Effluent Quality Assessment of

Daytona Beach/Bethune Point WRF

Volusia County

NPDES # FL0025984

Sampled July 9, 2018

June 2019

Biology Program

DEP Laboratory

Division of Environmental Assessment and Restoration

DEP Laboratory Quality Manual

NELAC Certification No. E31780

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Summary of Results

Effluent samples complied with water quality standards and permit limits for all analytes measured. The effluent sample was not acutely toxic to either test species during the 96-hour acute definitive bioassays. Isophorone was detected in the effluent grab sample between the method detection limit (MDL) and practical quantitation limit (PQL).

Facility Overview

The Daytona Beach/Bethune Point WRF is a domestic wastewater treatment facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A. The effluent is continuously discharged into the Halifax River, a Class III Marine Water.

Receiving waters for this facility fall under the Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criteria for the Lower Halifax River Estuary region (62-302.532, F.A.C.). The NNC thresholds, expressed as annual geometric means, are 0.142 mg/L total phosphorus, 0.72 mg/L total nitrogen, and 6.2 µg/L chlorophyll *a*. This FYI event only provides single sample results; therefore, compliance should be determined with additional sampling events.
http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

Effluent grab samples were collected on July 9, 2018 from monitoring site location EFD-1, the NPDES sampling point for Outfall D-001, by Philip Kane, Viviana Useche, Rebecca Bowden, and Nicholas Paseiro.

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.

Map: Daytona Beach/Bethune Point WRF, 1 Shady Place, Daytona Beach, Volusia County, FL 32114. NPDES #FL0025984.



Map produced by Lisa Homann on 4/10/19

Results

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

- Effluent physical and chemical parameters complied with effluent permit limits and Class III Marine Water Quality Criteria (62-302.530, F.A.C.).

Analytical Water Chemistry (See Table 2 and Appendix C)

- The total ammonia concentration in the grab sample was 0.049 mg N/L and the calculated unionized ammonia concentration was <0.02 mg/L. Chlorophyll *a* (corrected) was undetected in the effluent sample.
- Total phosphorus, total nitrogen, CBOD, and total suspended solids complied with effluent permit limits.
- Fluoride and turbidity levels in the effluent sample complied with Class III Marine Water Quality Criteria (62-302.530, F.A.C.). Insufficient data were collected to determine Class III Marine Water Quality compliance for chlorides (62-302.530(17), F.A.C.). A normal background level must be established at the time of sampling to account for daily and seasonal fluctuations.

Microbiology (See Table 2 and Appendix C)

- Enterococci and fecal coliform analyses were performed by Flowers Chemical Laboratories in Altamonte Springs.
- Enterococci and fecal coliforms were not detected in the effluent sample.

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

- Tests were performed July 10 through July 14, 2018.
- Acute bioassay results are reported as the Concentration Lethal to 50% of the test organisms (LC50). In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule and 62-302.500(1)a, F.A.C.). Mortality between 20 and 50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).
- For the 96-hour acute definitive test, the calculated LC50 for the water flea, *Ceriodaphnia dubia*, was >100% effluent with 0% mortality in 100% sample. The calculated LC50 for the fish, *Pimephales promelas*, was >100% effluent with 0% mortality in 100% sample.
- The bioassay samples were not acutely toxic to the test organisms and complied with effluent permit limits.
- For more information or to obtain copies of the toxicity bench sheets, please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix C)

- Effluent metals were detected at levels that complied with Class III Marine Quality Criteria (62-302.530, F.A.C.).
- Copper and nickel were detected in the field blank between the MDL and PQL.

Algal Growth Potential (See Table 4 and Appendix C)

- The freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, and the saltwater species, *Dunaliella tertiolecta*, were used to determine the AGP values in the effluent sample. The analytical chemistry suggests that the effluent is nitrogen-limited (Miller et al. 1978).
- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 0.33 parts per thousand (ppth) to a salinity of approximately 7.09 ppth by the addition of artificial sea salts to meet the salinity requirements of the test species.

Organic Constituents (See Table 5 and Appendix C)

- Isophorone was detected in the effluent grab sample between the MDL and PQL.

Literature Cited

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

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

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

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

DB Bethune Pt WRF	Units	Class III Criteria	Effluent Permit Limits	DB Bethune Pt Grab
Temperature	C	-	-	30.06
pH	SU	6.5 - 8.5	6.5 - 8.5	7.55
Specific Conductance	umhos/cm	-	-	844
Dissolved Oxygen	% saturation	≥ 42	-	99.28
Dissolved Oxygen	mg/L	-	≥ 2.0	7.48

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

Table 2. Effluent limits, Class III Marine Criteria and analytical water chemistry, microbiological, and toxicological data

DB Bethune Pt WRF	Units	Class III Criteria	Effluent Permit Limits	DB Bethune Pt Grab
Ortho-phosphate	mg P/L	-	-	0.5
Total Phosphorus	mg P/L	0.142[3]	≤ 2.0	0.54
Total Ammonia	mg N/L	-	-	0.049
Un-ionized Ammonia (calculated salinity)	mg NH_3/L	-	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	0.53
Total Kjeldahl Nitrogen	mg N/L	-	-	0.82
Organic Nitrogen	mg N/L	-	-	0.77 c
Total Nitrogen	mg N/L	0.72[3]	≤ 6.0	1.35 c
Total Organic Carbon	mg C/L	-	-	0.458
Chlorophyll *a* - Corrected	ug/L	6.2[3]	-	0.55 U
Phaeophytin	ug/L	-	-	0.40 I
Chlorophyll *a*	µg/L	-	-	0.40 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 10.0	1.8 IJ
Total Suspended Solids	mg/L	-	≤ 10.0	3 I
Turbidity	NTU	< 29 t	-	0.65
Color (true)	PCU	-	-	39 A
Alkalinity	mg $CaCO_3$/L	-	-	161 A
Chloride	mg Cl/L	< 10% [1]	-	140 A
Fluoride	mg F/L	≤ 5.0	-	0.65
Sulfate	mg SO_4/L	-	-	27 A
Microbiology [2]				
Fecal Coliforms	cfu/100 mL	-	-	1 U
Enterococci	MPN/100 mL	≤ 130	-	1 U
Toxicity (96-hour Acute Definitive, LC50 % effluent)				
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	> 100	> 100	> 100
Bioassay - Fish *(Pimephales promelas)*	% effluent	> 100	> 100	> 100

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit
1 - Shall not exceed 10% mg Cl/L above background
2 - All microbiological analyses performed by Flowers Chemical Laboratories in Altamonte Springs
3- Estuary-specific Numeric Interpretation for Numeric Nutrient Criteria (NNC) for the Lower Halifax River Estuary region, (62-302.532, F.A.C.). Value expressed as an annual geometric mean.

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

DB Bethune Pt WRF	Units	Class III Criteria	Effluent Permit Limits	DB Bethune Pt Grab	Field Blank
Hardness	mg $CaCO_3$/L	-	-	192 c	-
Aluminum	ug/L	≤ 1500	-	60 U	60 U
Arsenic	ug/L	≤ 50	-	1.36	0.050 U
Cadmium	ug/L	≤ 8.8	-	0.020 U	0.020 U
Calcium	mg/L	-	-	61.2	0.075 U
Chromium, Total [4]	ug/L	≤ 50	-	0.47 I	0.40 U
Copper	ug/L	≤ 3.7	-	1.07	0.48 I
Iron	ug/L	≤ 300	-	48 I	30 U
Lead	ug/L	≤ 8.5	-	0.23	0.050 U
Magnesium	mg/L	-	-	9.56	0.040 U
Nickel	ug/L	≤ 8.3	-	2.57	0.63 I
Selenium	ug/L	≤ 71	-	0.20 U	0.20 U
Silver	ug/L	≤ 2.3	-	0.010 U	0.010 U
Sodium	mg/L	-	-	90.1	0.50 U
Zinc	ug/L	≤ 86	-	33	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
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
4 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

Table 4. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus

DB Bethune Pt WRF								
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**
DB Bethune Pt Grab	*Pseudokirchneriella subcapitata*	38.1 A	22 ± 4.4	215 ± 43	51.3 ± 10.3	232.2 ± 46.4	1.2	2.5
DB Bethune Pt Grab	*Dunaliella tertiolecta*	25.7 A *	not applicable [5]	not applicable [5]	not applicable [5]	not applicable [4]	1.2	2.5

* - sample salinity adjusted to 7.09 ppth

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

5 - predictions not applicable to marine matrix

Table 5. Detected Organic Constituents

DB Bethune Pt WRF	Units	Class III Criteria	Effluent Permit Limits	DB Bethune Pt Grab
Isophorone	ug/L	≤ 3600 a	-	0.059 I

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

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event

Prepared By: Jenny E. Farrell	**Contact Number:** (407) 897-4173
Facility Name (as it appears on permit): Daytona Beach/Bethune Point WRF	**Former Names:**
NPDES Permit Number: FL0025984	**Permit Expiration Date:** January 20, 2019
Physical Address: 1 Shady Place, Daytona Beach, FL 32114	
District: Central	**County:** Volusia
Function of Facility: Domestic Wastewater Treatment Facility	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 13.0 MGD

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):
D-001 outfall flow: 8.8 million gallons per day (MGD) annual average daily flow (AADF), as reported on the May 2018 DMR (April 2017 through May 2018 reporting period).

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):
R-001 public access reuse system: 0.238 MGD AADF; R-002 flow to Convergence Point: 4.8 MGD AADF, as reported on the May 2018 DMR (April 2017 through May 2018 reporting period).

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):
The sampling location of D-001 is EFD-1, located at the Convergence point. The sampling location of R-002 is EFA-1, located at the sampling point at the outlet of the UV reactor channel. Total suspended solids grab samples are collected from EFB-1, after filtration and prior to disinfection.

Description of Permitted Outfall(s):

The Discharge Location (D-001) outfall consists of the combined flow from the Bethune and Westside Regional Facilities, limited to 22.8 MGD maximum daily flow, and is monitored at the concrete sampling structure (Convergence Point) adjacent to the Bethune WWTF site. The outfall discharges to the Halifax River (Class III marine waters, WBID 2363A) at D-001 which is approximately 1029 feet in length and discharges at a depth of approximately 4 feet.
Flow from the Bethune WRF only is described as R-002 for monitoring purposes, which is the discharge to Convergence Point, and has an existing capacity of 13.0 MGD. The point of discharge to the Halifax River is located approximately at latitude 29 º 11' 43" N, longitude 81 º 00' 05" W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):
Daytona Beach/Bethune Point WRF is an advanced domestic wastewater treatment plant consisting of a biological nutrient removal system (5-stage Bardenpho system) with influent screening, grit removal, aeration, secondary clarification, chemical feed (including a new alum feed system and supplemental carbon feed system), filtration, ultraviolet (UV) disinfection, and pumping of biosolids to the Daytona Beach/Westside Regional WRF.

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow (to Halifax River)	**MGD**	Max	20.0	Report	-	-	**Continuous**	**Recording Flow Meter with Totalizer**	**FLW-2**	**See I.A.4**
BOD, Carbonaceous 5 day, 20C	**mg/L**	Max	5.0	6.25	7.5	10.0	**5 Days/Week**	**24-hr FPC**	**EFD-1**	**See I.A.6**
Solids, Total Suspended	**mg/L**	Max	5.0	6.25	7.5	10.0	**5 Days/Week**	**24-hr FPC**	**EFD-1**	**See I.A.6**
pH	**s.u.**	Max/Min	-	-	-	8.5/6.5	**Continuous**	**Meter**	**EFD-1**	**See I.A.3**
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	**percent**	Min	-	-	-	100	**Semi-Annually; twice per year**	**24-hr FPC**	**EFD-1**	**See I.A.5**
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	**percent**	Min	-	-	-	100	**Semi-Annually; twice per year**	**24-hr FPC**	**EFD-1**	**See I.A.5**
Nitrogen, Total	**mg/L**	Max	3.0	3.0	4.5	6.0	**5 Days/Week**	**24-hr FPC**	**EFD-1**	
Phosphorus, Total (as P)	**mg/L**	Max	1.0	1.0	1.5	2.0	**5 Days/Week**	**24-hr FPC**	**EFD-1**	
Nitrogen, Total	**lb/yr**	Max	182,777	Report	-	-	**Monthly**	**Calculated**	**EFD-1**	**See I.A.7**
Phosphorus, Total (as P)	**lb/yr**	Max	60,926	Report	-	-	**Monthly**	**Calculated**	**EFD-1**	**See I.A.7**
Oxygen, Dissolved (DO)	**mg/L**	Min	-	-	-	2.0	**Daily; 24 hours**	**Grab**	**EFD-1**	

PART I: Continued	
Receiving Waters: Halifax River	**Classification (indicate whether fresh or marine):** Class III marine waters, WBID 2363A

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

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

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

   b. Monitoring Frequency
      (1) Routine toxicity tests shall be conducted once every six months, the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.
      (2) Upon completion of four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above, the permittee may submit a written request to the Department for a reduction in monitoring frequency to once every six months. The request shall include a summary of the data and the complete bioassay laboratory reports for each test used to demonstrate compliance. The Department shall act on the request within 45 days of receipt. Reductions in monitoring shall only become effective upon the Department's written confirmation that the facility has completed four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above.
      (3) If a test within the sequence of the four is deemed invalid based on the acceptance criteria in EPA-821-R-02-013, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency.

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

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

   e. Quality Assurance Requirements
      (1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.
      (2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet "test acceptability criteria", the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (**Ceriodaphnia dubia**) and Section 11.11 (**Pimephales promelas**). The repeat test shall begin

within 21 days after the last day of the invalid test.

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

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

f. Reporting Requirements

(1) Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as follows:

(a) Routine and Additional Follow-up Test Results: The calculated IC25 for each test species shall be entered on the DMR.

(2) A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R-02-013, Section 10, Report Preparation and Test Review, and mailed to the Department at the address below within 30 days after the last day of the test.

(3) For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-013, Section 10, and mailed within 30 days after the last day of the second valid additional follow-up test.

(4) Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.

(5) The same bioassay data shall not be reported as the results of more than one test.

(6) All bioassay laboratory reports shall be sent to:
Florida Department of Environmental Protection
Central District Office
3319 Maguire Blvd, Suite 232
Orlando, Florida 32803-3767

g. Test Failures

(1) A test fails when the test results do not meet the limits in 5.a.(1).

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in 5.a.(1) above, the permittee shall notify the Department at the address above within 21 days after the last day of the failed routine test and conduct two additional follow-up tests on each species that failed the test in accordance with 5.d.

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

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

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

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

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

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

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

(e) During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 5.d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in 5.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-013, a repeat test shall be initiated within 21 days after the last day of the invalid routine test.

(f) Upon completion of four consecutive quarterly valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive quarterly valid routine whole effluent toxicity tests. If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive quarterly valid routine tests for the

purpose of terminating the plan.

(4) If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 5.a.(2), the Department may revise this permit to require acute definitive whole effluent toxicity testing.

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

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): No administrative or consent orders were active or issued during this current permit cycle.

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:

Date	Parameter and Units	Limit	Result
June 2017	Total Nitrogen Monthly Avg. mg/L (D-001)	3.0	3.1

Describe previous FYI and WQBEL study:
The effluent sample collected from the EFD-1 NPDES sampling point for Outfall D-001 for this facility on May 10, 2010, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was greater than the "problem" thresholds for both fresh and marine receiving waters, suggesting nutrient enrichment may be an issue. Effluent water quality samples collected on May 10, 2010, did not exceed any applicable water quality standards or violate any permit conditions. Residual chlorine detected in the bioassay sample is thought to be due to interfering substances within the sample since chlorine is not used in the wastewater treatment process.

Describe previous or current Enforcement Actions (including WLs):
There have been no enforcement actions within the last 5 years.

Describe any violations or problems noted in previous inspection:
Multiple effluent exceedances were noted during the DMR review period for the following D-001 parameters: Total Nitrogen, Total Phosphorus, and Toxicity-Ceriodaphnia Dubia.

Discuss whether DMR trends within previous five years are improving or declining:
The annual average flow remains essentially unchanged compared to 5 years ago. There has been some slight variation over that time frame. Total Phosphorus data has decreased over the past five years. Total Nitrogen data has remained relatively stable with a slight decrease in the last year. The frequency of permit limit exceedances has decreased in the past year also for all parameters.

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

PART II: Sampling Event Information	
Date(s) sample collected: **7/9/2018**	**Sampler(s):** **Kane, Useche, Bowden**
Temperature (Deg C): On Field Sheet	**pH (SU): On Field Sheet**
Dissolved Oxygen (mg/L): On Field Sheet	**Conductivity (umhos/cm):** **On Field Sheet**
Total Residual Chlorine (mg/L): **N/A**	**Total Residual Chlorine - after Disinfection (mg/L):** **N/A**
Method of Chlorination: UV	**Method of De-chlorination:** **N/A**
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: **☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent** **☐ Other, please specify:**	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here: None	

Appendix B

Explanation 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.

1) Quality Assurance and Quality Control

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).

2) 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.

3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

4) Bacteriological Testing

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

5) Chlorophyll *a* Content

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

6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L are suggested to be representative of high productivity for freshwaters (Miller et al. 1978). High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm$ 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(61), F.A.C.

7) 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

Chemical analysis of effluent

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	DB Bethune Pt Grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	25.7 A	mg DryWt/L	3	3
07/09/18	DB Bethune Pt Grab	AGP/LN	Algal Growth Potential	38.1 A	mg DryWt/L	0.3	0.9
07/09/18	DB Bethune Pt Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.40 U	ug/L	0.4	1.2
07/09/18	DB Bethune Pt Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 I	ug/L	0.4	1.2
07/09/18	DB Bethune Pt Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.8 IJ	mg/L	0.2	2
07/09/18	DB Bethune Pt Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 U	ug/L	0.55	1.7
07/09/18	DB Bethune Pt Grab	Overflow	Enterococci-Quanti-Tray	1 U	MPN/100 mL	1	1
07/09/18	DB Bethune Pt Grab	Overflow	Fecal Coliform-Quanti-Tray	1 U	MPN/100 mL	1	1
07/09/18	DB Bethune Pt Grab	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100 L	LC50		
07/09/18	DB Bethune Pt Grab	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100 L	LC50		
07/09/18	DB Bethune Pt Grab	Metals	Calcium	61.2	mg/L	0.075	0.3
07/09/18	DB Bethune Pt Grab	Metals	Arsenic	1.36	ug/L	0.05	0.2
07/09/18	DB Bethune Pt Grab	Metals	Selenium	0.20 U	ug/L	0.2	0.8
07/09/18	DB Bethune Pt Grab	Metals	Aluminum	60 U	ug/L	60	240
07/09/18	DB Bethune Pt Grab	Metals	Nickel	2.57	ug/L	0.2	0.8
07/09/18	DB Bethune Pt Grab	Metals	Silver	0.010 U	ug/L	0.01	0.04
07/09/18	DB Bethune Pt Grab	Metals	Lead	0.23	ug/L	0.05	0.2
07/09/18	DB Bethune Pt Grab	Metals	Sodium	90.1	mg/L	0.5	2
07/09/18	DB Bethune Pt Grab	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
07/09/18	DB Bethune Pt Grab	Metals	Iron	48 I	ug/L	30	120
07/09/18	DB Bethune Pt Grab	Metals	Chromium	0.47 I	ug/L	0.4	1.6
07/09/18	DB Bethune Pt Grab	Metals	Copper	1.07	ug/L	0.2	0.8
07/09/18	DB Bethune Pt Grab	Metals	Zinc	33	ug/L	5	20
07/09/18	DB Bethune Pt Grab	Metals	Magnesium	9.56	mg/L	0.04	0.16
07/09/18	DB Bethune Pt Grab	Nutrients	Fluoride	0.65	mg F/L	0.035	0.1
07/09/18	DB Bethune Pt Grab	Nutrients	NO2NO3-N	0.53	mg N/L	0.008	0.02
07/09/18	DB Bethune Pt Grab	Nutrients	TSS	3 I	mg/L	2	10
07/09/18	DB Bethune Pt Grab	Nutrients	Total Alkalinity	161 A	mg CaCO3/L	0.65	2.5
07/09/18	DB Bethune Pt Grab	Nutrients	Turbidity	0.65	NTU	0.1	0.13
07/09/18	DB Bethune Pt Grab	Nutrients	Organic Carbon	11 A	mg C/L	1	2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	DB Bethune Pt Grab	Nutrients	O-Phosphate-P	0.5	mg P/L	0.04	0.1
07/09/18	DB Bethune Pt Grab	Nutrients	Ammonia-N	0.049	mg N/L	0.004	0.01
07/09/18	DB Bethune Pt Grab	Nutrients	Kjeldahl Nitrogen	0.82	mg N/L	0.16	0.4
07/09/18	DB Bethune Pt Grab	Nutrients	Chloride	140 A	mg Cl/L	0.4	1.2
07/09/18	DB Bethune Pt Grab	Nutrients	Color (true)	39 A	PCU	2.5	6
07/09/18	DB Bethune Pt Grab	Nutrients	Sulfate	27 A	mg SO4/L	0.4	1.2
07/09/18	DB Bethune Pt Grab	Nutrients	Total-P	0.54	mg P/L	0.005	0.05
07/09/18	DB Bethune Pt Grab	Pesticides	Naled	0.038 UJ	ug/L	0.038	0.15
07/09/18	DB Bethune Pt Grab	Pesticides	Chlorpyrifos Methyl	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Metalaxyl	0.038 U	ug/L	0.038	0.15
07/09/18	DB Bethune Pt Grab	Pesticides	Atrazine	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Ibuprofen	0.020 U	ug/L	0.02	0.08
07/09/18	DB Bethune Pt Grab	Pesticides	Phorate	0.0047 U	ug/L	0.0047	0.019
07/09/18	DB Bethune Pt Grab	Pesticides	Parathion Methyl	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Disulfoton	0.0047 U	ug/L	0.0047	0.019
07/09/18	DB Bethune Pt Grab	Pesticides	Chlorpyrifos Ethyl	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Butylate	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Ametryn	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Prometon	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
07/09/18	DB Bethune Pt Grab	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Norflurazon	0.028 U	ug/L	0.028	0.11
07/09/18	DB Bethune Pt Grab	Pesticides	Malathion	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Fonofos	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Sucralose	36	ug/L	0.1	0.4
07/09/18	DB Bethune Pt Grab	Pesticides	Metribuzin	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Ethoprop	0.0047 U	ug/L	0.0047	0.019
07/09/18	DB Bethune Pt Grab	Pesticides	Ethion	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Demeton	0.023 UJ	ug/L	0.023	0.09
07/09/18	DB Bethune Pt Grab	Pesticides	Atrazine Desethyl	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Simazine	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Mevinphos	0.0094 U	ug/L	0.0094	0.038

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	DB Bethune Pt Grab	Pesticides	Azinphos Methyl	0.019 U	ug/L	0.019	0.075
07/09/18	DB Bethune Pt Grab	Pesticides	Atrazine Desisopropyl	0.0094 UJ	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Alachlor	0.056 U	ug/L	0.056	0.23
07/09/18	DB Bethune Pt Grab	Pesticides	Naproxen	0.014 I	ug/L	0.008	0.032
07/09/18	DB Bethune Pt Grab	Pesticides	Hexazinone	0.028 U	ug/L	0.028	0.11
07/09/18	DB Bethune Pt Grab	Pesticides	Fenamiphos	0.028 U	ug/L	0.028	0.11
07/09/18	DB Bethune Pt Grab	Pesticides	Diazinon	0.0094 U	ug/L	0.0094	0.038
07/09/18	DB Bethune Pt Grab	Pesticides	Metolachlor	0.056 U	ug/L	0.056	0.23
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Isophorone	0.059 I	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	ug/L	1.9	7.5
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzidine	9.4 U	ug/L	9.4	38
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2-Nitrophenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.5
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	ug/L	0.94	3.8
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Phenanthrene	0.024 UQ	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Nitrobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Fluorene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Dimethyl phthalate	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Chrysene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.5
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Anthracene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,4-Dinitrophenol	9.4 U	ug/L	9.4	38
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Naphthalene	0.047 U	ug/L	0.047	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.094 U	ug/L	0.094	0.38
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Hexachloroethane	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Acenaphthene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2-Chlorophenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	4-Nitrophenol	9.4 U	ug/L	9.4	38
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Phenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Pentachlorophenol	0.47 U	ug/L	0.47	1.9
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.5
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Hexachlorobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	ug/L	2.8	11
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Pyrene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Fluoranthene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	Acenaphthylene	0.024 U	ug/L	0.024	0.094
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.047 U	ug/L	0.047	0.19
07/09/18	DB Bethune Pt Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.4 U	ug/L	9.4	38
07/09/18	DB Bethune Pt Grab	Nutrients	pH	7.55			
07/09/18	DB Bethune Pt Grab	Nutrients	Specific Conductance	844	umhos/cm		
07/09/18	DB Bethune Pt Grab	Nutrients	Temperature	30.06	C		
07/09/18	DB Bethune Pt Grab	Nutrients	Specific Conductance	844	umhos/cm		
07/09/18	DB Bethune Pt Grab	Nutrients	Dissolved Oxygen	7.48	mg/L		

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	DB Bethune Pt Grab	Nutrients	Temperature	30.06	C		
07/09/18	DB Bethune Pt Grab	Nutrients	pH	7.55			
07/09/18	DB Bethune Pt Grab	Nutrients	Dissolved Oxygen	7.48	mg/L		
07/09/18	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
07/09/18	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
07/09/18	Field Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
07/09/18	Field Blank	Metals	Copper	0.48 I	ug/L	0.2	0.8
07/09/18	Field Blank	Metals	Aluminum	60 U	ug/L	60	240
07/09/18	Field Blank	Metals	Iron	30 U	ug/L	30	120
07/09/18	Field Blank	Metals	Zinc	5.0 U	ug/L	5	20
07/09/18	Field Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
07/09/18	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
07/09/18	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
07/09/18	Field Blank	Metals	Silver	0.010 U	ug/L	0.01	0.04
07/09/18	Field Blank	Metals	Lead	0.050 U	ug/L	0.05	0.2
07/09/18	Field Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
07/09/18	Field Blank	Metals	Nickel	0.63 I	ug/L	0.2	0.8
07/09/18	Field Blank	Metals	Chromium	0.40 U	ug/L	0.4	1.6
07/09/18	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
07/09/18	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
07/09/18	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
07/09/18	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
07/09/18	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
07/09/18	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
07/09/18	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6
07/09/18	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
07/09/18	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
07/09/18	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
07/09/18	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
07/09/18	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
07/09/18	Field Blank	Pesticides	Bromacil	0.037 U	ug/L	0.037	0.15
07/09/18	Field Blank	Pesticides	Atrazine Desethyl	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Simazine	0.0094 U	ug/L	0.0094	0.037

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	Field Blank	Pesticides	Phorate	0.0047 U	ug/L	0.0047	0.019
07/09/18	Field Blank	Pesticides	Naled	0.037 UJ	ug/L	0.037	0.15
07/09/18	Field Blank	Pesticides	Disulfoton	0.0047 U	ug/L	0.0047	0.019
07/09/18	Field Blank	Pesticides	Butylate	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Mevinphos	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Prometon	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Ibuprofen	0.020 U	ug/L	0.02	0.08
07/09/18	Field Blank	Pesticides	Naproxen	0.0080 U	ug/L	0.008	0.032
07/09/18	Field Blank	Pesticides	Ethion	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Ethoprop	0.0047 U	ug/L	0.0047	0.019
07/09/18	Field Blank	Pesticides	Fonofos	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Metolachlor	0.056 U	ug/L	0.056	0.22
07/09/18	Field Blank	Pesticides	Parathion Methyl	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Atrazine	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Atrazine Desisopropyl	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Malathion	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Metalaxyl	0.037 U	ug/L	0.037	0.15
07/09/18	Field Blank	Pesticides	Hexazinone	0.028 U	ug/L	0.028	0.11
07/09/18	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Diazinon	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Fenamiphos	0.028 U	ug/L	0.028	0.11
07/09/18	Field Blank	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.04
07/09/18	Field Blank	Pesticides	Alachlor	0.056 U	ug/L	0.056	0.22
07/09/18	Field Blank	Pesticides	Metribuzin	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Ametryn	0.0094 U	ug/L	0.0094	0.037
07/09/18	Field Blank	Pesticides	Azinphos Methyl	0.019 U	ug/L	0.019	0.075
07/09/18	Field Blank	Pesticides	Norflurazon	0.028 U	ug/L	0.028	0.11
07/09/18	Field Blank	Pesticides	Demeton	0.022 UJ	ug/L	0.022	0.09
07/09/18	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	ug/L	1.9	7.5

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Phenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Fluoranthene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.5
07/09/18	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Fluorene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.5
07/09/18	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.93 U	ug/L	0.93	3.7
07/09/18	Field Blank	Priority Organic Pollutants	Anthracene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	9.3 U	ug/L	9.3	37
07/09/18	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.5
07/09/18	Field Blank	Priority Organic Pollutants	Isophorone	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	4-Nitrophenol	9.3 U	ug/L	9.3	37
07/09/18	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Phenanthrene	0.024 UQ	ug/L	0.024	0.094
07/09/18	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.093 U	ug/L	0.093	0.37
07/09/18	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.47 U	ug/L	0.47	1.9
07/09/18	Field Blank	Priority Organic Pollutants	Naphthalene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.023 U	ug/L	0.023	0.093

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
07/09/18	Field Blank	Priority Organic Pollutants	Benzidine	9.3 U	ug/L	9.3	37
07/09/18	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Pyrene	0.024 UQ	ug/L	0.024	0.094
07/09/18	Field Blank	Priority Organic Pollutants	Hexachloroethane	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.3 U	ug/L	9.3	37
07/09/18	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	ug/L	2.8	11
07/09/18	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Nitrobenzene	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.047 U	ug/L	0.047	0.19
07/09/18	Field Blank	Priority Organic Pollutants	Chrysene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	Acenaphthene	0.023 U	ug/L	0.023	0.093
07/09/18	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.047 U	ug/L	0.047	0.19

EPA End Sheet

The Bioassay of Daytona Beach/Bethune Point WRF effluent sampled on July 9, 2018. NPDES #FL0025984.

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

Transaction Code		NPDES NUMBER											YR/MO/DA						Insp Type	Inspector	Fac Type	
1	N	2	5	3	F	L	0	0	2	5	9	8	4	11 12	1	8	0	7	0	9	18 **B**	19 **S**	20	1

Remarks

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The Priority Pollutants Analysis of Daytona Beach/Bethune Point WRF effluent sampled on July 9, 2018. NPDES #FL0025984.

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

Transaction Code		NPDES NUMBER											YR/MO/DA						Insp Type	Inspector	Fac Type	
1	N	2	5	3	F	L	0	0	2	5	9	8	4	11 12	1	8	0	7	0	9	18 **X**	19 **S**	20	1

Remarks

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Biological Analyses of Daytona Beach/Bethune Point WRF effluent sampled on July 9, 2018. NPDES #FL0025984.

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

Transaction Code		NPDES NUMBER											YR/MO/DA						Insp Type	Inspector	Fac Type	
1	N	2	5	3	F	L	0	0	2	5	9	8	4	11 12	1	8	0	7	0	9	18 **S**	19 **S**	20	1

Remarks

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