

Biological Assessment of

Starke Wastewater Treatment Plant

Bradford County

NPDES # FL0028126

Sampled February 09, 2015

July 2015

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

2014 FDEP Bureau of Laboratories Quality Manual

NELAC Certification No. E31780

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Facility Overview

The Starke Wastewater Treatment Plant (WWTP) is a domestic wastewater treatment facility. The effluent is discharged into Alligator Creek, a Class III Fresh Water (see map Appendix A). The permitted capacity of the wastewater plant is 0.98 million gallons per day (MGD). The annual average daily flow for February 2014 to January 2015 for monitoring location EFD-01 (prior to outfall D-001/D-002) was 0.63 MGD. The plant discharges continuously except when diverted to R-001 for reuse. The flow was continuous at the time of sampling and was recorded by the facility at 0.763 MGD.

Biological assessments are prepared by FDEP 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.

See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits, Consent Order (CO), and Discharge Monitoring Report (DMR) information. The facility is operating under a Consent Order (#14-0573) addressing sanitary sewer overflows as well as WWTP equipment issues.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Test Site (located in Alligator Creek beginning 105 meters and ending 5 m downstream of outfall D-001/D-002) and a Control Site (located in Alligator Creek beginning 15 m and ending 115 m upstream of outfall D-001/D-002). Effluent samples were taken as grab samples from monitoring location EFD-01, after dechlorination.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Sharon Piltz, Jann Gruentzel, Jeremy Parrish, and Patrick O'Conner (FDEP Northeast District Office, Jacksonville), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski, Andrew Tintle, and Jennifer Walters).

Results

Physical and Chemical Parameters (See Table 1 and Appendices C, D, E, and F)

- Habitat Assessment scores were similar at the Test Site (59) and Control Site (50), which places both sites in the Marginal category. Both sites had low substrate availability, a lack of habitat diversity, and were severely smothered with sand and silt. Alligator Creek is artificially channelized through the Test and Control Sites, with low bank stability for both sites, and a narrow riparian buffer zone with a disturbed plant community, indicative of intensive human activities around the stream.
- The pH (Standard Units), specific conductance (µmhos/cm), and dissolved oxygen (mg/L and % saturation) of the effluent, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limits.
- The temperature and specific conductance of the effluent were higher than the values measured at the Test and Control Sites.

Organic Constituents (See Table 2 and Appendix F)

- Sucralose and 1,4-dioxane were detected in the effluent grab sample; neither were detected in the Test or Control Site samples.
- 1,4-dioxane was detected in the field blank.

Nutrients (See Table 2 and Appendix F)

- Organic nitrogen was detected in the effluent grab sample in an amount approximately five times higher than the amounts detected in the Test or Control Site samples. Effluent grab sample amounts of ortho-phosphate,

total phosphorus, total ammonia, nitrate plus nitrite, total Kjeldahl nitrogen, and total nitrogen were all at least an order of magnitude higher than the amounts of each nutrient detected in the Test or Control Site samples.
- No nutrients were detected in the field blank.

Analytical Water Chemistry (See Table 2 and Appendix F)
- The amounts of effluent total residual chlorine (TRC; mg/L) measured for disinfection and after dechlorination complied with the effluent permit limits.
- Chlorophyll *a* (corrected) was detected at a low level between the minimum detection limit (MDL) and the practical quantitation limit (PQL) in the effluent grab sample and was undetected in both the Test and Control Site samples.
- Carbonaceous biochemical oxygen demand (CBOD; mg/L) and total suspended solids (TSS; mg/L) of the effluent complied with permit limits. CBOD was detected between the MDL and the PQL in the Test and Control Sites. TSS were detected in the effluent and both instream sites between the MDL and the PQL.

Microbiology (See Table 2 and Appendix C and F)
- Fecal coliforms were analyzed by ALS Environmental (Jacksonville) using standard method SM 9222 D.
- Fecal coliforms were detected in the effluent and at both the Test and Control Sites at levels which complied with Class III Freshwater Quality Criterion (62-302.530(6), F.A.C.) and facility permit limits.

Toxicity Whole Effluent Test (See Table 2 and Appendix F)
- Tests were performed February 10 through February 16, 2015.
- The effluent sample was not chronically toxic to the fish, *Pimephales promelas,* or to the water flea, *Ceriodaphnia dubia,* during the chronic definitive bioassays.
- Determination of compliance with permit limits was not possible because the third set of samples were collected from chlorinated effluent discharging to reuse instead of the effluent stream discharging to D-001, which was not flowing that day. The high amounts of TRC, confirmed in the toxicity lab, would likely have been toxic to the test organisms. These effluent samples were dechlorinated in the toxicity lab before being used for renewal. Thus, the results were reported as estimated (J-qualifier). In order to detect non-chlorine related toxicity, a "dechlorinated" control test may be performed, but could not be performed alongside this test because the chlorination occurred unexpectedly in the final batch of renewal sample water.
- For more information please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix F)
- All metals detected in the effluent grab samples were present at levels that complied with effluent permit limits and Class III Freshwater Quality Criteria (62-302.530, F. A. C.).
- All metals in Test Site and Control Site samples were either undetected or detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F. A. C.).
- Effluent grab sample arsenic (detected between the MDL and the PQL), copper, nickel, selenium and zinc were detected in amounts higher than what was detected in the Test or Control Site samples. Copper was detected between the MDL and the PQL in the Test Site sample and was not detected in the Control Site sample.
- No metals were detected in the field blank.

Algal Growth Potential (AGP, See Table 4 and Appendix F)
- Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L, which represents a "problem" threshold for fresh receiving waters, imply nutrient enrichment. The AGP value of the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 77 times greater than the problem threshold value. The analytical chemistry suggests that the effluent is nitrogen-limited.
- The AGP values of the Test and Control Site were below the problem threshold. The analytical chemistry suggests that the Test and Control Sites are nitrogen and phosphorus co-limited.

Bioassessment

Periphyton (See Table 4)
- The Rapid Periphyton Surveys (RPS) conducted at the Test and Control Sites showed no evidence of problematic algal growth.

- Due to the low Habitat Assessment scores at both the Test and Control Sites, with the absence of available habitat, Stream Condition Index (SCI) sampling for macroinvertebrates was not conducted and Hester-Dendy samplers were not deployed.

Conclusion

Nutrient amounts in the effluent grab sample were much higher than those detected in the Test and Control Site samples, which indicates the potential of the effluent to contribute nutrients to the receiving waters. The high AGP of the effluent also supports this potential for nutrient enrichment. However, the effluent did not appear to be impacting the Test Site during this sampling event, with its low AGP, nutrient amounts, and lack of observed algal growth or overgrown vegetation in the habitat assessment.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

Table 1. Effluent limits, Class III Freshwater Criteria and field parameters

Starke WWTP	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site
Sample Depth	m	-	-	0.09	0.2	0.2
Temperature	C	-	-	19.2	13.1	13.1
pH	SU	6.0 - 8.5	6.0 - 8.5	7.0	7.8	7.5
Specific Conductance	µmhos/cm	≤ 1,275	-	595	182	182
Salinity	ppth	-	-	0.3 c	0.1 c	0.1 c
Dissolved Oxygen	% saturation	≥ 34%	-	84.6	90.4	91.4
Dissolved Oxygen	mg/L	-	5.5	7.8	9.5	9.6

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated

Qualifiers from Appendix F
L - Actual value is known to be greater than value given

Table 2. Effluent limits, Class III Freshwater Criteria and analytical water chemistry data

Starke WWTP	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site
Analytical organic and pesticide data						
Sucralose	µg/L	-	-	4.9	0.010 U	0.010 U
1,4-Dioxane	µg/L	-	-	0.4	0.020 U	0.020 U
Analytical water chemistry data						
Ortho-phosphate	mg P/L	-	-	1.6	0.007 I	0.007 I
Total Phosphorus	mg P/L	-	Report p	2.1	0.020	0.021
Total Ammonia	mg N/L	-	Report	3.9	0.022	0.023
Un-ionized Ammonia (calculated salinity)	mg N/L	≤ 0.02 s	≤ 0.02	< 0.02 c	< 0.02 c	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	13	0.018	0.019
Total Kjeldahl Nitrogen	mg N/L	-	Report	5.3	0.35	0.37
Organic Nitrogen	mg N/L	-	≤ 10.5	1.4 c	0.33 c	0.35 c
Total Nitrogen	mg N/L	-	Report p	18 c	0.37 c	0.39 c
Total Organic Carbon	mg C/L	-	-	9.5 A	9.4	9.4
Chlorophyll *a* - Corrected	ug/L	-	-	1.2 I	0.55 U	0.55 U
Phaeophytin	ug/L	-	-	0.40 U	0.40 U	0.40 U
Hardness	mg/L	-	Report	165	57.1	57.3
Total Residual Chlorine (before dechlorination)	mg/L	≥ 0.5	-	1.76	-	-
Total Residual Chlorine (after dechlorination)	mg/L	≤ 0.01	-	<0.01	-	-
CBOD, 5 day, N - inhibited	mg/L	-	≤ 24.0 p	4.6	1.2 I	1.3 I
Total Suspended Solids	mg/L	-	≤ 60	4 I	3 I	2 I
Turbidity	NTU	< 29 t	-	3.7	4.3	4.6
Color (true)	PCU	-	-	23	76	75
Alkalinity	mg CaCO3/L	≥ 20	-	117 A	16	16 A
Chloride	mg Cl/L	-	-	60 A	34 A	34
Fluoride	mg F/L	≤ 10.0	-	0.42	0.049 I	0.047 I
Sulfate	mg SO4/L	-	-	23 A	0.46	11
Microbiology						
Fecal Coliforms [1]	cfu/100 mL	≤ 400sx	≤ 800	2.0 B	84	110
Toxicity (IC25 Chronic Definitive)						
Bioassay - Water flea - Reproduction *(Ceriodaphnia dubia)*	%	-	≥ 100 %	100 J	-	-
Bioassay - Fish - Growth *(Pimephales promelas)*	%	-	≥ 100 %	100 J	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

c - Value is calculated

p - 24 hour flow proportioned composite

t - Shall not exceed 29 NTUs above background

s - Single sample

x - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

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. The third renewal samples of effluent water were tested in the toxicity lab and found to have a high amount of TRC and were dechlorinated before proceeding with the toxicity tests.

U - Material analyzed for but not detected; value reported is the method detection limit

1 – Fecal coliform analyses were conducted by ALS Environmental, Jacksonville, Florida, using SM 9222 D.

Table 3. Effluent limits, Class III Freshwater Criteria and analytical metals data

Starke WWTP	Units	Effluent Permit Limits	Effluent Grab Class III Criteria	Effluent Grab	Test Site Class III Criteria	Test Site	Control Site Class III Criteria	Control Site
Hardness (calculated)	mg/L	-	165 c	-	57 c	-	57.3 c	-
Aluminum	µg/L	-	-	16 I	-	506	-	520
Arsenic	µg/L	-	≤ 50	0.45 I	≤ 50	0.28 I	≤ 50	0.28 I
Cadmium	µg/L	-	≤ 0.392 b	0.050 U	≤ 0.178 b	0.050 U	≤ 0.179 b	0.050 U
Calcium	mg/L	-	-	45.5	-	19.6	-	19.7
Chromium, Total [g]	µg/L	-	≤ 130 b	0.30 U	≤ 54.4 b	0.69 I	≤ 54.6 b	0.71 I
Copper	µg/L	≤ 14.3 bp	≤ 14.3 b	3.09	≤ 5.77 b	0.89 I	≤ 5.79 b	0.50 U
Iron	µg/L	-	≤ 1,000	140	≤ 1,000	630	≤ 1,000	650
Lead	µg/L	-	≤ 6 b	0.20 U	≤ 1.55 b	0.35 I	≤ 1.56 b	0.31 I
Magnesium	mg/L	-	-	12.4		1.95		1.96
Nickel	µg/L	-	≤ 79.5 b	1.09	≤ 32.4 b	0.83 I	≤ 32.5 b	0.80 I
Potassium	mg/L	-	-	7.3	-	0.92 I	-	0.91 I
Selenium	µg/L	-	≤ 5.0	0.36 I	≤ 5.0	0.20 U	≤ 5.0	0.22 I
Silver	µg/L	≤ 0.07 p	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Sodium	mg/L	-	-	46.5	-	10.2	-	10.2
Zinc	µg/L	-	≤ 183 b	42	≤ 74.4 b	5.7 I	≤ 74.7 b	5.5 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

b - Value is calculated based on hardness, (62-302.530(3))

g - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III

p - 24 hour flow 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

Table 4. 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

Starke WWTP								
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*	387	642.2 ± 128.4	Not applicable [1]	695.4 ± 139.1	Not applicable [1]	10.6	8.7
Test Site	*Pseudokirchneriella subcapitata*	0.740 I	1.5 ± 0.3	3 ± 0.6	14 ± 2.8	8.6 ± 1.7	5.7	18.4
Control Site	*Pseudokirchneriella subcapitata*	1.11	1.6 ± 0.3	3 ± 0.6	14.8 ± 3	9 ± 1.8	6	18.5

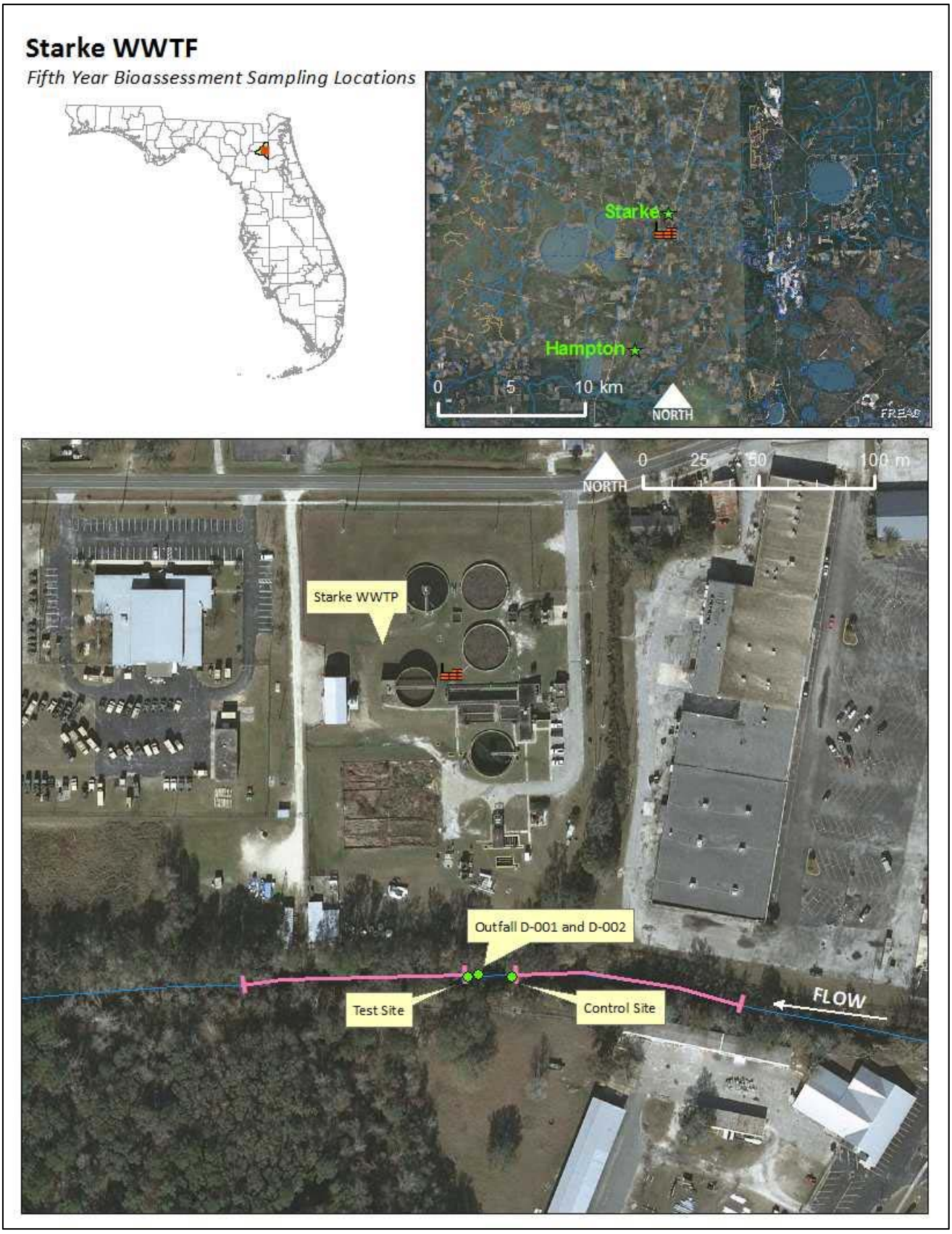
Pseudokirchneriella subcapitata - freshwater species

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

1 – Not applicable to nitrogen-limited freshwaters

Appendix A

Map of Facility



Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: **Edward Jamro**	**Contact Number:** **(904) 256-1617**
Facility Name (as it appears on permit): **Starke WWTP**	**Former Names:**
NPDES Permit Number: **FL0028126**	**Permit Expiration Date:** **March 02, 2016**
Physical Address: **602 Edwards Road** **Starke, Florida 32091-3802**	
District: **NED**	**County:** **Bradford**
Function of Facility: **Treat domestic wastewater for discharge to Alligator Creek (WBID-3598C) or to a slow-rate restricted public access irrigation system.**	
Facility Type: **Domestic Wastewater**	**Permitted Capacity (MGD):** **0.98** ***(Design capacity is 1.65MGD).***
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): ***based on data in PCS on 12/17/14 for D001 & D002.*** **0.71 MGD from 12/2013 – 11/2014.**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): ***Based on data in WAFR on 12/17/14 for R001.*** **0.02 MGD from 12/2013 – 11/2014.**	
Description of type of Discharge: Continuous operation **☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify** **-May be diverted to R-001 for re-use**	

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

EFD-1 – Effluent sample point after dechlorination and prior to discharge to Alligator Creek at the Outfall D001 / D002.

SWB-1	**Upstream of the outfall on the Alligator Creek at U.S.301.**
SWD-1	**100 yards downstream from the outfall on the Alligator Creek**

Description of Permitted Outfall(s): Surface Water Discharge:

Surface Water Discharge: An existing 1.25 MGD AADF permitted capacity discharge to Alligator Creek (Class III fresh waters, WBID 3598C) at Discharge Location (D-001). The point of discharge is located approximately at latitude 29° 56' 16" N, longitude 82° 06' 55" W.

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.**

Surface Water Discharge: An existing 0.4 MGD AADF permitted limited wet weather discharge (LWWD) to discharge to Alligator Creek (Class III fresh waters) (WBID 3598C) at Discharge Location (D-002).

Note: 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:

- 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);
- One Biological Treatment Unit which consisting of:
  - Two (2) aeration basins which are constructed of concrete; each basin has volume of 310,000 gallons, 60-foot diameter, and fitted with one 60 hp floating mechanical aerator;
  - Four adjacent concrete tanks that create anoxic zones to provide removal and reduction of nitrate-nitrogen and improve the overall total nitrogen removal (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);
- Two (2) secondary clarifiers each followed by a Parshall flume:
  - Each clarifier has 60-foot diameter, 12 feet water depth, and surface loading of 390.0 gal. per day (gpd) per square feet;
  - The Parshall flume for Clarifier No.1 is 24-inch height, 6-inch throat width, and 2.5 MGD maximum flow; the Parshall flume for Clarifier No. 2 is 24-inch height, 9-inch throat width, and 5.73 MGD maximum flow;
- A filtration system which comprises of a disc cloth filter each unit contains 4 cloth disks with a design flow at 5 gpm/SF at 3 MGD peak flow;
- One (1) chlorine contact chamber;
- One (1) aerobic digester with 55 feet diameter and one floating aerator powered by a 40-hp motor;
- 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).

The domestic biosolids are treated to meet Class AA or Class B requirements, and Class B shall be land applied on an approved agricultural site and/or air dried on sand filter beds or disposal in an Class I solid waste landfill.

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to Alligator Creek. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.E.7:

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
Flow (to Alligator Creek)	MGD	Max	**0.98***	Annual Average	Continuous	Recording Flow Meter with Totalizer	EFD-1	I.A.4
		Max	Report	Monthly Average				
		Max	Report	Quarterly Average				
BOD, Carbonaceous 5-day, 20ºC (Winter Months: **December – April**)	mg/L	Max	12.0	Annual Average	Weekly	24-hr FPC	EFD-1	
		Max	15.0	Monthly Average				
		Max	18.0	Weekly Average				
		Max	24.0	Single Sample				
BOD, Carbonaceous 5-day, 20ºC (Summer Months: **May – November**)	mg/L	Max	8.0	Annual Average	Weekly	24-hr FPC	EFD-1	
		Max	10.0	Monthly Average				
		Max	12.0	Weekly Average				
		Max	16.0	Single Sample				
Oxygen, Dissolved (Winter Months: **December – April**)	mg/L	Min	5.5	Single Sample	5 Day/Week	Meter	EFD-1	I.A.10

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
Oxygen, Dissolved (Summer Months: **May – November)**	mg/L	Min	6.2	Single Sample	5 Day/Week	Meter	EFD-1	I.A.10
Nitrogen, Organic, Total (as N) (Winter Months: **December – April)**	mg/L	Max	Report	Annual Average	Weekly	Grab	EFD-1	
		Max	5.0	Monthly Average				
		Max	7.5	Weekly Average				
		Max	10.5	Single Sample				
Nitrogen, Organic, Total (as N) (Summer Months: **May – November)**	mg/L	Max	Report	Annual Average	Weekly	Grab	EFD-1	
		Max	3.5	Monthly Average				
		Max	5.3	Weekly Average				
		Max	7.9	Single Sample				
Ultimate Oxygen Demand (UBOD) (Winter Months: **December – April)**	mg/L	Max	44.1	Monthly Average	Monthly	Calculated	CAL-1	IA14
Ultimate Oxygen Demand (Summer Months: **May – November)**	mg/L	Max	54.1	Monthly Average	Monthly	Calculated	CAL-1	I.A.14

		Effluent Limitations			Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Monthly Average	Monthly	Calculated	CAL-2	IA14
Solids, Total Suspended	mg/L	Max	20.0	Annual Average	Weekly	24-hr FPC	EFD-1	
		Max	30.0	Monthly Average				
		Max	45.0	Weekly Average				
		Max	60.0	Single Sample				
Solids, Total Suspended, % Removal	percent	Min	85.0	Monthly Average	Weekly	Calculated	CAL-3	
pH	s.u.	Min	6.5	Single Sample	5 Day/Week	Meter	EFD-1	IA3
		Max	8.5	Single Sample				
Coliform, Fecal	#/100mL	Max	200	Annual Average	Weekly	Grab	EFD-1	IA5
		Max	200	Monthly Geometric Mean				
		Max	800	Single Sample				
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	5 Day/Week	Meter	EFA-1	IA3 & 6

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	3 Day/Week	Grab	EFD-1	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Annual Average	Weekly	Grab	EFD-1	IA9
		Max	Report	Monthly Average				
		Max	Report	Single Sample				
		Max	Report	Weekly Average				
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	0.02	Single Sample	Weekly	Calculated	CAL-4	IA9
Temperature (ºC), Water	Deg C	Max	Report	Single Sample	Weekly	Meter	EFD-1	IA9
Nitrogen, Total	mg/L	Max	Report	Annual Average	Weekly	24-hr FPC	EFD-1	I.C.3
		Max	Report	Monthly Average				
		Max	Report	Single Sample				
		Max	Report	Weekly Average				
Phosphorus, Total (as P)	mg/L	Max	Report	Annual Average	Weekly	24-hr FPC	EFD-1	See I.C.3

		Effluent Limitations			Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
		Max	Report	Monthly Average				
		Max	Report	Single Sample				
		Max	Report	Weekly Average				
Hardness, Total (as CaCO3)	mg/L	Max	Report	Single Sample	Yearly	24-hr FPC	EFD-1	IA10
Copper, Total Recoverable	ug/L	Max	SEE I. A. 7	Single Sample	Yearly	24-hr FPC	EFD-1	IA10
Silver, Total Recoverable	ug/L	Max	0.07	Single Sample	Yearly	24-hr FPC	EFD-1	
Whole Effluent Toxicity (Chronic)	See Permit Condition I. A 8				Annually	24-hr FPC	EFD-1	
Dissolved Oxygen	mg/L	Min	Report	Single Sample	Semi – Annually	Grab/Meter	SWB-1 SWD-1	
pH	S.U.	Max	Report	Single Sample	Semi – Annually	Grab/Meter	SWB-1 SWD-1	
Water, Temperature	°C	Max	Report	Single Sample	Semi – Annually	Grab/Meter	SWB-1 SWD-1	
Conductivity	umhos/cm	Max	Report	Single Sample	Semi – Annually	Grab/Meter	SWB-1 SWD-1	
BOD, Carbonaceous 5-day, 20°C	mg/L	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes - See
Solids, Total Suspended	mg/L	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	
Fecal Coliform	#/100 mL	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	
Total Nitrogen, as N	mg/L	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	
TKN, as N	mg/L	**Max**	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	
Total Phosphorus	mg/L	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-1	
Hardness, as CaCO3	mg/L	Max	Report	Single Sample	Semi – Annually	Grab	SWB-1 SWD-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.

3. Hourly measurement of pH and total residual chlorine for disinfection during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 2]*

4. A recording flow meter with totalizer shall be utilized to measure flow and calibrated at least once every 12 months. *[62-601.200(17) and .500(6)]*

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 reported as “MNR” on the Discharge Monitoring Report. *[62-600.440(4)(c)]*

6. Total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b), (5)(b), and (6)(b)]*

7. The limit for "Copper, Total Recoverable" shall be calculated using the following equation(s):

$Cu \leq e^{(0.8545[\ln H]-1.702)}$

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 $CaCO_3$. 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. *[62-302.530(23)]*

8. <u>Chronic Whole Effluent Toxicity Monitoring. – see top of Page 11 also.</u>

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.]

9. 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.

10. 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. *[62-302.530(31)] and [62-650.400(2)*

11. The ambient/stream monitoring and sampling shall be performed on Alligator Creek at the upstream and downstream of the point of discharge (D-001/D-002). The samples shall be collected on a semi-annual basis and concurrently with the effluent nutrient samples listed in condition I.A.1. Samples shall be collected at mid-depth. The results shall be forwarded to the Northeast District Office at the address specified in Specific Condition I.E.7. *[62-302.530]*

12. For purposes of determining compliance with rules and regulations of the Department, ultimate biological oxygen demand (UBOD) shall be calculated as follows: **$UBOD = (2.3) \times CBOD_5 + (4.57) \times TKN$**

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

[62-302.530]

13. 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. *[62-4.240(3)(c)]*

14. 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. *[62-302.530]*

PART I: Continued

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

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

Toxicity: -017 Current permit (issued 03/03/2011, expires 03/02/16) requires annual chronic definitive tests with 24-hr FPC samples and freshwater species (*C.dubia* and *P.promelas*). Test concentrations are 100%, 50%, 25%, 12.5% and 6.25% final effluent. Two additional definitive tests are required if the 7-day IC_{25} < 100% per species in any routine test.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
A long form Consent Order #14-0573 was executed on 12/11/14. This CO deals with Sanitary Sewer Overflows in the City of Starke as well as WWTP equipment issues.

Facility Mixing Zone Details (if applicable): NONE

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

Based on PCS & WAFR data – December 2013 to November 2014

Date – Month/Yr	Parameter and Units	Limit	Result
D001 – 05-2014	**Unionized Ammonia – mg/L**	**0.02 (max)**	**0.059**

Note – Low pH in Monitoring wells 2Q-14 and 3Q-14; High Fecal Coliform in biosolids –June and July 2014.

Describe previous FYI and WQBEL study:

1. Description of Receiving Water:

The final treated effluent is discharged to the Alligator Creek at Discharge Location (D-001) which is located approximately at latitude 29° 56' 26" N, longitude 82° 06' 53" W. Alligator Creek is classified as Class III fresh waters (WBID 3598C), with a designated use classification for recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Alligator Creek has a contributing drainage area of 19.4 square miles. Low-flow frequency of the creek is following: $_{7}Q_{2}$ = 3.2 ft^3/s, $_{7}Q_{10}$ = 0.3 ft^3/s, $_{30}Q_{2}$ = 8.0 ft^3/s; 30Q10 = 1.1 ft3/s.

The Alligator Creek is a tributary to Lake Rowell (364 acres) which is approximate 3.5 miles downstream of the outfall D-001. The lake has a cypress border, is shallow with a mucky bottom and usually cycles from dense to moderate hydrilla growths. The lake is classified as a Class III – Fresh water (WBID 3898B). Lake Rowell is then connected with Lake Sampson (2042 acres) by a canal. Lake Sampson (Class III fresh water – WBID 3598D) has a sand bottom, several 14-foot deep holes and FWC permanent plastic fish attractors. The entire lake is ringed by a marsh of cattails, water lilies and a band of maidencane grass.

(1) The 303(d) List – Impaired Parameters

- Alligator Creek – WBID 3598C:
  Alligator Creek is a 303(d) Listed for fecal coliform as a water quality parameter of concern. (Florida Section 303(d) List (September 2, 2009))
- Lake Rowell – WBID 3598B
  The water quality parameters of concern at Lake Rowell are nutrients and dissolved oxygen (Florida Section 303(d) List (September 2, 2009))
- Sampson River - WBID# 3598
  The water quality parameters of concern at Sampson River is dissolved oxygen (Florida Section 303(d) List (September 2, 2009))
- Lake Sampson – WBID 3598D
  The water quality parameter of concern at Lake Sampson is mercury (based on fish consumption advisory).

i) Discussion on the limitations:
The limits in this permit are based in part on information received in the application, the wastewater characterization reported on the DMR, the results of Fifth - Year inspection and the receiving water body characterization. The limits necessary to meet the rules and regulations of the State of Florida were determined and included in this permit.

ii) **Discussion on the limitations (continued)**

(1) Technology-Based Effluent Limitations (TBELs)

City of Starke WWTF, a municipal wastewater treatment facility, is a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These regulations are performance standards that constitute all known available and reasonable assurance of prevention, control, and treatment for municipal wastewater. The limitations and conditions of the TSS, pH, and TRC (for both disinfection and dechlorination) have been developed to comply with the technology-based standards of the Clean Water Act

(2) Water Quality Based Effluent Limitation (WQBEL) (Supporting Document Available)

(a) Coliform:

Coliform is listed impaired water (WBID 3598C, EPA 303(d), September 2, 2009 version). Therefore, the effluent limit for fecal coliform needs to be re-evaluated.

Data from DMRs (January 2005 through March 2010) show that the maximum total coliform in a single sample effluent was 124 counts in 100 mL average, mode, and median of annual average of the fecal coliform were 10.29,1.0, and 1.0 count in 100 mL, respectively. Based on the fecal coliform data, although segment of the water body has 303(d) listed impairments for fecal coliform, there is no evidence to show that the coliform in the effluent contributed to the total coliform of the receiving waterbody . Therefore, the permittee is not required to increase a disinfection treatment level of the effluent before discharge to the creek. The limit of fecal coliform, which was established in accordance with Rule 62-600.440(4)(c), FAC, is remained.

(b) BOD, Carbonaceous 5-day; Dissolved Oxygen and Ultimate Oxygen Demand;

Limitations of CBOD5, DO and UOD were established based on a Level I WQBEL which developed by the NED staff and available in the District permit files.

(c) Nutrients:

Mass load limits for TN and TP were established based on a Level I WQBEL which developed by the NED staff and available in the District permit files.

(d) Metals:

Metals, if present in effluent, have been complied with Class III Fresh Water Quality Criteria (62-302.530, FAC). Therefore, no additional monitoring requires for metals.

ii. In Conclusion:

The review included in-stream monitoring data, discharge monitoring reports, the Department's year 2000 305(b) report, EPA 303(d) report, FDEP 303 (d) and the Department's compliance sampling inspection reports. Considering the above, reasonable assurance of compliance has been provided with the effluent limits and applicable surface water quality standards for each parameter of concern.

(1) <u>The Department Sampling Inspection</u>: A Third-Year inspection was conducted on March 1, 2010 for the effluent discharge through Outfall D-001; the result is summarized following:

(a) Results of the Water Chemistry:

Arsenic, Iron, lead, nickel, arsenic and selenium were detected in the effluent at levels that comply with Class III Marine water quality criteria.

(a) Toxicity Test Result:

The effluent sample collected by DEP from D-001 for this facility on March 1, 2010, was not chronically toxic to test species during the bioassays at the DEP Lab. The passing test results showed NOEC ≥ 100% effluent for both species.

(b) Algal Growth Potential:

The effluent AGP result was greater than the "problem" threshold for fresh receiving waters; the presumptive evidence suggests that nutrient-enrichment would have been demonstrated with the freshwater species.

Describe previous or current Enforcement Actions (including WLs):
Consent Order 14-0573 was executed on 12/11/14. We are awaiting a Plan of Study regarding Sanitary Sewer Overflow elimination. Starke will also be doing a management plan for SSO's and an O&M report on WWTP equipment..

Describe any violations or problems noted in previous inspection:
Inspection conducted on 06/05/2013 resulted in In-Compliance rating.
Some issues were brought up during the inspection but they centered around recordkeeping and other paperwork.

Discuss whether DMR trends within previous five years are improving or declining:

5-year trends were reviewed in PCS. Effluent TSS appears to be trending downward. Effluent temperature and Total-Nitrogen concentration appear to be trending lower.

Effluent flow and effluent Total Nitrogen mass loading appear to be trending upward.

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

The consent order will focus attention on several areas within the WWTP that need attention and upgrading. Depending upon the cost and timing the CO may require implementation of remedies or those projects will be added to the compliance schedule portion of the renewed permit.

PART II: Sampling Event Information

Date(s) sample collected: **February 9, 2015 - planned**	**Sampler(s):** **Sharon Piltz, Jann Gruentzel**
Temperature (Deg C): **19.15**	**pH (SU):** **7.01**
Dissolved Oxygen (mg/L): **7.80**	**Conductivity (umhos/cm):** **595**
Total Residual Chlorine (mg/L): **1.76**	**Total Residual Chlorine - after Disinfection (mg/L):** **<0.01**
Method of Chlorination: **Chlorine Gas**	**Method of De-chlorination:** **Gas Sulfur dioxide**

Flow During Sample Collection for each outfall(MGD):
Feb 9, 2015 - 0.763 MGD
Feb 11, 2015 - 0.620 MGD
Feb 13, 2015 - 0.673 MGD

Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):

Describe Discharge during Sampling Event:
☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify

Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:

Once in the creek for the biological sampling the Habitat Assessments had low scores which is why the Stream Condition Index was not conducted and Hester-Dendy samplers were not set up.

The facility was discharging at the time of sampling. The discharged stopped just as sampling was finished.

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.dep.state.fl.us/labs/library/lab_sops.htm and/or http://www.dep.state.fl.us/water/sas/qa/index.htm.

(2) Chemical Analyses of the Effluent

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

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 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 62-302.530(20), 62-302.530(61) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of 62-302.530(6) and/or facility permit limits. Fecal coliform and enterococci 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.

(5) 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).

(6) 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. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(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 $\pm$ 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 62-302.530(61), F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

The Rapid Periphyton Survey (RPS) is a rapid method to document the extent and estimate the thickness of attached algae (periphyton) in a stream or river and gather taxonomic information associated with the dominant algae. Samplers indicate presence/absence and thickness of algal mat at up to 99 points along a 100 m reach. Thicker algal growth and excessive dominance by one taxon may be indicative of nutrient enrichment and may cause habitat smothering.

Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass . High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

(8) Definition of Qualifiers

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.

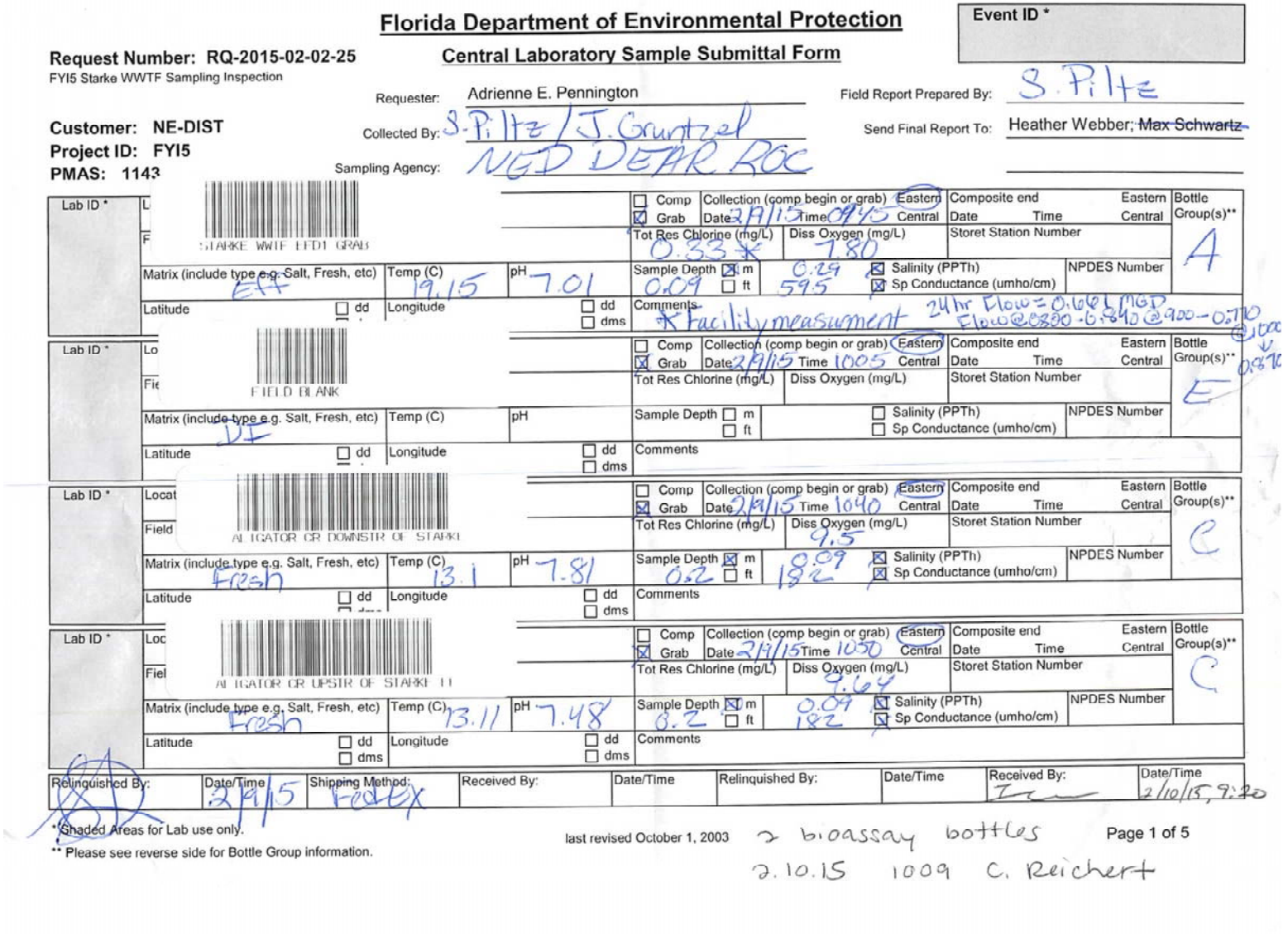
X - Too few individuals to calculate SCI value.

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 D

Chain of Custody



Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2015-02-02-25
FYI5 Starke WWTF Sampling Inspection

Requester: Adrienne E. Pennington
Field Report Prepared By: S. Pilte
Collected By: S. Pilte / J. Gruntzel
Send Final Report To: Heather Webber; ~~Max Schwartz~~
Sampling Agency: NGD DEAR ROC

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Lab ID * | STARKE WWTF EFF01 GRAB

Comp ☐ Grab ☒ | Collection (comp begin or grab) Eastern Central | Date 2/9/15 Time 0945 | Composite end Eastern Central Date Time | Bottle Group(s)** A

Tot Res Chlorine (mg/L) 0.33 * | Diss Oxygen (mg/L) 7.80 | Storet Station Number

Matrix (include type e.g. Salt, Fresh, etc) EST | Temp (C) 19.15 | pH 7.01 | Sample Depth 0.09 ☒ m ☐ ft | 0.29 595 | Salinity (PPTh) ☒ Sp Conductance (umho/cm) ☒ | NPDES Number

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments * Facility measurement 24hr Flow = 0.668 MGD Flow@0800 - 0.540 @900 - 0.710 @1000 ↓ 0.870

Lab ID * | FIELD BLANK

Comp ☐ Grab ☒ | Collection (comp begin or grab) Eastern Central | Date 2/9/15 Time 1005 | Composite end Eastern Central Date Time | Bottle Group(s)** E

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) | Storet Station Number

Matrix (include type e.g. Salt, Fresh, etc) DI | Temp (C) | pH | Sample Depth ☐ m ☐ ft | Salinity (PPTh) ☐ Sp Conductance (umho/cm) ☐ | NPDES Number

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments

Lab ID * | ALLIGATOR CR DOWNSTR OF STARKE

Comp ☐ Grab ☒ | Collection (comp begin or grab) Eastern Central | Date 2/9/15 Time 1040 | Composite end Eastern Central Date Time | Bottle Group(s)** C

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) 9.5 | Storet Station Number

Matrix (include type e.g. Salt, Fresh, etc) Fresh | Temp (C) 13.1 | pH 7.81 | Sample Depth 0.2 ☒ m ☐ ft | 0.09 182 | Salinity (PPTh) ☒ Sp Conductance (umho/cm) ☒ | NPDES Number

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments

Lab ID * | ALLIGATOR CR UPSTR OF STARKE 11

Comp ☐ Grab ☒ | Collection (comp begin or grab) Eastern Central | Date 2/9/15 Time 1050 | Composite end Eastern Central Date Time | Bottle Group(s)** C

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) 9.64 | Storet Station Number

Matrix (include type e.g. Salt, Fresh, etc) Fresh | Temp (C) 13.11 | pH 7.48 | Sample Depth 0.2 ☒ m ☐ ft | 0.09 182 | Salinity (PPTh) ☒ Sp Conductance (umho/cm) ☒ | NPDES Number

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments

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* Shaded Areas for Lab use only.
** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2 bioassay bottles

2.10.15 1009 C. Reichert

Page 1 of 5

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2015-02-02-25
FYI5 Starke WWTF Sampling Inspection

Requester: Adrienne E. Pennington

Field Report Prepared By: S. Piltz

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Collected By: J. Gruentzel / S. Piltz

Sampling Agency: NED DEAR ROC

Send Final Report To: Heather Webber; ~~Max Schwartz~~

Lab ID *	Location / Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (comp begin or grab) Eastern Central: Date / Time	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	Composite end Eastern Central: Date / Time	Storet Station Number	NPDES Number	Comments	Bottle Group(s)**
	STARKE WWTF EFD1 GRAB	EA	18.37	6.76	☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☒ Grab	2/11/15 0920		8.27	0.12 m / ☐ ft	0.32 / 649 ☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm)					A
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time			☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	Date Time				
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time			☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	Date Time				
					☐ dd ☐ dms	☐ dd ☐ dms	☐ Comp ☐ Grab	Date Time			☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	Date Time				

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* Shaded Areas for Lab use only.
** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2.12.15 @1035

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2015-02-02-25
FYI5 Starke WWTF Sampling Inspection

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Adrienne E. Pennington
Collected By: J. Parrish
Sampling Agency: FDEP

Field Report Prepared By: Amy Kalmbacher
Send Final Report To: Heather Webber; Max Schwartz

Lab ID *	Location			Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID: STARKE WWTF EFD1 GRAB			☐ Comp ☒ Grab Date 2/13/2015 Time 0955	Date Time	A
	Matrix (include type e.g. Salt, (Fresh), etc)	Temp (C) 17.97	pH 7.03	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.45	Storet Station Number
				Sample Depth ☒ m 0.1 ☐ ft	0.29 ☒ Salinity (PPTh) 604 ☒ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments		

Lab ID *	Location			Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			☐ Comp ☐ Grab Date Time	Date Time	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
				Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments		

Lab ID *	Location			Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			☐ Comp ☐ Grab Date Time	Date Time	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
				Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments		

Lab ID *	Location			Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			☐ Comp ☐ Grab Date Time	Date Time	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
				Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	2/13/2015 12:00	FedEx						

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2.14.15 0900
C. Reichert

cooler 1 - 1 bottle 0.3°C
cooler 2 - 2 bottles 0.4°C

Appendix E

Physical/Chemical and Habitat Assessment field sheets

DEP-SOP-001/01: Form FD 9000-3 (3/8/13)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID _____ ORG ID _____ LATITUDE _____

COUNTY Bradford STORET # _____ LONGITUDE _____

DATE 2/9/15 TIME 1015 SAMPLING AGENCY _____

SITE NAME Alligator Ct below Starke WWTP POD

FIELD ID/NAME _____ RECEIVING BODY OF WATER _____

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

Landscape Development Intensity (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: 10

Hydrologic Modification Score (per FT 3101)

High Water Mark: 1.5 (m) + 0.3 (above present water level) = 1.8 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

m wide

m/s 0.25 m/s m/s

m deep 0.3 m deep m deep

Artificially Channelized: ☐ No ☐ Mostly recovered, more sinuous ☑ Some recovery ☐ Recent, severe

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):

Sediment Deposition

	None	Slight	Moderate	Severe
Sand Smothering:	☐	☐	☐	☒
Silt Smothering:	☐	☐	☐	☒
Algae Smothering:	☐	☐	☒	☐

SUBSTRATE TYPE

Assessment Tool: ☐ SCI ☒ RPS ☒ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	C1		
Undercut Banks / Roots	C1		
Leaf Packs or Mat	C1		
Aquatic Vegetation	L2m²		
Rock or Shell Rubble..			
Sand.....			
Mud / Muck / Silt			
Other			
Other			

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton:	☐	☐	☒	☐
Fish:	☐	☒	☐	☐
Aquatic Plants:	☒	☐	☐	☐
Iron/Sulfur Bacteria:	☐	☒	☐	☐

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:								
Mid:	0.15	13.8	8.3	90.9	9.4	212	0.1	☒ VOB
Bottom								

Meter ID: QUANTA #1 DEP# 121338

Water Odors Normal ☐ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☒ Eff.

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 ☐ Estuary ☐ Other(Specify) ☐ Ditch

WEATHER CONDITIONS / NOTES: Overcast Light Sprinkle 60°F

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

SAMPLING TEAM JParrish P. O'Connor **SIGNATURE:** _____ **DATE:** 02/09/15

Revision Date: March 8, 2013

DEP-SOP-001/01: Form FD 9000-3 (3/8/13)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID _____ ORG ID _____ LATITUDE _____

COUNTY Brad Ford STORET # _____ LONGITUDE _____

DATE 02/09/15 TIME 1105 SAMPLING AGENCY DEAR

SITE NAME Alligator Creek Above Starke WWTP POD

FIELD ID/NAME _____ RECEIVING BODY OF WATER _____

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

Landscape Development Intensity (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: 0 Right Bank: 4

Hydrologic Modification Score (per FT 3101)

High Water Mark: 1.0 (m) + 0.2 (above present water level) = 1.2 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

4-5 m wide

m/s	0.25 m/s	m/s
m deep	m deep	m deep
	0.2	

Artificially Channelized: ☐ No ☒ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

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):

Sediment Deposition

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)	C1		
Undercut Banks / Roots	C1		
Leaf Packs or Mat	C1		
Aquatic Vegetation	C2m²	—	—
Rock or Shell Rubble			
Sand			
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp (°C)	pH (SU)	D.O. (MG/L)	D.O. (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:								
Mid:								☐ VOB
Bottom								

Meter ID: _____

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 ☐

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton:	☐	☐	☒	☐
Fish:	☐	☒	☐	☐
Aquatic Plants:	☐	☒	☐	☐
Iron/Sulfur Bacteria:	☐	☒	☐	☐

System Type: Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☒ Ditch

WEATHER CONDITIONS / NOTES:

Overcast Light Sprinkle 60° F

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

SAMPLING TEAM J Parrish P O'Connor SIGNATURE: _____ DATE: 02/09/15

Revision Date: March 8, 2013

STARKE FY15 Form FD 9000-25 FDEP Rapid Periphyton Survey (DEP SOP FS 7230) Revised 10/11/11

Site: Alligator Cr. below POD | County: Bradford | Date: 2/9/15 | Investigators: SB PO

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (0 - 6)	Canopy Cover (# shaded)
0	1	1	
	2	1	
	3	0	
	4	0	
	5	X	36
	6	X	
	7	X	
	8	0	
	9	0	
10	1	3	
	2	1	
	3	0	
	4	2	
	5	2	52
	6	1	
	7	1	
	8	1	
	9	0	
20	1	3	
	2	2	
	3	1	
	4	3	
	5	3	44
	6	2	
	7	0	
	8	2	
	9	3	
30	1	1	
	2	0	
	3		
	4		
	5		44
	6		
	7		
	8	↓	
	9	↓	
40	1	1	
	2	0	
	3		
	4		
	5		48
	6		
	7		
	8	↓	
	9	1	
50	1	0	
	2	2	
	3	2	
	4	2	
	5	0	48
	6		
	7		
	8		
	9	↓	
60	1	0	
	2	2	
	3	2	
	4	2	
	5	1	40
	6	1	
	7	1	
	8	2	
	9	0	
70	1	4	
	2	4	
	3	4	
	4	4	
	5	5	90
	6	0	
	7	1	
	8	1	
	9	1	
80	1	3	
	2	1	
	3		
	4		
	5		90
	6		
	7		
	8	↓	
	9	3	
90	1	3	
	2	3	
	3	1	
	4	1	
	5	1	88
	6	1	
	7	1	
	8	1	
	9	3	
100	1	4	
	2	4	
	3	4	
	4	4	
	5	4	88
	6	4	
	7	4	
	8	4	
	9	4	

Check accompanying data collected at same site/date.	
Water sample	
Algal mat sample	
SCI/Biorecon (circle 1)	
Habitat Assessment	
RQ:	

Algal Thickness Rank	
0	rough, no algae
1	≤ or =0.5 mm or slimy
2	>0.5 - 1 mm
3	>1mm - 6 mm
4	>6 - 20 mm
5	>20 mm - 10 cm
6	>10 cm

Record an "X" for points where algae is not sampled because the substrate cannot be seen or reached with the hand. If the cell is left blank, data managers will assume point was not evaluated.

Record canopy cover as the NUMBER OF SMALL DENSIOMETER SQUARES (OUT OF 96) THAT HAVE CANOPY COVER. Measure while facing upstream.

Collect an 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%.

Form FD 9000-25 FDEP Rapid Periphyton Survey (DEP SOP FS 7230) Revised 10/11/11

te: Alligator Cr Above POD | County: Bradford | Date: 2/09/15 | Investigators: JK, PO

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (0 - 6)	Canopy Cover (# shaded)
0	1	1	
	2	1	
	3	1	
	4	X	
	5	X	0
	6	X	
	7	no 54	
	8	2	
	9	2	
10	1	2	
	2	2	
	3	X	
	4	X	
	5	X	5
	6	1	
	7	1	
	8	1	
	9	1	
20	1	1	
	2	1	
	3	1	
	4	1	
	5	1	45
	6	1	
	7	1	
	8	0	
	9	0	
30	1	2	
	2	2	
	3	X	
	4	X	
	5	X	60
	6	1	
	7	1	
	8	2	
	9	2	
40	1	2	
	2	2	
	3	X	
	4	X	
	5	X	56
	6	X	
	7	X	
	8	2	
	9	3	
50	1	2	
	2	1	
	3	0	
	4	0	
	5	0	90
	6	X	
	7	X	
	8	0	
	9	0	
60	1	3	
	2	1	
	3	X	
	4	0	
	5	0	52
	6	0	
	7	0	
	8	0	
	9	2	
70	1	2	
	2	1	
	3	X	
	4	0	
	5	0	95
	6	0	
	7	0	
	8	X	
	9	1	
80	1	0	
	2	1	
	3	1	
	4	1	
	5	1	80
	6	1	
	7	1	
	8	X	
	9	X	
90	1	1	
	2	0	
	3	0	
	4	0	
	5	0	28
	6	0	
	7	X	
	8	X	
	9	1	
100	1	0	
	2	0	
	3	0	
	4	0	
	5	0	68
	6	0	
	7	0	
	8	0	
	9	2	

Check accompanying data collected at same site/date.	
Water sample	
Algal mat sample	
SCI/Biorecon (circle 1)	
Habitat Assessment	
RQ.	

Algal Thickness Rank	
0	rough, no algae
1	< or =0.5 mm or slimy
2	>0.5 - 1 mm
3	>1mm - 6 mm
4	>6 - 20 mm
5	>20 mm - 10 cm
6	>10 cm

Record an "X" for points where algae is not sampled because the substrate cannot be seen or reached with the hand. If the cell is left blank, data managers will assume point was not evaluated.

Record canopy cover as the NUMBER OF SMALL DENSIOMETER SQUARES (OUT OF 96) THAT HAVE CANOPY COVER. Measure while facing upstream.

Collect an 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%.

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 2/9/15	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: Bradford	LOCATION: Alligator Creek below Stake Pond	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 5	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 2	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 15	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 6 Primary Score 28	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** 5	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 3 Left Bank 3	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 7 Left Bank 3	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 2 Left Bank 3 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

59 **TOTAL SCORE**

Date: 2/9/15	Analyst: Jeremy Parmer	Signature: Jeremy Parmer

Form FD 9000-5 Revision Date: December 19, 2011

DEP-SOP-001/01: Form FD 9000-5

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 2/9/15	RECEIVING BODY OF WATER:
REMARKS	COUNTY: Bradford	LOCATION: Alligator upstream of pod	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 5	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 2	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 15	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 6 Primary Score 28	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** 6	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 3 Left Bank 2	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 4 Left Bank 1	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 5 Left Bank 1 Secondary Score 22	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)

50 **TOTAL SCORE**

Date: 2/9/15	Analyst: Jeremy Pace	Signature: Jeremy Pace

Form FD 9000-5 Revision Date: December 19, 2011

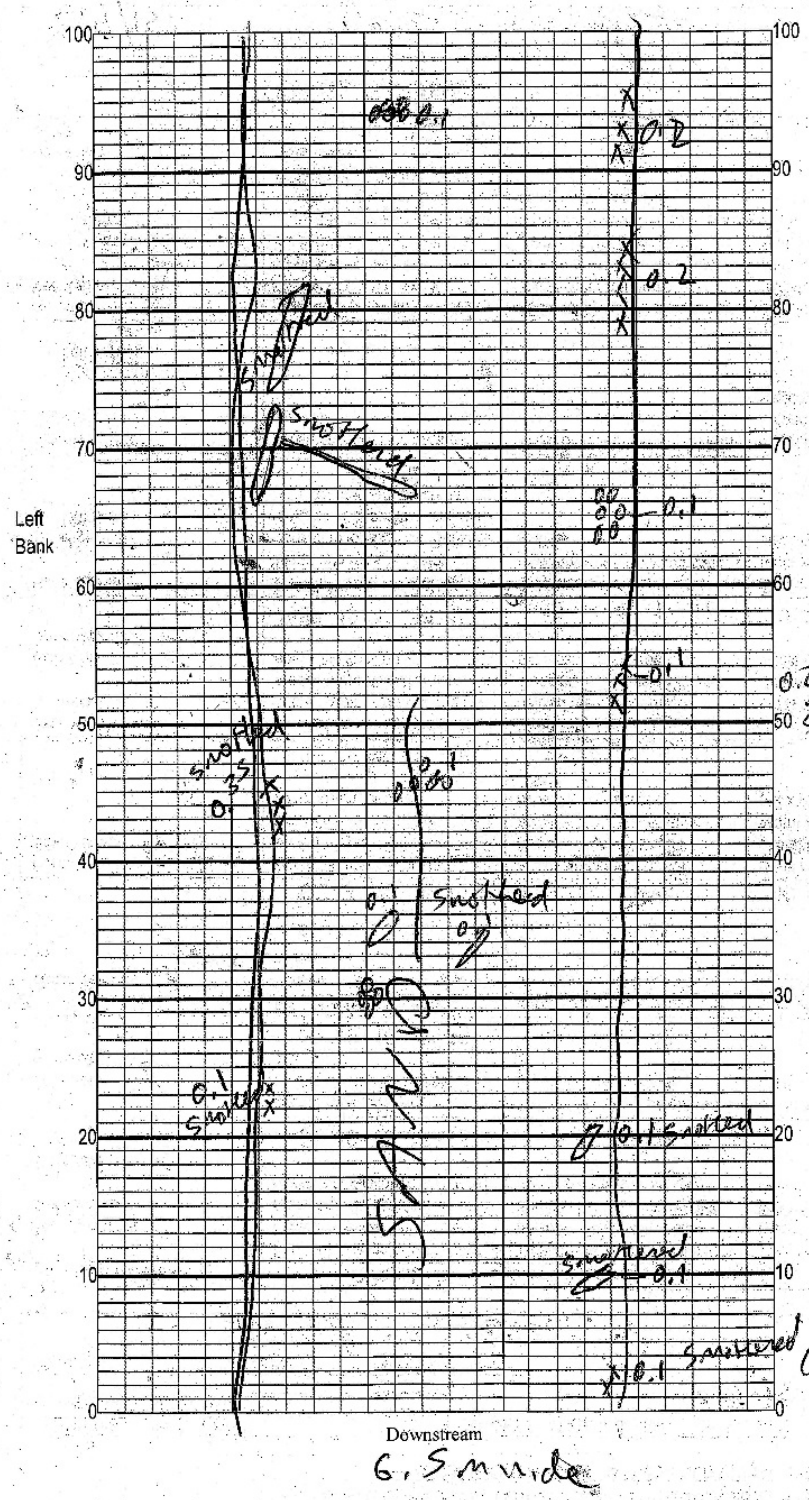
DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

1015

Location: Downstream Allys. Cr.

Date: 2/9/15

Sampler: JP/PO



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

100 m: Latitude	
Longitude	
0 m: Latitude	
Longitude	
Substrates: Code key, draw proportionate habitat abundance.	%
Snags	<1
Roots/undercut banks	<1
Leaf Packs (or mats)	<1
Aquatic Macrophytes	
Pools	total # observed = ____ # range expected = ____
Average width ____ m	
Average depth ____ m	
Velocity measured at ____ meter mark.	
WQ & chemistry taken at ____ 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:

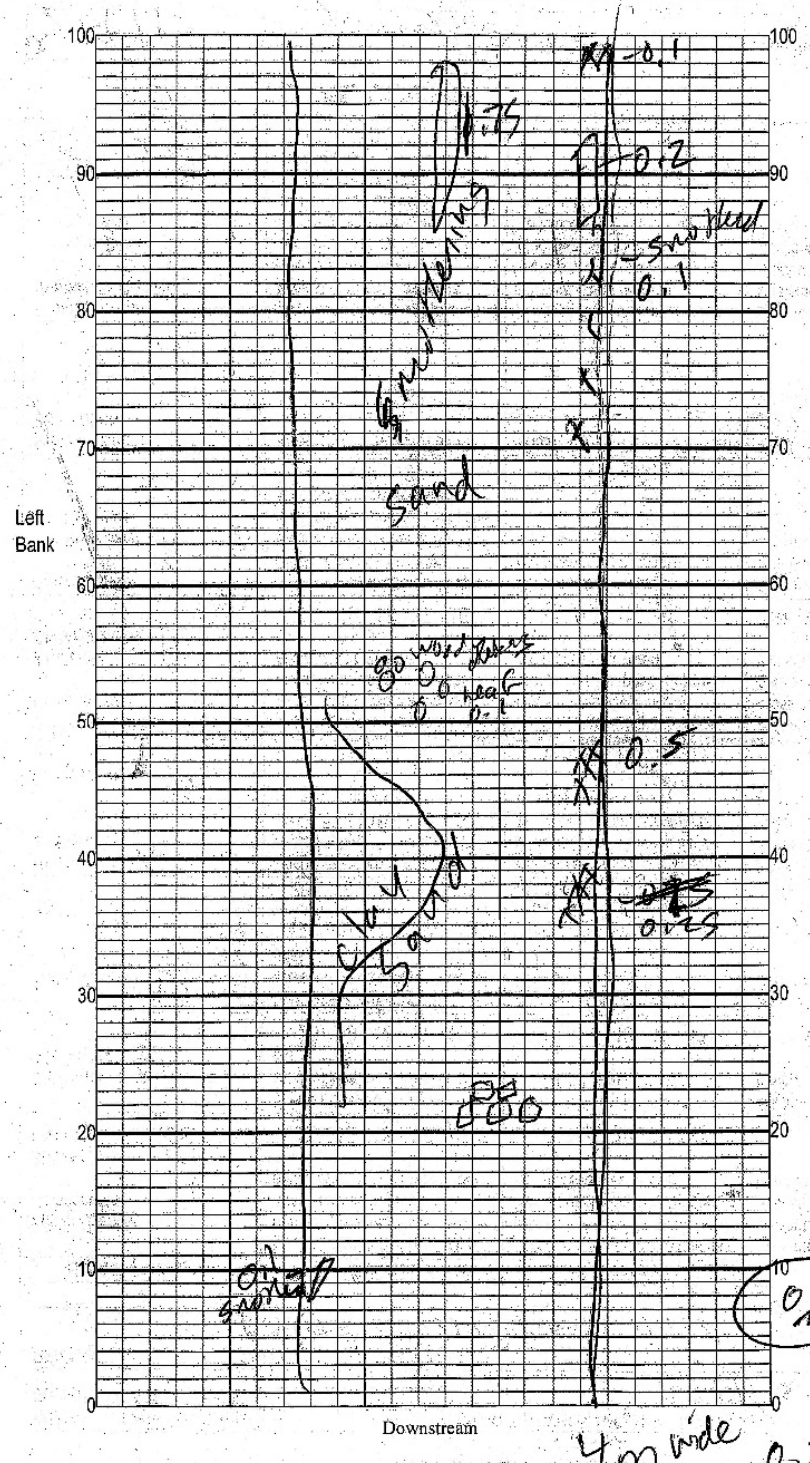
X = 0.85
0 = 0.1 + 0.1 + 0.1 = 0.3
0 = 0.4
0.4 depth
@ 25 m

600

Revision Date: June 2, 2011

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

7105



Location: Alligator Upstream

Date: 2/9/15

Sampler: JP

100 m: Latitude _____
Longitude _____

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

//	Snags	<1
xx	Roots/undercut banks	<1
OO	Leaf Packs (or mats)	<1
	Aquatic Macrophytes	____
	_____	____
	_____	____
	Pools	total # observed = ____ # range expected = ____

Average width _____ m
Average depth _____ m

Velocity measured at _____ meter mark.

WQ & chemistry taken at _____ 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:
X = 1m
OO = 0.1
// = 2m
0.25 0.3 m sec
in sec,

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

Revision Date: June 2, 2011

Appendix F

Chemical analysis of effluent and receiving water

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 9:45	Effluent Grab	AGP/LN	Algal Growth Potential	387	mg DryWt/L	0.3	0.9
02/09/15 9:45	Effluent Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	4.6	mg/L	0.2	2
02/09/15 9:45	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.2 I	ug/L	0.55	1.7
02/09/15 9:45	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
02/09/15 9:45	Effluent Grab	Overflow	Fecal Coliforms-Membrane Filter	2.0 B	cfu/100 mL	1.6	1.6
02/09/15 9:45	Effluent Grab	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100 J	NOEC		
02/09/15 9:45	Effluent Grab	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 LJ	IC25		
02/09/15 9:45	Effluent Grab	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100 J	NOEC		
02/09/15 9:45	Effluent Grab	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 LJ	IC25		
02/09/15 9:45	Effluent Grab	Metals	Lead	0.20 U	ug/L	0.2	0.8
02/09/15 9:45	Effluent Grab	Metals	Hardness	165	mg/L	0.35	1.4
02/09/15 9:45	Effluent Grab	Metals	Zinc	42	ug/L	5	20
02/09/15 9:45	Effluent Grab	Metals	Silver	0.025 U	ug/L	0.025	0.1
02/09/15 9:45	Effluent Grab	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
02/09/15 9:45	Effluent Grab	Metals	Iron	140	ug/L	30	120
02/09/15 9:45	Effluent Grab	Metals	Arsenic	0.45 I	ug/L	0.25	1
02/09/15 9:45	Effluent Grab	Metals	Sodium	46.5	mg/L	0.5	2
02/09/15 9:45	Effluent Grab	Metals	Aluminum	16 I	ug/L	5	20
02/09/15 9:45	Effluent Grab	Metals	Selenium	0.36 I	ug/L	0.2	0.8
02/09/15 9:45	Effluent Grab	Metals	Nickel	1.09	ug/L	0.25	1
02/09/15 9:45	Effluent Grab	Metals	Copper	3.09	ug/L	0.5	1
02/09/15 9:45	Effluent Grab	Metals	Calcium	45.5	mg/L	0.075	0.3
02/09/15 9:45	Effluent Grab	Metals	Chromium	0.30 U	ug/L	0.3	1.2
02/09/15 9:45	Effluent Grab	Metals	Potassium	7.3	mg/L	0.3	1.2
02/09/15 9:45	Effluent Grab	Metals	Magnesium	12.4	mg/L	0.04	0.16
02/09/15 9:45	Effluent Grab	Nutrients	Chloride	60 A	mg Cl/L	2	5
02/09/15 9:45	Effluent Grab	Nutrients	Color (true)	23	PCU	2.5	6
02/09/15 9:45	Effluent Grab	Nutrients	NO2NO3-N	13	mg N/L	0.4	1
02/09/15 9:45	Effluent Grab	Nutrients	Alkalinity	117 A	mg CaCO3/L	0.65	2.5
02/09/15 9:45	Effluent Grab	Nutrients	Fluoride	0.42	mg F/L	0.035	0.1
02/09/15 9:45	Effluent Grab	Nutrients	Kjeldahl Nitrogen	5.3	mg N/L	0.16	0.4
02/09/15 9:45	Effluent Grab	Nutrients	TSS	4 I	mg/L	2	10
02/09/15 9:45	Effluent Grab	Nutrients	Turbidity	3.7	NTU	0.1	0.1
02/09/15 9:45	Effluent Grab	Nutrients	Ammonia-N	3.9	mg N/L	0.2	0.5
02/09/15 9:45	Effluent Grab	Nutrients	Total-P	2.1	mg P/L	0.025	0.25
02/09/15 9:45	Effluent Grab	Nutrients	Organic Carbon	9.5 A	mg C/L	1	2
02/09/15 9:45	Effluent Grab	Nutrients	O-Phosphate-P	1.6	mg P/L	0.08	0.2
02/09/15 9:45	Effluent Grab	Nutrients	Sulfate	23 A	mg SO4/L	2	5

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 9:45	Effluent Grab	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
02/09/15 9:45	Effluent Grab	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
02/09/15 9:45	Effluent Grab	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Prometon	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Hexazinone	0.030 UJ	ug/L	0.03	0.12
02/09/15 9:45	Effluent Grab	Pesticides	Norflurazon	0.060 U	ug/L	0.06	0.24
02/09/15 9:45	Effluent Grab	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
02/09/15 9:45	Effluent Grab	Pesticides	Sucralose	4.9	ug/L	0.1	0.5
02/09/15 9:45	Effluent Grab	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
02/09/15 9:45	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Azinphos Methyl	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Butylate	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Metolachlor	0.060 U	ug/L	0.06	0.24
02/09/15 9:45	Effluent Grab	Pesticides	Naled	0.040 U	ug/L	0.04	0.16
02/09/15 9:45	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
02/09/15 9:45	Effluent Grab	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Acetaminophen	0.0020 U	ug/L	0.002	0.01
02/09/15 9:45	Effluent Grab	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Demeton	0.024 U	ug/L	0.024	0.096
02/09/15 9:45	Effluent Grab	Pesticides	Diazinon	0.010 UJ	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Carbamazepine	0.15	ug/L	0.002	0.01
02/09/15 9:45	Effluent Grab	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
02/09/15 9:45	Effluent Grab	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Pesticides	Metalaxyl	0.040 UJ	ug/L	0.04	0.16
02/09/15 9:45	Effluent Grab	Pesticides	Metribuzin	0.020 U	ug/L	0.02	0.08
02/09/15 9:45	Effluent Grab	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.7
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	58
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96 U	ug/L	0.96	3.8

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.7
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Phenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.6 U	ug/L	9.6	38
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzidine	96 U	ug/L	96	380
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	58
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.7
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.7
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	1,4-Dioxane	0.4	ug/L	0.02	0.1
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.7
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.96 U	ug/L	0.96	3.8

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Isophorone	0.96 U	ug/L	0.96	3.8
02/09/15 9:45	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.77
02/09/15 9:45	Effluent Grab	Nutrients	pH	7.01			
02/09/15 9:45	Effluent Grab	Nutrients	Specific Conductance	595	umhos/cm		
02/09/15 9:45	Effluent Grab	Nutrients	Dissolved Oxygen	7.8	mg/L		
02/09/15 9:45	Effluent Grab	Nutrients	Temperature	19.15	C		
02/09/15 9:45	Effluent Grab	Nutrients	Sample Depth	0.09	m		
02/11/15 9:20	Effluent Grab	Nutrients	Specific Conductance	649	umhos/cm		
02/11/15 9:20	Effluent Grab	Nutrients	Temperature	18.37	C		
02/11/15 9:20	Effluent Grab	Nutrients	pH	6.76			
02/11/15 9:20	Effluent Grab	Nutrients	Sample Depth	0.12	m		
02/11/15 9:20	Effluent Grab	Nutrients	Dissolved Oxygen	8.27	mg/L		
02/09/15 10:40	Test Site	AGP/LN	Algal Growth Potential	0.740 I	mg DryWt/L	0.3	0.9
02/09/15 10:40	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2 I	mg/L	0.2	2
02/09/15 10:40	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 U	ug/L	0.55	1.7
02/09/15 10:40	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
02/09/15 10:40	Test Site	Overflow	Fecal Coliforms-Membrane Filter	84	cfu/100 mL	2	2
02/09/15 10:40	Test Site	Metals	Aluminum	506	ug/L	5	20
02/09/15 10:40	Test Site	Metals	Lead	0.35 I	ug/L	0.2	0.8
02/09/15 10:40	Test Site	Metals	Potassium	0.92 I	mg/L	0.3	1.2
02/09/15 10:40	Test Site	Metals	Copper	0.89 I	ug/L	0.5	1
02/09/15 10:40	Test Site	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
02/09/15 10:40	Test Site	Metals	Iron	630	ug/L	30	120
02/09/15 10:40	Test Site	Metals	Silver	0.025 U	ug/L	0.025	0.1
02/09/15 10:40	Test Site	Metals	Chromium	0.69 I	ug/L	0.3	1.2
02/09/15 10:40	Test Site	Metals	Magnesium	1.95	mg/L	0.04	0.16
02/09/15 10:40	Test Site	Metals	Calcium	19.6	mg/L	0.075	0.3
02/09/15 10:40	Test Site	Metals	Hardness	57.1	mg/L	0.35	1.4
02/09/15 10:40	Test Site	Metals	Sodium	10.2	mg/L	0.5	2
02/09/15 10:40	Test Site	Metals	Nickel	0.83 I	ug/L	0.25	1
02/09/15 10:40	Test Site	Metals	Selenium	0.20 U	ug/L	0.2	0.8
02/09/15 10:40	Test Site	Metals	Arsenic	0.28 I	ug/L	0.25	1
02/09/15 10:40	Test Site	Metals	Zinc	5.7 I	ug/L	5	20
02/09/15 10:40	Test Site	Nutrients	Chloride	34 A	mg Cl/L	0.2	0.5
02/09/15 10:40	Test Site	Nutrients	Turbidity	4.3	NTU	0.1	0.1
02/09/15 10:40	Test Site	Nutrients	Alkalinity	16	mg CaCO3/L	0.65	2.5
02/09/15 10:40	Test Site	Nutrients	Sulfate	11:00 AM	mg SO4/L	0.2	0.5
02/09/15 10:40	Test Site	Nutrients	Color (true)	76	PCU	2.5	6
02/09/15 10:40	Test Site	Nutrients	Total-P	0.02	mg P/L	0.002	0.005
02/09/15 10:40	Test Site	Nutrients	Kjeldahl Nitrogen	0.35	mg N/L	0.08	0.2
02/09/15 10:40	Test Site	Nutrients	TSS	3 I	mg/L	2	10
02/09/15 10:40	Test Site	Nutrients	NO2NO3-N	0.018	mg N/L	0.004	0.01
02/09/15 10:40	Test Site	Nutrients	Ammonia-N	0.022	mg N/L	0.002	0.005

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:40	Test Site	Nutrients	Fluoride	0.049 I	mg F/L	0.035	0.1
02/09/15 10:40	Test Site	Nutrients	O-Phosphate-P	0.007 I	mg P/L	0.004	0.01
02/09/15 10:40	Test Site	Nutrients	Organic Carbon	9.4	mg C/L	0.5	1
02/09/15 10:40	Test Site	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
02/09/15 10:40	Test Site	Priority Organic Pollutants	2-Chlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Isophorone	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Phenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,4-Dimethylphenol	9.7 U	ug/L	9.7	39
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 U	ug/L	39	160
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Di-n-butyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Hexachlorobenzene	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Pentachlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	ug/L	15	58
02/09/15 10:40	Test Site	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	58
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	2-Nitrophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzidine	97 U	ug/L	97	390
02/09/15 10:40	Test Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	2-Chloronaphthalene	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.8
02/09/15 10:40	Test Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Dimethyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.8
02/09/15 10:40	Test Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.8
02/09/15 10:40	Test Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.8

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:40	Test Site	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.8
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Priority Organic Pollutants	Diethyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:40	Test Site	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
02/09/15 10:40	Test Site	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:40	Test Site	Nutrients	Dissolved Oxygen	9.5	mg/L		
02/09/15 10:40	Test Site	Nutrients	pH	7.81			
02/09/15 10:40	Test Site	Nutrients	Specific Conductance	182	umhos/cm		
02/09/15 10:40	Test Site	Nutrients	Sample Depth	0.2	m		
02/09/15 10:40	Test Site	Nutrients	Temperature	13.1	C		
02/09/15 10:50	Control Site	AGP/LN	Algal Growth Potential	1.11	mg DryWt/L	0.3	0.9
02/09/15 10:50	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 U	ug/L	0.55	1.7
02/09/15 10:50	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.3 I	mg/L	0.2	2
02/09/15 10:50	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
02/09/15 10:50	Control Site	Overflow	Fecal Coliforms-Membrane Filter	110	cfu/100 mL	2	2
02/09/15 10:50	Control Site	Metals	Lead	0.31 I	ug/L	0.2	0.8
02/09/15 10:50	Control Site	Metals	Magnesium	1.96	mg/L	0.04	0.16
02/09/15 10:50	Control Site	Metals	Nickel	0.80 I	ug/L	0.25	1
02/09/15 10:50	Control Site	Metals	Silver	0.025 U	ug/L	0.025	0.1
02/09/15 10:50	Control Site	Metals	Sodium	10.2	mg/L	0.5	2
02/09/15 10:50	Control Site	Metals	Chromium	0.71 I	ug/L	0.3	1.2
02/09/15 10:50	Control Site	Metals	Iron	650	ug/L	30	120
02/09/15 10:50	Control Site	Metals	Arsenic	0.28 I	ug/L	0.25	1
02/09/15 10:50	Control Site	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
02/09/15 10:50	Control Site	Metals	Copper	0.50 U	ug/L	0.5	1
02/09/15 10:50	Control Site	Metals	Hardness	57.3	mg/L	0.35	1.4
02/09/15 10:50	Control Site	Metals	Calcium	19.7	mg/L	0.075	0.3
02/09/15 10:50	Control Site	Metals	Zinc	5.5 I	ug/L	5	20
02/09/15 10:50	Control Site	Metals	Selenium	0.22 I	ug/L	0.2	0.8
02/09/15 10:50	Control Site	Metals	Potassium	0.91 I	mg/L	0.3	1.2
02/09/15 10:50	Control Site	Metals	Aluminum	520	ug/L	5	20
02/09/15 10:50	Control Site	Nutrients	Turbidity	4.6	NTU	0.1	0.1
02/09/15 10:50	Control Site	Nutrients	Organic Carbon	9.4	mg C/L	0.5	1

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:50	Control Site	Nutrients	Chloride	34	mg Cl/L	0.2	0.5
02/09/15 10:50	Control Site	Nutrients	Fluoride	0.047 I	mg F/L	0.035	0.1
02/09/15 10:50	Control Site	Nutrients	O-Phosphate-P	0.007 I	mg P/L	0.004	0.01
02/09/15 10:50	Control Site	Nutrients	Sulfate	11	mg SO4/L	0.2	0.5
02/09/15 10:50	Control Site	Nutrients	Color (true)	75	PCU	2.5	6
02/09/15 10:50	Control Site	Nutrients	Ammonia-N	0.023	mg N/L	0.002	0.005
02/09/15 10:50	Control Site	Nutrients	Alkalinity	16 A	mg CaCO3/L	0.65	2.5
02/09/15 10:50	Control Site	Nutrients	NO2NO3-N	0.019	mg N/L	0.004	0.01
02/09/15 10:50	Control Site	Nutrients	TSS	2 I	mg/L	2	10
02/09/15 10:50	Control Site	Nutrients	Total-P	0.021	mg P/L	0.002	0.005
02/09/15 10:50	Control Site	Nutrients	Kjeldahl Nitrogen	0.37	mg N/L	0.08	0.2
02/09/15 10:50	Control Site	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
02/09/15 10:50	Control Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.8
02/09/15 10:50	Control Site	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Dimethyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.8
02/09/15 10:50	Control Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,4-Dimethylphenol	9.7 U	ug/L	9.7	39
02/09/15 10:50	Control Site	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	58
02/09/15 10:50	Control Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Diethyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 U	ug/L	39	160
02/09/15 10:50	Control Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.8
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzidine	97 U	ug/L	97	390
02/09/15 10:50	Control Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.8
02/09/15 10:50	Control Site	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
02/09/15 10:50	Control Site	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:50	Control Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Phenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Di-n-butyl phthalate	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Isophorone	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.8
02/09/15 10:50	Control Site	Priority Organic Pollutants	Pentachlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	ug/L	15	58
02/09/15 10:50	Control Site	Priority Organic Pollutants	2-Chlorophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	2-Nitrophenol	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.78
02/09/15 10:50	Control Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
02/09/15 10:50	Control Site	Priority Organic Pollutants	Hexachlorobenzene	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
02/09/15 10:50	Control Site	Priority Organic Pollutants	2-Chloronaphthalene	0.97 U	ug/L	0.97	3.9
02/09/15 10:50	Control Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
02/09/15 10:50	Control Site	Nutrients	Dissolved Oxygen	9.64	mg/L		
02/09/15 10:50	Control Site	Nutrients	pH	7.48			
02/09/15 10:50	Control Site	Nutrients	Temperature	13.11	C		
02/09/15 10:50	Control Site	Nutrients	Sample Depth	0.2	m		
02/09/15 10:50	Control Site	Nutrients	Specific Conductance	182	umhos/cm		
02/09/15 10:05	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
02/09/15 10:05	Field Blank	Metals	Chromium	0.30 U	ug/L	0.3	1.2
02/09/15 10:05	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
02/09/15 10:05	Field Blank	Metals	Zinc	5.0 U	ug/L	5	20
02/09/15 10:05	Field Blank	Metals	Copper	0.50 U	ug/L	0.5	1
02/09/15 10:05	Field Blank	Metals	Nickel	0.25 U	ug/L	0.25	1
02/09/15 10:05	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
02/09/15 10:05	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
02/09/15 10:05	Field Blank	Metals	Aluminum	5.0 U	ug/L	5	20
02/09/15 10:05	Field Blank	Metals	Iron	30 U	ug/L	30	120
02/09/15 10:05	Field Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
02/09/15 10:05	Field Blank	Metals	Silver	0.025 U	ug/L	0.025	0.1
02/09/15 10:05	Field Blank	Metals	Arsenic	0.25 U	ug/L	0.25	1
02/09/15 10:05	Field Blank	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
02/09/15 10:05	Field Blank	Metals	Lead	0.20 U	ug/L	0.2	0.8

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:05	Field Blank	Metals	Hardness	0.35 U	mg/L	0.35	1.4
02/09/15 10:05	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
02/09/15 10:05	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
02/09/15 10:05	Field Blank	Nutrients	Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
02/09/15 10:05	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
02/09/15 10:05	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
02/09/15 10:05	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
02/09/15 10:05	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
02/09/15 10:05	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
02/09/15 10:05	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
02/09/15 10:05	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
02/09/15 10:05	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
02/09/15 10:05	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
02/09/15 10:05	Field Blank	Pesticides	Mevinphos	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Naled	0.039 U	ug/L	0.039	0.16
02/09/15 10:05	Field Blank	Pesticides	Atrazine	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Bromacil	0.039 U	ug/L	0.039	0.16
02/09/15 10:05	Field Blank	Pesticides	Acetaminophen	0.0020 U	ug/L	0.002	0.01
02/09/15 10:05	Field Blank	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
02/09/15 10:05	Field Blank	Pesticides	Butylate	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Pesticides	Ethion	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Ethoprop	0.0049 U	ug/L	0.0049	0.02
02/09/15 10:05	Field Blank	Pesticides	Norflurazon	0.029 U	ug/L	0.029	0.12
02/09/15 10:05	Field Blank	Pesticides	Parathion Methyl	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Carbamazepine	0.0020 U	ug/L	0.002	0.01
02/09/15 10:05	Field Blank	Pesticides	Malathion	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Pesticides	Atrazine Desethyl	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Atrazine Desisopropyl	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Metalaxyl	0.039 UJ	ug/L	0.039	0.16
02/09/15 10:05	Field Blank	Pesticides	Metribuzin	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Pesticides	Prometon	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Pesticides	Phorate	0.0049 U	ug/L	0.0049	0.02
02/09/15 10:05	Field Blank	Pesticides	Demeton	0.024 U	ug/L	0.024	0.094
02/09/15 10:05	Field Blank	Pesticides	Diazinon	0.0098 UJ	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Pesticides	Simazine	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Fenamiphos	0.029 U	ug/L	0.029	0.12
02/09/15 10:05	Field Blank	Pesticides	Metolachlor	0.059 U	ug/L	0.059	0.24
02/09/15 10:05	Field Blank	Pesticides	Hexazinone	0.029 UJ	ug/L	0.029	0.12
02/09/15 10:05	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Alachlor	0.059 U	ug/L	0.059	0.24

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:05	Field Blank	Pesticides	Disulfoton	0.0049 U	ug/L	0.0049	0.02
02/09/15 10:05	Field Blank	Pesticides	Ametryn	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Fonofos	0.0098 U	ug/L	0.0098	0.039
02/09/15 10:05	Field Blank	Pesticides	Azinphos Methyl	0.020 U	ug/L	0.02	0.079
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Acenaphthene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzidine	100 U	ug/L	100	400
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8.1
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.0 U	ug/L	2	8.1
02/09/15 10:05	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Naphthalene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10 U	ug/L	10	40
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Hexachloroethane	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Isophorone	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Phenanthrene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Pentachlorophenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Pyrene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	ug/L	15	61
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2-Nitrophenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0 U	ug/L	2	8.1

Date Sampled	Location	SCH Group	Component	Result	Units	MDL	PQL
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Phenol	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40 U	ug/L	40	160
02/09/15 10:05	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0 U	ug/L	2	8.1
02/09/15 10:05	Field Blank	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	61
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Anthracene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.1 U	ug/L	2.1	8.5
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Chrysene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.0 U	ug/L	1	4
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Fluoranthene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Fluorene	0.20 U	ug/L	0.2	0.81
02/09/15 10:05	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.0 U	ug/L	3	12
02/09/15 10:05	Field Blank	Priority Organic Pollutants	1,4-Dioxane	0.1	ug/L	0.02	0.1
02/09/15 10:05	Field Blank	Priority Organic Pollutants	2-Chlorophenol	1.0 U	ug/L	1	4

Appendix G

Toxicological results

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Starke WWTP
Address: 602 Edwards Road
County: Bradford
NPDES Permit #: FL 0028126
Contact/District: Sharon Pitz / NED

LIMS entry: 2-24-15 MF verified: CM 2.24.15

Diluent/ Batch: MHWCD / 2-5-15 Test Days Used: 0 – 5
MHWCD / _____ Test Days Used: _____

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: 2.10.15
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 1-8-15 11-21-14
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2015-02-10-14	1673652	2.9.15/0945	2.10.15/1009
Test Day 2	2	TLH-2015-02-12-93	1674660	2.11.15/0920	2.12.15/1035
Test Day 4	3	TLH-2015-02-16-02	1675382	2.13.15/0955	2.14.15/0900

Batch #	2.5.15		NA	NA	NA			
Water Quality Parameters	MHWCD	MHWCD	Sample 1	Sample 2	Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	0.33	*NM	NM		—	CR
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	1.40		CR/cm	CM/CR
Alkalinity (mg/L as $CaCO_3$):	68		132	111	111		CR/cm	CM/CR
Hardness (mg/L as $CaCO_3$):	81		162	159	154		CR/cm	CM/CR
Total Ammonia (mg/L as N):	<0.017		4.22	1.265	0.099		MF	CR
Conductivity: µmhos mmhos:	289		584	625	609		cm/CR	CR/CM
Salinity (ppth):								

*NM = not measured

Test Incubated in: Incubator #: 5

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min. 25.0 max. 26.3
Room B246 min. 24.0 max. 24.9
Test min. 24.0 max. 25.9

Loaded by: CM

Test Replicates	Loaded from culture vial
1	A2
2	A24
3	B3
4	B21
5	B23
6	C18
7	A1
8	A5
9	C3
10	C27

Interrupted Dose Response ↓ Concentration Removed

225% 36.7% 25% 50% 100% 100% 80% 32.5%

Results	
Control % CV:	22.5
Dunnetts PMSD:	36.7
Reproduction NOEC:	100 %
Reproduction LOEC:	>100 %
Survival NOEC:	100 %
Survival LOEC:	>100
ICP_{20}:	60.9
ICP_{25}:	>100 %

Investigators' signatures

	Initials
Cassidy Reichert	CR
Diane Power	DP

REVIEWER Liz Miller

Comments: Results showed and interrupted dose response. This was thought to be a type I error; no results reported excluding the interrupted response. MF 2/20/15

(2-14-15) Third sample received chlorinated - Dechlorinated with Sodium Thiosulfate used in tests. Verbal confirmation – Facility had switched to reuse (no surface water discharge).

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Starke WWTP

LIMS Sample #: 1673652 for lab sample #1

Start Date: 2-10-15 Time: 1115

End Date: 2-16-15 Time: 1000

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	2	3	0	6	5	6	6	4	6	44	10	4.4
	4	9	9	11	9	11	8	13	13	6	7	98	10	9.8
	5	13	14	0	15	11	7	15	10	0	0	71	10	7.1
	6	0	0	13	0	0	0	0	0	14	15	42	10	4.2
	7													
	8													
	Total	28	13	27	24	28	20	34	29	24	28	255	10	25.5

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	2	4	2	6	3	4	6	5	4	42	10	4.2
	4	13	14	8	9	8	10	11	8	4	12	97	10	9.7
	5	14	13	12	12	13	13	13	14	0	0	103	10	10.3
	6	0	0	0	0	0	0	0	0	10	11	21	10	2.1
	7													
	8													
	Total	33	29	24	23	26	26	28	28	19	27	263	10	26.3

Organisms loaded by: CM

Day	Counted/ verified by:	Concentrations prepared by:
0	MF	CM
1	CR	CR
2	CR	CR
3	CR	CR
4	CR	CR
5	CR	CR
6	MF	Not Received
7		
8		

Concentration	Mean neonates /female	% survival
Control	25.5	100
6.25%	26.3	100
12.50%	24.9	100
25%	19.7	100
50%	14.5	90
100%	0	90

Test acceptability	
Mean control reproduction 15/female	(yes) no
3rd brood in 60% of surviving females	(yes) no
Control survival ≥ 80%:	(yes) no

Comments: 5 = spl.+ Brood 2-15-15 Cont Rep 2

*Day 0 is test initiation day
X = Dead (original organism)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Starke WWTP

LIMS Sample # : 1673652 for lab sample #1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	Neonates per female
12.5%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	4	0	6	6	4	3	4	4	5	42	10	4.2
	4	12	9	7	11	10	10	10	11	7	12	99	10	9.9
	5	15	0	7	14	12	7	11	13	0	0	79	10	7.9
	6	0	8	11	0	0	0	2	0	2	16	29	10	2.9
	7													
	8													
	Total	33	13	25	31	28	21	24	28	13	33	249	10	24.9

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	Neonates per female
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	0	5	6	5	0	5	5	0	6	35	10	3.5
	4	0	7	10	12	11	0	13	10	1	12	76	10	7.6
	5	8	0	15	15	9	0	10	16	0	0	65	10	6.5
	6	0	0	0	0	0	0	0	0	8	13	21	10	2.1
	7													
	8						male							
	Total	3	7	30	33	25	0	28	31	9	31	197	10	19.7

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	0	2	1	8	0	6	0	0	3	23	10	2.3
	4	0	0	13	8	12	1	13	10	6	7	70	10	7.0
	5	0	0	X	10	10	0	14	0	0	11	45	9	4.5
	6	0	0	|	0	0	2	0	0	5	0	7	9	0.7
	7		male	|									
	8		♀											
	Total	3	0	15	19	30	3	33	10	11	21	145	9	14.5

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	0	4	4	4	4	6	6	0	5	39	10	4.3
	4	0	0	9	0	9	0	6	6	0	7	37	10	4.1
	5	0	X	9	7	0	8	13	0	0	0	37	9	4.1
	6	10	|	0	12	13	7	0	4	0	16	62	9	6.9
	7		|											
	8		|											
	Total	16	0	22	23	26	19	25	16	0	28	175	(9) 9	19.4

Comments:

*Day 0 is test initiation day
X = Dead (original organism)

Test Page 3 of 6

PAGE

revised 11/22/13 AP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: StarVe SOP TA07_05

LIMS Sample #: 1673652 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	8.3	25.3	8.0	289					
	1	6.25%	M	8.3	24.5	8.0	306					
	1	12.5%	M	8.3	24.4	8.1	328					
	1	25%	M	8.2	24.3	8.2	367					
	1	50%	M	8.1	24.4	8.2	439					
	1	100%	M	8.0	24.2	8.3	587					
	Measured by:			CM	CM	CM	CM					
	Recorded by:			CM	CM	CM	CM					
Day 1	sample:	Control	M	8.3	24.9	8.1	294	CR M A	8.3	24.7	7.8	308
	1	6.25%	M	8.2	25.7	8.3	317	M A	8.3	24.6	7.8	322
	1	12.5%	M	8.1	25.5	8.4	336	M A	8.3	25.5	8.0	335
	1	25%	M	8.1	25.2	8.5	373	M A	8.2	25.6	8.0	375
	1	50%	M	7.9	24.7	8.7	444	M A	8.3	25.7	7.9	449
	1	100%	M	7.7	24.4	8.9	593	M A	8.3	25.4	7.9	596
	Measured by:			CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:			CR	CR	CR	CR		CR	CR	CR	CR
Day 2	sample:	Control	M	8.3	25.7	7.8	296	CR M A	8.3	24.5	8.0	313
	2	6.25%	M	8.3	25.9	8.0	322	M A	8.3	25.0	8.0	325
	2	12.5%	M	8.2	25.9	8.0	344	M A	8.2	25.3	8.1	338
	2	25%	M	8.2	25.7	8.1	387	M A	8.2	25.4	8.1	376
	2	50%	M	8.2	25.3	8.1	472	M A	8.3	25.3	8.0	450
	2	100%	M	8.1	24.8	8.1	642	M A	8.3	24.8	8.1	611
	Measured by:			CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:			CR	CR	CR	CR		CR	CR	CR	CR
Day 3	sample:	Control	M	8.3	24.6	8.2	297	CR M A	8.2	24.0	8.0	302
	2	6.25%	M	8.2	25.2	8.5	316	M A	8.2	24.6	8.0	318
	2	12.5%	M	8.2	25.2	8.6	338	M A	8.2	24.7	8.1	340
	2	25%	M	8.2	24.9	8.6	380	M A	8.2	24.8	8.1	383
	2	50%	M	8.2	24.6	8.6	464	M A	8.2	24.8	8.1	471
	2	100%	M	8.3	24.3	8.6	628	M A	8.3	24.5	8.1	657
	Measured by:			CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:			CR	CR	CR	CR		CR	CR	CR	CR

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Starke WWTP SOP TA07_05

LIMS Sample #: 1673652 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M	8.3	24.6	8.0	292	CR2 M A	8.4	24.0	7.9	311
	3	6.25%	M	8.3	25.0	8.1	314	M A	8.3	24.5	8.0	319
	3	12.5%	M	8.3	25.0	8.2	337	M A	8.3	24.8	8.0	339
	3	25%	M	8.3	24.9	8.2	378	M A	8.3	24.9	8.0	390
	3	50%	M	8.3	24.6	8.3	458	M A	8.3	24.9	8.1	477
	3	100%	M	8.3	24.3	8.3	617	M A	8.3	24.5	8.0	668
	Measured by:			CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:			CR	CR	CR	CR		CR	CR	CR	CR
Day 5	sample:	Control	M	8.2	25.1	8.4	303	CR M A	8.2	24.9	8.3	326
	3	6.25%	M	8.2	25.8	8.4	320	M A	8.2	25.3	8.3	331
	3	12.5%	M	8.2	25.8	8.4	340	M A	8.2	25.4	8.3	352
	3	25%	M	8.2	25.7	8.5	379	M A	8.1	25.4	8.3	397
	3	50%	M	8.2	25.7	8.5	459	M A	8.2	25.3	8.3	489
	3	100%	M	8.3	25.9	8.5	624	M A	8.2	25.2	8.4	666
	Measured by:			CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:			CR	CR	CR	CR		CR	CR	CR	CR
Day 6	sample:	Control	M					M A	8.2 7.0* mL	25.0	8.8	326
	3	6.25%	M					M A	8.2 7.0 mL	25.4	8.9	337
	3	12.5%	M					M A	8.2 6.4 mL	25.5	8.8	353
	3	25%	M					M A	8.2 6.9 mL	25.6	8.6	391
	3	50%	M					M A	8.2 6.7 mL	25.7	8.4	500
	3	100%	M					M A	8.2 6.4 mL	25.4	8.5	654
	Measured by:								MF	MF	MF	MF
	Recorded by:								MF	MF	MF	MF
Day 7	sample:	Control	M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	Measured by:											
	Recorded by:											
Day 8	sample:	Control	M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	3		M					M				
	Measured by:											
	Recorded by:											

Not renewed.

CR
pH
8.1
8.1
8.1
8.2
8.2
CR
CR

Comments: pH Day 6 old — cont'd first cause of lower pH value. MF 2/16/15
* determined that probe had been left in DI H2O + Rehydrated probe MF 2/16/15

Test ID: Starke WWTP Dates: 2.10.15-2.16.15

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ IR
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered By: C. Reichert 2.23.15

V 1.3 2/15/13 MF

PAGE

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FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimephales promelas or Menidia beryllina

Facility: Starke WWTP
Address: 607 Edwards Road
County: Bradford
NPDES Permit #: FL 0028126
Contact/District: Sharon Piltz/NED
LIMS entry: 2-24-15 MF verified: CM 2.24.15

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
(M. beryllina) SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0
MF
Start Date: 2-10-15 Time: 1430
End Date: 2-17-15 Time: 0945

Diluent/ Batch #:
MHW / 12.3.15 Test Days Used: 0-1
MHW / 2.6.15 Test Days Used: 1-6
ASW / Test Days Used:
ASW / Test Days Used:

Feeding Prior to Test and Daily
Organism Batch #: 2.10.15
Organism Age : 48 hrs.
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Lot #: 29039	
Artemia Batch #	Day 3 38.15
Day 0 35.15	Day 4 39.15
Day 1 36.15	Day 5 40.15
Day 2 37.15	Day 6 41.15

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2015-02-10-14	16736527	2.9.15/0945	2.10.15/1009
Test Day 2	2	TLH-2015-02-12-93	16746607	2.11.15/0920	2.12.15/1035
Test Day 4	3	TLH-2015-02-16-07	16753827	2.13.15/0955	2.14.15/0900

Water Quality Parameters	Batch #	2.3.15 MHW ASW (circle one)	2.6.15 MHW ASW (circle one)	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):		NA	NA	0.33	*NM	NM		—	CR
Lab Total Residual Cl_2 (mg/L):		<0.03	<0.03	<0.03	<0.03	1.40		CR/cm/DP	CM/CR
Alkalinity (mg/L as $CaCO_3$):		68	71	132	111	111		DP/CR/cm	CR/CM
Hardness (mg/L as $CaCO_3$):		83	81	167	159	154		DP/CR/cm	CR/CM
Total Ammonia (mg/L as N):		<0.017	<0.017	4.22	1.265	0.099		MF	CR
Conductivity: ☒ µmhos ☐ mmhos:		289	291	584	625	609		CR/cm	CM/CR
Salinity (ppth):									

*NM = not measured

Initial sample handling:
Instructions: Check yes or no. If yes is checked, complete blanks

PH adjustment : ☐ yes ☑ no Initial pH: ____ NaOH ____ N HCl ____ N ____ Drops mL Final pH: ____
Aeration : ☐ yes ☑ no Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~____bubbles/min
Salinity adjusted : ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Dechlorination: ☐ yes ☑ no ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min 24.9 max 26.3
Test min 23.6 max 25.9
Room B248 min 24.0 max 25.1

Sample Validation:
Instructions: Check yes or no. Fill in temperatures.
Temperature: Shipped ≤ 6°C ☒ Yes ☐ No
If Hand Delivered:Cooling ☐ Yes ☐ No (received ____°C collected____°C)
Holding Time: ≤ 36 Hours ☒ Yes ☐ No
(Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Statistics	
Growth NOEC:	100 %
Growth LOEC:	>100 %
Growth IC_{20}:	>NA %
Growth IC_{25}:	>NA %
Ctrl % CV:	18.2 %
Dunnetts PMSD:	23.1 %
Survival NOEC:	100 %
Survival LOEC:	>100 %

Investigators' signatures	Initials:
Marshall Faindett	MF
Colby Mosher	CM
Cassidy Knight	CK
Dana Powe	DP

REVIEWER Liz Miller

Comments:
Third sample received chlorinated. Dechlorinated with sodium thiosulfate and used in test. Verbal confirmation - facility had switched to reuse (no surface water discharge).

revised 5/20/14 CR

Chronic Bioassay Survival Benchsheet

Facility: Starke

LIMS Sample Number: 1673652
(for Lab Sample # 1)

Department of Environmental Protection
Biology Laboratory Chronic Definitive Bioassay
***P. promelas* SOP TA07_09 *M. beryllina* SOP TA07_14**

Organism: *P. promelas* *M.beryllina* (circle one)

D = dead M=missing

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	~~10~~ MF	10	10	10	10
	B	10	10	10	~~10~~ MF	10	10	10	10
	C	10	10	10	~~10~~ MF	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 6.25 %	A	10	10	10	10	10	9 ID	9	9
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	9 ID
Sample 12.5 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 ID	9	9 ID	8
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	9 ID	8 ID	8	7 ID
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: CM	Checked by:		CR	MF	MF	CM	CR	CR	CR
Verified by: CR									

Comments:

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Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14 parameter pg 1

Sample Source: Starke WWTF
LIMS Sample #: 1673652 (for Lab sample #1)
Start Date: 2.10.15 End Date: 2.17.15
Start Time: 1430 End Time: 0945

Conc = concentration Rep = replicate circle umhos or mmhos

Test Day			Before Renewal						After Renewal					
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity (ppth)	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity (ppth)
Day 0	sample:	Control	A	8.3	24.9	7.8	289							
	1	6.25%	A	8.3	24.7	7.8	307							
	1	12.5%	A	8.2	24.7	7.8	326							
	1	25%	A	8.2	24.7	8.0	361							
	1	50%	A	8.1	24.8	8.1	439							
	1	100%	A	7.9	25.9	8.3	593							
	1		A											
	Measured by:			CM	CR	CM	CM							
	Recorded by:			CM	CM	CM	CM							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	8.2	24.0	8.0	300		B	8.3	24.2	8.1	304	
	1	6.25%	B	8.2	24.8	8.1	320		B	8.2	24.0	8.1	317	
	1	12.5%	B	8.1	24.3	8.0	340		B	8.1	24.0	8.1	336	
	1	25%	B	8.1	24.2	7.9	374		B	8.1	24.2	8.2	373	
	1	50%	B	8.0	24.8	7.8	455		B	7.9	24.1	8.2	447	
	1	100%	B	8.0	24.7	7.8	606		B	7.7	24.3	8.8	624	
	1		B						B					
	Measured by:			CM	CM	CM	CM			CR	CM	CR	CR	
	Recorded by:			CM	CR	CM	CM			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	8.1	25.4	7.6	299		C	8.2	24.9	7.6	314	
	2	6.25%	C	8.1	25.1	7.5	315		C	8.2	25.3	7.6	333	
	2	12.5%	C	8.1	24.6	7.5	333		C	8.1	25.0	7.5	343	
	2	25%	C	8.0	25.1	7.5	371		C	8.1	25.1	7.6	384	
	2	50%	C	7.9	25.5	7.5	447		C	8.0	24.7	7.5	461	
	2	100%	C	7.9	25.1	7.5	596		C	8.0	24.4	7.5	618	
	2		C						C					
	Measured by:			CM	CR	CM	CM			CR	CM	CR	CR	
	Recorded by:			CM	CR	CM	CM			CR	CM	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	8.2	24.3	7.6	300		D	8.2	25.0	8.7	311	
	2	6.25%	D	8.1	24.0	7.5	323		D	8.2	24.7	8.7	329	
	2	12.5%	D	8.1	23.6	7.5	343		D	8.2	24.3	8.5	348	
	2	25%	D	8.0	24.5	7.7	394		D	8.1	24.1	8.2	389	
	2	50%	D	7.9	24.6	7.7	474		D	8.1	24.1	8.3	473	
	2	100%	D	7.9	24.4	7.4	641		D	8.2	24.1	8.2	642	
	2		D						D					
	Measured by:			CM	CM	CM	CM			CR	CM	CR	CR	
	Recorded by:			CM	CR	CM	CM			CR	CR	CR	CR	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14 parameter pg. 2

Sample Source: Starke WWTP
LIMS Sample #: 1673652 (for Lab sample #1)

Start Date: 2.10.15 End Date: 2.17.15
Start Time: 1430 End Time: 0945

Conc = concentration Rep = replicate circle umhos or mmhos

Test Day			Before Renewal						After Renewal					
	Conc.		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity (ppth)	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity (ppth)
Day 4	sample	Control	A	8.2	25.0	7.8	310		A	8.3	24.5	7.9	289	
	3	6.25%	A	8.1	24.9	7.9	330		A	8.3	24.3	7.8	309	
	3	12.5%	A	8.1	24.9	7.9	352		A	8.3	24.2	7.8	329	
	3	25%	A	8.0	24.7	8.0	398		A	8.2	24.0	7.9	367	
	3	50%	A	8.0	24.3	8.0	508		A	8.2	24.1	8.0	447	
	3	100%	A	8.0	24.8	8.1	659		A	8.1	24.3	8.1	610	
	3		A						A					
	Measured by:			CR	CM	CR	CR			CM	CM	CM	CM	
	Recorded by:			CR	CR	CR	CR			CM	CR	CM	CM	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample	Control	B	8.2	24.5	7.7	315		B	8.2	24.7	7.9	311	
	3	6.25%	B	8.1	24.5	7.8	332		B	8.2	24.9	8.1	322	
	3	12.5%	B	8.1	24.2	7.6	350		B	8.1	24.7	8.0	343	
	3	25%	B	8.0	24.1	7.9	393		B	8.1	24.7	8.0	384	
	3	50%	B	7.9	24.3	7.7	478		B	8.1	24.8	8.1	467	
	3	100%	B	7.9	24.3	7.7	636		B	8.1	25.6	8.1	630	
	3		B						B					
	Measured by:			CR	CR	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	CR	CR	CR			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample	Control	C	8.1	~~25.8~~	7.5	300		C	8.0	24.2	7.5	312	
	3	6.25%	C	8.0	~~24.7~~	7.6	329		C	8.0	24.3	7.5	324	
	3	12.5%	C	8.0	~~24.3~~ 24.7	7.4	351		C	8.0	24.3	7.5	348	
	3	25%	C	7.9	~~24~~	7.3	394		C	8.0	24.3	7.9	385	
	3	50%	C	7.9	~~24.5~~	7.3	476		C	7.9	24.3	7.9	469	
	3	100%	C	7.8	~~24.8~~	7.0	635		C	7.9	24.4	7.7	626	
	3		C						C					
	Measured by:			DP	DP	DP	DP			CR	DP	CR	CR	
	Recorded by:			DP	DP	DP	DP			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample	Control	D	8.8	25.1	6.9	316							
	3	6.25%	D	8.0	25.1	7.3	336							
	3	12.5%	D	7.9	24.9	7.1	357							
	3	25%	D	7.8	24.7	6.6	401							
	3	50%	D	7.8	24.5	6.3	481							
	3	100%	D	7.7	25.1	6.1	646							
	3													
	Measured by:			CR	CM	CR	CR							
	Recorded by:			CR	CR	CR	CR							

Comments: Day 6 Temp
A CH. 24.9
6.25% 24.9
12.5% 24.3
25% 24.7
50% 24.7
100% 24.6
DP 2.16.15

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Chronic Bioassay Weighing Benchsheet

Facility: Starke WWTP

LIMS Sample Number: 1673652 (for Lab Sample # 1)

***P. promelas* and *M. beryllina* Bench Sheet**
SOP TA06_21

Concentration	Replicate	Pan #	Mean wt. = Fish wt. divided by 10 Convert g to mg: move decimal 3 places to right: Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	Avg.
Control	A	1	0.02377	0.02891	0.00514	10	0.514	
	B	2	0.02552	0.02990	0.00438	10	0.438	0.540
	C	3	0.02610	0.03144	0.00534	10	0.534	
	D	4	0.02594	0.03267	0.00673	10	0.673	
sample 6.25%	A	5	0.02669	0.03187	0.00518	10	0.518	
	B	6	0.02660	0.03224	0.00564	10	0.564	0.528
	C	7	0.02730	0.03285	0.00555	10	0.555	
	D	8	0.02579	0.03054	0.00475	10	0.475	
sample 12.5%	A	9	0.02581	0.03076	0.00495	10	0.495	
	B	10	0.02570	0.03019	0.00449	10	0.449	0.507
	C	11	0.02535	0.03118	0.00583	10	0.583	
	D	12	0.02634	0.03133	0.00499	10	0.499	
sample 25%	A	13	0.02584	0.03212	0.00628	10	0.628	
	B	14	0.02669	0.03254	0.00585	10	0.585	0.582
	C	15	0.02512	0.03072	0.00560	10	0.560	
	D	16	0.02645	0.03198	0.00553	10	0.553	
sample 50%	A	17	0.02673	0.03322	0.00649	10	0.649	
	B	18	0.02596	0.03194	0.00598	10	0.598	8 tm 0.587
	C	19	0.02641	0.03208	0.00567	10	0.567	
	D	20	0.02599	0.03134	0.00535 3, cr2	10	0.575 3 tm	
sample 100%	A	21	0.02620	0.03084	0.00464	10	0.464	
	B	22	0.02705	0.03305	0.00600	10	0.600	0.610
	C	23	0.02585	0.03206	0.00621	10	0.621	
	D	24	0.02476	0.03231	0.00755	10	0.755	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		CR	CR				

Comments:

Note: Pan number (#) refers to actual Pan number.

revised 5/20/14 CR

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Chronic Bioassay Weighing Benchsheet
Quality Control
P. promelas and M. beryllina Bench sheet
SOPs TA07_09, TA07_14, and TA06_21

Facility: Starke WWTP
LIMS Sample #: 1673652
(for Lab Sample # 1)

Empty Pan Weights Date: 2.16.15 By: CR

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02376	@ 0.02377
after Pan 10	0.02377	@ 0.02377
after Pan 15	0.02375	@ 0.02377
after Pan 20	0.02377	@ 0.02377
after Pan 25	0.02375	@ 0.02377
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)	S-weight Value (g)
S-weights	0.00998	@ 0.01
	0.03007	@ 0.03

S-Weights: BIO-S-WEIGHTS-01
Balance: Mettler Toledo XA105
Ser# B314195659

Fish + Pan Weights Date: 2.18.15 By: CR

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02892	@ 0.02891
after Pan 10	0.02892	@ 0.02891
after Pan 15	0.02893	@ 0.02891
after Pan 20	0.02891	@ 0.02891
after Pan 25	0.02890	@ 0.02891
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)	S-weight Value (g)
S-weights	0.00999	@ 0.01
	0.05004	@ 0.05

Drying Oven ID: ERO34000
Temperature °C: 100
Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 5/21/14 CR

Test ID: Starke WWTP Dates: 2.10.15 - 2.17.15

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ ##4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered By: C. Reichert 2.24.15

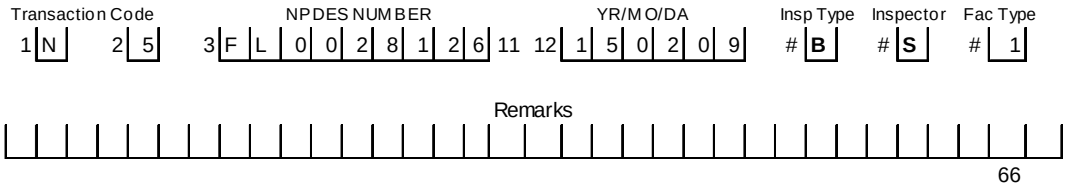
V 1.3 2/15/13 MF

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EPA End Sheet

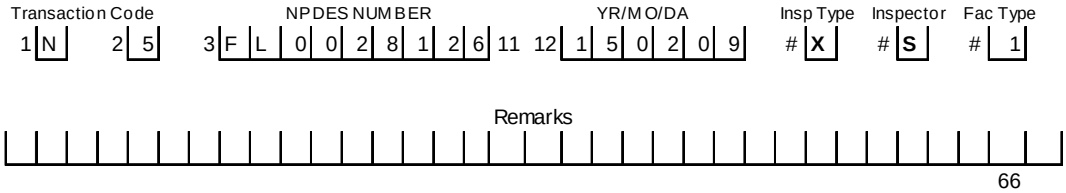
The Bioassay of the Starke WTP effluent sampled on February 9, 2015, NPDES #FL0028126

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)



The Priority Pollutants Analysis of the Starke WTP effluent sampled on February 9, 2015, NPDES #FL0028126

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)



Biological Analyses of the Starke WTP effluent sampled on February 9, 2015, NPDES #FL0028126

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

