Effluent Quality Assessment of Chattahoochee WWTP Gadsden County NPDES # FL0027669 Sampled January 28, 2019

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
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DEP Laboratory, Biology Program
2600 Blair Stone Road, MS 6515
Tallahassee, FL 32399-2400
www.floridadep.gov

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Summary of Results

Compliance for several parameters could not be determined because permit sampling requirements were not met. Where sampling requirements were met, the values measured from the effluent samples complied with effluent permit limits and Class III Freshwater Quality Criteria (62-302.530, F.A.C.). The analytical chemistry from the Algal Growth Potential (AGP) test suggests that the effluent is nitrogen-phosphorus co-limited (Miller et al. 1978).

Facility Overview

The Chattahoochee Wastewater Treatment Plant is a domestic wastewater treatment facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO) and Discharge Monitoring Report (DMR) information is provided in Appendix A. The Chattahoochee WWTP has Administrative Order AO-100NW, which requires the Chattahoochee WWTP to be in compliance with dissolved oxygen limitations and Numeric Nutrient Criteria no later than December 1, 2017. The AO, however is no longer effective and the facility begin operating the new DO meter on September 18, 2018 (email communication from Chattahoochee WWTP). The effluent is discharged using a sequencing batch reactor into Mosquito Creek, a Class III Fresh Water (Figure 1).

Mosquito Creek falls within the Panhandle West Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). For this region, the NNC thresholds, expressed as annual geometric means, are 0.06 mg/L total phosphorus and 0.67 mg/L total nitrogen. For the Panhandle bioregion, the dissolved oxygen criteria states that no more than 10 percent of the daily average percent dissolved oxygen (DO) saturation values shall be below 67% (62-302.533(1)(a), F.A.C.). Mosquito Creek (Mosquito Creek Lower Segment, WBID 376A) is impaired for fecal coliform (Statewide Comprehensive Verified List of Impaired Waters, list dated 08/01/2018, https://floridadep.gov/dear/watershed-assessment-section/documents/comprehensive-verified-list). This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

The facility was discharging to Mosquito Creek through D-001 at the time of sampling. Effluent samples were taken as grab and 24-hour time proportioned composite samples from monitoring site location EFF-02. The permit requires 8-hour flow proportioned composite samples and 24-hour flow proportioned composite samples for some parameters. In-stream samples were not taken from the receiving waterbody, Mosquito Creek, because the water level was above normal conditions and therefore, sampling conditions were not appropriate for water quality assessment. Habitat assessment was not performed. Samples were collected by Lucas Grantham, Adrienne Pennington, Tanya Wellborn, and Sydney Cummings.

All field and laboratory methods followed DEP Standard Operating Procedures (see https://floridadep.gov/dear/quality-assurance/content/dep-sops and https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-

manual-and-sops for details) and met DEP quality assurance/quality control standards (see https://floridadep.gov/dear/quality-assurance). Explanations of specific methods and measurements can be found in Appendix B.

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

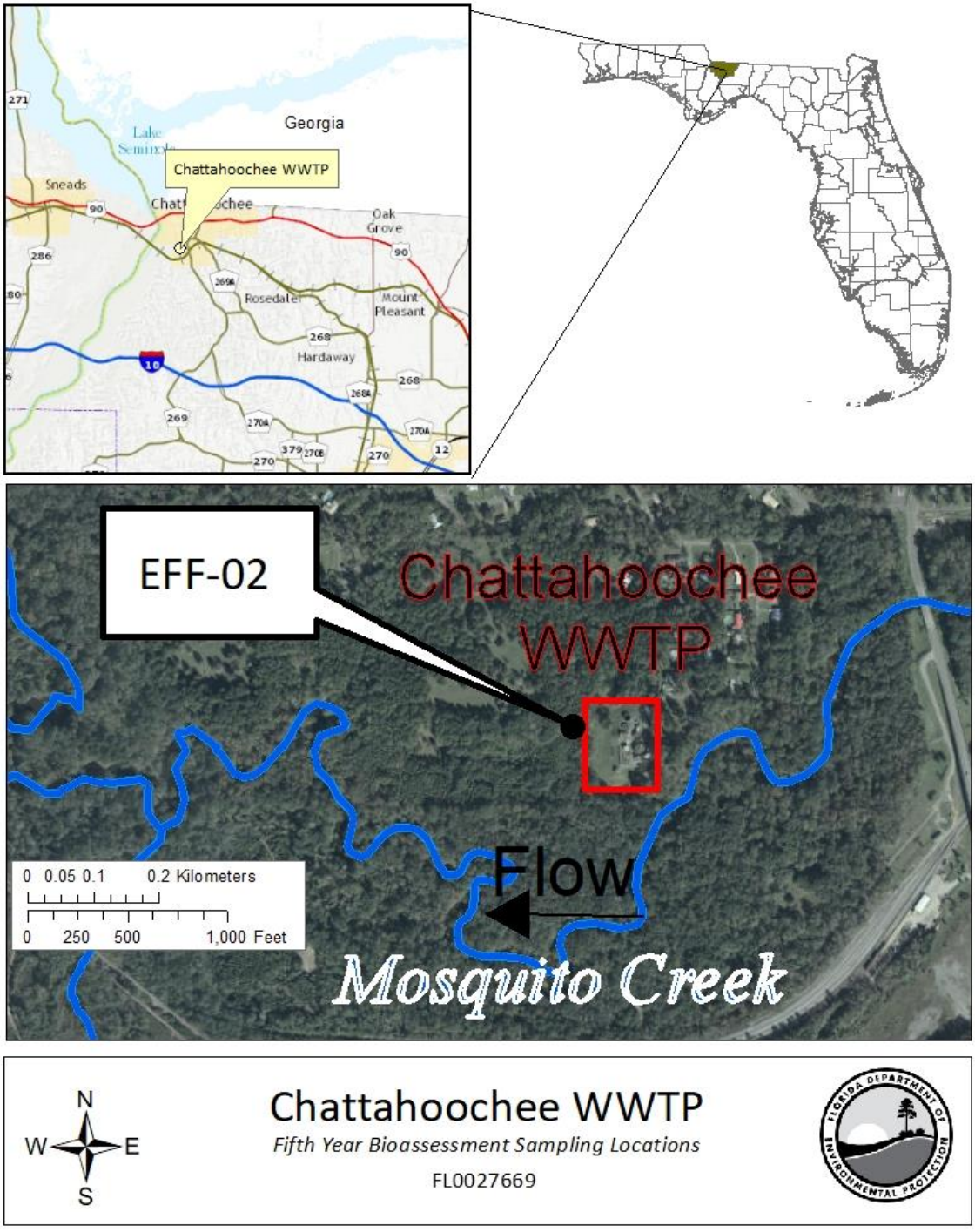


Figure 1. Map of Facility and Sampling Locations

Results

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

- For this inspection, dissolved oxygen (DO) percent saturation was calculated from the recorded effluent DO measured in mg/L. For comparative purposes only, the calculated percent saturation of dissolved oxygen (DO) of the effluent was below the permit limit and the Class III Freshwater Quality Criterion (62-302.533(1)(a), F.A.C.).

- The flow, measured by the facility on the day of the sampling event, was 0.20 MGD from outfall D-001.

- Compliance for total residual chlorine of the effluent could not be determined because the detection limit for the field colorimeter used was 0.2 mg/L.

Analytical Water Chemistry (See Table 2 and Appendix D)

- Unionized ammonia, turbidity, alkalinity, and fluoride detected in the effluent samples complied with effluent permit limits and/or Class III Freshwater Quality Criteria (62-302.530, F.A.C.).

- The effluent limits for total Kjeldahl nitrogen, CBOD, and total suspended solids require an 8-hour flow proportioned composite sample and a 24-hour time proportioned composite sample was collected.

Microbiology (See Table 2 and Appendix B)

- *Escherichia coli* (*E. coli*) and fecal coliform were not detected in the effluent grab sample and therefore complied with facility permit limits and/or Class III Freshwater Quality Criterion (62-302.530(11)(c), F.A.C.).

Toxicity Whole Effluent Test (See Table 2)

- Tests were performed January 29 through February 5, 2019.
- During the chronic definitive bioassay, the effluent composite sample IC25 for the water flea, *Ceriodaphnia dubia*, and the IC25 for the fish, *Pimephales promelas*, were calculated as being greater than 100% effluent.

- The effluent sample was not toxic to either species. Toxicity testing was conducted using 24-hour time proportioned composite samples and the permit requires 24-hour flow proportioned composite samples.

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

Metals (See Table 3 and Appendix D)

- Effluent metals were detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.). There are no effluent permit limits for metals.

Algal Growth Potential (See Table 4 and Appendix B)

- The freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, was used to determine the AGP values in the effluent. The analytical chemistry suggests that the effluent is nitrogen-phosphorus co-limited (Miller et al. 1978).

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

Organic Constituents (See Appendix D)

- 2,4,6-Tricholorophenol was detected in the effluent grab sample between the MDL and PQL.

Literature Cited

Miller, W. E., Maloney, T. E. and Greene, J. C. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA600/978-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Stevenson, R. J. and Bahls, L. L. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

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

Table 1. Measured field parameters

Effluent limits, Class III Freshwater Criteria, and field parameters for Chattahoochee WWTP

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Temperature	C	-	Report	16.6
pH	SU	6.0 - 8.5 s	6.0 - 8.5 s	7.2
Dissolved Oxygen	% saturation	≥ 67[1]	≥ 67[1]	56.9 c
Dissolved Oxygen	mg/L	-	-	5.5
Flow	MGD	-	0.400 a	0.20
Total Residual Chlorine[3]	mg/L	≤ 0.01	≤ 0.01 s	≤ 0.2[2] U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
a - Annual average
c - Value is calculated (in this instance, DO was calculated from mg/L using 280ft as elevation)
1 - no more than 10% of the daily average shall be below this value (62-302.533(1)(a), F.A.C.
2 - A meter was used with a minimum detection limit of 0.2 mg/L. The value was below this limit.
3 - Measurement and permit limit is for after dechlorination

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

Effluent limits, Class III Freshwater Criteria, and analytical water chemistry, microbiological, and toxicological data for Chattahoochee WWTP

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Ortho-phosphate	mg P/L	-	-	-	0.95
Total Phosphorus	mg P/L	≤ 0.06[4]	Report	1.2	1.1
Total Ammonia	mg N/L	5.36 c	Report	-	0.025
Un-ionized Ammonia	mg N/L	≤ 0.02 s	≤ 0.02 s	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	12	11
Total Kjeldahl Nitrogen	mg N/L	-	<2.0 p	0.79	0.45
Organic Nitrogen	mg N/L	-	-	-	0.43 c
Total Nitrogen	mg N/L	≤ 0.67[4]	Report	13 c	11 c
Total Organic Carbon	mg C/L	-	-	3.3	2.8
Chlorophyll *a* - Corrected	µg/L	-	-	-	0.55 UJ
Phaeophytin	µg/L	-	-	-	0.60 UJ
CBOD, 5 day, N - inhibited	mg/L	-	≤ 20.0 sp	4.5 AJ	-
Hardness	mg CaCO3/L	-	-	-	141 c
Total Suspended Solids	mg/L	-	≤30.0 sp	3 IA	-
Turbidity	NTU	≤ 29 t	-	-	1
Color (true)	PCU	-	-	-	4.4 I
Alkalinity	mg CaCO3/L	≥ 20	-	-	90
Chloride	mg Cl/L	-	-	-	19 A
Fluoride	mg F/L	≤ 10.0	-	-	0.13
Sulfate	mg SO4/L	-	-	-	15 A
Fecal Coliforms	cfu/100 mL	-	≤ 800 s	-	2 U
Escherichia coli	MPN/100 mL	≤ 410 s	-	-	1 U
Bioassay - Water flea *(Ceriodaphnia dubia)*, IC25	% effluent	-	≥ 100 p	>100	-
Bioassay - Fish *(Pimephales promelas)*, IC25	% effluent	-	≥ 100 p	>100	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
p - 8-hr flow proportioned composite for TKN, CBOD, and TSS; 24-hr flow proportioned composite for toxicity
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit
4 - Numeric Nutrient Criteria for Panhandle West Nutrient Watershed Region expressed as annual geometric means

Table 3. Analytical metals data

Effluent limits, Class III Freshwater Criteria, and analytical metals data for Chattahoochee WWTP

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Hardness	mg CaCO3/L	-	-	141 c
Aluminum	µg/L	-	-	11 I
Arsenic	µg/L	≤ 50	-	0.81
Cadmium	µg/L	≤ 0.349 b	-	0.020 U
Calcium	mg/L	-	-	36.6
Chromium, Total [5]	µg/L	≤ 114 b	-	0.40 U
Copper	µg/L	≤ 12.5 b	-	3.44
Iron	µg/L	≤ 1,000	-	30 U
Lead	µg/L	≤ 4.94 b	-	0.20 U
Magnesium	mg/L	-	-	12.1
Nickel	µg/L	≤ 69.9 b	-	0.74 I
Potassium	mg/L	-	-	3.7
Selenium	µg/L	≤ 5.0	-	0.23 I
Silver	µg/L	≤ 0.07	-	0.010 U
Sodium	mg/L	-	-	14.8
Zinc	µg/L	≤ 161 b	-	32

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
b - Value is calculated based on hardness, (62-302.530(3))
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
5 - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III

Table 4. Algal Growth Potential (AGP)

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

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	*Pseudokirchneriella subcapitata*	249 A	419 ± 83.8	408.5 ± 81.7	435.1 ± 87	473 ± 94.6	11.6	10.4

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

Appendix A. Facility Summary

State _of Florida

Department of Environmental Protection

Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Sydney Cummings	Contact Number: 850-245-7629
Facility Name (as it appears on permit): City of Chattahoochee WWTP	Former Names:
NPDES Permit Number: FL0027669	Permit Expiration Date: 10-14-2020
Physical Address: 211 Palm Street, Chattahoochee, FL 32324	
District: Northwest	County: Gadsden
Function of Facility: Domestic Wastewater Treatment Facility	
Facility Type: Domestic	Permitted Capacity (MGD): 0.400 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): For the date range of 12/2017 – 11/2018 the Mean Flow for all external outfalls was 0.202.	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): Not applicable	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify:	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):	

Monitoring Site Number	Description of Monitoring Site
FLW-01	Effluent Flow Meter
EFF-02	Effluent Sample Point
CAL-01	Percent Capacity
EFA-01	Discharge From Chlorine Contact Chamber
EFD-01	Effluent after Dechlorination
SWB-02	Background Ambient Monitoring-120 ft upstream of the WWTP Outfall to Mosquito Creek
SWA-03	Downstream Ambient Monitoring-670 ft downstream of the WWTP Outfall to Mosquito Creek
SWA-06	Downstream Ambient Monitoring-located near the Mouth of Mosquito Creek

Description of Permitted Outfall(s):

D-001 – An existing 0.400 MGD annual average daily flow discharge to Mosquito Creek, Class III fresh waters, (WBID# 376A) which is approximately 2 feet in length and discharges at a depth of approximately 0 feet. The point of discharge is located approximately at latitude 30◦41’12:N, longitude 84◦50’45”W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

An existing 0.400 MGD annual average daily flow (AADF) permitted capacity activated sludge wastewater treatment facility (WWTF). The WWTF has provisions for influent screening, biological treatment and clarification by dual sequencing batch reactors (SBR), post SBR equalization tank, chlorine gas disinfection and sulfur dioxide dichlorination. The biosolids are aerobically digested in a dingle tank and are dewatered by either a belt press or drying beds before transported to a landfill for disposal. Effluent is discharged to Mosquito Creek (Class III fresh wasters), WBID-376A.

PART I: Continued

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

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow	MGD	Max Max Max	0.400 Report Report	Annual Average Monthly Average 3-Month Rolling Ave	5 Days/Week	Recording Flow Meter with Totalizer	FLW-01	See I.A.3
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max Max	10.0 12.5 15.0 20.0	Annual Average Monthly Average Weekly Average Single Sample	Bi-weekly; every 2 weeks	8-hr FPC	EFF-02	
Solids, Total Suspended	mg/L	Max Max Max Max	15.0 18.8 22.5 30.0	Annual Average Monthly Average Weekly Average Single Sample	Bi-weekly; every 2 weeks	8-hr FPC	EFF-02	
Nitrogen, Total	mg/L	Max	Report	Monthly Average	Bi-weekly; every 2 weeks	8-hr FPC	EFF-02	See I.A.9
Phosphorus, Total (as P)	mg/L	Max	Report	Monthly Average	Bi-weekly; every 2 weeks	8-hr FPC	EFF-02	See I.A.9
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	2.0	Single Sample	Bi-weekly; every 2 weeks	8-hr FPC	EFF-02	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Monthly Average	Bi-weekly; every 2 weeks	Grab	EFF-02	
Ammonia, Unionized (as NH3)	mg/L	Max	0.02	Single Sample	Bi-weekly; every 2 weeks	Calculated	CAL-01	See I.A.6

PART I: Continued								
List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)								
Temperature (C), Water	Deg C	Max	Report	Single Sample	Bi-weekly; every 2 weeks	Meter	EFF-02	See I.A.6
pH	s.u.	Min Max	6.0 8.5	Single Sample Single Sample	5 Days/Week	Meter	EFF-02	
Oxygen, Dissolved Percent Saturation	% samples in compliance (% smpcmpln)	Max	90	Monthly Total	5 Days/Week	Meter	EFF-02	See I.A.8
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	5 Days/Week	Meter	EFA-01	See I.A.5
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	Bi-weekly; every 2 weeks	Grab	EFD-01	
Coliform, Fecal	#/100mL	Max Max Max	200 200 800	Monthly Geo Mean Annual Average Single Sample	Bi-weekly; every 2 weeks	Grab	EFF-02	See I.A.4
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFF-02	See I.A.7
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFF-02	See I.A.7
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes

PART I: Continued								
List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)								
Nitrogen, Total	mg/L	Max	Report	Single Sample	Quarterly	Grab	SWB-02, SWA-03, SWA-06	
Phosphorus, Total (as P)	mg/L	Max	Report	Single Sample	Quarterly	Grab	SWB-02, SWA-03, SWA-06	
Oxygen, Dissolved Percent Saturation	percent	Max	Report	Single Sample	Quarterly	Grab	SWB-02, SWA-03, SWA-06	
Chlorophyll a	ug/L	Max	Report	Single Sample	Quarterly	Grab	SWB-02, SWA-03, SWA-06	

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Mosquito Creek	Class III Fresh Waters

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

Routine toxicity tests shall be conducted every six months, the first starting within 60 days of the effective date of the permit and lasting for the duration of the permit.

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5% and 6.25% final effluent.
(2) The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test, and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.
(3) All test species procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein hall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with revised method.
(4) The control water dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.2.3.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

AO-100NW was issued on October 15, 2015 and expires October 14, 2020. The Administrative Order states that the permittee shall be in compliance with DO limitations in Part I.A.8 of the Permit, FL0027669-008-DW2P, not later than December 1, 2017, and that the permittee must be in compliance with the NNC limitation in Part I.A.9 of the Permit, not later than December 1, 2017.

Facility Mixing Zone Details (if applicable):

Not applicable

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

Date	Parameter and Units	Limit	Result
10/31/2018	Nitrogen, Kjeldahl Total(as N)	2.0 mg/L	3.02 mg/L
10/31/2018	Ammonia, Unionized (as NH3)	0.02 mg/L	0.67 mg/L
10/31/2018	Coliform, Fecal	200.0 #/100mL	207 #/100mL

Describe previous FYI and WQBEL study:

Previous FYI sampling was conducted on April 19, 2013. The sampling results indicated the following exceedance:

Parameter and Units	Limit	Result
Bioassay – Fish (*Pimephales promelas*)	≥ 100 r	69.8 r

Describe previous or current Enforcement Actions (including WLs): None
Describe any violations or problems noted in previous inspection: The previous inspection, conducted on January 14, 2014, noted no violations or problems.
Discuss whether DMR trends within previous five years are improving or declining: 2014 – 1 violation 2015 – 3 violations 2016 – 2 violations 2017 – 1 violation 2018 – 3 violations Based on the above information, the DMRs show a consistent trend of 1 to 3 violations per year for the previous five years.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

PART II: Sampling Event Information	
Date(s) sample collected: 01/28/2019, 01/30/2019, 02/01/2019	Sampler(s): Sydney Cummings, Lucas Grantham, Adrienne Pennington, Tanya Wellborn
Temperature (Deg C): 16.6	pH (SU): 7.2
Dissolved Oxygen (mg/L): 5.5	Conductivity (umhos/cm): N/A
Total Residual Chlorine (mg/L): 0.01	Total Residual Chlorine - after Disinfection (mg/L): 0.08
Method of Chlorination: Gas	Method of De-chlorination: SO_2
Flow During Sample Collection for each outfall(MGD): 0.20 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): For the date range of 12/2017 – 11/2018 the Mean Flow for all external outfalls was 0.202.	
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: Composite samples collected were Time Proportionate samples as opposed to Flow Proportionate samples that are required by permit.	

Appendix B. Explanations of Measurements

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

- **Chemical Analyses of the Effluent**

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

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 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.

- **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.

- **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..

- **Algal Growth Potential (AGP)**

  The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L are suggested to be representative of high productivity for freshwaters (Miller et al. 1978).

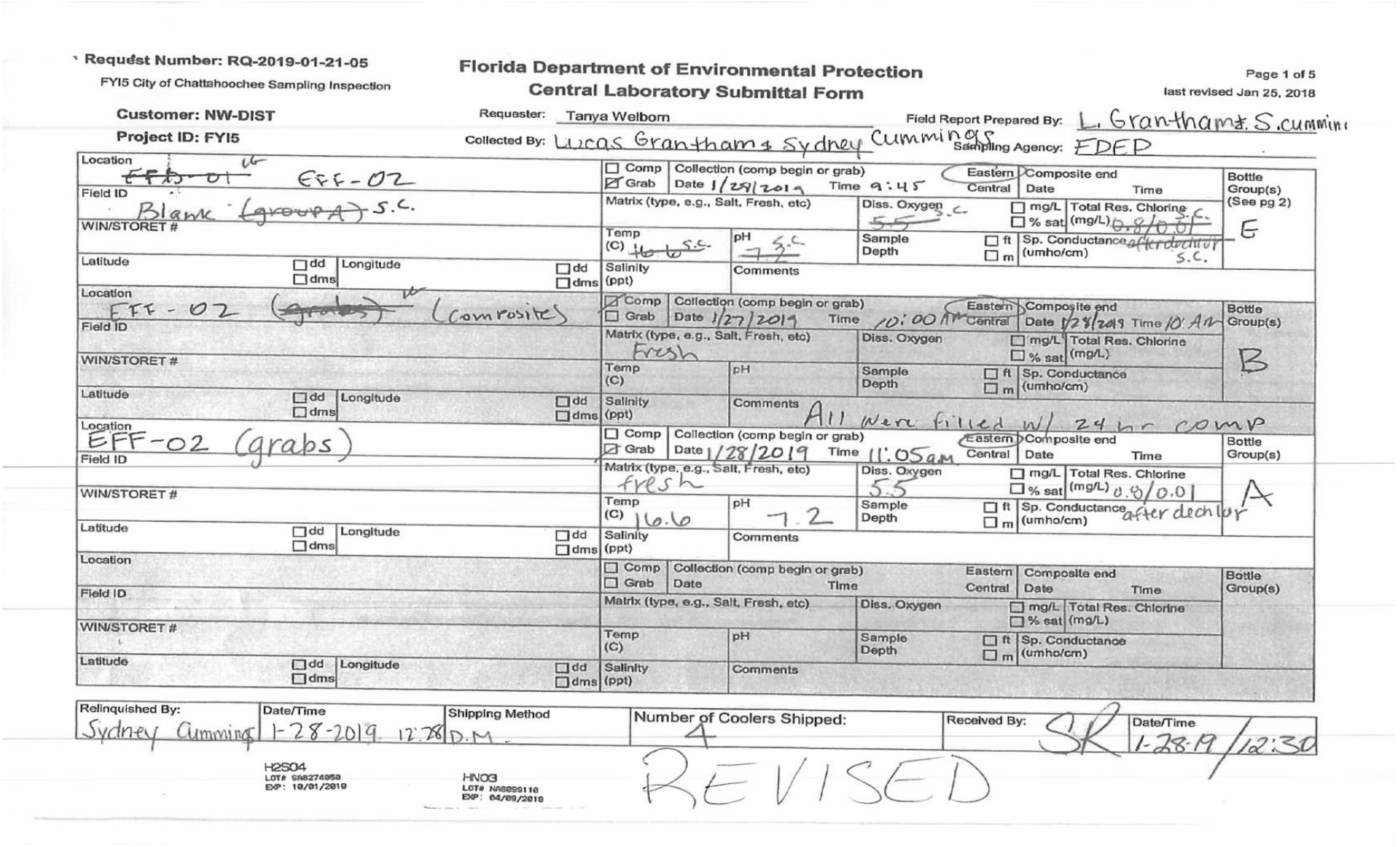
High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

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 ± 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.

- **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 C. Chain of Custody



Request Number: RQ-2019-01-21-05
FYI5 City of Chattahoochee Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5
last revised Jan 25, 2018

Customer: NW-DIST
Project ID: FYI5

Requester: Tanya Welborn
Collected By: Lucas Grantham & Sydney Cummings
Field Report Prepared By: L. Grantham & S. Cummings
Sampling Agency: FDEP

Location: ~~EFF-01~~ W EFF-02	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 1/28/2019 Time 9:45	Eastern / Central	Composite end Date Time	Bottle Group(s) (See pg 2)
Field ID: Blank (group A) S.C.	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen 5.5 S.C.	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L) 0.8/0.01 S.C.	E
WIN/STORET #	Temp (C) ~~16.6~~ S.C.	pH 7.2 S.C.	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm) after dechlor S.C.	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments		
Location: EFF-02 ~~(grabs)~~ W (composites)	☑ Comp ☐ Grab	Collection (comp begin or grab) Date 1/27/2019 Time 10:00 AM	Eastern / Central	Composite end Date 1/28/2019 Time 10 AM	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc) Fresh	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	B
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments All were filled w/ 24 hr comp		
Location: EFF-02 (grabs)	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 1/28/2019 Time 11:05am	Eastern / Central	Composite end Date Time	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc) fresh	Diss. Oxygen 5.5	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L) 0.8/0.01	A
WIN/STORET #	Temp (C) 16.6	pH 7.2	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm) after dechlor	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments		
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments		

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Sydney Cummings	1-28-2019 12:28	D.M.	4	SR	1-28-19 / 12:30

H2SO4 LOT# SA8274050 EXP: 10/01/2019
HNO3 LOT# NA8099110 EXP: 04/09/2019

REVISED

Request Number: RQ-2019-01-21-05
FY15 City of Chattahoochee Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5
last revised Jan 25, 2018

Customer: NW-DIST
Project ID: FYI5

Requester: Tanya Welborn
Collected By: L. Grantham & S. Cummings
Field Report Prepared By: Sydney Cummings
Sampling Agency: FDEP

Location: EFF-02	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 1-29-19 Time 10:10	Eastern Central	Composite end Date 1-30-19 Time 10:10	Bottle Group(s) (See pg 2): B					
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Fresh		Diss. Oxygen: 5.6 ☒ mg/L ☐ % sat	Total Res. Chlorine (mg/L): 0.4/0.02 (2 cmmes)						
WIN/STORET #	Temp (C): 16.6	pH: 7.8	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: facility was taking time proportionate samples							
Location: ~~1-28-19~~ S.C.	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Cummings	1-30-19 12:20	P.M.	1	AB	1-30-19 12:20

Request Number: RQ-2019-01-21-05

FYI5 City of Chattahoochee Sampling Inspection

Customer: NW-DIST

Project ID: FYI5

Florida Department of Environmental Protection

Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Tanya Welborn

Field Report Prepared By: Sydney Cummings

Collected By: L. Grantham, S. Cummings

Sampling Agency: FDEP

Location EFF-02	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 1-31-19 Time 10:15	Eastern / Central	Composite end Date 2-1-19 Time 10:15	Bottle Group(s) (See pg 2)				
Field ID	Matrix (type, e.g., Salt, Fresh, etc) Fresh		Diss. Oxygen 5.8	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L) .51/.01dech	UVB			
WIN/STORET #	Temp (C) 15.5	pH 7.0	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments Time proportionate sample						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)				
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)				
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)				
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
S Cummings	2-1-19 11:52		2		2.1.19 / 11:54

Appendix D. Chemical Analysis of Effluent and Receiving Water

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/1/2019 10:15	EFF-02	Nutrients	Temperature	15.5	C		
2/1/2019 10:15	EFF-02	Nutrients	Total Residual Chlorine	0.51	mg/L		
2/1/2019 10:15	EFF-02	Nutrients	pH	7	SU		
2/1/2019 10:15	EFF-02	Nutrients	Dissolved Oxygen	5.8	%Sat		
1/30/2019 10:10	EFF-02	Nutrients	Dissolved Oxygen	5.6	mg/L		
1/30/2019 10:10	EFF-02	Nutrients	pH	7.8	SU		
1/30/2019 10:10	EFF-02	Nutrients	Total Residual Chlorine	0.02	mg/L		
1/30/2019 10:10	EFF-02	Nutrients	Temperature	16.6	C		
1/28/2019 10:00	EFF-02 (composite)	Chlorophyll/Grain Size/BOD	Biochemical O_2 Demand-5 Day,N-Inhib	4.5 AJ	mg/L	0.2	2
1/28/2019 10:00	EFF-02 (composite)	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
1/28/2019 10:00	EFF-02 (composite)	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 L	IC25		
1/28/2019 10:00	EFF-02 (composite)	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
1/28/2019 10:00	EFF-02 (composite)	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
1/28/2019 10:00	EFF-02 (composite)	Nutrients	Kjeldahl Nitrogen	0.79	mg N/L	0.16	0.4
1/28/2019 10:00	EFF-02 (composite)	Nutrients	NO2NO3-N	12	mg N/L	0.08	0.2
1/28/2019 10:00	EFF-02 (composite)	Nutrients	Total-P	1.2	mg P/L	0.005	0.05
1/28/2019 10:00	EFF-02 (composite)	Nutrients	Organic Carbon	3.3	mg C/L	0.5	1
1/28/2019 10:00	EFF-02 (composite)	Nutrients	TSS	3 IA	mg/L	2	10
1/28/2019 11:05	EFF-02	AGP/LN	Algal Growth Potential	249 A	mg DryWt/L	0.3	0.9
1/28/2019 11:05	EFF-02	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 UJ	ug/L	0.55	1.7
1/28/2019 11:05	EFF-02	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.40 UJ	ug/L	0.4	1.2
1/28/2019 11:05	EFF-02	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.60 UJ	ug/L	0.6	1.8
1/28/2019 11:05	EFF-02	Microbiology	Fecal Coliforms-Membrane Filter	2 U	cfu/100 mL	2	2
1/28/2019 11:05	EFF-02	Microbiology	Escherichia Coli-Quanti-Tray	1.0 U	MPN/100 mL	1	1
1/28/2019 11:05	EFF-02	Metals	Calcium	36.6	mg/L	0.075	0.3
1/28/2019 11:05	EFF-02	Metals	Selenium	0.23 I	ug/L	0.2	0.8
1/28/2019 11:05	EFF-02	Metals	Lead	0.20 U	ug/L	0.2	0.4
1/28/2019 11:05	EFF-02	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
1/28/2019 11:05	EFF-02	Metals	Aluminum	11 I	ug/L	5	20
1/28/2019 11:05	EFF-02	Metals	Zinc	32	ug/L	5	20
1/28/2019 11:05	EFF-02	Metals	Copper	3.44	ug/L	0.4	0.8
1/28/2019 11:05	EFF-02	Metals	Arsenic	0.81	ug/L	0.05	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/28/2019 11:05	EFF-02	Metals	Potassium	3.7	mg/L	0.3	1.2
1/28/2019 11:05	EFF-02	Metals	Sodium	14.8	mg/L	0.5	2
1/28/2019 11:05	EFF-02	Metals	Iron	30 U	ug/L	30	120
1/28/2019 11:05	EFF-02	Metals	Chromium	0.40 U	ug/L	0.4	1.6
1/28/2019 11:05	EFF-02	Metals	Magnesium	12.1	mg/L	0.04	0.16
1/28/2019 11:05	EFF-02	Metals	Nickel	0.74 I	ug/L	0.5	2
1/28/2019 11:05	EFF-02	Metals	Silver	0.010 U	ug/L	0.01	0.04
1/28/2019 11:05	EFF-02	Nutrients	Total Alkalinity	90	mg CaCO3/L	0.65	2.5
1/28/2019 11:05	EFF-02	Nutrients	Chloride	19 A	mg Cl/L	0.2	0.6
1/28/2019 11:05	EFF-02	Nutrients	Organic Carbon	2.8	mg C/L	0.5	1
1/28/2019 11:05	EFF-02	Nutrients	NO2NO3-N	11	mg N/L	0.08	0.2
1/28/2019 11:05	EFF-02	Nutrients	Turbidity	1	NTU	0.1	0.13
1/28/2019 11:05	EFF-02	Nutrients	Total-P	1.1	mg P/L	0.005	0.05
1/28/2019 11:05	EFF-02	Nutrients	Ammonia-N	0.025	mg N/L	0.002	0.005
1/28/2019 11:05	EFF-02	Nutrients	Sulfate	15 A	mg SO4/L	0.2	0.6
1/28/2019 11:05	EFF-02	Nutrients	Color (true)	4.4 I	PCU	2.5	6
1/28/2019 11:05	EFF-02	Nutrients	Kjeldahl Nitrogen	0.45	mg N/L	0.16	0.4
1/28/2019 11:05	EFF-02	Nutrients	O-Phosphate-P	0.95	mg P/L	0.04	0.1
1/28/2019 11:05	EFF-02	Nutrients	Fluoride	0.13	mg F/L	0.035	0.1
1/28/2019 11:05	EFF-02	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.075
1/28/2019 11:05	EFF-02	Pesticides	Hexazinone	0.066 U	ug/L	0.066	0.26
1/28/2019 11:05	EFF-02	Pesticides	Diazinon	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Demeton	0.023 U	ug/L	0.023	0.09
1/28/2019 11:05	EFF-02	Pesticides	Chlorpyrifos Ethyl	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Butylate	0.047 UJ	ug/L	0.047	0.19
1/28/2019 11:05	EFF-02	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
1/28/2019 11:05	EFF-02	Pesticides	Alachlor	0.056 U	ug/L	0.056	0.23
1/28/2019 11:05	EFF-02	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.075
1/28/2019 11:05	EFF-02	Pesticides	Parathion Methyl	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Mevinphos	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Metalaxyl	0.17 U	ug/L	0.17	0.68
1/28/2019 11:05	EFF-02	Pesticides	Norflurazon	0.047 U	ug/L	0.047	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/28/2019 11:05	EFF-02	Pesticides	Disulfoton	0.0047 U	ug/L	0.004	0.019
1/28/2019 11:05	EFF-02	Pesticides	Phorate	0.0047 U	ug/L	0.0047	0.019
1/28/2019 11:05	EFF-02	Pesticides	Metribuzin	0.047 U	ug/L	0.047	0.19
1/28/2019 11:05	EFF-02	Pesticides	Chlorpyrifos Methyl	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Prometon	0.019 UJ	ug/L	0.019	0.075
1/28/2019 11:05	EFF-02	Pesticides	Malathion	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Azinphos Methyl	0.085 UJ	ug/L	0.085	0.34
1/28/2019 11:05	EFF-02	Pesticides	Atrazine Desisopropyl	0.0094 UJ	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Ametryn	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Ethoprop	0.0047 U	ug/L	0.0047	0.019
1/28/2019 11:05	EFF-02	Pesticides	Ethion	0.0094 UJ	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Atrazine Desethyl	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Atrazine	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Simazine	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Naled	0.075 U	ug/L	0.075	0.3
1/28/2019 11:05	EFF-02	Pesticides	Fonofos	0.0094 U	ug/L	0.0094	0.038
1/28/2019 11:05	EFF-02	Pesticides	Fenamiphos	0.028 U	ug/L	0.028	0.11
1/28/2019 11:05	EFF-02	Pesticides	Metolachlor	0.11 U	ug/L	0.11	0.45
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2-Chlorophenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.6
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Hexachlorobutadiene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Isophorone	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Pyrene	0.095 U	ug/L	0.095	0.38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,4-Dinitrophenol	9.5 U	ug/L	9.5	38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2-Nitrophenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	4-Nitrophenol	9.5 U	ug/L	9.5	38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.064 I	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2-Chloronaphthalene	0.048 U	ug/L	0.048	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Fluoranthene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.6
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Naphthalene	0.095 U	ug/L	0.095	0.38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Phenanthrene	0.095 U	ug/L	0.095	0.38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,4-Dichlorophenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,4-Dimethylphenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,4-Dinitrotoluene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Acenaphthylene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Di-n-octyl phthalate	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Fluorene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.048 UJ	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Nitrobenzene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Phenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Acenaphthene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	ug/L	0.95	3.8
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	ug/L	1.9	7.6
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Hexachlorobenzene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Pentachlorophenol	0.48 U	ug/L	0.48	1.9
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzidine	9.5 U	ug/L	9.5	38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.8 U	ug/L	4.8	19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2,6-Dinitrotoluene	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	11
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.5 U	ug/L	9.5	38

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Anthracene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Chrysene	0.024 U	ug/L	0.024	0.095
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Dimethyl phthalate	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	Hexachloroethane	0.048 U	ug/L	0.048	0.19
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.095 U	ug/L	0.095	0.38
1/28/2019 11:05	EFF-02	Priority Organic Pollutants	1,4-Dioxane	0.18	ug/L	0.02	0.08
1/28/2019 11:05	EFF-02	Nutrients	Dissolved Oxygen	5.5	%Sat		
1/28/2019 11:05	EFF-02	Nutrients	pH	7.2	SU		
1/28/2019 11:05	EFF-02	Nutrients	Temperature	16.6	C		
1/28/2019 11:05	EFF-02	Nutrients	Total Residual Chlorine	0.8	mg/L		
1/28/2019 9:45	BLANK	Metals	Sodium	0.50 U	mg/L	0.5	2
1/28/2019 9:45	BLANK	Metals	Silver	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Metals	Chromium	0.40 U	ug/L	0.4	1.6
1/28/2019 9:45	BLANK	Metals	Lead	0.20 U	ug/L	0.2	0.4
1/28/2019 9:45	BLANK	Metals	Zinc	5.0 U	ug/L	5	20
1/28/2019 9:45	BLANK	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Metals	Copper	0.40 U	ug/L	0.4	0.8
1/28/2019 9:45	BLANK	Metals	Calcium	0.075 U	mg/L	0.075	0.3
1/28/2019 9:45	BLANK	Metals	Selenium	0.20 U	ug/L	0.2	0.8
1/28/2019 9:45	BLANK	Metals	Iron	30 U	ug/L	30	120
1/28/2019 9:45	BLANK	Metals	Potassium	0.30 U	mg/L	0.3	1.2
1/28/2019 9:45	BLANK	Metals	Nickel	0.50 U	ug/L	0.5	2
1/28/2019 9:45	BLANK	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
1/28/2019 9:45	BLANK	Metals	Aluminum	5.0 U	ug/L	5	20
1/28/2019 9:45	BLANK	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
1/28/2019 9:45	BLANK	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
1/28/2019 9:45	BLANK	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
1/28/2019 9:45	BLANK	Nutrients	Color (true)	2.5 U	PCU	2.5	6
1/28/2019 9:45	BLANK	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/28/2019 9:45	BLANK	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
1/28/2019 9:45	BLANK	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
1/28/2019 9:45	BLANK	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
1/28/2019 9:45	BLANK	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6
1/28/2019 9:45	BLANK	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
1/28/2019 9:45	BLANK	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
1/28/2019 9:45	BLANK	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
1/28/2019 9:45	BLANK	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Norflurazon	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Pesticides	Azinphos Methyl	0.090 U	ug/L	0.09	0.36
1/28/2019 9:45	BLANK	Pesticides	Ethion	0.010 UJ	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
1/28/2019 9:45	BLANK	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
1/28/2019 9:45	BLANK	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Demeton	0.024 U	ug/L	0.024	0.096
1/28/2019 9:45	BLANK	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
1/28/2019 9:45	BLANK	Pesticides	Hexazinone	0.070 U	ug/L	0.07	0.28
1/28/2019 9:45	BLANK	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Naled	0.080 U	ug/L	0.08	0.32
1/28/2019 9:45	BLANK	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Metalaxyl	0.18 U	ug/L	0.18	0.72
1/28/2019 9:45	BLANK	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.48

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1/28/2019 9:45	BLANK	Pesticides	Metribuzin	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
1/28/2019 9:45	BLANK	Pesticides	Prometon	0.020 UJ	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Pesticides	Naproxen	0.0080 U	ug/L	0.008	0.032
1/28/2019 9:45	BLANK	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
1/28/2019 9:45	BLANK	Pesticides	Butylate	0.050 UJ	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Pesticides	Atrazine Desisopropyl	0.010 UJ	ug/L	0.01	0.04
1/28/2019 9:45	BLANK	Pesticides	Ibuprofen	0.020 U	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Fluorene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.050 UJ	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	40
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Anthracene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Dimethyl phthalate	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Pentachlorophenol	0.50 U	ug/L	0.5	2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	40
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.0 U	ug/L	5	20
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Fluoranthene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Hexachloroethane	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.4
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Phenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12

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1/28/2019 9:45	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Chrysene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Isophorone	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Nitrobenzene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.4
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzidine	10 U	ug/L	10	40
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	ug/L	2	8
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Diethyl phthalate	2.0 U	ug/L	2	8
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.4
1/28/2019 9:45	BLANK	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.08
1/28/2019 9:45	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Acenaphthylene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.4
1/28/2019 9:45	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.050 U	ug/L	0.05	0.2
1/28/2019 9:45	BLANK	Priority Organic Pollutants	Acenaphthene	0.025 U	ug/L	0.025	0.1
1/28/2019 9:45	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	40