

Effluent Quality Assessment

City of Dunedin Wastewater Treatment Facility

Pinellas County

NPDES #FL0021326

Sampled December 09, 2013

January 2014

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration
2014 FDEP Bureau of Labs Quality Manual
NELAC Certification No. E31780

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City of Dunedin Wastewater Treatment Facility (WWTF), 1140 Martin Luther King, Jr. Avenue, Dunedin, Pinellas County, Florida, 34697. NPDES #FL0021326.

Facility Overview

City of Dunedin WWTF is a Type 1 advanced wastewater treatment facility which uses the A2O Biological Nutrient Removal (BNR) Process to treat domestic wastewater. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent grab and composite samples for biological and chemical analyses for this facility were collected on December 09, 2013. All grab and composite samples were collected, respectively, from the EFD-01 and EFA-01, NPDES sampling points for Outfall D-001 by Ramandeep Kaur and Gitta Schmitt (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix B).

The 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09 (see Appendix B).

Results

Chemistry Results (See Table 1 and Appendix C)

- The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 0.034 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.
- Aluminum, arsenic, bromodichloromethane, copper, nickel, total nitrogen, total phosphorus, and zinc were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Carbonaceous biochemical oxygen demand (CBOD) and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential (See Table 2 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 0.479 I mg dry wt/L (I - the reported value is between the laboratory method detection limit and the laboratory quantitation limit) of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is phosphorus–limited (Miller et al. 1978).
- The salinity adjusted effluent algal growth potential (AGP) was 3.00 U * mg dry wt/L (U – material was analyzed for but was not detected. The value reported is the minimum detection limit) of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a “problem” threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP with Ron Raschke USEPA Region 4 1987).

*An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts from an apparent salinity of approximately 0.71 parts per thousand (ppth) to a salinity of approximately 7.0 ppth to meet the salinity requirements of the test species.

Toxicity Test Results (See Appendix C)

- Tests were performed December 10 - 14, 2013.

Ceriodaphnia dubia 96-hour acute definitive bioassay –	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours
Pimephales promelas 96-hour acute definitive bioassay –	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

- The bioassay samples were not acutely toxic to the test organisms.

*NOTE: In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).

Conclusion

The effluent sample collected from the EFD-01 NPDES sampling point for this facility on December 9, 2013, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. Effluent water quality samples collected on December 9, 2013, did not exceed any applicable water quality standards or violate any permit conditions.

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

Literature Cited

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.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

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

City of Dunedin WWTF	Class III Criteria	Effluent Limits	EFD-01 grab	EFA-01 composite.
Organic Constituents (µg/L)				
Bromodichloromethane	≤ 22 a	≤ 22 a	12	-
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	205	-
Arsenic	≤ 50	-	3.68	-
Cadmium	≤ 8.8	-	0.050 U	-
Calcium (mg/L)	-	-	123	-
Chromium, Total	≤ 50 ψ	-	0.30 U	-
Copper	≤ 3.7	≤ 3.7	1.3	-
Iron	≤ 300	-	30 U	-
Lead	≤ 8.5	-	0.20 U	-
Magnesium (mg/L)	-	-	18.6	-
Mercury	≤ 0.025	-	-	-
Nickel	≤ 8.3	-	1.59	-
Selenium	≤ 71	-	0.20 U	-
Silver	≤ 2.3	-	0.025 U	-
Sodium	-	-	141	-
Zinc	≤ 86	-	28	-
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.006 l	-
Total Phosphorus	-	≤ 2.0 p	-	0.034 p
Total Ammonia	-	-	0.034	-
Un-ionized Ammonia	-	-	< 0.02 c	-
Nitrate and Nitrite	-	-	-	0.34 p
Total Kjeldahl Nitrogen	-	-	-	0.6
Organic Nitrogen	-	-	-	-
Total Nitrogen	-	≤ 6.0 p	-	0.94 c
Total Organic Carbon	-	-	7.4	-
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 5.0	7.55	-
pH (SU)	6.5 - 8.5	6.5 - 8.5	8.32	-
Specific Conductance (µmhos/cm)	-	-	1,429	-
Temperature (°C)	-	-	26.15	-
Salinity	-	-	0.629 c	-
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	-	0.06 Q£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55 U	-
Phaeophytin (µg/L)	-	-	0.40 U	-
Total Suspended Solids (mg/L)	-	≤ 10.0 p		3 l
Turbidity (NTU)	< 29 t	-	0.75	-
Color (true, PCU)	-	-	7.6	-
Alkalinity (mg CaCO3/L)	-	-	277	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 p	-	1.9 lQ
Chloride (mg/L)	-	-	270	-
Fluoride (mg/L)	≤ 5.0	-	0.72	-
Sulfate (mg/L)	-	-	60	-
Flow (MGD)	-	≤ 6.0 a	1.3 a	-
Hardness (mg $CaCO_3$)	-	-	383.7 c	
Microbiology (CFU/100ml)				
Enterococci ¥	-	≤ 276s	2 UQ	-
Fecal Coliforms ¥	≤ 400s #	≤ 25s	1 U	-

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

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

c - Value is calculated

p - 24 hour flow proportioned composite

s - Single sample

t - Shall not exceed 29 NTUs above background

l - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Q - Sample held beyond normal holding time

U - Material analyzed for but not detected; value reported is the method detection limit

¥ - Fecal coliform analysis performed by Advanced Environmental Laboratory, Tampa

- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

£ - measurement taken in the FDEP laboratory

ψ - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) for chromium-VI

Table 2. Measured and predicted algal growth potential (AGP; mg dry weight/L) for ortho-phosphate (OP) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata,* salinity adjusted AGP for the saltwater species *Dunaliella tertiolecta* , and ratios of nitrogen to phosphorus.

City of Dunedin WWTF						
Location	Test Species	AGP (measured)	Predicted AGP (OP) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent*	Marine	3.00 U	-	-	62.3	27.6
Effluent	Fresh	0.479 I	2.6 ± 0.5	35.7 ± 7.1	62.3	27.6

* - sample salinity adjusted to 7.0 ppth

A dash (-) indicates that the predicted AGP is not applicable

Appendix A
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Ramandeep Kaur	Contact Number: (813)-470-5771
Facility Name (as it appears on permit): **City of Dunedin WWTF**	Former Names:
NPDES Permit Number: FL0021326	Permit Expiration Date: **September 16, 2014**
Physical Address: **1140 Martin Luther King, Jr. Avenue, Dunedin, FL 34697**	
District: SWD	County: Pinellas
Function of Facility: Domestic Wastewater Treatment Plant	
Facility Type: Domestic Wastewater	Permitted Capacity (MGD): 6.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 1.3 MGD (October 2012- October 2013)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

Monitoring Location Site Number	Description of Monitoring Location
EFA-01	After disinfection and prior to the master reuse system or dechlorination.
EFB-01	After the denitrification filters and prior to disinfection.
EFD-01	After dechlorination and prior to discharge at D-001.
FLW-02	Flow measurement location after dechlorination and prior to discharge in St. Josephs Sound.

Description of Permitted Outfall(s):

Surface Water Discharge:

An existing 6.0 MGD Annual Average Daily Flow (AADF) permitted discharge to St. Joseph's Sound (Class III marine waters, WBID No. 8045D) at Discharge Location (D-001) which is approximately 1200 feet in length and discharges at a depth of approximately 11 feet. The point of discharge is located approximately at latitude 28 ° 01' 10" N, longitude 82 ° 47' 39" W.

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

Operation of an existing 6.0 million gallons per day (MGD) Annual Average Daily Flow (AADF) Type I domestic advanced wastewater treatment plant, using the A2O Biological Nutrient Removal (BNR) process, consisting of the following components: a head works with two coarse bar screens (one mechanically cleaned and one manually cleaned), one grit removal and handling unit with cyclone and classifier, two fine bar screens (one mechanically cleaned and one manually cleaned), and a raw sewage pumping station capable of pumping to either the flow equalization basin or the anaerobic/anoxic influent channel; one sideline flow equalization basin of 1.2 million gallons capacity; a plant influent flow meter using an 18" Parshall flume; four anaerobic basins with a total volume of 400,000 gallons; three anoxic basins with a total volume of 350,000 gallons; the facility has the capability of using one anoxic basin as an anaerobic basin; four identical aeration basins with a total volume of 2.98 million gallons; two clarifiers of 775,000 gallons each, providing a total capacity of 1.55 million gallons and total surface area of 17,300 ft^2; four multi-media denitrification filters using methanol, with a total surface area of 2,000 ft^2; a clear well of 179,000 gallons volume; a backwash holding basin of 137,000 gallons volume; and two chlorine contact basins of 129,000 gallons total volume, using a gaseous chlorination system. For reclaimed reuse water, a reclaimed water pumping station sends flow to reuse system R-001 described below. For effluent to be discharged at outfall D-001 described below, flow is sent to two re-aeration basins of 126,400 gallons total volume; then to a de-chlorination basin of 8,600 gallons, using sulfur dioxide; then by gravity through parallel 21-inch and 36-inch diameter pipes to the outfall location. The residuals handling stream consists of: one dissolved air flotation thickener with polymer addition; one rotary drum thickener; and four aerobic digesters of 733,000 gallons total capacity. Stabilized residuals are land applied.

Filter backwash, residuals de-watering and other plant process waters are returned to the first anaerobic basin. Alum feed is available to the clarifiers to aid in phosphorus and total suspended solids control. Progress Energy provides two redundant primary circuits to power the plant. A generator of 2000 kW also provides a standby source of power. A SCADA system is used for plant monitor and control.

An off-site sludge drying bed is located at 2000 Greenbriar Blvd. The City of Dunedin shall construct an addition drying bed at this location, for disposal of materials collected during sewer maintenance.

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
St. Joseph's Sound	Class III Marine water body

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

Facility ID	Outfall Type	Monitoring Date	Outfall Indicator	Parameter Code	Parameter Description	Data	Limit
FL0021326	EXO	7/31/2013	001-T	P TRP3B	IC25 STATRE 7DAY CHR CERIODAPHNIA	100	100
FL0021326	EXO	7/31/2013	001-T	P TRP3B	IC25 STATRE 7DAY CHR CERIODAPHNIA	<100	100

Describe previous FYI and WQBEL study:
2008 FYI report submitted as separate email attachment.

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

Describe any violations or problems noted in previous inspection: N/A

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

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

Chronic Whole Effluent Toxicity Testing

The permittee shall comply with the following whole effluent toxicity testing requirements and initiate the series of tests described below within 60 days of permit issuance, unless otherwise directed by the Department in writing, to evaluate chronic whole effluent toxicity of the discharge from outfall D-001 to St. Joseph's Sound.

a. Effluent Limitation
   (1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. *[62-302.530(61) and 62-4.241(2)(b)]*
   (2) In the chronic toxicity test, the effluent cannot be acutely toxic, in accordance with 62-302.200(1) and 62-302.500(1)(a)(4).

b. Monitoring Frequency
   (1) The "routine" toxicity tests specified shall be conducted *once every three months.*

c. Sampling Requirements
   (1) For each routine test or additional follow-up test conducted, a total of three *flow proportional 24-hour composite* samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8, or the most current edition.
   (2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
   (3) Samples for routine and additional follow-up tests shall not be collected on the same day.
   (4) If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody. Each sample shall be analyzed for total residual chlorine and pH at the time of sample collection. Should the discharge last less than 24 hours, the bioassay shall be run on the volume collected, however, three samples must be collected.

d. Test Requirements
   (1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.
   (2) The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.
   (3) All test species, procedures and quality assurance criteria used shall be in accordance with UShort-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater OrganismsU, 4th ed., EPA-821-R-02-013 or the most 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.
   (4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7 or the most current edition.

e. Quality Assurance Requirements
   (1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test

organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.

(2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet "test acceptability criteria", the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (Ceriodaphnia dubia) and Section 11.11 (Pimephales promelas) or the most current edition. The repeat test shall begin within 21 days after the last day of the invalid test.

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

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

f. Reporting Requirements

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

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

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

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

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

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

(6) All bioassay laboratory reports shall be sent to:

Department of Environmental Protection
Southwest District Office
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Telephone No.: (813) 632-7600

g. Test Failures

(1) A test fails when the test results do not meet the limits in Permit Condition I.A.8.a.(1).

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in Permit Condition I.A.8.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 Permit Condition I.A.8.d.

(b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up test shall be conducted weekly thereafter

until a total of two valid additional follow-up tests are completed.

(c) The first additional follow-up test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5%, and 6.25% effluent. The permittee may modify the dilution series in the second additional follow-up test to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013 or the most 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 period of time that the approved plan is ongoing, the permittee shall conduct routine whole effluent toxicity testing at the frequency of once every three months, but shall not be required to perform additional follow-up tests. If a routine test is invalid as established in EPA Methods, EPA-821-R-02-012, EPA-821-R-02-013, or EPA-821-R-02-014, a retest must be started within 21 days for a chronic test or 14 days for an acute test after the last day of the invalid test.

(f) Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up whole effluent toxicity tests shall return to the schedule established in the facility wastewater permit. The permittee may terminate the plan at any time upon written verification by the Department that the facility has passed at least four consecutive valid routine whole effluent toxicity tests.

[62-4.241, 62-620.620(3)]

*If the discharge ceases before the first additional test sample can be collected, the first additional sample shall be initiated within one business day following the next discharge event. If the discharge again ceases before the second additional test sample can be collected, the second additional sample shall be initiated within one business day following the next discharge event. A routine test must be conducted on the other test species during the discharge used for the additional test it if will be the only discharge during the monitoring period. If another discharge should occur during the same monitoring period, then a routine test will be required only on the species that failed the previous routine test. The additional tests will be used to determine if the toxicity found in the routine test is still present.

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Maximum	6.0	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-02	See Cond.I.A.4
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFA-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFA-01	
Solids, Total Suspended	MG/L	Maximum	-	-	-	5.0	5 Days/Week	Grab	EFB-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	5 Days/Week	24-hour flow proportioned composite	EFA-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	1.5	2.0	5 Days/Week	24-hour flow proportioned composite	EFA-01	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFD-01	See Cond.I.A.3
Coliform, Fecal, % less than detection	PERCENT	Minimum	-	75	-	-	Monthly	Calculation	EFA-01	See Cond.I.A.5
Coliform, Fecal	#/100ML	Maximum	-	-	-	25	5 Days/Week	Grab	EFA-01	See Cond.I.A.5
Enterococci	#/100ML	Maximum	-	35	-	276	5 Days/Month	Grab	EFA-01	See Cond.I.A.7
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous	Meter	EFA-01	See Cond.I.A.3, 6
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	7 Days/Week	Grab	EFD-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	7 Days/Week	Grab	EFD-01	
Dibromochloromethane	UG/L	Maximum	34	Report	-	-	Monthly	Grab	EFD-01	
Dichlorobromomethane	UG/L	Maximum	22	Report	-	-	Monthly	Grab	EFD-01	
Copper, Total Recoverable	UG/L	Maximum	-	-	-	3.7	Monthly	Grab	EFD-01	
Chronic Whole Effluent Toxicity	%	Min	-	-	-	100	Every Three Months	24-hour flow proportioned composite	EFD-1	See Permit Condition I. A. 8

City of Dunedin WWTF, Permit #: FL0021326; FYI3 PART II: Sampling Event Information	
Date(s) sample collected: December 9, 2013	**Sampler(s):** Ramandeep Kaur, Gitta Schmitt
Temperature (Deg C): 26.15	**pH (SU):** 8.32
Dissolved Oxygen (mg/L): 7.55 (DO% 93.7)	**Conductivity (umhos/cm):** Salinity: 0.71 PPTh
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination: Gaseous Chlorination System	**Method of De-chlorination:** Sulfur Dioxide
Flow During Sample Collection for each outfall(MGD): 1.274	
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): 1.3 MGD (October 2012- October 2013)	
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: Grab samples were collected from EFD-01- Discharge sampling point.	





Discharge sampling point for EFD-01

Appendix B
Explanation of measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

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

(3) Toxicity Bioassays

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

(4) Bacteriological Testing

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

(5) Algal Growth Potential (AGP)

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

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

(6) Chlorophyll *a* Content

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

(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 Analyses of Effluent

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:15	EFD-01 grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
12/9/2013 11:15	EFD-01 grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
12/9/2013 11:15	EFD-01 grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	3	U	mg DryWt/L	3	3
12/9/2013 11:15	EFD-01 grab	AGP/LN	Algal Growth Potential	0.479	I	mg DryWt/L	0.3	0.9
12/9/2013 11:15	EFD-01 grab	Microbiology	Enterococci-Membrane Filter	2	UQ	cfu/100 mL	2	2
12/9/2013 11:15	EFD-01 grab	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	
12/9/2013 11:15	EFD-01 grab	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
12/9/2013 11:15	EFD-01 grab	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
12/9/2013 11:15	EFD-01 grab	Metals	Lead	0.20	U	ug/L	0.2	0.8
12/9/2013 11:15	EFD-01 grab	Metals	Aluminum	205		ug/L	5	20
12/9/2013 11:15	EFD-01 grab	Metals	Arsenic	3.68		ug/L	0.25	1
12/9/2013 11:15	EFD-01 grab	Metals	Nickel	1.59		ug/L	0.25	1
12/9/2013 11:15	EFD-01 grab	Metals	Sodium	141		mg/L	0.5	2
12/9/2013 11:15	EFD-01 grab	Metals	Calcium	123		mg/L	0.075	0.3
12/9/2013 11:15	EFD-01 grab	Metals	Magnesium	18.6		mg/L	0.04	0.16
12/9/2013 11:15	EFD-01 grab	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
12/9/2013 11:15	EFD-01 grab	Metals	Potassium	12.7		mg/L	0.3	1.2
12/9/2013 11:15	EFD-01 grab	Metals	Iron	30	U	ug/L	30	120
12/9/2013 11:15	EFD-01 grab	Metals	Selenium	0.20	U	ug/L	0.2	0.8
12/9/2013 11:15	EFD-01 grab	Metals	Silver	0.025	U	ug/L	0.025	0.1
12/9/2013 11:15	EFD-01 grab	Metals	Copper	1.3		ug/L	0.5	1
12/9/2013 11:15	EFD-01 grab	Metals	Chromium	0.30	U	ug/L	0.3	1.2
12/9/2013 11:15	EFD-01 grab	Metals	Zinc	28		ug/L	5	20
12/9/2013 11:15	EFD-01 grab	Nutrients	Color (true)	7.6		PCU	2.5	6
12/9/2013 11:15	EFD-01 grab	Nutrients	Alkalinity	277		mg CaCO3/L	0.65	2.5
12/9/2013 11:15	EFD-01 grab	Nutrients	Turbidity	0.75		NTU	0.1	0.1
12/9/2013 11:15	EFD-01 grab	Nutrients	O-Phosphate-P	0.006	I	mg P/L	0.004	0.01
12/9/2013 11:15	EFD-01 grab	Nutrients	Organic Carbon	7.4		mg C/L	0.5	1
12/9/2013 11:15	EFD-01 grab	Nutrients	Sulfate	60		mg SO4/L	2	5
12/9/2013 11:15	EFD-01 grab	Nutrients	Ammonia-N	0.034		mg N/L	0.002	0.005
12/9/2013 11:15	EFD-01 grab	Nutrients	Fluoride	0.72		mg F/L	0.035	0.1
12/9/2013 11:15	EFD-01 grab	Nutrients	Chloride	270		mg Cl/L	2	5
12/9/2013 11:15	EFD-01 grab	Pesticides	Ethoprop	0.0047	U	ug/L	0.0047	0.019

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:15	EFD-01 grab	Pesticides	Alachlor	0.057	U	ug/L	0.057	0.23
12/9/2013 11:15	EFD-01 grab	Pesticides	Butylate	0.019	U	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Chlorpyrifos Methyl	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Ethion	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Metolachlor	0.057	U	ug/L	0.057	0.23
12/9/2013 11:15	EFD-01 grab	Pesticides	Naled	0.038	UJ	ug/L	0.038	0.15
12/9/2013 11:15	EFD-01 grab	Pesticides	Parathion Ethyl	0.019	UJ	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Atrazine Desisopropyl	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Chlorpyrifos Ethyl	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Demeton	0.023	UJ	ug/L	0.023	0.091
12/9/2013 11:15	EFD-01 grab	Pesticides	Hexazinone	0.028	U	ug/L	0.028	0.11
12/9/2013 11:15	EFD-01 grab	Pesticides	Metalaxyl	0.038	U	ug/L	0.038	0.15
12/9/2013 11:15	EFD-01 grab	Pesticides	Azinphos Methyl	0.019	UJ	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Phorate	0.0047	U	ug/L	0.0047	0.019
12/9/2013 11:15	EFD-01 grab	Pesticides	Norflurazon	0.028	U	ug/L	0.028	0.11
12/9/2013 11:15	EFD-01 grab	Pesticides	Parathion Methyl	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Metribuzin	0.019	U	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Fenamiphos	0.028	U	ug/L	0.028	0.11
12/9/2013 11:15	EFD-01 grab	Pesticides	Prometryn	0.019	U	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Atrazine	0.030	U	ug/L	0.03	0.12
12/9/2013 11:15	EFD-01 grab	Pesticides	Atrazine Desethyl	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Bromacil	0.038	U	ug/L	0.038	0.15
12/9/2013 11:15	EFD-01 grab	Pesticides	Diazinon	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Disulfoton	0.0047	U	ug/L	0.0047	0.019
12/9/2013 11:15	EFD-01 grab	Pesticides	Fonofos	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Prometon	0.019	U	ug/L	0.019	0.075
12/9/2013 11:15	EFD-01 grab	Pesticides	Malathion	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Mevinphos	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Simazine	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Pesticides	Ametryn	0.0094	U	ug/L	0.0094	0.038
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Di-n-butyl phthalate	0.94	U	ug/L	0.94	3.8

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.5
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,4-Dinitrophenol	14	UJ	ug/L	14	57
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Dimethyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Bromodichloromethane	12		ug/L	0.2	0.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.5
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	U	ug/L	9.4	38
12/9/2013 11:15	EFD-01 grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
12/9/2013 11:15	EFD-01 grab	Field Parameter	Specific Conductance	1,429		umhos/cm		
12/9/2013 11:15	EFD-01 grab	Field Parameter	pH	8.32				
12/9/2013 11:15	EFD-01 grab	Field Parameter	Dissolved Oxygen	7.55		mg/L		
12/9/2013 11:15	EFD-01 grab	Field Parameter	Temperature	26.15		C		
12/9/2013 2:30	Effluent comp.	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.9	IQ	mg/L	0.2	2
12/9/2013 2:30	Effluent comp.	Nutrients	TSS	3	I	mg/L	2	10
12/9/2013 2:30	Effluent comp.	Nutrients	Kjeldahl Nitrogen	0.6		mg N/L	0.08	0.2
12/9/2013 2:30	Effluent comp.	Nutrients	NO2NO3-N	0.34		mg N/L	0.004	0.01
12/9/2013 2:30	Effluent comp.	Nutrients	Total-P	0.034		mg P/L	0.002	0.005
12/9/2013 11:40	Field Blank	Metals	Lead	0.20	U	ug/L	0.2	0.8
12/9/2013 11:40	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
12/9/2013 11:40	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
12/9/2013 11:40	Field Blank	Metals	Sodium	0.50	U	mg/L	0.5	2
12/9/2013 11:40	Field Blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
12/9/2013 11:40	Field Blank	Metals	Selenium	0.20	U	ug/L	0.2	0.8
12/9/2013 11:40	Field Blank	Metals	Copper	0.50	U	ug/L	0.5	1
12/9/2013 11:40	Field Blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
12/9/2013 11:40	Field Blank	Metals	Zinc	5.0	U	ug/L	5	20
12/9/2013 11:40	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
12/9/2013 11:40	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
12/9/2013 11:40	Field Blank	Metals	Aluminum	5.5	I	ug/L	5	20
12/9/2013 11:40	Field Blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
12/9/2013 11:40	Field Blank	Metals	Iron	30	U	ug/L	30	120
12/9/2013 11:40	Field Blank	Metals	Potassium	0.30	U	mg/L	0.3	1.2
12/9/2013 11:40	Field Blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
12/9/2013 11:40	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
12/9/2013 11:40	Field Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
12/9/2013 11:40	Field Blank	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1
12/9/2013 11:40	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/9/2013 11:40	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:40	Field Blank	Nutrients	Ammonia-N	0.006		mg N/L	0.002	0.005
12/9/2013 11:40	Field Blank	Nutrients	Turbidity	0.10	U	NTU	0.1	0.1
12/9/2013 11:40	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
12/9/2013 11:40	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
12/9/2013 11:40	Field Blank	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
12/9/2013 11:40	Field Blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
12/9/2013 11:40	Field Blank	Pesticides	Atrazine Desisopropyl	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Demeton	0.024	UJ	ug/L	0.024	0.095
12/9/2013 11:40	Field Blank	Pesticides	Ethion	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Malathion	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Mevinphos	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Atrazine Desethyl	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Naled	0.039	UJ	ug/L	0.039	0.16
12/9/2013 11:40	Field Blank	Pesticides	Parathion Ethyl	0.020	UJ	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Parathion Methyl	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Prometryn	0.020	U	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Azinphos Methyl	0.020	UJ	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Metribuzin	0.020	U	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Norflurazon	0.030	U	ug/L	0.03	0.12
12/9/2013 11:40	Field Blank	Pesticides	Simazine	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Atrazine	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Bromacil	0.039	U	ug/L	0.039	0.16
12/9/2013 11:40	Field Blank	Pesticides	Ametryn	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Ethoprop	0.0049	U	ug/L	0.0049	0.02
12/9/2013 11:40	Field Blank	Pesticides	Fenamiphos	0.030	U	ug/L	0.03	0.12
12/9/2013 11:40	Field Blank	Pesticides	Hexazinone	0.030	U	ug/L	0.03	0.12
12/9/2013 11:40	Field Blank	Pesticides	Phorate	0.0049	U	ug/L	0.0049	0.02
12/9/2013 11:40	Field Blank	Pesticides	Prometon	0.020	U	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Alachlor	0.059	U	ug/L	0.059	0.24
12/9/2013 11:40	Field Blank	Pesticides	Diazinon	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Disulfoton	0.0049	U	ug/L	0.0049	0.02
12/9/2013 11:40	Field Blank	Pesticides	Fonofos	0.0099	U	ug/L	0.0099	0.039
12/9/2013 11:40	Field Blank	Pesticides	Metolachlor	0.059	U	ug/L	0.059	0.24
12/9/2013 11:40	Field Blank	Pesticides	Butylate	0.020	U	ug/L	0.02	0.079
12/9/2013 11:40	Field Blank	Pesticides	Metalaxyl	0.039	U	ug/L	0.039	0.16
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	U	ug/L	9.4	38
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	UJ	ug/L	14	57
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8

Date Sampled	Field ID	Analysis Group	Component	Result	Remark	Units	MDL	PQL
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.5
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Bromodichloromethane	0.20	U	ug/L	0.2	0.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.75
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.5
12/9/2013 11:40	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	0.94	U	ug/L	0.94	3.8
12/9/2013 11:15	Field Blk 1	Priority Organic Pollutants	Bromodichloromethane	0.20	U	ug/L	0.2	0.8
12/9/2013 0:00	Field Blk 2	Priority Organic Pollutants	Bromodichloromethane	0.20	U	ug/L	0.2	0.8

EPA End Sheet

The Bioassay of City of Dunedin WWTF effluent sampled on December 9, 2013. NPDES #FL0021326.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 3 2 6 11	12 1 3 1 2 0 9	18 **B**	19 **S**	20 1

Remarks

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The Priority Pollutants Analysis of City of Dunedin WWTF effluent sampled on December 9, 2013. NPDES #FL0021326.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 3 2 6 11	12 1 3 1 2 0 9	18 **X**	19 **S**	20 1

Remarks

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Biological Analyses of City of Dunedin WWTF effluent sampled on December 9, 2013. NPDES #FL0021326.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 1 3 2 6 11	12 1 3 1 2 0 9	18 **S**	19 **S**	20 1

Remarks

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