Effluent Quality Assessment of

Tampa Bay Water Desalination Facility

Hillsborough County

NPDES # FL0186813-006

Sampled May 21, 2018

February 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

Acute toxicity tests were performed on a sample collected from sampling point INT-2. This sample consisted of RO concentrate from the RO discharge pump and was not collected at the toxicity sample location identified in the permit. This sample had an elevated salinity and had to be diluted to allowable method salinity levels before acute toxicity tests could be performed according to the EPA method. Toxicity permit compliance could not be determined from the toxicity test performed on this sample. All other parameters complied with permit limits and/or Class III Marine Water Quality Criteria (62-302.530 F.A.C.).

Facility Overview

Tampa Bay Water (formally Tampa Bay Water Desalination Facility) is a drinking water facility that produces potable water by desalination of marine water. A Facility Summary, including a description of the facility, summary of permit limits, and Discharge Monitoring Report (DMR) information is provided in Appendix A.

The receiving water, Hillsborough Bay, falls within the Tampa Bay Estuary Region for Numeric Nutrient Criteria (NNC). For this region, the NNC thresholds, expressed as annual totals, are 1.28 tons/million cubic meters of water for total phosphorus, 162 tons/million cubic meters of water for total nitrogen, and 15.0 µg/L chlorophyll-α (62-302.532, F.A.C.). This FYI event can only provide single sample results; therefore, compliance should be determined with additional sampling events. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

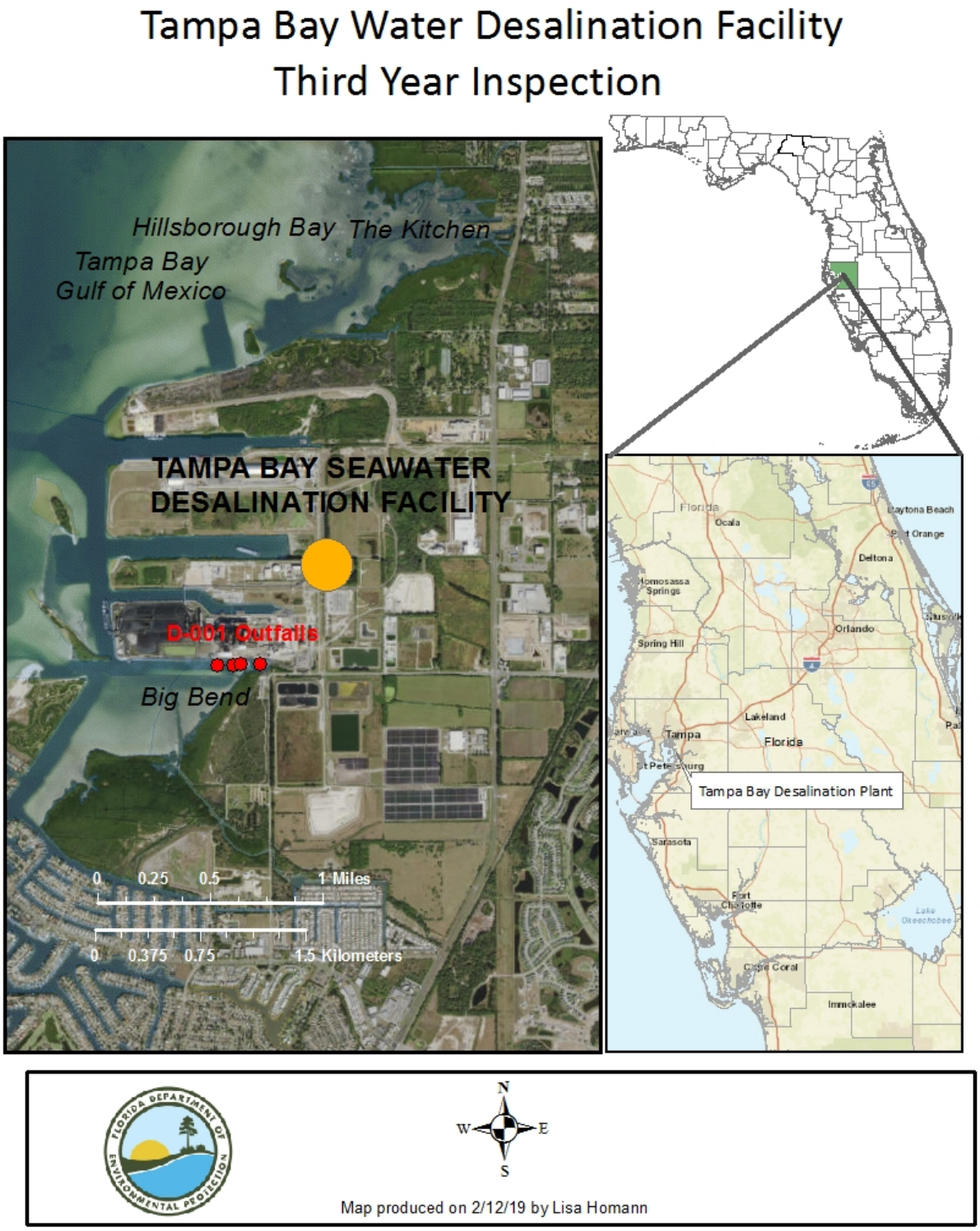
Methods

Effluent grab and composite samples were collected on May 21, 2018. All samples were collected from the INT-2 monitoring site, an internal discharge site located before the effluent is mixed with cooling water prior to discharge. Most permit limits apply to EFF-3, the final effluent point for discharge, and are therefore not relevant for this sampling event. Samples were collected by Peter Wenner (DEP Southwest District).

Explanations of specific methods and measurements can be found in Appendix B. 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).

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: Tampa Bay Water Desalination Facility, 13041 Wyandotte Road, Gibsonton, Hillsborough County, Florida, 33534. NPDES #FL0186813-006.



Results

Physical and Chemical Parameters (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)

- Total residual chlorine was not detected in the bioassay sample in the laboratory. Compliance cannot be determined due to the holding time requirements and because the detection limit for the laboratory equipment is higher than Class III Marine Water Quality Criterion (62-302.530(18), F.A.C.).
- The total ammonia concentration in the grab sample was 0.006 mg N/L and the calculated unionized ammonia concentration was <0.02 mg/L.
- Fluoride, total alpha particles, and turbidity levels in the effluent sample complied with Class III Marine Water Quality Criteria (62-302.530, F.A.C.). Carbonaceous biological oxygen demand and total suspended solids were detected in the effluent sample between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). 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.

Toxicity Test Results (See Table 2 and Appendix C)

- Acute toxicity tests were performed May 22 through May 26, 2018 on the diluted RO concentrate.
- The bioassay sample was diluted with deionized water from a salinity of 65.3 parts per thousand (ppth) to a salinity of 30.9 ppth to meet the analytical method salinity requirements. LC50 results are reported based on the percent of original RO concentrate.
- For the 96-hour acute definitive test, the calculated LC50 for the mysid, *Americamysis bahia,* was greater than 47%. The calculated LC50 for the fish, *Menidia* beryllina, was greater than 47%.
- This sample cannot be used to assess compliance with the permit limit because the sample was not collected from EFF-3, the combined RO concentrate and cooling water discharge sample location, and the sample had to be diluted to allowable method salinity levels prior to the test.
- For additional information concerning this sampling event, including bioassay bench sheets and SRT data, please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix C)

- All metals analyzed complied with effluent permit limits and Class III Water Quality Criteria (62-302.530, F.A.C.).

Organic Constituents (See Appendix C)

- Atrazine was detected in the effluent grab sample at 0.18 µg/L between the laboratory method detection limit (MDL) and practical quantitation limit (PQL).

Algal Growth Potential (See Table 4 and Appendix C)

- The AGP sample was diluted with deionized water from a salinity of 63.1 ppth to a salinity of 32.6 ppth to meet the salinity requirements of the test species.
- The effluent Algal Growth Potential (AGP) was 3.22 A mg dry wt/L of the unicellular green alga, *Dunaliella tertiolecta.* The analytical chemistry suggests that the effluent is nitrogen–limited (Miller et al. 1978).

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. 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

Tampa Bay Water	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Temperature	C	-	-	34.7
pH	SU	6.5 - 8.5	6.5-8.5	7.0
Specific Conductance	µmhos/cm	-	Report	92,000
Salinity	ppt	-	Report	65.3[1]
Dissolved Oxygen	% saturation	≥ 42	-	100.0
Dissolved Oxygen	mg/L	-	-	5.25

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

1 - measurement taken in the FDEP laboratory

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

Tampa Bay Water	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Ortho-phosphate	mg P/L	-	-	-	0.090
Total Phosphorus	mg P/L	-	-	-	0.11 J
Total Ammonia	mg N/L	-	-	-	0.006
Un-ionized Ammonia (calculated salinity)	mg NH_3/L	-	-	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	-	0.036
Total Kjeldahl Nitrogen	mg N/L	-	-	-	0.48 J
Organic Nitrogen	mg N/L	-	-	-	0.47 c
Total Nitrogen	mg N/L	-	-	-	0.52 c
Total Organic Carbon	mg C/L	-	-	-	7.0 A
Chlorophyll *a* - Corrected	µg/L	-	-	-	0.62 U
Phaeophytin	µg/L	-	-	-	0.45 U
CBOD, 5 day, N - inhibited	mg/L	-	-	0.86 I	-
Total Residual Chlorine	mg/L	≤ 0.01	-	-	< 0.03[2]
Total Suspended Solids	mg/L	-	-	4 IQ	-
Turbidity	NTU	< 29 t	-	-	0.40
Color (true)	PCU	-	-	-	5.0 U
Alkalinity	mg $CaCO_3$/L	-	-	-	247 A
Chloride	mg Cl/L	< 10%[3]	-	39000 A	-
Fluoride	mg F/L	≤ 5.0	-	-	2.2
Sulfate	mg SO4/L	-	-	-	5,500
Alpha, Total	pCi/L	≤ 15.0	Report	418 U	-
Alpha-Counting Error	pCi/L	-	-	216	-
Radium 226 + 228	pCi/L	≤ 5.0	Report	-	-
Toxicity (96-hour Acute Definitive, LC50 % effluent)					
Bioassay - Mysid *(Americamysis bahia)*	% effluent	> 100	-	-	> 47[4]
Bioassay - Fish *(Menidia beryllina)*	% effluent	> 100	-	-	> 47[4]

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
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
2 - Measurement taken in the FDEP laboratory
3 - Shall not exceed 10% mg Cl/L above background
4 - Value reported is the result from the diluted RO concentrate

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

Tampa Bay Water	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite
Hardness	mg $CaCO_3$/L	-	-	12,600 c
Aluminum	µg/L	≤ 1,500	-	240 U
Arsenic	µg/L	≤ 50	-	4.4
Cadmium	µg/L	≤ 8.8	-	0.20 U
Calcium	mg/L	-	-	820
Chromium, Total [5]	µg/L	≤ 50	-	4.0 U
Copper	µg/L	≤ 3.7	Report	3.0 I
Iron	µg/L	≤ 300	Report	120 U
Lead	µg/L	≤ 8.5	-	2.5 U
Magnesium	mg/L	-	-	2,570
Mercury	ng/L	≤ 25	Report	1.22
Nickel	µg/L	≤ 8.3	-	3.2 I
Potassium	mg/L	-	-	750
Selenium	µg/L	≤ 71	-	2.0 U
Silver	µg/L	≤ 2.3	-	0.10 U
Sodium	mg/L	-	-	20,700
Zinc	µg/L	≤ 86	-	50 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
5 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

Table 4. Measured algal growth potential (AGP; mg dry weight/L) and ratios of nitrogen to phosphorus

Tampa Bay Water								
Location	**Test Species**	**AGP (measured)**	**Predicted AGP (TSIN) ± 20%**	**Predicted AGP (OP) ± 20%**	**Predicted AGP (TN) ± 20%**	**Predicted AGP (TP) ± 20%**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent Grab	*Dunaliella tertiolecta*	3.22 A *	not applicable [6]	not applicable [6]	not applicable [6]	not applicable [6]	0.5	4.7

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

* - sample salinity adjusted to 32.6 ppth

6- predictions not applicable to marine matrix

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event

Prepared By: Peter Wenner	**Contact Number: 813-470-5921**
Facility Name (as it appears on permit): Tampa Bay Water Desalination Facility	**Former Names: N/A**
NPDES Permit Number: FL0186813-006	**Permit Expiration Date: August 15, 2018**
Physical Address: 13041 Wyandotte Road, Gibsonton, FL 33534	
District: SWD	**County: Hillsborough**
Function of Facility: Potable water supply through desalination of Tampa Bay water	
Facility Type: Industrial Wastewater	**Permitted Capacity (MGD): 22.8**

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): Information was not available at the time this summary was written.

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):

Monitoring Site Number	Description of Monitoring Site
FLW-TECO	Total seawater flow from the sump located between the cooling water discharges conduits for TECO Big Bend Power Station Units 3 & 4 prior to the Flue Gas Desulfurization (FGD) discharge.
FLW-INTAKE	Intake flow to the RO plant.
FLW-1	Calculated flow (V_1) of TECO cooling water discharged to the canal minus RO intake flow. FLW-1 = (FLW-TECO) – (FLW-Intake)
FLW-2	Discharge flow (V_2) from the RO discharge pump station.
FLW-1&2	Flow available for dilution divided by the RO flow discharge FLW-1&2 = (FLW-1) / (FLW-2)
FLW-3	Total calculated flow (V_3) of available TECO cooling water in the canal and RO concentrate discharge flow. ($V_3 = V_1 + V_2$)
INT-1	Intake to desalination facility prior to filtering or chemical additions. (Water Quality, C_1).
INT-2	Internal discharge from the RO discharge sample pump (RO concentrate quality, C_2) prior to mixing with TECO cooling water.
EFF-3	Final effluent point for combined discharge quality (C_3) of RO discharge and power plant cooling water.

Description of Permitted Outfall(s):
INTERNAL OUTFALLS:
D-001 is comprised of the following internal outfalls:

Outfall I-001 is located approximately at Latitude: 27° 47' 36", Longitude: 82° 24' 16".
Outfall I-002 is located approximately at Latitude: 27° 47' 36", Longitude: 82° 24' 12".
Outfall I-003 is located approximately at Latitude: 27° 47' 36", Longitude: 82° 24' 10".
Outfall I-004 is located approximately at Latitude: 27° 47' 36", Longitude: 82° 24' 05".

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

FACILITY DESCRIPTION:

Tampa Bay Water Desalination Facility operates a Reverse Osmosis (RO) desalination system consisting of pretreatment, RO treatment, and post-treatment of the RO permeate. The source water (seawater) intake sump is located between the cooling water discharge conduits for Tampa Electric Company (TECO) – Big Bend Power Station Units 3 & 4 prior to the Flue Gas Desulfurization (FGD) discharge. Source water can be pulled from intake tunnel 3 or intake tunnel 4.

The RO desalination facility is designed to treat a maximum of 48.4 million gallons per day (MGD) of raw water, yielding up to 29 MGD of potable water and a daily maximum of 22.8 MGD of wastewater. Under average operating conditions, the facility is designed to treat 44.5 MGD, yielding up to 25 MGD of potable water and 19.5 MGD of wastewater.

WASTEWATER TREATMENT:

Normal Operations Mode

When potable water is being produced, backwash water and coagulation/flocculation sludge from the pretreatment system are sent to the sludge treatment system that includes a rapid mixing chamber, a flocculation tank, a lamella clarifier, and a belt press. Clarifier supernatant is routed to the discharge pump station to be discharged with the RO concentrate or recycled back to the head of the pretreatment process. Belt press pressate is returned to the rapid mixing chamber. Dewatered sludge is disposed of at a landfill.

The first pass RO concentrate is routed to the discharge pump station. The second pass RO concentrate is returned to the source water pretreatment system transfer pump station (prior to the pre-coat microfiltration system). The initial flush of spent RO membrane cleaning solution will be diverted to a scavenger tank for off-site disposal in the sanitary sewer. The remaining membrane cleaning rinse water will be routed to the RO concentrate surface water discharge.

The discharge pump station conveys combined effluent from the RO concentrate, clarifier supernatant, and membrane cleaning rinse water, to one or more of the four power plant cooling water discharge conduits. Discharge from the RO concentrate to the cooling water conduits will only occur when cooling water is discharged to allow for blending of the waste streams.

Recycle Operation Mode

When potable water is not being produced, the facility operates in a recycle mode, which does not include RO system treatment. Recycle operation mode wastewater consists of pretreatment system water (filtered seawater), sludge system clarifier supernatant, and RO membrane cleaning rinse water.

REUSE OR DISPOSAL:

A 22.8 MGD daily maximum flow (during either normal or recycle operation mode) is routed to the discharge pump station, which pumps effluent to one or more of the four TECO Big Bend power station cooling water conduits (Internal Outfalls I-001, I-002, I-003 or I-004) prior to entering the TECO Big Bend discharge canal (WBID #1693, Big Bend Bayou), which ultimately discharges to Hillsborough Bay, Class III marine waters.

PART I: Continued

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

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Chronic Whole Effluent Toxicity, 7-Day IC25 (Mysidopsis bahia)	percent	Min	100	Single Sample	Quarterly	Grab	EFF-3	See I.A.12
Chronic Whole Effluent Toxicity, 7-Day IC25 (Menidia beryllina)	percent	Min	100	Single Sample	Quarterly	Grab	EFF-3	See I.A.12
Total Seawater Pump Station Flow	MGD	Max	Report	Daily Maximum	Continuous	Calculated	FLW-TECO	See I.A.3
Intake to RO Facility Flow	MGD	Max	Report	Daily Maximum	Continuous	Calculated	FLW-INTAKE	See I.A.3
Cooling water available for blending with RO discharge Flow	MGD	Max	Report	Daily Maximum	Continuous	Calculated	FLW-1	See I.A.3
RO Facility Discharge Flow	MGD	Max Max	22.8 Report	Daily Maximum Monthly Average	Continuous	Recorder	FLW-2	See I.A.3 & 13
Total discharge Flow	MGD	Max	Report	Daily Maximum	Continuous	Calculated	FLW-3	See I.A.3
Dilution Ratio	ratio	Min	28	Single Sample	Continuous	Calculated	FLW-1&2	See I.A.4
Dilution Ratio	ratio	Min	20	Single Sample	Continuous	Calculated	FLW-1&2	See I.A.4
Time Dilution Ratio less than 28	hr	Max Max	Report 384	Monthly Total Annual Total	Hourly	Calculated	FLW-1&2	See I.A.4
Oxygen, Dissolved (DO) (Discharge minus calculated limit)	mg/L	Min Min Min	Report 0.00 0.00	Single Sample Single Sample (grab) Single Sample (24 hour)	Weekly	4 grabs per day	INT-1 INT-2 INT-2	See I.A.5
Chloride (as Cl)	mg/L	Max	Report Report 0.00	Daily Maximum Daily Maximum Daily Maximum	Daily	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3
Specific Conductance	µmhos/cm	Max	Report	Daily Maximum Daily Maximum Daily Maximum	Daily	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3
Salinity	ppt	Max	Report Report 35.8	Daily Maximum Daily Maximum Daily Maximum	Daily	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3
Copper, Total Recoverable	µg/L	Max	Report Report 0.00	Daily Maximum Daily Maximum Daily Maximum	Monthly	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3 & 7
Iron, Total Recoverable	mg/L	Max	Report Report 0.00	Daily Maximum Daily Maximum Daily Maximum	Monthly	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3 & 8

Radium 226 + Radium 228, Total	pCi/L	Max	Report Report 5	Daily Maximum Daily Maximum Daily Maximum	Monthly	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3
Alpha, Gross Particle Activity	pCi/L	Max	Report Report 15	Daily Maximum Daily Maximum Daily Maximum	Monthly	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3
pH	s.u.	Min Max	6.5 8.5	Daily Minimum Daily Maximum	Continuous	Meter	INT-2	See I.A.6
Mercury, Total Recoverable	µg/L	Max	Report Report 0.00	Daily Maximum Daily Maximum Daily Maximum	Monthly	24-hr TPC 24-hr TPC Calculated	INT-1 INT-2 EFF-3	See I.A.3 & 9

PART I: Continued	
Receiving Waters: **Hillsborough Bay segment of Tampa Bay**	**Classification (indicate whether fresh or marine):** **Class 3 Marine**

12. The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001. The permittee shall evaluate the whole effluent toxicity of the combined discharge of RO discharge and power plant cooling water **(blended test sample)** as described below:

    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% **blended test sample**. *[62- 302.530(61) and 62-4.241(2)(b)]*

        (2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% **blended test**

-302.500(1)(a)4 and 62-4.241(2)(a)]

13. Monitoring Frequency

    a. Routine toxicity tests shall be conducted quarterly. When membrane cleaning occurs during the toxicity testing period, the toxicity testing will be conducted immediately after the membranes are cleaned.

    b. Upon completion of four consecutive, valid routine tests that demonstrate compliance with the **blended test sample** limitation in I.A.12.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 **blended test sample** limitation in I.A.12.a.(1) above.

    c. If a test within the sequence of the four is deemed invalid based on the acceptance criteria in EPA-821-R-02-014 (or the current edition), 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.

14. Sampling Requirements

    a. <u>For each routine test or additional follow-up test conducted, a total of three 24 hour composite samples of RO discharge and power plant cooling water shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-014, Section 8 (or the current edition). The **blended test sample** shall consist of 1(one) part RO discharge blended with 20 parts of TECO cooling water (final effluent concentration of 4.8% concentrate).</u>

    b. The first **blended test 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.

    c. Samples for routine and additional follow-up tests shall not be collected on the same day.

15. Test Requirements

    a. 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% blended test sample**.

    b. The permittee shall conduct 7-day survival and growth chronic toxicity tests with a mysid shrimp, **Americamysis (Mysidopsis) bahia**, Method 1007.0, and an inland silverside, **Menidia beryllina**, Method 1006.0, concurrently.

    c. All test species, procedures and quality assurance criteria used shall be in accordance with **<u>Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms</u>**, 3rd Edition, EPA-821-R-02-014 (or the current edition). 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.

    d. The control water and dilution water shall be prepared with artificial sea salts as described in EPA-821-R-02-014 (or the current edition), Section 7.2. The salinity of the **blended test sample** shall not exceed 30 +/- 2 ppt. If the resulting **blended test sample** exceeds 30 ppt the sample shall be adjusted to 30 +/- 2 ppt using deionized water. Any deionized water adjustment shall be documented noting the initial **blended test sample** salinity, the amount of deionized water added, and the resulting salinity of the **blended test sample**. For **blended test sample** salinities less than 30 ppt, the test shall be run at the salinity of the **blended test sample**. This shall be the test salinity. The renewal solutions shall be adjusted to the test

if required.

16. Quality Assurance Requirements

    a. 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.

b. If the mortality in the control (0% blended test sample) exceeds 20% for either species in any test or any test 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-02-014 (or the current edition), Section 14.12 (**Americamysis bahia**) and Section 13.12 (**Menidia beryllina**). The repeat test shall begin within 21 days after the last day of the invalid test.

c. If 100% mortality occurs in all **blended test sample** concentrations for either 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.

d. Routine and additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-014 (or the current edition), Section 10.2.6., and the evaluation shall be included with the bioassay laboratory reports.

17. Reporting Requirements

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

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

b. A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R- 02-014 (or the current edition), 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.

c. For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-014 (or the current edition), Section 10, and mailed within 30 days after the last day of the second valid additional follow-up test.

d. Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.

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

f. All bioassay laboratory reports shall be sent to:

Florida Department of Environmental Protection Southwest District
Compliance Assurance Program Attn: Industrial Wastewater 13051 N. telecom Parkway
Temple Terrace, Florida 33637 Phone Number (813) 470-5700

g.Test Failures

(1) A test fails when the test results do not meet the limits in I.A.12.a.(1).

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in I.A.12.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 I.A.12.d.

18. 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.

19. 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% **blended test sample**. 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-02-014 (or the current edition).

(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 **blended test sample** toxicity tests in accordance with I.A.12.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 I.A.12.a.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-014 (or the current edition), 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 **blended test sample** limitation in I.A.12.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 **blended test sample** 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 any **blended test sample** concentration, 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.): N/A

Facility Mixing Zone Details (if applicable):
N/A

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

Date	Parameter and Units	Limit	Result

Describe previous FYI and WQBEL study:
Previous FYI3 were collected on August 20, 2012. The full FYI report can be found as an email attachment to this report.

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

Describe any violations or problems noted in previous inspection: Facility was found to be in compliance during last CSI.

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

Trends are improving as the facility has been modernized and the process refined.

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: **21 May 2018**	**Sampler(s):** **Pete Wenner**
Temperature (Deg C): **34.7**	**pH (SU):** **7.01**
Dissolved Oxygen (mg/L): **5.25**	**Conductivity (µmhos/cm):** **92,000**
Total Residual Chlorine (mg/L): **N/A**	**Total Residual Chlorine - after Disinfection (mg/L):** **N/A**
Method of Chlorination: **N/A**	**Method of De-chlorination:** **N/A**

Flow During Sample Collection for each outfall(MGD):
15.7

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

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 62.302.200(1), F.A.C., and 62-302.500(1)a, F.A.C., 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 62-302.200(5), F.A.C., and 62-302.530(20), F.A.C., 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(20), F.A.C., 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 facility permit limits. Class III Water Quality Criteria are based on *Eschericia coli* and enterococci levels (F.A.C. 62-302.530(11)(c) and (d)).

(5) Chlorophyll *a* Content

Chlorophyll *a* content is an estimate algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(89), F.A.C. 62-302.530(90)(a), F.A.C., and/or 62-302.530(90)(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. The AGP range of 6.10 to 20.0 mg dry wt/L is suggested to be representative of high productivity for freshwater (Miler et al. 1978). High AGP values may constitute exceedances of 62-302.530(89), F.A.C., 62-302.530(90)(a), F.A.C. and/or 62-302.530(90)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP in a low salinity sample 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 (EPA-822-B-00-002). 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(108) F.A.C. Expected AGP is not calculated for marine samples incubated with *Dunaliella*.

(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
5/21/2018	Effluent Composite	Overflow	Alpha, Total	418 U	pCi/L	418	
5/21/2018	Effluent Composite	Overflow	Alpha-Counting Error	216	pCi/L	418	
5/21/2018	Effluent Composite	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.86 I	mg/L	0.2	2
5/21/2018	Effluent Composite	Metals	Calcium	820	mg/L	0.75	3
5/21/2018	Effluent Composite	Metals	Magnesium	2.57E+03	mg/L	4	16
5/21/2018	Effluent Composite	Metals	Aluminum	240 U	µg/L	240	960
5/21/2018	Effluent Composite	Metals	Cadmium	0.20 U	µg/L	0.2	0.8
5/21/2018	Effluent Composite	Metals	Arsenic	4.4	µg/L	0.5	2
5/21/2018	Effluent Composite	Metals	Nickel	3.2 I	µg/L	2	8
5/21/2018	Effluent Composite	Metals	Copper	3.0 I	µg/L	2	8
5/21/2018	Effluent Composite	Metals	Lead	2.5 U	µg/L	2.5	10
5/21/2018	Effluent Composite	Metals	Selenium	2.0 U	µg/L	2	8
5/21/2018	Effluent Composite	Metals	Mercury	1.22	ng/L	0.1	0.3
5/21/2018	Effluent Composite	Metals	Sodium	2.07E+04	mg/L	100	400
5/21/2018	Effluent Composite	Metals	Chromium	4.0 U	µg/L	4	16
5/21/2018	Effluent Composite	Metals	Silver	0.10 U	µg/L	0.1	0.4
5/21/2018	Effluent Composite	Metals	Iron	120 U	µg/L	120	480
5/21/2018	Effluent Composite	Metals	Potassium	750	mg/L	30	120
5/21/2018	Effluent Composite	Metals	Zinc	50 U	µg/L	50	200
5/21/2018	Effluent Composite	Nutrients	Chloride	3.9E+04 A	mg Cl/L	200	500
5/21/2018	Effluent Composite	Nutrients	TSS	4 IQ	mg/L	3	10
5/21/2018	Effluent Grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	3.22 A	mg DryWt/L	3	3
5/21/2018	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.45 U	µg/L	0.45	1.4
5/21/2018	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.62 U	µg/L	0.62	1.9
5/21/2018	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.45 U	µg/L	0.45	1.4
5/21/2018	Effluent Grab	Toxicology	Bioassay-Acute-Def-SW-Fish, LC50	47 L	LC50		
5/21/2018	Effluent Grab	Toxicology	Bioassay-Acute-Def-SW-Mysid, LC50	47 L	LC50		
5/21/2018	Effluent Grab	Nutrients	Total Alkalinity	247 A	mg CaCO3/L	0.65	2.5

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Effluent Grab	Nutrients	Sulfate	5.5E+03	mg SO4/L	40	100
5/21/2018	Effluent Grab	Nutrients	Total-P	0.11 J	mg P/L	0.004	0.01
5/21/2018	Effluent Grab	Nutrients	NO2NO3-N	0.036	mg N/L	0.004	0.01
5/21/2018	Effluent Grab	Nutrients	Organic Carbon	7.0 A	mg C/L	1	2
5/21/2018	Effluent Grab	Nutrients	Fluoride	2.2	mg F/L	0.18	0.5
5/21/2018	Effluent Grab	Nutrients	Color (true)	5.0 U	PCU	5	12
5/21/2018	Effluent Grab	Nutrients	Turbidity	0.40	NTU	0.1	0.13
5/21/2018	Effluent Grab	Nutrients	Ammonia-N	0.006	mg N/L	0.002	0.005
5/21/2018	Effluent Grab	Nutrients	O-Phosphate-P	0.090	mg P/L	0.004	0.01
5/21/2018	Effluent Grab	Nutrients	Kjeldahl Nitrogen	0.48 J	mg N/L	0.16	0.4
5/21/2018	Effluent Grab	Pesticides	Bromacil	0.038 U	µg/L	0.038	0.15
5/21/2018	Effluent Grab	Pesticides	Simazine	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Butylate	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Pesticides	Diazinon	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Naled	0.038 UJ	µg/L	0.038	0.15
5/21/2018	Effluent Grab	Pesticides	Atrazine Desethyl	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Malathion	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Metolachlor	0.056 U	µg/L	0.056	0.23
5/21/2018	Effluent Grab	Pesticides	Mevinphos	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Atrazine	0.018 I	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Hexazinone	0.028 UJ	µg/L	0.028	0.11
5/21/2018	Effluent Grab	Pesticides	Metribuzin	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Pesticides	Prometon	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Pesticides	Demeton	0.023 U	µg/L	0.023	0.09
5/21/2018	Effluent Grab	Pesticides	Disulfoton	0.0047 U	µg/L	0.0047	0.019
5/21/2018	Effluent Grab	Pesticides	Ethoprop	0.0047 U	µg/L	0.0047	0.019
5/21/2018	Effluent Grab	Pesticides	Phorate	0.0047 U	µg/L	0.0047	0.019
5/21/2018	Effluent Grab	Pesticides	Fenamiphos	0.028 U	µg/L	0.028	0.11
5/21/2018	Effluent Grab	Pesticides	Ametryn	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Atrazine Desisopropyl	0.0094 UJ	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.0094 U	µg/L	0.0094	0.038

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Effluent Grab	Pesticides	Ethion	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Norflurazon	0.028 UJ	µg/L	0.028	0.11
5/21/2018	Effluent Grab	Pesticides	Parathion Methyl	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Prometryn	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Pesticides	Alachlor	0.056 U	µg/L	0.056	0.23
5/21/2018	Effluent Grab	Pesticides	Azinphos Methyl	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Fonofos	0.0094 U	µg/L	0.0094	0.038
5/21/2018	Effluent Grab	Pesticides	Metalaxyl	0.038 UJ	µg/L	0.038	0.15
5/21/2018	Effluent Grab	Pesticides	Parathion Ethyl	0.019 U	µg/L	0.019	0.075
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzidine	11 UJ	µg/L	11	43
5/21/2018	Effluent Grab	Priority Organic Pollutants	Phenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	11 UJ	µg/L	11	43
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	11 U	µg/L	11	43
5/21/2018	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	2.1 UJ	µg/L	2.1	8.5
5/21/2018	Effluent Grab	Priority Organic Pollutants	Isophorone	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2 U	µg/L	3.2	13
5/21/2018	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.053 U	µg/L	0.053	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Anthracene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.1 U	µg/L	2.1	8.5
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	µg/L	2.1	8.5
5/21/2018	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	µg/L	2.1	8.5
5/21/2018	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.53 U	µg/L	0.53	2.1
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	11 U	µg/L	11	43
5/21/2018	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.1 U	µg/L	1.1	4.3
5/21/2018	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.11 U	µg/L	0.11	0.43
5/21/2018	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Priority Organic Pollutants	Pyrene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Chrysene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.027 U	µg/L	0.027	0.11
5/21/2018	Effluent Grab	Priority Organic Pollutants	Fluorene	0.027 U	µg/L	0.027	0.11

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.053 U	µg/L	0.053	0.21
5/21/2018	Effluent Grab	Nutrients	pH	7.01			
5/21/2018	Effluent Grab	Nutrients	Dissolved Oxygen	5.25	mg/L		
5/21/2018	Effluent Grab	Nutrients	Temperature	34.7	C		
5/21/2018	Effluent Grab	Nutrients	Specific Conductance	92000	µmhos/cm		
5/21/2018	Field Blank	Overflow	Alpha, Total	0.975 U	pCi/L	0.975	
5/21/2018	Field Blank	Overflow	Alpha-Counting Error	0.515	pCi/L	0.975	
5/21/2018	Field Blank	Metals	Silver	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
5/21/2018	Field Blank	Metals	Arsenic	0.050 U	µg/L	0.05	0.2
5/21/2018	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
5/21/2018	Field Blank	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
5/21/2018	Field Blank	Metals	Chromium	0.40 U	µg/L	0.4	1.6
5/21/2018	Field Blank	Metals	Zinc	5.0 U	µg/L	5	20
5/21/2018	Field Blank	Metals	Iron	30 U	µg/L	30	120
5/21/2018	Field Blank	Metals	Aluminum	60 U	µg/L	60	240
5/21/2018	Field Blank	Metals	Mercury	0.10 U	ng/L	0.1	0.3
5/21/2018	Field Blank	Metals	Selenium	0.20 U	µg/L	0.2	0.8
5/21/2018	Field Blank	Metals	Copper	0.20 U	µg/L	0.2	0.8
5/21/2018	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
5/21/2018	Field Blank	Metals	Lead	0.050 U	µg/L	0.05	0.2
5/21/2018	Field Blank	Metals	Nickel	0.20 U	µg/L	0.2	0.8
5/21/2018	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
5/21/2018	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
5/21/2018	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
5/21/2018	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
5/21/2018	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
5/21/2018	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
5/21/2018	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
5/21/2018	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
5/21/2018	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
5/21/2018	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
5/21/2018	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
5/21/2018	Field Blank	Pesticides	Butylate	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Parathion Ethyl	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Ethoprop	0.0050 U	µg/L	0.005	0.02
5/21/2018	Field Blank	Pesticides	Fenamiphos	0.030 UJ	µg/L	0.03	0.12
5/21/2018	Field Blank	Pesticides	Hexazinone	0.030 UJ	µg/L	0.03	0.12
5/21/2018	Field Blank	Pesticides	Naled	0.040 U	µg/L	0.04	0.16
5/21/2018	Field Blank	Pesticides	Metolachlor	0.060 U	µg/L	0.06	0.24
5/21/2018	Field Blank	Pesticides	Metalaxyl	0.040 U	µg/L	0.04	0.16
5/21/2018	Field Blank	Pesticides	Malathion	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Bromacil	0.040 U	µg/L	0.04	0.16
5/21/2018	Field Blank	Pesticides	Simazine	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Diazinon	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Fonofos	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Prometon	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Parathion Methyl	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Norflurazon	0.030 U	µg/L	0.03	0.12
5/21/2018	Field Blank	Pesticides	Azinphos Methyl	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Ametryn	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Atrazine	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Demeton	0.024 U	µg/L	0.024	0.096
5/21/2018	Field Blank	Pesticides	Disulfoton	0.0050 U	µg/L	0.005	0.02
5/21/2018	Field Blank	Pesticides	Metribuzin	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Prometryn	0.020 U	µg/L	0.02	0.08
5/21/2018	Field Blank	Pesticides	Phorate	0.0050 U	µg/L	0.005	0.02
5/21/2018	Field Blank	Pesticides	Alachlor	0.060 U	µg/L	0.06	0.24
5/21/2018	Field Blank	Pesticides	Atrazine Desethyl	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Mevinphos	0.010 U	µg/L	0.01	0.04

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Field Blank	Pesticides	Chlorpyrifos Methyl	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Atrazine Desisopropyl	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Pesticides	Ethion	0.010 U	µg/L	0.01	0.04
5/21/2018	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.8 U	µg/L	9.8	39
5/21/2018	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Acenaphthene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.98 U	µg/L	0.98	3.9
5/21/2018	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	µg/L	2	7.8
5/21/2018	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0 U	µg/L	2	7.8
5/21/2018	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Naphthalene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Phenanthrene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Hexachloroethane	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Isophorone	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	9.8 UJ	µg/L	9.8	39
5/21/2018	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	12
5/21/2018	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Fluoranthene	0.025 U	µg/L	0.025	0.098

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
5/21/2018	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	µg/L	2	7.8
5/21/2018	Field Blank	Priority Organic Pollutants	Anthracene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Phenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Benzidine	9.8 U	µg/L	9.8	39
5/21/2018	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.49 U	µg/L	0.49	2
5/21/2018	Field Blank	Priority Organic Pollutants	Pyrene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	µg/L	2	7.8
5/21/2018	Field Blank	Priority Organic Pollutants	Fluorene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	4-Nitrophenol	9.8 U	µg/L	9.8	39
5/21/2018	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	Chrysene	0.025 U	µg/L	0.025	0.098
5/21/2018	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.049 U	µg/L	0.049	0.2
5/21/2018	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.098 U	µg/L	0.098	0.39
5/21/2018	Field Blank	Priority Organic Pollutants	Nitrobenzene	0.049 U	µg/L	0.049	0.2

EPA End Sheet

The Bioassay of Tampa Bay Water effluent sampled on May 21, 2018. NPDES #FL0186813-006.

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 FL0186813	11 12 18052 1	18 B	19 S	20 2

Remarks

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The Priority Pollutants Analysis of Tampa Bay Water effluent sampled on May 21, 2018. NPDES #FL0186813-006.

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 FL0186813	11 12 18052 1	18 X	19 S	20 2

Remarks

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Biological Analyses of Tampa Bay Water effluent sampled on May 21, 2018. NPDES #FL0186813-006.

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 FL0186813	11 12 18052 1	18 S	19 S	20 2

Remarks

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