cc: Jackie Lorne, FPL

FPL

June 1, 2009

Timothy A. Gray
Environmental Specialist
Florida Department of Environmental Protection
Southeast District Office
400 North Congress Avenue, Suite 200
West Palm Beach, Florida 33401

RE: FPL Riviera Beach Energy Center Project

Dear Mr. Gray:

Florida Power & Light Company (FPL) received the Florida Department of Environmental Protection Southeast District's (DEP) comments on the Riviera Beach Energy Center project dated May 6, 2009. FPL is pleased to provide herein to DEP the requested additional information.

If you have any comments or questions regarding the attached, please feel free to contact me at (561) 691-7518 or Jackie Lorne at (561) 691-7063.

Sincerely,

Barbara P. Linkiewicz

Barbara P. Linkiewicz
Director of Environmental Licensing

cc: Cindy Mulkey, FDEP Siting Office
Peter Cunningham, Hopping Green & Sams

<u>Question 1:</u>
There are two general references in Volume I of the Site Certification Application report, under Sections 6.2.3, <u>Measurement Programs</u>, and Section 6.3.2, <u>Groundwater</u>, both of a brief remark nature, suggesting that the existing wastewater-to-groundwater discharge (or land application) part of discharge activities now authorized for the Riviera Beach Power Plant, will be discontinued after completion of the proposed power plant conversion project.

(i) The current permitted wastewater land application activities included at least the following structural/functional components - three (3) percolation areas identified as EP-1, EP-2 and EP-3; two (2) solids settling basins identified as SSB-1 and SSB-2; and three (3) active groundwater monitoring wells identified as R1-MW-1, OB-5, and OB-6 (and likely more previously existing monitoring wells now placed in inactive status.)

The applicant should discuss in details how all these existing groundwater discharge (land application) related components would be properly decommissioned and abandoned. The discussion should include the steps to be taken to ensure thorough removal of all the waste sediments and deposits, accumulated at the lined settling basins and percolation areas, and removal of all leftover structural debris (e.g. pond liners), and their disposal destinations. All the currently active and inactive groundwater monitoring wells, that will no longer be needed after the conversion project, should all first be identified and later on properly abandoned following a proper well abandonment protocol. In addition, similar decommissioning and remnants disposal procedures should extend to include all those existing wastewater collection and treatment process equipment (e.g. , collection sumps, oil/water separators, oil skimmers, organo clay filters, etc.) located upstream of the groundwater discharge components, that will be retired after the conversion project.

<u>FPL Response to Question 1:</u>
FPL will provide FDEP written notice at least 60 days prior to initiating inactivation or abandonment of the wastewater system facilities identified in FDEP's Question 1. The specific activities proposed for inactivation or abandonment are set forth below.

There are currently four aboveground storage tanks onsite in the tank farm that store #6 oil, as well as three percolation basins and two solid settling basins located within the tank farm. Closure assessments for the storage tanks will be conducted in accordance with the requirements of Rule 62-762.801(4). The closure assessment report for the storage tanks will be submitted to Palm Beach County Environmental Resources Management within 60 days of completion of field activities. A courtesy copy will be provided to the FDEP Southeast District Office.

There are currently three percolation basins at the Riviera Plant. Concurrent with tank closure activities, FPL is proposing to visually inspect the soil within the percolation basins. If no soil staining is observed, four confirming soil samples per basin will be collected and analyzed for nickel and Total Recoverable Petroleum Hydrocarbons (TRPH). If visually stained soil is observed, the impacted soil will be removed and four confirming soil samples will be taken. All TRPH samples will be analyzed by the FL-PRO method and/or speciation utilizing the Florida Working Group method.

The two solid settling basins are lined. As part of the closure of these basins, FPL will remove the liner and visually inspect the underlying soil. Any impacted soil will be removed and FPL will collect four confirming soil samples per basin, for laboratory analysis of nickel and TRPH. The removed liner will be disposed of at an approved Class I FDEP-permitted lined landfill. Disposal manifests for the liner and any excavated soil will be kept on file and provided to the FDEP Southeast District Office.

There are currently three monitoring onsite. The monitoring wells are MW-B-1 (background well), MW-I-01 (intermediate well), and MW-C-01 (compliance well). The three existing 2-inch monitoring wells are not proposed to be utilized by the operation of the new Riviera Beach Energy Center and will be abandoned via tremmie grouting by a licensed water well contractor, following procedures and requirements of Chapter 40C-3, F.A.C and Rule 62-532.440, F.A.C. The water well contractor will obtain the required permits and submit the well completion reports, as required by Chapter 40C-3.411.

For collection sumps, oil/water separators, oil skimmers, and organo clay filters associated with these wastewater system facilities, FPL will conduct the following tasks:

- Each component will be removed and then cleaned to allow for visual inspection.
- If the integrity of the component is not compromised, no further action will be taken prior to demolition.
- If the integrity of the component is suspect, then an in-service leak test will be performed.
- The in-service leak test will be a hydrostatic test whereby the component is filled with water and monitored for any leaks within 30 minutes.
- If no leakage is observed, then no further action will be taken prior to demolition.
- If leakage is detected, then a soil sample will be collected from beneath the area of concern during the demolition process and analyzed for TRPH.
- Any impacted soil identified will be excavated and disposed of in accordance with applicable FDEP rules.

<u>Question 2:</u>

In Application Form 2CS, under the tables in Section I and IV.B, three new discharge streams - washwater/equipment drains at 25 gallons per minute (gpm); HRSG/evaporative cooler blowdown at 36 gpm; and R.O. reject at 46 gpm, are now being listed as discharges to occur at outfalls that are *To Be Determined (TBD).* However, from reading Section 6.2, <u>Effects of Chemicals and Biocide Discharges</u>, in Volume I of the Site Certification Application report, and also the attachment to Section IV.B (or Attachment B-2) to Form 2CS, that these three discharge streams would either be reused as cooling water, or more likely, be discharged into (commingled with) the existing once-through cooling water discharge, to Outfalls D-013 and D-014, in order to attain the 1,000-to 2,000-to-1 dilution ratio.

As such, the discharge streams could now be identified in Section I of Form 2CS as "internal outfalls", discharging internally to the streams tributary to the two existing Outfalls D-013 and D-014. The exact locations for the internal discharge locations may not yet be known, but their ultimate outfall locations, i.e., latitude/longitude coordinates, and with Lake Worth Lagoon being the receiving water, could already be indicated.

Additionally, the Department should review appropriate regulatory authority under the Antidegradation Permitting requirements in Florida Administrative Code (F.A.C.) Section 62-4, to determine if any of these discharges (probably excluding main cooling water discharge) could be classified as "new" and therefore subject to the Antidegradation review. If so, FPL should provide feasibility of connecting to sewer or possibly another disposal method such as a deep well.

<u>FPL Response to Question 2:</u>

FPL has submitted revised pages 16, 17, and 18 of the 2CS form to FDEP Industrial Wastewater Section in Tallahassee as part of the responses to their request (included as ATTACHMENT 1 to this submittal), dated February 23, 2009, for additional information relative to FPL's request to modify the NPDES Permit FL0001546. Copies of those pages are attached to this document. On revised page 2CS-16, Section I, we identify outfall I-TBD as discharging to Lake Worth Lagoon via internal outfall. On revised page 2CS-18, Part IV, outfall I-TBD is identified as Plant/Equipment Drains, with the actual number to be determined by the Department. On that same page, Outfall I-063/I-064 is identified as the R.O. reject (water treatment system wastewater) and HRSG/Evaporative Cooler blowdown discharge, and the correct latitude/longitude for Outfall I-0163/I-0164 is presented. Outfall I-063/I-064 is an existing internal discharge to the cooling water intake structure that presently delivers the existing plant water treatment system wastewater to be reused as cooling water. FPL intends to continue to discharge the similar water treatment system wastewater from the proposed RBEC to that location using the existing piping. FPL also intends to recycle the HRSG/Evaporative Cooler blowdown to the water treatment system for recycling as process water, with a secondary path to discharge via the Outfall I-0163/I-0164 on occasions when the water treatment system is unable to accept it for recycle. This secondary path will allow the HRSG/Evaporative Cooler blowdown to be reused as cooling water. All of the above information is consistent with the water use diagram presented as Attachment B-1 of the request to modify the NPDES Permit FL0001546 (included as ATTACHMENT 2 to this submittal), and the water use diagram presented in the SCA as Figure 4.5.0-1 (included as ATTACHMENT 3 to this submittal),.

Additionally, FDEP Industrial Wastewater Section in Tallahassee as part of their request for additional information relative to FPL's request to modify the NPDES Permit FL0001546, dated February 23, 2009, asked in their Comment G-4:

> **"NPDES G-4. The application did not provide sufficient information to determine whether anti-degradation requirements in Rules 62-4.242 and 62-302.300, F.A.C., are applicable to the discharges at the proposed Riviera Beach Energy Complex (RBEC). Please provide wastewater characterizations, which include pollutant concentrations and loadings, for all proposed wastewater streams directly or indirectly discharged to surface waters. In addition, please provide a comparison of pollutant concentrations and loadings for the existing and proposed RBEC.**
>
> **If a pollutant concentration or loading shows an increase, please provide an antidegradation demonstration. As part of the antidegradation demonstration, please provide an evaluation of the feasibility of other disposal options in addition to the proposed once-through-cooling water discharge. The options evaluation should include reuse of wastewater streams, other discharge locations, any additional treatment, as well as non-surface water discharge options."**

FPL's response to Comment G-4 was (referenced documents are included with this submittal as ATTACHMENTS 4 through 7):

> "Table 3.3.4-1 of the SCA *(see ATTACHMENT 4)* provided the concentration levels of constituents in the existing Riviera Plant (PRV) discharge as reported in Form 2CS during the most recent PRV NPDES permit renewal application (August 2008). There are two discharges from the proposed RBEC which were previously authorized to discharge to groundwater via the solids settling ponds/EP ponds: water treatment system wastewater, and plant/equipment drains. The Circulating Water (CW) pump seal water is presently withdrawn from ground water and discharged into the CW. Because this waste stream is in the PRV discharge and will continue unchanged at the same flow rate and quality in the RBEC discharge, it is not discussed further. Please note that the aluminum values in Table 3.3.4-1 have been corrected from the original version of this table in that they were reported in milligrams per liter (mg/L) when they were actually measured in micrograms per liter (μg/L).
>
> As discussed in detail below, the changes in concentrations that are predicted are smaller than the potential error in the measurements. Similarly, the estimated mass loadings are based on changes in concentration that are smaller than the potential error in the measurements. Because these changes in concentrations and/or mass loadings are so small, FPL concludes that the RBEC will not cause any degradation of the RBW.
>
> The Sanford Plant Units 4 and 5 waste stream I-010 has been selected to represent the expected water quality of the RBEC plant/equipment drains waste stream as was done for the proposed Cape Canaveral Energy Center (CCEC). The water

treatment wastewater stream I-017 from the existing Canaveral Plant (PCC) has been selected to represent the expected water quality of the water treatment system wastewater, also as was done for CCEC. The concentration levels from Table 3.3.4-1 for the existing PRV cooling water discharges and the intake water [representing the Receiving Body of Water (RBW), which is Lake Worth Lagoon and the cooling water for RBEC], are shown in Table NPDES G-4-1 *(see ATTACHMENT 5)*. Also shown in this table is the estimated water quality of the water treatment system wastewater and plant/equipment drains wastewater. Only those constituents which were detected in at least one of the streams are shown in the table. Those constituents that are estimated to be present in the plant/ equipment drains wastewater or in the water treatment system wastewater at concentrations greater than or equal to the concentrations in the RBW are highlighted in Table NPDES G-4-1. Because the non-highlighted levels are lower in the non-cooling water wastewater streams than they are in the RBW, they cannot degrade the RBW and so are not considered further.

Table NPDES G-4-2 *(see ATTACHMENT 6)* includes only those constituents for which the potential exists for degradation of the once-through cooling water. These are the highlighted constituents in Table NPDES G-4-1. In order to estimate the final discharge water quality, the following assumptions have been made:

- The RBEC cooling water quality is represented by the Intake values;
- The only change in the discharge water quality will be due to the addition of the two new waste streams, the water treatment system wastewater and plant/equipment drains;
- The water treatment wastewater will be discharged at the rate of 25 gpm; and
- The plant/equipment drains wastewater will be discharged at a rate of 152 gpm.

Table NPDES G-4-2 lists the expected quality of the intake water, the existing OTCW/AECW, and the expected water quality of the two new waste streams. It also shows the flow-weighted concentration of the RBEC discharge, which is calculated as the concentration of the mixture of intake water and the two new waste streams. Table NPDES G-4-2 also tabulates the expected changes in concentrations of the RBEC discharge relative to both the intake and to the existing discharges. The changes are insignificant because they are smaller than the margin of error in the detection method of analysis.

Based on the concentrations presented in Table NPDES G-4-2, the gross mass loadings for the existing intake and discharges (PRV) and for the proposed intake and discharges (RBEC) are calculated and shown in Table NPDES G-4-3 *(see ATTACHMENT 7)*. From those quantities, the net mass loadings for PRV and RBEC have been calculated, as well as the changes in net mass loading of RBEC relative to that for PRV.

The net mass loadings have been analyzed further. Negative mass loading changes have no potential for degradation of the RBW (Lake Worth Lagoon). Calculated increases that are caused by the use of half the detection limit for undetected constituents (highlighted in yellow), with a calculated value less than the detection limit, are an artifact of the calculation and are not expected to actually occur. Calculated increases that are caused by intake concentrations that are higher than the discharge concentrations (highlighted in green) are also artifacts; they are an indication of the natural variability of the RBW and the accuracy of the detection method. Calculated increases that are caused by the assumption of a concentration of zero in the intake and in the existing discharges (highlighted in blue) are also artifacts because, when these constituents are considered not present, they are not assumed present at one half of the detection limit. When all of the artifacts are eliminated, the only remaining potential increase is for bromide. That increase may or may not be an artifact because of the higher detection limit in the analysis for the non-cooling water waste streams. However, the concentration of bromide shows a change of +0.002 microgram per liter (µg/L) (in Table NPDES G-4-3, the difference between the predicted concentration of RBEC effluent and existing discharge concentration effluent). This change is not significant.

The changes in concentrations that are predicted are smaller than the potential error in the measurements. Similarly, the estimated mass loadings are based on changes in concentration that are smaller than the potential error in the measurements. Because these changes in concentrations and/or mass loadings are so small, FPL concludes that the RBEC will not cause any degradation of the RBW."

ATTACHMENT 1

Florida Power & Light Company

Riviera Beach Energy Center Project

NPDES Permit No. FL0001546

Request for Additional information (RAI#1) for Permit Revision

Submitted to:
Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408

Submitted by:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, Georgia 30341
Certificate of Authorization Number: 1670

Harold A Frediani Jr 4/24/09

Harold A. Frediani, Jr., P.E. 36394

HAROLD A. FREDIANI, JR.
LICENSE
No. 36394
★
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

ATTACHMENT NPDES 2-CS-6

FORM

2CS

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0001546

Please print or type information in the appropriate areas.

I OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water.
(latitude/longitude to the nearest 15 seconds)

A. Outfall No. (List)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
D-013/D-0183	26	45	52/57	80	03	02	Lake Worth Lagoon
D-014/D-0184	26	45	52/57	80	03	02	Lake Worth Lagoon
I-0163/D-0164	26	46	00	80	03	09	Lake Worth Lagoon via Internal Outfall
D-009	26	45	52	80	03	03	Lake Worth Lagoon
I-TBD							Lake Worth Lagoon via Internal Outfall

II OUTFALL DESIGN

A. Outfall No. (List)	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
D-013/ D-0183	Off-shore Subsurface Discharge, Concrete Pipe	1900 '	90"ID	-16.58	-22.66
D-014/ D-0184	Off-shore Subsurface Discharge, Concrete Pipe	1900 '	90"ID	-16.58	-22.66
I-0163/ D-0164	Discharge Pipe to Intake Well	N/A			N/A
D-009	Discharge Pipe	N/A			-5
I-TBD					

Facility I.D. Number: FL0001546

III RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
Lake Worth Lagoon	☐	☒	Class III Marine	Lagoon
	☐	☐		
	☐	☐		
	☐	☐		
	☐	☐		
	☐	☐		

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate).

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used.

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants?

IV FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

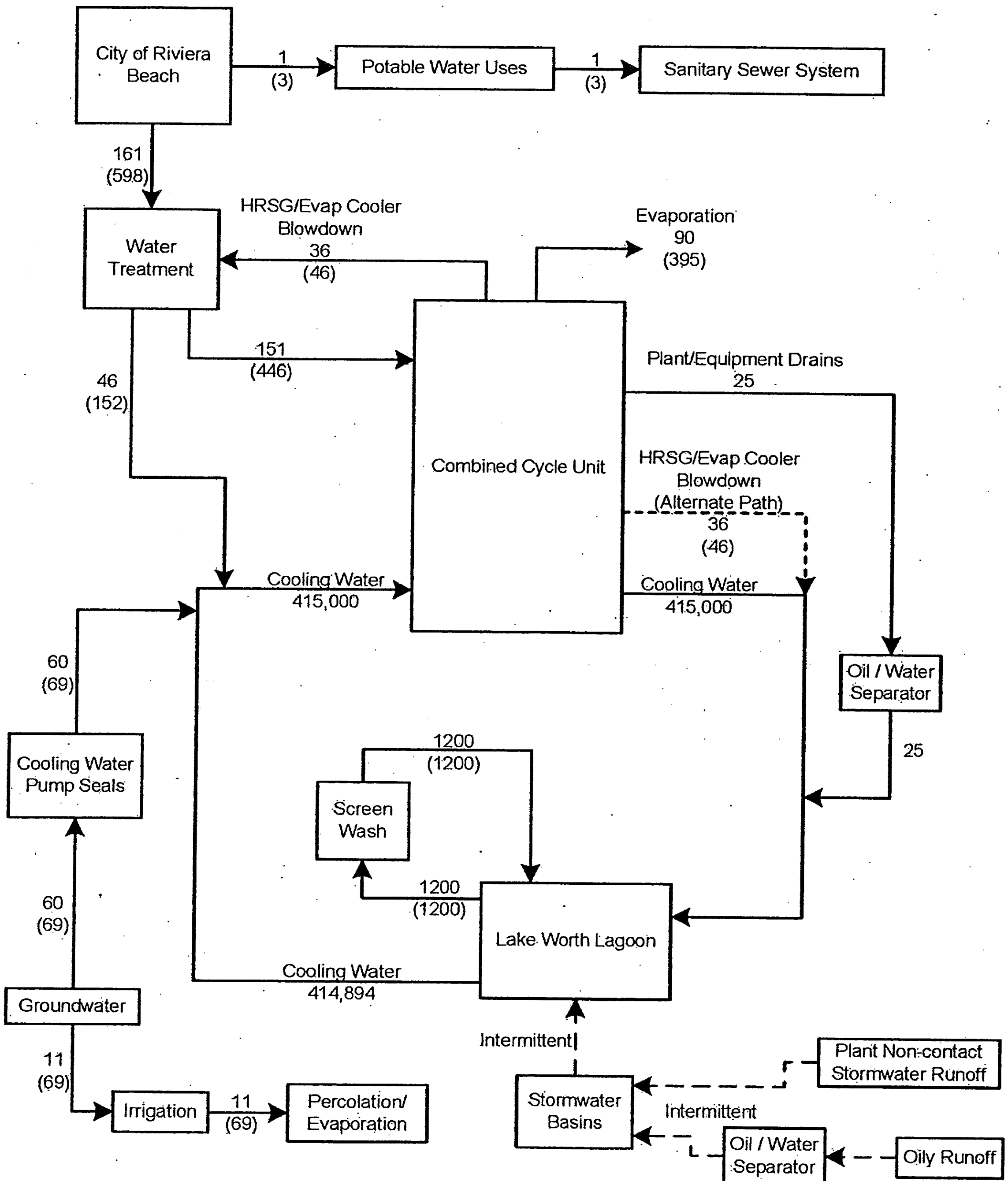
3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

Facility I.D. Number: FL0001546

(1) Outfall No. (List)	(2) Operation(s) Contributing Flow		(3) Treatment		
	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
D-013/D-0183	Once-Through Cooling Water	299 MGD	Discharge to Surface Water	4-A	
	Auxillary Cooling Water (D-0183)		Chlorination	2-F	
	Cooling Water Pump Seals				
D-014/D-0184	Once-Through Cooling Water	299 MGD	Discharge to Surface Water	4-A	
	Auxillary Cooling Water (D-0184)		Chlorination	2-F	
	Cooling Water Pump Seals				
I-TBD	Plant/Equipment Drains	25 gpm	Discharge to D-013 or D-014		
			Oil/Water Separator	XX	
I-0163/D-0164	Water Treatment Wastewater		Discharge to D-013 or D-014		
	HRSG/Evaporative Cooler	36 gpm	Discharge to D-013 or D-014	4-A	
	Reverse Osmosis Reject	46 gpm	Discharge to D-013 or D-014	4-A	
	Low-Volume/Metal Cleaning		Discharge to D-013 or D-014	4-A	
D-009	Intake Screen Washwater	1,200 gpm	Discharge to Surface Water	NA	

ATTACHMENT 2

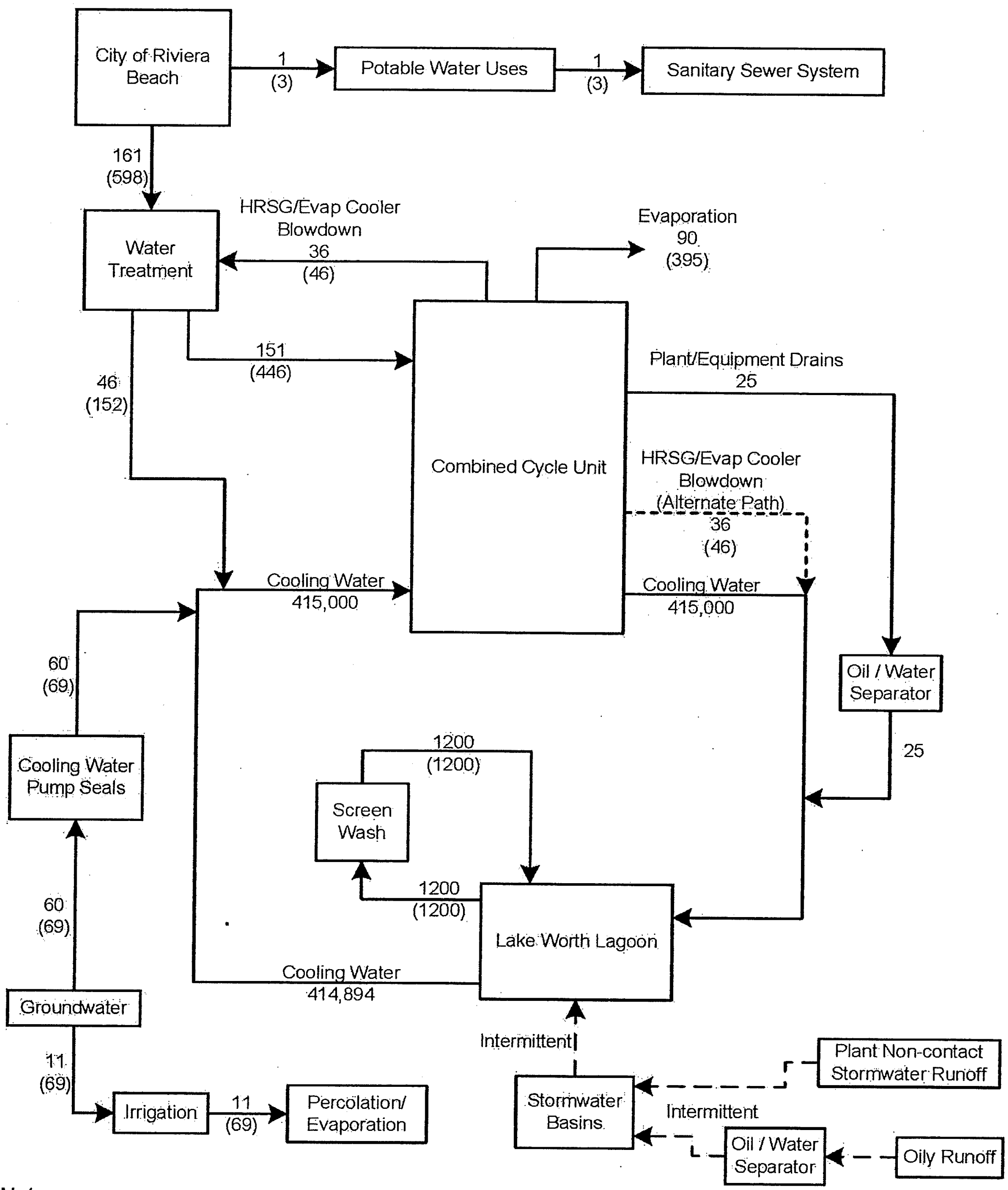


Notes:
1. Flows are in gallons per minute unless otherwise noted.
2. Flows shown with no () are based on average daily water use at the following conditions: 75 degree ambient temperature, CT evaporative coolers in service.
3. Numbers in () are peak intermittent flows.
4. Dashed lines indicate intermittent or alternate flow paths as noted.

Attachment B-1
Water Balance for RBEC
App.10.2.2/Attachment B-1.docx

Source: FPL, Golder; 2009.

ATTACHMENT 3



Notes:
1. Flows are in gallons per minute unless otherwise noted.
2. Flows shown with no () are based on average daily water use at the following conditions: 75 degree ambient temperature, CT evaporative coolers in service.
3. Numbers in () are peak intermittent flows.
4. Dashed lines indicate intermittent or alternate flow paths as noted.

Figure 4.5.0-1
Water Balance for RBEC
Fig 4.5.0-1.docx

Source: FPL, Golder; 2009.

ATTACHMENT 4

ATTACHMENT NPDES G-4

TABLE 3.3.4-1 (Revised May 2009)
WATER QUALITY DATA SUBMITTED FOR THE RIVIERA PLANT PURSUANT TO FDEP INDUSTRIAL WASTEWATER FACILITY PERMIT

Parameter		Intake Max. Daily	D-013, D-014, D0183, D0184 Effluent Max. Daily	D0163, D0164 Effluent Max. Daily
Carbonaceous Biochemical Oxygen Demand	mg/L	14.6	14	12.8
Chemical Oxygen Demand	mg/L	406	473	8
Total Organic Carbon	mg/L	0.57	1.6	1.5
Total Suspended Solids	mg/L	76	50	< 3
Total Nitrogen (as N)	mg/L	1.21	1.21	0.31
Total Phosphorus (as P)	mg/L	< 0.01	< 0.01	0.06
Ammonia (as N)	mg/L	0.13	< 0.1	0.18
Flow	MGD		439	0.036
Specific Conductivity	µmhos	51,800	51,600	600
Temperature (summer)	°F		105.6	
pH			7.68	6.89
Bromide	mg/L	3.18	3.18	NA
Color	CU	5	5	10
Fecal Coliform	col/100 mL	2	2	NA
Fluoride	mg/L	< 1	< 1	NA
Nitrate-Nitrite (as N)	mg/L	< 2.3	< 2.3	< 0.5
Nitrogen, Total Organic (N)	mg/L	0	0.01	0
Oil and Grease	mg/L	< 1.4	< 1.4	< 1.4
Phosphorus, Total (P)	mg/L	< 0.01	0.01	0.06
Sulfate (as SO4)	mg/L	3000	2800	NA
Surfactants	mg/L	< 0.043	< 0.043	NA
Aluminum, Total	mg/L	< 0.13	< 0.13	< 0.04
Iron, Total	ug/L	550	570	< 5
Magnesium, Total	mg/L	1300	1300	NA
Molybdenum, Total	µg/L		NA	51.3
Manganese, Total	µg/L		NA	< 2
Antimony, Total	µg/L	< 13	< 13	< 5
Arsenic, Total	µg/L	< 5	< 5	< 2
Beryllium, Total	µg/L	< 0.6	< 0.6	< 0.1
Cadmium, Total	µg/L	< 5	< 5	< 0.5
Chromium, Total	µg/L	< 3	< 3	< 3
Copper, Total	µg/L	3.7	4.7	6.4
Lead, Total	µg/L	< 10	< 10	2.8
Mercury, Total	µg/L	0.00048	< 0.0004	< 2E-04
Nickel, total	µg/L	< 2	< 2	< 4
Selenium, Total	µg/L	< 4	< 4	< 3
Silver, Total	µg/L	< 0.8	< 0.8	< 2
Thallium, Total	µg/L	7.1	7.1	< 1.3
Zinc, Total	µg/L	< 6	< 6	< 6.2
Cyanide, Total	µg/L	< 0.0067	< 0.0067	< 0.007
Phenols, Total	µg/L	< 0.34	< 0.34	< 0.007
Acrolein	µg/L	< 2	< 2	< 2
Acrylonitrile	µg/L	< 2.4	< 2.4	< 2.4
Benzene	µg/L	< 0.28	< 0.28	< 0.28
Bromoform	µg/L	0.27	< 0.27	< 0.27
Carbon Tetrachloride	µg/L	< 0.44	< 0.44	< 0.44
Chlorobenzene	µg/L	< 0.33	< 0.33	< 0.033
Chlorodi-bromomethane	µg/L	< 0.18	< 0.18	< 0.18
Chloroethane	µg/L	< 0.42	< 0.42	< 0.42
2-Chloro-ethylvinyl Ether	µg/L	< 1.2	< 1.2	< 1.2
Chloroform	µg/L	< 0.26	< 0.26	< 0.26
Dichloro-bromomethane	µg/L	< 0.21	< 0.21	< 0.21
Dichloro-difluoromethane	µg/L	< 0.88	< 0.88	< 0.88
1,1-Dichloroethane	µg/L	< 0.23	< 0.23	< 0.23
1,2-Dichloroethane	µg/L	< 0.23	< 0.23	< 0.23
1,1-Dichlororethylene	µg/L	< 0.38	< 0.38	< 0.38
1,2-Dichloropropane	µg/L	< 0.21	< 0.21	< 0.21
1,3-Dichloropropylene	µg/L	< 0.19	< 0.19	< 0.19
Ethylbenzene	µg/L	< 0.25	< 0.25	< 0.25
Methyl Bromide	µg/L	< 0.36	< 0.36	< 0.36
Methyl Chloride	µg/L	< 0.89	< 0.89	< 0.89
Methylene Chloride	µg/L	0.43	< 0.34	< 0.34
1,1,2,2-Tetra-chloroethance	µg/L	< 0.36	< 0.36	< 0.36

ATTACHMENT NPDES G-4

TABLE 3.3.4-1 (Revised May 2009)
WATER QUALITY DATA SUBMITTED FOR THE RIVIERA PLANT PURSUANT TO FDEP INDUSTRIAL WASTEWATER FACILITY PERMIT

Parameter		Intake Max. Daily	D-013, D-014, D0183, D0184 Effluent Max. Daily	D0163, D0164 Effluent Max. Daily
Tetrachloroethylene	µg/L	< 0.32	< 0.32	< 0.32
Toluene	µg/L	< 0.25	< 0.25	< 0.25
1,2 Trans-Dichloroethylene	µg/L	< 0.3	< 0.3	< 0.3
1,1,1-Trichlororethane	µg/L	< 0.22	< 0.22	< 0.22
1,1,2-Trichlororethane	µg/L	< 0.3	< 0.3	< 0.3
Trichloroethylene	µg/L	< 0.35	< 0.35	< 0.35
Trichloro-fluormethane	µg/L	< 0.26	< 0.27	< 0.26
Vinyl Chloride	µg/L	< 0.35	< 0.35	< 0.35
2-Chlorophenol	µg/L	< 1.6	< 1.5	< 1.7
2,4-Dichlorophenol	µg/L	< 1.8	< 1.5	< 1.9
2,4-Dimethylphenol	µg/L	< 1.3	< 1.3	< 1.4
4,6-Dinitro-O-Cresol	µg/L	< 1	< 1.1	< 1.1
2,4-Dinitrophenol	µg/L	< 1.2	< 1.2	< 1.3
2-Nitrophenol	µg/L	< 1.5	< 1.5	< 1.7
4-Nitrophenol	µg/L	< 2.9	< 2.9	< 3.2
P-Chloro-M-Cresol	µg/L	< 1.2	< 1.2	< 1.7
Pentachlorophenol	µg/L	< 1.8	< 1.8	< 2
Phenols, Total	µg/L	< 2	< 2	< 2.2
2,4,5-Trichloro-phenol	µg/L	< 1.6	< 1.6	< 1.7
Acenaphthene	µg/L	< 0.014	< 0.014	< 0.016
Acenaphtylene	µg/L	< 0.02	< 0.02	< 0.022
Antihracene	µg/L	< 0.013	< 0.013	0.88
Benzidine	µg/L	< 0.95	< 0.94	< 1
Benzo (a) Anthracene	µg/L	< 0.026	< 0.025	2.4
Benzo (a) Pyrene	µg/L	< 0.017	< 0.017	0.71
3,4-Benzo-fluoranthene	µg/L	< 0.0082	< 0.0081	0.83
Benzo (ghi) Perylene	µg/L	< 0.01	< 0.01	0.25
Benzo (k) Fluoranthene	µg/L	< 0.01	< 0.01	< 0.011
Bis (2-Chloroethoxy) Methane	µg/L	< 1.8	< 1.8	< 2
Bis (2-Chloroethyl) ether	µg/L	< 2.5	< 2.4	< 2.7
Bis (2-Chloroisopropyl) Ether	µg/L	< 1.6	< 1.6	< 1.7
Bis (2-Ethylhexyl) Phthalate	µg/L	< 2.4	< 2.4	< 2.6
4-Bromophenyl Phenyl Ether	µg/L	< 1.4	< 2.3	< 1.6
Butyl Benzyl Phthlate	µg/L	< 2	< 2	< 2.2
2-Chloronaphthalene	µg/L	< 1.2	< 1.2	< 1.3
4-Chlorophenyl Phenyl Ether	µg/L	< 1.5	< 1.5	< 1.7
Chrysene	µg/L	0.012	< 0.012	2.8
Dibenzo (a,h) Anthracene	µg/L	< 0.01	< 0.01	0.22
1,2-Dichlorobenzene	µg/L	< 0.92	< 0.91	< 1
1,3-Dichlorobenzene	µg/L	< 1.5	< 1.5	< 1.7
1,4-Dichlorobenzene	µg/L	< 0.48	< 0.47	< 0.52
3,3-Dichlorobenzene	µg/L	< 1.2	< 1.2	< 1.3
Diethyl Phthalate	µg/L	< 1.5	< 1.5	< 1.6
Dimethyl Phthalate	µg/L	< 1.7	< 1.7	< 1.9
Di-N-Butyl Phthalate	µg/L	< 0.88	< 0.87	< 1.6
2,4-Dinitrotoluene	µg/L	< 2.3	< 1.3	< 2.6
2,6-Dinitrotoluene	µg/L	< 1.3	< 2.3	< 1.4
Di-N-Octyl Phthalate	µg/L	< 1.5	< 1.5	< 1.6
1,2-Diphenythydrazine (as Azobenzene)	µg/L	< 0.53	< 0.53	< 0.58
Fluoranthene	µg/L	< 0.022	< 0.022	1.5
Fluorene	µg/L	< 0.011	< 0.011	0.07
Hexachlorobenzene	µg/L	< 1.7	< 1.7	< 1.9
Hexachlorobutadiene	µg/L	< 1.8	< 1.8	< 2
Hexachlorocyclopentadiene	µg/L	< 1.4	< 1.4	< 1.5
Hexachloroethane	µg/L	< 1.4	< 1.4	< 1.5
Indeno (1,2,3-cd) Pyrene	µg/L	< 0.015	< 0.015	0.6
Isophorone	µg/L	< 1.8	< 1.8	< 2
Naphthalene	µg/L	< 0.012	< 0.012	< 0.013
Nitrobenzene	µg/L	< 1.8	< 1.8	< 2
N-Nitrosodimethylamine	µg/L	< 1.6	< 1.6	< 1.8
N-Nitrosodi-N-Propylamine	µg/L	< 1.4	< 1.4	< 1.6
N-Nitro-sodiphenylamine	µg/L	< 1.6	< 1.6	< 1.8
Phenanthrene	µg/L	< 0.018	< 0.018	10
Pyrene	µg/L	< 0.081	< 0.08	6.1
1,2,4-Trichlorobenzene	µg/L	< 1.6	< 1.6	< 1.7

Source: FPL, 2008.

ATTACHMENT 5

TABLE NPDES G-4-1

ESTIMATED CONCENTRATIONS IN RBEC WASTEWATER STREAMS

Parameter	Units	Intake Max. Daily (PRV) [1]	D-013, D-014, D0183, D0184 Effluent (Cooling Water) Max. Daily	Plant/ Equipment Drains (PSN I-010) [2]	Water Treatment Wastewater (PCC I-017) [3]
Carbonaceous Biochemical Oxygen Demand	mg/L	14.6	14	8	<4
Chemical Oxygen Demand	mg/L	406	473	37	430
Total Organic Carbon	mg/L	0.57	1.6	7.7	7.7
Total Suspended Solids	mg/L	76	50	51	9
Total Nitrogen (as N)	mg/L	1.21	1.21	1.14	0.57
Total Phosphorus (as P)	mg/L	<0.01	<0.01	0.08	0.13
Ammonia (as N)	mg/L	0.13	<0.1	0.18	<.1
Flow (for RBEC only)	gpm	414,848	415,025	25	152
Specific Conductivity	umhos	51,800	51,600	0.4986	31.7
pH			7.68	9.17	8.4
Bromide	mg/L	3.18	3.18	<50	<10
Color	CU	5	5	15	60
Fecal Coliform	col/100 mL	2	2	0	0
Fluoride	mg/L	<1	<1	0.12	<.5
Nitrate-Nitrite (as N)	mg/L	<2.3	<2.3	0.22	0.55
Nitrogen, Total Organic (N)	mg/L	0	0.01	0.74	0.57
Phosphorus, Total (P)	mg/L	<0.01	0.01	0.08	0.13
Sulfate (as SO4)	mg/L	3000	2800	26	78
Surfactants	mg/L	<0.043	<0.043	0.12	<.1
Aluminum, Total	mg/L	<0.130	<0.130	0.09	0
Iron, Total	µg/L	550	570	330	440
Magnesium, Total	mg/L	1300	1300	6.4	62
Molybdenum, Total	µg/L		NA	590	90
Manganese, Total	µg/L		NA	29	94
Antimony, Total	µg/L	<13	<13	13	<5
Copper, Total	µg/L	3.7	4.7	0.089	<1
Lead, Total	µg/L	<10	<10	3	<3
Nickel, total	µg/L	<2	<2	23	6
Zinc, Total	µg/L	<6	<6	39	<10
Bromoform	µg/L	0.27	<0.27	<1	4.7
Chlorodi-bromomethane	µg/L	<0.18	<0.18	<.4	30
Chloroform	µg/L	<0.26	<0.26	<1	17
Dichloro-bromomethane	µg/L	<0.21	<0.21	<.4	26
Chrysene	µg/L	0.012	<0.012		

Note: Color indicates : Constituent which is present in non-cooling waters at levels above that in cooling waters.

[1] Based on existing FPL Riviera Plant (PRV).

[2] Based on FPL Sanford Plant (PSN) Units 4 and 5 waste stream I-010 as was done for Cape Canaveral Energy Center (CCEC).

[3] Based on existing FPL Cape Canaveral Plant (PCC) water treatment wastewater stream I-017.

ATTACHMENT 6

TABLE NPDES G-4-2

ESTIMATED DISCHARGE CONCENTRATIONS IN RBEC WASTEWATER STREAMS

Parameter	Units	Intake Max. Daily (PRV)[1]	D-013, D-014, D0183, D0184 Effluent (Cooling Water) Max. Daily (PRV)[1]	Plant/Equipment Drains (PSN I-010)[2]	Water Treatment Wastewater (PCC I-017)[3]	Flow-Weighted Concentration of RBEC Effluent	Change from Intake for Predicted RBEC Discharge	Change from Existing Discharge for Predicted RBEC Discharge
Total Organic Carbon	mg/L	0.57	1.6	7.7	7.7	0.5730	0.0030	-1.0270
Total Phosphorus (as P)	mg/L	0.005	0.005	0.08	0.13	0.0051	0.0001	0.0001
Ammonia (as N)	mg/L	0.13	0.05	0.18	0.05	0.1300	0.0000	0.0800
Flow (for RBEC only)	gpm	414.848	415,025	25	152	415.025	-	-
pH			7.68	9.17	8.4	7.6808	7.6808	0.0008
Bromide	mg/L	3.18	3.18	25	5	3.1820	0.0020	0.0020
Color	CU	5	5	15	60	5.0207	0.0207	0.0207
Fluoride	mg/L	0.5	0.5	0.12	0.25	0.4999	-0.0001	-0.0001
Nitrate-Nitrite (as N)	mg/L	1.15	1.15	0.22	0.55	1.1497	-0.0003	-0.0003
Nitrogen, Total Organic (N)	mg/L	0	0.01	0.74	0.57	0.0003	0.0003	-0.0097
Phosphorus, Total (P)	mg/L	0.005	0.01	0.08	0.13	0.0051	0.0001	-0.0049
Surfactants	mg/L	0.0215	0.0215	0.12	0.05	0.0215	0.0000	0.0000
Aluminum, Total	mg/L	0.065	0.065	0.09	0	0.0650	0.0000	0.0000
Molybdenum, Total	ug/L		0	590	90	0.0685	0.0685	0.0685
Manganese, Total	ug/L		0	29	94	0.0362	0.0362	0.0362
Antimony, Total	ug/L	6.5	6.5	13	2.5	6.4989	-0.0011	-0.0011
Lead, Total	ug/L	5	5	3	1.5	4.9986	-0.0014	-0.0014
Nickel, total	ug/L	1	1	23	6	1.0032	0.0032	0.0032
Zinc, Total	ug/L	3	3	39	5	3.0029	0.0029	0.0029
Bromoform	ug/L	0.27	0.135	0.05	4.7	0.2716	0.0016	0.1366
Chlorodi-bromomethane	ug/L	0.09	0.09	0.2	30	0.1010	0.0110	0.0110
Chloroform	ug/L	0.13	0.13	0.5	17	0.1362	0.0062	0.0062
Dichloro-bromomethane	ug/L	0.105	0.105	0.2	26	0.1145	0.0095	0.0095
Chrysene	ug/L	0.012	0.006	0.006	0.006	0.0120	0.0000	0.0060

Note: Color indicates - Below detection limit.

[1] Based on existing FPL Riviera Plant (PRV).

[2] Based on FPL Sanford Plant (PSN) Units 4 and 5 waste stream I-010 as was done for Cape Canaveral Energy Center (CCEC).

[3] Based on existing FPL Cape Canaveral Plant (PCC) water treatment wastewater stream I-017.

ATTACHMENT 7

TABLE NPDES G-4-3

ESTIMATED DISCHARGE MASS LOADING IN RBEC WASTEWATER STREAMS

Parameter	Units	Intake Concentration	Existing Discharge Concentration Effluent	Predicted Concentration of RBEC Effluent	Existing Intake Mass Loading to RBW (lbs/day)	Proposed Intake Mass Loading to RBW (lbs/day)	Net Mass Loading Existing Discharge (lbs/day)	Net Mass Loading Proposed Discharge (lbs/day)	Change in Net Mass Loading for Proposed Discharge (lbs/day)
Total Organic Carbon	mg/L	0.57	1.6	0.5730	-2,837.5	-2,836.4	5,127.35	16.35	-5,111.00
Total Phosphorus (as P)	mg/L	0.005	0.005	0.0051	-24.9	-24.9	0.00	0.26	0.26
Ammonia (as N)	mg/L	0.13	0.05	0.1300	-647.1	-646.9	-398.24	0.15	398.39
Flow	gpm	414,848	415,000	415,025					NA
pH			7.68	7.6808	NA	NA	NA	NA	NA
Bromide	mg/L	3.18	3.18	3.1820	-15,830.1	-15,824.3	0.00	16.61	16.61
Color	CU	5	5	5.0207	NA	NA	NA	NA	NA
Fluoride	mg/L	0.5	0.5	0.4999	-2,489.0	-2,488.1	0.00	0.49	0.49
Nitrate-Nitrite (as N)	mg/L	1.15	1.15	1.1497	-5,724.7	-5,722.6	0.00	1.07	1.07
Nitrogen, Total Organic (N)	mg/L	0	0.01	0.0003	0.0	0.0	49.78	1.26	-48.52
Phosphorus, Total (P)	mg/L	0.005	0.01	0.0051	-24.9	-24.9	24.89	0.26	-24.63
Surfactants	mg/L	0.0215	0.0215	0.0215	-107.0	-107.0	0.00	0.13	0.13
Aluminum, Total	mg/L	0.065	0.065	0.0650	-323.6	-323.5	0.00	0.03	0.03
Molybdenum, Total	ug/L		0	0.0685	0.0000	0.0000	0.00	341.02	341.02
Manganese, Total	ug/L		0	0.0362	0.0000	0.0000	0.00	180.08	180.08
Antimony, Total	ug/L	6.5	6.5	6.4989	-32.3571	-32.3452	32,324.69	32,321.31	-3.38
Lead, Total	ug/L	5	5	4.9986	-24.8900	-24.8809	24,865.15	24,859.68	-5.47
Nickel, total	ug/L	1	1	1.0032	-4.9780	-4.9762	4,973.03	4,989.05	16.02
Zinc, Total	ug/L	3	3	3.0029	-14.9340	-14.9286	14,919.09	14,934.44	15.35
Bromoform	ug/L	0.27	0.135	0.2716	-1.3441	-1.3436	670.69	1,350.81	680.12
Chlorodi-bromomethane	ug/L	0.09	0.09	0.1010	-0.4480	-0.4479	447.57	502.17	54.59
Chloroform	ug/L	0.13	0.13	0.1362	-0.6471	-0.6469	646.49	677.40	30.91
Dichloro-bromomethane	ug/L	0.105	0.105	0.1145	-0.5227	-0.5225	522.17	569.44	47.27

Note: Color indicates -
Below detection limit, artifact of using half the detection limit.
Artifact of intake concentration being higher than existing discharge concentration.
Predicted increase based on using half the detection limit in the waste stream.
Artifact of assumed zero concentration in intake.