Effluent Quality Assessment of Jacksonville Beach WWTF Duval County NPDES # FL0020231 Sampled November 14, 16, & 18, 2021

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
January 2023

DEP Laboratory, Biology Program
2600 Blair Stone Road, MS 6515
Tallahassee, FL 32399-2400
www.floridadep.gov

Contents

Summary of Results 3
Facility Overview 3
Methods 3
Results 6
Literature Cited 8
Appendix A. Facility Summary 15
Appendix B. Explanations of Measurements 38
Appendix C. Chain of Custody 40
Appendix D. Chemical Analysis of Effluent 45

List of Tables

Table 1. Measured field parameters 9
Table 2. Analytical water chemistry, microbiological, and toxicological data 10
Table 3. Analytical metals data 12
Table 4. Algal Growth Potential (AGP) 13
Table 5. Detected Organic Constituents 14

List of Figures

Figure 1. Map of Facility and Discharge Location 5

Summary of Results

The effluent grab sample's cyanide level exceeded Class III Water Quality Criteria for Marine Waters and effluent permit limits. The effluent sample was chronically toxic to the water flea, *Ceriodaphnia dubia*, during the bioassay. The 25% Inhibition Concentration result of the bioassay for the fish, *Pimephales promelas*, was reported as No Result after it failed test acceptability criteria for survival. The nutrient and algal growth potential (AGP) results suggest a potential for nutrient enrichment of the receiving waters. There were twenty–three organic constituents detected in the effluent grab sample.

Facility Overview

The Jacksonville Beach WWTF is an advanced domestic wastewater treatment facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A. The effluent is continuously discharged into the St. Johns River, a Class III Marine Water [waterbody identification (WBID) 2213A] (Figure 1).

Receiving waters for this facility fall under the Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criteria (NNC) for the Lower St. Johns River and Tributaries. For this region, the NNC, expressed as an annual load, are 722,834 kg/yr total phosphorus, 1,376,855 kg/yr total nitrogen. The chlorophyll *a* criterion is 5.4 µg/L (Subparagraph 62-302.532(1)(bb)(1), F.A.C.). For Class III predominantly marine waters, the daily average dissolved oxygen (DO) saturation shall not be below 42 percent in more than 10 percent of the values (Subsection 62-302.533(2), F.A.C.). This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

Effluent grab and 24-hour flow proportioned composite samples were collected from monitoring site location EFD-1, for outfall D-001 on November 14, 2022. Effluent renewal composite samples were collected on November 16, 2022 and November 18, 2022. There is an effluent permit limit for carbonaceous biochemical oxygen demand analysis but this test was not scheduled.

Samples were collected by Conor Lucey and Philippe Hook (Northeast District). Analyses were performed by Diversified Environmental Laboratories in Jacksonville, Eurofins Savannah, and DEP Laboratory in Tallahassee.

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.

Class III Water Quality Criteria for Fresh and Marine Waters are found in Chapter 62-302, F.A.C. All references to Rule 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

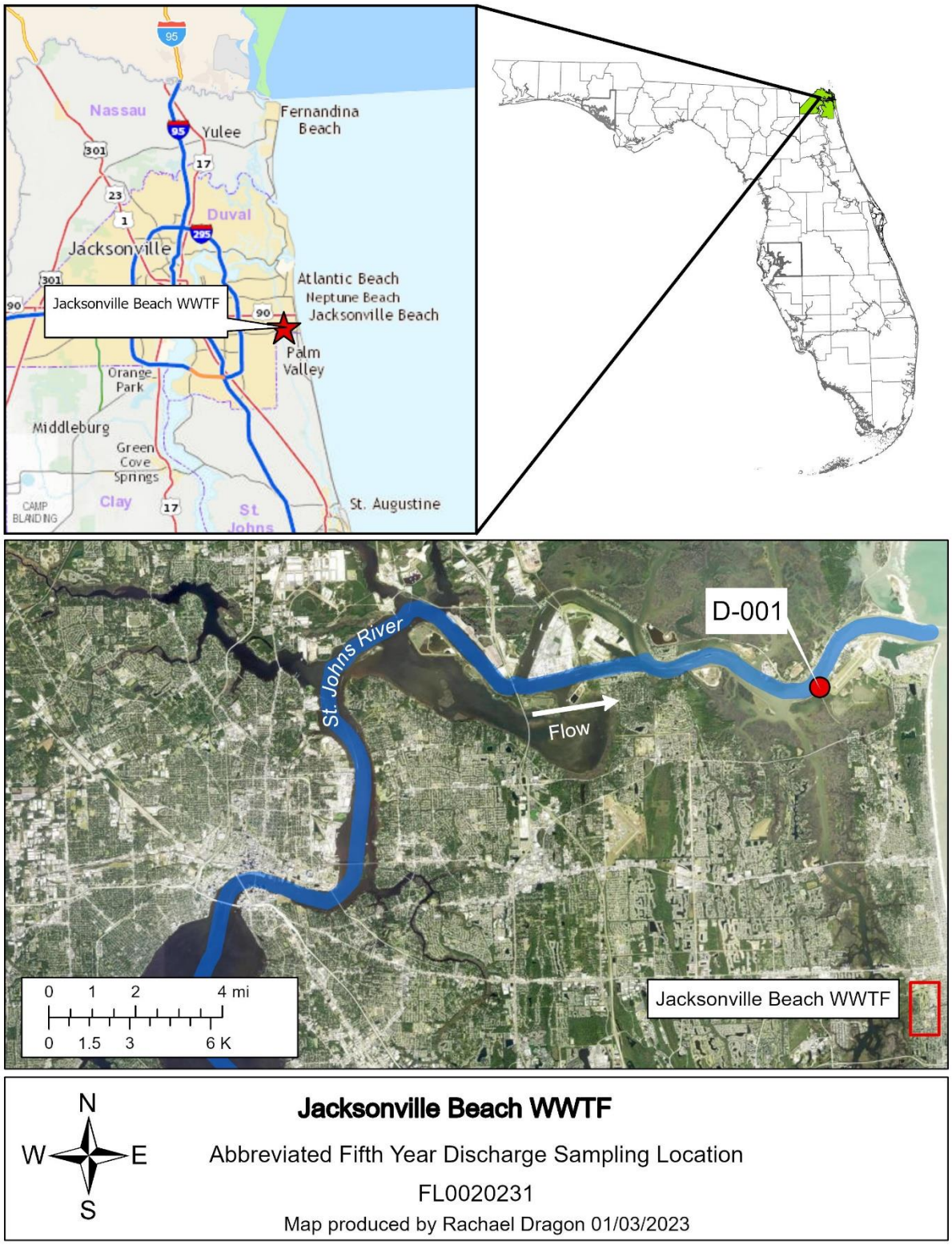


Figure 1. Map of Facility and Discharge Location

Results

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

- All effluent water quality parameters complied with Class III Water Quality Criteria for Marine Waters and effluent permit limits.

- Total Residual Chlorine compliance could not be determined because the laboratory minimum detection level was above the permit limit.

Analytical Water Chemistry (See Table 2 and Appendix D)

- Cyanide detected in the effluent grab sample exceeded the Class III Water Quality Criterion for Marine Waters (Subsection 62-302.530(24), F.A.C.) and effluent permit limit. The sample was J-qualified because the matrix spike duplicate recovery was outside control limits.

- Cyanide was detected in the field blank between the Method detection limit (MDL) and practical quantitation limit (PQL).

- Total phosphorus, total ammonia nitrogen, and nitrate and nitrite were detected in the equipment blank.

Microbiology (See Table 2 and Appendix B)

- Effluent enterococci levels complied with the Class III Water Quality Criterion for Marine Waters. Effluent enterococci and fecal coliform levels complied with effluent permit limits.

Toxicity Whole Effluent Test (See Table 2)

- Tests were performed November 15 through November 21, 2022.

- The sample was aerated for 15 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 9.6 mg/L to 8.1 mg/L.

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

- During the chronic definitive bioassay, the effluent composite sample IC25 for the water flea, *Ceriodaphnia dubia,* was calculated as 34.2% effluent. This did not comply with the effluent permit limit.

- The chronic definitive bioassay for the fish, *Pimephales promelas,* failed the test acceptability criteria for survival and was reported as ‘No Result’.

- 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 complied with Class III Water Quality Criteria for Marine Waters and effluent permit limits.

- Copper was detected in the equipment blank between the MDL and PQL.

Algal Growth Potential (See Table 4 and Appendix B)

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

- The effluent grab sample AGP result of 8.38 mg dry wt/L is within 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).

- Differences greater than an order of magnitude between actual and predicted AGP values are considered sufficient evidence to warrant follow up testing with the algal growth inhibition bioassay. True algal growth inhibition can only be determined by performing an actual algal growth inhibition test. Should algal growth inhibition be suspected, the district should request that the algal growth inhibition test be performed as a follow-up to the inspection.

Organic Constituents (See Table 5 and Appendix D)

- Atrazine, azoxystrobin, bromacil, caffeine, chlorfenapyr, fipronil, fipronil desulfinyl, fipronil sulfide, fipronil sulfone, fludioxonil, flutolanil, fluxapyroxad, iprodione, loratadine, oxadiazon, prodiamine, propiconazole, simazine, sulfentrazone, tebuconazole, terbufos, 2,4,6-trichlorophenol, and hexachlorocyclopentadiene were detected in the effluent grab sample.

- There are no effluent permit limits for organic constituents.

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 Water Quality Criteria for Marine Waters, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent EFD-1
Temperature	C	-	-	23.8
pH	SU	6.5 - 8.5	6.5 - 8.5 s	6.8
Specific Conductance	umhos/cm	-	-	1,092
Salinity	ppth	-	-	0.6 c
Dissolved Oxygen	% saturation	≥ 42	-	69.9
Dissolved Oxygen	mg/L	-	≥ 5.0 s	5.9
Total Residual Chlorine	mg/L	-	≤ 0.01 s	0.02 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
s - Single sample
U - Material analyzed for but not detected; value reported is the method detection limit

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

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Ortho-phosphate	mg P/L	-	Report	-	1.4
Total Phosphorus[1]	mg P/L	-	Report	1.5	1.6
Total Ammonia Nitrogen[1]	mg N/L	-	Report	0.075	0.049
Un-ionized Ammonia (calculated salinity)	mg N/L	-	-	-	< 0.02 c
Nitrate and Nitrite[1]	mg N/L	-	Report	3.1	1.6
Total Kjeldahl Nitrogen	mg N/L	-	Report	1.2	1.3
Organic Nitrogen	mg N/L	-	Report	1.1 c	1.3 c
Total Nitrogen	mg N/L	-	Report	4.3 c	2.9 c
Total Organic Carbon	mg C/L	-	-	-	12 A
Chlorophyll *a* - Corrected	µg/L	≤ 5.4 a	-	-	3.1
Phaeophytin	µg/L	-	-	-	1.5 I
Hardness	mg CaCO3/L	-	-	-	286 c
Total Suspended Solids	mg/L	-	≤ 10.0 sp	3 I	-
Turbidity	NTU	≤ 29 t	-	-	1.5 A
Color (true)	PCU	-	-	-	15
Alkalinity	mg CaCO3/L	-	-	-	110 A
Chloride	mg Cl/L	-	-	-	170 A
Cyanide[2]	µg/L	≤ 1.0	≤ 7.0 s	-	15 J e
Fluoride	mg F/L	≤ 5.0	-	-	0.65
Sulfate	mg SO4/L	-	-	-	170 A
Fecal Coliforms	cfu/100 mL	-	≤ 800 s	-	40
Enterococci	MPN/100 mL	≤ 130	≤ 130	-	6.9
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	-	≥ 100 sp	34.2 e	-
Bioassay - Fish *(Pimephales promelas)*	% effluent	-	≥ 100 sp	No Result O	-

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

e - Value exceeds the Class III Water Quality Criteria or permit limits

a - Long-term average of annual means

c - Value is calculated

p - 24-hour flow proportioned composite

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
O - Sampled, but analysis lost or not performed
1 - Analyte detected in the equipment blank
2 - Analyte detected in the field blank

Table 3. Analytical metals data

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Aluminum	µg/L	≤ 1500	-	-	20
Arsenic	µg/L	≤ 50	-	-	0.49
Cadmium	µg/L	≤ 8.8	-	-	0.020 U
Calcium	mg/L	-	-	-	66.8
Chromium, Total [3]	µg/L	≤ 50	-	-	0.62 I
Copper[1]	µg/L	≤ 3.7	≤ 16.0 sp	2.03	1.93
Iron	µg/L	≤ 300	≤ 300 sp	46 I	49 I
Lead	µg/L	≤ 8.5	-	-	0.20 U
Magnesium	mg/L	-	-	-	28.9
Nickel	µg/L	≤ 8.3	-	-	0.96 I
Potassium	mg/L	-	-	-	12.4
Selenium	µg/L	≤ 71	-	-	0.20 U
Silver	µg/L	≤ 2.3	-	-	0.010 U
Sodium	mg/L	-	-	-	100
Zinc	µg/L	≤ 86	-	-	32

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
p - 24-hour flow proportioned composite
s - Single sample
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
1 - Analyte detected in the equipment blank
3 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

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*	8.38 A	62.7 ± 12.5	602 ± 120.4	110.2 ± 22	688 ± 137.6	1.2	1.8

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

Table 5. Detected Organic Constituents

Effluent limits, Class III Water Quality Criteria for Marine Waters, and analytical organic and pesticide data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Atrazine	ng/L	-	-	12
Azoxystrobin	ng/L	-	-	3.6
Bromacil	ng/L	-	-	1.1 I
Caffeine	ng/L	-	-	16 I
Chlorfenapyr	ng/L	-	-	3.4
Fipronil	ng/L	-	-	2.8
Fipronil Desulfinyl	ng/L	-	-	0.22 I
Fipronil Sulfide	ng/L	-	-	1.3
Fipronil Sulfone	ng/L	-	-	0.78
Fludioxonil	ng/L	-	-	0.63
Flutolanil	ng/L	-	-	0.35 I
Fluxapyroxad	ng/L	-	-	0.33 I
Iprodione	ng/L	-	-	0.71 I
Loratadine	ng/L	-	-	5.2
Oxadiazon	ng/L	-	-	3.4
Prodiamine	ng/L	-	-	0.33 I
Propiconazole	ng/L	-	-	1.4 I
Simazine	ng/L	-	-	6.8
Sulfentrazone	ng/L	-	-	28
Tebuconazole	ng/L	-	-	7.3
Terbufos	ng/L	-	-	0.15 I
2,4,6-Trichlorophenol	µg/L	-	-	0.23
Hexachlorocyclopentadiene	µg/L	-	-	0.12 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Appendix A. Facility Summary

PART I: Information gathered prior to sampling event

Prepared By: Shannon Taylor	**Contact Number:** (904) 256-1617
Facility Name (as it appears on permit): Jacksonville Beach WWTF	**Former Names:** **N/A**
NPDES Permit Number: FL0020231	**Permit Expiration Date:** 02/03/2024
Physical Address: 910 10th Street South, Jacksonville Beach, Florida 32250	
District: Northeast	**County:** Duval
Function of Facility: Advanced domestic wastewater treatment.	
Facility Type: Advanced wastewater treatment, w/SBRs	**Permitted Capacity (MGD):** 4.5 million gallons

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 1.92 MGD Annual Average, D-002 no discharge in the last 12 months 9/30/2021 - 8/31/2022

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):
R-001 0.514 MGD 9/30/2021-8/31/2022

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	Description of Monitoring Site
EFD-1	Sample point after de-chlorination and prior to the effluent pump station for discharge to the Outfall D-001 (**Sampling Point Used for FYI3**)
EFA-1	Sample point after disinfection (basic-level disinfection) and prior to De-chlorination.
SWA-BE1	Ambient sample located at STORET Station 21FLA20030464; approximately at latitude 30° 23' 4.4" N, longitude 81° 26' 19.5" W. (See Figure 1 or 2)
SWA-BE2	Ambient sample located at STORET Station 21FLA20030465; approximately at latitude 30° 22' 57.9" N, longitude 81° 26' 27.2" W. (See Figure 1 or 2)
SWA-BE1	Ambient/background sample located at STORET Station 21FLA20030056; approximately at latitude 30° 22' 53.965" N, longitude 81° 26' 55.194" W. (See Figure 1 or 2)
EFD-2	Sample point after de-chlorination and prior to discharge to Cradle Creek.
SWB-3	Upstream of the Outfall D-002, at the Central Basin Stormwater Station located 12th Avenue South
EFA-3	Sample point immediately after disinfection (high-level disinfection) prior discharge to the holding pond
EFB-1	Sample point after filtration and prior to disinfection (high-level disinfection) at the reuse facility.
RWS-A	Same sampling point as EFA-3 for primary and secondary drinking water analysis

Description of Permitted Outfall(s):

Outfall ID	Description

D-001	An existing 4.5 MGD AADF permitted discharge through a 24-inch diameter ductile iron pipe effluent force main to the St. Johns River (Class III Marine Waters, WBID 2213A- Within the National Preserve) at Sherman Point. The effluent force main is also utilized by the Atlantic Beach and Neptune Beach wastewater treatment facilities. The Discharge Location (D-001) has an outfall of approximately 250 feet in length and discharges at a depth of approximately10 feet below the water surface. The point of discharge is located approximately at latitude 30□22' 55.24" N, longitude 81□26' 22.68" W.
D-002	An existing permitted discharge of final effluent and stormwater to Cradle Creek (which is predominantly fresh water during wet weather conditions) to an estuary of Pablo Creek (Intracoastal Waterway, Class III marine waters, WBID 2205C) at Discharge Location (D-002). The D-002 is classified as a limited wet weather discharge (LWWD) and is utilized only during periods of heavy rainfall (at least 24-hour, 25-year storm events). The point of discharge is located approximately at latitude 30□16' 28.9" N, longitude 81□24' 23.1" W
R-00	An existing 1.123 MGD monthly average daily flow (MADF) permitted capacity slow-rate public access (R-001) consisting of following:

User Name	**Acreage (Acres)**	**Capacity (MGD)**
Jacksonville Beach Municipal Golf Course	84.0	0.70
Wingate Park	10.4	0.047
Police Station, O&M Grounds, Ball Fields	3.0	0.01
Jacksonville Beach WWTF – Belt press, irrigation of landscape	-	0.03
Other users	-	0.336
Total	210.06	1.123

Design capacity of the reuse treatment system (slow-rate public access) is 4.50 MGD AADF. However, the permitted capacity of the reuse system is limited to 1.123 MGD AADF due to limited capacity of the land application sites.

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

A 4.5 million gallons per day (MGD) annual average (AADF) permitted capacity advanced wastewater treatment (AWT) facility consisting of:

- A screening chamber consisting of two traveling bar screens with 3/16-inch opening. Each screen is mechanically cleaned, provided with a spiral conveyor/compactor and continuous bagging unit
- A master pump station consisting of 4 pumps each of which has a capacity of 2,800 gpm operating at a maximum TDH of approximately 53 feet
- Four sequential batch reactors (SBRs) each of which have a volume of 1.436 million gallons (Mgal) and contain 4 Invent HyperClassis mixer/aerator. Three blowers rated at 3588 ICFM, 3200 SCFM (one redundant) provide oxygen for the SBR system. The SBR cycle includes six main steps: fill/mix without aeration, fill with aeration, aeration without filling, missing without filling, settling and decanting and excess sludge removal. The SBRs operate at minimum hydraulic retention time (HRT) of 30 hours with a solids retention time (SRT) of 23 ays and with mixed liquor suspended Solids (MLSS) concentration of 4,322 mg TSS/L or lower at the minimum water depth (post decanting). The entire SBR operation is controlled by a PLC/CPU controller
- Four ultrascreen filters, each of which has 12 elements each at 22 square feet with a design filter element loading rate of 4 to 6 gpm per square foot
- Two chlorine contact chambers, each of which has a volume of 325,050 gallons
- Two rectangular re-aeration basins consisting of six modules. Each module consists of 18 membrane tubes
- Three aerobic digesters each of which is 45-foot diameter with 20-foot side water depth. The aerobic digesters are aerated by three blowers.
- A reclaimed water distribution system

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)

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Flow (D-001)	MGD	Max	4.50	Annual Average	Continuous	Recording Flow Meter with Totalizer	EFD – 1	See I.A.4
		Max	Report	Monthly Average				
Flow, Total Volume	Mgal/month	Max	Report	Monthly Total	Monthly	Calculated *(Sum of daily flow in the month)*	CAL-1	
BOD, Carbonaceous 5 day, 20C	mg/L	Max	5.0	Annual Average	Weekly	24-hr FPC	EFD – 1	
		Max	6.25	Monthly Average				
		Max	7.5	Weekly Average				
		Max	10.0	Single Sample				
Solids, Total Suspended	mg/L	Max	5.0	Annual Average	Weekly	24-hr FPC	EFD – 1	
		Max	6.25	Monthly Average				
		Max	7.5	Weekly Average				
		Max	10.0	Single Sample				
pH	s.u.	Min	6.5	Single Sample	Continuous	Meter	EFD – 1	See I.A.3
		Max	8.5	Single Sample				

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Coliform, Fecal	#/100mL	Max	200	Annual Average	Weekly	Grab	EFD – 1	See I.A.5
		Max	200	Monthly Geometric Mean				
		Max	800	Single Sample				
Enterococci	#/100mL	Max	35.0	Monthly Geometric Mean	Weekly	Grab	EFD – 1	See I.A.5
		Max	130.0	90th Percentile				
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	Continuous	Meter	EFA-1	See I.A.3 and I.A.
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	Daily; 24 hours	Grab	EFD – 1	
Oxygen, Dissolved (DO)	mg/L	Min	5.0	Single Sample	Daily, 24 hours	Meter	EFD – 1	See I.A.7

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Copper, Total Recoverable *(Regulatory Mixing Zone)*	µg/L	Max	16.0	Single Sample	Monthly	24-hr FPC	EFD – 1	See I.A.8
Cyanide, Total (as CN) *(Regulatory Mixing Zone)*	µg/L	Max	7.0	Single Sample	Monthly	Grab	EFD – 1	See I.A.9
Nitrogen, Total (as N)	mg/L	Max	Report	Annual Average	Weekly	24-hr FPC	EFD – 1	
		Max	Report	Monthly Average				
		Max	Report	Single Sample				
Nitrogen, Total Load (as N)	lb/year	Max	Report	Annual Total	Monthly	Calculated	CAL – 5	
	Lbs/month	Max	Report	Monthly Total				
Phosphorus, Total (as P)	mg/L	Max	Report	Annual Average	Weekly	24-hr FPC	EFD – 1	
		Max	Report	Monthly Average				
		Max	Report	Single Sample				
Phosphorus, Total Load (as P)	lbs/year	Max	Report	Annual Total	Monthly	Calculated	CAL – 5	
	Lbs/month	Max	Report	Monthly Total				
Nitrogen, Organic, Total (as N)	mg/L	Max	Report	Single Sample	Quarterly	24-hour flow proportioned composite	EFD – 1	
Nitrite plus Nitrate, Total (as N)	mg/L	Max	Report	Single Sample	Quarterly	24-hour flow proportioned composite	EFD – 1	

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Single Sample	Quarterly	24-hour flow proportioned composite	EFD – 1	
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Single Sample	Quarterly	24-hour flow proportioned composite	EFD – 1	
Phosphate, Ortho (as P)	mg/L	Max	Report	Single Sample	Quarterly	Grab and filtered	EFD – 1	
Iron, Total Recoverable	mg/L	Max	0.3	Single Sample	Semi-Annually; twice per year	24-hour flow proportioned composite	EFD – 1	
Chronic Whole Effluent Toxicity, 7-Day IC25 (*Ceriodaphnia dubia*)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFD – 1	See I.A.10
Chronic Whole Effluent Toxicity, 7-Day IC25 (*Pimephales promelas*)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFD – 1	See I.A.10
Dissolved Oxygen	mg/L	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
pH	S.U.	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Salinity	mg/L	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Specific Conductance	Umhos/cm	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Turbidity	NTU	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Temperature	Deg. C	Max	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Tide Stage	Low/High	Min	Report	Single Sample	Monthly	Meter	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
BOD, Carbonaceous 5 day, 20C	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Solids, Total Suspended	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Ammonia, Nitrogen (as N)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Nitrogen, Total (as N)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Phosphate, Ortho (as P)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Phosphorus, Total (as P)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11

Chloride (as Cl)	mg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/ Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Copper, Total Recoverable	µg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11
Cyanide	µg/L	Max	Report	Single Sample	Bi-Monthly	Grab	SWA – BE1 SWA – BE2 SWB – BE1	See I.A.11

Part I: Continued	
Receiving Waters: St. Johns River (Class III Marine Waters, WBID 2213A)	**Classification (indicate whether fresh or marine):** Marine

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

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

a. Effluent Limitation
   (1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. [Rules 62- 302.530(61) and 62-4.241(1)(b), F.A.C.]
   (2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. *[Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]*

b. Monitoring Frequency
   (1) Routine toxicity tests shall be conducted once every six months, the first starting within six (6) month of the most recent toxicity test and lasting for the duration of this permit.

c. Sampling Requirements
   (1) For each routine test or additional follow-up test conducted, a total of three flow proportional 24-hr composite samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
   (2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
   (3) Samples for routine and additional follow-up tests shall not be collected on the same day.

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

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

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

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

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

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

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

Facility Mixing Zone Details (if applicable):
Mixing zones for Total Recoverable Copper and Total Cyanide are in place and described below.
A mixing zone for c**oncentration of copper (total recoverable)** in the effluent discharged through the existing outfall D-001 to St. Johns River has been established. The mixing zone consists of the 36,379 m2-polygonal embayment and a 15,848 m2 -quadrilateral strip (28 m by 566 m) adjoining the polygonal embayment. The total mixing zone area shall be 52,227 m2, centered over the end-of-pipe of the Outfall D-001 perpendicular to the shore and extends approximately 256 meters up-river and 310 meters down-river from the outfall. Within the mixing zone, a minimum dilution ration of 9:1 is achieved at critical/worse care hydrologic scenarios. The maximum concentration limit at the end-of-pipe for copper (total recoverable) is 16.0 µg/L for Jacksonville Beach WWTF (4.5 MGD AADF), Atlantic Beach WWTF (3.5 MGD AADF), and Neptune Beach WWTF (1.5 MGD AADF), at the total permitted capacity of 9.5 MGD AADF. The dischargers shall meet the water quality criterion of 3.7 µg/L for copper at the edge of the mixing zone area. The coordinates of the vertices of the copper mixing zone and the Outfall D-001 are listed in the Table 1. Mixing zone delineation is shown on Figure 1.

Table 1. Coordinates of the Vertices of Mixing Zone Polygon for Copper

Point	Latitude	Longitude
Outfall D-001	30° 22´ 55.24´´ N	81° 26´ 22.68´´ W
SW	30° 22´ 50.38´´ N	81° 26´ 32.457´´ W
NE	30° 23´ 02.45´´ N	81° 26´ 16.07´´ W
B	30° 22´ 49.70´´ N	81° 26´ 31.72´´ W
C	30° 23´ 01.45´´ N	81° 26´ 15.45´´ W
D	30° 22´ 58.46´´ N	81° 26´ 16.91´´ W
E	30° 22´ 56.07´´ N	81° 26´ 20.22´´ W
F	30° 22´ 52.95´´ N	81° 26´ 20.67´´ W
G	30° 22´ 49.66´´ N	81° 26´ 36.40´´ W
SWA – BE1	30° 23´ 4.4´´ N	81° 26´ 19.5´´ W
SWA – BE2	30° 22´ 57.9´´ N	81° 26´ 27.2´´ W
SWB – BE1	30° 22´ 53.965´´ N	81° 26´ 55.194´´ W

A mixing zone for concentration of **total cyanide** in the effluent discharged through the existing outfall D-001 to St. Johns River has been established. The mixing zone consists of the 36,379 m2-polygonal embayment and a 28,830 m2-quadrilateral strip (31 m by 930 m) adjoining the polygonal embayment. The total mixing zone area shall be 65,209 m2, centered over the end-of-pipe of the Outfall D-001 perpendicular to the shore and extends approximately 497 meters up-river and 433 meters down-river from the outfall. Within the mixing zone, a minimum dilution ration of 12:1 is achieved at critical/worse case hydrologic scenarios. The maximum concentration limit at the end-of-pipe for total cyanide of 7 µg/L at the permitted capacity of 9.5 MGD AADF, is a combination of flow rates of three Beach facilities: Jacksonville Beach WWTF (4.5 MGD AADF), Atlantic Beach WWTF (3.5 MGD AADF), and Neptune Beach WWTF (1.5 MGD AADF). The dischargers shall meet the water quality criterion of 1.0 µg/L for cyanide or are identified in compliance with Rule 62-4.246(7), FAC, at the edge of the mixing zone area. The coordinates of the vertices of the cyanide mixing zone and the Outfall D-001 are listed in the Table 2, and mixing zone delineation is shown on Figure 2.

Table 2: Coordinates of the Vertices of Mixing Zone Polygon for Cyanide

Point	Latitude	Longitude
Outfall D-001	30° 22´ 55.24´´ N	81° 26´ 22.68´´ W
SW1	30° 22´ 46.24´´ N	81° 26´ 38.94´´ W
SW2	30° 22´ 47.75´´ N	81° 26´ 39.62´´ W
NE1	30° 23´ 05.07´´ N	81° 26´ 11.35´´ W
NE2	30° 23´ 05.96´´ N	81° 26´ 12.05´´ W
B1	30° 22´ 50.96´´ N	81° 26´ 31.72´´ W
B	30° 22´ 49.70´´ N	81° 26´ 31.72´´ W
C	30° 23´ 01.45´´ N	81° 26´ 15.45´´ W
D	30° 22´ 58.46´´ N	81° 26´ 16.91´´ W
E	30° 22´ 56.07´´ N	81° 26´ 20.22´´ W
F	30° 22´ 52.95´´ N	81° 26´ 20.67´´ W
G	30° 22´ 49.66´´ N	81° 26´ 36.40´´ W
SWA – BE1	30° 23´ 4.4´´ N	81° 26´ 19.5´´ W
SWA – BE2	30° 22´ 57.9´´ N	81° 26´ 27.2´´ W
SWB – BE1	30° 22´ 53.965´´ N	81° 26´ 55.194´´ W

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

Date	Location	Description	Result	Limit	Units	Statistical Base
06/30/2022	EFA-3	Coliform, Fecal	94	25	#/100mL	MB - Maximum
02/28/2022	EFB-1	Solids, Total Suspended	38	5	mg/L	MB - Maximum
12/31/2021	EFA-3	Color	26	15	PCU	AB - Annual Average
12/31/2021	EFA-3	Solids, Total Dissolved (TDS)	574	500	mg/L	AB - Annual Average
12/31/2021	EFA-3	1,1-dichloroethylene	0.44	0.007	mg/L	MB - Maximum
12/31/2021	EFA-3	1,1,2-trichloroethane	0.2	0.005	mg/L	MB - Maximum
12/31/2021	EFA-3	1,2-dichloroethane	0.4	0.003	mg/L	MB - Maximum
12/31/2021	EFA-3	1,2-dichloropropane	0.1	0.005	mg/L	MB - Maximum
12/31/2021	EFA-3	1,2,4-trichlorobenzene	0.4	0.07	mg/L	MB - Maximum
12/31/2021	EFA-3	Benzene	0.2	0.001	mg/L	MB - Maximum
12/31/2021	EFA-3	Carbon tetrachloride	0.3	0.003	mg/L	MB - Maximum
12/31/2021	EFA-3	Cis-1,2-dichloroethene, Whole Water	0.3	0.07	mg/L	MB - Maximum
12/31/2021	EFA-3	Dichloromethane (methylene chloride)	0.3	0.005	mg/L	MB - Maximum
12/31/2021	EFA-3	Monochlorobenzenes	0.3	0.1	mg/L	MB - Maximum
12/31/2021	EFA-3	1,4-dichlorobenzene	0.3	0.075	mg/L	MB - Maximum
12/31/2021	EFA-3	Styrene, Total	0.3	0.1	mg/L	MB - Maximum
12/31/2021	EFA-3	Tetrachloroethylene	0.3	0.003	mg/L	MB - Maximum
12/31/2021	EFA-3	1,2-trans-dichloroethylene	0.4	0.1	mg/L	MB - Maximum
12/31/2021	EFA-3	Trichloroethylene	0.3	0.003	mg/L	MB - Maximum
12/31/2021	EFA-3	Vinyl chloride	0.4	0.001	mg/L	MB - Maximum
12/31/2021	EFA-3	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)	13.01	3.0E-5	ug/L	MB - Maximum
12/31/2021	EFA-3	Silvex	0.09	0.05	mg/L	MB - Maximum
12/31/2021	EFA-3	Alachlor	0.1	0.002	mg/L	MB - Maximum
12/31/2021	EFA-3	Atrazine	0.09	0.003	mg/L	MB - Maximum
12/31/2021	EFA-3	Carbofuran	0.5	0.04	mg/L	MB - Maximum
12/31/2021	EFA-3	Chlordane (tech mix. and metabolites)	0.05	0.002	mg/L	MB - Maximum
12/31/2021	EFA-3	Dalapon	0.9	0.2	mg/L	MB - Maximum
12/31/2021	EFA-3	Bis(2-ethylhexyl)adipate	0.5	0.4	mg/L	MB - Maximum
12/31/2021	EFA-3	Bis (2-ethylhexyl) phthalate	0.5	0.006	mg/L	MB - Maximum
12/31/2021	EFA-3	Dinoseb, Whole Water, Recoverable	0.18	0.007	mg/L	MB - Maximum
12/31/2021	EFA-3	Diquat	0.6	0.02	mg/L	MB - Maximum
12/31/2021	EFA-3	Endothall	6	0.1	mg/L	MB - Maximum
12/31/2021	EFA-3	Endrin	0.0069	0.002	mg/L	MB - Maximum
12/31/2021	EFA-3	Glyphosate	5.9	0.7	mg/L	MB - Maximum
12/31/2021	EFA-3	Hexachlorobenzene	0.0063	0.001	mg/L	MB - Maximum
12/31/2021	EFA-3	Oxamyl (vydate)	1.8	0.2	mg/L	MB - Maximum

12/31/2021	EFA-3	Pentachlorophenol	0.038	0.001	mg/L	MB - Maximum	
12/31/2021	EFA-3	Simazine in Whole Water	0.06	0.004	mg/L	MB - Maximum	
12/31/2021	EFA-3	Toxaphene	0.12	0.003	mg/L	MB - Maximum	
12/31/2021	EFA-3	Trihalomethane, Total by summation	0.28	0.08	mg/L	MB - Maximum	
09/30/2021	EFD-1	BOD, Carbonaceous 5 day, 20C	40	10	mg/L	MB - Maximum	
09/30/2021	EFD-1	BOD, Carbonaceous 5 day, 20C	40	7.5	mg/L	WA - Weekly Average	
09/30/2021	EFD-1	BOD, Carbonaceous 5 day, 20C	8	6.25	mg/L	MK - Monthly Average	
09/30/2021	EFA-3	Coliform, Fecal	144	25	#/100mL	MB - Maximum	
09/30/2021	EFA-3	pH	8.6	8.5	s.u.	MB - Maximum	

Describe previous FYI and WQBEL study:
No other FYI or WQBEL study information available, outside of the information in the permit discussing the WQBEL parameters selected .
(ii) Water Quality Based Effluent Limitation (WQBEL)
Water quality based effluent limitations (WQBELs) are effluent limitations, which may be more stringent than a technology based effluent limitation, that have been determined necessary by the Department to ensure that water quality standards in a receiving body of water will not be violated. WQBELs are developed in accordance with Chapter 62-650, F.A.C., and are based on the characteristics of the discharge, the receiving water characteristics, and the criteria and standards in Chapters 62-4, 62-302, and the 62-600 series, F.A.C.; they were developed based on Total Maximum Daily Load (TMDL) allocations adopted in Chapter 62-304, F.A.C., and allocations developed as part of a Basin Management Action Plan (BMAP) or/and a Reasonable Assurance Plan (RAP). WQBELs are included in the permit for the following pollutants of concern.

1. Enterococci:
• In 2004, EPA promulgated bacteriological water quality criteria for Florida in 40 CFR 131.41. A requirement for discharges from the Outfall D-001 to meet the federal criteria was adopted in subsection 62-600.520(5), F.A.C.; thus, enterococci was required to monitor in the existing permit.
In July 2017, EPA approved Florida's bacteriological water quality standards in Rule 62-302.530, F.A.C., superseding the criteria in 40 CFR
131.41. The enterococci effluent limitations previously included in the permit have been replaced with enterococci effluent limitations consistent with the bacteriological water quality standards for enterococci in Rule 62- 302.530, F.A.C.
• Because there is no established relationship between fecal coliform and enterococci bacteria, limitations based on both the disinfection requirements for fecal coliform from Rule 62-600.440, F.A.C., and based on the bacteriological water quality standards for enterococci for discharges to Class III predominately marine waters under Rule 62- 302.530, F.A.C., have been included in the permit.
2. Dissolved Oxygen:
• Site Specific Alternative Criteria (SSACs) for dissolved oxygen has established for the St. Johns River marine portions of the lower St. Johns River and its tributaries (between Julington Creek and the mouth of the river at the Atlantic Ocean). Pursuant to the SSAC, Dissolved Oxygen shall not be less than a minimum concentration of 4.0 mg/L, and a Total Fractional Exposure not greater than 1.0 over an annual evaluation period as defined by the following equation for segments of the river: WBID 2213A (outfall location).

• The effluent limitations for CBOD5, TKN and DO have been established such the water quality criterion for DO concentration of the segment of waterbody is meet. In addition, the permittee shall continue to monitor for dissolved oxygen for the segment waterbody where the discharge/outfall located to confirm that the discharge would not impact to the dissolve oxygen level of the waterbody. The fact that the ambient river monitoring has confirmed that the DO level of the River has been in compliance with the SSAC for DO. There is no evidence to show that the effluent would impact the DO level of the waterbody. Therefore, the limit for DO is proposed to remain unchanged.

3. Iron:
• Iron is listed as potentially impaired parameter in the WB segment. In addition, result of 3rd Year Department Sampling Inspection (January 2013) reported that iron in the sample was at 490 g/L which was exceeded the
Florida Water Quality Criterion for iron. Overall, for all other sample results, the facility meets the WQ standard for iron. To provide reasonable assurance that the discharge would not have negative impact to segment of the waterbody, the permittee is required to monitor for iron (iron, total recoverable).
4. Mercury:
• The analytical results indicate that the discharge has complied with the permit limit for mercury. Based on the Statewide mercury TMDL, the permittee is required to continue to monitor for mercury. EPA Method 1631E is

recommended. However, an alternative EPA approved method such as Method 245.1 or 245.7 with a MDL of 14.0 ng/L or less operated in the high sensitivity mode can be used as for initial screening for mercury. If mercury is not detected (e.g., the results are less than the MDL of 14.0 ng/L), then mercury is in compliance with the water quality criterion of Rule 62-302.530(41), FAC. However, for any sample results that have a value greater than the MDL but less than the PQL, the permittee shall conduct an additional evaluation for mercury using clean sampling techniques such as Method 1631E. If test results show quantifiable mercury levels in the effluent, the permittee shall prepare and implement a mercury minimization plan addressing sources of mercury.

- Since the effluent discharging from the Outfall D-001 or D-002 has the same water qualities (the same treatment levels), mercury shall be selected to monitor for the discharge from the Outfall D-002 which has more stringent Water Quality Criterion for mercury (0.012 µg/L for the discharge from Outfall D-002 vs 0.025 µg/L for the discharge from Outfall D-001).

5. Copper – Mixing Zone Evaluation:

- The effluent from three Beaches' wastewater facilities, which include City of Jacksonville Beach WWTF, Atlantic Beach WWTF and Neptune Beach WWTF, has been combined and discharges through 30-inch diameter outfall pipe (D – 001). The Beaches have been required to monitor for concentration of copper in the effluent before discharge, and compared the results with the water quality standards (WQS) of 3.7µg/L. Exceedances of WQS in surface water discharge are not authorized, except with a localized area defined and approved as a mixing zone.
- Mixing Zone for copper has been established which consist of the 36,379 m2-polygonal embayment and a 15,848 m2 -quadrilateral strip (28 m by 566 m) adjoining the polygonal embayment. The total mixing zone is 52,227 m2, centered over the end-of-pipe of the Outfall D-001 perpendicular to the shore and extends approximately 256 meters up-river and 310 meters down- river from the outfall. Within the mixing zone, a minimum dilution ratio of 9:1 is achieved at critical/worse care hydrologic scenarios.

- Evaluation of Existing Mixing Zone:

o Re-Calculations of the Mixing Zone Boundary – Target Dilution/Bulk Dilution:

Dilution required to meet acute water quality criteria were calculated as the ratio of the differences between each acute water quality criterion and the respective effluent concentration, and the ambient concentration and the criterion for each constituent:

Dilution Ratio: $D = \frac{Ce - Cm}{Cm - Ca}$

Dilution Factor: $S = \frac{Ce - Ca}{Cm - Ca}$

Then $S = D + 1$

$Cm = Ca + \frac{(Ce - Ca)}{S}$ (iv.1)

Where:

Ce = Effluent/discharge concentration Ca = Ambient/background concentration

Cm = concentration of the constituent in the mixing area

The range of value for Cm, like those for Ce or Ca, may be described by a cumulative frequency distribution which is computed based on the expectation that the distribution for Ce and Ca are stochastically independent of each other and by constructing a joint probability matrix. The joint probability matrix was constructed based on the percentile value of ambient and effluent copper concentration from 1 to 100 percent at 1 percent increments (Total of 100 ambient and effluent copper values). There are a resultant 10,000 combinations of mixed concentration calculated using equation iv.1 and a specified value of S. The results of these calculations were then evaluated to determine percent of the 10,000 calculated values are above the water quality standard for copper of 3.7 µg/L for the specified values of S. Table 1 below indicates the percent of the time that the Cm is less than or equal to the water quality standard

Dilution Factor, S	% of time concentration is less than 3.7 µg/L
1.5	98.29
1.8	98.96
2.0	99.13
3.0	99.59
3.2	99.63
3.5	99.67
4.0	99.71
5.0	99.76
6.0	99.83
7.0	99.85
8.0	99.88
9.0	99.93

o The current data shows that at the selected target dilution 99.93 percent of time the mixed concentration is less than the WQS.

o Mixing Zone for Copper is recommended to remain as previous approval.

Point	Latitude	Longitude
Outfall D-001	30° 22´ 55.24´´ N	81° 26´ 22.68´´ W
SW	30° 22´ 50.38´´ N	81° 26´ 32.457´´ W
NE	30° 23´ 02.45´´ N	81° 26´ 16.07´´ W
B	30° 22´ 49.70´´ N	81° 26´ 31.72´´ W
C	30° 23´ 01.45´´ N	81° 26´ 15.45´´ W
D	30° 22´ 58.46´´ N	81° 26´ 16.91´´ W
E	30° 22´ 56.07´´ N	81° 26´ 20.22´´ W
F	30° 22´ 52.95´´ N	81° 26´ 20.67´´ W
G	30° 22´ 49.66´´ N	81° 26´ 36.40´´ W

6. Cyanide – Mixing Zone Evaluation:

• The Beaches have been required to monitor for concentration of total cyanide in the effluent before discharge, and compared the results with the water quality standards (WQS). Exceedances of WQS in surface water discharge are not authorized, except with a localized area defined and approved as a mixing zone.

• Mixing Zone for total cyanide has been established which consist of the 36,379 m2-polygonal embayment and a 28,830 m2 -quadrilateral strip (31 m by 930 m) adjoining the polygonal embayment. The total mixing zone is 65,209 m2, centered over the end-of-pipe of the Outfall D-001 perpendicular to the shore and extends approximately 497 meters up-river and 433 meters down-river from the outfall. Within the mixing zone, a minimum dilution ration of 12:1 is achieved at critical/worse care hydrologic scenarios.

• Evaluation of Existing Mixing Zone:

o The current data shows that at the selected target dilution 99.93 percent of time the mixed concentration is less than the WQS.

o Mixing Zone for total cyanide is recommended to remain as previous approval.

o Coordinates of the Vertices of Mixing Zone Polygon for Cyanide.

Point	Latitude	Longitude
Outfall D-001	30° 22´ 55.24´´ N	81° 26´ 22.68´´ W
SW1	30° 22´ 46.24´´ N	81° 26´ 38.94´´ W

SW2	30° 22´ 47.75´´ N	81° 26´ 39.62´´ W
NE1	30° 23´ 05.07´´ N	81° 26´ 11.35´´ W
NE2	30° 23´ 05.96´´ N	81° 26´ 12.05´´ W
B1	30° 22´ 50.96´´ N	81° 26´ 31.72´´ W
B	30° 22´ 49.70´´ N	81° 26´ 31.72´´ W
C	30° 23´ 01.45´´ N	81° 26´ 15.45´´ W
D	30° 22´ 58.46´´ N	81° 26´ 16.91´´ W
E	30° 22´ 56.07´´ N	81° 26´ 20.22´´ W
F	30° 22´ 52.95´´ N	81° 26´ 20.67´´ W
G	30° 22´ 49.66´´ N	81° 26´ 36.40´´ W

7. Other Heavy Metals:

o Results of the Department's Sampling Inspection indicates that the concentrations of the above listed metals were either below the MDL or in compliance with the Florida Water Quality Criteria (WQC). In addition, the data listed in the Expanded Effluent Testing (Application Form 2A) show that concentrations of the metals were at level that complied with the fresh water quality standard. Also, the facility receives almost 100% domestic wastewater; there are not any new industrial users. Therefore, there are no any new metals other than copper and iron are recommended to be monitor at the current time.

8. Narrative Nutrient Criterion of Numeric Nutrient Standards

o Pursuant with Rule 62-302.531(2)(a).1a, the narrative water quality criterion for nutrients in paragraph 62-302.530(47)(b), F.A.C., is numerically interpreted for both nutrients and nutrient response variables in the manner of the TMDL – Nutrient for the Lower St. Johns River.

o Jacksonville Beach wastewater treatment facility was designed as an advance wastewater treatment facility which is capable of producing high quality effluent: CBOD5 = 5.0 mg/L; TSS = 5.0 mg/L, and TN = 3.0 mg/L. With the high treatment level, the discharge meets the TMDL nutrients wastewater load allocation (Please see detail discussions below).

9. Whole Effluent Toxicity Testing:

In order to provide reasonable assurance that the discharge will not adversely affect the designated use of the receiving water, chronic whole effluent toxicity testing is required.

10. River Water – Ambient Monitoring:

City of Jacksonville Beach joints with these other two Beaches monitoring of the segment of the waterbody near the outfall D-001 for maintaining data on the impact of the discharge to the water quality of the surface water body. (The Beaches has a contract with JEA for the ambient sampling)

11. Benthic Macroinvertebrate Communities:

Due to good benthic macroinvertebrate communities near the WWTF outfall, at the present time the facility is not required to conduct bio-integrity monitoring. If the future studies reveal that benthic monitoring is necessary, the facility will be required to conduct additional regular monitoring of the segment of the St. Johns River near the outfall.

ii. In Conclusion:

The review included in-stream monitoring data, discharge monitoring reports, the Final Integrated Water Quality Assessment for Florida: 2018 Sections 303(d), 305(b) and 314 Report, EPA 303(d) report, and the Department's compliance sampling inspection reports. Considering the above, reasonable assurance of compliance has been

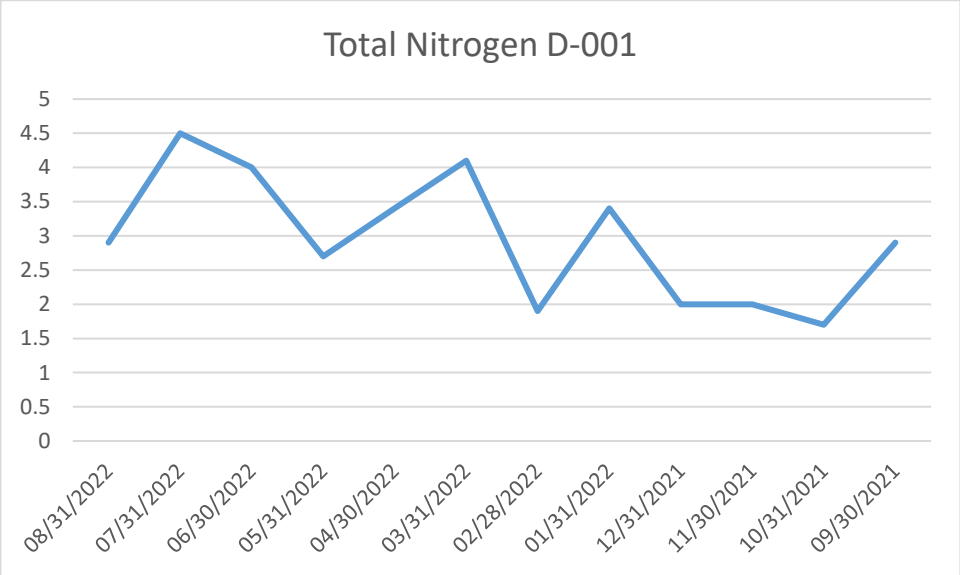
provided with the effluent limits and applicable surface water quality standards for each parameter of concern (based upon rules referenced in the tables above).
The previous permit limits are recommended to remain since they are more protected the waterbody (National Preserves).

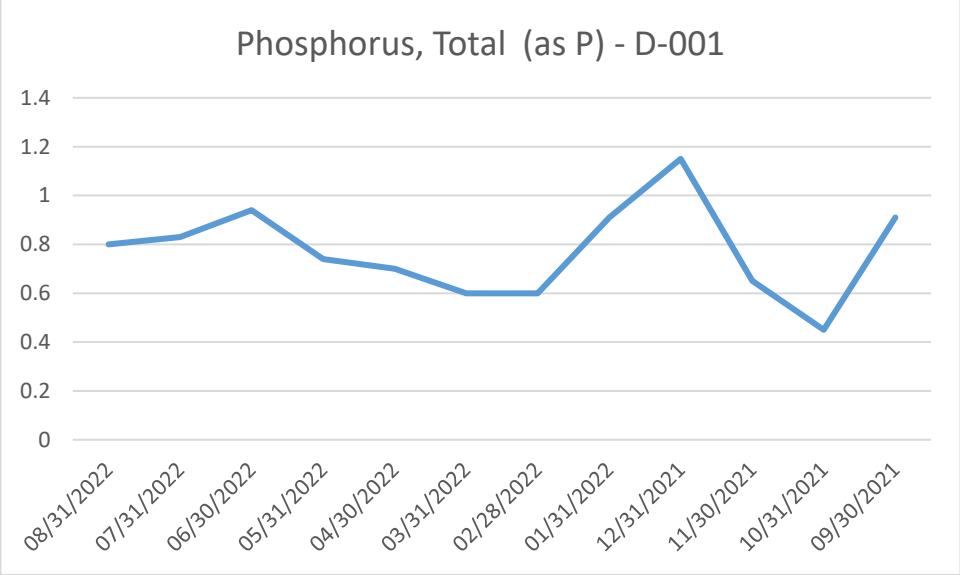
Describe previous or current Enforcement Actions (including WLs):
N/A

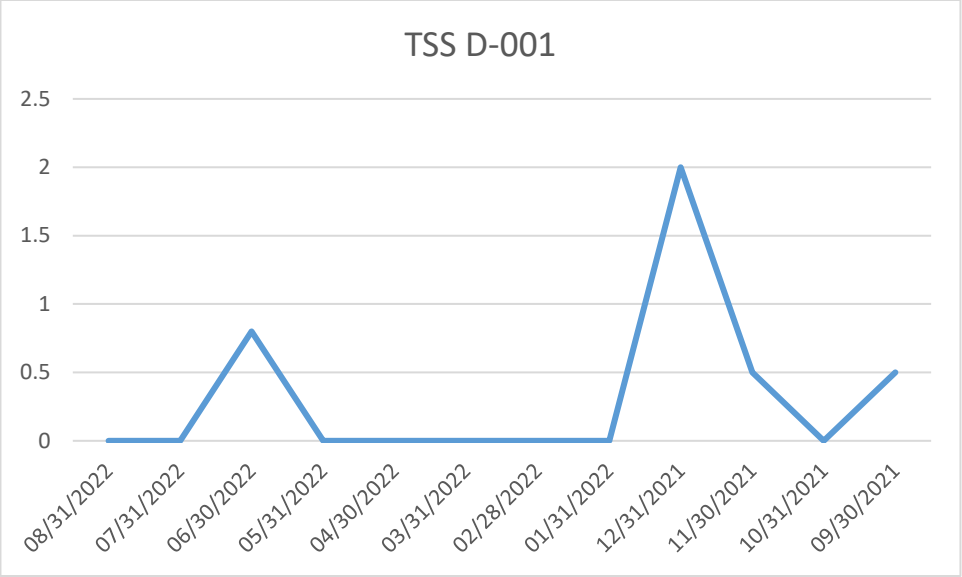
Describe any violations or problems noted in previous inspection:
2021 Inspection

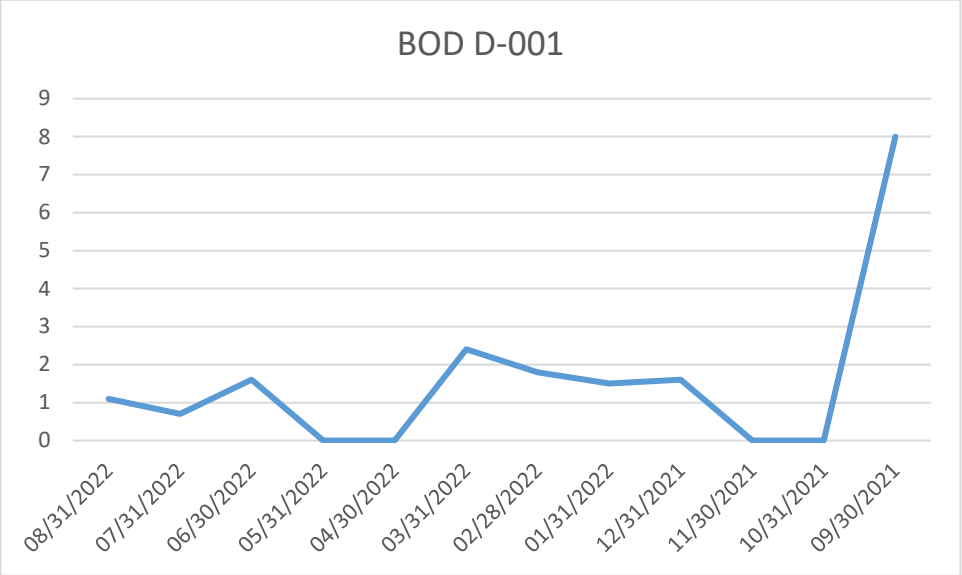
- Missing backflow prevention device annual certification
- Exceedances: Silver, TN, BOD, TSS
- Five resolved SSOs

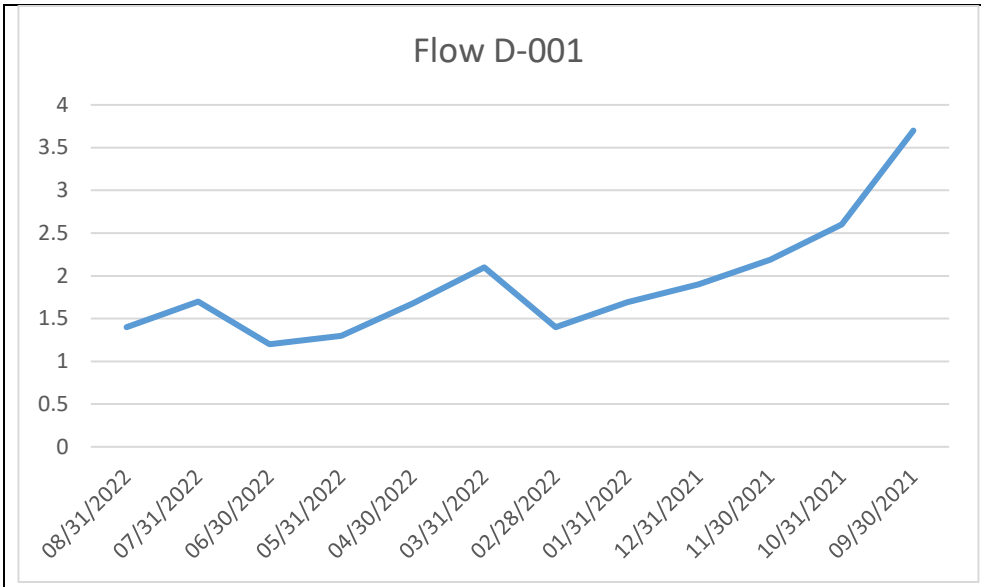
Discuss whether DMR trends within previous five years are improving or declining:
D-001 effluent does not appear to have a significant trend for any of the parameters over the last five years. Below are a few monthly average parameters depict the quality of effluent over the last year.






TSS D-001
2.5
2
1.5
1
0.5
0
08/31/2022
07/31/2022
06/30/2022
05/31/2022
04/30/2022
03/31/2022
02/28/2022
01/31/2022
12/31/2021
11/30/2021
10/31/2021
09/30/2021


BOD D-001
9
8
7
6
5
4
3
2
1
0
08/31/2022
07/31/2022
06/30/2022
05/31/2022
04/30/2022
03/31/2022
02/28/2022
01/31/2022
12/31/2021
11/30/2021
10/31/2021
09/30/2021



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

Appendix B. Explanations of Measurements

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

- **Chemical Analyses of the Effluent**

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

- **Toxicity Bioassays**

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

- **Bacteriological Testing**

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

- **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 Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C. and/or Paragraph 62-302.530(48)(b), F.A.C.

  The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater,

phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of Subsection 62-302.530(62), F.A.C.

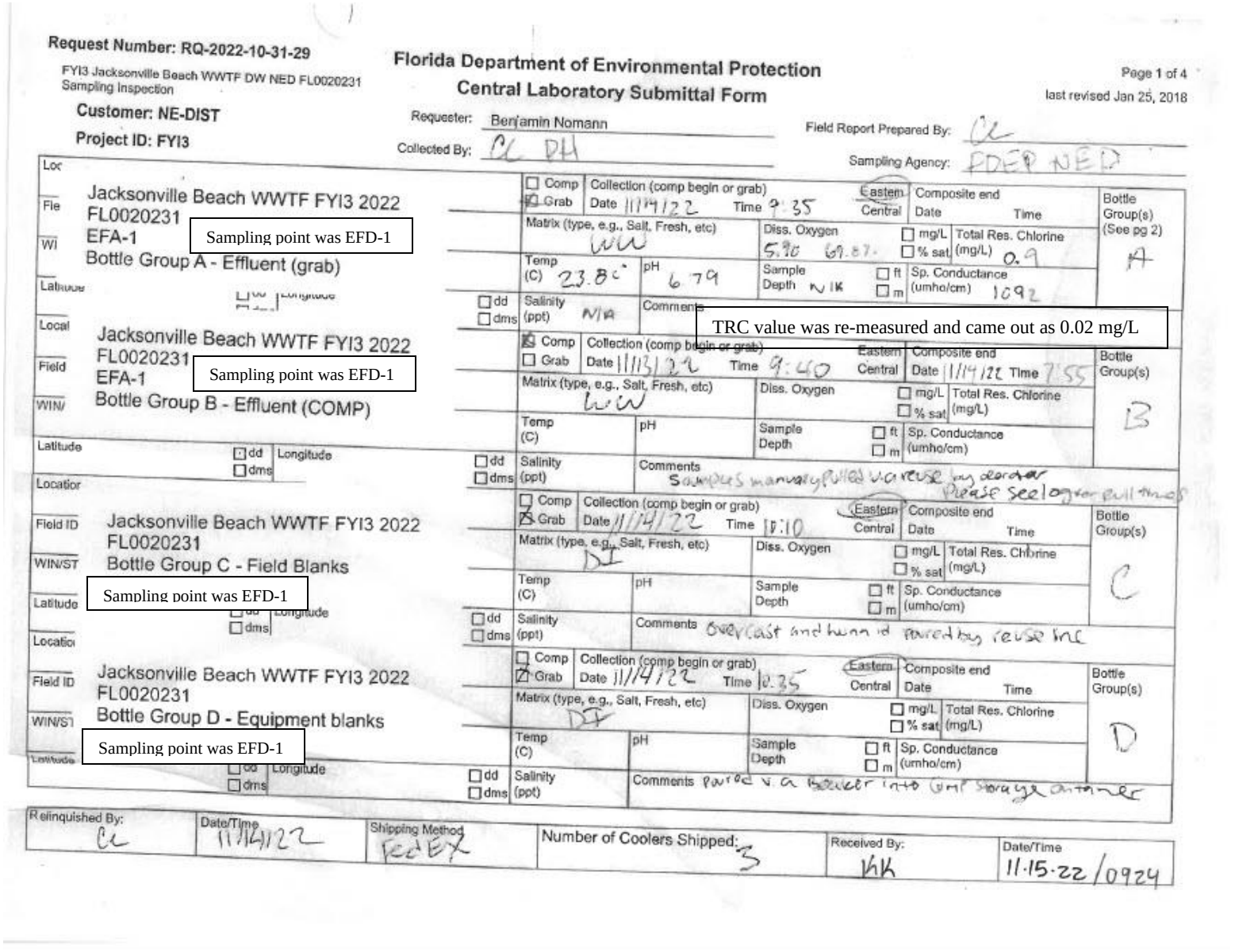
- **Chlorophyll *a* Content**

  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 Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a) F.A.C. and/or Paragraph 62-302.530(48)(b) F.A.C..

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

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

Appendix C. Chain of Custody



Request Number: RQ-2022-10-31-29

FYI3 Jacksonville Beach WWTF DW NED FL0020231 Sampling Inspection

Customer: NE-DIST

Project ID: FYI3

Florida Department of Environmental Protection

Central Laboratory Submittal Form

Page 1 of 4

last revised Jan 25, 2018

Requester: Benjamin Normann

Collected By: CL DH

Field Report Prepared By: CL

Sampling Agency: FDEP NED

Jacksonville Beach WWTF FYI3 2022
FL0020231
EFA-1
Bottle Group A - Effluent (grab)

Sampling point was EFD-1

Comp / Grab; Collection (comp begin or grab) Date 11/14/22 Time 9:35; Eastern / Central; Composite end Date Time; Bottle Group(s) (See pg 2): A

Matrix (type, e.g., Salt, Fresh, etc): WW; Diss. Oxygen 5.96 69.8% mg/L / % sat; Total Res. Chlorine (mg/L) 0.9

Temp (C) 23.8°C; pH 6.79; Sample Depth N/K ft / m; Sp. Conductance (umho/cm) 1092

dd / dms; Salinity (ppt) N/A; Comments

TRC value was re-measured and came out as 0.02 mg/L

Jacksonville Beach WWTF FYI3 2022
FL0020231
EFA-1
Bottle Group B - Effluent (COMP)

Sampling point was EFD-1

Comp / Grab; Collection (comp begin or grab) Date 11/13/22 Time 9:40; Eastern / Central; Composite end Date 11/14/22 Time 7:55; Bottle Group(s): B

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

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

Latitude dd / dms Longitude

dd / dms; Salinity (ppt); Comments Samples manually pulled via reuse bag decanter Please see log for pull times

Jacksonville Beach WWTF FYI3 2022
FL0020231
Bottle Group C - Field Blanks

Sampling point was EFD-1

Comp / Grab; Collection (comp begin or grab) Date 11/14/22 Time 10:10; Eastern / Central; Composite end Date Time; Bottle Group(s): C

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

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

dd / dms; Salinity (ppt); Comments Overcast and humid poured by reuse inc

Jacksonville Beach WWTF FYI3 2022
FL0020231
Bottle Group D - Equipment blanks

Sampling point was EFD-1

Comp / Grab; Collection (comp begin or grab) Date 11/14/22 Time 10:35; Eastern / Central; Composite end Date Time; Bottle Group(s): D

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

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

dd / dms; Salinity (ppt); Comments Poured via beaker into comp storage container

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
CL	11/14/22	FedEX	3	VK	11.15.22/0924

Request Number: RQ-2022-10-31-29

FYI3 Jacksonville Beach WWTF DW NED FL0020231
Sampling Inspection

Customer: NE-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 4

last revised Jan 25, 2018

Requester: Benjamin Nomann

Field Report Prepared By: Conor Lucy

Collected By: Conor Lucy Philippe Hook

Sampling Agency: FDEP NED

Location: Jacksonville Beach WWTF FYI3
Field ID: FL0020231
WIN/STORET #: EFA-1
Bottle Group - Effluent (COMP)

Sampling point was EFD-1

☑ Comp ☐ Grab	Collection (comp begin or grab) Date 11/15/22 Time 13:01	Eastern Central	Composite end Date 11/16/22 Time 6:45	Bottle Group(s) (See pg 2) 3							
Matrix (type, e.g., Salt, Fresh, etc) WW			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
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								
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
	11/16/22 11:00	FedEx	1	A.SHAIK	11/17/2022 / 09:5

Request Number: RQ-2022-10-31-29

FYI3 Jacksonville Beach WWTF DW NED FL0020231
Sampling Inspection

Customer: NE-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 4
last revised Jan 25, 2018

Requester: Benjamin Normann
Collected By: CL DH
Field Report Prepared By: Lauren Lucas
Sampling Agency: FDEP NED

Local Field Jacksonville Beach WWTF FYI3 2022 FL0020231 ~~EFD-1~~ EFD-1 (CL) WIN/ Bottle Group B - Effluent (COMP)	☑ Comp ☐ Grab	Collection (comp begin or grab) Date 11/17/22 Time 13:00	Eastern / Central	Composite end Date 11/18/22 Time 4:40						Bottle Group(s) (See pg 2) B
	Matrix (type, e.g., Salt, Fresh, etc) WW			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)				
	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments Paddlewheel field							
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
CL	11/18/22 11:00	FedEx	2	Ron Bott	11.19.22/0910

ARS 11.21.22/10.00 (COC)

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

FAO Tallahassee

Contract Manager: Linda Allen /Devan Cobb (850) 245-8084/ (850) 245-8078
2600 Blair Stone Rd., MS 6512
Tallahassee, FL 32399-2400

Contractor: Eurofins Environmental Testing Southeast, LLC
5102 LaRoche Ave
Savannah, GA 31404
ATTN: Noel Savoie

DEP Approval By: Devan R. Cobb-Williams Contractor Approval By: Project Manager

Contractor Representatives Contacted: Noel Savoie

Date: 11/15/2022
Means of Contact: Email

400-229051 COC

Task Assignment Number: OV407 Maximum Cost: **$79.00** Turnaround Time: 10 BD

Sample Delivery Date: 11/15/2022

Project Name/Description:
RQ-2022-10-31-29; NE-DIST-2022-11-15-01; FYI3 Jacksonville Beach WWTF FL0020231; TLH-2022-11-15-14

Deliverable Number/ Parameter Group/ Method	**Sample Matrix**	**# of Samples**	**# of Containers**	**DEP ID #**	**Unit Cost**	**% Mark-up (if any)**	**Cost**
58/ Cyanide OV-CN-W EPA 335.4	W	2	2	2369269, 2369270	$37.00		$74.00
217/Sample Disposal Fee:		2			$2.50		$5.00
Total Number of Containers Shipped:		2				**Total:**	**$79.00**

11/16/22 - 914.

QC Instructions: 4.8°C IR 10 0.7°C IR 10

Comments:

Samples released to Contract Lab by: Date/Time: 11-15-2022 1530

Delivery Method: HD

Samples Accepted by: Date/Time 11.15.22 1530
Relig. 11.15.22 1600

* **Please sign and return by email to** Linda.S.Allen@FloridaDEP.gov and Magan.Bowden@dep.state.fl.us



CHAIN OF CUSTODY RECORD

Project Number: (Lab Use Only) 221114.03

3653 Regent Boulevard, Suite # 509
Jacksonville, FL 32224
P. (904) 807-9625 E. info@delilab.com
F. (904) 807-9627

Page 1 of 1

Company Name: Florida Department of Environmental Protection
Address: 8800 Baymeadows Way West
City: Jacksonville State: FL Zip: 32256
Attn.: Dep-overflownicro@fldep.state.fl.us
Tel.: E-mail or Fax
Project Name: Jax Beach WWTF fy 3
Project Number: 2022- RQ-2022-10-31-29
Project Location: Jax Beach WWTF
Sampler Name/Signature: Conor Lucey

Transfer #	Sample # (Lab Use Only)	Sample Identification	Date Sampled	Time Sampled	Sample Matrix Code	Specific Cond. (Field)	Comp	Grab	E. Coli - Quantitray	Enterococci - Quantitray	Coliform, Fecal - MF 3 Dilutions
1	61495	JaxBeachBact2022	11/14/22	9:35	NPW			X	X	X	X
2									Jump		
3								*	11/14/22		
4											
5											
6											
7											
8											
9											
0											

Container Information (Qty, Size, & Type): NPW; 250mL PP; 250mL PP
Container Preservation Codes: 6; 6; 6
Parameters

Sample Matrix Codes:
A. Air P. Petroleum
B. Bulk S. Soil/Sludge
W. Wipe O. Other _____
PW. Potable Water
NPW. Non-Potable Water

Sample Kit or Container Lot #: NA

Preservation Codes:
0. None 5. Na2S2O3
1. H2SO4 6. Crushed Ice (4C)
2. HNO3 7. C8H8O6
3. HCl 8. NH4Cl
4. NaOH 9. Other: (List)

Thermal Preservation:
In Crushed Ice? (Yes) / No
Cooler Temp: 0.4 °C
Sample Cont. Temp: 0.2 °C

Turnaround Requested:
X Standard (10 Business Days)
___ Semi-Rush (3-5 Business Days)
___ Rush (1-2 Business Days)
Turnaround times are estimated & subject to change. Surcharges apply for all Rush samples.

Billing Information:
___ Invoice with Report
___ Invoice to Accounting
Req. #: _____
P.O. #: C0319A

NELAP ACCREDITED TNI LABORATORY
Certification #E821059

Special Instructions: * see PLF

Transfer Numbers	Relinquished By	Date / Time	Received By	Date / Time
1	Conor Lucey	11/14/22 1300	DC VC	11/14/22 1322

Appendix D. Chemical Analysis of Effluent

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 7:55	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	25	NOEC		
11/14/2022 7:55	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	No Result O	NOEC		
11/14/2022 7:55	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	34.2	IC25		
11/14/2022 7:55	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	No Result O	IC25		
11/14/2022 7:55	Effluent Composite	Metals	Iron	46 I	µg/L	30	120
11/14/2022 7:55	Effluent Composite	Metals	Copper	2.03	µg/L	0.40	0.80
11/14/2022 7:55	Effluent Composite	Nutrients	TSS	3 I	mg/L	2.0	10
11/14/2022 7:55	Effluent Composite	Nutrients	Kjeldahl Nitrogen	1.2	mg N/L	0.080	0.20
11/14/2022 7:55	Effluent Composite	Nutrients	Total-P	1.5	mg P/L	0.050	0.25
11/14/2022 7:55	Effluent Composite	Nutrients	NO2NO3-N	3.1	mg N/L	0.040	0.10
11/14/2022 7:55	Effluent Composite	Nutrients	Ammonia-N	0.075	mg N/L	0.0040	0.010
11/14/2022 9:35	Effluent Grab	AGP/LN	Algal Growth Potential	8.38 A	mg DryWt/L	0.300	0.900
11/14/2022 9:35	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	4.1	µg/L	0.60	1.8
11/14/2022 9:35	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	3.1	µg/L	0.82	2.5
11/14/2022 9:35	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.5 I	µg/L	0.90	2.7
11/14/2022 9:35	Effluent Grab	Overflow	Enterococci-Quanti-Tray	6.9	MPN/100 mL	1	1
11/14/2022 9:35	Effluent Grab	Overflow	Fecal Coliforms-Membrane Filter	40	cfu/100 mL	2	2
11/14/2022 9:35	Effluent Grab	Metals	Magnesium	28.9	mg/L	0.040	0.16
11/14/2022 9:35	Effluent Grab	Metals	Aluminum	20	µg/L	5.0	20
11/14/2022 9:35	Effluent Grab	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
11/14/2022 9:35	Effluent Grab	Metals	Copper	1.93	µg/L	0.40	0.80
11/14/2022 9:35	Effluent Grab	Metals	Potassium	12.4	mg/L	0.30	1.2
11/14/2022 9:35	Effluent Grab	Metals	Sodium	100	mg/L	0.50	2.0
11/14/2022 9:35	Effluent Grab	Metals	Zinc	32	µg/L	5.0	20
11/14/2022 9:35	Effluent Grab	Metals	Arsenic	0.49	µg/L	0.050	0.20
11/14/2022 9:35	Effluent Grab	Metals	Lead	0.20 U	µg/L	0.20	0.40
11/14/2022 9:35	Effluent Grab	Metals	Calcium	66.8	mg/L	0.075	0.30
11/14/2022 9:35	Effluent Grab	Metals	Nickel	0.96 I	µg/L	0.50	2.0
11/14/2022 9:35	Effluent Grab	Metals	Chromium	0.62 I	µg/L	0.40	1.6
11/14/2022 9:35	Effluent Grab	Metals	Iron	49 I	µg/L	30	120
11/14/2022 9:35	Effluent Grab	Metals	Silver	0.010 U	µg/L	0.010	0.040
11/14/2022 9:35	Effluent Grab	Metals	Selenium	0.20 U	µg/L	0.20	0.80
11/14/2022 9:35	Effluent Grab	Nutrients	O-Phosphate-P	1.4	mg P/L	0.080	0.20

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 9:35	Effluent Grab	Nutrients	Kjeldahl Nitrogen	1.3	mg N/L	0.080	0.20
11/14/2022 9:35	Effluent Grab	Nutrients	Color (true)	15	PCU	2.5	6.0
11/14/2022 9:35	Effluent Grab	Nutrients	NO2NO3-N	1.6	mg N/L	0.040	0.10
11/14/2022 9:35	Effluent Grab	Nutrients	Total Alkalinity	110 A	mg CaCO3/L	0.65	2.5
11/14/2022 9:35	Effluent Grab	Nutrients	Ammonia-N	0.049	mg N/L	0.0040	0.010
11/14/2022 9:35	Effluent Grab	Nutrients	Chloride	170 A	mg Cl/L	2.0	5.0
11/14/2022 9:35	Effluent Grab	Nutrients	Organic Carbon	12 A	mg C/L	0.50	1.0
11/14/2022 9:35	Effluent Grab	Nutrients	Sulfate	170 A	mg SO4/L	2.0	5.0
11/14/2022 9:35	Effluent Grab	Nutrients	Turbidity	1.5 A	NTU	0.10	1.0
11/14/2022 9:35	Effluent Grab	Nutrients	Fluoride	0.65	mg F/L	0.025	0.10
11/14/2022 9:35	Effluent Grab	Nutrients	Total-P	1.6	mg P/L	0.050	0.25
11/14/2022 9:35	Effluent Grab	Overflow	Cyanide	0.015 J	µg/L	0.0025	0.010
11/14/2022 9:35	Effluent Grab	Pesticides	Azinphos Methyl	1.9 U	ng/L	1.9	7.6
11/14/2022 9:35	Effluent Grab	Pesticides	EPTC	1.2 U	ng/L	1.2	4.8
11/14/2022 9:35	Effluent Grab	Pesticides	Fenamiphos	0.48 U	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Fonofos	0.19 U	ng/L	0.19	0.76
11/14/2022 9:35	Effluent Grab	Pesticides	Imazalil	0.72 U	ng/L	0.72	2.9
11/14/2022 9:35	Effluent Grab	Pesticides	Metalaxyl	0.72 U	ng/L	0.72	2.9
11/14/2022 9:35	Effluent Grab	Pesticides	Molinate	0.29 U	ng/L	0.29	1.1
11/14/2022 9:35	Effluent Grab	Pesticides	Norflurazon	0.48 U	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Terbuthylazine	0.41 U	ng/L	0.41	1.6
11/14/2022 9:35	Effluent Grab	Pesticides	Naproxen	0.0080 U	µg/L	0.0080	0.032
11/14/2022 9:35	Effluent Grab	Pesticides	Propargite	1.4 U	ng/L	1.4	5.7
11/14/2022 9:35	Effluent Grab	Pesticides	Pyraflufen Ethyl	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Thiobencarb	0.57 U	ng/L	0.57	2.3
11/14/2022 9:35	Effluent Grab	Pesticides	Diazinon	0.12 U	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Disulfoton	0.48 U	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Ethion	0.14 U	ng/L	0.14	0.57
11/14/2022 9:35	Effluent Grab	Pesticides	Ethoprop	0.095 U	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Fipronil Sulfide	1.3	ng/L	0.14	0.57
11/14/2022 9:35	Effluent Grab	Pesticides	Fipronil Sulfone	0.78	ng/L	0.14	0.57
11/14/2022 9:35	Effluent Grab	Pesticides	Atrazine	12	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Caffeine	16 I	ng/L	7.2	29
11/14/2022 9:35	Effluent Grab	Pesticides	Fipronil Desulfinyl	0.22 I	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Myclobutanil	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Fluxapyroxad	0.33 I	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Pronamide	0.14 U	ng/L	0.14	0.57

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 9:35	Effluent Grab	Pesticides	Pyriproxyfen	0.12 U	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Sucralose	63	µg/L	0.10	0.40
11/14/2022 9:35	Effluent Grab	Pesticides	Metolachlor	0.33 U	ng/L	0.33	1.3
11/14/2022 9:35	Effluent Grab	Pesticides	Prodiamine	0.33 I	ng/L	0.17	0.67
11/14/2022 9:35	Effluent Grab	Pesticides	Propiconazole	1.4 I	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Terbufos	0.15 I	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Ibuprofen	0.20 U	µg/L	0.20	0.80
11/14/2022 9:35	Effluent Grab	Pesticides	Etridiazole	0.14 U	ng/L	0.14	0.57
11/14/2022 9:35	Effluent Grab	Pesticides	Cyprodinil	0.095 U	ng/L	0.095	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Pyridaben	0.43 U	ng/L	0.43	2.1
11/14/2022 9:35	Effluent Grab	Pesticides	Alachlor	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Cyanazine	3.1 U	ng/L	3.1	12
11/14/2022 9:35	Effluent Grab	Pesticides	Fipronil	2.8	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Hexazinone	0.48 U	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Iprodione	0.71 I	ng/L	0.57	2.3
11/14/2022 9:35	Effluent Grab	Pesticides	Naled	1.4 U	ng/L	1.4	5.7
11/14/2022 9:35	Effluent Grab	Pesticides	Fludioxonil	0.63	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Flumioxazin	4.3 U	ng/L	4.3	17
11/14/2022 9:35	Effluent Grab	Pesticides	Flutolanil	0.35 I	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Stirophos	0.12 U	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Carbophenothion	0.19 U	ng/L	0.19	0.76
11/14/2022 9:35	Effluent Grab	Pesticides	Demeton	1.4 U	ng/L	1.4	5.7
11/14/2022 9:35	Effluent Grab	Pesticides	Difenoconazole	0.57 U	ng/L	0.57	2.3
11/14/2022 9:35	Effluent Grab	Pesticides	Dimethenamid	0.095 U	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Metribuzin	1.4 U	ng/L	1.4	5.7
11/14/2022 9:35	Effluent Grab	Pesticides	Oxadiazon	3.4	ng/L	0.29	1.1
11/14/2022 9:35	Effluent Grab	Pesticides	Pendimethalin	0.95 U	ng/L	0.95	3.8
11/14/2022 9:35	Effluent Grab	Pesticides	Sulfentrazone	28	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Phenytoin	3.3 U	ng/L	3.3	13
11/14/2022 9:35	Effluent Grab	Pesticides	Chlorfenapyr	3.4	ng/L	0.17	0.67
11/14/2022 9:35	Effluent Grab	Pesticides	Coumaphos	0.48 U	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Atrazine Desethyl	1.4 U	ng/L	1.4	5.7
11/14/2022 9:35	Effluent Grab	Pesticides	Bromacil	1.1 I	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Dithiopyr	0.60 U	ng/L	0.60	2.4
11/14/2022 9:35	Effluent Grab	Pesticides	Fenbuconazole	0.12 U	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Mevinphos	1.0 U	ng/L	1.0	4.0
11/14/2022 9:35	Effluent Grab	Pesticides	Oxyfluorfen	0.14 U	ng/L	0.14	0.57

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 9:35	Effluent Grab	Pesticides	Phorate	0.50 U	ng/L	0.50	2.0
11/14/2022 9:35	Effluent Grab	Pesticides	Tebuconazole	7.3	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Fluazifop-P-butyl	0.095 U	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Dimethomorph	0.17 U	ng/L	0.17	1.0
11/14/2022 9:35	Effluent Grab	Pesticides	Loratadine	5.2	ng/L	0.33	1.3
11/14/2022 9:35	Effluent Grab	Pesticides	Napropamide	0.38 U	ng/L	0.38	1.5
11/14/2022 9:35	Effluent Grab	Pesticides	Ametryn	0.57 U	ng/L	0.57	2.3
11/14/2022 9:35	Effluent Grab	Pesticides	Parathion Methyl	0.52 U	ng/L	0.52	2.1
11/14/2022 9:35	Effluent Grab	Pesticides	Prometryn	0.19 U	ng/L	0.19	0.76
11/14/2022 9:35	Effluent Grab	Pesticides	Simazine	6.8	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Propanil	0.12 U	ng/L	0.12	0.48
11/14/2022 9:35	Effluent Grab	Pesticides	Triadimefon	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Acetochlor	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Azoxystrobin	3.6	ng/L	0.48	1.9
11/14/2022 9:35	Effluent Grab	Pesticides	Butylate	0.38 U	ng/L	0.38	1.5
11/14/2022 9:35	Effluent Grab	Pesticides	Carfentrazone Ethyl	0.095 U	ng/L	0.095	0.38
11/14/2022 9:35	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.048 U	ng/L	0.048	0.19
11/14/2022 9:35	Effluent Grab	Pesticides	Malathion	0.33 U	ng/L	0.33	1.3
11/14/2022 9:35	Effluent Grab	Pesticides	Parathion Ethyl	0.24 U	ng/L	0.24	0.95
11/14/2022 9:35	Effluent Grab	Pesticides	Prometon	0.86 U	ng/L	0.86	3.4
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	µg/L	10	42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	10 U	µg/L	10	42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	2.1 U	µg/L	2.1	8.3
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Chrysene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	µg/L	2.1	8.3
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Pyrene	0.10 U	µg/L	0.10	0.42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.026 U	µg/L	0.026	0.10

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.2 U	µg/L	5.2	21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Fluorene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.52 U	µg/L	0.52	2.1
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Benzidine	10 U	µg/L	10	42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	µg/L	1.0	4.2
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.23	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	µg/L	10	42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Anthracene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.10 U	µg/L	0.10	0.42
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Phenol	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	µg/L	3.1	12
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	µg/L	2.1	8.3
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	µg/L	0.026	0.10
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.21 U	µg/L	0.21	0.83
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.12 I	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Isophorone	0.052 U	µg/L	0.052	0.21
11/14/2022 9:35	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.10 U	µg/L	0.10	0.42
11/14/2022 9:35	Effluent Grab	Nutrients	Specific Conductance	1,092	umhos/cm		

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 9:35	Effluent Grab	Nutrients	Temperature	23.8	C		
11/14/2022 9:35	Effluent Grab	Nutrients	Dissolved Oxygen %Sat	69.89	%Sat		
11/14/2022 9:35	Effluent Grab	Nutrients	pH	6.79			
11/14/2022 10:35	Blank	Metals	Iron	30 U	µg/L	30	120
11/14/2022 10:35	Blank	Metals	Copper	0.54 I	µg/L	0.40	0.80
11/14/2022 10:35	Blank	Nutrients	NO2NO3-N	0.007 I	mg N/L	0.0040	0.010
11/14/2022 10:35	Blank	Nutrients	Ammonia-N	0.002 I	mg N/L	0.0020	0.0050
11/14/2022 10:35	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.080	0.20
11/14/2022 10:35	Blank	Nutrients	Total-P	0.014	mg P/L	0.0020	0.0050
11/14/2022 10:10	Blank	Metals	Potassium	0.30 U	mg/L	0.30	1.2
11/14/2022 10:10	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.30
11/14/2022 10:10	Blank	Metals	Magnesium	0.040 U	mg/L	0.040	0.16
11/14/2022 10:10	Blank	Metals	Silver	0.010 U	µg/L	0.010	0.040
11/14/2022 10:10	Blank	Metals	Lead	0.20 U	µg/L	0.20	0.40
11/14/2022 10:10	Blank	Metals	Selenium	0.20 U	µg/L	0.20	0.80
11/14/2022 10:10	Blank	Metals	Chromium	0.40 U	µg/L	0.40	1.6
11/14/2022 10:10	Blank	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
11/14/2022 10:10	Blank	Metals	Arsenic	0.050 U	µg/L	0.050	0.20
11/14/2022 10:10	Blank	Metals	Iron	30 U	µg/L	30	120
11/14/2022 10:10	Blank	Metals	Copper	0.40 U	µg/L	0.40	0.80
11/14/2022 10:10	Blank	Metals	Nickel	0.50 U	µg/L	0.50	2.0
11/14/2022 10:10	Blank	Metals	Zinc	5.0 U	µg/L	5.0	20
11/14/2022 10:10	Blank	Metals	Aluminum	5.0 U	µg/L	5.0	20
11/14/2022 10:10	Blank	Metals	Sodium	0.50 U	mg/L	0.50	2.0
11/14/2022 10:10	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.0020	0.0050
11/14/2022 10:10	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.0020	0.0050
11/14/2022 10:10	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.50	1.0
11/14/2022 10:10	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
11/14/2022 10:10	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6.0
11/14/2022 10:10	Blank	Nutrients	Fluoride	0.025 U	mg F/L	0.025	0.10
11/14/2022 10:10	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.080	0.20
11/14/2022 10:10	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.0040	0.010
11/14/2022 10:10	Blank	Nutrients	Turbidity	0.10 U	NTU	0.10	1.0
11/14/2022 10:10	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.20	0.50
11/14/2022 10:10	Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.0040	0.010
11/14/2022 10:10	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.20	0.50
11/14/2022 10:10	Blank	Overflow	Cyanide	0.0062 I	µg/L	0.0025	0.010

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 10:10	Blank	Pesticides	Cyprodinil	0.096 U	ng/L	0.096	0.48
11/14/2022 10:10	Blank	Pesticides	Loratadine	0.33 U	ng/L	0.33	1.3
11/14/2022 10:10	Blank	Pesticides	Napropamide	0.38 U	ng/L	0.38	1.5
11/14/2022 10:10	Blank	Pesticides	Phenytoin	3.3 U	ng/L	3.3	13
11/14/2022 10:10	Blank	Pesticides	Propanil	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Propargite	1.4 U	ng/L	1.4	5.7
11/14/2022 10:10	Blank	Pesticides	Triadimefon	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Ethoprop	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Flumioxazin	4.3 U	ng/L	4.3	17
11/14/2022 10:10	Blank	Pesticides	Fluxapyroxad	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Malathion	0.33 U	ng/L	0.33	1.3
11/14/2022 10:10	Blank	Pesticides	Phorate	0.50 U	ng/L	0.50	2.0
11/14/2022 10:10	Blank	Pesticides	Prodiamine	0.17 U	ng/L	0.17	0.67
11/14/2022 10:10	Blank	Pesticides	Propiconazole	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Pyriproxyfen	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Sulfentrazone	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Butylate	0.38 U	ng/L	0.38	1.5
11/14/2022 10:10	Blank	Pesticides	Pyridaben	0.43 U	ng/L	0.43	2.2
11/14/2022 10:10	Blank	Pesticides	Fipronil Sulfone	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Fluazifop-P-butyl	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Terbufos	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Atrazine Desethyl	1.4 U	ng/L	1.4	5.7
11/14/2022 10:10	Blank	Pesticides	Etridiazole	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Fenbuconazole	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Fludioxonil	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Fonofos	0.19 U	ng/L	0.19	0.76
11/14/2022 10:10	Blank	Pesticides	Myclobutanil	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Pronamide	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Ametryn	0.57 U	ng/L	0.57	2.3
11/14/2022 10:10	Blank	Pesticides	Caffeine	7.2 U	ng/L	7.2	29
11/14/2022 10:10	Blank	Pesticides	Chlorpyrifos Ethyl	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Coumaphos	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Thiobencarb	0.57 U	ng/L	0.57	2.3
11/14/2022 10:10	Blank	Pesticides	Dithiopyr	0.60 U	ng/L	0.60	2.4
11/14/2022 10:10	Blank	Pesticides	EPTC	1.2 U	ng/L	1.2	4.8
11/14/2022 10:10	Blank	Pesticides	Flutolanil	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Imazalil	0.72 U	ng/L	0.72	2.9

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 10:10	Blank	Pesticides	Mevinphos	1.0 U	ng/L	1.0	4.0
11/14/2022 10:10	Blank	Pesticides	Naled	1.4 U	ng/L	1.4	5.7
11/14/2022 10:10	Blank	Pesticides	Oxadiazon	0.29 U	ng/L	0.29	1.1
11/14/2022 10:10	Blank	Pesticides	Atrazine	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Azoxystrobin	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Dimethenamid	0.096 U	ng/L	0.096	0.38
11/14/2022 10:10	Blank	Pesticides	Sucralose	0.010 U	µg/L	0.010	0.040
11/14/2022 10:10	Blank	Pesticides	Dimethomorph	0.17 U	ng/L	0.17	1.0
11/14/2022 10:10	Blank	Pesticides	Pyraflufen Ethyl	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Fenamiphos	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Iprodione	0.57 U	ng/L	0.57	2.3
11/14/2022 10:10	Blank	Pesticides	Metalaxyl	0.72 U	ng/L	0.72	2.9
11/14/2022 10:10	Blank	Pesticides	Metolachlor	0.33 U	ng/L	0.33	1.3
11/14/2022 10:10	Blank	Pesticides	Parathion Methyl	0.53 U	ng/L	0.53	2.1
11/14/2022 10:10	Blank	Pesticides	Pendimethalin	0.96 U	ng/L	0.96	3.8
11/14/2022 10:10	Blank	Pesticides	Prometon	0.86 U	ng/L	0.86	3.4
11/14/2022 10:10	Blank	Pesticides	Terbuthylazine	0.41 U	ng/L	0.41	1.6
11/14/2022 10:10	Blank	Pesticides	Azinphos Methyl	1.9 U	ng/L	1.9	7.6
11/14/2022 10:10	Blank	Pesticides	Carbophenothion	0.19 U	ng/L	0.19	0.76
11/14/2022 10:10	Blank	Pesticides	Difenoconazole	0.57 U	ng/L	0.57	2.3
11/14/2022 10:10	Blank	Pesticides	Disulfoton	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Naproxen	0.0080 U	µg/L	0.0080	0.032
11/14/2022 10:10	Blank	Pesticides	Fipronil Sulfide	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Hexazinone	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Oxyfluorfen	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Acetochlor	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Bromacil	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Chlorpyrifos Methyl	0.048 U	ng/L	0.048	0.19
11/14/2022 10:10	Blank	Pesticides	Cyanazine	3.1 U	ng/L	3.1	12
11/14/2022 10:10	Blank	Pesticides	Stirophos	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Ethion	0.14 U	ng/L	0.14	0.57
11/14/2022 10:10	Blank	Pesticides	Molinate	0.29 U	ng/L	0.29	1.1
11/14/2022 10:10	Blank	Pesticides	Norflurazon	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Prometryn	0.19 U	ng/L	0.19	0.76
11/14/2022 10:10	Blank	Pesticides	Tebuconazole	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Alachlor	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Carfentrazone Ethyl	0.096 U	ng/L	0.096	0.38

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 10:10	Blank	Pesticides	Demeton	1.4 U	ng/L	1.4	5.7
11/14/2022 10:10	Blank	Pesticides	Chlorfenapyr	0.17 U	ng/L	0.17	0.67
11/14/2022 10:10	Blank	Pesticides	Fipronil	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Fipronil Desulfinyl	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Metribuzin	1.4 U	ng/L	1.4	5.7
11/14/2022 10:10	Blank	Pesticides	Parathion Ethyl	0.24 U	ng/L	0.24	0.96
11/14/2022 10:10	Blank	Pesticides	Simazine	0.48 U	ng/L	0.48	1.9
11/14/2022 10:10	Blank	Pesticides	Diazinon	0.12 U	ng/L	0.12	0.48
11/14/2022 10:10	Blank	Pesticides	Ibuprofen	0.20 U	µg/L	0.20	0.80
11/14/2022 10:10	Blank	Priority Organic Pollutants	2-Nitrophenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Phenanthrene	0.10 U	µg/L	0.10	0.41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Fluoranthene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Fluorene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Naphthalene	0.10 U	µg/L	0.10	0.41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Pentachlorophenol	0.51 U	µg/L	0.51	2.0
11/14/2022 10:10	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	µg/L	2.0	8.2
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Isophorone	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	µg/L	1.0	4.1
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Acenaphthene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	µg/L	2.0	8.2
11/14/2022 10:10	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.20 U	µg/L	0.20	0.82
11/14/2022 10:10	Blank	Priority Organic Pollutants	Phenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	µg/L	10	41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	µg/L	2.0	8.2
11/14/2022 10:10	Blank	Priority Organic Pollutants	2-Chlorophenol	0.051 U	µg/L	0.051	0.20

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	4-Nitrophenol	10 U	µg/L	10	41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Acenaphthylene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.1 U	µg/L	5.1	20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Hexachloroethane	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	µg/L	10	41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Pyrene	0.10 U	µg/L	0.10	0.41
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Benzidine	10 U	µg/L	10	41
11/14/2022 10:10	Blank	Priority Organic Pollutants	Chrysene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	µg/L	0.026	0.10
11/14/2022 10:10	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Nitrobenzene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	µg/L	3.1	12
11/14/2022 10:10	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Anthracene	0.051 U	µg/L	0.051	0.20
11/14/2022 10:10	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.051 U	µg/L	0.051	0.20