Biological Assessment of Mosaic Fertilizer, L. L. C. South Pasture Mine Hardee County NPDES # FL0040177 Sampled July 22, 24, and 26, 2019

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

Field parameters, such as dissolved oxygen, are measured using a handheld multiparameter water quality meter. At the time of the sample collection, the dissolved oxygen saturation in a single sample of the effluent was less than the minimum daily average dissolved oxygen percent saturation specified for the Peninsula and Everglades Bioregion. Note that the measurement of a single sample cannot be used to determine compliance with rules 62-302.533(1)(a), Florida Administrative Code. The bioassay for the water flea (*Ceriodaphnia dubia*) did not comply with the effluent permit limit. Iron at the Control Site exceeded the Class III Freshwater Quality Criterion (62-302.530(38), F.A.C.). Chlorophyll-*a* in the effluent sample was elevated compared to the Test Site sample and was not detected in the Control Site sample. The elevated chlorophyll in the effluent sample is indicative of higher algal biomass being discharged from the mine's pond through D-005 on the sampling date. Effluent nutrient concentrations of phosphorus and nitrate/nitrite were lower than concentrations at the Control Site on the sampling date. Total Kjeldahl nitrogen, organic nitrogen, and total nitrogen were higher in the effluent than the two ambient samples. The results indicate that the effluent along with the immediate receiving streams, Shirttail Branch and Doe Branch, influences the water chemistry in the downstream waters of Payne Creek. However, only slight nutrient enrichment was detected as evidenced by the similarity of Test and Control Site analytical nutrient chemistry and the similarity in AGP results. Shading from the tree canopy appears to help suppress periphyton growth at the Test Site. Simazine, an herbicide, was detected in the effluent between the MDL and PQL.

Facility Overview

The Mosaic South Pasture Facility is a phosphate mine and beneficiation plant. 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 intermittently discharged from the mine's ponds and canals into Shirttail Branch via D-004 and Doe Branch via D-005. Both Shirttail Branch and Doe Branch flow into Payne Creek, a Class III Fresh Water (Figure 1).

Payne Creek falls within the West Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). For this region, the NNC thresholds, expressed as annual geometric means, are 0.49 mg/L total phosphorus and 1.65 mg/L total nitrogen. 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 composite samples were collected from monitoring site location D-005 on July 22, and renewal composite samples for toxicity were collected on July 24 and 26. The instream site samples were collected on July 22. Water chemistry was collected at the facility monitored Control Site (SWB-004/SWB-005), located in Payne Creek upstream of the confluence of

Shirttail Branch and approximately 1.25 miles upstream of the Test Site (SWD-004/SWD-005). Water chemistry was also collected within a 100m long Test Site, located in Payne Creek downstream of the confluence of Shirttail Branch and Doe Branch (Figure 1). Macroinvertebrate samples were collected at the Test Site only based on the permit requirements that only lists collection of water chemistry in upstream waters and does not require biological data collection. The NNC criteria needs to be met for receiving waters downstream, hence the samplers focused their efforts collecting bioassessment samples there. Habitat Assessment (HA), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) were only conducted at the Test Site. Total residual chlorine was not measured. Location D-004 was discharging to Shirttail Branch on the day of sample collection (14.07 MGD, facility measurement) but was not sampled for chemistry. The influence of this discharge to Shirttail Branch and the influence of D-005 to Doe Branch should be captured in Payne Creek at the downstream Test Site.

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

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

The following were involved in this investigation: Edgar Guerron-Orejuela and Anthony Annibali, (DEP Phosphate Management Team, Tampa), Judy Ashton and Matt Bearden (DEP Southwest Regional Operation Center, Temple Terrace), and DEP Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Nancy Ross, Michael Tanski, and Adrienne Pennington).

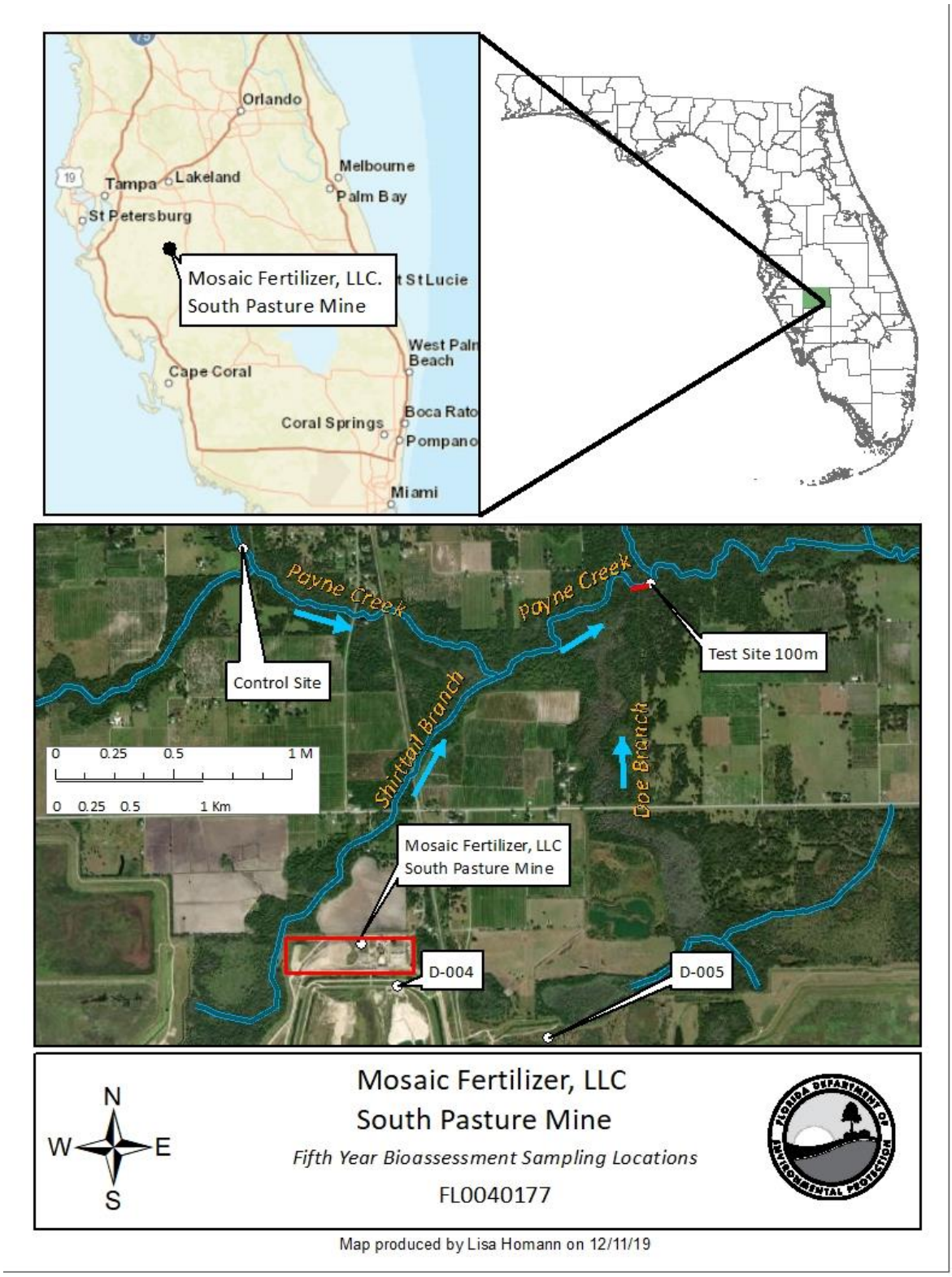


Figure 1. Map of Facility and Sampling Locations

Results

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

- The Test Site Habitat Assessment (HA) score was 125, which places the site in the Optimal category. The site lost points for substrate diversity, substrate availability, and habitat smothering. Snags and roots were identified as the major productive habitats with some vegetation present. Habitats were moderately smothered with sand and silt. All other HA parameters scored in the Optimal category.

- The percent saturation of dissolved oxygen measured in the effluent at the time of sample collection was less than the permit limit for the daily average; however, a single measurement cannot be used to determine compliance.

Analytical Water Chemistry (See Table 2 and Appendix E)

- Ortho-phosphate and total phosphorus were highest in the Control Site samples. Total ammonia, total Kjeldahl nitrogen, and total nitrogen (calculated) were highest in the effluent sample. Total ammonia and total nitrogen (calculated) complied with permit limits.

- Chlorophyll *a* (corrected) measured in the effluent sample was approximately twice that of the amount measured in the Test Site sample. Chlorophyll *a* was undetected in the Control Site sample.

Microbiology (See Table 2 and Appendix B)

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

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

Toxicity Whole Effluent Test (See Table 2 and Appendices B and E)

- Tests were performed July 23 through July 30, 2019.

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

- During the chronic definitive bioassay, the effluent composite sample IC25 for the water flea, *Ceriodaphnia dubia*, was calculated as 66.4% effluent and the IC25 for the fish,

Pimephales promelas, was calculated as greater than 100% effluent. The IC25 for *C. dubia* did not comply with the effluent permit limit.

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

Metals (See Table 3 and Appendix E)

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

- Test Site metals complied with Class III Freshwater Water Quality Criteria (62-302.530, F.A.C.).

- Control Site iron exceeded the Class III Freshwater Quality Criterion (62-302.530(38), F.A.C.). Samplers speculated there may be influence from the bridge however, the sampling site is upstream of the bridge leaving an unknown source for the iron detected in this sampling event.

Algal Growth Potential (See Table 4 and Appendices B and E)

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

- The effluent, Test Site, and Control Site AGP results are all 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.

Flora (See Appendices B and D)

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

- For the LVS, the Test Site contained less than $2m^2$ of aquatic macrophytes.

- The RPS was performed at the Test Site. Most of the stream at the Test Site was heavily shaded and the water was tannic, which are inhibitors of algal growth. The Secchi depth was visible on bottom, indicating enough light for algae to grow despite color. Thick algal growth is not expected at strongly shaded sites. Filamentous mat-forming algae were not found at any of the sampled points. RPS did not indicate nutrient enrichment at the Test Site.

Macroinvertebrates (See Table 5 and Appendices B and D)

- Qualitative macroinvertebrate data from dipnet samples indicated a balanced macroinvertebrate community and had a moderate number of taxa. The Test Site scored 45 on the Stream Condition Index (SCI) (see Appendix C for an explanation of SCI Categories). A single long-lived dragonfly taxon was collected from the Test Site. Ephemeroptera and Trichoptera were collected, but no Plecoptera were found. There were fewer than 1 percent of Tanytarsini individuals (which tend to decline with human disturbance) but ~11% percent of very tolerant individuals (see Appendix B for an explanation of how these SCI metrics typically respond to human disturbance). The site contained approximately 45% Coleoptera which, while not on the sensitive taxa list, tend to decline with heavy human disturbance.

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

Literature Cited

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Table 1. Measured field parameters

Effluent limits, Class III Freshwater Criteria, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site
Habitat Assessment	-	-	-	-	125	-
Sample Depth	m	-	-	0.3	0.3	0.3
Temperature	C	-	Report	29.7	27.3	26.7
pH	SU	6.0 - 8.5	6.0 - 8.5[1]	7.9	7.6	7.9
Specific Conductance	µmhos/cm	≤ 1,275	≤ 1,275	442	393	268
Salinity	ppt	-	-	0.2 c	0.2 c	0.1 c
Dissolved Oxygen	% saturation	≥ 38	≥ 38	35.5 [2]	68	97
Flow—D-005	MGD	-	Report	5.65[3]	-	-

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

c - Value is calculated

1 - pH "daily minimum" shall be "Report" when only accumulated stormwater is discharged from Outfall D-001.

2 - Value exceeds the Class III Freshwater Quality Criteria or permit limits (See paragraph 1 on page 3 for further explanation)

3 – Sample result obtained from facility

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

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Effluent Composite	Test Site	Control Site
Ortho-phosphate	mg P/L	-	-	0.068	-	0.19	0.60
Total Phosphorus	mg P/L	≤ 0.49 [4]	≤ 5.0	0.26	-	0.26	0.69
Total Ammonia	mg N/L	≤ 1.98 c (Test) ≤ 1.45 c (Control)	1.19 c	0.24	-	0.026	0.025
Un-ionized Ammonia (calculated salinity)	mg NH3/L	≤ 0.02 s	-	< 0.02 c	-	< 0.02 c	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	0.026	-	0.15	0.25
Total Kjeldahl Nitrogen	mg N/L	-	-	1.4	-	0.89	0.84
Organic Nitrogen	mg N/L	-	-	1.2 c	-	0.86 c	0.82 c
Total Nitrogen	mg N/L	≤ 1.65 [4]	≤ 3.0	1.4 c	-	1.04 c	1.09 c
Total Organic Carbon	mg C/L	-	-	11	-	11	18
Chlorophyll *a* - Corrected	µg/L	-	Report	22	-	9.2	1.6 U
Phaeophytin	µg/L	-	-	7.7	-	1.8 U	1.8 U
CBOD, 5 day, N - inhibited	mg/L	-	Report	23 V	-	24 V	23 V
Oil and Grease	mg/L	-	≤ 5.0	3.6	-	4.4	0.74 I
Total Suspended Solids	mg/L	-	≤ 60	9 I	-	4 IA	2 I
Turbidity	NTU	< 29 t	< 29	6.8	-	2.7	4.9
Color (true)	PCU	-	-	15	-	41 A	110
Alkalinity	mg CaCO3/L	≥ 20	-	147	-	123 A	103
Chloride	mg Cl/L	-	-	26	-	22	9.4 A
Fluoride	mg F/L	≤ 10.0	≤ 10.0	1.5	-	1.5	0.71
Sulfate	mg SO4/L	-	-	37	-	46	18 A

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

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Effluent Composite	Test Site	Control Site
Fecal Coliforms	cfu/100 mL	-	≤ 800	17	-	114	72
Escherichia coli	MPN/100 mL	≤ 410 s	-	10 U	-	134	120
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	-	≥ 100 p	-	66.4 e	-	-
Bioassay - Fish *(Pimephales promelas)*	% effluent	-	≥ 100 p	-	> 100	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e -Value exceeds the Class III Water Quality Criteria or permit limits
c - Value is calculated
p - 24 hour time 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
U - Material analyzed for but not detected; value reported is the method detection limit
V - Analyte was detected in both sample and method blank
4 - West Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC), 62-302.531(2)(c), F.A.C. Value expressed as an annual geometric mean

Table 3. Analytical metals data

Effluent limits, Class III Freshwater Criteria, and analytical metals data

Analyte	Units	Effluent Class III Criteria	Effluent Grab	Test Site Class III Criteria	Test Site	Control Site Class III Criteria	Control Site
Hardness	mg CaCO3/L	-	173 c	-	161 c	-	130 c
Aluminum	µg/L	-	194	-	127	-	153
Arsenic	µg/L	≤ 50	3.9	≤ 50	3.69	≤ 50	2.83
Cadmium	µg/L	≤ 0.407 b	0.025 I	≤ 0.385 b	0.020 U	≤ 0.32 b	0.020 U
Calcium	mg/L	-	28.7	-	24.7	-	26.1
Chromium, Total [5]	µg/L	≤ 135 b	0.60 I	≤ 127 b	0.40 U	≤ 100 b	0.74 I
Copper	µg/L	≤ 14.9 b	0.40 U	≤ 14 b	0.40 U	≤ 11 b	0.40 U
Iron	µg/L	≤ 1,000	160	≤ 1,000	170	≤ 1,000	1070 e
Lead	µg/L	≤ 6.41 b	0.20 U	≤ 5.83 b	0.20 U	≤ 4.3 b	0.20 U
Magnesium	mg/L	-	24.7	-	24.1	-	15
Nickel	µg/L	≤ 83.1 b	0.56 I	≤ 78 b	0.50 U	≤ 64 b	0.50 U
Selenium	µg/L	≤ 5.0	0.58 I	≤ 5.0	0.57 I	≤ 5.0	0.38 I
Silver	µg/L	≤ 0.07	0.010 U	≤ 0.07	0.010 U	≤ 0.07	0.010 U
Sodium	mg/L	-	30.8	-	28.6	-	12.5
Zinc	µg/L	≤ 191 b	5.0 U	≤ 179 b	5.0 U	≤ 150 b	6.5 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e -Value exceeds the Class III Water Quality Criteria or permit limits
b - Value is calculated based on hardness, (62-302.530(3))
c - Value is calculated
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
5 - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III

Table 4. Algal Growth Potential (AGP)

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

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	*Pseudokirchneriella subcapitata*	13.4	10.1 ± 2	29.2 ± 5.8	54.2 ± 10.8	111.8 ± 22.4	3.9	5.5
Test Site	*Pseudokirchneriella subcapitata*	10.9	6.7 ± 1.3	81.7 ± 16.3	39.5 ± 7.9	111.8 ± 22.4	0.9	4
Control Site	*Pseudokirchneriella subcapitata*	11.8 A	10.5 ± 2.1	258 ± 51.6	41.4 ± 8.3	296.7 ± 59.3	0.5	1.6

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

Table 5. Macroinvertebrate dipnet samples - qualitative

Mosaic South Pasture	**Test Site**	
Stream Condition Index 2012	**45**	
Replicate	Rep 1	Rep 2
Stream Condition Index Metrics		
Number of Total Taxa	24	24
Number of Ephemeroptera Taxa	2	1
Number of Trichoptera Taxa	5	3
Number of Clinger Taxa	5	4
Number of Long-lived Taxa	0	1
Number of Sensitive Taxa	3	1
Percent of Dominant Taxon	26.8	25.5
Percent Suspension Feeders and Filterers	16.2	13.5
Percent of Tanytarsini Individuals	0.7	0.0
Percent of Very Tolerant Individuals	11.3	11.4
Total Number of Individuals	142	141
Community Composition: Percent of total		
Dominant Taxon Name	*Microcylloepus pusillus* (Coleoptera)	*Microcylloepus pusillus* (Coleoptera)
Acariformes	0.0	2.8
Amphipoda	2.1	1.4
Bivalvia	0.0	0.7
Coleoptera	43.7	45.4
Diptera	12.0	8.5
Ephemeroptera	2.8	2.1
Gastropoda	10.6	9.2
Odonata	1.4	2.1
Oligochaeta	0.0	2.8
Plecoptera	0.0	0.0
Trichoptera	26.8	22.7
Other	0.7	0.0
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0.0	2.8
Predators	4.9	8.9
Scrapers	32.0	31.6
Shredders	9.5	7.8
Surface Deposit Feeders	35.9	34.8
Suspension Feeders	16.2	13.5
Unknown	1.4	0.0

Appendix A. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Edgar Guerron Orejuela	**Contact Number:** 813-470-5749
Facility Name (as it appears on permit): Mosaic Fertilizer, L.L.C. South Pasture Mine	**Former Names:** CF-Industries Hardee Complex I
NPDES Permit Number: FL0040177	**Permit Expiration Date:** April 22, 2020
Physical Address: 2220 Mine View Road, Bowling Green, FL 33834	
District: DWRM-Phosphate Management (Tampa)	**County:** Hardee

Function of Facility:

The permit authorizes the operation of a phosphate mining and beneficiation facility, five wastewater discharge outfalls (D-004, D-005, D-006, D-007, and D-008), construction and operation of waste clay settling areas (CSAs) and sand-clay mix areas (SCMAs), the Aquifer Recharge and Recovery project (ARRP) sand filter basin. Also, the permit authorizes the use of reclaimed water into the facility's mine water recirculation system, as the current Third Amendment to Agreement for Furnishing Reclaimed Water. The reclaimed water would eventually discharge through existing Outfalls D-004 and D-005, and through Outfalls D-006, D-007 and D-008 when constructed, depending on stormwater accumulation. Currently, the maximum quantity of reclaimed water received by the Hardee South Pasture Mine from the City of Wauchula is set at an annual average daily flow of 3.5 million gallons per day. The current agreement is in accordance with the City of Wauchula's FDEP Municipal Wastewater Permit [Permit-FLA119890-015-DW1P] to discharge treated sewage effluent to a location other than the Peace River.

This permit acknowledges the incorporation of 7,512.8 acres (of which 6,418.2 acres will be mined) of property referred to as the South Pasture Extension [Permit modification, File No. FL0040177-028-IWB/MR] and also incorporates the transfer of about 1,110.9 acres [PA File No. FL0040177-030-IWB/MR] of South Pasture property to the Mosaic Four Corners Mine (FL0036412). The matrix and associated mine water from this property will be transported via pipeline across the Wingate and Fort Green mines to the Four Corners beneficiation plant. A hydrological connection exists between the Hardee South Pasture Mine, the Mosaic Fort Green/Payne Creek Mine (FL0027600), Wingate Creek Mine (FL0032522), and Four Corners (FL0036412) Mine. This permit authorizes the transfer of surplus water for environmental safeguard and management purposes between the above reference facilities and recognizes boundary overlaps including mining, reclamation and storm water management activities in the footprint(s) of the mines.

Facility Type:	**Permitted Capacity (MGD):**
Phosphate mine and beneficiation plant	N/A

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):

D-004 from May 2018 to April 2019 → 10.95 MGD
D-005 from May 2018 to April 2019 → 8.86 MGD
D-006, D-007 and D-008 → not constructed

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):

N/A
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): EFF-004, EFF-005, EFF-006, EFF-007, EFF-008
Description of Permitted Outfall(s): Outfall D-004 (WBID 1821) discharges excess mine recirculation water and stormwater into Shirttail Branch, which flows into Payne Creek and then into the Peace River (Class III Fresh Waters). Outfall D-005 (WBID 1820) discharges excess mine recirculation water and stormwater into Doe Branch, which flows into Payne Creek and then into the Peace River (Class III Fresh Waters). Outfall D-006 will discharge into Troublesome Creek (WBID 1839), which flows into the Peace River (WBID 1623E), a Class III Fresh Waters of the State. Outfall D-007 will discharge into Brushy Creek (WBID 1826A), which flows into Horse Creek (WBID 1787B), thence to the Peace River (WBID 1623B), a Class III Fresh Waters of the State. Outfall D-008 will discharge into Lettis Creek (WBID 1838), which flows into Brushy Creek (WBID 1826A), thence to the Peace River (WBID 1623B), a Class III Fresh Waters of the State.
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): The wastewater treatment consists of gravity settling of sand, clay, and other suspended solids within earthen diked settling areas. Clarified water is decanted by gravity from the settling areas into the mine water recirculation system for reuse or discharge as needed. Other available treatment methodologies are addressed in the facility's BMP3 plan and include aeration, CO2 addition, flocculant addition, sulfuric acid treatment, application of algal growth blocking dye, and aluminum sulfate (alum) treatment. Excess water is discharged through existing Outfalls D-004 and D-005, and through outfalls D-006, D-007, and D-008 following construction. The discharge volume is seasonal and dependent upon rainfall and mining activities. Reclaimed SCMA W-1 consists of a reservoir and wetland areas that provide water for the ARRP. A 10-acre geomembrane-lined sand filter basin (SFB) has been installed and is being operated to provide additional water treatment prior to injection through a Floridan Aquifer recharge well.

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; note: all condition references, such as I.A.5., are from current NPDES permit)

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow	MGD	Max Max	Report Report	Monthly Average Daily Maximum	Continuous	Recording Flow Meter with Totalizer	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	
Flow, Total Volume	Mgal/mth	Max	Report	Monthly Total	Monthly	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	
Stream Flow	MGD	Max	Report	Daily Maximum	Monthly	Instantaneous sample	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	
Solids, Total Suspended	mg/L	Max Max	30 60	Monthly Average Daily Maximum	Weekly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	
Solids, Fixed Suspended	mg/L	Max Max	12 25	Monthly Average Daily Maximum	Weekly	Grab	EFF-004 EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.2.
pH	s.u.	Min Max	6.0 8.5	Daily Minimum Daily Maximum	Weekly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
pH	s.u.	Min Max	Report Report	Daily Minimum Daily Maximum	Bi-weekly; every 2 weeks	Grab	SWB-004, SWD-004, SWB-005, SWD-005, SWD-006, SWD-007, SWD-008	See I.A.14. To be Sampled Only if Outfall is Discharging.
Phosphorus, Total (as P)	mg/L	Max Max	3 5	Monthly Average Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See 1.A.3. and I.A.6
Phosphorus, Total (as P)	lb/day	Max	Report	Daily Maximum	Monthly	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	
Phosphorus, Total (as P)	lb/mth	Max	Report	Monthly Total	Monthly	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A13.
Phosphorus, Total (as P)	lb/yr	Max	Report	Annual Total	Annually	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A13.
Phosphorus, Total (as P)	lb/yr	Max	Report	Annual Total	Annually	Calculated	EFF-AAPL	See I.A.13. & I.A.14
Phosphorus, Total (as P)	lb/yr	Max	20,530	5-Year Average	Annually	Calculated	EFF-RAPL	See I.A.13. & I.A.14
Phosphorus, Total (as P)	mg/L	Max	Report	Annual Geometric Mean	Annually	Calculated	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	I.A.20.a & 20.b
Phosphorus, Total (as P)	mg/L	Max	Report	Daily Maximum	Monthly	Grab	SWB-004, SWD-004, SWB-005, SWD-005, SWD-006, SWD-007, SWD-008	See I.A.14

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Nitrogen, Total	mg/L	Max	3.0	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.14
Nitrogen, Total	lb/day	Max	Report	Daily Maximum	Monthly	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	
Nitrogen, Total	lb/mth	Max	Report	Monthly Total	Monthly	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.13.
Nitrogen, Total	lb/yr	Max	Report	Annual Total	Annually	Calculated	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.13.
Nitrogen, Total	lb/yr	Max	Report	Annual Total	Annually	Calculated	EFF-AANL	See I.A.13. & I.A.14
Nitrogen, Total	lb/yr	Max	80,544	5-Year Average	Annually	Calculated	EFF-RANL	See I.A.13. & I.A.14
Nitrogen, Total	mg/L	Max	Report	Annual Geometric Mean	Annually	Calculated	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	I.A.20.a
Nitrogen, Total	mg/L	Max	Report	Daily Maximum	Monthly	Grab	SWB-004, SWB-005	To be sampled only when Outfall is discharging
Nitrogen, Total	mg/L	Max	Report	Daily Maximum	Monthly	Grab	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	See I.A.13.

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Fluoride, Total (as F)	mg/L	Max	10.0	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.10
Oxygen, Dissolved Percent Saturation	percent	Min	38	Daily Average	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.15
Oil and Grease	mg/L	Max	5.0	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.23
Specific Conductance	µmhos/cm	Max	1275	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6. & I.A.25
Specific Conductance (background)	µmhos/cm	Max	Report	Single Sample	Monthly	Grab	SWB-004, SWB-005	See I.**Error! Reference source not found.**.**Error! Reference source not found.**, & I.**Error! Reference source not found.**.**Error! Reference source not found.** To be sampled only when Outfall is discharging
Specific Conductance (downstream)	µmhos/cm	Max	Report	Daily Maximum	Monthly	Grab	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	See I.A.25 To be sampled only when Outfall is discharging

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Temperature (C), Water	Deg C	Max	Report	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.15
Turbidity	NTU	Max.	29	Daily Maximum	Monthly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6. & I.A.24
Turbidity (background)	NTU	Max	Report	Single Sample	Monthly	Grab	SWB-004, SWB-005	See I.A.6. & I.A.24 To be sampled only when Outfall is discharging
Turbidity (downstream)	NTU	Max	Report	Daily Maximum	Monthly	Grab	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	See I.A.6 & I.A.24 To be sampled only when Outfall is discharging
BOD, Carbonaceous 5 day, 20C	mg/L	Max	Report	Daily Maximum	Per occurrence	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6. & I.A26.
Coliform, Fecal	#/100mL	Max	800	Daily Maximum	Per occurrence	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6, I.A.7, I.A.8, & I.A.26..
Chlorine, Total Residual	mg/L	Max	0.01	Daily Maximum	Per occurrence	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.6 & I.A.26.
Chlorophyll a	µg/L	Max	Report	Daily Maximum	Quarterly	Grab	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A.14

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Chlorophyll a (upstream)	µg/L	Max	Report	Daily Maximum	Monthly	Grab	SWB-004, SWB-005	To be sampled only when Outfall is discharging
Chlorophyll a (downstream)	µg/L	Max	Report	Daily Maximum	Monthly	Grab	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	See I.A.20.a &20.c
Chlorophyll a	µg/L	Max	Report	Annual Geometric Mean	Annually	Calculated	SWD-004, SWD-005, SWD-006, SWD-007, & SWD-008	See I.A.20.a & 120.c
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	percent	Min	100	Single Sample	Annually	24-hr TPC	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A27.a & 27.b.
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	percent	Min	100	Single Sample	Annually	24-hr TPC	EFF-004, EFF-005, EFF-006, EFF-007, & EFF-008	See I.A27.a & 27.b.

PART I: Continued	
Receiving Waters: Shirttail branch (WBID 1821), a tributary of Payne Creek. Doe branch (WBID 1820), a tributary of Payne Creek. Troublesome Creek (WBID 1839), a tributary of the Peace River. Brushy Creek (WBID 1826A), a tributary of Horse Creek. Lettis Creek (WBID 1838), a tributary of Brushy Creek.	Classification (indicate whether fresh or marine): Class III Freshwater

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 discharges from Outfalls D-004, D-005, D-006, D-007, and D-008:

a. Effluent Limitation

1. In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) for reproduction or growth shall not be less than 100% effluent. [Rules 62-302.530(62) 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 annually, the first starting within 60 days of the effective date of this permit 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 a total of three 24-hour 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.

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

N/A

Facility Mixing Zone Details (if applicable):

N/A

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year N/A.

Describe previous FYI and WQBEL study:

Previous FYI conducted in November 1993.

XSI: Sampled 1 November 1993. "No metals were detected at levels which exceed Class III standards. No organic priority pollutants, VOC's, or pesticides were found."

CBI: Sampled 1 November 1993. "The sample of effluent was not acutely toxic to the bannerfin shinner, *Cyprinella leedsi*, or to the invertebrate, *Ceriodaphnia dubia."*

IBI: Sampled 22 November 1993. "Measures of benthic macroinvertebrate community health indicated no degradation resulting from the CF-Industries – Hardee Complex I discharge. In fact, the majority of the metrics, such as taxa richness, diversity, EPT index, and SIIF, were better at the test site than at the reference site, probably due to the increased flow and recruitment potential provided by the discharge. Periphyton communities at both sites were dominated by the diatom *Cocconeis plancentula*, which is typically found in eutrophic conditions. With the exception of periphyton chlorophyll a, which was 464% more at the test site, other algal measures indicated great similarity between the two sites."

WQI: Sampled 1 November 1993. "While elevated phosphorus was associated with this discharge (1.6mg/L in the effluent), the test site concentration of phosphorus (0.75 mg/L) was only slightly elevated from that of the reference site (0.62 mg/L). Total phosphorus at both sites was higher than those concentrations found in approximately 85% of all other Florida streams. The concentration of nitrogenous nutrients at both stations were averaged to below average, when compared with other Florida streams. Algal growth potential (AGP) decreased from 3.7 mg dry wt/L at the reference site to 0.9 mg dry wt/L at the test site. Both results were less than the 5 mg dry wt/L "problem threshold"".

Describe previous or current Enforcement Actions (including WLs):

N/A

Describe any violations or problems noted in previous inspection:

N/A

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

N/A

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

N/A

PART II: Sampling Event Information

Date(s) sample collected: 7/22/2019	Sampler(s): Edgar Guerron Orejuela, Gordon D'Abreu, Matt Bearden, Judy Ashton

Temperature (Deg C): 29.7	pH (SU): 7.9
Dissolved Oxygen (%): 35.5	Conductivity (umhos/cm): 442
Total Residual Chlorine (mg/L): N/A	Total Residual Chlorine - after Disinfection (mg/L): N/A
Method of Chlorination: N/A	Method of De-chlorination: N/A
Flow During Sample Collection for each outfall(MGD): D-005: 5.65 / D-004: 14.07	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): EFF-004: 11.16 MGD EFF-005: 8.04 MGD EFF-006: No discharge EFF-007: No discharge EFF-008: No discharge	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☒ Rainfall Dependent ☐ Other, please specify:	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here: 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 (62-302, F.A.C.) and facility permit limits.

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(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 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 coliform bacteria may constitute an exceedance of 62-302.530(6) and/or facility permit limits. Fecal coliform results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20- 60 colony forming units per plate. The B-qualifier does not affect data quality.

- **Habitat Assessment**

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

- **Algal Growth Potential (AGP)**

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

High AGP values may constitute exceedances of 62-302.530(47), F.A.C., 62-302.530(48)(a), F.A.C. and/or 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 62-302.530(62), F.A.C.

- **Sediment Sampling**

  Sediments were collected using a petite ponar dredge at all sampling stations. Sediment samples were analyzed for metals, organic constituents, pesticides, organic content and sediment grain size. The results from these analyses were compared with sediment quality assessment guidelines applicable to Florida coastal waters (Table 4. in MacDonald 1994). The range of sediment contaminant concentrations that fall below the threshold effects level (TEL) are not likely to be associated with adverse biological effects on aquatic organisms. The range of sediment contaminant concentrations that fall above the probable effects level (PEL) are usually or always associated with adverse biological effects. Within the range of concentrations delineated by the TEL (lower limit) and the PEL (upper limit), adverse biological effects are possible, but it is difficult to predict the occurrence, nature, and/or severity of these effects (MacDonald 1994).

- **Algal Phytoplankton and Periphyton Assemblages**

  Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

  - Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of 62-302.530(47), F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..
  - Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples. Although algal density of a single site is highly variable and depends on several factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).
  - Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae

present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

- Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C.

- **Benthic Macroinvertebrate Assemblages**

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

  - Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute exceedances of 62-302.530(47), F.A.C., 62-302.530(48)(a), F.A.C., 62-302.530(48)(b), F.A.C. and/or 62-302.530(62), F.A.C.
  - Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedances of 62-302.530(47), F.A.C., 62-302.530(48)(a), F.A.C. and/or 62-302.530(48)(b), F.A.C.
  - Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedances of 62-302.530(47) F.A.C., 62-302.530(48)(a), F.A.C., 62-302.530(48)(b), F.A.C. and/or 62-302.530(62), F.A.C.
  - Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedances of 62-302.530(47), F.A.C., 62-302.530(48)(a), F.A.C., 62-302.530(48)(b), F.A.C. and/or 62-302.530(62), F.A.C..
  - Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity

scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitute exceedances of 62-302.530(10), F.A.C.

- The Stream Condition Index (SCI): The SCI is a biological assessment tool that measures the degree to which flowing fresh waters support a healthy, well-balanced biological community, as indicated by aquatic, benthic macroinvertebrates. Macroinvertebrate taxonomic and abundance data are used to calculate ten biological metric scores, each of which has been shown to respond predictably to human disturbance (Fore et al. 2007; DEP SOP SCI 1000; DEP-SAS-001/11, incorporated into the Quality Assurance Rule by reference 62-160.210(2)(a), F.A.C.). The points for each of the metric scores (0 to 10) are summed to yield a final SCI score (range 0-100). The ten metrics are percent contribution of Tanytarsini, number of sensitive taxa, percent contribution of very tolerant taxa, number of total taxa, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, the percent contribution of suspension and filter feeders, number of long-lived taxa, and number of clinger taxa. As human disturbance increases, it is expected that the number of total taxa, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon and percent contribution of very tolerant taxa will increase.

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

- **Rapid Periphyton Survey**

  Rapid Periphyton Survey (RPS) is a rapid method to quantify the extent and abundance of attached algae (periphyton) in a stream or river. A total of 99 points are assessed within a 100m area of sampling reach, 9 equidistant points along 11 cross-section transects spaced 10 m apart, If greater than 20% of sampled points have algal lengths greater than 6mm, a sample is collected and the autecological information associated with the dominant algae is evaluated (see DEP SOP FS 7230 Rapid Periphyton Survey). This method could be used to determine floral health associated with Chapter 62-302.531, F.A.C.

- **Linear Vegetation Survey**

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

- **Florida Wetland Condition Index-Vegetation**

  The Florida Wetland Condition Index-Vegetation (WCI-VI) for isolated, forested wetlands is a biological assessment of wetland health conducted by sampling vascular plants along transects, identifying them to the species level, and calculating metric values based on attributes of the plant community that change predictably along an independent gradient of human disturbance. The index is calculated based on six metrics: percent tolerant indicator species, percent sensitive indicator species, percent exotic macrophyte species, average Coefficient of Conservatism (CC) score, percent native perennial species, and percent wetland status species. These metrics are calibrated for four ecoregions within the state including the Panhandle, North, Central, and South regions. The score is based on a 0-60 scale, with 60 representing high biological integrity. This current index is based on the Florida Wetland Condition Index (FWCI) developed by Reiss and Brown (2005) to provide a quantitative measure of the biological integrity of a wetland system.

- **Definition of Qualifiers**

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

Appendix C. Chain of Custody

Request Number: RQ-2019-07-15-24

FYI5 Mosaic Fertilizer FL0040177 Sampling Inspection

Customer: BMR-TAMPA

Project ID: FYI5

Florida Department of Environmental Protection

Central Laboratory Submittal Form

~~Page 1 of 5~~

last revised Jan 25, 2018

Requester: Tanya Welborn

Collected By: Edgar Guevon Orejuela, Anthony Annibali, Matt Beaudoin, Judy Ashton

Field Report Prepared By: Edgar Guevon Orejuela

Sampling Agency: FDEP - PM

Location: Mosaic South Pasture	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 7/21/19 Time 1009	Eastern / Central	Composite end Date 7/22/19 Time 0909	Bottle Group(s) (See pg 2): B						
Field ID: MSP-TOX	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen: 4.28	☐ mg/L ☑ % sat	Total Res. Chlorine (mg/L):					
WIN/STORET #	Temp (C): 30.8	pH: 8.3		Sample Depth: 0.3	☐ ft ☒ m	Sp. Conductance (umho/cm): 427					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt):	Comments: Readings from 7/21/19.								
Location: Mosaic South Pasture	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 7/22/19 Time 0945	Eastern / Central	Composite end Date Time	Bottle Group(s): A						
Field ID: MSP-DOOS	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen: ~~35.5~~ ~~4.28~~ too	☐ mg/L ☑ % sat	Total Res. Chlorine (mg/L):					
WIN/STORET #	Temp (C): ~~30.8~~ ~~27.7~~ too	pH: ~~8.3~~ ~~7.9~~ too		Sample Depth: 0.3	☐ ft ☒ m	Sp. Conductance (umho/cm): ~~427~~ too	~~442~~				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt):	Comments:								
Location: Mosaic South Pasture	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 7/22/19 Time 1245	Eastern / Central	Composite end Date Time	Bottle Group(s): C						
Field ID: MSP-Downstream	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen: 6.8	☐ mg/L ☒ % sat	Total Res. Chlorine (mg/L):					
WIN/STORET #	Temp (C): 27.3	pH: 7.6		Sample Depth: 0.3	☐ ft ☒ m	Sp. Conductance (umho/cm): 393					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt):	Comments:								
Location: Mosaic South Pastore	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 7/22/19 Time 1310	Eastern / Central	Composite end Date Time	Bottle Group(s): D						
Field ID: MSP-Downstream	Matrix (type, e.g., Salt, Fresh, etc): Fresh			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: SCL								

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Edgar Guevon Orejuela	7/22/19 ; 1700	Fed Ex	7	ABP	7-23-19 0955

Lauren Gottfried 7.23.19 1050

1/7

Request Number: RQ-2019-07-15-24

FYI5 Mosaic Fertilizer FL0040177 Sampling Inspection

Customer: BMR-TAMPA

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5

last revised Jan 25, 2018

Requester: Tanya Welborn

Collected By: Edgar Guevara Orozco, Antony Ammirati, Matt Bowden, Judy Ashton

Field Report Prepared By: Edgar Guevara Orozco

Sampling Agency: FDEP - PM

Location: Mosaic South Pasture	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 7/22/19	Time 1330	Eastern Central	Composite end Date	Time	Bottle Group(s) (See pg 2): C			
Field ID: MSP - Upstream	Matrix (type, e.g., Salt, Fresh, etc): Fresh		Diss. Oxygen: 9.7	☐ mg/L ☒ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C): 26.7	pH: 7.9	Sample Depth: 0.3	☐ ft ☒ m	Sp. Conductance (umho/cm): 268					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location: Mosaic South Pasture	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 7/22/19	Time 1000	Eastern Central	Composite end Date	Time	Bottle Group(s): E			
Field ID: MSP - BLANK	Matrix (type, e.g., Salt, Fresh, etc): DI		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
					7-23-19 0855

3/7

Benchmark EnviroAnalytical,Inc
1711 12th Street East
Palmetto, Fl 34221
941-723-9986
941-723-6061 Fax

PO#B57BC6
RQ#2019-07-15-24

Client Information:	FDEP
Address:	13051 N Telecom Pkwy, Suite 101
Phone #	813-470-5749
Fax #	
Email	Edgar.GuevaraOrejuela@FloridaDEP.gov, DEP overflow
Laboratory Submission #:	

Project Name:

Sample Name	Sample Type[1] / Sample Matrix[2]	Collection		Container			Preservative[4]	Parameters for Analysis	Laboratory Sample #
		Date	Time	Qty	Capacity	Type[3]	Lab Preserved □		
MSP-D005	SW	7-22-19	0945	1	120mL	P	ICE	FECAL, E. COLI	1
MSP-D005	SW	7-22-19	0945	1	120mL	P	ICE	FECAL, E. COLI	2
MSP-Downstream	SW	7-22-19	1245	2	120 ml	P	ICE	Fecal, E. Coli	3
MSP-Upstream	SW	7-22-19	1330	2	120 ml	P	ice	Fecal, E. Coli	4

[1] "Sample Type" is used to indicate whether the sample was a grab (G) or whether it was a composite (C).
[2] "Sample Matrix" is used to indicate what that the sample is being obtained as drinking water (DW), groundwater (GW), surface water (SW), fresh surface water (FSW), saline surface water (SSW), soil, sediment (SOMNT), or sludge (SLDG).
[3] "Container Type" is used to indicate whether the container is plastic (P) or glass (G).
[4] Sample must be refrigerated or stored in wet ice after collection. The temperature during storage should be less than or equal to 6°C (43.8°F).
Under "Preservative," list any preservatives that were added to the sample container.

Instructions:
1. Each bottle has a label identifying sample ID, preservative preservative contained in the bottle, sample type, client ID, and parameters for analysis.
2. The following information should be added to each bottle label after collection with permanent black ink: date and time of collection, sampler's name or initials, and any field number or ID.
3. All bottles not containing preservative may be rinsed with appropriate sample prior to collection.
4. The client is responsible for documentation of the sampling event. Please note special sampling events on the sample custody form.

Laboratory Sample Acceptability:
pH <2: ✓ Temperature: 5.2°C

1	Collected By: Edgar Guevara Orejuela	Date 7/22/19	Time 0945	Received By:	Date	Time
2	Relinquished By: Edgar Guevara Orejuela	Date 7/22/19	Time 15:01	Received By:	Date 7-22-19	Time 1501

Request Number: RQ-2019-07-15-24

FYI5 Mosaic Fertilizer FL0040177 Sampling Inspection

Customer: BMR-TAMPA

Project ID: FYI5

Florida Department of Environmental Protection

Central Laboratory Submittal Form

Requester: Tanya Welborn

Field Report Prepared By: Edgar Guevara Orejuela

Collected By: Edgar Guevara Orejuela, Anthony Annibali

Sampling Agency: FDEP - PM

Location: Mosaic South Pasture	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 7/23/19 Time 11:15	Eastern Central	Composite end Date 7/24/19 Time 10:15				Bottle Group(s) (See pg 2): B
Field ID: MSP - Tox	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen: 50.2 ☐ mg/L ☒ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C): 30.3	pH: 8.2		Sample Depth: 0.3 ☐ ft ☒ m	Sp. Conductance (umho/cm): 423.8			
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
Edgar Guevara Orejuela	7/24/19 ; 1700	Fed Ex	1	KR	7.25.19 / 9:35

Ref:
Dep:

Date: 02Apr19
Wgt: 25.00 LBS
DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Lauren Langford 1005 7.25.19

Svcs: PRIORITY OVERNIGHT Master 4751 8778 4348
TRCK: 4751 8778 4392

Request Number: RQ-2019-07-15-24

FYI5 Mosaic Fertilizer FL0040177 Sampling Inspection

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Customer: BMR-TAMPA

Project ID: FYI5

Requester: Tanya Welborn

Collected By: Edgar Guevara Orquiola

Field Report Prepared By: Edgar Guevara Orquiola

Sampling Agency: FDEP - PM

Location: Mosaic South Pasture			☒ Comp ☐ Grab	Collection (comp begin or grab) Date 7/25/19 Time 0940	Eastern Central	Composite end Date 7/26/19 Time 0840					Bottle Group(s) (See pg 2): B
Field ID: MSP-TOX			Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen: 37.7	☐ mg/L ☒ % sat	Total Res. Chlorine (mg/L):			
WIN/STORET #			Temp (C): 27.7	pH: 7.74		Sample Depth: 0.3	☐ ft ☒ m	Sp. Conductance (umho/cm): 426.2			
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
Edgar Guevara Orquiola	7/26/19 : 1400	Fed Ex	2	Lauren Gautfred	7.27.19 0900

Appendix D. Physical/ Chemical and Habitat Assessment Field Sheets

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

SAMPLE ID see sticker ^ ORG ID 21FLTPA LATITUDE
STORET # see sticker COUNTY Hardee LONGITUDE
SITE NAME see sticker TIME SAMPLING AGENCY FDEP SW ROC
DATE 7/22/19 RECEIVING BODY OF WATER

RIPARIAN ZONE / STREAM FEATURES

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

Landscape Development Intensity Index (LDI)

Local Watershed Erosion (select one) : ☐ None ☒ Slight ☐ Moderate ☐ Heavy
Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☒ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
Left Bank : >18 Right Bank : >18

Hydrologic Modification Score (per FT 3101)

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

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
5 m wide
m/s | 0.31 m/s | m/s
m deep | 1.5 m deep | m deep

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

Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%) ☒ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

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

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

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)		7	
Undercut Banks / Roots		7	
Leaf Packs or Mat			
Aquatic Vegetation		3	
Rock or Shell Rubble..			
Sand.....		3	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

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

SECCHI (M): 1.5 ☒ VOB
TOTAL DEPTH: 1.5
Meter ID:

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

Water Surface Oils Normal ☒ Sheen ☐ Globs ☐ Slick ☐ Other ☐

Water Sample Taken? ☒ Yes ☐ No
Sample Preserved? ☒ Yes ☐ No
Lot Number: Exp:

Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify) ☐

Algae Sample Taken? ☐ Yes ☒ No
Sample Preserved? ☐ Yes ☐ No
Lot Number: Exp:

Clarity Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque ☐

ABUNDANCE

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

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

AMBIENT FIELD CONDITIONS / NOTES:

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

SAMPLING TEAM Matthew Bearden / Sudy Ashton SIGNATURE : DATE : 7/22/19

62-160.800, F.A.C. Revision Date: March 1, 2014

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

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
DEAR - DEP SW Roc			7/22/19	Peace River
REMARKS:	COUNTY: Hardee	LOCATION: Payne Creek		FIELD ID/NAME: MSP- Downstream

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 8	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 (8) 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 9	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 (9) 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity 19	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 (19) 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 13 Primary Score 49	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 (13) 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. (20) 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 10	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 9 Left Bank 10	Width of vegetation greater than 18 m (10) (9)	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 9 Left Bank 9 Secondary Score 76	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. 10 (9)	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

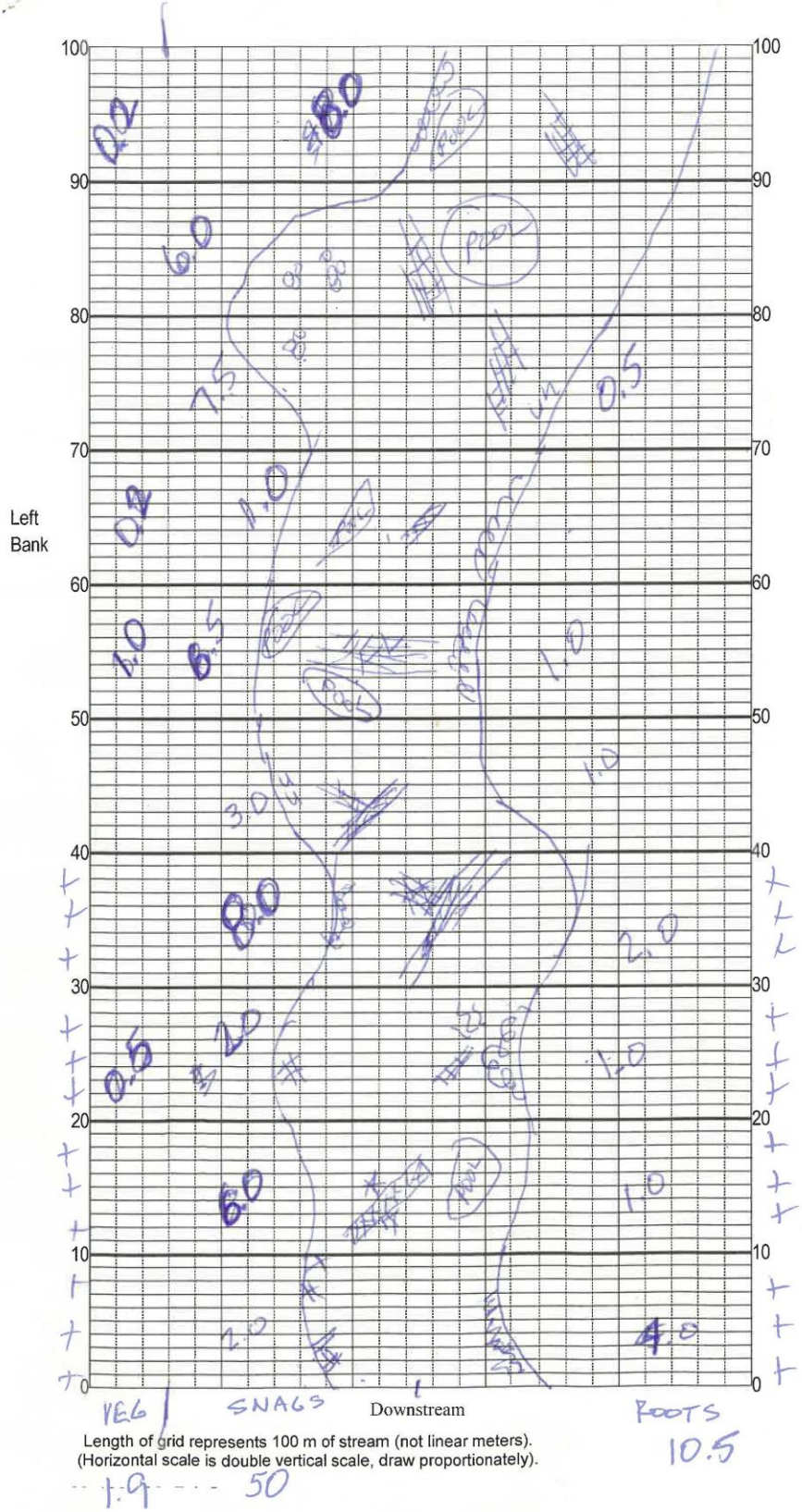
125 **TOTAL SCORE**

Date:	Analyst: Matthew Bearden / Judy Ashton	Signature:

62-160.800, F.A.C.

Revision Date: March 1, 2014

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



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

Location: MSP - Downstream

Date: 7/22/19

Sampler: Judy Ashton

100 m: Latitude _____
Longitude _____

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance.		%
50	Snags	10
10.5	Roots/undercut banks	2.1
	Leaf Packs (or mats)	
1.9	Aquatic Macrophytes	0.4
	ROCKS	
X	Pools	total # observed = 6 # range expected = 2-4

Average width 5 m
Average depth 1.5 m

Velocity measured at 100 meter mark.

WQ & chemistry taken at 0 meter mark.

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

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

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

Plants observed / other notes:

5 m wide

0.33

Label here

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sh

MSP - Downstream | Investigators: Matthew Bearden | County: Hardee

STORET Station Number: **see label**

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
0	1	N		
	2			
	3			
	4			
	5			51
	6			
	7			
	8			
	9	V		
10	1	N		
	2			
	3			
	4			
	5			90
	6			
	7			
	8			
	9	V		
20	1	N		
	2			
	3			
	4			
	5			85
	6			
	7			
	8			
	9	V		
30	1	N		
	2			
	3			
	4			
	5			96
	6			
	7			
	8			
	9	V		
40	1	N		
	2			
	3			
	4			
	5			96
	6			
	7			
	8			
	9	V		
50	1	N		
	2			
	3			
	4			
	5			75
	6			
	7			
	8			
	9	V		

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
60	1	N		
	2			
	3			
	4			
	5			91
	6			
	7			
	8			
	9	V		
70	1	N		
	2			
	3			
	4			
	5			96
	6			
	7			
	8			
	9	V		
80	1	N		
	2			
	3			
	4			
	5			~~37~~ 96
	6			
	7			
	8			
	9	V		
90	1	N		
	2			
	3			
	4			
	5			71
	6			
	7			
	8			
	9	V		
100	1	N		
	2			
	3			
	4			
	5			87
	6			
	7			
	8			
	9	V		

Secchi depth	1.5
Estimated?	No
# points ranked 4-6	0
total points assessed	99
% points ranked 4-6	0

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

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

56 −47 =9

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

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

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

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

62-160.800, F.A.C. Revision Date: March 1, 2014

Appendix E. Chemical Analysis of Effluent and Receiving Water

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 9:45	Effluent	AGP/LN	Algal Growth Potential	13.4	mg DryWt/L	0.3	0.9
7/22/2019 9:45	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	23 V	mg/L	0.2	2
7/22/2019 9:45	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	28	ug/L	1.2	3.6
7/22/2019 9:45	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	22	ug/L	1.6	5
7/22/2019 9:45	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	7.7	ug/L	1.8	5.4
7/22/2019 9:45	Effluent	Overflow	Escherichia Coli-Quanti-Tray	10 U	MPN/100 mL	10	10
7/22/2019 9:45	Effluent	Overflow	Fecal Coliforms-Membrane Filter	17	cfu/100 mL	1	1
7/22/2019 9:45	Effluent	Metals	Calcium	28.7	mg/L	0.075	0.3
7/22/2019 9:45	Effluent	Metals	Magnesium	24.7	mg/L	0.04	0.16
7/22/2019 9:45	Effluent	Metals	Aluminum	194	ug/L	5	20
7/22/2019 9:45	Effluent	Metals	Copper	0.40 U	ug/L	0.4	0.8
7/22/2019 9:45	Effluent	Metals	Selenium	0.58 I	ug/L	0.2	0.8
7/22/2019 9:45	Effluent	Metals	Sodium	30.8	mg/L	0.5	2
7/22/2019 9:45	Effluent	Metals	Chromium	0.60 I	ug/L	0.4	1.6
7/22/2019 9:45	Effluent	Metals	Nickel	0.56 I	ug/L	0.5	2
7/22/2019 9:45	Effluent	Metals	Cadmium	0.025 I	ug/L	0.02	0.08
7/22/2019 9:45	Effluent	Metals	Zinc	5.0 U	ug/L	5	20
7/22/2019 9:45	Effluent	Metals	Arsenic	3.9	ug/L	0.05	0.2
7/22/2019 9:45	Effluent	Metals	Silver	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Metals	Lead	0.20 U	ug/L	0.2	0.4
7/22/2019 9:45	Effluent	Metals	Iron	160	ug/L	30	120
7/22/2019 9:45	Effluent	Nutrients	Total Alkalinity	147	mg CaCO3/L	0.65	2.5
7/22/2019 9:45	Effluent	Nutrients	Color (true)	15	PCU	2.5	6
7/22/2019 9:45	Effluent	Nutrients	Turbidity	6.8	NTU	0.1	0.13
7/22/2019 9:45	Effluent	Nutrients	O-Phosphate-P	0.068	mg P/L	0.004	0.01
7/22/2019 9:45	Effluent	Nutrients	NO2NO3-N	0.026	mg N/L	0.004	0.01
7/22/2019 9:45	Effluent	Nutrients	Sulfate	37	mg SO4/L	0.2	0.6
7/22/2019 9:45	Effluent	Nutrients	Ammonia-N	0.24	mg N/L	0.004	0.01
7/22/2019 9:45	Effluent	Nutrients	Total-P	0.26	mg P/L	0.005	0.05
7/22/2019 9:45	Effluent	Nutrients	Fluoride	1.5	mg F/L	0.035	0.1
7/22/2019 9:45	Effluent	Nutrients	Organic Carbon	11	mg C/L	0.5	1

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 9:45	Effluent	Nutrients	Chloride	26	mg Cl/L	0.2	0.6
7/22/2019 9:45	Effluent	Nutrients	Kjeldahl Nitrogen	1.4	mg N/L	0.08	0.2
7/22/2019 9:45	Effluent	Nutrients	TSS	9 I	mg/L	2	10
7/22/2019 9:45	Effluent	Overflow	HEM	3.6	mg/L	0.72	2.6
7/22/2019 9:45	Effluent	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.081
7/22/2019 9:45	Effluent	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
7/22/2019 9:45	Effluent	Pesticides	Fenamiphos	0.030 UJ	ug/L	0.03	0.12
7/22/2019 9:45	Effluent	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
7/22/2019 9:45	Effluent	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
7/22/2019 9:45	Effluent	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Prometon	0.020 U	ug/L	0.02	0.081
7/22/2019 9:45	Effluent	Pesticides	Metalaxyl	0.18 U	ug/L	0.18	0.73
7/22/2019 9:45	Effluent	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Norflurazon	0.050 U	ug/L	0.05	0.2
7/22/2019 9:45	Effluent	Pesticides	Metribuzin	0.050 U	ug/L	0.05	0.2
7/22/2019 9:45	Effluent	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
7/22/2019 9:45	Effluent	Pesticides	Simazine	0.019 I	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Butylate	0.050 U	ug/L	0.05	0.2
7/22/2019 9:45	Effluent	Pesticides	Azinphos Methyl	0.091 U	ug/L	0.091	0.36
7/22/2019 9:45	Effluent	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Hexazinone	0.071 U	ug/L	0.071	0.28
7/22/2019 9:45	Effluent	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
7/22/2019 9:45	Effluent	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Demeton	0.024 U	ug/L	0.024	0.097
7/22/2019 9:45	Effluent	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.081
7/22/2019 9:45	Effluent	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Naled	0.081 U	ug/L	0.081	0.32
7/22/2019 9:45	Effluent	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.48
7/22/2019 9:45	Effluent	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 9:45	Effluent	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Fluorene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.4
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	40
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Anthracene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.1 U	ug/L	5.1	20
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Diethyl phthalate	2.0 U	ug/L	2	8.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Fluoranthene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Phenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Acenaphthene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Acenaphthylene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Dimethyl phthalate	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.4
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzidine	10 U	ug/L	10	40
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Isophorone	0.051 U	ug/L	0.051	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 9:45	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.4
7/22/2019 9:45	Effluent	Priority Organic Pollutants	1,4-Dioxane	0.062 I	ug/L	0.02	0.08
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	40
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Chrysene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	ug/L	2	8.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Pentachlorophenol	0.51 U	ug/L	0.51	2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	40
7/22/2019 9:45	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	ug/L	0.025	0.1
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Hexachloroethane	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Nitrobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.4
7/22/2019 9:45	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.051 U	ug/L	0.051	0.2
7/22/2019 9:45	Effluent	Nutrients	Specific Conductance	442	umhos/cm		
7/22/2019 9:45	Effluent	Nutrients	Sample Depth	0.3	m		
7/22/2019 9:45	Effluent	Nutrients	Dissolved Oxygen	35.5	%Sat		
7/22/2019 9:45	Effluent	Nutrients	pH	7.9			
7/22/2019 9:45	Effluent	Nutrients	Temperature	29.7	C		
7/22/2019 9:09	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
7/22/2019 9:09	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	66.4	IC25		
7/22/2019 9:09	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	50	NOEC		
7/22/2019 9:09	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
7/22/2019 9:09	Effluent	Nutrients	Specific Conductance	427	umhos/cm		
7/22/2019 9:09	Effluent	Nutrients	pH	8.3			
7/22/2019 9:09	Effluent	Nutrients	Sample Depth	0.3	m		
7/22/2019 9:09	Effluent	Nutrients	Dissolved Oxygen	42.8	%Sat		

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 9:09	Effluent	Nutrients	Temperature	30.8	C		
7/22/2019 12:45	Test Site	AGP/LN	Algal Growth Potential	10.9	mg DryWt/L	0.3	0.9
7/22/2019 12:45	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	24 V	mg/L	0.2	2
7/22/2019 12:45	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.8 U	ug/L	1.8	5.4
7/22/2019 12:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	10	ug/L	1.2	3.6
7/22/2019 12:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	9.2	ug/L	1.6	5
7/22/2019 12:45	Test Site	Overflow	Escherichia Coli-Quanti-Tray	134	MPN/100 mL	10	10
7/22/2019 12:45	Test Site	Overflow	Fecal Coliforms-Membrane Filter	114	cfu/100 mL	2	2
7/22/2019 12:45	Test Site	Metals	Sodium	28.6	mg/L	0.5	2
7/22/2019 12:45	Test Site	Metals	Zinc	5.0 U	ug/L	5	20
7/22/2019 12:45	Test Site	Metals	Silver	0.010 U	ug/L	0.01	0.04
7/22/2019 12:45	Test Site	Metals	Nickel	0.50 U	ug/L	0.5	2
7/22/2019 12:45	Test Site	Metals	Iron	170	ug/L	30	120
7/22/2019 12:45	Test Site	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
7/22/2019 12:45	Test Site	Metals	Arsenic	3.69	ug/L	0.05	0.2
7/22/2019 12:45	Test Site	Metals	Chromium	0.40 U	ug/L	0.4	1.6
7/22/2019 12:45	Test Site	Metals	Selenium	0.57 I	ug/L	0.2	0.8
7/22/2019 12:45	Test Site	Metals	Magnesium	24.1	mg/L	0.04	0.16
7/22/2019 12:45	Test Site	Metals	Copper	0.40 U	ug/L	0.4	0.8
7/22/2019 12:45	Test Site	Metals	Calcium	24.7	mg/L	0.075	0.3
7/22/2019 12:45	Test Site	Metals	Lead	0.20 U	ug/L	0.2	0.4
7/22/2019 12:45	Test Site	Metals	Aluminum	127	ug/L	5	20
7/22/2019 12:45	Test Site	Nutrients	Ammonia-N	0.026	mg N/L	0.002	0.005
7/22/2019 12:45	Test Site	Nutrients	Color (true)	41 A	PCU	2.5	6
7/22/2019 12:45	Test Site	Nutrients	O-Phosphate-P	0.19	mg P/L	0.004	0.01
7/22/2019 12:45	Test Site	Nutrients	Turbidity	2.7	NTU	0.1	0.13
7/22/2019 12:45	Test Site	Nutrients	Fluoride	1.5	mg F/L	0.035	0.1
7/22/2019 12:45	Test Site	Nutrients	Organic Carbon	11	mg C/L	0.5	1
7/22/2019 12:45	Test Site	Nutrients	Total Alkalinity	123 A	mg CaCO3/L	0.65	2.5
7/22/2019 12:45	Test Site	Nutrients	Kjeldahl Nitrogen	0.89	mg N/L	0.08	0.2
7/22/2019 12:45	Test Site	Nutrients	Sulfate	46	mg SO4/L	0.2	0.6
7/22/2019 12:45	Test Site	Nutrients	TSS	4 IA	mg/L	2	10
7/22/2019 12:45	Test Site	Nutrients	Chloride	22	mg Cl/L	0.2	0.6
7/22/2019 12:45	Test Site	Nutrients	Total-P	0.26	mg P/L	0.005	0.05

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 12:45	Test Site	Nutrients	NO2NO3-N	0.15	mg N/L	0.004	0.01
7/22/2019 12:45	Test Site	Overflow	HEM	4.4	mg/L	0.77	2.8
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Pentachlorophenol	0.52 U	ug/L	0.52	2.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Dimethyl phthalate	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Anthracene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.2 U	ug/L	5.2	21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	1,4-Dioxane	0.034 I	ug/L	0.02	0.08
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
7/22/2019 12:45	Test Site	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Acenaphthene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Acenaphthylene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Fluoranthene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Diethyl phthalate	2.1 U	ug/L	2.1	8.2
7/22/2019 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.2
7/22/2019 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2-Chlorophenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Chrysene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Isophorone	0.052 U	ug/L	0.052	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Phenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Hexachlorobutadiene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2-Chloronaphthalene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	ug/L	2.1	8.2
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Fluorene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Hexachloroethane	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Nitrobenzene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2-Nitrophenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzidine	10 U	ug/L	10	41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	ug/L	0.026	0.1
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Hexachlorobenzene	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.41
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Priority Organic Pollutants	2,4-Dimethylphenol	0.052 U	ug/L	0.052	0.21
7/22/2019 12:45	Test Site	Nutrients	Sample Depth	0.3	m		
7/22/2019 12:45	Test Site	Nutrients	Temperature	27.3	C		
7/22/2019 12:45	Test Site	Nutrients	Specific Conductance	393	umhos/cm		
7/22/2019 12:45	Test Site	Nutrients	Dissolved Oxygen	68	%Sat		
7/22/2019 12:45	Test Site	Nutrients	pH	7.6			
7/22/2019 13:30	Control Site	AGP/LN	Algal Growth Potential	11.8 A	mg DryWt/L	0.3	0.9
7/22/2019 13:30	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	1.2 U	ug/L	1.2	3.6
7/22/2019 13:30	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	23 V	mg/L	0.2	2
7/22/2019 13:30	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6 U	ug/L	1.6	5
7/22/2019 13:30	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.8 U	ug/L	1.8	5.4
7/22/2019 13:30	Control Site	Overflow	Fecal Coliforms-Membrane Filter	72	cfu/100 mL	2	2
7/22/2019 13:30	Control Site	Overflow	Escherichia Coli-Quanti-Tray	120	MPN/100 mL	10	10

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 13:30	Control Site	Metals	Aluminum	153	ug/L	5	20
7/22/2019 13:30	Control Site	Metals	Selenium	0.38 I	ug/L	0.2	0.8
7/22/2019 13:30	Control Site	Metals	Lead	0.20 U	ug/L	0.2	0.4
7/22/2019 13:30	Control Site	Metals	Chromium	0.74 I	ug/L	0.4	1.6
7/22/2019 13:30	Control Site	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
7/22/2019 13:30	Control Site	Metals	Iron	1.07E+03	ug/L	30	120
7/22/2019 13:30	Control Site	Metals	Nickel	0.50 U	ug/L	0.5	2
7/22/2019 13:30	Control Site	Metals	Silver	0.010 U	ug/L	0.01	0.04
7/22/2019 13:30	Control Site	Metals	Copper	0.40 U	ug/L	0.4	0.8
7/22/2019 13:30	Control Site	Metals	Sodium	12.5	mg/L	0.5	2
7/22/2019 13:30	Control Site	Metals	Zinc	6.5 I	ug/L	5	20
7/22/2019 13:30	Control Site	Metals	Arsenic	2.83	ug/L	0.05	0.2
7/22/2019 13:30	Control Site	Metals	Magnesium	15	mg/L	0.04	0.16
7/22/2019 13:30	Control Site	Metals	Calcium	26.1	mg/L	0.075	0.3
7/22/2019 13:30	Control Site	Nutrients	O-Phosphate-P	0.60	mg P/L	0.04	0.1
7/22/2019 13:30	Control Site	Nutrients	Total Alkalinity	103	mg CaCO3/L	0.65	2.5
7/22/2019 13:30	Control Site	Nutrients	Color (true)	110	PCU	2.5	6
7/22/2019 13:30	Control Site	Nutrients	Organic Carbon	18	mg C/L	0.5	1
7/22/2019 13:30	Control Site	Nutrients	Turbidity	4.9	NTU	0.1	0.13
7/22/2019 13:30	Control Site	Nutrients	Kjeldahl Nitrogen	0.84	mg N/L	0.08	0.2
7/22/2019 13:30	Control Site	Nutrients	Fluoride	0.71	mg F/L	0.035	0.1
7/22/2019 13:30	Control Site	Nutrients	TSS	2 I	mg/L	2	10
7/22/2019 13:30	Control Site	Nutrients	Sulfate	18 A	mg SO4/L	0.2	0.6
7/22/2019 13:30	Control Site	Nutrients	NO2NO3-N	0.25	mg N/L	0.004	0.01
7/22/2019 13:30	Control Site	Nutrients	Total-P	0.69	mg P/L	0.005	0.05
7/22/2019 13:30	Control Site	Nutrients	Ammonia-N	0.025	mg N/L	0.002	0.005
7/22/2019 13:30	Control Site	Nutrients	Chloride	9.4 A	mg Cl/L	0.2	0.6
7/22/2019 13:30	Control Site	Overflow	HEM	0.74 I	mg/L	0.74	2.6
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,4-Dinitrophenol	11 U	ug/L	11	42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2-Chloronaphthalene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2 U	ug/L	3.2	13
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.053 U	ug/L	0.053	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Acenaphthene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Nitrobenzene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Pentachlorophenol	0.53 U	ug/L	0.53	2.1
7/22/2019 13:30	Control Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.08
7/22/2019 13:30	Control Site	Priority Organic Pollutants	4-Nitrophenol	11 U	ug/L	11	42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Chrysene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Hexachlorobenzene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Hexachlorobutadiene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.4
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2-Chlorophenol	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.3 U	ug/L	5.3	21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Fluoranthene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Hexachloroethane	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Isophorone	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.11 U	ug/L	0.11	0.42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Phenanthrene	0.11 U	ug/L	0.11	0.42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,4-Dimethylphenol	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzidine	11 U	ug/L	11	42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Butyl benzyl phthalate	1.1 U	ug/L	1.1	4.2
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	ug/L	2.1	8.4
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Phenol	0.053 U	ug/L	0.053	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 13:30	Control Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Anthracene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Fluorene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Naphthalene	0.11 U	ug/L	0.11	0.42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	11 U	ug/L	11	42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Diethyl phthalate	2.1 U	ug/L	2.1	8.4
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Dimethyl phthalate	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Pyrene	0.11 U	ug/L	0.11	0.42
7/22/2019 13:30	Control Site	Priority Organic Pollutants	2-Nitrophenol	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Acenaphthylene	0.026 U	ug/L	0.026	0.11
7/22/2019 13:30	Control Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.053 U	ug/L	0.053	0.21
7/22/2019 13:30	Control Site	Nutrients	Dissolved Oxygen	97	%Sat		
7/22/2019 13:30	Control Site	Nutrients	Sample Depth	0.3	m		
7/22/2019 13:30	Control Site	Nutrients	Specific Conductance	268	umhos/cm		
7/22/2019 13:30	Control Site	Nutrients	pH	7.9			
7/22/2019 13:30	Control Site	Nutrients	Temperature	26.7	C		
7/22/2019 10:00	Blank	Metals	Iron	30 U	ug/L	30	120
7/22/2019 10:00	Blank	Metals	Copper	0.40 U	ug/L	0.4	0.8
7/22/2019 10:00	Blank	Metals	Chromium	0.40 U	ug/L	0.4	1.6
7/22/2019 10:00	Blank	Metals	Nickel	0.50 U	ug/L	0.5	2
7/22/2019 10:00	Blank	Metals	Zinc	5.0 U	ug/L	5	20
7/22/2019 10:00	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
7/22/2019 10:00	Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
7/22/2019 10:00	Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
7/22/2019 10:00	Blank	Metals	Silver	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Metals	Lead	0.20 U	ug/L	0.2	0.4
7/22/2019 10:00	Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
7/22/2019 10:00	Blank	Metals	Aluminum	5.0 U	ug/L	5	20
7/22/2019 10:00	Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
7/22/2019 10:00	Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
7/22/2019 10:00	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 10:00	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
7/22/2019 10:00	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
7/22/2019 10:00	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
7/22/2019 10:00	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
7/22/2019 10:00	Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
7/22/2019 10:00	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
7/22/2019 10:00	Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
7/22/2019 10:00	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6
7/22/2019 10:00	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
7/22/2019 10:00	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
7/22/2019 10:00	Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
7/22/2019 10:00	Blank	Overflow	HEM	0.76 U	mg/L	0.76	2.7
7/22/2019 10:00	Blank	Pesticides	Alachlor	0.061 U	ug/L	0.061	0.24
7/22/2019 10:00	Blank	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
7/22/2019 10:00	Blank	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.081
7/22/2019 10:00	Blank	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Demeton	0.024 U	ug/L	0.024	0.097
7/22/2019 10:00	Blank	Pesticides	Ethoprop	0.0051 U	ug/L	0.0051	0.02
7/22/2019 10:00	Blank	Pesticides	Phorate	0.0051 U	ug/L	0.0051	0.02
7/22/2019 10:00	Blank	Pesticides	Azinphos Methyl	0.091 U	ug/L	0.091	0.36
7/22/2019 10:00	Blank	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Metribuzin	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Disulfoton	0.0051 U	ug/L	0.0051	0.02
7/22/2019 10:00	Blank	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.48
7/22/2019 10:00	Blank	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Prometon	0.020 U	ug/L	0.02	0.081
7/22/2019 10:00	Blank	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Naled	0.081 U	ug/L	0.081	0.32
7/22/2019 10:00	Blank	Pesticides	Norflurazon	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.081

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 10:00	Blank	Pesticides	Butylate	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Pesticides	Fenamiphos	0.030 UJ	ug/L	0.03	0.12
7/22/2019 10:00	Blank	Pesticides	Hexazinone	0.071 U	ug/L	0.071	0.28
7/22/2019 10:00	Blank	Pesticides	Metalaxyl	0.18 U	ug/L	0.18	0.73
7/22/2019 10:00	Blank	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	40
7/22/2019 10:00	Blank	Priority Organic Pollutants	Phenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.4
7/22/2019 10:00	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Chrysene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	40
7/22/2019 10:00	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4
7/22/2019 10:00	Blank	Priority Organic Pollutants	Hexachloroethane	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Nitrobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.4
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzidine	10 U	ug/L	10	40
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Anthracene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.1 U	ug/L	5.1	20

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
7/22/2019 10:00	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	ug/L	2	8.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Pentachlorophenol	0.51 U	ug/L	0.51	2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2-Chlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Isophorone	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Fluoranthene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Acenaphthylene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Fluorene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.4
7/22/2019 10:00	Blank	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.4
7/22/2019 10:00	Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	ug/L	2	8.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	ug/L	0.025	0.1
7/22/2019 10:00	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	2-Nitrophenol	0.051 U	ug/L	0.051	0.2
7/22/2019 10:00	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	40
7/22/2019 10:00	Blank	Priority Organic Pollutants	Acenaphthene	0.025 U	ug/L	0.025	0.1