

Effluent Quality Assessment

DuPont Trail Ridge Mine

Bradford County

NPDES # FL0000051

Sampled September 8, 10 and 12, 2014

December 2014

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

2014 FDEP Bureau of Laboratories Quality Manual

NELAC Certification No. E31780

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DuPont Trail Ridge Mine, 4641 State Road 230, Starke, Bradford County, Florida, 32091. NPDES #FL0000051

Facility Overview

DuPont Trail Ridge Mine is a heavy minerals mining facility. Mining wastewater, storm water and rainfall are treated in the facility's wastewater treatment system. 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 samples for toxicity testing were collected on September 8, 10, and 12, 2014. Effluent grab samples for biological and chemical analyses for this facility were collected on September 8, 2014. All samples were collected from the EFF-01 NPDES sampling point for Outfall D-001 by Jann Gruentzel and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix B).

The 7 day chronic definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_05, TA07_09, and TA08_01 through TA08_09 (see Appendix B).

Results

Chemistry Results (See Tables 1, 2, 3 and Appendix C)

- The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 0.04 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.
- The effluent's iron (1080 ug/L) exceeded Class III Fresh Water Criteria and the permitted limit. Turbidity and alkalinity were detected in the effluent at levels that comply with Class III Fresh Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Total suspended solids, fluoride, arsenic, total chromium and nickel were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).
- The overflow lab did not have enough sample volume to perform QC and analyze Radium 228, therefore, no Radium 228 results were reported.
- Nitrate+nitrite was detected in the field blank.

Algal Growth Potential (See Table 4 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 0.347 I mg dry wt/L 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, which represents a "problem" threshold for fresh receiving waters, imply nutrient enrichment. The analytical chemistry suggests that the effluent is phosphorus limited (Miller et al. 1978).

Toxicity Test Results (See Appendix C)

- Tests were performed September 9-16, 2014.

Ceriodaphnia dubia 7-day chronic definitive bioassay –	IC25: > 100%* NOEC: 100%*
Pimephales promelas 7-day chronic definitive bioassay –	IC25: > 100%* NOEC: 100%*

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

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

Conclusion

The effluent sample collected from the EFF-01 NPDES sampling point for this facility on September 8, 10 and 12, 2014, was not toxic to either test species during the 7 day chronic definitive bioassays. The AGP result was less than the "problem" threshold for fresh receiving waters, suggesting, in conjunction with low predicted AGP values, that nutrient enrichment is not an issue. The effluent's iron (1080 ug/L) exceeded both the Class III Freshwater criteria (62-302.530(38), F.A.C.) and the permitted limit.

For additional information concerning this sampling event, including bioassay bench sheets and SRT data, please contact Diane.Power@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.

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. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. 4th edition. EPA-821-R-02-013.

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

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

DuPont Trail Ridge Mine	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab 9/8/2014	Effluent Grab 9/10/2014	Effluent Grab 9/12/2014
Sample Depth	m	-	-	0.2	0.05	0.1
Temperature	°C	-	-	26.63	26.23	27.14
pH	SU	6.0 - 8.5	6.0 - 8.5	7.73	7.56	6.96
Specific Conductance	umhos/cm	≤ 1,275	-	224	207	199
Salinity	ppth	-	-	0.1 c	0.1 c	0.1 c
Dissolved Oxygen	%	≥ 34	-	63.4	58.9	66.2
Dissolved Oxygen	mg/L	≥ 5.0	-	5.08	4.85	5.53
Flow (6/1/2013 – 5/31/2014)	MGD	-	Report	4.78 r	-	-
Total Residual Chlorine	mg/L	≤ 0.01	-	< 0.03 UQ[1]	< 0.03 UQ[1]	< 0.03 UQ[1]

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
r - Annual average
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
1 - Measurement taken in the FDEP laboratory

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

DuPont Trail Ridge Mine	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab 9/8/2014
Ortho-phosphate	mg P/L	-	-	0.004 U
Total Phosphorus	mg P/L	-	-	0.006
Total Ammonia	mg N/L	-	-	0.04
Un-ionized Ammonia (calculated salinity)	mg/L	≤ 0.02 s	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	0.01 I
Total Kjeldahl Nitrogen	mg N/L	-	-	0.19 I
Organic Nitrogen	mg N/L	-	-	0.15 c
Total Nitrogen	mg N/L	-	-	0.2 c
Total Organic Carbon	mg C/L	-	-	2.7 A
Chlorophyll *a* - Corrected	ug/L	-	-	2.0 A
Phaeophytin	ug/L	-	-	0.40 U
CBOD, 5 day, N - inhibited	mg/L	-	-	0.47 I
Hardness	mg CaCO3/L	-	Report	77.7
Total Suspended Solids	mg/L	-	≤ 30.0	4 I
Turbidity	NTU	< 29 t	-	2.2
Color (true)	PCU	-	-	2.5 U
Alkalinity	mg CaCO3/L	≥ 20	-	23 A
Chloride	mg Cl/L	-	-	42
Fluoride	mg F/L	≤ 10.0	-	0.037 I
Sulfate	mg SO4/L	-	-	9.8
Radium 226	pCi/L	-	-	1.24 V
Radium 226-Counting Error	pCi/L	-	-	0.240 V
Bioassay - Water flea *(Ceriodaphnia dubia)*	% IC25	≥ 100	≥ 100 s	> 100
Bioassay - Fish (*Pimephales promelas*)	% IC25	≥ 100	≥ 100 s	> 100

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
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
V - Analyte was detected in both sample and method blank

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

DuPont Trail Ridge Mine	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab 9/8/2014 Class III Criteria	Effluent Grab 9/8/2014
Aluminum	ug/L	-	-	-	144
Arsenic	ug/L	≤ 50	-	≤ 50	0.34 I
Cadmium	ug/L	≤ 0.22 b	-	≤ 0.22 b	0.050 U
Calcium	mg/L	-	-	-	27.4
Chromium, Total [g]	ug/L	≤ 70 b	-	≤ 70 b	0.41 I
Copper	ug/L	≤ 7.5 b	-	≤ 7.5 b	0.50 U
Iron	ug/L	≤ 1,000		≤ 1,000	1080 e
Lead	ug/L	≤ 2.3 b	-	≤ 2.3 b	0.20 U
Magnesium	mg/L	-	-	-	2.3
Nickel	ug/L	≤ 42 b	≤ 128 b	≤ 42 b	0.77 I
Potassium	mg/L	-	-	-	1.0 I
Selenium	ug/L	≤ 5.0	-	≤ 5.0	0.20 U
Silver	ug/L	≤ 0.07	-	≤ 0.07	0.025 U
Sodium	mg/L	-	-	-	9.6
Zinc	ug/L	≤ 97 b	≤ 86 b	≤ 97 b	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
b - Value is calculated based on hardness, (62-302.530(3))
e - Value exceeds the Class III Water Quality Criteria or permit limits
g - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III
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

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

DuPont Trail Ridge Mine								
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 9/8/2014	*Pseudokirchneriella subcapitata*	0.347 I	1.9 ± 0.4	not applicable [2]	7.6 ± 1.5	2.6 ± 0.5	not applicable [2]	33.3

2 - non-detect in the analytical chemistry; predictions could not be made and N:P ratios could not be calculated.

Appendix A

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Ed Jamro	**Contact Number:** 904-256-1617
Facility Name (as it appears on permit): DuPont Trail Ridge Mine	**Former Names:** **NA**
NPDES Permit Number: FL0000051	**Permit Expiration Date:** September 6, 2016
Physical Address: 4641 State Road 230, Starke, FL 32091	
District: Northeast	**County:** Bradford
Function of Facility: Mining for heavy minerals	
Facility Type: Industrial	**Permitted Capacity (MGD):** 40.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 06/1/2013 through 05/31/2014 – 4.78 MGD mean flow (Monthly average flows ranged from 0 to 8.1 MGD)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): EFF-1 – nearest accessible point after final treatment but before actual discharge	
Description of Permitted Outfall(s): This discharge is an existing 40.0 MGD daily permitted maximum at Outfall D-001 to Alligator Creek (WBID 3606), a Class III fresh surface water. The point of discharge is located approximately at latitude 29* 55' 25" N, longitude 82* 03' 43" W.	

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

This heavy minerals mining wastewater treatment system provides acidification with ferric chloride, sulfuric acid, aluminum sulfate, or ferric sulfate to a pH between 3.0 and 3.5 standard units for flocculation of colloidal material followed by settling in a series of diked ponds, neutralization with hydrated lime to a pH between 6.0 to 8.5, and additional settling with final discharge to Alligator Creek.

Upon Department approval, polymer addition may be provided after neutralization for aluminum reduction prior to final discharge to Alligator Creek, at D-001, which flows west in Bradford County.

Storm water and rainfall from the mined areas are also collected and treated as described above. The treatment train consists of the addition of barium chloride to the wastewater at the location where ferric chloride, aluminum sulfate and or ferric sulfate is added (prior to the humate settling ponds).

A portion of the effluent is directed to the Southwest Quadrant Pond. The existing recycle line from D-001 was tapped and a pipeline was constructed to route approximately 400 gallons per minute (gpm) of the wastewater to an existing ditch which then discharges into the Southwest Quadrant Pond (location D-002) with eventual discharge into Blue Pond, which is the portion of Alligator Creek that flows south in Clay County.

This rerouting of final effluent is the result of an effort by *The Keystone Stakeholders* to help improve lake water levels in the Keystone Heights area.

Effluent Limits at D001

Parameter	Units	Max/Min	Effluent Limitations: Limit	Effluent Limitations: Statistical Basis	Monitoring Requirements: Frequency of Analysis	Monitoring Requirements: Sample Type	Monitoring Requirements: Monitoring Site Number	Notes
Flow	MGD	Max	40.0	Daily Maximum	Continuous	Recording Flow Meter with Totalizer	EFF-1	
		Max	Report	Annual Average				
		Max	Report	Monthly Average				
Solids, Total Suspended	mg/L	Max	20.0	Monthly Average	Weekly	24-hr FPC	EFF-1	
		Max	30.0	Daily Maximum				
Iron, Total Recoverable	mg/L	Max	1.0	Monthly Average	Weekly	24-hr FPC	EFF-1	
		Max	1.0	Daily Maximum				
Radium 226 + Radium 228, Total	pCi/L	Max	5.0	Daily Maximum	Annually	24-hr FPC	EFF-1	
pH	s.u.	Min	6.0	Daily Minimum	Continuous	Meter	EFF-1	See I. A. 3
		Max	8.5	Daily Maximum				
Zinc, Total Recoverable	ug/L	Max	See I.A.4	Daily Maximum	Monthly	Grab	EFF-1	See I.A.4
Nickel, Total Recoverable	ug/L	Max	See I.A.4	Daily Maximum	Monthly	Grab	EFF-1	See I.A.4
Hardness	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	
Chronic Whole Effluent Toxicity, 7-day IC25	percent	Min	100	Single Sample	Quarterly	Grab	EFF-1	See I.A.6
Acute Whole Effluent Toxicity, 96-hour LC50	Percent	Min	100	Single Sample	See I.A.6	Grab	EFF-1	See I.A.6 and I.A.7

The following items are from the Trailridge NPDES permit section I.A.:

3. The pH at EFF-1 shall be monitored continuously via a recorder. The pH values shall not deviate outside the range of 6.0 standard units to 8.5 standard units more than 1% of the time in any calendar month and no individual excursion shall exceed 60 minutes. An "excursion" is an unintentional and temporary incident in which the pH value of discharged wastewater exceeds the range set forth in the permit.

4. The limit for Zinc shall be calculated using the hardness of the water taken at the time of the zinc sample with this formula: $e^{\wedge(0.8473[lnH]+0.7614)}$. The nickel limit shall be calculated using this formula: $e^{\wedge(0.846[lnH]+1.1645)}$. **After 12 months of samples have been taken, the permittee may submit a written request to the Department for a reduction in the monitoring frequency or possibly a removal of the monitoring requirements.**

5. The discharge shall not contain components that settle to form putrescent deposits or float as debris, scum, oil, or other matter. *[62-302.500(1)(a)]*

6. **Chronic Whole Effluent Toxicity Monitoring:** The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001. When five (5) consecutive discharge days have not occurred from outfall D-001, the permittee shall conduct acute toxicity testing in accordance with Part I.A.7 of this permit in lieu of the chronic testing where sampling for chronic toxicity testing cannot be conducted as described below.

    a. Effluent Limitation

        i. In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]

        ii. For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

    b. Monitoring Frequency

        i. Routine toxicity tests shall be conducted once every three months, the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.

        ii. Upon completion of four consecutive, valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above, the permittee may submit a written request to the Department for a reduction in monitoring frequency to once every six months. The request shall include a summary of the data and the complete bioassay laboratory reports for each test used to demonstrate compliance. The Department shall act on the request within 45 days of receipt. Reductions in monitoring shall only become effective upon the Department's written confirmation that the facility has completed four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 5.a.(1) above.

        iii. If a test within the sequence of the four is deemed invalid based on the acceptance criteria in EPA-821-R-02-013, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency.

    c. Sampling Requirements

        i. For each routine test or additional follow-up test conducted, a total of three grab samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.

        ii. 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.

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

d. Test Requirements

i. 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.

ii. The permittee shall conduct a daphnid, *Ceriodaphnia dubia*, Survival and Reproduction Test, and a fathead minnow, *Pimephales promelas*, Larval Survival and Growth Test, concurrently.

iii. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.

iv. The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.2.3.

7. **Acute Whole Effluent Toxicity Monitoring:** The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-001. The permittee shall report MNR on the DMR for reporting purposes when acute whole effluent toxicity monitoring is not required.

a. Effluent Limitation

(1) In any routine or additional follow-up test for acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent. [Rules 62-302.200(1), 62-302.500(1)(a)4., 62-4.244(3)(a), and 62-4.241, F.A.C.]

b. Monitoring Frequency

(1) Routine acute toxicity tests shall be conducted during the required quarterly reporting period in lieu of the chronic toxicity testing as described in Part IA.6.

c. Sampling Requirements

(1) All tests shall be conducted on a single grab sample of final effluent.

d. Test Requirements

(1) Routine Tests: All routine acute tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: **100%, 75%, 50%, 25%**, and **12.5%** effluent.

(2) The permittee shall conduct 96-hour acute static renewal multi-concentration toxicity tests using the daphnid, ***Ceriodaphnia dubia***, and the bannerfin shiner, ***Cyprinella leedsi***, concurrently.

(3) All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th Edition, EPA-821-R-02-012. 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 acute toxicity testing in accordance with the revised method.

(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-012, Table 7.

8. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge stormwater and process wastewater from Outfall D-002 to Blue Pond. The discharge to D-002 is "report" only and the quantity of the discharge is not limited, unless it is

restricted by requirements from other regulatory authorities. Such discharge shall be limited and monitored by the permittee

PART I: Continued

Receiving Waters:	**Classification (indicate whether fresh or marine):**
Alligator Creek (WBID 3606)	Class III Fresh

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

See Sections 6 and 7 on Pages 3 and 4 of this facility summary.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
N/A – There are no active AO's or CO;'s.

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 & UNITS	LIMIT	RESULT
May 2013	Iron – mg/l	1.0 - MAX	1.18
June 16, 2013	pH - SU	6.0 - MIN	3.5 (for 330 minutes)
March 2014	pH – SU	8.5 - MAX	8.7 (for 40 minutes)

Describe previous FYI and WQBEL study:
There was no specific information available in the permit fact sheet.

Describe previous or current Enforcement Actions (including WLs):
None since 2006.

Describe any violations or problems noted in previous inspection:
Dec. 14, 2012 –Needed new NIST thermometer, needed to document ICV's and CCV's for pH meter, composite sampler tubing was crimped, log book filled out in pencil, Iron exceedances due to Tropical Storm Debby, flow meter calibration not available, monitoring wells needed labels and base cleaning

Discuss whether DMR trends within previous five years are improving or declining:
No trends in effluent pH, TSS, Nickel, and radium. Flow spikes in 2012 and 2013. Hardness is trending lower and effluent iron maximum concentrations are lower.

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

PART II: Sampling Event Information

Date(s) sample collected: September 08, 2014 (planned)	**Sampler(s):** Sharon Piltz, Pat O'Connor
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L): NA	**Total Residual Chlorine - after Disinfection (mg/L):** NA
Method of Chlorination: NONE	**Method of De-chlorination:** NONE

Flow During Sample Collection for each outfall (MGD):

Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):

Describe Discharge during Sampling Event:

☐ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**

Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:

Appendix B

Explanation of Measurements

(1) Quality Assurance and Quality Control

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

(3) Toxicity Bioassays

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

(4) Bacteriological Testing

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

(5) Chlorophyll *a* Content

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

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. 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 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(61) 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

F – Analyte was detected in both sample and field blank
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.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate

Appendix C

Chemical analysis of effluent

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
9/8/2014 10:20	DuPont Trailridge EFF Grab	AGP/LN	Algal Growth Potential	0.347 I	mg DryWt/L	0.3	0.9
9/8/2014 10:20	DuPont Trailridge EFF Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	2.0 A	ug/L	0.55	1.7
9/8/2014 10:20	DuPont Trailridge EFF Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.47 I	mg/L	0.2	2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 L	IC25		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Potassium	1.0 I	mg/L	0.3	1.2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Arsenic	0.34 I	ug/L	0.25	1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Iron	1.08E+03	ug/L	30	120
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Copper	0.50 U	ug/L	0.5	1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Aluminum	144	ug/L	5	20
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Selenium	0.20 U	ug/L	0.2	0.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Hardness	77.7	mg/L	0.4	1.6
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Lead	0.20 U	ug/L	0.2	0.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Sodium	9.6	mg/L	0.5	2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Zinc	5.0 U	ug/L	5	20
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Chromium	0.41 I	ug/L	0.3	1.2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Magnesium	2.3	mg/L	0.04	0.16
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Calcium	27.4	mg/L	0.075	0.3
9/8/2014 10:20	DuPont Trailridge EFF Grab	Metals	Nickel	0.77 I	ug/L	0.25	1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Turbidity	2.2	NTU	0.1	0.1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	TSS	4 I	mg/L	2	10
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Organic Carbon	2.7 A	mg C/L	0.5	1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Chloride	42	mg Cl/L	0.2	0.5
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	NO2NO3-N	0.01 I	mg N/L	0.004	0.01
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Sulfate	9.8	mg SO4/L	0.2	0.5
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Total-P	0.006	mg P/L	0.002	0.005
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Fluoride	0.037 I	mg F/L	0.035	0.1
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Alkalinity	23 A	mg CaCO3/L	0.65	2.5
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Kjeldahl Nitrogen	0.19 I	mg N/L	0.08	0.2
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Color (true)	2.5 U	PCU	2.5	6
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Ammonia-N	0.04	mg N/L	0.002	0.005
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Butylate	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Norflurazon	0.030 U	ug/L	0.03	0.12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Metribuzin	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Azinphos Methyl	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Metalaxyl	0.040 U	ug/L	0.04	0.16
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Hexazinone	0.030 UJ	ug/L	0.03	0.12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Metolachlor	0.060 U	ug/L	0.06	0.24
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Prometon	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Demeton	0.024 UJ	ug/L	0.024	0.096
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Naled	0.040 U	ug/L	0.04	0.16
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
9/8/2014 10:20	DuPont Trailridge EFF Grab	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.7
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.7
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.7
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Di-n-butyl phthalate	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Hexachlorobenzene	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Pentachlorophenol	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2-Chlorophenol	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Isophorone	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzidine	96 U	ug/L	96	380
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Diethyl phthalate	0.96 UJ	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Dimethyl phthalate	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2-Nitrophenol	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.7

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.7
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	58
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Phenol	0.96 U	ug/L	0.96	3.8
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.6 U	ug/L	9.6	38
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	58
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.38 U	ug/L	0.38	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
9/8/2014 10:20	DuPont Trailridge EFF Grab	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.77
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Sample Depth	0.2	m		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	pH	7.73			
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Dissolved Oxygen	5.08	mg/L		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	pH	7.73			
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Sample Depth	0.2	m		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Specific Conductance	224	umhos/cm		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Dissolved Oxygen	5.08	mg/L		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Specific Conductance	224	umhos/cm		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Temperature	26.63	C		
9/8/2014 10:20	DuPont Trailridge EFF Grab	Nutrients	Temperature	26.63	C		
9/10/2014 10:05	DuPont Trailridge EFF Grab	Nutrients	Temperature	26.23	C		
9/10/2014 10:05	DuPont Trailridge EFF Grab	Nutrients	Specific Conductance	207	umhos/cm		
9/10/2014 10:05	DuPont Trailridge EFF Grab	Nutrients	Dissolved Oxygen	4.85	mg/L		
9/10/2014 10:05	DuPont Trailridge EFF Grab	Nutrients	pH	7.56			
9/10/2014 10:05	DuPont Trailridge EFF Grab	Nutrients	Sample Depth	0.05	m		
9/12/2014 8:10	DuPont Trailridge EFF Grab	Nutrients	Temperature	27.14	C		

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
9/12/2014 8:10	DuPont Trailridge EFF Grab	Nutrients	Specific Conductance	199	umhos/cm		
9/12/2014 8:10	DuPont Trailridge EFF Grab	Nutrients	Dissolved Oxygen	5.53	mg/L		
9/12/2014 8:10	DuPont Trailridge EFF Grab	Nutrients	pH	6.96			
9/12/2014 8:10	DuPont Trailridge EFF Grab	Nutrients	Sample Depth	0.1	m		
9/8/2014 10:40	Field Blanks	Metals	Zinc	5.0 U	ug/L	5	20
9/8/2014 10:40	Field Blanks	Metals	Calcium	0.075 U	mg/L	0.075	0.3
9/8/2014 10:40	Field Blanks	Metals	Selenium	0.20 U	ug/L	0.2	0.8
9/8/2014 10:40	Field Blanks	Metals	Lead	0.20 U	ug/L	0.2	0.8
9/8/2014 10:40	Field Blanks	Metals	Copper	0.50 U	ug/L	0.5	1
9/8/2014 10:40	Field Blanks	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
9/8/2014 10:40	Field Blanks	Metals	Iron	30 U	ug/L	30	120
9/8/2014 10:40	Field Blanks	Metals	Nickel	0.25 U	ug/L	0.25	1
9/8/2014 10:40	Field Blanks	Metals	Aluminum	5.0 U	ug/L	5	20
9/8/2014 10:40	Field Blanks	Metals	Chromium	0.30 U	ug/L	0.3	1.2
9/8/2014 10:40	Field Blanks	Metals	Arsenic	0.25 U	ug/L	0.25	1
9/8/2014 10:40	Field Blanks	Metals	Sodium	0.50 U	mg/L	0.5	2
9/8/2014 10:40	Field Blanks	Metals	Hardness	0.40 U	mg/L	0.4	1.6
9/8/2014 10:40	Field Blanks	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
9/8/2014 10:40	Field Blanks	Metals	Potassium	0.30 U	mg/L	0.3	1.2
9/8/2014 10:40	Field Blanks	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/8/2014 10:40	Field Blanks	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
9/8/2014 10:40	Field Blanks	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
9/8/2014 10:40	Field Blanks	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
9/8/2014 10:40	Field Blanks	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
9/8/2014 10:40	Field Blanks	Nutrients	NO2NO3-N	0.005 I	mg N/L	0.004	0.01
9/8/2014 10:40	Field Blanks	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
9/8/2014 10:40	Field Blanks	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
9/8/2014 10:40	Field Blanks	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
9/8/2014 10:40	Field Blanks	Nutrients	Color (true)	2.5 U	PCU	2.5	6
9/8/2014 10:40	Field Blanks	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
9/8/2014 10:40	Field Blanks	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
9/8/2014 10:40	Field Blanks	Nutrients	Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5

EPA End Sheet

The Bioassay of DuPont Trail Ridge Mine effluent sampled on September 8, 10 and 12, 2014. NPDES #FL0000051.

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 0 0 0 5 1	11 12 14 09 08	18 B	19 S	20 2

Remarks

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The Priority Pollutants Analysis of DuPont Trail Ridge Mine effluent sampled on September 8, 2014. NPDES #FL0000051.

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
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Remarks

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Biological Analyses of DuPont Trail Ridge Mine effluent sampled on September 8, 2014. NPDES #FL0000051.

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 0 0 0 5 1	11 12 14 09 08	18 S	19 S	20 2

Remarks

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