

Effluent Quality Assessment

Flagler Beach Wastewater Treatment Facility

Flagler County

NPDES #FL0026611

Sampled August 19, 21 and 23, 2013

November 2013

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration
Quality Manual No. 870346G
NELAC Certification No. E31780

CONTENTS

Facility Overview

Methods

Results

Conclusion

Literature Cited

Tables

Table 1 Effluent limits, Class III Marine Criteria and chemical data, microbiological data, and qualifiers

Appendices

Appendix A Facility Summary

Appendix B Explanation of measurements

Appendix C Chemical Analyses of Effluent

EPA End Sheet

Flagler Beach Wastewater Treatment Facility (WWTF), 2000 Avenue A, Flagler Beach, Flagler County, Florida, 32136. NPDES #FL0026611.

Facility Overview

Flagler Beach WWTF is a domestic wastewater treatment facility which uses the activated sludge process to treat domestic wastewater. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent composite and grab samples for toxicity testing were collected on August 19, 2013, August 21, 2013, and August 23, 2013. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on August 21, 2013. All samples were collected from the EFD-01 NPDES sampling point for Outfall D-001 by Eesa Ali, Kyle Watson and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix C).

The chronic definitive toxicity tests were performed following internal DEP SOPs TA07_14 and TA07_15 (see Appendix C).

Results

Chemistry Results (See Table 1 and Appendix D)

- The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.97 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.
- Copper, carbonaceous biochemical oxygen demand (CBOD), fluoride, nickel, total alpha particles, turbidity and zinc were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted conditions. Arsenic and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential

- An effluent Algal Growth Potential (AGP) sample was not collected.

Toxicity Test Results (See Appendix D)

- Tests were performed August 20 - 27, 2013.

Americamysis bahia chronic definitive bioassay – IC_{25} – 5.83%,
NOEC biomass– <6.25%
LOEC biomass– 6.25%
NOEC survival– 50%
LOEC survival– 100%

Menidia beryllina chronic definitive bioassay – IC_{25} – 91.4%,
NOEC biomass– 50%
LOEC biomass– 100%
NOEC survival– 100%
LOEC survival– >100%

- The bioassay samples were chronicly toxic to the test organisms. The cause of toxicity was not determined.
- The bioassay samples were salinity adjusted for each test per permit requirements. A salt control for each test was prepared daily to confirm that there was no effect of adding artificial sea salts to the sample. There was no mortality in the salt controls of the *Americamysis bahia* test. There was 22.5% mortality in the salt controls of the *Menidia beryllina* test within 24 hours of test initiation. The cause of mortality in the *Menidia* salted control was not determined but was not thought to be from the addition of sea salts since sea salt addition was performed daily without a corresponding increase in mortality as seen at 24 hours.
- The bioassay samples were aerated for approximately 30 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 10.7 mg/L to 8.7 mg/L; 11.6 mg/L to 8.3 mg/L; and, 11.2 mg/L to 8.2 mg/L, respectively in samples 1, 2, and 3.

Conclusion

The effluent samples collected from the EFD-01 NPDES sampling point for this facility on August 19, 21 and 23, 2013, were chronically toxic to both test species during the 7 day chronic definitive bioassays; however, the result for the *Menidia beryllina* bioassay was "J" qualified due to the failure of the *Menidia* test salt control at 24 hours. Effluent water quality samples collected on August 21*, 2013, did not exce*ed any applicable water quality standards or violate any permit conditions.

*F*or additional information concerning this sampling event, including bioassay bench sheets and SRT data, please contact Bruce.Alexander@dep.state.fl.us and/or Joseph.Faircloth@dep.state.fl.us.

Literature Cited

None

Table 1. Effluent limits, Class III Criteria for predominantly marine waters, chemical and microbiological data.

Flagler Beach WWTF	Class III Criteria	Effluent Limits	Effluent
Organic Constituents (µg/L)			
None Detected			None Detected
Metals (µg/L unless otherwise noted)			
Aluminum	≤ 1500		60 U
Arsenic	≤ 50		0.69 I
Cadmium	≤ 8.8		0.050 U
Calcium (mg/L)			162
Chromium, total	≤ 50 ψ		0.32 I
Copper	≤ 3.7		1.4
Iron	≤ 300	≤ 300	30 U
Lead	≤ 8.5		0.20 U
Magnesium (mg/L)			76.3
Mercury	≤ 0.025		
Nickel	≤ 8.3		1.28
Selenium	≤ 71		0.20 U
Silver	≤ 2.3		0.025 U
Sodium			580
Zinc	≤ 86		50
Nutrients (mg/L)			
Ortho-phosphate			3.1
Total Phosphorus		Report	3.5
Total Ammonia		Report	0.97
Un-ionized Ammonia		-	< 0.02 c
Total Ammonia		Report	0.53 Y£
Nitrate and Nitrite		Report	13
Total Kjeldahl Nitrogen		Report	2.1 J
Organic Nitrogen		Report	1.13 c
Total Nitrogen		Report	15.1 c
Total Organic Carbon		-	9.4 A
General Physical and Chemical Parameters			
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 5.0	6.21
pH (SU)	6.5 - 8.5	6.5 - 8.5	7.43
Specific Conductance (µmhos/cm)			3,884
Temperature (°C)			28.9
Salinity			1.89 c
Sample Depth (m)			0.1
Total Residual Chlorine (mg/L)	≤ 0.01 s	≤ 0.01 s	< 0.03 UQ£
Total Suspended Solids (mg/L)		60 s	5 I
Turbidity (NTU)	< 29 t		0.95
Color (true, PCU)			26 A
Alkalinity (mg CaCO3/L)			226 A
CBOD, 5 day (mg/L), N - inhibited		60 s	3.2 AJQ
Chloride (mg/L)		Report	1.1E+03 A
Cyanide (µg/L)	≤ 1.0 s	≤ 1.0 s	0.005 U
Fluoride (mg/L)	≤ 5.0 s		0.15
Sulfate (mg/L)			140 A
Alpha, Total (pCi/L)	≤ 15 s		4.6
Alpha-Counting Error (pCi/L)			3
Radium 226 (pCi/L)		Report	5.6
Radium 226-Counting Error (pCi/L)			0.4
Radium 228 (pCi/L)		Report	2.4
Radium 228-Counting Error (pCi/L)			0.6
Flow (MGD) (may 2012 to May 2013)		1a	0.9 a
Hardness (mg $CaCO_3$)			718.7 c
Microbiology (Number of colony forming units/100ml)			
Fecal Coliforms ¥	≤ 400s #		3 B

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

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
¥ - Fecal coliform analysis performed by Columbia Analytical Services Inc. Jacksonville
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - measurement taken in the FDEP bioassay laboratory
ψ - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) for chromium-VI

Appendix A
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Jim Orr	**Contact Number:** 904-256-1623
Facility Name (as it appears on permit): Flagler Beach WWTF	**Former Names:**
NPDES Permit Number: FL0026611	**Permit Expiration Date:** 4/20/2014
Physical Address: 2000 Avenue A Flagler Beach, FL 32136	
District: NED	**County:** Flagler
Function of Facility: Domestic wastewater treatment.	
Facility Type: Domestic	**Permitted Capacity (MGD):** 1.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): The months from May 2012 to May 2013 the mean flow was roughly 0.90 MGD.	
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): **CAL-1 – Calculated Values.** **EFA-1 – Effluent sample point after disinfection but before dechlorination.** **EFB-1 – Sample point located just before discharge into the chlorine contact chamber.** **EFD-1 – Effluent sample point after dechlorination but before mixed with the RO concentrate water.** **PPI-1 – Reject concentrate sampling point before combination with domestic wastewater treatment plant effluent.** **PPI-2 – Sampling point for the mixed domestic wastewater effluent and the RO concentrate that is located after the Parshall flume but before the intracoastal waterway outfall.** **SWB-1 – Approximately 300 feet upstream of D-001, just north of SR 100 bridge, mid-channel, at the marina entrance.** **SWD-1 – Approximately 300 feet downstream of D-001, mid-channel, 0.5 miles south of SR 100 bridge.**
Description of Permitted Outfall(s): **An existing 1.0 MGD annual average daily flow (AADF) domestic effluent flow and 0.50 MGD maximum daily flow RO concentrate water permitted capacity discharge to Intracoastal Waterway (Class III marine waters – WBID 2363J) at Discharge Location (D-001) which is approximately 30 feet in length and discharges at a depth of approximately 4 feet. The point of discharge is located approximately at latitude 29° 28' 20" N, longitude 81° 08' 33" W.**
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): **To operate an existing 1.0 MGD annual average daily flow (AADF) permitted capacity domestic wastewater treatment facility (WWTF) consisting of a manually cleaned bar screen (1.0-inch opening and 2.0-foot width), one oxidation ditch (0.65 million gallon (MG).), a flow splitting box (391.5 gal), two secondary clarifiers (58-foot diameter, 12.5 feet side water depth, 0.25 MG. each), one chlorine contact chamber (0.02 MG), one dechlorination chamber, one sludge holding tank (0.112 MG.), eight sludge drying beds, and one Parshall Flume effluent flow meter. The permit includes the substantial modification, issued on October 29, 2004 (PA Number: FL0026611-007-DW1P), which authorizes construction of a force-main and required appurtenances to convey 0.50 MGD maximum daily flow concentrated water from a proposed nano-filtration potable water system to the existing gravity flow line from the wastewater treatment facility for discharge through outfall D-001. The modification also includes construction of a step aeration system to treat the RO concentrate water. The RO concentrate will be blended with the final treated domestic wastewater effluent before discharge to the Intracoastal Waterway. The domestic wastewater biosolids are treatment to meet Class B requirements and applied on approved land application sites.**

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow, (Domestic Wastewater)	MGD	Maximum	1.0	Report	-	-	Continuous	Recording flow meters and totalizers	EFD-1	See Cond. I.A.4
Flow, (RO Concentrate Water)	MGD	Maximum		Report	-	0.50 (Max. Daily)	Continuous	Recording flow meters and totalizers	PPI-1	See Cond. I.A.4
Percent Capacity, [TMADF (Three Month Average Domestic Wastewater Flow/Permitted Capacity) x 100	PERCENT	Maximum	-	Report	-	-	Monthly	Calculated	CAL-1	
BOD, Carbonaceous 5-day, 20°C	MG/L	Maximum	20.0	25.0	40.0	60.0	Weekly	8-hour flow proportioned composite	EFD-1	
BOD, 5-Day Percent Removal	PERCENT	Maximum	-	85.0	-	-	Monthly	Calculated	CAL-1	
Solids, Total Suspended	MG/L	Maximum	20.0	30.0	45.0	60.0	Weekly	8-hour flow proportioned composite	EFD-1	
Solids, Suspended, % Removal	PERCENT	Minimum	-	85.0	-	-	Monthly	Calculated	CAL-1	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	PPI-2	See Cond. I.A.3
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.5.				Weekly	Grab	EFD-1	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	Continuous	Meter	EFA-1	See Cond. I.A.3, 6, &16

			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
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Weekly	Grab	EFD-1	See Cond. I.A.16
Peracetic Acid (PAA) Dosage	mg/L	Min				1.5	Continuous	Meter	EFB – 1	See Cond. I.A.17
Peracetic Acid (PAA) Residual	mg/L	Max				1.0	Daily (7days/wk)	Meter	EFD – 1	See Cond. I.A.17
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	Daily (7days/wk)	Grab	PPI-2	See Cond. I.A.15
Nitrogen, Total as N	MG/L	Maximum	Report	Report	-	Report	Monthly	8-hour flow proportioned composite	EFD-1	
Mass Load - Nitrogen, Total (as N)	-	Maximum	25,915.0 (Lbs/yr)	Report (Lbs/mo)	-	-	Monthly	Calculated	CAL-1	See Cond. I.A.11
Phosphorus, Total (as P)	MG/L	Maximum	Report	Report	-	Report	Monthly	8-hour flow proportioned composite	EFD-1	
Mass Load - Total Phosphorous (as P)	-	Maximum	Report (Lbs/yr)	Report (Lbs/mo)	-		Monthly	Calculated	CAL-1	See Cond. I.A.11
Total Cyanide	µg/L	Maximum	-	-	-	1.0	Monthly	Grab	EFD-1	See Cond. I.A.8 & I.A.9
Chloride (as Cl-)	MG/L	Maximum	-	-	-	Report	Monthly	Grab	PPI-2	
Hydrogen sulfide, un-ionized	MG/L	Maximum	-	-	-	Report	Monthly	Grab	PPI-2	
Iron, Total Recoverable	MG/L	Maximum	-	-	-	Report	Monthly	Grab	PPI-1	
Iron, Total Recoverable	MG/L	Maximum	-	-	-	0.30	Monthly	Grab	PPI-2	

			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
Nitrite plus Nitrate, Total 1 det. (as N)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-1	See Cond. I.A. 12
Nitrogen, Kjeldahl, Total (as N)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-1	See Cond. I.A. 12 & I.A.13
Nitrogen, Ammonia, Total (as N)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-1	See Cond. I.A. 12
Nitrogen, Organic, Total (as N)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-1	See Cond. I.A. 12
Phosphate, Ortho (as P)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-1	See Cond. I.A. 12
Radium 226 + Radium 228, Total	PCI/L	Maximum	-	-	-	Report	Quarterly	Grab	PPI-1	
Radium 226 + Radium 228, Total	PCI/L	Maximum	-	-	-	15.0	Quarterly	Grab	PPI-2	
Alpha, Gross Particle Activity	PCI/L	Maximum	-	-	-	Report	Quarterly	Grab	PPI-1	
Alpha, Gross Particle Activity	PCI/L	Maximum	-	-	-	5.0	Quarterly	Grab	PPI-2	
Chronic Whole Effluent Toxicity (WET)	See Permit Condition I.A.7								PPI-2	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
pH	SU	Range	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Temperature (C), Water	DEG.C	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12

			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
Specific Conductance	UMHOS/ CM	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
BOD, Carbonaceous 5- day, 20°C	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Solids, Total Suspended	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Nitrogen, Total	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Nitrogen, Kjeldahl, Total (as N)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Nitrogen, Ammonia, Total (as N)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Nitrogen, Organic, Total (as N)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Nitrite plus Nitrate, Total (as N)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12 & 13
Phosphorus, Total (as P)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Phosphate, Ortho (as P)	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Chlorophyll a	MG/L	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12
Tide Stage	FEET	Maximum	-	-	-	Report	Annually	Grab	SWB-1 SWD-1	See Cond. I.A. 12

PART I: Continued	
Receiving Waters: **Intracoastal Waterway**	**Classification (indicate whether fresh or marine):** **Class III marine waters**

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
See Permit Condition I.A.7.

b. Monitoring Frequency

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

c. Sampling Requirements

(1) For each routine test or additional follow-up test conducted, a total of three *flow proportional 24-hour composite* samples of final effluent shall be collected at sampling location PPI-2 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 7-day survival and growth chronic toxicity tests with a mysid shrimp, *Americamysis bahia*, Survival, Growth and Fecundity Test, and an inland silverside, *Menidia beryllina*, 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 Marine and Estuarine Organisms, 3rd ed., EPA-821-R-02-014. 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 prepared with artificial sea salts as described in EPA-821-R-02-014, Section 7.2. The test salinity shall be determined as follows:

(a) For the *Americamysis bahia* bioassays, the effluent shall be adjusted to a salinity of 20 parts per thousand (ppt) with artificial sea salts. The salinity of the control/dilution water shall be 20 ppt. If the salinity of the effluent is greater than 20 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.

(b) For the *Menidia beryllina* bioassays, the effluent shall be adjusted to 5 ppt with artificial sea salts. The salinity of the control/dilution water (0% effluent) shall be 5 ppt. If the salinity of the effluent is greater than 5 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.

(c) If the salinity of the effluent requires adjustment, a salinity adjustment control should be prepared and included with each bioassay. The salinity adjustment control is intended to identify toxicity resulting from adjusting the effluent salinity with artificial sea salts. To prepare the salinity adjustment control, dilute the control/dilution water to the salinity of the effluent and adjust the salinity of the salinity adjustment control at the same time and to the same salinity that the salinity of the effluent is adjusted using the same artificial sea salts.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): **AO 118 NE – Establishes a compliance schedule and interim limit for total cyanide.**			
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
May 2012	**Total Cyanice, ug/L**	**25**	**28**
May 2012	**Total Chlorine Residual, mg/L**	**0.5 Min.**	**0**
June 2012	**IC25 Statre 7Day Chr – Americamysis bahia, %**	**100**	**72**
June 2012	**IC25 Statre 7Day Chr – Menida beryllina, %**	**100**	**70**
August 2012	**Total Chlorine Residual, mg/L**	**0.5 Min.**	**0**
September 2012	**Total Chlorine Residual, mg/L**	**0.5 Min.**	**0**
Febryary 2013	**pH, SU**	**8.5 Max.**	**8.6**
March 2013	**Total Nitrogen, lb/yr**	**25915 Annl. Max.**	**28516.16**
March 2013	**CBOD % Removal**	**85**	**83.62**
March 2013	**TSS % Removal**	**85**	**81.3**
April 2013	**Dissolved Oxygen, mg/L**	**5 Min.**	**4.01**
April 2013	**TSS, mg/L**	**30 Mo. Avg.**	**42.25**
April 2013	**TSS, mg/L**	**60 Max.**	**58**
April 2013	**Total Nitrogen, lb/yr**	**25915 Annl. Max.**	**32489**
April 2013	**Total Chlorine Residual, mg/L**	**0.5 Min.**	**0**
April 2013	**CBOD, mg/L**	**25 Mo. Avg.**	**42.75**
April 2013	**CBOD, mg/L**	**40 Wkly. Avg.**	**42.75**
April 2013	**CBOD, mg/L**	**60**	**72**
April 2013	**CBOD % Removal**	**85**	**70.26**
April 2013	**TSS % Removal**	**85**	**66.2**
May 2013	**Total Nitrogen, lb/yr**	**25915 Annl. Max.**	**31915.51**
May 2013	**Total Chlorine Residual, mg/L**	**0.5 Min.**	**0.27**
May 2013	**TSS % Removal**	**85**	**84.18**

Describe previous FYI and WQBEL study:

The June 2007 Effluent Quality Assessment for Flagler Beach WWTF indicated the following:

"The effluent samples collected from the EFD-1 sampling point for Outfall D-001 for this facility on April 1-2, 2007, were not acutely toxic to either test species during the 96-hour acute screening bioassays. The effluent AGP result exceeded the "problem" threshold for marine receiving waters. Effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions."

Describe previous or current Enforcement Actions (including WLs):
WL 11-018-DW – Warning letter for multiple Total Chlorine Residual violations. Facility was CWOEd on 2/15/2012.

The permit is accompanied by Administrative Order AO 118 NE. The AO gave interim limits for Total Cyanide to the facility. However, the interim limits for Total Cyanide expired on 6/30/2013.

Describe any violations or problems noted in previous inspection:
- The aeration basin was not providing adequate mixing. Several dead spots were observed in the basins. Facility indicated that a bid for contractor/aerators was published 6/21/12. An update was received on 7/25/12 stating "We are processing a Purchase Order for Cline Construction to re-mount the aerator impellor. I'll let you know what the schedule will be as I find out."

- The skimmer arm was not mounted flush with the stilling well therefore a small amount of surface solids were not effectively being skimmed.

- The following effluent exceedances were noted on the inspection report.

Monitoring Period	Parameter	Limit	Reported Value
October 2011	Total Residual Chlorine	0.5 mg/L (Min.)	0 mg/L
November 2011	Total Cyanide	25 µg/L (Max.)	31 µg/L
Q4 2011	Gross Alpha Particle Activity	5.0 pCi/L (Max.)	9.7 pCi/L
January 2012	Total Residual Chlorine	0.5 mg/L (Min.)	0 mg/L
Q1 2012	Gross Alpha Particle Activity	5.0 pCi/L (Max.)	5.8 pCi/L

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

Total Suspended Solids (TSS) – Beginning around July 2012 the TSS values have seen an increase.

Fecal Coliform – Beginning around July 2012 there have been some higher fecal coliform values.

CBOD – Beginning around July 2012 there have been some higher CBOD values.

Total Cyanide – The facility had high value for total cyanide, however, since early 2012 they have had a significant decrease in total cyanide values and have reported non-detects from the lab for the past several sampling events.

Radium 226 + Radium 228 (PPI-1) – The values have increased on average over the past 5 years.

Alpha, Gross Particle Activity (PPI-2) - The values have decreased on average over the past 5 years.

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

During the months of April, May, June and the beginning of July the facility was submitting weekly progress reports that included updates on construction projects as well as notification of permit violations for parameters. The timeline and summary of the weekly progress reports is as follows:

5/3/2013 – East aerator installed.
5/5/2013 – Exceeded 1.0 mg/L limit for PAA.
5/16/2013 – No PAA feed to the contact chamber.
May 2013 – Fecal Coliform TNTC.
6/6/2013 – Notification that UPS lost facility's order of PAA vials.
6/6/2013 – Digester construction complete.
6/8/2013 – PAA dosing limit exceedance.
6/12/2013 – Turned on air to the new blower for the expanded digester.
6/18/2013 – PAA exceedance.
6/19/2013 – PAA exceedance
6/20/2013 – Construction complete.
June 2013 – Gross Alpha Particle Activity Exceedance.

PART II: Sampling Event Information

Date(s) sample collected:	**Sampler(s):**
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**

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:

Appendix B
Explanation of measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or 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 a violation of 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 a violation of 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 a violation of 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 a violation of 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) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C.

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

(7) Chlorophyll *a* Content

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

(8) Definition of Qualifiers

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

Appendix C
Chemical Analyses of Effluent

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/19/2013 10:42	final effluent grabs	Toxicology	Bioassay-Chron-Def-SW-Fish, NOEC	50.0	J	NOEC		
8/19/2013 10:42	final effluent grabs	Toxicology	Bioassay-Chron-Def-SW-Fish, IC25	91.4	J	IC25		
8/19/2013 10:42	final effluent grabs	Toxicology	Bioassay-Chron-Def-SW-Mysid, IC25	5.83	J	IC25		
8/19/2013 10:42	final effluent grabs	Toxicology	Bioassay-Chron-Def-SW-Mysid, NOEC	6.25	JK	NOEC		
8/19/2013 10:42	final effluent grabs	Field Parameter	Specific Conductance	3,884		umhos/cm		
8/19/2013 10:42	final effluent grabs	Field Parameter	Sample Depth	0.1		m		
8/19/2013 10:42	final effluent grabs	Field Parameter	pH	7.43				
8/19/2013 10:42	final effluent grabs	Field Parameter	Temperature	28.9		C		
8/19/2013 10:42	final effluent grabs	Field Parameter	Dissolved Oxygen	6.21		mg/L		
8/21/2013 8:00	final effluent grabs	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3.2	AJQ	mg/L	0.2	2
8/21/2013 8:00	final effluent grabs	Nutrients	Total-P	3.5		mg P/L	0.025	0.25
8/21/2013 8:00	final effluent grabs	Nutrients	Ammonia-N	0.97		mg N/L	0.1	0.25
8/21/2013 8:00	final effluent grabs	Nutrients	TSS	5	I	mg/L	2	10
8/21/2013 8:00	final effluent grabs	Nutrients	NO2NO3-N	13		mg N/L	0.2	0.5
8/21/2013 8:00	final effluent grabs	Nutrients	Kjeldahl Nitrogen	2.1	J	mg N/L	0.16	0.4
8/21/2013 11:30	final effluent grabs	Overflow	Fecal Coliforms-Membrane Filter	3	B	cfu/100 mL	1.6	
8/21/2013 11:30	final effluent grabs	Metals	Nickel	1.28		ug/L	0.25	1
8/21/2013 11:30	final effluent grabs	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
8/21/2013 11:30	final effluent grabs	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/21/2013 11:30	final effluent grabs	Metals	Selenium	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Metals	Magnesium	76.3		mg/L	0.04	0.16
8/21/2013 11:30	final effluent grabs	Metals	Chromium	0.32	I	ug/L	0.3	1.2
8/21/2013 11:30	final effluent grabs	Metals	Calcium	162		mg/L	0.075	0.3
8/21/2013 11:30	final effluent grabs	Metals	Potassium	27.3		mg/L	1.5	6
8/21/2013 11:30	final effluent grabs	Metals	Sodium	580		mg/L	2.5	10
8/21/2013 11:30	final effluent grabs	Metals	Arsenic	0.69	I	ug/L	0.25	1
8/21/2013 11:30	final effluent grabs	Metals	Lead	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Metals	Copper	1.4		ug/L	0.5	1
8/21/2013 11:30	final effluent grabs	Metals	Zinc	50		ug/L	5	20
8/21/2013 11:30	final effluent grabs	Metals	Iron	30	U	ug/L	30	120
8/21/2013 11:30	final effluent grabs	Metals	Aluminum	60	U	ug/L	60	240
8/21/2013 11:30	final effluent grabs	Nutrients	O-Phosphate-P	3.1		mg P/L	0.16	0.4

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 11:30	final effluent grabs	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/21/2013 11:30	final effluent grabs	Nutrients	Fluoride	0.15		mg F/L	0.035	0.1
8/21/2013 11:30	final effluent grabs	Nutrients	Chloride	1.1E	A	mg Cl/L	4	10
8/21/2013 11:30	final effluent grabs	Nutrients	Turbidity	0.95		NTU	0.1	0.1
8/21/2013 11:30	final effluent grabs	Nutrients	Sulfate	140	A	mg SO4/L	4	10
8/21/2013 11:30	final effluent grabs	Nutrients	Organic Carbon	9.4	A	mg C/L	0.5	1
8/21/2013 11:30	final effluent grabs	Nutrients	Alkalinity	226	A	mg CaCO3/L	0.65	2.5
8/21/2013 11:30	final effluent grabs	Nutrients	Color (true)	26	A	PCU	2.5	6
8/21/2013 11:30	final effluent grabs	Overflow	Alpha, Total	4.6		pCi/L		
8/21/2013 11:30	final effluent grabs	Overflow	Alpha-Counting Error	3		pCi/L		
8/21/2013 11:30	final effluent grabs	Overflow	Radium 228	2.4		pCi/L		
8/21/2013 11:30	final effluent grabs	Overflow	Radium 226	5.6		pCi/L		
8/21/2013 11:30	final effluent grabs	Overflow	Sulfide	1.0	U	mg/L	1	1
8/21/2013 11:30	final effluent grabs	Overflow	Radium 228-Counting Error	0.6		pCi/L		
8/21/2013 11:30	final effluent grabs	Overflow	Radium 226-Counting Error	0.4		pCi/L		
8/21/2013 11:30	final effluent grabs	Pesticides	Metalaxyl	0.040	U	ug/L	0.04	0.16
8/21/2013 11:30	final effluent grabs	Pesticides	Chlorpyrifos Methyl	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Parathion Ethyl	0.020	U	ug/L	0.02	0.08
8/21/2013 11:30	final effluent grabs	Pesticides	Parathion Methyl	0.010	UJ	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Ethoprop	0.0050	U	ug/L	0.005	0.02
8/21/2013 11:30	final effluent grabs	Pesticides	Mevinphos	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Norflurazon	0.030	U	ug/L	0.03	0.12
8/21/2013 11:30	final effluent grabs	Pesticides	Alachlor	0.060	U	ug/L	0.06	0.24
8/21/2013 11:30	final effluent grabs	Pesticides	Butylate	0.020	U	ug/L	0.02	0.08
8/21/2013 11:30	final effluent grabs	Pesticides	Bromacil	0.040	U	ug/L	0.04	0.16
8/21/2013 11:30	final effluent grabs	Pesticides	Fenamiphos	0.030	U	ug/L	0.03	0.12
8/21/2013 11:30	final effluent grabs	Pesticides	Naled	0.040	U	ug/L	0.04	0.16
8/21/2013 11:30	final effluent grabs	Pesticides	Azinphos Methyl	0.020	UJ	ug/L	0.02	0.08
8/21/2013 11:30	final effluent grabs	Pesticides	Diazinon	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Ethion	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Fonofos	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Malathion	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Prometryn	0.020	U	ug/L	0.02	0.08
8/21/2013 11:30	final effluent grabs	Pesticides	Ametryn	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Atrazine	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Hexazinone	0.030	U	ug/L	0.03	0.12

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 11:30	final effluent grabs	Pesticides	Metolachlor	0.060	U	ug/L	0.06	0.24
8/21/2013 11:30	final effluent grabs	Pesticides	Phorate	0.0050	U	ug/L	0.005	0.02
8/21/2013 11:30	final effluent grabs	Pesticides	Simazine	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Chlorpyrifos Ethyl	0.010	U	ug/L	0.01	0.04
8/21/2013 11:30	final effluent grabs	Pesticides	Metribuzin	0.020	U	ug/L	0.02	0.08
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Hexachloroethane	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Nitrobenzene	2.0	U	ug/L	2	8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Phenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	60
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzo(a)anthracene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Hexachlorobutadiene	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,4-Dichlorophenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2-Chlorophenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	60
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Di-n-butyl phthalate	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Di-n-octyl phthalate	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Diethyl phthalate	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Hexachlorobenzene	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.0	UJ	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Naphthalene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Acenaphthene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Acenaphthylene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzo(a)pyrene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Dimethyl phthalate	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Fluorene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0	U	ug/L	2	8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Phenanthrene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0	U	ug/L	1	4

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Anthracene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Isophorone	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2-Nitrophenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Fluoranthene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0	U	ug/L	2	8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Pyrene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2-Chloronaphthalene	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0	U	ug/L	2	8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Pentachlorophenol	3.0	U	ug/L	3	12
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0	U	ug/L	2	8
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Butyl benzyl phthalate	1.0	U	ug/L	1	4
8/21/2013 11:30	final effluent grabs	Priority Organic Pollutants	Chrysene	0.20	U	ug/L	0.2	0.8
8/21/2013 11:30	final effluent grabs	Field Parameter	Temperature	28.72		C		
8/21/2013 11:30	final effluent grabs	Field Parameter	pH	7.49				
8/21/2013 11:30	final effluent grabs	Field Parameter	Dissolved Oxygen	5.86		mg/L		
8/21/2013 11:30	final effluent grabs	Field Parameter	Sample Depth	0.1		m		
8/21/2013 11:30	final effluent grabs	Field Parameter	Specific Conductance	4,203		umhos/cm		
8/23/2013 8:00	final effluent 24FPC	Field Parameter	Temperature	2.3	2.3	C		
8/21/2013 12:00	field blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
8/21/2013 12:00	field blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
8/21/2013 12:00	field blank	Metals	Nickel	0.25	U	ug/L	0.25	1
8/21/2013 12:00	field blank	Metals	Potassium	0.30	U	mg/L	0.3	1.2
8/21/2013 12:00	field blank	Metals	Zinc	5.0	U	ug/L	5	20
8/21/2013 12:00	field blank	Metals	Sodium	0.50	U	mg/L	0.5	2
8/21/2013 12:00	field blank	Metals	Iron	30	U	ug/L	30	120
8/21/2013 12:00	field blank	Metals	Lead	0.20	U	ug/L	0.2	0.8

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 12:00	field blank	Metals	Aluminum	60	U	ug/L	60	240
8/21/2013 12:00	field blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
8/21/2013 12:00	field blank	Metals	Copper	0.50	U	ug/L	0.5	1
8/21/2013 12:00	field blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
8/21/2013 12:00	field blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
8/21/2013 12:00	field blank	Metals	Selenium	0.20	U	ug/L	0.2	0.8
8/21/2013 12:00	field blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/21/2013 12:00	field blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
8/21/2013 12:00	field blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
8/21/2013 12:00	field blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
8/21/2013 12:00	field blank	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/21/2013 12:00	field blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
8/21/2013 12:00	field blank	Nutrients	Turbidity	0.10	U	NTU	0.1	0.1
8/21/2013 12:00	field blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
8/21/2013 12:00	field blank	Overflow	Radium 226-Counting Error	0.1		pCi/L		
8/21/2013 12:00	field blank	Overflow	Alpha, Total	0.5	U	pCi/L		
8/21/2013 12:00	field blank	Overflow	Alpha-Counting Error	0.4		pCi/L		
8/21/2013 12:00	field blank	Overflow	Radium 228	0.7	U	pCi/L		
8/21/2013 12:00	field blank	Overflow	Radium 226	0.1	U	pCi/L		
8/21/2013 12:00	field blank	Overflow	Radium 228-Counting Error	0.5		pCi/L		
8/21/2013 12:00	field blank	Pesticides	Phorate	0.0051	U	ug/L	0.0051	0.021
8/21/2013 12:00	field blank	Pesticides	Prometryn	0.021	U	ug/L	0.021	0.082
8/21/2013 12:00	field blank	Pesticides	Simazine	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Naled	0.041	U	ug/L	0.041	0.16
8/21/2013 12:00	field blank	Pesticides	Azinphos Methyl	0.021	UJ	ug/L	0.021	0.082
8/21/2013 12:00	field blank	Pesticides	Malathion	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Mevinphos	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Parathion Ethyl	0.021	U	ug/L	0.021	0.082
8/21/2013 12:00	field blank	Pesticides	Parathion Methyl	0.010	UJ	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Atrazine	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Butylate	0.021	U	ug/L	0.021	0.082
8/21/2013 12:00	field blank	Pesticides	Chlorpyrifos Ethyl	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Ethoprop	0.0051	U	ug/L	0.0051	0.021
8/21/2013 12:00	field blank	Pesticides	Fenamiphos	0.031	U	ug/L	0.031	0.12
8/21/2013 12:00	field blank	Pesticides	Hexazinone	0.031	U	ug/L	0.031	0.12
8/21/2013 12:00	field blank	Pesticides	Bromacil	0.041	U	ug/L	0.041	0.16

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 12:00	field blank	Pesticides	Metalaxyl	0.041	U	ug/L	0.041	0.16
8/21/2013 12:00	field blank	Pesticides	Alachlor	0.062	U	ug/L	0.062	0.25
8/21/2013 12:00	field blank	Pesticides	Ethion	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Fonofos	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Metolachlor	0.062	U	ug/L	0.062	0.25
8/21/2013 12:00	field blank	Pesticides	Metribuzin	0.021	U	ug/L	0.021	0.082
8/21/2013 12:00	field blank	Pesticides	Ametryn	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Chlorpyrifos Methyl	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Diazinon	0.010	U	ug/L	0.01	0.041
8/21/2013 12:00	field blank	Pesticides	Norflurazon	0.031	U	ug/L	0.031	0.12
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2	UJ	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.6
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Hexachloroethane	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.6
8/21/2013 12:00	field blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	65
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Dimethyl phthalate	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.86

Date Sampled	Field ID	Analysis Group	Component	Result	Qualifier	Units	MDL	PQL
8/21/2013 12:00	field blank	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.6
8/21/2013 12:00	field blank	Priority Organic Pollutants	Pentachlorophenol	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	43
8/21/2013 12:00	field blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	430
8/21/2013 12:00	field blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.2	U	ug/L	2.2	8.6
8/21/2013 12:00	field blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Hexachlorobutadiene	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	43	U	ug/L	43	170
8/21/2013 12:00	field blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.6
8/21/2013 12:00	field blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	UJ	ug/L	16	65
8/21/2013 12:00	field blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2	U	ug/L	3.2	13
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.86
8/21/2013 12:00	field blank	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.3
8/21/2013 12:00	field blank	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4

EPA End Sheet

The Bioassay of Flagler Beach WWTF effluent sampled on August 19, 21 and 23, 2013. NPDES #FL0026611.

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 6 6 1 1 11	12 1 3 0 8 1 9	18 **B**	19 **S**	20 1

Remarks

66

The Priority Pollutants Analysis of Flagler Beach WWTF effluent sampled on August 21, 2013. NPDES #FL0026611.

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 6 6 1 1 11	12 1 3 0 8 2 1	18 **X**	19 **S**	20 1

Remarks

66

Biological Analyses of Flagler Beach WWTF effluent sampled on August 21, 2013. NPDES #FL0026611.

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 6 6 1 1 11	12 1 3 0 8 2 1	18 **S**	19 **S**	20 1

Remarks

66