Biological Assessment of Starke WWTF Bradford County NPDES # FL0028126 Sampled August 24, 27, and 31, and September 2 and 4, 2020

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
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Summary of Results

The dissolved oxygen detected in the effluent did not meet the minimum effluent permit limit. Iron was detected in the Test Site and Control Site samples at levels that exceeded the Class III Water Quality Criterion for Fresh Waters (62-302.530(38), F.A.C.). Nutrients detected in the effluent (composite and grab), Test Site, and Control Site samples, along with the respective algal growth potential (AGP) results, indicate the potential for nutrient enrichment due to the effluent. The effluent samples were not toxic to either toxicity test organism during the chronic definitive bioassay. A higher percentage of pollutant tolerant taxa in the Test Site compared to the Control Site may indicate an effect of the effluent on the stream biology. Twelve measured organic constituents were detected in the effluent and chrysene and fluoranthene were detected between method detection limit (MDL) and practical quantitation limit (PQL) at the Control Site.

Facility Overview

The Starke Wastewater Treatment Facility is a conventional activated sludge domestic wastewater treatment facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A.

The effluent is discharged into Alligator Creek, a Class III fresh water creek, WBID 3598C (Figure 1). Alligator Creek falls within the North Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). For this region, the NNC, expressed as annual geometric means (AGM), are 0.3 mg/L total phosphorus and 1.87 mg/L total nitrogen (Paragraph 62-302.531(2)(c), F.A.C.). Alligator Creek falls within the Northeast bioregion; the daily average percent DO saturation shall not be below 34 percent saturation in more than 10 percent of the values (Paragraph 62-302.533(1)(a), F.A.C.). This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment.
http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

The Test Site and Control Site for this FYI event were established on December 19, 2019. There was too little habitat to perform the stream conditioning index (SCI) at either site. Hester-Dendy samplers were placed instream at both sites on July 27, 2020. This FYI event was scheduled on August 24, 2020; however, due to potentially hazardous weather conditions caused by Hurricane Laura making landfall, only the instream Hester-Dendy samples were collected from the Test Site and Control Site that day. During the 28-day Hester-Dendy sampler incubation period, one of the three multi-plate sampling condos from the Test Site floating rack was lost. It is suspected to have been caused by a turbidity boom curtain that broke loose from a construction site upstream of the Control Site and impacted the Test Site floating rack.

Equipment blanks were collected on August 27, 2020. Effluent composite and grab samples were collected on August 31, 2020 from monitoring site EFD-1, along with instream chemistry grab samples at the Test and Control Sites. The rapid periphyton survey (RPS), habitat assessment (HA), and linear vegetation survey (LVS) were also conducted at the Test Site on August 31, 2020; however, these biological assessments were not performed at the Control Site due to thunderstorm. On September 2, 2020, 24-hour time proportional composite effluent samples for metals and nutrients were collected along with a grab sample for carbonaceous biochemical oxygen demand. Permit limits are for flow-proportional composite samples. Effluent renewal composite samples for the chronic definitive toxicity bioassays were collected on September 2, 2020 and September 4, 2020. Comparisons were made between water chemistry samples collected from the Test Site (located in Alligator Creek approximately 20 m downstream of the point of discharge) and the Control Site (located in Alligator Creek approximately 30 m upstream of the point of discharge, Figure 1).

Samples were collected by Brian Davis, Paul Duff, Kelly McDonald (DEP Northeast District, Jacksonville). Analyses were performed by ALS Environmental Laboratories in Jacksonville, Eurofins Test America Laboratories in Savannah, and DEP Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski, Nancy Ross, and Adrienne Pennington).

All field and laboratory methods followed DEP Standard Operating Procedures (see https://floridadep.gov/dear/quality-assurance/content/dep-sops and https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops for details) and met DEP quality assurance/quality control standards (see https://floridadep.gov/dear/quality-assurance). Explanations of specific methods and measurements can be found in Appendix B.

All references to Rule 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

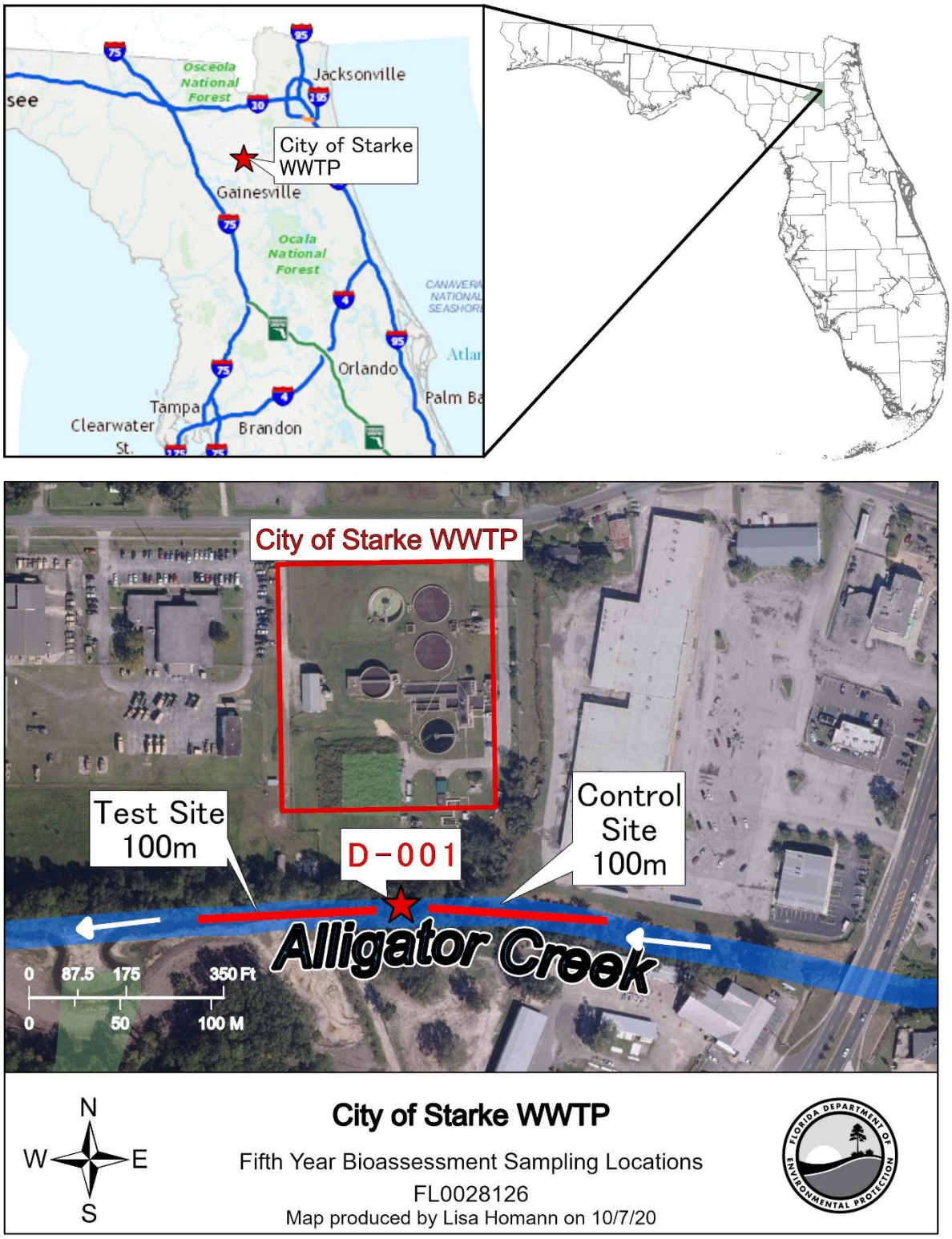


Figure 1. Map of the Facility and Sampling Locations

Results

Physical and Chemical Parameters / Site Characterization (See Table 1 and Appendices B, C, D, and E)

- The dissolved oxygen (mg/L) of the effluent grab sample did not meet the minimum effluent permit limit. The pH, specific conductance, and total residual chlorine of the effluent grab sample complied with effluent permit limits.

- The pH, specific conductance, and dissolved oxygen (% saturation) measured at the Test and Control Sites complied with Class III Water Quality Criteria for Fresh Waters.

- The habitat assessment (HA) score at the Test Site was 66, which places it in the marginal category (Appendix B). The HA was not performed at the Control Site. While a complete HA comparison cannot be made between the Test and Control Sites, some comparisons can be made between them using habitat information found on their physical/chemical field sheets. At both sites, the right bank had a wider riparian buffer zone than the left bank. There was also severe, recent artificial channelization and slight sand smothering at both sites. A chemical odor was noticed at the Test Site, but not at the Control Site. Aquatic plants were abundant at both sites.

Analytical Water Chemistry (See Table 2 and Appendix E)

- Unionized ammonia (calculated) detected in the effluent grab sample exceeded the permit limit.

- The nutrients detected in both the effluent composite and grab samples ranged from 2.8 to 7.8 times greater than the nutrients detected in the Test Site sample, and from 1.2 to 215 times greater than the nutrients detected in the Control Site sample. Ortho-phosphate, total phosphorus, total ammonia, un-ionized ammonia (calculated), total Kjeldahl nitrogen, organic nitrogen, and total nitrogen (calculated) were all detected in the effluent samples at levels between 1.2 and 12 times greater than in either the Test or the Control Site samples. Un-ionized ammonia (calculated) and total ammonia were detected in the effluent samples at 180 and 215 times greater, respectively, than in the Control Site sample. This indicates the potential for the effluent to elevate nutrient levels in the receiving waters.

- Nutrients detected in the Test Site samples ranged from 1.1 to 30 times greater than the nutrients detected in the Control Site samples. Ortho-phosphate, total phosphorus, total Kjeldahl nitrogen, organic nitrogen, and total nitrogen were all detected in the Test Site sample at levels between 1.1 and 2.5 times greater than in the Control Site sample. Un-ionized ammonia (calculated) and total ammonia were detected in the Test Site sample at 23 and 30 times greater, respectively, than in the Control Site sample. This may be indicative of nutrient enrichment due to the effluent.

- For comparative purposes only, the values for total phosphorous and total nitrogen (calculated) in effluent composite and grab samples were approximately 3 times greater than NNC AGM limits.

- Chlorophyll *a* (corrected) was detected at a low level in the effluent grab sample but was undetected in the Test Site and Control Site samples.

- Total suspended solids were detected in the effluent composite, effluent grab, Test Site, and Control Site samples at levels between the MDL and PQL.

Microbiology (See Table 2 and Appendix B)

- *Escherichia coli* was not detected in the effluent grab sample and detected in the instream samples at levels which complied with Class III Water Quality Criterion for Fresh Waters (62-302.530(6)(b), F.A.C.).

- Fecal coliforms were detected in the effluent grab sample at levels which complied with the facility permit limit. Fecal coliforms were detected in both the Test and Control Site samples at levels greater than detected in the effluent grab sample.

Toxicity Whole Effluent Test (See Table 2 and Appendix B)

- The chronic definitive bioassays were performed September 1, 2020 through September 7, 2020.

- Chronic bioassay results are reported as the 25% Inhibition Concentration (IC25). A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.200(5), 62-302.530(20) and/or facility permit limits.

- During the chronic definitive bioassay, the effluent composite sample IC25 for the water flea, *Ceriodaphnia dubia*, and the IC25 for the fish, *Pimephales promelas*, were calculated as being greater than 100% effluent, and therefore complied with effluent permit limits.

- For more information or to obtain copies of the toxicity bench sheets, please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix E)

- Iron was detected in the Test Site and Control Site samples at levels that exceeded the Class III Water Quality Criterion for Fresh Waters (62-302.530(38), F.A.C.). All other metals measured were either undetected or detected in the effluent composite sample, Control and Test Site samples at levels that complied with Class III Water Quality Criteria for Fresh Waters and effluent permit limits.

- Copper and zinc were detected in the equipment blank.

Algal Growth Potential (See Table 4 and Appendix B)

- The freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, was used to determine the AGP values in the effluent grab, Test Site, and Control Site samples. The analytical chemistry suggests that all three samples were nitrogen-limited (Miller et al. 1978).

- The effluent grab sample AGP result (149 mg dry wt/L) is greater than the AGP range (6.10 to 20.0 mg dry wt/L) that is suggested to be representative of high productivity for freshwater (Miller et al. 1978).

Flora (See Appendices B and D)

- Two temporally independent Linear Vegetation Survey (LVS) samplings showing a Coefficient of Conservatism score ≥ 2.5 and the frequency of occurrence of Florida Exotic Plant Pest Council (FLEPPC) exotic taxa ≤ 25% are needed to achieve NNC floral metrics. Sites with no observed macrophytes are considered to achieve the LVS component of the NNC. Two temporally independent Rapid Periphyton survey (RPS) samplings with ≤ 25% rank 4-6 (algae > 6mm thick) coverage are needed to achieve NNC floral metrics. This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment.

- The LVS and RPS were performed at the Test Site only; therefore, comparisons cannot be made between the Test Site and Control Site.

- The LVS performed at the Test Site had an average Coefficient of Conservatism (C of C) score of 0.19 with 92.3% FLEPPC exotic taxa. While there was 0-5% macrophyte coverage in each 10 m section of the 100 m assessment, there were only three taxa present, two of which were Category 1 FLEPPC exotic species: *Ludwigia peruviana* and *Ruelia simplex*. *Polygonum hydropiperoides* was found only in the 50-60 m section of the assessment stream segment.

- The RPS conducted at the Test Site showed no evidence of nutrient enrichment. Filamentous mat-forming algae were not found at any of the sampled points at the Test Site. The stream was lightly shaded within the 0-70 m stretch and was more heavily shaded in the 80-100 m stretch. Thick algal growth is not expected at moderately or heavily shaded sites.

Macroinvertebrates (See Tables 5 and Appendices B and D)

- Quantitative macroinvertebrate data were collected from floating Hester-Dendy samplers, incubated for 28 days, within the flow of the stream (at the Control Site) and the effluent (at the Test Site). While all multi-plate sampler condos were able to be retrieved from the Control Site, only two were used for calculations so a comparison could be made between the Test and Control Sites. The diversity calculation requires a minimum of three replicates, per 62-302.530(10a), F.A.C.. The following is for general information, only.

- Both sites had sensitive taxa present. Although the Test Site had a greater number of Ephemeroptera and Trichoptera taxa than the Control Site, these taxa made up a greater percent of individuals at the Control Site. Surface deposit feeders dominated both the Test and Control Sites.

- Ephemeropteran (42.4%) and dipteran (39.0%) taxa constituted more than 80% of the community composition in the Control Site sample. The Test Site sample was dominated by dipterans (73.0%). Dipterans are pollution tolerant taxa.

- For more information or to obtain a copy of the taxa lists, please contact the Biology Laboratory at 850-245-8177.

Organic Constituents (See Table 6 and Appendix E)

- Atrazine, bromacil, fipronil, fipronil desulfinyl, fipronil desulfinyl, fipronil sulfide, fipronil sulfone, flumioxazin, hexazinone, oxadiazon, propiconazole, sulfentrazone, tebuconazole, chrysene, and fluoranthene were detected in the effluent grab sample. This facility has no permit limits for these analytes.

- Chrysene and fluoranthene were detected between MDL and PQL at the Control Site. For comparison only, these single sample values are within the limits for the Class III Water Quality Criteria for Fresh Waters, expressed as an annual average.

Literature Cited

Fore, L.S., Frydenborg, R., Miller, D., Frick, T., Whiting, D., Espy, J., and Wolfe, L. 2007. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams (Stream Condition Index and Biorecon). Florida Department of Environmental Protection. 110 pp.

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Table 1. Measured field parameters

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Control Site	Test Site
Sample Depth	m	-	-	0.97	0.3	0.3
Temperature	C	-	Report	29.5	26.8	26.9
pH	SU	6.0 - 8.5	6.0 - 8.5	7.3	7.0	7.2
Specific Conductance	µmhos/cm	≤ 1,275	-	493	141	188
Salinity	ppt	-	-	0.2 c	0.1 c	0.1 c
Dissolved Oxygen	% saturation	> 34	-	65	85 c	84 c
Dissolved Oxygen	mg/L	-	> 6.2	5.0 e	6.8	6.7
Total Residual Chlorine	mg/L	≤ 0.01	≤ 0.01	0.02 U[1]	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e - Value exceeds the Class III Water Quality Criteria or permit limits
c - Value is calculated
U - Material analyzed for but not detected; value reported is the method detection limit
1 - Measurement taken by DEP staff with Hach colorimeter with an MDL of 0.02 mg/L.

Table 2. Analytical water chemistry, microbiological, and toxicological data

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and analytical water chemistry, microbiological, and toxicological data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab	Control Site	Test Site
Ortho-phosphate	mg P/L	-	-	-	0.77	0.063	0.16
Total Phosphorus	mg P/L	≤ 0.3 g	Report	1.1	0.93	0.11	0.24
Total Ammonia	mg N/L	≤ 3.0 c (Control) ≤ 2.7 c (Test)	Report	2.5	2.8	0.013	0.39
Un-ionized Ammonia (calculated salinity)	mg N/L	-	≤ 0.02 s	-	0.05 c e	< 0.02 c	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	2.4	1.8	0.010	0.23
Total Kjeldahl Nitrogen	mg N/L	-	-	3.6	3.9 J	0.91	1.4
Organic Nitrogen	mg N/L	-	≤ 7.9	1.1 c	1.1 c	0.9 c	1.0 c
Total Nitrogen	mg N/L	≤ 1.87 g	Report	6.0 c	5.7 c	0.92 c	1.6 c
Total Organic Carbon	mg C/L	-	-	9.2	8.1	25	24
Chlorophyll *a* - Corrected	µg/L	-	-	-	2.2 I	1.6 U	1.6 U
Phaeophytin	µg/L	-	-	-	0.90 U	1.8 U	1.8 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 16	-	2.0 U	2.0 U	2.0 U
Total Suspended Solids	mg/L	-	≤ 60	5 IA	2 I	7 I	5 IA
Turbidity	NTU	< 29 t	-	-	4.7	8.7	11
Color (true)	PCU	-	-	-	30	250	240
Alkalinity	mg CaCO3/L	≥ 20	-	-	159 A	29	45
Chloride	mg Cl/L	-	-	-	36 A	14	18
Fluoride	mg F/L	≤ 10.0	-	-	0.30	0.047 I	0.079 I
Sulfate	mg SO4/L	-	-	-	18 A	13	15
Fecal Coliforms	cfu/100 mL	-	≤ 800	-	3.0 B	2,100	2,600
Escherichia coli	MPN/100 mL	≤ 410	-	-	10 U	365	140
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	-	≥ 100	> 100	-	-	-
Bioassay - Fish *(Pimephales promelas)*	% effluent	-	≥ 100	> 100	-	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e - Value exceeds the Class III Water Quality Criteria or permit limits
c - Value is calculated
g- Value expressed as an annual geometric mean
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit

Table 3. Analytical metals data

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and analytical metals data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Hardness	mg CaCO3/L	-	Report	162 c	-	-	55.8 c	-	69.8 c
Aluminum	µg/L	-	-	61	-	-	852	-	826
Arsenic	µg/L	≤ 50	-	-	-	≤ 50	1.13	≤ 50	1.15
Cadmium	µg/L	≤ 0.386 b	-	0.020 U	-	≤ 0.176 b	0.020 U	≤ 0.207 b	0.020 U
Calcium	mg/L	-	-	49.8	-	-	19.2	-	23.1
Chromium, Total [2]	µg/L	≤ 128 b	-	0.49 I	-	≤ 53.5 b	1.1 I	≤ 64.2 b	1.1 I
Copper [3]	µg/L	≤ 14.1 b	≤ 14.1 b	7.53	-	≤ 5.67 b	1.14	≤ 6.86 b	1.20
Iron	µg/L	≤ 1,000	-	260	-	≤ 1,000	1,230 e	≤ 1,000	1,120 e
Lead	µg/L	≤ 5.86 b	-	0.48	-	≤ 1.51 b	0.84	≤ 2.01 b	0.83
Magnesium	mg/L	-	-	9.06	-	-	1.91	-	2.95
Mercury	ng/L	≤ 12	≤ 12	-	1.8	12	5.5	12	5.3
Nickel	µg/L	≤ 78.3 b	-	1.1 I	-	≤ 31.8 b	0.86 I	≤ 38.5 b	0.86 I
Potassium	mg/L	-	-	5.0	-	-	1.5	-	2.0
Selenium	µg/L	≤ 5.0	-	0.23 I	-	≤ 5.0	0.26 I	≤ 5.0	0.25 I
Silver	µg/L	≤ 0.07	≤ 0.07 p	0.032 I	-	≤ 0.07	0.010 U	≤ 0.07	0.010 U
Sodium	mg/L	-	-	31.5	-	-	7.9	-	11.6
Zinc [3]	µg/L	≤ 180 b	-	29	-	≤ 73.1 b	7.4 I	≤ 88.4 b	10 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e - Value exceeds the Class III Water Quality Criteria or permit limits
b - Value is calculated based on hardness, (62-302.530(3))
c - Value is calculated
p - 24-hour timed proportioned composite
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit

2 - Class III Water Quality Criterion for Fresh Waters (62-302.530(19)(a), F.A.C.) is for chromium-III
3 - Analyte was detected in the equipment blank for copper (1.46 µg/L) and for zinc (34 µg/L)

Table 4. Algal Growth Potential (AGP)

Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	*Pseudokirchneriella subcapitata*	149	180 ± 35	330 ± 66	220 ± 43	400 ± 80	6.0	6.1
Control Site	*Pseudokirchneriella subcapitata*	1.72	0.90 ± 0.20	27 ± 5.4	35 ± 7.0	47 ± 9.5	0.40	8.4
Test Site	*Pseudokirchneriella subcapitata*	14.7 A	24 ± 4.7	69 ± 14	62 ± 12	100 ± 21	3.9	6.8

A - Value reported is the mean of two or more determinations

Table 5. Macroinvertebrate Hester-Dendy samples – quantitative

Starke WWTF	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity*	4.11 [4]	3.94 [4]
Number of Taxa	24	42
Number of EPT Taxa	7	10
Percent Dominant Taxon	26	32
Dominant Taxon Name	*Labiobaetis propinquus* (Ephemeroptera)	*Stenochironomus* (Diptera)
Total Number of Individuals (counted)	302	1,013
Total Number of Individuals (#/m^2)	1,202	4,024
Community Composition: Percent of total		
Amphipoda	0.0	1.1
Coleoptera	10.0	7.4
Diptera	39.0	73.0
Ephemeroptera	42.4	14.5
Gastropoda	3.0	1.7
Odonata	1.3	0.3
Plecoptera	0.0	0.0
Trichoptera	3.6	1.8
Other	0.70	0.20
Functional Feeding Groups: Percent of total		
Piercers	5.0	0.4
Predators	6.6	8.8
Scrapers	14	11.5
Shredders	6.3	23.2
Surface Deposit Feeders	64	51.2
Suspension Feeders	3.5	4.8

* - Shannon-Weaver Diversity scores calculated on samples with < 300 individuals have the potential for negative bias (lower diversity scores compared to sites with more individuals; Lande 1996).

4 - The diversity criterion requires a minimum of three replicates, per 62-302.530(10a), F.A.C.. This result is based on two replicates and is for informational purposes, only.

Table 6. Detected Organic Constituents

Effluent limits, Class III Water Criteria for Fresh Waters, and analytical organic and pesticide

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Control Site	Test Site
Atrazine	ng/L	-	-	2.0 J	-	-
Bromacil	ng/L	-	-	5.4 J	-	-
Fipronil	ng/L	-	-	14	-	-
Fipronil Desulfinyl	ng/L	-	-	0.60	-	-
Fipronil Sulfide	ng/L	-	-	7.4 J	-	-
Fipronil Sulfone	ng/L	-	-	9.4	-	-
Flumioxazin	ng/L	-	-	2.3 I	-	-
Hexazinone	ng/L	-	-	0.92 I	-	-
Oxadiazon	ng/L	-	-	0.11 IJ	-	-
Propiconazole	ng/L	-	-	2.3	-	-
Sulfentrazone	ng/L	-	-	3.8	-	-
Tebuconazole	ng/L	-	-	15	-	-
Chrysene	µg/L	< 0.031 a [5]	-	0.024 U	0.038 I	0.024 U
Fluoranthene	µg/L	< 370	-	0.047 U	0.079 I	0.048 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
a - Annual average
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit
5 – Class III Water Quality Criterion for Fresh Waters is for the annual average of a group of PAHs (62-302.530(57)(a), F.A.C.)

Appendix A. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Abhi Maturi	**Contact Number:** 904-256-1584
Facility Name (as it appears on permit): Starke WWTF	**Former Names:**
NPDES Permit Number: FL0028126	**Permit Expiration Date:** 03/02/2021
Physical Address: 209 North Thompson Street, Starke, Florida 32091	
District: Northeast	**County:** Bradford
Function of Facility: Domestic Waste Water Treatment	
Facility Type: Domestic Waste Water	**Permitted Capacity (MGD):** 1.65
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **Jan 2019-Dec 2019. D-001: 0.44 MGD**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): **Jan 2019-Dec 2019. R-001: 0.18**	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify:**	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): **Surface Water Discharge (Normal Conditions)** EFD-1: Sample Point after de-chlorination and prior to discharge to Alligator Creek at the Outfall D-001 EFA-1: Sample point immediately after disinfection and prior to de-chlorination. CAL-1: Calculation of ultimate biochemical oxygen demand CAL-2: Calculation of monthly average TKN which is the sum of monthly average total ammonia (as N) and monthly average total organic nitrogen (as N) in a given month. CAL-3: Calculation of percent removal of total suspended solids CAL-4: Calculation of unionized ammonia **Surface Water Discharge (Wet Conditions)** EFA-1: Sample point immediately after disinfection and prior to de-chlorination. EFD-2: Sample point after de-chlorination and prior to discharge to Alligator Creek under the LWWD mechanism SWB-3: Stream flow at the USGS Gauge Station: Alligator Creek at Stark, Florida OTH-1: The average annual rainfall shall be reported as measured at the City of Starke, FL EFD-1: Sample point after de-chlorination and prior discharge to Alligator Creek at the Outfall D-001. CAL-5: Calculation of the stream dilution ratio (stream flow divided by limited wet weather discharge flow) CAL-6: Cumulative number of days LWWD is activated **Reuse and Land Application Systems:** EFA-2: Sample point of the final Effluent prior to discharge to the reuse system	

EFA-1: Sample point immediately after disinfection and prior to de-chlorination
EFD-1: Sample Point after de-chlorination and prior to Reuse System
RWS-A: Same as EFA-2 for Primary and Secondary drinking water standards

Description of Permitted Outfall(s):
D-001: Discharge into Alligator Creek (Class III fresh waters, WBID 3598C). Location is approximately at latitude 29° 56' 16" N, longitude -82° 06' 55" W
D-002: Limited wet weather discharge (LWWD) into Alligator Creek (Class III fresh waters, WBID 3598C)*
R-001: Permitted slow-rate restricted public access irrigation. Locations is approximately at latitude 29° 56' 26" N, longitude 82° 06' 53" W

** Outfalls D-001 and D-002 are at the same location. They are named differently due to different disposal mechanisms.*

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):
An existing 1.65 million gallon per day (MGD) annual average daily flow (AADF) design capacity conventional activated sludge domestic wastewater treatment facility (WWTF) with the following units:

Pretreatment Unit Processes:
One (1) influent headworks consisting of: A coarse bar screen; an influent pump station consisting of three self-priming centrifugal pumps (598 gpm, 748 gpm, and 1,010 gpm; all @ 31 feet TDH), and two vertical centrifugal pumps (1,050 gpm @ 16 feet TDH); a static screen (with a slot size of 0.10-inch) including an inlet headbox, overflow weir, screen section, and effluent distribution structure. The static screen is manually operated with the flow being controlled by two 10" plug valves and one 10" gate valve; a cyclone grit removal chamber (The main chamber is 7.0 feet in diameter and has a capacity of approximately of 3.0 MGD)

Biological Treatment Processes
Two (2) aeration basins which are constructed of concrete; each basin has volume of 310,000 gallons, 60-foot diameter, and fine bubble diffused air system
Two (2) secondary clarifiers, each clarifier has 60-foot diameter, 12 feet water depth, and surface loading of 390.0 gal. per day (gpd) per square feet;

- A filtration system which is comprised of a disc cloth filter each unit containing 4 cloth disks with a design flow at 5 gpm/SF at 3 MGD peak flow;
- One (1) chlorine contact chamber;
- Four adjacent concrete tanks which are used as aerobic digester (Tank No.1 is 27 feet by 21 feet; tanks No.2 3 is 12 feet by 54 feet; and tank No.4 is 100 feet by 17 feet), and one (1) sludge holding tank, 55 ft in diameter
- BioChem Neutralizer System to produce Class AA domestic wastewater biosolids treatment system. The system is designed to accommodate 3.0 MGD AADF permitted treatment capacity;
- One (1) sludge drying bed consisting of layers of sand (7-inch thick) and gravel (3-inch thick for 1/8 to 1/4-inch size stone and 6 to 12-inch thick for 1/4- to 3/4-inch size stone);
- One (1) effluent transfer pump station consisting of three (3) suction lift pumps (30 hp, 1,300 RPM) and one (1) self-priming pump (7.5 hp, 3,600 RPM).

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

Normal conditions			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow (to Alligator Creek)	MGD	Max	0.98*	Report	Report		Continuous	Recording Flowmeter with Totalizer	EFD-1	See I.A.4
BOD, Carbonaceous 5-day, 20ºC **(Winter Months:** December – April)	Mg/L	Max	12	15	18	24	Weekly	24-hr FPC	EFD-1	See I.A.8
BOD, Carbonaceous 5-day, 20ºC (Summer Months: **May – November)**	Mg/L	Max	8	10	12	16	Weekly	24-hr FPC	EFD-1	See I.A.8
Oxygen, Dissolved (Winter Months: **December – April)**	Mg/L	Min				5.5	5 day/week	Meter	EFD-1	See I.A.8
Oxygen, Dissolved (Summer Months: **May – November)**	Mg/L	Min				6.2	5 day/week	Meter	EFD-1	See I.A.8
Nitrogen, Organic, Total (as N) (Winter Months: **December – April)**	Mg/L	Max	Report	5	7.5	10.5	Weekly	Grab	EFD-1	
Nitrogen, Organic, Total (as N) (Summer Months: **May – November)**	Mg/l	Max	Report	3.5	5.3	7.9	Weekly	Grab	EFD-1	

Ultimate Oxygen Demand (UBOD) (Winter Months: **December – April)**	Mg/l	Max		51.8			Monthly	Calculated	CAL-1	See I.A.13
Ultimate Oxygen Demand (Summer Months: **May – November)**	Mg/L	Max		48.3			Monthly	Calculated	CAL-1	See I.A.13
Nitrogen, Kjeldahl, Total (as N)	Mg/l	Max	Report				Monthly	Calculated	CAL-2	See I.A.13
Solids, Total Suspended	Mg/L	Max	20	30	45	60	Weekly	24-hr FPC	EFD-1	
Solids, Total Suspended, % Removal	percent	Min		85			Weekly	Calculated	CAL-3	
pH	s.u.	Min Max				6.0 8.5	5 day/ Week	Meter	EFD-1	See I.A.3
Fecal Coliform	#/100 mL	Max	200	200 (monthly Geometric Mean)		800	Weekly	Grab	EFD-1	See I.A.5
Chlorine, Total Residual (For Disinfection)	Mg/L	Min				0.5	5 day/ Week	Meter	EFA -1	See I.A.3 and I.A.6
Chlorine, Total Residual (For Dechlorination)	Mg/L	Max				0.01	3 Day/Week	Grab	EFD-1	
Nitrogen, Ammonia, Total (as N)	Mg/L	Max	Report	Report	Report	Report	Weekly	Grab	EFD-1	See I.A.14
Nitrogen, Ammonia, Total unionized (as N)	Mg/L	Max				0.02	Weekly	Calculated	CAL-4	See I.C.3

Temperature (ºC), Water	Deg C	Max				Report	Weekly	Meter	EFD-1	See I.A.14
Nitrogen, Total	Mg/L	Max	Report	Report	Report	Report	Weekly	24-hr FPC	EFD-1	See I.C.3
Total Phosphorus	Mg/L	Max	Report	Report	Report	Report	Weekly	24-hr		See I.A.7
Hardness, Total (as CaCO3)	Mg/L	Max				Report	Yearly	24-hr FPC	EFD-1	See I.A.7
Copper, Total Recoverable	µg/L	Max				See I.A.7	Yearly	24-hr FPC	EFD-1	See I.A.7
Silver, Total Recoverable	µg/L	Max				0.07	Yearly	24 hr-FPC	EFD-1	
Mercury, Total Recoverable	µg/L	Max				0.012	Yearly	Grab	EFD-1	See I.A.9
Whole Effluent Toxicity (Chronic)	See Permit Condition I.A.10						Annually	24-hr FPC	EFD-1	

***In the interim period when the flow to the WWTF is flow, the permitted discharge to Alligator Creek at the Outfall D – 001 is temporary reduced to **0.98 MGD AADF**.*

I.A.4. A recording flow meter with totalizer shall be utilized to measure flow and calibrated at least once every 12 months.
I.A.5. The effluent limitation for the monthly geometric mean for fecal coliform is only applicable if 10 or more values are reported. If fewer than 10 values are reported, the monthly geometric mean shall be reported as "MNR" on the Discharge Monitoring Report.
I.A.6. Total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow.
I.A.7. The limit for "Copper, Total Recoverable" shall be calculated using the following equation(s):

$$Cu \leq e(0.8545[lnH]-1.702)$$

Total hardness shall be measured at the time of the effluent sample. The "ln H" means the natural logarithm of total hardness expressed as mg/L of CaCO3. For metals criteria involving equations with hardness, the hardness shall be set at 25 mg/L if actual hardness is <25 mg/L and set at 400 mg/L if actual hardness is >400 mg/L.
The measured effluent value shall be recorded on the DMR in the parameter row for "Copper, Total Recoverable (effluent)." The calculated effluent limit shall be recorded on the DMR in the parameter row for "Copper, Total Recoverable (calculated limit)." Compliance with the effluent limitation is determined by calculating the difference between the measured effluent value and the calculated. The compliance value shall be recorded on the DMR in the parameter row for "Copper, Total Recoverable (effluent minus calculated limit)." The compliance value shall not exceed 0.00.

I.A.8. Limits of dissolved oxygen concentration and other pollutants (such as CBOD5 and TKN) of effluent shall be maintained such that the discharge does not degrade dissolved oxygen level of the receiving water/stream (Sweetwater Branch) below the Water Quality Criterion. The Criterion requires that 90 percent of the daily average percent dissolved oxygen (DO) saturation values of the stream shall be above 38%.

I.A.9. EPA Method 1631E shall be used to analyze for mercury. Method 245.1 with an MDL of 4.2 ng/L operated in the high sensitivity mode can be used as for initial screening for mercury. If mercury is not detected (e.g., the results are less than the MDL of 4.2 ng/L), then mercury is in compliance with the water quality criterion of Rule 62-302.530(41), FAC. However, for any sample results that have a value greater than the MDL of 4.2 ng/L but less than the PQL, the permittee shall conduct an additional evaluation for mercury using Method 1631E.

I.A.10. The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001.

a. Effluent Limitation

(1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. *[Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]*

(2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. *[Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]*

ii) Monitoring Frequency

(1) Routine toxicity tests shall be conducted once every 12 months (Annually), the first starting within 12 months of the most recent test and lasting for the duration of this permit.

iii) Sampling Requirements

(1) For each test conducted, a total of three *flow-proportional 24-hr composite* samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.

(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

(3) Samples for routine and additional follow-up tests shall not be collected on the same day.

iv) Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: **100%**, **50%**, **25%**, **12.5%**, and **6.25%** final effluent.

(2) The permittee shall conduct a daphnid, ***Ceriodaphnia dubia***, Survival and Reproduction Test and a fathead minnow, ***Pimephales promelas***, Larval Survival and Growth Test, concurrently.

(3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.

(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.2.3.

v) Quality Assurance Requirements

(1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the

required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.

(2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet test acceptability criteria, the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (***Ceriodaphnia dubia***) and Section 11.11 (***Pimephales promelas***). The repeat test shall begin within 21 days after the last day of the invalid test.

(3) If 100% mortality occurs in all effluent concentrations for either test species prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) for that species shall be terminated with the conclusion that the test fails and constitutes non-compliance.

(4) Routine and additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-013, Section 10.2.6., and the evaluation shall be included with the bioassay laboratory reports.

vi) Test Failures

(1) A test fails when the test results do not meet the limits in 10.a.

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitations in 10.a. (1) above, the permittee shall notify the Department at the address above within 21 days after the last day of the failed routine test and conduct two additional follow-up tests, on each species that failed the test, in accordance with 10.d.

(b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed.

(c) The additional follow-up tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5%, and 6.25% effluent. The permittee may modify the dilution series in the additional follow-up tests to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control are run. All test results shall be analyzed according to the procedures in EPA-821-R-02-013.

(3) In the event of three valid test failures (whether routine or additional follow-up tests) within a 12-month period, the permittee shall notify the Department within 21 days after the last day of the third test failure.

a. The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.

b. The Department shall review and approve the plan before initiation.

c. The plan shall be initiated within 30 days following the Department's written approval of the plan.

d. Progress reports shall be submitted quarterly to the Department at the address above.

e. During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 10.d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in 10.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-013, a repeat test shall be initiated within 21 days after the last day of the invalid routine test.

f. Upon completion of four consecutive quarterly valid routine tests that demonstrate compliance with the effluent limitation in 10.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive quarterly valid routine whole effluent toxicity tests.

g. If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive quarterly valid routine tests for the purpose of terminating the plan.

(4) If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 10.a.(2), the Department may revise this permit to require acute definitive whole effluent toxicity testing.

(5) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for acute or chronic whole effluent toxicity failures.

I.A.11. The pH and temperature of the effluent shall be taken at the time of total ammonia sample collection. The un-ionized ammonia fraction shall be calculated based on the total ammonia, pH, and temperature.

I.A.12. The DO level shall not be less than the summer and winter limits listed in the Level I WQEBL for the city of Starke (Version August 2010). Normal daily and seasonal fluctuations above these levels shall be maintained.

I.A.13 For purposes of determining compliance with rules and regulations of the Department, ultimate biological oxygen demand (UBOD) shall be calculated as follows:

UBOD = (2.3) x $CBOD_5$ + (4.57) x TKN

Where: UBOD = Ultimate Biochemical Oxygen Demand, mg/L.

$CBOD_5$ = Monthly average concentration of 5-day carbonaceous BOD, mg/L

TKN = Monthly average concentration of total Kjeldahl nitrogen, mg/L.

TKN = Monthly average total ammonia + Monthly average total organic nitrogen

I.A.14. The Department reserves the right to require additional regular monitoring of the segment of the Alligator Creek near the outfall for the purpose of maintaining data on the impact of the discharge to the creek.

I.A.15. The permit may be reopened to adjust effluent limitations or monitoring requirements should future Water Quality Based Effluent Limitation determinations, water quality studies, DEP approved changes in water quality standards, or other information show a need for a different limitation or monitoring requirement.

PART I: Continued

List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

Wet conditions			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow, LLWD	MGD	Max	0.4	Report			Continuous *(During Discharge)*	Recording Flowmeter with Totalizer	EFD-1	See I.B.4 And I.B.5
Flow, Stream Flow	cfs	Max				Report	Continuous *(During Discharge)*	Meter	SWB-1	See I.B.6
Blend Ratio (Stream Dilution Ratio)	Ratio	Min				166	Daily *(During Discharge)*	Calculated	CAL-1	See I.B.5
Rain	In.	Max				Report	Daily *(During Discharge)*	Meter	OTH	See I.B.7
BOD, Carbonaceous 5-day, 20ºC	Mg/L	Max	20	20	40	40	Daily *(During Discharge)*	16-hour flow proportioned composite*	EFD-1	See I.B.6
Solids, Total Suspended	Mg/L	Max	20	30	45	60	Daily *(During Discharge)*	16-hour flow proportioned composite*	EFD-1	
Nitrogen, Kjeldahl, Total (as N)	Mg/L	Max	20	20		20	Daily *(During Discharge)*	16-hour flow proportioned composite*	EFD-1	See I.B.6

Coliform, Fecal	#/100mL	Max	200	200 (monthly Geometric mean)		800	Weekly (During Discharge)	Grab	EFD-1	See I.B.8
Chlorine, Total Residual (For Disinfection)	Mg/L	Min				0.5	Continuous	Grab	EFA-1	See I.B.9
Chlorine, Total Residual (For Dechlorination)	Mg/L	Max				0.01	Daily *(During Discharge)*	Grab	EFD-1	
pH	s.u	Min Max				6.0 8.5	Continuous *(During Discharge)*	Grab	EFD-2	
Cumulative Number of Days during the Calendar Year the LWWD Activated	Day	Max				Report	Daily *(During Discharge)*	Calculated	CAL-6	
Nitrogen, Total	Mg/L	Max	Report	Report	Report	Report	Weekly *(During Discharge)*	Grab	EFD-2	
Phosphorus, Total (as P)	Mg/L	Max	Report	Report	Report	Report	Weekly *(During Discharge)*	Grab	EFD-2	

**16-hour flow proportioned composite or flow proportioned composite samples for the time period of discharge if discharge is less than 16 hours.*

I.B.3. The limited wet weather discharge is authorized only when the dilution ratio (stream flow divided by limited wet weather discharge flow) equals or exceeds the minimum stream dilution factor (SDF) of 102.0. The stream dilution ratio shall be calculated for each day of discharge and reported on the DMRs.

I.B.4 The LWWD has a permitted capacity of 0.40 MGD annual average daily flow. The discharge is proposed to be used 60 days but shall not be activated more than 150 days during any calendar year.

I.B.5 When the LWWD is activated, the permittee shall monitor for the parameters as required in the table above. For each day of discharge, i.e. for each 24-hour period of discharge or portion thereof if the discharge begins and ends for a time period less than 24 hours, samples must be taken and analyzed for TKN, CBOD5 and pH and must report for stream flow and the resulting stream dilution ratio. When no discharge occurs, this fact shall be reported on the discharge monitoring report (DMR).

I.B.6 The stream flow shall be monitored at the upstream of the outfall of the LWWD at the USGS Gauge Station: Alligator Creek at Starke, Florida (approximately at latitude 29° 56' 10" N, longitude 82° 06' 43" W).

I.B.7. The average annual rainfall shall be reported as measured at the City of Starke, Florida, Bradford County

I.B.8. The effluent limitation for the monthly geometric mean for fecal coliform is only applicable if 10 or more values are reported. If fewer than 10 values are reported, the monthly geometric mean shall report as "MNR" on the Discharge Monitoring Report.

I.B.9. Total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow.

PART I: Continued

Receiving Waters: **Alligator Creek (WBID 3598C)**	**Classification (indicate whether fresh or marine):** **Class III Fresh Waters**

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
The facility tests for chronic toxicity on a daphnid, ***Ceriodaphnia dubia***, Survival and Reproduction Test and a fathead minnow, ***Pimephales promelas***, Larval Survival and Growth Test.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
Facility is under Administrative Order AO 181 NE which went into effect February 1, 2016. The AO sets interim limits for Total Nitrogen and Total Phosphorus for the Annual Geometric Mean to "Report" rather than 1.87 mg/L and 0.3 mg/L respectively. These limits are for the Total Mass loading monitoring and not for Surface water discharge monitoring.

CO 14-0573:
The facility is under CO 14-0573 to address SSO incidents. The first deadline for the Consent Order is 07/05/2020
CO 18-1074:
The facility is under CO 18-074. An amended version of the original CO became effective on January 30, 2019. The CO addresses for the following parameters: Unionized Ammonia, Oxygen Demand, Dissolved Oxygen, CBOD 5 Day, TSS, Total Organic Nitrogen, Chronic Whole Effluent Toxicity, Fecal Coliform and pH. The CO set interim limits for Unionized Ammonia and pH.

Facility Mixing Zone Details (if applicable):
The facility has not been granted a mixing zone

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
09/30/2019	Oxygen demand	48.3	74.3
08/31/2019	Oxygen demand	48.3	100.2
07/31/2019	Oxygen demand	48.3	90.8
09/30/2019	Solids, Total Suspended, % Removal	85	76
08/31/2019	Solids, Total Suspended, % Removal	85	76
11/30/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.05
09/30/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.53
08/31/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.56
07/31/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.26
05/31/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.05
02/28/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.07
01/31/2019	Nitrogen, Ammonia, Total unionized (as N)	0.02	0.07
08/31/2019	BOD, Carbonaceous 5 day, 20C	13.5	10.0
08/31/2019	Coliform, Fecal	800	8900
12/31/2019	pH	6.5-8.5	5.32
09/30/2019	pH	6.5-8.5	6.2
06/30/2019	pH	6.5-8.5	5.63
03/31/2019	pH	6.5-8.5	6.2
12/31/2019	pH	6.5-8.5	5
09/30/2019	pH	6.5-8.5	5.2

06/30/2019	pH	6.5-8.5	4.77
03/31/2019	pH	6.5-8.5	5.5
12/31/2019	pH	6.5-8.5	4.69
09/30/2019	pH	6.5-8.5	4.82
06/30/2019	pH	6.5-8.5	4.41
03/31/2019	pH	6.5-8.5	4.7
09/30/2019	pH	6.5-8.5	4.86
06/30/2019	pH	6.5-8.5	4.7
03/31/2019	pH	6.5-8.5	4.6

Describe previous FYI and WQBEL study: An FYI was conducted in 2015. The facility was found to be in compliance.

Describe previous or current Enforcement Actions (including WLs):
Facility is currently under Consent Order CO 14-0573 to address SSOs and Consent Order CO 18-1074 to address effluent exceedances for Unionized Ammonia, Oxy Gen Demand, Dissolved Oxygen, Total Suspended Solids, Total Organic Nitrogen, CBOD, and toxicity

On 9/23/2019 the facility received a warning letter WL19-219 for violations observed during a CEI/SSOP inspection.
On 03/03/2020 the facility received a warning letter WL20-061 for an unpermitted Sanitary Sewer Overflow event

Describe any violations or problems noted in previous inspection:
On 8/20/2019 a CEI/SSO inspection was conducted. Violations from that inspection include:

1. Not on schedule for projects listed in CO 14-0573
2. Excessive foam throughout plant
3. Latest RPZ certification not present (RPZ was later tested on 08/28/2019)
4. Exceedances in effluent quality (facility is under CO 14-0573 to address exceedances)
5. Excessive turbidity in the effluent,
6. Exceedances in groundwater quality
7. Sanitary sewer overflow events (facility is under CO 18-1074 to address SSOs)

Discuss whether DMR trends within previous five years are improving or declining:
All parameters for the facility have remained within the expected limits and has not shown any significant trends

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

Appendix B. Explanations of Measurements

Biological assessments are prepared by DEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions. References to Rule 62-302.530, F.A.C., are to the currently applicable surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

- **Chemical Analyses of the Effluent**

  The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following DEP SOPs. The results from these analyses were compared with Water Quality Criteria (Chapter 62-302, F.A.C.) and facility permit limits.

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of Pargraph 62-302.500(1)(a) and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of Subsection 62-302.530(20), Subsection 62-302.530(62) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of Subsection 62-302.530(62) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

- **Bacteriological Testing**

  High levels of fecal indicator bacteria may constitute an exceedance of Subsection 62-302.530(6) and/or facility permit limits. Fecal coliform results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20- 60 colony forming units per plate. The B-qualifier does not affect data quality.

- **Habitat Assessment**

  Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

- **Algal Growth Potential (AGP)**

  The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L

are suggested to be representative of high productivity for fresh waters (Miller et al. 1978). High AGP values may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C. and/or Paragraph 62-302.530(48)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of Subsection 62-302.530(62), F.A.C.

- **Benthic Macroinvertebrate Assemblages**

  Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species.

  - Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C.
  - Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C. and/or Paragraph 62-302.530(48)(b), F.A.C.
  - Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47) F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C.
  - Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional

feeding groups related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C..

- Shannon-Weaver Diversity Index: This index is specified in Chapter 62-302 F.A.C. as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitute exceedances of Subsection 62-302.530(10), F.A.C.
- The Stream Condition Index (SCI): The SCI is a biological assessment tool that measures the degree to which flowing fresh waters support a healthy, well-balanced biological community, as indicated by aquatic, benthic macroinvertebrates. Macroinvertebrate taxonomic and abundance data are used to calculate ten biological metric scores, each of which has been shown to respond predictably to human disturbance (Fore et al. 2007; DEP SOP SCI 1000; DEP-SAS-001/11, incorporated into the Quality Assurance Rule by reference Paragraph 62-160.210(2)(a), F.A.C.). The points for each of the metric scores (0 to 10) are summed to yield a final SCI score (range 0-100). The ten metrics are percent contribution of Tanytarsini, number of sensitive taxa, percent contribution of very tolerant taxa, number of total taxa, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, the percent contribution of suspension and filter feeders, number of long-lived taxa, and number of clinger taxa. As human disturbance increases, it is expected that the number of total taxa, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon and percent contribution of very tolerant taxa will increase.

  The SCI can be used to determine faunal health associated with Rule 62-302.531, F.A.C. An average SCI score of 40 or higher from at least two temporally independent SCIs, performed at representative locations and times indicates a balanced faunal community. Neither of the two most recent SCI scores should be less than 35. Failure of the SCI indicates that the stream does not meet the Clean Water Act goal of biological integrity, as measured by community structure and function. A failing SCI could be due to water quality problems or other physical disturbance factors such as habitat disruption or hydrologic alterations. While the stressor may not be known, a failed SCI does indicate that fauna is not well-balanced. A failing SCI score, if it is shown to be related to a facility's effluent, may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C., or of Subsection 62-302.530(62.

- **Rapid Periphyton Survey**

  Rapid Periphyton Survey (RPS) is a rapid method to quantify the extent and abundance of attached algae (periphyton) in a stream or river. A total of 99 points are assessed within a 100m area of sampling reach, 9 equidistant points along 11 cross-section transects spaced 10

m apart, If greater than 20% of sampled points have algal lengths greater than 6mm, a sample is collected and the autecological information associated with the dominant algae is evaluated (see DEP SOP FS 7230 Rapid Periphyton Survey). This method could be used to determine floral health associated with Rule 62-302.531, F.A.C.

- **Linear Vegetation Survey**

  Linear Vegetation Survey (LVS) is a rapid screening tool for ecological condition, by determining how closely a site's flora resembles that of an undisturbed condition. When the total area of macrophytes equals or exceeds two square meters within the wetted area of the 100 m sampling reach, macrophyte taxonomic names are recorded (DEP SOP FS 7320 Stream and River Linear Vegetation Survey (LVS) Method). This method could be used to determine floral health associated with Rule 62-302.531, F.A.C.

- **Definition of Qualifiers** (Rule 62-160.700 F.A.C.)

  A - Value reported is the mean of two or more determinations
  B - Results based on colony counts outside the acceptable range.
  I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
  J - Estimated value
  K - Actual value is known to be less than value given
  L - Actual value is known to be greater than value given
  N - Presumptive evidence of presence of material.
  O - Sampled, but analysis lost or not performed.
  Q - Sample held beyond normal holding time.
  T - Value reported is less than the criterion of detection.
  U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
  V - Analyte was detected in both sample and method blank.
  X - Too few individuals to calculate SCI value.
  Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
  Z - Colonies were too numerous to count (TNTC)

Appendix C. Chain of Custody

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5
last revised Jan 25, 2018

Customer: NE-DIST
Project ID: FYI5

Requester: Tanya Welborn
Collected By: Brian Davis, Kelly McDonald
Field Report Prepared By: Brian Davis
Sampling Agency: DEAR NEP

Location: FYI5 Starke WWTF Downstream Test	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 8/24/20 Time 1035	Eastern / Central	Composite end Date / Time	Bottle Group(s) (See pg 2): D
Field ID / WIN/STORET: TEST SITE	Matrix (type, e.g., Salt, Fresh, etc): Fresh	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
Latitude: 29.936666 ☑ dd ☐ dms	Longitude: -82.115421 ☐ dd ☐ dms	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
		Salinity (ppt)	Comments: Rep-2	
Location: FYI5 Starke WWTF Upstream Control	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 8/24/20 Time 1105	Eastern / Central	Composite end Date / Time	Bottle Group(s): D
Field ID / WIN/STORET: CONTROL SITE	Matrix (type, e.g., Salt, Fresh, etc): Fresh	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
Latitude: 29.936634 ☑ dd ☐ dms	Longitude: -82.115137 ☑ dd ☐ dms	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
		Salinity (ppt)	Comments: Rep-2, Rep-3	
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date / Time	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen ☐ mg/L ☑ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments	
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date / Time	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments	

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
B-D-	8/24/20 1600	FedEx	1	ABJ	082520 1000

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Customer: NE-DIST

Project ID: FYI5

Requester: Tanya Welborn

Collected By: Paul Dodd

Field Report Prepared By: Paul Dodd

Sampling Agency: FDEP

Location: FYI5 Starke WWTF		☐ Comp ☒ Grab	Collection (comp begin or grab) Date 8/27/2020 Time 11:054m	Eastern Central	Composite end Date	Time	Bottle Group(s) (See pg 2)			
Field		Matrix (type, e.g., Salt, Fresh, etc): DI. water		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/S	EQUIP BLANK	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)	F			
Latitu ☐ dms	☐ dd ☐ dms	Salinity (ppt)	Comments: DI water used from lab, taken through sampler							
Location		☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date	Time	Bottle Group(s)			
Field ID		Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #		Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location		☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date	Time	Bottle Group(s)			
Field ID		Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #		Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location		☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date	Time	Bottle Group(s)			
Field ID		Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #		Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Paul Dodd	8/27/20 3:00 PM	FEDEX	1	KK	8-28-20/1155

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5
last revised Jan 25, 2018

Customer: NE-DIST
Project ID: FYI5

Requester: Tanya Welborn
Collected By: Paul Duff

Field Report Prepared By: Paul Duff
Sampling Agency: FDEP

Location: FYI5 Starke WWTF
Field ID: EFF GRAB
WIN/ST
Latitude ☐dms ☐dd ☐dms

☐ Comp ☒ Grab | Collection (comp begin or grab) Date 8/31/20 Time 10:15 AM | Eastern Central | Composite end Date ___ Time ___ | Bottle Group(s) (See pg 2): A

Matrix (type, e.g., Salt, Fresh, etc): Effluent
Diss. Oxygen: 4.95 65 ☐ mg/L ☐ % sat
Total Res. Chlorine (mg/L)
Temp (C): 29.48
pH: 7.28
Sample Depth: 0.966 ☒ m ☐ ft
Sp. Conductance (umho/cm): 493
Salinity (ppt): 0.23
Comments

Location: FYI5 Starke WWTF
Field ID: EFF COMPOSITE
WIN/S
Latitud ☐dms ☐dd ☐dms

☒ Comp ☐ Grab | Collection (comp begin or grab) Date 8/30/20 Time 10:15 AM | Eastern Central | Composite end Date 8/31/20 Time 10:45 AM | Bottle Group(s): B

Matrix (type, e.g., Salt, Fresh, etc): Effluent
Diss. Oxygen: ___ ☐ mg/L ☐ % sat
Total Res. Chlorine (mg/L): ___
Temp (C): ___
pH: ___
Sample Depth: ___ ☐ m ☐ ft
Sp. Conductance (umho/cm): ___
Salinity (ppt): ___
Comments: Picked up composite @ 10:30 AM 8/31/20

Location: FYI5 Starke WWTF
Field ID: FIELD BLANK
WIN/ST
Latitude ☐dms ☐dd ☐dms

☐ Comp ☒ Grab | Collection (comp begin or grab) Date 8/30/20 Time 9:56 AM | Eastern Central | Composite end Date ___ Time ___ | Bottle Group(s): E

Matrix (type, e.g., Salt, Fresh, etc): D.I. water
Diss. Oxygen: ___ ☐ mg/L ☐ % sat
Total Res. Chlorine (mg/L): ___
Temp (C): ___
pH: ___
Sample Depth: ___ ☐ m ☐ ft
Sp. Conductance (umho/cm): ___
Salinity (ppt): ___
Comments: collected on 8/31/20

Location
Field ID
WIN/STORET #
Latitude ☐dd ☐dms Longitude ☐dd ☐dms

☐ Comp ☐ Grab | Collection (comp begin or grab) Date ___ Time ___ | Eastern Central | Composite end Date ___ Time ___ | Bottle Group(s)

Matrix (type, e.g., Salt, Fresh, etc)
Diss. Oxygen ☐ mg/L ☐ % sat
Total Res. Chlorine (mg/L)
Temp (C)
pH
Sample Depth ☐ m ☐ ft
Sp. Conductance (umho/cm)
Salinity (ppt)
Comments

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	8/31/20 / 3:00PM	FEDEX	4	KH	9.1.20 / 1135

Lauren Hatton 9.1.20 1200

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Customer: NE-DIST

Project ID: FYI5

Requester: Tanya Welborn

Collected By: B Davis, & K McDonald

Field Report Prepared By: Brian Davis

Sampling Agency: DEAR NED ROC

FYI5 Starke WWTF Upstream Control

CONTROL SITE

Latitude 29.93663 ☑ dd ☐ dms | Longitude -82.11480 ☑ dd ☐ dms

☐ Comp ☑ Grab | Collection (comp begin or grab) Date 8/31/20 Time 1300 Eastern Central | Composite end Date Time | Bottle Group(s) (See pg 2): C

Matrix (type, e.g., Salt, Fresh, etc): Fresh | Diss. Oxygen: 6.8 ☑ mg/L ☐ % sat | Total Res. Chlorine (mg/L)

Temp (C): 26.8 | pH: 6.99 | Sample Depth: 0.3 ☐ ft ☑ m | Sp. Conductance (umho/cm): 141.2

Salinity (ppt): 0.07 | Comments

FYI5 Starke WWTF Downstream Test

TEST SITE

Latitude 29.93667 ☑ dd ☐ dms | Longitude -82.11536 ☑ dd ☐ dms

☐ Comp ☑ Grab | Collection (comp begin or grab) Date 8/31/20 Time 1030 Eastern Central | Composite end Date Time | Bottle Group(s): C, D

Matrix (type, e.g., Salt, Fresh, etc): Fresh | Diss. Oxygen: 6.72 ☐ mg/L ☐ % sat | Total Res. Chlorine (mg/L)

Temp (C): 26.9 | pH: 7.22 | Sample Depth: 0.3 ☐ ft ☑ m | Sp. Conductance (umho/cm): 187.8

Salinity (ppt): 0.09 | Comments

Location | Field ID | WIN/STORET #

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms

☐ Comp ☐ Grab | Collection (comp begin or grab) Date Time Eastern Central | Composite end Date Time | Bottle Group(s)

Matrix (type, e.g., Salt, Fresh, etc) | Diss. Oxygen ☐ mg/L ☐ % sat | Total Res. Chlorine (mg/L)

Temp (C) | pH | Sample Depth ☐ ft ☐ m | Sp. Conductance (umho/cm)

Salinity (ppt) | Comments

Location | Field ID | WIN/STORET #

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms

☐ Comp ☐ Grab | Collection (comp begin or grab) Date Time Eastern Central | Composite end Date Time | Bottle Group(s)

Matrix (type, e.g., Salt, Fresh, etc) | Diss. Oxygen ☐ mg/L ☐ % sat | Total Res. Chlorine (mg/L)

Temp (C) | pH | Sample Depth ☐ ft ☐ m | Sp. Conductance (umho/cm)

Salinity (ppt) | Comments

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
B Davis	1600 8/31/20	FEDEX	2	KK	9.1.20 / 1135

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Customer: NE-DIST

Project ID: FYI5

Requester: Tanya Welborn

Collected By: Paul Duff / Felicia Manning

Field Report Prepared By: Paul Duff

Sampling Agency: FDEP

Location: FYI5 Starke WWTF	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 9/2/20 Time 10:00	Eastern / Central	Composite end Date Time	Bottle Group(s) (See pg 2): A
Field		Matrix (type, e.g., Salt, Fresh, etc): Effluent	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN: EFF GRAB		Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	☐ dd ☐ dms	Salinity (ppt)	Comments: Sent to test America			
Location: FYI5 Starke WWTF Downstream Test	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 9/2/20 Time 10:15	Eastern / Central	Composite end Date Time	Bottle Group(s): C
Field ID		Matrix (type, e.g., Salt, Fresh, etc): Fresh in stream	Diss. Oxygen: Down 3.66 5.9	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STO: TEST SITE		Temp (C) 26.55	pH 6.77	Sample Depth 1.03 ☐ ft ☒ m	Sp. Conductance (umho/cm) 119	
Latitude ☐ dd ☐ dms	☐ dd ☐ dms	Salinity (ppt) 0.05	Comments: Sent to test America			
Location: FYI5 Starke WWTF	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 9/1/20 Time 9:45	Eastern / Central	Composite end Date 9/2 Time 9:45	Bottle Group(s): B
Field ID		Matrix (type, e.g., Salt, Fresh, etc): Effluent	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/ST: EFF COMPOSITE		Temp (C) ~~26.48~~	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	☐ dd ☐ dms	Salinity (ppt)	Comments: Samples collected at 9:50			
Location: FYI5 Starke WWTF Upstream Control	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 9/2/20 Time 10:40	Eastern / Central	Composite end Date Time	Bottle Group(s): C
Field ID		Matrix (type, e.g., Salt, Fresh, etc): Fresh, up in stream	Diss. Oxygen 71.7	☐ mg/L ☒ % sat	Total Res. Chlorine (mg/L)	
WIN/S: CONTROL SITE		Temp (C) 26.48	pH 6.54	Sample Depth 0.386 ☐ ft ☒ m	Sp. Conductance (umho/cm) 118	
Latitud ☐ dd ☐ dms	☐ dd ☐ dms	Salinity (ppt) 0.06	Comments: Sent to test America			

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	9/2/20 3:00PM	FEDEX		JL	1145 9.3.20

Request Number: RQ-2020-08-10-24

FYI5 FL0028126 Starke WWTF Sampling Inspection

Customer: NE-DIST

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Tanya Welborn

Collected By: Paul Duff

Field Report Prepared By: Paul Duff

Sampling Agency: FDEP

Location: FYI5 Starke WWTF (EFF COMPOSITE)	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 9/3/20 Time 9:45	Eastern / Central	Composite end Date 9/4/20 Time 9:45	Bottle Group(s) (See pg 2): B					
Field ID: FYI5 Starke WWTF	Matrix (type, e.g., Salt, Fresh, etc): Effluent	Diss. Oxygen — ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L) —							
WIN/ST	Temp (C) —	pH —	Sample Depth — ☐ ft ☐ m	Sp. Conductance (umho/cm) —						
Latitude ☐ dd ☐ dms	Salinity (ppt) —	Comments: collected @ 9:50 AM on 9/4/20								
Location	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 9/4/20 Time 9:50	Eastern / Central	Composite end Date — Time —	Bottle Group(s): X					
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Effluent	Diss. Oxygen 5.27 69.3	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L) —						
WIN/STORET #	Temp (C) 29.7	pH 7.3	Sample Depth 0.49 ☐ ft ☒ m	Sp. Conductance (umho/cm) 532						
Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	Salinity (ppt) 0.25	Comments: YSI outfall measurement only								
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	9/4/20 13:00	FEDEX	2	Devon Witczak	9.5.20 / 0935

ALS Environmental

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

SR #

ALS Contact: Mandy Sullivan

9143 Philips Highway, Suite 200 Jacksonville, FL 32256 / Ph(904) 739-2277 / FAX (904) 739-2011

Page 1 of 1

Client Name	Project Number
FDEP-NE ROC	RQ-2020- 08 10 - 24
Report To	**Report CC**
Dep-Overflowmicro@dep.state.fl.us	
Company/Address	
8800 Baymeadows Way W Jacksonville, Fl 32256	
Phone #	**FAX #**
904-256-1700	
Sampler's Signature	**Sampler's Printed Name**
Kelly a McDonald	Kelly McDonald

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	Matrix	NUMBER OF CONTAINERS	E.Coli	Enterococci	Fecal	REMARKS
control site		8/31	1030	SW	2	X		X	Fresh
test site		8/31	1300	↓	2	X		X	Fresh

Preservative Key: 0. None; 1. HCL; 2. HNO3; 3. H2SO4; 4. NaOH; 5. Zn. Acetate; 6. MeOH; 7. NaHSO4; 8. ICE

Special Instructions/Comments: **Email Report to: Dep-Overflowmicro@dep.state.fl.us**

0.0

TURNAROUND REQUIREMENTS

___ RUSH (SURCHARGES APPLY)

X STANDARD

REQUESTED FAX DATE
N/A

REQUESTED REPORT DATE
N/A

REPORT REQUIREMENTS

___ I. Results Only

___ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

Edata ___ Yes ___ No

INVOICE INFORMATION

P.O. # ~~B10739~~

Bill to:

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature: Kelly a McDonald	Signature:	Signature	Signature	Signature	Signature
Printed Name: Kelly A McDonald	Printed Name: Bennett Brandt	Printed Name	Printed Name	Printed Name	Printed Name
Firm: FDEP NEROC	Firm: ARS	Firm	Firm	Firm	Firm
Date/Time: 8/31/20 1509	Date/Time: 8/31/2020 1509	Date/Time	Date/Time	Date/Time	Date/Time

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TASK ASSIGNMENT/NOTIFICATION FORM: LAB145

Contract Manager: Trenetta Wilson/Magan Bowden (850) 245-8084/ (850) 245-8095
2600 Blair Stone Rd., MS 6512
Tallahassee, FL 32399-2400

Contractor: Eurofins/TestAmerica Laboratories, Inc
5102 LaRoche Ave
Savannah, GA 31404
ATTN: Noel Savoie

DEP Approval By: Trenetta L Brinkley-Wilson Contractor Approval By: Noel Savoie
Project Manager

Contractor Representatives Contacted: Noel Savoie

Date: 8/27/2020
Means of Contact: Email

Task Assignment Number: OV167 Maximum Cost: **$108.75** Turnaround Time: 5 BD

Sample Delivery Date: 8/27/2020

Project Name/Description:
RQ-2020-08-10-24

Deliverable Number/ Parameter Group/ Method	**Sample Matrix**	**# of Samples**	**# of Containers**	**DEP ID #**	**Unit Cost**	**% Mark-up (if any)**	**Cost**
Quote/CBOD 5210B-2011	W	3	3 bottles		$33.75		$101.25
217/Sample Disposal Fee:	3				$2.50		$7.50
Total Number of Containers Shipped:	3					**Total:**	**$108.75**

660-104013 Chain of Custody

Loc: 660
10401:

QC Instructions:

Comments:

Samples released to Contract Lab by: Date/Time: 9/2/20 3:00PM By FEDEX

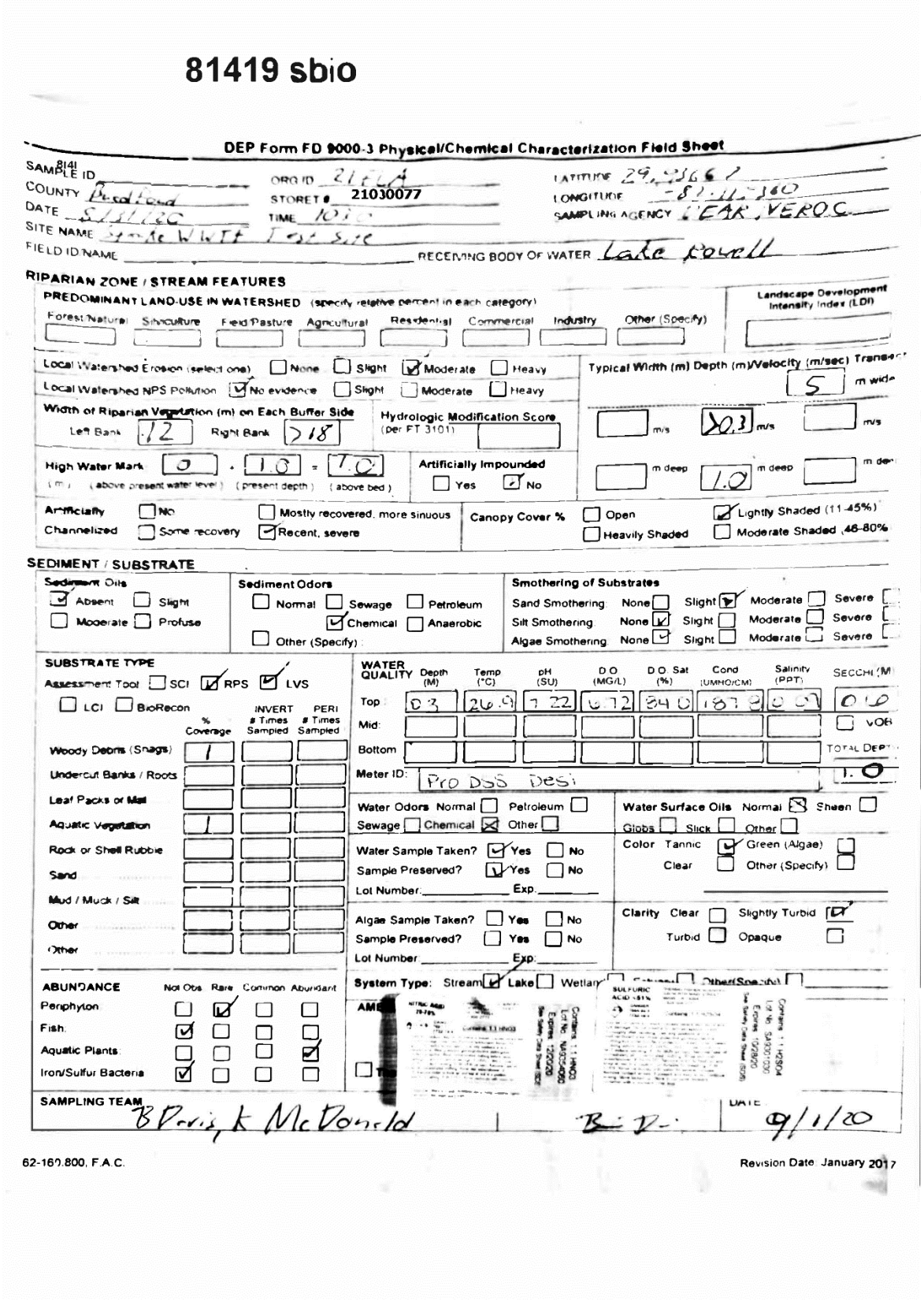
Delivery Method: Hand Delivery

Samples Accepted by: Date/Time 9/3/20 950

* **Please sign and return by email to** Trenetta.L.Wilson@floridaDEP.gov and Magan.Bowden@dep.state.fl.us

2.6/2.4 cu09

Appendix D. Physical/ Chemical and Habitat Assessment Field Sheets



81419 sbio

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 81419 ORG ID 21FLA STORET # 21030077 LATITUDE 29.9366 LONGITUDE -81.4160
COUNTY Bradford DATE 8/31/20 TIME 10:15 SAMPLING AGENCY FDEP, VEROC
SITE NAME Starke WWTF Lake Site
FIELD ID NAME _____ RECEIVING BODY OF WATER Lake Powell

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category)
Forest Natural | Silviculture | Field Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify) | Landscape Development Intensity Index (LDI)

Local Watershed Erosion (select one) ☐ None ☐ Slight ☑ Moderate ☐ Heavy
Local Watershed NPS Pollution ☑ No evidence ☐ Slight ☐ Moderate ☐ Heavy
Width of Riparian Vegetation (m) on Each Buffer Side: Left Bank 12 Right Bank >18
Hydrologic Modification Score (per FT 3101)
Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 5 m wide; 0.3 m/s; 1.0 m deep
High Water Mark (m) 0 (above present water level) . 10 (present depth) = 1.0 (above bed)
Artificially Impounded ☐ Yes ☑ No
Artificially Channelized ☐ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☑ Recent, severe
Canopy Cover % ☐ Open ☐ Heavily Shaded ☑ Lightly Shaded (11-45%) ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors ☐ Normal ☐ Sewage ☐ Petroleum ☑ Chemical ☐ Anaerobic ☐ Other (Specify)
Smothering of Substrates: Sand Smothering None ☐ Slight ☑ Moderate ☐ Severe; Silt Smothering None ☑ Slight ☐ Moderate ☐ Severe; Algae Smothering None ☑ Slight ☐ Moderate ☐ Severe

SUBSTRATE TYPE
Assessment Tool ☐ SCI ☑ RPS ☑ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	1		
Undercut Banks / Roots			
Leaf Packs or Mat			
Aquatic Vegetation	1		
Rock or Shell Rubble			
Sand			
Mud / Muck / Silt			
Other			
Other			

ABUNDANCE

	Not Obs	Rare	Common	Abundant
Periphyton	☐	☑	☐	☐
Fish	☑	☐	☐	☐
Aquatic Plants	☐	☐	☐	☑
Iron/Sulfur Bacteria	☑	☐	☐	☐

WATER QUALITY

	Depth (M)	Temp (°C)	pH (SU)	DO (MG/L)	DO Sat (%)	Cond (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top	0.3	26.9	7.22	6.72	84.0	187.2	0.09	0.6
Mid:								☐ VOB
Bottom								TOTAL DEPTH 1.0

Meter ID: Pro DSS Desi

Water Odors Normal ☐ Petroleum ☐ Sewage ☐ Chemical ☒ Other ☐
Water Surface Oils Normal ☒ Sheen ☐ Globs ☐ Slick ☐ Other ☐
Water Sample Taken? ☑ Yes ☐ No; Sample Preserved? ☑ Yes ☐ No; Lot Number: _____ Exp: _____
Color Tannic ☑ Green (Algae) ☐ Clear ☐ Other (Specify) ☐
Algae Sample Taken? ☐ Yes ☐ No; Sample Preserved? ☐ Yes ☐ No; Lot Number _____ Exp: _____
Clarity Clear ☐ Slightly Turbid ☑ Turbid ☐ Opaque ☐
System Type: Stream ☐ Lake ☑ Wetland ☐ Estuarine ☐ Other (Specify) ☐

AMPULES

SAMPLING TEAM B Davis, K McDonald B. D. DATE 9/1/20

62-160.800, F.A.C. Revision Date January 2017

81419 sbio

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Starke WWTF Test Site | County: Bradford | Date: 6/30/20 | Investigators: B Powell, K McDaniel | STORET/Station Number: 21030077

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N 6, X)	Estimated	Canopy Cover	Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N 6, X)	Estimated	Canopy Cover
0	1	↓			60	1	X	✓	
	2	↓				2			
	3	X	✓			3			
	4					4			
	5			50		5			12
	6					6			
	7					7			
	8					8			
	9					9			
10	1				70	1			
	2					2			
	3					3			
	4					4			
	5			12		5			12
	6					6			
	7					7			
	8					8			
	9					9			
20	1				80	1			
	2					2			
	3					3			
	4					4			
	5			12		5			96
	6					6			
	7					7			
	8					8			
	9					9			
30	1				90	1			
	2					2			
	3					3			
	4					4			
	5			12		5			92
	6					6			
	7					7			
	8					8			
	9					9			
40	1				100	1			
	2					2			
	3					3			
	4					4			
	5			12		5			85
	6					6			
	7					7			
	8					8			
	9					9	↓	↓	
50	1								
	2								
	3								
	4								
	5			0					
	6								
	7								
	8								
	9	↓	↓						

Secchi depth	
Estimated?	
# points ranked 4 5	
total points assessed	
% points ranked 4 5	

Check accompanying data collected at same site/date	
Algal mat sample	
Linear Veg Survey	✓
Habitat Assessment	
SCI/Biorecon	
Water sample	✓

RQ- 2020-08-10-24

Algal Thickness Rank	
N	rough, no algae, slimy, algae up to 1mm
3	>1mm - 6mm
4	>6mm - 20mm
5	>20mm - 10 cm
6	>10 cm

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.

Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.

Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.

Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%

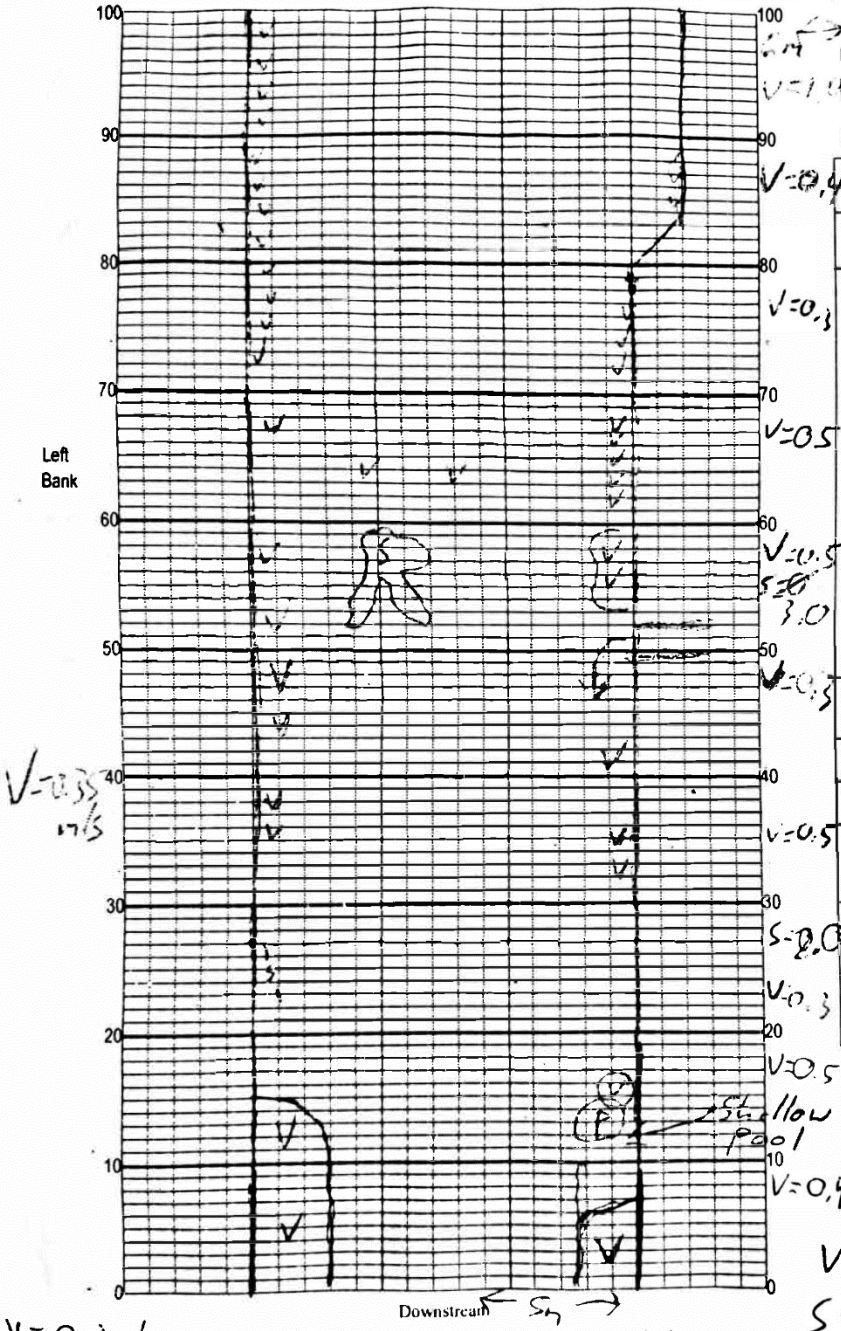
62-160 800, F.A.C.

Revision Date: January 2017

62-160 800, F.A.C.

Revision Date: January 2017

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Location: Starke WWTF Test Site

Date: 8/31/20

Sampler: Erica Davis

100 m: Latitude _____ Longitude _____

0 m: Latitude _____ Longitude _____

Substrates: Code key, draw proportionate habitat abundance.		%
S	Snags	1
	Roots/undercut banks	
	Leaf Packs (or mats)	
V	Aquatic Macrophytes	1
P	Pools	total # observed = 1, # range expected = 1

Average width 5 m

Average depth 1.0 m

Velocity measured at 0 meter mark.

WQ & chemistry taken at 100 meter mark.

Habitat Smothering: Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability: Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width: Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

<2 M of Macrophytes was observed while doing the LVS? YES or NO

V = 4.7 ~ 1%

S = 5.0 ~ 1%

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

62-160.800, F.A.C

Revision Date: March 1, 2014

Very High Water level.

81419 sbio

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY: NE ROC	STORET/AGENCY ID NUMBER: 21030077	DATE: 8/31/20	RECEIVING BODY OF WATER: Lake Rowell
REMARKS: Rubin Davis Survey	COUNTY: Bradford	LOCATION: Starke WWTF Test Site	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 6	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 (6)	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 1	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 (1)
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring; > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 8 Primary Score 35	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 (8) 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 3	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. 20 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 (3) 2 1
Bank Stability Right Bank 6 Left Bank 4	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 6 Left Bank 4	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m, human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 4 Left Bank 4 Secondary Score 31	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, tree, shrub, and forbs represented, if appropriate). Minimal disturbance 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

66 **TOTAL SCORE**

Date:	Analyst: Rubin Davis	Signature: R. D.

62-160.800, F.A.C.

Revision Date: March 1, 2014

sbio 81419

DEP FORM FD 9000-32: LINEAR VEGETATION SURVEY FIELD SHEET

21030077

Waterbody: Starke WWTF Test Site | Date: 8/31/20 | County: Bradford | Storet Number:

Analyst: Brian Davis | Signature:

Comments

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m^2 of taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Alternanthera philoxeroides											
Bacopa caroliniana											
Bacopa monnieri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Ceratophyllum demersum											
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Commelina diffusa											
Commelina virginica											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes											
Eleocharis (wispy viviparous)											
Hydrilla verticillata											
Hydrocotle											
Hygrophila polysperma											
Hymenocallis											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna											
Limnophila sessiflora											
Ludwigia leptocarpa											
Ludwigia palustris											
Ludwigia peruviana	✓	✓	✓	✓	✓	✓	✓				
Ludwigia repens											
Luziola fluitans											
If no Dominant or Co-Dominant were selected, indicate with "X"											
Indicate % cover macrophytes per section											
0-5% Macrophyte Coverage	✓	✓	✓	✓	✓	✓					
>5 and ≤10% Macrophyte Coverage											
>10 and ≤25% Macrophyte Coverage											
>25 and ≤50% Macrophyte Coverage											
> 50% Macrophyte Coverage											

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Micranthemum glomeratum											
Micranthemum umbrosum											
Myriophyllum aquaticum											
Najas guadelupensis											
Nuphar luteum											
Orontium aquaticum											
Panicum hemitomon											
Panicum repens											
Panicum rigidulum											
Pistia stratioides											
Polygonum glabra											
Polygonum hydropiperoides						✓					
Polygonum punctatum											
Pontederia cordata											
Potamogeton illinoensis											
Ruellia simplex			✓				✓	✓	✓	✓	
Sacciolepis striata											
Sagittaria kurziana											
Sagittaria lancifolia											
Sagittaria latifolia											
Salvinia minima											
Samolus parviflora											
Saururus cernuus											
Sparganium americanum											
Typha											
Vallisneria americana											
Zizania aquatica											
If no Dominant or Co-Dominant were selected, indicate with "X"											
Indicate % cover macrophytes per section											
0-5% Macrophyte Coverage			X				X	X	X	X	
>5 and ≤10% Macrophyte Coverage											
>10 and ≤25% Macrophyte Coverage											
>25 and ≤50% Macrophyte Coverage											
> 50% Macrophyte Coverage											

62-160.800, F.A.C. page 1 of 2 Revision Date March 1, 2014

sbio 81418

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 81418 ORG ID 21FLA STORET # 21030076 LATITUDE 29.93663
COUNTY Bradford DATE 8/31/20 TIME 1100 LONGITUDE -82.11480
SITE NAME Starke WWTF Control site SAMPLING AGENCY PEAK NERDC
FIELD ID/NAME RECEIVING BODY OF WATER Lake Rowell

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify)
Landscape Development Intensity Index (LDI)

Local Watershed Erosion (select one): ☐ None ☐ Slight ☑ Moderate ☐ Heavy
Local Watershed NPS Pollution: ☑ No evidence ☐ Slight ☐ Moderate ☐ Heavy
Width of Riparian Vegetation (m) on Each Buffer Side — Left Bank: 6 Right Bank: 12
Hydrologic Modification Score (per FT 3101):
High Water Mark: 0.5 (m) + 1.1 (above present water level) = 1.6 (present depth) (above bed)
Artificially Impounded ☐ Yes ☐ No
Artificially Channelized: ☐ NO ☐ Some recovery ☐ Mostly recovered, more sinuous ☑ Recent, severe
Typical Width (m) Depth (m)/Velocity (m/sec) Transect — m wide
m/s | >0.3 m/s | m/s
m deep | 1.1 m deep | m deep
Canopy Cover % ☐ Open ☑ Lightly Shaded (11-45%) ☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils: ☐ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors: ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify):
Smothering of Substrates:
Sand Smothering: None ☐ Slight ☑ Moderate ☐ Severe ☐
Silt Smothering: None ☑ Slight ☐ Moderate ☐ Severe ☐
Algae Smothering: None ☑ Slight ☐ Moderate ☐ Severe ☐

SUBSTRATE TYPE
Assessment Tool: ☐ SCI ☐ RPS ☐ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)			
Undercut Banks / Roots			
Leaf Packs or Mat			
Aquatic Vegetation			
Rock or Shell Rubble			
Sand			
Mud / Muck / Silt			
Other			
Other			

ABUNDANCE

	Not Obs	Rare	Common	Abundant
Periphyton:	☑	☐	☐	☐
Fish:	☑	☐	☐	☐
Aquatic Plants:	☐	☐	☐	☑
Iron/Sulfur Bacteria:	☑	☐	☐	☐

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	0.3	26.8	6.99	4.8	85.1	141.2	0.07	0.6
Mid:								☐ VOB
Bottom								TOTAL DEPTH
Meter ID:	Des.							1.1

Water Odors: Normal ☑ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐
Water Surface Oils: Normal ☑ Sheen ☐ Globs ☐ Slick ☐ Other ☐
Color: Tannic ☑ Green (Algae) ☐ Clear ☐ Other (Specify) ☐
Clarity: Clear ☐ Slightly Turbid ☑ Turbid ☐ Opaque ☐
☐ Estuary ☐ Other(Specify) ☐

Contains: 1:1 HNO3 Lot No. NA9354060 Expires 12/20/20 See Safety Data Sheet (SDS
1:1 H2SO4 SA9301030 10/28/20 Safety Data Sheet (SDS)

850-245-8171

☐ The antecedent hydrologic conditions have been met to my best knowledge.

SAMPLING TEAM B Davis, K McDonald SIGNATURE DATE 9/1/20

62-160.800, F.A.C. Revision Date: January 2017

Appendix E. Chemical Analysis of Effluent and Receiving Water

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:15	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
8/31/2020 10:15	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
8/31/2020 10:15	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 L	IC25		
8/31/2020 10:15	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
8/31/2020 10:15	Effluent Grab	AGP/LN	Algal Growth Potential	149	mg DryWt/L	0.300	0.900
8/31/2020 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	2.2 I	µg/L	0.82	2.5
8/31/2020 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	2.5	µg/L	0.60	1.8
8/31/2020 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.90 U	µg/L	0.90	2.7
8/31/2020 10:15	Effluent Grab	Overflow	Fecal Coliforms-Membrane Filter	3.0 B	cfu/100 mL	1.6	1.6
8/31/2020 10:15	Effluent Grab	Overflow	Escherichia Coli-Quanti-Tray	10 U	MPN/100 mL	10	10
8/31/2020 10:15	Effluent Grab	Metals	Mercury	1.8	ng/L	0.10	0.30
8/31/2020 10:15	Effluent Grab	Nutrients	Total Alkalinity	159 A	mg CaCO3/L	0.65	2.5
8/31/2020 10:15	Effluent Grab	Nutrients	O-Phosphate-P	0.77	mg P/L	0.020	0.050
8/31/2020 10:15	Effluent Grab	Nutrients	Total-P	0.93	mg P/L	0.0050	0.050
8/31/2020 10:15	Effluent Grab	Nutrients	Chloride	36 A	mg Cl/L	2.0	5.0
8/31/2020 10:15	Effluent Grab	Nutrients	Kjeldahl Nitrogen	3.9 J	mg N/L	0.40	1.0
8/31/2020 10:15	Effluent Grab	Nutrients	Organic Carbon	8.1	mg C/L	0.50	1.0
8/31/2020 10:15	Effluent Grab	Nutrients	Turbidity	4.7	NTU	0.10	0.13
8/31/2020 10:15	Effluent Grab	Nutrients	Color (true)	30	PCU	2.5	6.0
8/31/2020 10:15	Effluent Grab	Nutrients	Fluoride	0.30	mg F/L	0.035	0.10
8/31/2020 10:15	Effluent Grab	Nutrients	Ammonia-N	2.8	mg N/L	0.20	0.50
8/31/2020 10:15	Effluent Grab	Nutrients	NO2NO3-N	1.8	mg N/L	0.040	0.10
8/31/2020 10:15	Effluent Grab	Nutrients	Sulfate	18 A	mg SO4/L	2.0	5.0
8/31/2020 10:15	Effluent Grab	Nutrients	TSS	2 I	mg/L	2.0	10
8/31/2020 10:15	Effluent Grab	Nutrients	Temperature	29.48	C		
8/31/2020 10:15	Effluent Grab	Nutrients	Specific Conductance	493	µmhos/cm		
8/31/2020 10:15	Effluent Grab	Nutrients	Sample Depth	0.966	m		
8/31/2020 10:15	Effluent Grab	Nutrients	pH	7.28			
8/31/2020 10:15	Effluent Grab	Nutrients	Dissolved Oxygen	65	%Sat		
8/31/2020 10:15	Effluent Grab	Pesticides	Azinphos Methyl	2.1 U	ng/L	2.1	8.4
8/31/2020 10:15	Effluent Grab	Pesticides	Ethion	0.16 U	ng/L	0.16	0.63
8/31/2020 10:15	Effluent Grab	Pesticides	Fipronil Desulfinyl	0.60	ng/L	0.13	0.53
8/31/2020 10:15	Effluent Grab	Pesticides	Imazalil	0.79 UJ	ng/L	0.79	3.2
8/31/2020 10:15	Effluent Grab	Pesticides	Tebuconazole	15	ng/L	0.53	2.1

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:15	Effluent Grab	Pesticides	Bromacil	5.4 J	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Fipronil	14	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Fipronil Sulfone	9.4	ng/L	0.16	0.63
8/31/2020 10:15	Effluent Grab	Pesticides	Norflurazon	0.53 U	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Pendimethalin	1.1 UJ	ng/L	1.1	4.2
8/31/2020 10:15	Effluent Grab	Pesticides	Terbuthylazine	0.45 UJ	ng/L	0.45	1.8
8/31/2020 10:15	Effluent Grab	Pesticides	Atrazine	2.0 J	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Carbophenothion	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Dithiopyr	0.11 UJ	ng/L	0.11	0.42
8/31/2020 10:15	Effluent Grab	Pesticides	Hexazinone	0.92 I	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Oxadiazon	0.11 IJ	ng/L	0.11	0.42
8/31/2020 10:15	Effluent Grab	Pesticides	Parathion Methyl	0.58 U	ng/L	0.58	2.3
8/31/2020 10:15	Effluent Grab	Pesticides	Simazine	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Cyanazine	3.4 U	ng/L	3.4	14
8/31/2020 10:15	Effluent Grab	Pesticides	Diazinon	0.13 UJ	ng/L	0.13	0.53
8/31/2020 10:15	Effluent Grab	Pesticides	Fenamiphos	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Prometon	0.95 UJ	ng/L	0.95	3.7
8/31/2020 10:15	Effluent Grab	Pesticides	Acetochlor	0.26 UJ	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Alachlor	0.26 U	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Atrazine Desethyl	1.6 UJ	ng/L	1.6	6.3
8/31/2020 10:15	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.053 UJ	ng/L	0.053	0.21
8/31/2020 10:15	Effluent Grab	Pesticides	Ethoprop	0.11 UJ	ng/L	0.11	0.42
8/31/2020 10:15	Effluent Grab	Pesticides	Malathion	0.37 UJ	ng/L	0.37	1.5
8/31/2020 10:15	Effluent Grab	Pesticides	Metalaxyl	0.79 U	ng/L	0.79	3.2
8/31/2020 10:15	Effluent Grab	Pesticides	Prodiamine	0.18 UJ	ng/L	0.18	0.74
8/31/2020 10:15	Effluent Grab	Pesticides	Pronamide	0.16 UJ	ng/L	0.16	0.63
8/31/2020 10:15	Effluent Grab	Pesticides	Propiconazole	2.3	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Ibuprofen	0.044 I	µg/L	0.020	0.080
8/31/2020 10:15	Effluent Grab	Pesticides	Sucralose	22	µg/L	0.10	0.40
8/31/2020 10:15	Effluent Grab	Pesticides	Butylate	0.42 U	ng/L	0.42	1.7
8/31/2020 10:15	Effluent Grab	Pesticides	Disulfoton	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	EPTC	1.3 U	ng/L	1.3	5.3
8/31/2020 10:15	Effluent Grab	Pesticides	Fipronil Sulfide	7.4 J	ng/L	0.16	0.63
8/31/2020 10:15	Effluent Grab	Pesticides	Fonofos	0.21 UJ	ng/L	0.21	0.84
8/31/2020 10:15	Effluent Grab	Pesticides	Mevinphos	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Molinate	0.32 U	ng/L	0.32	1.3
8/31/2020 10:15	Effluent Grab	Pesticides	Naled	1.6 U	ng/L	1.6	6.3
8/31/2020 10:15	Effluent Grab	Pesticides	Parathion Ethyl	0.26 U	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Sulfentrazone	3.8	ng/L	0.53	2.1

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:15	Effluent Grab	Pesticides	Ametryn	0.63 U	ng/L	0.63	2.5
8/31/2020 10:15	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.26 UJ	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Metribuzin	3.4 U	ng/L	3.4	14
8/31/2020 10:15	Effluent Grab	Pesticides	Demeton	1.6 UJ	ng/L	1.6	6.3
8/31/2020 10:15	Effluent Grab	Pesticides	Dimethenamid	0.11 U	ng/L	0.11	0.42
8/31/2020 10:15	Effluent Grab	Pesticides	Flumioxazin	2.3 I	ng/L	1.8	7.4
8/31/2020 10:15	Effluent Grab	Pesticides	Metolachlor	0.53 UJ	ng/L	0.53	2.1
8/31/2020 10:15	Effluent Grab	Pesticides	Phorate	0.26 U	ng/L	0.26	1.1
8/31/2020 10:15	Effluent Grab	Pesticides	Prometryn	0.21 U	ng/L	0.21	0.84
8/31/2020 10:15	Effluent Grab	Pesticides	Terbufos	0.11 UJ	ng/L	0.11	0.42
8/31/2020 10:15	Effluent Grab	Pesticides	Naproxen	0.20	µg/L	0.0080	0.032
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	9.4 U	µg/L	9.4	38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.47 U	µg/L	0.47	1.9
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Isophorone	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.094 U	µg/L	0.094	0.38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.094 U	µg/L	0.094	0.38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	1,4-Dioxane	0.23	µg/L	0.020	0.080
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	µg/L	0.94	3.8
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.7 U	µg/L	4.7	19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	9.4 U	µg/L	9.4	38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.4 U	µg/L	9.4	38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.5
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzidine	9.4 U	µg/L	9.4	38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.19 U	µg/L	0.19	0.75
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.047 U	µg/L	0.047	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.5
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Pyrene	0.094 U	µg/L	0.094	0.38
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	µg/L	2.8	11
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Chrysene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Anthracene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Fluorene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	µg/L	0.024	0.094
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	Phenol	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.047 U	µg/L	0.047	0.19
8/31/2020 10:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.5
8/31/2020 13:00	Control Site	AGP/LN	Algal Growth Potential	1.72	mg DryWt/L	0.300	0.900
8/31/2020 13:00	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	1.6 I	µg/L	1.2	3.6
8/31/2020 13:00	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.8 U	µg/L	1.8	5.4
8/31/2020 13:00	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6 U	µg/L	1.6	5.0
8/31/2020 13:00	Control Site	Overflow	Escherichia Coli-Quanti-Tray	365	MPN/100 mL	1	1
8/31/2020 13:00	Control Site	Overflow	Fecal Coliforms-Membrane Filter	2100	cfu/100 mL	100	100
8/31/2020 13:00	Control Site	Metals	Calcium	19.2	mg/L	0.075	0.30
8/31/2020 13:00	Control Site	Metals	Sodium	7.9	mg/L	0.50	2.0
8/31/2020 13:00	Control Site	Metals	Nickel	0.86 I	µg/L	0.50	2.0
8/31/2020 13:00	Control Site	Metals	Arsenic	1.13	µg/L	0.050	0.20
8/31/2020 13:00	Control Site	Metals	Iron	1.23E+03	µg/L	30	120
8/31/2020 13:00	Control Site	Metals	Copper	1.14	µg/L	0.40	0.80
8/31/2020 13:00	Control Site	Metals	Silver	0.010 U	µg/L	0.010	0.040
8/31/2020 13:00	Control Site	Metals	Hardness	55.9	mg/L	0.35	1.4

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 13:00	Control Site	Metals	Lead	0.84	µg/L	0.20	0.40
8/31/2020 13:00	Control Site	Metals	Selenium	0.26 I	µg/L	0.20	0.80
8/31/2020 13:00	Control Site	Metals	Mercury	5.5	ng/L	0.10	0.30
8/31/2020 13:00	Control Site	Metals	Magnesium	1.91	mg/L	0.040	0.16
8/31/2020 13:00	Control Site	Metals	Chromium	1.1 I	µg/L	0.40	1.6
8/31/2020 13:00	Control Site	Metals	Potassium	1.5	mg/L	0.30	1.2
8/31/2020 13:00	Control Site	Metals	Zinc	7.4 I	µg/L	5.0	20
8/31/2020 13:00	Control Site	Metals	Aluminum	852	µg/L	5.0	20
8/31/2020 13:00	Control Site	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
8/31/2020 13:00	Control Site	Nutrients	Turbidity	8.7	NTU	0.10	0.13
8/31/2020 13:00	Control Site	Nutrients	Ammonia-N	0.013	mg N/L	0.0020	0.0050
8/31/2020 13:00	Control Site	Nutrients	NO2NO3-N	0.010	mg N/L	0.0040	0.010
8/31/2020 13:00	Control Site	Nutrients	Fluoride	0.047 I	mg F/L	0.035	0.10
8/31/2020 13:00	Control Site	Nutrients	Sulfate	13	mg SO4/L	0.20	0.50
8/31/2020 13:00	Control Site	Nutrients	Organic Carbon	25	mg C/L	0.50	1.0
8/31/2020 13:00	Control Site	Nutrients	Total-P	0.11	mg P/L	0.0050	0.050
8/31/2020 13:00	Control Site	Nutrients	Total Alkalinity	29	mg CaCO3/L	0.65	2.5
8/31/2020 13:00	Control Site	Nutrients	Chloride	14	mg Cl/L	0.20	0.50
8/31/2020 13:00	Control Site	Nutrients	Kjeldahl Nitrogen	0.91	mg N/L	0.080	0.20
8/31/2020 13:00	Control Site	Nutrients	Color (true)	250	PCU	12	30
8/31/2020 13:00	Control Site	Nutrients	TSS	7 I	mg/L	2.0	10
8/31/2020 13:00	Control Site	Nutrients	O-Phosphate-P	0.063	mg P/L	0.0040	0.010
8/31/2020 13:00	Control Site	Nutrients	pH	6.99			
8/31/2020 13:00	Control Site	Nutrients	Temperature	26.8	C		
8/31/2020 13:00	Control Site	Nutrients	Specific Conductance	141.2	µmhos/cm		
8/31/2020 13:00	Control Site	Nutrients	Dissolved Oxygen	6.8	mg/L		
8/31/2020 13:00	Control Site	Nutrients	Sample Depth	0.3	m		
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Chrysene	0.038 I	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,4-Dinitrophenol	9.5 U	µg/L	9.5	38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2-Nitrophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.5 U	µg/L	9.5	38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Acenaphthylene	0.024 U	µg/L	0.024	0.095

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Fluoranthene	0.079 I	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Nitrobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Phenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2-Chloronaphthalene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2-Chlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	11
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Fluorene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Isophorone	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Naphthalene	0.095 U	µg/L	0.095	0.38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Pyrene	0.095 U	µg/L	0.095	0.38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,4-Dimethylphenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzidine	9.5 U	µg/L	9.5	38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Hexachlorobutadiene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.6
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Pentachlorophenol	0.48 U	µg/L	0.48	1.9
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.6
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Dimethyl phthalate	0.19 U	µg/L	0.19	0.76
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Hexachloroethane	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Anthracene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Hexachlorobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	4-Nitrophenol	9.5 U	µg/L	9.5	38
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.8 U	µg/L	4.8	19
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	µg/L	0.95	3.8
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.6
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Phenanthrene	0.095 U	µg/L	0.095	0.38

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Acenaphthene	0.024 U	µg/L	0.024	0.095
8/31/2020 13:00	Control Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	AGP/LN	Algal Growth Potential	14.7 A	mg DryWt/L	0.300	0.900
8/31/2020 10:30	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6 U	µg/L	1.6	5.0
8/31/2020 10:30	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.8 U	µg/L	1.8	5.4
8/31/2020 10:30	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	1.5 I	µg/L	1.2	3.6
8/31/2020 10:30	Test Site	Overflow	Escherichia Coli-Quanti-Tray	140	MPN/100 mL	1	1
8/31/2020 10:30	Test Site	Overflow	Fecal Coliforms-Membrane Filter	2600	cfu/100 mL	100	100
8/31/2020 10:30	Test Site	Metals	Iron	1.12E+03	µg/L	30	120
8/31/2020 10:30	Test Site	Metals	Lead	0.83	µg/L	0.20	0.40
8/31/2020 10:30	Test Site	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
8/31/2020 10:30	Test Site	Metals	Hardness	69.8	mg/L	0.35	1.4
8/31/2020 10:30	Test Site	Metals	Nickel	0.86 I	µg/L	0.50	2.0
8/31/2020 10:30	Test Site	Metals	Calcium	23.1	mg/L	0.075	0.30
8/31/2020 10:30	Test Site	Metals	Mercury	5.3	ng/L	0.10	0.30
8/31/2020 10:30	Test Site	Metals	Selenium	0.25 I	µg/L	0.20	0.80
8/31/2020 10:30	Test Site	Metals	Sodium	11.6	mg/L	0.50	2.0
8/31/2020 10:30	Test Site	Metals	Aluminum	826	µg/L	5.0	20
8/31/2020 10:30	Test Site	Metals	Chromium	1.1 I	µg/L	0.40	1.6
8/31/2020 10:30	Test Site	Metals	Copper	1.20	µg/L	0.40	0.80
8/31/2020 10:30	Test Site	Metals	Zinc	10 I	µg/L	5.0	20
8/31/2020 10:30	Test Site	Metals	Arsenic	1.15	µg/L	0.050	0.20
8/31/2020 10:30	Test Site	Metals	Silver	0.010 U	µg/L	0.010	0.040
8/31/2020 10:30	Test Site	Metals	Magnesium	2.95	mg/L	0.040	0.16
8/31/2020 10:30	Test Site	Metals	Potassium	2.0	mg/L	0.30	1.2
8/31/2020 10:30	Test Site	Nutrients	Ammonia-N	0.39	mg N/L	0.020	0.050
8/31/2020 10:30	Test Site	Nutrients	O-Phosphate-P	0.16	mg P/L	0.0040	0.010
8/31/2020 10:30	Test Site	Nutrients	Chloride	18	mg Cl/L	0.20	0.50
8/31/2020 10:30	Test Site	Nutrients	Color (true)	240	PCU	12	30
8/31/2020 10:30	Test Site	Nutrients	TSS	5 IA	mg/L	2.0	10
8/31/2020 10:30	Test Site	Nutrients	Total-P	0.24	mg P/L	0.0050	0.050
8/31/2020 10:30	Test Site	Nutrients	Organic Carbon	24	mg C/L	0.50	1.0
8/31/2020 10:30	Test Site	Nutrients	NO2NO3-N	0.23	mg N/L	0.0040	0.010
8/31/2020 10:30	Test Site	Nutrients	Total Alkalinity	45	mg CaCO3/L	0.65	2.5
8/31/2020 10:30	Test Site	Nutrients	Fluoride	0.079 I	mg F/L	0.035	0.10
8/31/2020 10:30	Test Site	Nutrients	Kjeldahl Nitrogen	1.4	mg N/L	0.080	0.20
8/31/2020 10:30	Test Site	Nutrients	Turbidity	11	NTU	0.10	0.13
8/31/2020 10:30	Test Site	Nutrients	Sulfate	15	mg SO4/L	0.20	0.50
8/31/2020 10:30	Test Site	Nutrients	Temperature	26.9	C		

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:30	Test Site	Nutrients	pH	7.22			
8/31/2020 10:30	Test Site	Nutrients	Sample Depth	0.3	m		
8/31/2020 10:30	Test Site	Nutrients	Dissolved Oxygen	6.72	mg/L		
8/31/2020 10:30	Test Site	Nutrients	Specific Conductance	187.8	µmhos/cm		
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Chrysene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Pentachlorophenol	0.48 U	µg/L	0.48	1.9
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzidine	9.5 U	µg/L	9.5	38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.6
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Hexachloroethane	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Acenaphthene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Acenaphthylene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Isophorone	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2-Chloronaphthalene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Hexachlorobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Hexachlorobutadiene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Naphthalene	0.095 U	µg/L	0.095	0.38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Phenanthrene	0.095 U	µg/L	0.095	0.38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
8/31/2020 10:30	Test Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.5 U	µg/L	9.5	38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.6
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	11
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	µg/L	0.95	3.8
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Nitrobenzene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Phenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Pyrene	0.095 U	µg/L	0.095	0.38

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 10:30	Test Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.8 U	µg/L	4.8	19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Dimethyl phthalate	0.19 U	µg/L	0.19	0.76
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Fluoranthene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Fluorene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2-Chlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2-Nitrophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,4-Dinitrophenol	9.5 U	µg/L	9.5	38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	µg/L	0.024	0.095
8/31/2020 10:30	Test Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.6
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,4-Dimethylphenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	4-Nitrophenol	9.5 U	µg/L	9.5	38
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Anthracene	0.048 U	µg/L	0.048	0.19
8/31/2020 10:30	Test Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.048 U	µg/L	0.048	0.19
9/2/2020 9:45	Effluent Composite	Metals	Magnesium	9.06	mg/L	0.040	0.16
9/2/2020 9:45	Effluent Composite	Metals	Zinc	29	µg/L	5.0	20
9/2/2020 9:45	Effluent Composite	Metals	Silver	0.032 I	µg/L	0.010	0.040
9/2/2020 9:45	Effluent Composite	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
9/2/2020 9:45	Effluent Composite	Metals	Chromium	0.49 I	µg/L	0.40	1.6
9/2/2020 9:45	Effluent Composite	Metals	Nickel	1.1 I	µg/L	0.50	2.0
9/2/2020 9:45	Effluent Composite	Metals	Lead	0.48	µg/L	0.20	0.40
9/2/2020 9:45	Effluent Composite	Metals	Hardness	162	mg/L	0.35	1.4
9/2/2020 9:45	Effluent Composite	Metals	Potassium	5.0	mg/L	0.30	1.2
9/2/2020 9:45	Effluent Composite	Metals	Selenium	0.23 I	µg/L	0.20	0.80
9/2/2020 9:45	Effluent Composite	Metals	Copper	7.53	µg/L	0.40	0.80
9/2/2020 9:45	Effluent Composite	Metals	Aluminum	61	µg/L	5.0	20
9/2/2020 9:45	Effluent Composite	Metals	Sodium	31.5	mg/L	0.50	2.0
9/2/2020 9:45	Effluent Composite	Metals	Iron	260	µg/L	30	120
9/2/2020 9:45	Effluent Composite	Metals	Calcium	49.8	mg/L	0.075	0.30
9/2/2020 9:45	Effluent Composite	Nutrients	Organic Carbon	9.2	mg C/L	0.50	1.0
9/2/2020 9:45	Effluent Composite	Nutrients	Kjeldahl Nitrogen	3.6	mg N/L	0.40	1.0
9/2/2020 9:45	Effluent Composite	Nutrients	Total-P	1.1	mg P/L	0.025	0.25
9/2/2020 9:45	Effluent Composite	Nutrients	NO2NO3-N	2.4	mg N/L	0.040	0.10
9/2/2020 9:45	Effluent Composite	Nutrients	TSS	5 IA	mg/L	2.0	10
9/2/2020 9:45	Effluent Composite	Nutrients	Ammonia-N	2.5	mg N/L	0.20	0.50

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/2/2020 10:00	Effluent Grab	Overflow	Carbonaceous Biochemical Oxygen Demand	2.0 U	mg/L	2.0	2.0
9/2/2020 10:15	Test Site	Overflow	Carbonaceous Biochemical Oxygen Demand	2.0 U	mg/L	2.0	2.0
9/2/2020 10:15	Test Site	Nutrients	Temperature	26.55	C		
9/2/2020 10:15	Test Site	Nutrients	Specific Conductance	119	µmhos/cm		
9/2/2020 10:15	Test Site	Nutrients	Dissolved Oxygen	73.6	%Sat		
9/2/2020 10:15	Test Site	Nutrients	Sample Depth	1.03	m		
9/2/2020 10:15	Test Site	Nutrients	pH	6.77			
8/27/2020 11:05	Equipment Blank	Metals	Lead	0.20 U	µg/L	0.20	0.40
8/27/2020 11:05	Equipment Blank	Metals	Iron	30 U	µg/L	30	120
8/27/2020 11:05	Equipment Blank	Metals	Silver	0.010 U	µg/L	0.010	0.040
8/27/2020 11:05	Equipment Blank	Metals	Potassium	0.30 U	mg/L	0.30	1.2
8/27/2020 11:05	Equipment Blank	Metals	Selenium	0.20 U	µg/L	0.20	0.80
8/27/2020 11:05	Equipment Blank	Metals	Chromium	0.40 U	µg/L	0.40	1.6
8/27/2020 11:05	Equipment Blank	Metals	Sodium	0.50 U	mg/L	0.50	2.0
8/27/2020 11:05	Equipment Blank	Metals	Copper	1.46	µg/L	0.40	0.80
8/27/2020 11:05	Equipment Blank	Metals	Zinc	34	µg/L	5.0	20
8/27/2020 11:05	Equipment Blank	Metals	Aluminum	5.0 U	µg/L	5.0	20
8/27/2020 11:05	Equipment Blank	Metals	Arsenic	0.050 U	µg/L	0.050	0.20
8/27/2020 11:05	Equipment Blank	Metals	Hardness	0.35 U	mg/L	0.35	1.4
8/27/2020 11:05	Equipment Blank	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
8/27/2020 11:05	Equipment Blank	Metals	Nickel	0.50 U	µg/L	0.50	2.0
8/27/2020 11:05	Equipment Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.30
8/27/2020 11:05	Equipment Blank	Metals	Magnesium	0.040 U	mg/L	0.040	0.16
8/31/2020 9:56	Field Blank	Metals	Mercury	0.10 U	ng/L	0.10	0.30
8/31/2020 9:56	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.0020	0.0050
8/31/2020 9:56	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.0040	0.010
8/31/2020 9:56	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.10	0.13
8/31/2020 9:56	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.20	0.50
8/31/2020 9:56	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.0040	0.010
8/31/2020 9:56	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.080	0.20
8/31/2020 9:56	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.20	0.50
8/31/2020 9:56	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.10
8/31/2020 9:56	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.50	1.0
8/31/2020 9:56	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
8/31/2020 9:56	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6.0
8/31/2020 9:56	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.0020	0.0050
8/31/2020 9:56	Field Blank	Pesticides	Alachlor	0.24 U	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Terbuthylazine	0.40 UJ	ng/L	0.40	1.6
8/31/2020 9:56	Field Blank	Pesticides	Hexazinone	0.47 U	ng/L	0.47	1.9

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 9:56	Field Blank	Pesticides	Malathion	0.33 UJ	ng/L	0.33	1.3
8/31/2020 9:56	Field Blank	Pesticides	Metalaxyl	0.71 U	ng/L	0.71	2.8
8/31/2020 9:56	Field Blank	Pesticides	Metolachlor	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Metribuzin	3.1 U	ng/L	3.1	12
8/31/2020 9:56	Field Blank	Pesticides	Molinate	0.28 U	ng/L	0.28	1.1
8/31/2020 9:56	Field Blank	Pesticides	Parathion Methyl	0.52 U	ng/L	0.52	2.1
8/31/2020 9:56	Field Blank	Pesticides	Bromacil	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Carbophenothion	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Fipronil Sulfone	0.14 U	ng/L	0.14	0.57
8/31/2020 9:56	Field Blank	Pesticides	Terbufos	0.095 UJ	ng/L	0.095	0.38
8/31/2020 9:56	Field Blank	Pesticides	Ibuprofen	0.020 U	µg/L	0.020	0.080
8/31/2020 9:56	Field Blank	Pesticides	Cyanazine	3.1 U	ng/L	3.1	12
8/31/2020 9:56	Field Blank	Pesticides	Fipronil Sulfide	0.14 UJ	ng/L	0.14	0.57
8/31/2020 9:56	Field Blank	Pesticides	Flumioxazin	1.7 U	ng/L	1.7	6.6
8/31/2020 9:56	Field Blank	Pesticides	Fonofos	0.19 UJ	ng/L	0.19	0.76
8/31/2020 9:56	Field Blank	Pesticides	Imazalil	0.71 U	ng/L	0.71	2.8
8/31/2020 9:56	Field Blank	Pesticides	Propiconazole	0.47 U	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Sulfentrazone	0.47 U	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Naproxen	0.0080 U	µg/L	0.0080	0.032
8/31/2020 9:56	Field Blank	Pesticides	Acetochlor	0.24 U	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Ethoprop	0.095 UJ	ng/L	0.095	0.38
8/31/2020 9:56	Field Blank	Pesticides	Fipronil Desulfinyl	0.12 U	ng/L	0.12	0.47
8/31/2020 9:56	Field Blank	Pesticides	Pendimethalin	0.95 UJ	ng/L	0.95	3.8
8/31/2020 9:56	Field Blank	Pesticides	Pronamide	0.14 U	ng/L	0.14	0.57
8/31/2020 9:56	Field Blank	Pesticides	Simazine	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Ametryn	0.57 U	ng/L	0.57	2.3
8/31/2020 9:56	Field Blank	Pesticides	Azinphos Methyl	1.9 U	ng/L	1.9	7.6
8/31/2020 9:56	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.24 UJ	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Mevinphos	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Norflurazon	0.47 U	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Phorate	0.24 U	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Atrazine Desethyl	1.4 UJ	ng/L	1.4	5.7
8/31/2020 9:56	Field Blank	Pesticides	Butylate	0.38 U	ng/L	0.38	1.5
8/31/2020 9:56	Field Blank	Pesticides	Demeton	1.4 UJ	ng/L	1.4	5.7
8/31/2020 9:56	Field Blank	Pesticides	EPTC	1.2 U	ng/L	1.2	4.7
8/31/2020 9:56	Field Blank	Pesticides	Naled	1.4 U	ng/L	1.4	5.7
8/31/2020 9:56	Field Blank	Pesticides	Prodiamine	0.17 UJ	ng/L	0.17	0.66
8/31/2020 9:56	Field Blank	Pesticides	Prometryn	0.19 U	ng/L	0.19	0.76
8/31/2020 9:56	Field Blank	Pesticides	Tebuconazole	0.47 U	ng/L	0.47	1.9

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 9:56	Field Blank	Pesticides	Sucralose	0.010 U	µg/L	0.010	0.040
8/31/2020 9:56	Field Blank	Pesticides	Atrazine	0.24 UJ	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Disulfoton	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Fenamiphos	0.47 UJ	ng/L	0.47	1.9
8/31/2020 9:56	Field Blank	Pesticides	Prometon	0.85 UJ	ng/L	0.85	3.3
8/31/2020 9:56	Field Blank	Pesticides	Chlorpyrifos Methyl	0.047 UJ	ng/L	0.047	0.19
8/31/2020 9:56	Field Blank	Pesticides	Diazinon	0.12 U	ng/L	0.12	0.47
8/31/2020 9:56	Field Blank	Pesticides	Dithiopyr	0.095 UJ	ng/L	0.095	0.38
8/31/2020 9:56	Field Blank	Pesticides	Ethion	0.14 U	ng/L	0.14	0.57
8/31/2020 9:56	Field Blank	Pesticides	Fipronil	0.24 U	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Oxadiazon	0.095 U	ng/L	0.095	0.38
8/31/2020 9:56	Field Blank	Pesticides	Parathion Ethyl	0.24 U	ng/L	0.24	0.95
8/31/2020 9:56	Field Blank	Pesticides	Dimethenamid	0.095 U	ng/L	0.095	0.38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Fluorene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Nitrobenzene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Anthracene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzidine	9.4 U	µg/L	9.4	38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Isophorone	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.7 U	µg/L	4.7	19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	9.4 U	µg/L	9.4	38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	4-Nitrophenol	9.4 U	µg/L	9.4	38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Acenaphthene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Naphthalene	0.094 U	µg/L	0.094	0.38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.047 U	µg/L	0.047	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	µg/L	0.94	3.8
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Fluoranthene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Phenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.4 U	µg/L	9.4	38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.5
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.5
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.47 U	µg/L	0.47	1.9
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Phenanthrene	0.094 U	µg/L	0.094	0.38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.19 U	µg/L	0.19	0.75
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Hexachloroethane	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Pyrene	0.094 U	µg/L	0.094	0.38
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	µg/L	2.8	11
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Chrysene	0.024 U	µg/L	0.024	0.094
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.047 U	µg/L	0.047	0.19
8/31/2020 9:56	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.5