

Effluent Quality Assessment
Indiantown Generating Plant

Industrial Wastewater Emergency Discharge Facility
(Indiantown Cogeneration, L. P.)

Martin County

NPDES #FL0183750

Sampled February 2, 2009

May 2009

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

Indiantown Generating Plant, Industrial Wastewater Emergency Discharge Facility, 13303 SW Silver Fox Lane, Indiantown, Martin County, Florida, 34956. NPDES #FL0183750. Effluent samples for this facility were collected on February 2, 2009.

Introduction

Indiantown Generating Plant, Industrial Wastewater Emergency Discharge Facility is a 330-megawatt cogeneration (electricity and steam) facility fueled by pulverized coal. The electricity produced is sold under contract to Florida Power and Light Company. The process steam is supplied to a citrus processing plant owned by Louis Dreyfus Citrus, Inc. The primary source for the cooling water makeup and other process waters is withdrawn from Taylor Creek/Nubbin Slough (TC/NS) at a rate of about 4.035 million gallons per day, and pumped to the facility via a 19-mile long pipeline. During dry periods or other emergencies, backup supply water can be provided by the onsite wells pumping from the upper zone of the Floridan aquifer. The facility is generally operated as a "zero discharge" facility where the process wastewaters and onsite stormwater are contained, treated and reused. Most of the heated water is lost as steam exported to the citrus processing plant and through evaporation at the cooling towers.

The permit authorizes the emergency discharges from the 26.5-acre lined cooling water makeup storage pond and the 8-acre lined wastewater storage pond. The cooling water storage pond has a storage capacity of about 32 million gallons and stores primarily fresh TC/NS canal water, stormwater, backup groundwater supply water, and relatively small side streams of miscellaneous process waters, and wastewaters diverted from the wastewater storage pond. The wastewater storage pond has a storage capacity of about 7.5 million gallons, and stores miscellaneous cooling process wastewaters and effluents from the evaporator system; air-preheater wash sump; ash handling area sump; and the water neutralization tank, etc., and also fresh TC/NS canal water, and backup groundwater supply water.

Wastewater treatment is achieved by the dilution effect from mixing with rainfall within the two storage ponds, before discharge through the control structures. Additional dilution is then achieved by mixing with the stormwater collected at the downstream onsite drainage ditch, before reaching the offsite receiving water.

Effluent disposal via surface water discharge:

Cooling Water Storage Pond – Discharge of cooling water makeup (canal water source) diluted with stormwater from Outfall D-004 is authorized after rainfall events exceeding the 25-year 72-hour storm event, or 9.5 inches of rainfall. Outfall D-004 is the outfall structure located at the southwest corner of the pond. Outfall D-004 is located approximately at latitude 27º 02' 25" N and longitude 80º 31' 14" W.

Process Wastewater Storage Pond – Discharge of process wastewater diluted with stormwater from Outfall D-005 is authorized after rainfall events exceeding the 100-year 72-hour storm event, or 12.2 inches of rainfall. Outfall D-005 is the control structure located at the west side of the pond. Outfall D-005 is located approximately at latitude 27º 02' 19" N and longitude 80º 30' 52" W.

Both Outfalls, D-004 and D-005, discharge first to internal onsite ditches that drain southerly, until they converge at a point by the property limit referenced as Outfall D-001. At that point, the open ditch enters an offsite unnamed canal that continues to flow southerly until it empties into the Class III freshwaters of the St. Lucie Canal. Outfall D-001 is located approximately at latitude 27º 02' 06" N and longitude 80º 31' 07" W.

The facility has no Administrative Orders, Consent Orders or mixing zones. Due to no discharge through Outfall D-004 and D-005 (even after Tropical Storm Fay), there is no Discharge

Monitoring Report (DMR) data for the past five years. (Facility information provided by Terry Davis of FDEP Southeast District.)

The facility has no permitted toxicity test requirements; however, a 48-hour acute screening test can provide 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.) if the mortality in 100% effluent is less than 20%.

Methods

Samples were collected at the D-004 overflow structure and from the D-005 overflow structure by Terry Davis (FDEP Southeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. These samples were composited prior to placing into sample containers for shipment. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 48-hour acute screening toxicity tests and the algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The pH (9.6 SU) of the bioassay sample exceeded the Method (USEPA 2002) recommended range of 6.0 - 9.0 SU. An aliquot of the bioassay sample was pH-adjusted to approximately pH 7.0 SU by the addition of 2.5 ml of 1.0N HCL per liter of sample. Acute screening bioassays were run with both the original sample and the pH-adjusted sample.

The apparent salinity of the effluent (1.59 parts per thousand (ppth) based on conductivity and temperature measurements) exceeded the limit (1 ppth salinity) for performing algal growth potential analyses with the freshwater species, *Pseudokirchneriella subcapitata* (DEP SOP TA08_01). Therefore, the AGP analysis was performed as a marine test. The AGP sample was salinity adjusted to meet the minimum salinity requirements of the marine test species.

Toxicity Test Results

Tests were performed February 3 - 5, 2009.

Ceriodaphnia dubia 48-hour acute screening bioassay –	LC_{50} > 100%, 5% mortality* in original 100% sample at 48 hours
Ceriodaphnia dubia 48-hour acute screening bioassay –	LC_{50} > 100%, 5% mortality* in pH-adjusted 100% sample at 48 hours
Cyprinella leedsi 48-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in original 100% sample at 48 hours
Cyprinella leedsi 48-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in pH-adjusted 100% sample at 48 hours

Neither the original bioassay sample nor the pH-adjusted sample was acutely toxic to the test organisms.

See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

*NOTE: In a 48-hour acute screening 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.).

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 8.9 mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz found 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). The ratio of inorganic nitrogen to ortho-phosphate in the effluent suggests that the effluent is nitrogen-limited; whereas, the ratio of total nitrogen to total phosphorus in the effluent suggests that the effluent is co-limited by both nitrogen and phosphorus. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test should be performed (Maloney et al. 1978).

Due to the apparent salinity of the AGP sample, a freshwater AGP test was not performed.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.16 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.

Arsenic, chromium-III, copper, iron, and nickel were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Hexazinone, lead, silver and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Aluminum was also detected in the effluent. The effluent chlorophyll (corrected) and phaeophytin concentrations were, respectively, 22 µg/L and 6.7 µg/L.

Selenium (8.75 µg/L), pH (9.7 SU) and conductivity (3,166 µmhos/cm) exceeded their respective Class III freshwater quality criterion of (≤ 5.0 µg/L; 62-302.530(58), F.A.C.), (6.0 – 8.5 SU; 62-302.530(51) (c), F.A.C.) and (≤ 1,275 µmhos/cm; 62-302.530(22), F.A.C.). It should be noted that the facility was not discharging and that the effluent as collected was not characteristic of the diluted (with storm water) effluent that would be discharged from the facility; therefore, the exceedances were not in violation of Class III water quality criteria.

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed.

Conclusion

The effluent samples collected from Outfall D-004 and Outfall D-005 then composited for analyses for this facility on February 2, 2009, and the pH-adjusted aliquot of effluent were not acutely toxic to either test species during the 48-hour acute screening bioassays. The effluent AGP result was less than the "problem" threshold for fresh receiving waters. Although effluent selenium, pH and conductivity exceeded their respective Class III freshwater quality criterion, the facility was not in violation of Class III water quality criteria nor permitted conditions due to the absence of effluent discharge from the facility to surface waters.

Literature Cited

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 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.

USEPA. 2002. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 5th edition. EPA-821-R-02-012.

Table 1. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus or samples collected from the Indiantown Cogeneration Plant, Industrial Wastewater Emergency Discharge Facility on February 2, 2009.

Indiantown Cogeneration Plant, Industrial Wastewater Emergency Discharge Facility			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent*	8.9	9.9	18.8

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the Indiantown Cogeneration Plant, Industrial Wastewater Emergency Discharge Facility on February 2, 2009.

Indiantown Cogeneration Plant, Industrial Wastewater Emergency Discharge Facility NPDES# FL0183750	Class III Criteria	Effluent Limits	Effluent Composite from D-004 and D-005	
Organic Constituents (µg/L)				
Hexazinone	-	-	0.14	I
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	340	
Arsenic	≤ 50	-	2.87	
Cadmium	≤ 0.8 b	-	0.03	U
Calcium (mg/L)	-	-	254	
Chromium-III	≤ 268.2 b	-	1.63	
Copper	≤ 30.5 b	-	14.4	
Iron	≤ 1,000	-	360	
Lead	≤ 18.6 b	-	0.31	I
Magnesium (mg/L)	-	-	24.7	
Nickel	≤ 168.5 b	-	4.62	
Selenium	≤ 5.0	-	8.75	*
Silver	≤ 0.07	-	0.013	I
Zinc	≤ 387.8 b	-	15	I
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.1	
Total Phosphorus	-	-	0.23	
Total Ammonia	-	-	0.16	
Un-ionized Ammonia	≤ 0.02 s	-	< 0.02	c
Nitrate and Nitrite	-	-	0.83	
Total Kjeldahl Nitrogen	-	-	3.5	
Organic Nitrogen	-	-	3.34	c
Total Nitrogen	-	-	4.33	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0		9.1	
pH (SU)	6.0 - 8.5	Report	9.7	*
Conductivity (µmhos/cm)	≤ 1,275	Report	3166	*
Temperature °C	-	-	23.1	
Total Residual Chlorine (mg/L)	≤ 0.01	-	≤ 0.03	QU£
Chlorophyll a (µg/L) - Corrected	-	-	22	
Phaeophytin (µg/L)	-	-	6.7	
Total Suspended Solids (mg/L)	-	Report	27	
Total Dissolved Solids (mg/L)	-	Report	2010	
Color (pt-Co)	-	Report	200	
Sulfate (mg/L)	-	Report	510	
Alpha, Total (pCi/L)	≤ 15	Report	6.3	
Alpha-Counting Error (pCi/L)	-	-	2.9	
Flow (MGD) DMR shows no flow during past year	-	Report	No discharge	
Hardness (mg $CaCO_3$)	-	-	735.95	c

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

c - Value is calculated

I - 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

* - Values are not characteristic of actual discharge (pond contents diluted with stormwater)

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-02-02-26
Indiantown CoGeneration Plant

Requester: Jennifer Paris
Field Report Prepared By: T. Davis
Collected By: T. Davis
Send Final Report To: ~~Todd Brown~~ T. Davis
Sampling Agency: SED - PSL Branch

Customer: SE-DIST
Project ID: FYI3
PMAS: 1143

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	D-004 & D-005	☐ Comp ☒ Grab Date 2/2/09 Time 1130 Eastern Central	Date Time Eastern Central	A
	Field ID 51-IC-1	Tot Res Chlorine (mg/L)	Diss Oxygen ~~(mg/L)~~ 10.72	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc) Fresh water-waste water	Temp (C) 23.14	pH 9.66	Sample Depth ☒ m ☐ ft .1
	Latitude o ' " .	Longitude o ' " .		Salinity (PPTh) ☒ Sp Conductance (umho/cm) 3,166 NPDES Number
				Comments Sample is composite from two sites. Pres = pH < 2 and/or ice

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Equip Blank	☐ Comp ☒ Grab Date 2/2/09 Time 1110 Eastern Central	Date Time Eastern Central	B
	Field ID 51-IC-2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc) water, d. i.	Temp (C)	pH	Sample Depth ☒ m ☐ ft .01
	Latitude o ' " .	Longitude o ' " .		Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
				Comments

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
	Latitude o ' " .	Longitude o ' " .		Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
				Comments

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
	Latitude o ' " .	Longitude o ' " .		Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
				Comments 2 biology reed intox by JD 1049 2.3.09

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
T Davis	2/2/09/1400	FedEX	Tahmoures Ebrahimi	02/03/09 9:35				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Indiantown Cogeneration, L.P.

Address: 13303 Silver Fox Lane

City: Indiantown **County:** Martin

Contact/District: Terry Purvis / SED

NPDES Permit #: FL 0183750

LIMS Job # TLH-20091-02-03-19 **LIMS Sample #:** 116307

Lims Data Entry: 2-17-09 MF Data Entry Verification: 2.17.09 JD

Sample Collection: Date: 2-2-09 Time: 11:30

Hold Time Start: Date: 2-2-09 Time: 11:30

Comments: ⑤ Transcription error BA 2-10-09
aliquot of sample was pH adjusted by the addition of HCL to reduce pH from 9.6 SU to approximate 7.0 SU. pH increased to 7.3 SU when test initially (loaded). MF 2-3-09

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: Screen
Static / Static Renewal / Flow-through
Test Duration: 48 96 Hours.

Test 1 validation: **Test 1:** SOP TA 07 01
Control survival ≥90%: Yes No
Temperature Range ≤3°C: Yes No

Test 2 validation: **Test 2:** SOP TA 07 02
Control survival ≥90%: Yes No
Temperature Range ≤3°C: Yes No

(√one)
Test 1 incubated in: ☑ Incubator #: 2 ☐ Waterbath #:
Test 2 incubated in: ☑ Incubator #: 2 ☐ Waterbath #:

Initial sample handling:
PH adjustment: yes no Initial pH: 9.6 NaOH N HCl 1 N 2.5 Drops ml Final pH: 7.0
Aeration: yes no Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~____bubbles/min
Salinity adjusted (Test 1): yes no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Salinity adjusted (Test 2): yes no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Dechlorination: yes no ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Light Intensity: 50 - 100 ft. candles
Photoperiod: 16 light 8 dark
Temperature Range °C: (If used)
Incubator # 2 min. 25.2 max. 25.9 mean 25.6
Incubator # ____ min. ____ max. ____ mean ____
Waterbath # ____ min. ____ max. ____ mean ____
Room B246 min. 23.7 max. 25.1 mean 24.4

Sample Validation:
Temperature: Shipped ≤6°C Yes No — IF Hand Delivered: Cooling (received °C < collected °C) Yes No
Holding Time: ≤36 Hours Yes No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures
Marshall Faircloth
Bruce Alexander
Kim M Spencer
Jane Daniel
Ankita Barker
Loretta C. Wolfe
REVIEWER

Batch #	1.30.09	2.3.09							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A		not measured	—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					<0.03	ACR	BA
Alkalinity (mg/L as $CaCO_3$):	83	130					138	ACR	BA
Hardness (mg/L as $CaCO_3$):	85	125					—	ACR	BA
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.017	MF	BA
Conductivity: µmhos mmhos	0.184	0.284					~~3.45~~ 3.16	BA	~~BA~~
Salinity (ppth):	—	—					1.61	BA	BA

V 1.6 7/8/08

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1163071 Test #: 1 SOP#:TA 07 01 Test Started: Date 2-3-09 Time: 13:00

Organism/Batch/Age: C. dubia / 4-09 / < 24 hours Test Ended: Date 2-5-09 Time: 12:30

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: DMW / 11-30-09 Test Duration: (48) hr / 96 hr

Food/Batch: [✓] YCT 6-18-08 [✓] P.sub 7-18-08

[ ] Artemia Lot#____ Batch #: 0hr____ 24hr____ 48hr____ 72hr____

Feeding: [✓] Prior to Test [✓] Prior to Renewal (NA MF 2-16-09) [✓] 0 hr [ ] 24 hr [✓] 48 hr (NA 2-16-09 MF) [ ] 72 hr

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	4			
pH adj. 100	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	4			
Loaded/Verified by: BA / MF		Checked by:	B	BA	MF			

m = missing d = dead BR/AR = Before/After Renewal

Comments: Sample pH adjusted with HCL. pH-adjusted result 5% mortality

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 5% LC50: >100% (to incorrectly assign 2-16-09) LC50 >100% MF 2/16/09

If Calculated: 95% CI______ Method______

V 2.3 7/15/2008

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1163071 Test #: 2 SOP#:TA 07 02 Test Started: Date 2-3-09 Time: 13:20

Organism/Batch/Age: C. leedsi / 2-3-09 / 12 days Test Ended: Date 2-5-09 Time: 12:15

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Well / 2-3-09 Test Duration: (48) hr 96 hr

Food/Batch: [ ] YCT____ [ ] P.sub____

[✓] Artemia Lot# 3 8438 Batch #: 0hr 15-09 24hr____ 48hr NA 2-16-09 MF 72hr____

Feeding: [ ] Prior to Test [ ] Prior to Renewal [✓] 0 hr [ ] 24 hr [✓] 48 hr [ ] 72 hr → NA 2-16-09 MF

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
			Test Hour					
Ctrl	A	C13	10	10	10			
	B	C14	10	10	10			
	C							
	D							
100%	A	C15	10	10	10			
	B	C16	10	10	10			
	C							
	D							
pH adj 100%	A	C17	10	10	10			
	B	C18	10	10	10			
	C							
	D							
Loaded/Verified by: BA / JD	Checked by:		BA	BA	JD			

m = missing d = dead BR/AR = Before/After Renewal

Comments: pH adjusted result 0% mortality LC50 > 100% MF 2-16-09

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0% LC50: >100%

If Calculated: 95% CI________ Method________

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Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

Page [illegible]

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1163071 **Test #:** 1 of 2

TEST SOP #: TA07_01 **Test Species:** ☒ *Ceriodaphnia dubia* ☐ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		B			
pH (S.U.)	7.7		8.0			
Temperature °C	24.0		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.8		8.2			
Conductivity (µmhos) mmhos	184		245			
Salinity ppth	–		—			
(initials) Measured by:	BA		KMS			
(initials) Recorded by:	BA		KMS			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		B			
pH (S.U.)	9.5		8.3			
Temperature °C	24.2		24.0			
Dissolved Oxygen mg/L aerate if < 4	8.2		8.1			
Conductivity (µmhos) mmhos	3160		3450			
Salinity ppth	—		—			
(initials) Measured by:	BA		KMS			
(initials) Recorded by:	BA		KMS			

Comments:

Salinity only needs measuring if saltwater.

Concentration pH adjusted 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		B			
pH (S.U.)	7.3		8.0			
Temperature °C	24.5		24.0			
Dissolved Oxygen mg/L aerate if < 4	8.2		8.3			
Conductivity (µmhos) mmhos	3280		3530			
Salinity ppth	–		—			
(initials) Measured by:	BA		KMS			
(initials) Recorded by:	BA		KMS			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1163071 **Test #:** 2 of 2

TEST SOP #: TA07_02 **Test Species:** ☐ *Ceriodaphnia dubia* ☑ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	8.2	8.0	8.2			
Temperature °C	24.0	24.0	24.0			
Dissolved Oxygen mg/L aerate if < 4	7.8	7.3	7.4			
Conductivity (µmhos) mmhos	284	296	296			
Salinity ppth	—	—	—			
(initials) Measured by:	BA	BA	KMM			
(initials) Recorded by:	BA	BA	KMM			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	9.4	8.9	8.5			
Temperature °C	24.7	24.0	24.0			
Dissolved Oxygen mg/L aerate if < 4	7.6	6.8	7.6			
Conductivity µmhos (mmhos)	3130 STD	3.12 MF STD	3.15 MF UNACCEPTABLY LOW			
Salinity ppth	—		—			
(initials) Measured by:	BA	BA	KMM			
(initials) Recorded by:	BA	BA	KMM			

Comments:

Salinity only needs measuring if saltwater.

Concentration pH ADJUSTED 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	7.2	8.0	7.8			
Temperature °C	24.9	24.0	24.0			
Dissolved Oxygen mg/L aerate if < 4	7.6	7.1	7.8			
Conductivity (µmhos) mmhos	3260	3280	3260			
Salinity ppth	—	—	—			
(initials) Measured by:	BA	BA	KMM			
(initials) Recorded by:	BA	BA	KMM			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Indian Town Cogeneration, L.P. Dates: Feb. 2 - Feb. 5, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Metller-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity	SM 2510 B	✓
			Salinity	SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	—
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	—

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Recorded by MF 2-16-09

V 1.1 6/12/08 MF

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Appendix C. SRT Bench Sheets and Statistical Analysis

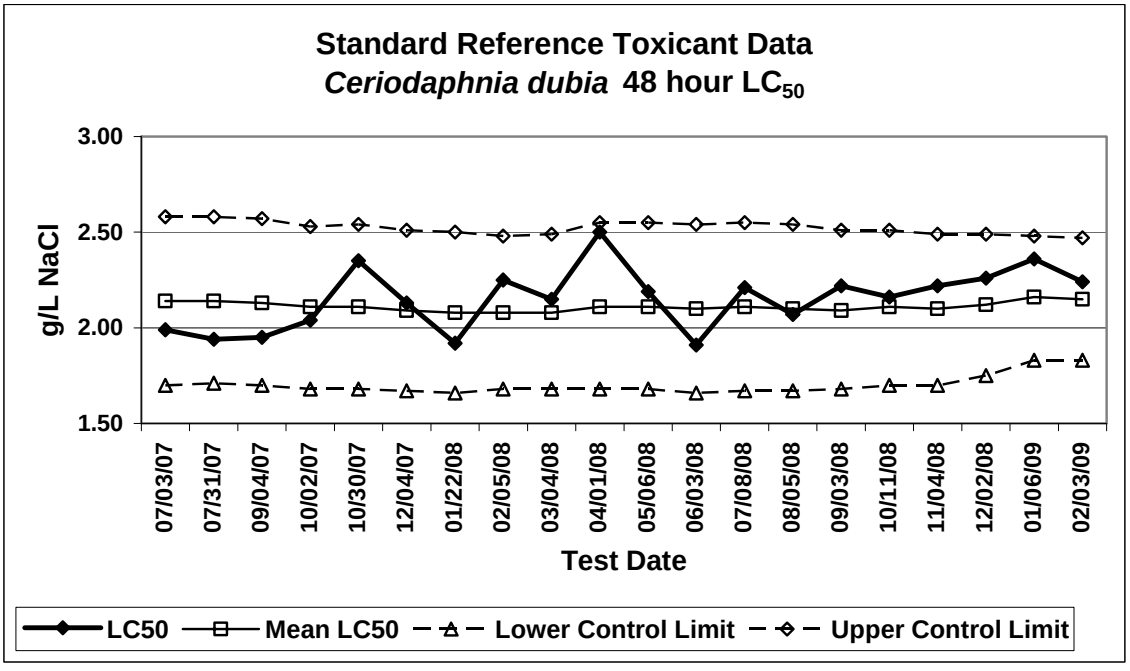
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/03/07	1.99	2.14	0.22	1.70	2.58
07/31/07	1.94	2.14	0.22	1.71	2.58
09/04/07	1.95	2.13	0.22	1.70	2.57
10/02/07	2.04	2.11	0.21	1.68	2.53
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54
09/03/08	2.22	2.09	0.21	1.68	2.51
10/11/08	2.16	2.11	0.20	1.70	2.51
11/04/08	2.22	2.10	0.20	1.70	2.49
12/02/08	2.26	2.12	0.19	1.75	2.49
01/06/09	2.36	2.16	0.16	1.83	2.48
02/03/09	2.24	2.15	0.16	1.83	2.47

Means are of the last 20 SRT tests.
Lower Control Limit = mean - 2 * Std Dev
Upper Control Limit = mean + 2 * Std Dev

CV = 7.47
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

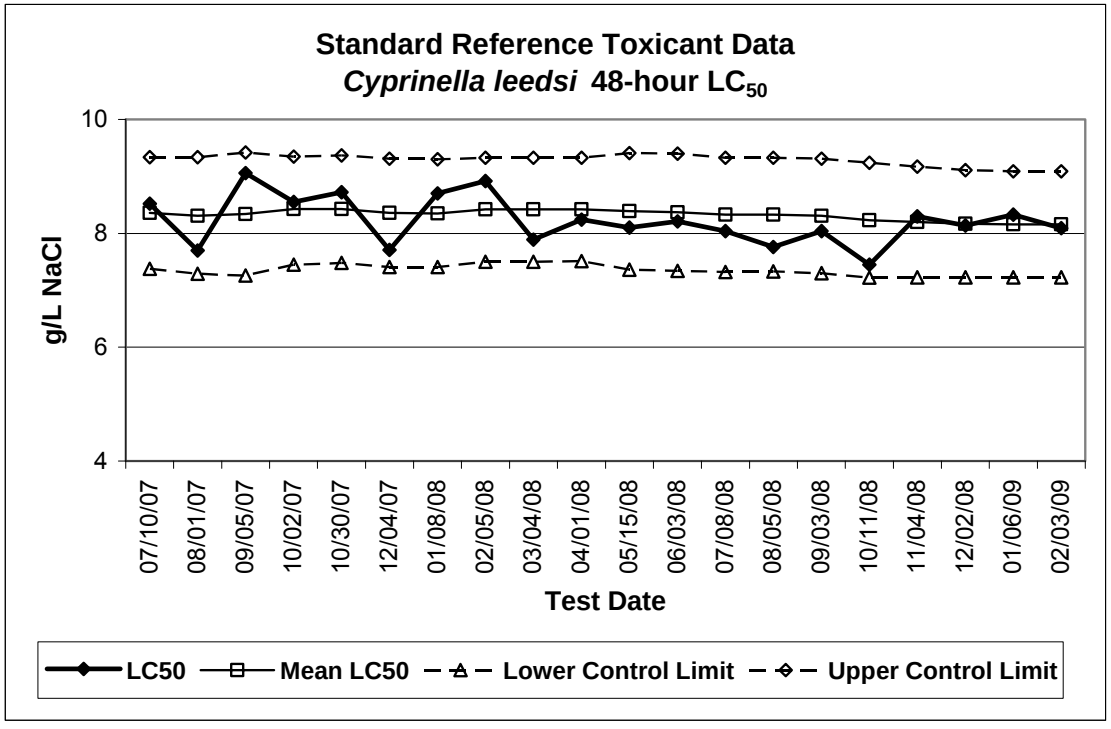
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/10/07	8.52	8.36	0.49	7.38	9.34
08/01/07	7.7	8.31	0.51	7.29	9.34
09/05/07	9.06	8.34	0.54	7.26	9.42
10/02/07	8.55	8.43	0.47	7.45	9.35
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33
09/03/08	8.04	8.31	0.50	7.30	9.31
10/11/08	7.45	8.23	0.51	7.22	9.24
11/04/08	8.3	8.20	0.48	7.23	9.17
12/02/08	8.14	8.17	0.47	7.23	9.11
01/06/09	8.33	8.16	0.47	7.23	9.09
02/03/09	8.09	8.16	0.47	7.23	9.09

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 5.7
EPA reference 75th quartile CV = 19%



Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one) ☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064 ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☐ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☐ renewal

Test Page 1 of 2

Diluent/ Batch #: DMW / 1-30-09

Toxicant/ Batch#: NaCl / 12-3-09

Organism Batch: [illegible] 4-09 Age: 24hr 06

Test Beginning: Date: 2-3-09 Time: 11:30

Test Ending: Date: 2-7-09 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	AGR
Hardness (mg/L as $CaCO_3$):	85	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: ☐ µmhos ☐ mmhos	184	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	6-18-08
☑ *P. subcapitata*	7-18-08
☐ Artemia Lot #	

Artemia Batch:

0 hr:	
24 hr:	
48 hr:	
72 hr:	

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: BA

Temperature Range °C:(if used)

Test Incubated in: Incubator #2 Waterbath # ____ Incubator # 2 min. 22.7 max. 25.9 mean 24.3

Light Intensity: 50-100 Ft. candles

Waterbath # ___ min. ____ max. ____ mean ____

Photoperiod: 16 hours Light / 8 hours dark

Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed

☑	Before test
☐	0 hr
☐	24 hr
☑	48 hr
☐	72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L ‰	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	4 1D	4 MF Transcription error MF 2/7/09
2.0	A	A	5	5	5	5	2 3D	2
	B	B	5	5	5	5	1 4D	1
	C	C	5	5	5	5	3 2D	3
	D	D	5	5	5	5	4 1D	4
2.5	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
3.0	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
4.0	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
Organisms loaded by: BA		Checked by:	BA	BA	BA	BA	MM	MF

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Loading Verified by: MF AR = after renewal

m = missing d = dead BR = before renewal hr = hour

Investigators' Signatures

Bruce Alexander

Marshall Faircloth

MM M. Spencer

Amelia Rankin

James Daniels

Reviewer: Loretta C. Wolfe

Comments: (A) Transcription error BA 2-9-09

(B) 95% confidence limits unreliable BA 2-9-09

Method: TSK

Statistics: LC50

	95% confidence intervals Lower	Upper
48 hour: 2.24	(B)	(A)
96 hour: 1.96	1.83	2.09

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☒ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 2-3-09 Time: 1130
Test Ending: Date: 2-7-09 Time: 0900

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.0	8.3	184	—
		24 hr	—	—	—	2930 (A)	—
	A	48 hr BR	7.7	24.0	8.1	195	
	m	48 hr AR	7.9	24.0	8.0	178	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.1	7.6	210	
1.5	M	0 hr	7.9	24.0	8.3	2930	
		24 hr	—	—	—	~~3200~~ (A)	
	A	48 hr BR	7.8	24.0	8.0	3200	
	m	48 hr AR	8.0	24.0	8.1	2930	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.3	7.8	3150	
2.0	M	0 hr	7.9	24.0	8.3	3870	
		24 hr	—	—	—	—	
	A	48 hr BR	7.8	24.0	7.9	4400	
	m	48 hr AR	8.0	24.0	8.2	3760	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.3	7.7	4070	
2.5	M	0 hr	7.9	24.0	8.3	4760	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	8.0	5430	
		48 hr AR					
		72 hr					
		96 hr					
3.0	M	0 hr	8.0	24.0	8.3	5610	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	7.9	6300	
		48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	8.0	24.0	8.3	7290	
		24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.7	8050	
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Brad Alexander
Marshall Fairchild
Kim M. Spencer
James Daniel

Reviewed By: Loretta C. Wolfe

Measured by:
0 hr: BA
24 hr: BA
48 hr BR: BA
48 hr AR: BA
72 hr: BA
96 hr: MF

Measure/record salinity for marine tests

Comments: (A) Transcription error BA 2-3-09

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Revised 07/15/2008 MF

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one) ☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064 ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☑ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: well 12-3-09 **Organism Batch:** 2-3-09 **Test Beginning:** Date: 2-3-09 Time: 1345

Toxicant/ Batch#: NaCl 12-2-09 Age: 12 hrs **Test Ending:** Date: 2-7-09 Time: 0915

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	130	TA06_08	AGR
Hardness (mg.L as $CaCO_3$):	125	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos (mmhos)	0.283	TA06_25	MF
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☑ Artemia Lot #	38438

Artemia Batch:
0 hr: 15-09
24 hr:
48 hr: 17-39
72 hr:

Chamber size: 1000 mL

Test volume: 500 mL per replicate

Concentrations prepared by: JD

Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ___ Incubator # 2 min. 22.7 max. 25.4 mean 24.3

Light Intensity: 50-100 Ft. candles

Waterbath # ___ min. ___ max. ___ mean ___

Photoperiod: 16 hours Light / 8 hours dark

Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed

☑	Before test
☐	0 hr
☐	24 hr
☑	48 hr
☐	72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	C1	10	10	10	10	10	10
	B	C2	10	9 D 10 BA	10	10	10	10
	♀	not applicable		(A)				
	♂	2/11/09 mf						
6	A	C3	10	9 D 10	10	10	10	10
	B	C4	10 (A)	9 D 10	10	10	10	10
	♀	not applicable						
	♂	mf 2/11/09						
7	A	C5	10	9 D	9	9	9	9
	B	C6	10	9 D	9	9	9	9
	♀	not applicable						
	♂	mf 2/11/09						
8	A	C7	10	6 D	6	6	6	6
	B	C8	10	7 BD	7	7	7	7
	♀	not applicable						
	♂	mf 2/11/09						
9	A	C9	10	0 10D	—	—	—	—
	B	C10	10	2 8D	2	2	2	2
	♀	not applicable						
	♂	mf 2/11/09						
10	A	C11	10	0 10D	—	—	—	
	B	C12	10	0 10D	—	—	—	
	♀	not applicable						
	♂	mf 2/11/09						
Organisms loaded by: BR		Checked by:	BA	BR/KHS	JD	BB	VMM	MF

Loading Verified by: MF AR = after renewal m = missing d = dead BR = before renewal hr = hour

Comments: A Transfer pipet error 2-4-09 BA

Investigators' Signatures

Marshall Faircloth

Bruce Alexander

VMM M. Spencer

Amelia Rankin

James Daniels

Reviewer: Loretta C. Wolfe

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.09	7.81	8.39
96 hour: 8.07	7.81	8.39

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Revised 7/15/2008 mf

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☑ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 2-3-09 Time: 1350
Test Ending: Date: 2-7-09 Time: 0915

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L %	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	7.9	24.0	7.9	0.283	
	B	24 hr	7.8	24.0	7.5	0.295	
	A ¢	48 hr BR	8.1	24.0	7.4	0.297	
	A ¢	48 hr AR	8.1	24.2	7.9	0.298	
	B	72 hr	7.8	23.1	7.0	0.308	
	A	96 hr	8.2	24.1	7.0	0.319	
6	A	0 hr	7.9	24.2	8.1	11.5	
	B	24 hr	7.9	24.0	7.3	11.6	
	A	48 hr BR	8.1	24.0	7.3	11.7	
	A	48 hr AR	8.1	24.2	7.4	11.4	
	B	72 hr	7.8	23.0	6.9	12.0	
	A	96 hr	8.1	24.1	7.0	12.4	
7	A	0 hr	7.9	24.1	8.2	12.5	
	B	24 hr	8.0	24.0	7.2	13.4	
	A	48 hr BR	8.1	24.0	6.8	13.4	
	A	48 hr AR	8.0	24.2	7.4	13.3	
	B	72 hr	7.8	23.2	6.5	13.9	
	A	96 hr	8.1	24.6	6.7	14.3	
8	A	0 hr	7.9	24.2	8.2	15.2	
	B	24 hr	7.9	24.0	6.8	15.3	
	A	48 hr BR	8.1	24.0	6.9	15.4	
	B	48 hr AR	8.0	24.1	7.4	15.0	
	B	72 hr	7.8	23.1	6.6	15.6	
	A	96 hr	8.1	24.0	6.6	16.2	
9	A	0 hr	7.9	24.2	8.1	16.9	
	B	24 hr	7.9	24.0	6.6	16.9	
	B	48 hr BR	8.1	24.0	7.0	16.9	
	B	48 hr AR	8.0	24.1	7.3	16.0	
	B	72 hr	7.8	22.7	6.7	16.9	
	B	96 hr	8.1	24.1	6.9	17.3	
10	A	0 hr	7.9	24.3	8.0	18.6	
	B	24 hr	7.9	24.0	6.2	18.6	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faircloth
Kimm. Spencer
Bruce Alexander
Amelia Rankin
James Dysart
Reviewed By: Anita C Wolfe

Measured by:
0 hr: MF
24 hr: BA
48 hr BR: KMS
48 hr AR: KMS
72 hr: BA
96 hr: MF

Measure/record salinity for marine tests

Comments:

PAGE 00 014

Revised 07/15/2008 MF

Appendix C. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	0
2.00	20	0
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.24
95% CONFIDENCE LIMITS ARE NOT RELIABLE.

***Cyprinella leedsi* Acute Standard Reference Toxicant Test**

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
6.00	20	0
7.00	20	2
8.00	20	7
9.00	20	18
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 8.09
95% LOWER CONFIDENCE: 7.81
95% UPPER CONFIDENCE: 8.39

Appendix D. Test Organism Receipt

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 12/2/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	150	4 DAYS	MS090129	25°C	7.9	20‰
Menidia beryllina	150	11 DAYS 11 DAYS SR	MS090122	25°C	7.9	20‰
						Hardness
Cyprinella leedsi	200	11 DAYS	CL090122	25°C	7.8	80mg/L
Pimephales promelas	150	9 DAY	FM090124	25°C	7.8	80mg/L

Packed by:

Shipped Via: FedEx

Notes:

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix E. Chemical Analyses performed on the effluent from the Indiantown Cogenerating Plant, Industrial Wastewater Emergency Discharge Facility combined Outfalls D-004 and D-005, sampled on February 2, 2009.

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:30	Effluent D-004 + D-005	AGP/LN	Algal Growth Potential	8.9		mg DryWt/L	3	3
2/2/2009 11:30	Effluent D-004 + D-005	Chlorophyll/Grain Size/BOD	Phaeophytin-a	6.7		ug/L	0.4	1.2
2/2/2009 11:30	Effluent D-004 + D-005	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	22		ug/L	0.92	2.8
2/2/2009 11:30	Effluent D-004 + D-005	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
2/2/2009 11:30	Effluent D-004 + D-005	Toxicology	Bioassay-Acute-Scrn-FW-Cdubia,LC50-pHadj	100	L	LC50		
2/2/2009 11:30	Effluent D-004 + D-005	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
2/2/2009 11:30	Effluent D-004 + D-005	Toxicology	Bioassay-Acute-Screen-FW-Fish,LC50-pHadj	100	L	LC50		
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Copper	14.4		ug/L	0.5	0.5
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Iron	360		ug/L	30	120
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Lead	0.31	I	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Chromium	1.63		ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Silver	0.013	I	ug/L	0.01	0.04
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Arsenic	2.87		ug/L	0.25	1
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Aluminum	340		ug/L	60	240
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Selenium	8.75		ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Nickel	4.62		ug/L	0.25	1
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Zinc	15	I	ug/L	5	20
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Calcium	254		mg/L	0.37	1.5
2/2/2009 11:30	Effluent D-004 + D-005	Metals	Magnesium	24.7		mg/L	0.04	0.16
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Color	200		PCU	20	20
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Sulfate	510		mg SO4/L	4	10
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	TDS	2010		mg/L	30	120
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	TSS	27		mg/L	4	16
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Ammonia-N	0.16		mg N/L	0.01	0.02
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Total-P	0.23		mg P/L	0.02	0.06
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Organic Carbon	43		mg C/L	1	5
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	Kjeldahl Nitrogen	3.5		mg N/L	0.08	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	NO2NO3-N	0.83		mg N/L	0.008	0.02
2/2/2009 11:30	Effluent D-004 + D-005	Nutrients	O-Phosphate-P	0.1		mg P/L	0.004	0.01
2/2/2009 11:30	Effluent D-004 + D-005	Overflow	Alpha, Total	6.3		pCi/L		
2/2/2009 11:30	Effluent D-004 + D-005	Overflow	Alpha-Counting Error	2.9		pCi/L		
2/2/2009 11:30	Effluent D-004 + D-005	Overflow	COD	110		mg/L	9.4	20

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Alachlor	0.59	UJ	ug/L	0.59	2.4
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Ethoprop	0.098	U	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Metribuzin	0.098	U	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Naled	0.78	U	ug/L	0.78	3.1
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Fonofos	0.098	U	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Parathion Methyl	0.098	U	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Aldrin	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Chlorpyrifos Methyl	0.098	U	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Prometryn	0.15	UJ	ug/L	0.15	0.6
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Gamma-BHC	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Phorate	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Endrin	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Methoxychlor	0.049	UJ	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Hexazinone	0.14	I	ug/L	0.098	0.39
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Metolachlor	0.49	UJ	ug/L	0.49	2

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Alpha-BHC	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Delta-BHC	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Heptachlor	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Toxaphene	0.73	U	ug/L	0.73	2.9
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	Beta-BHC	0.0098	U	ug/L	0.0098	0.039
2/2/2009 11:30	Effluent D-004 + D-005	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Endosulfan I	3.8	U	ug/L	3.8	15
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4,4'-DDE	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4,4'-DDT	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Endrin aldehyde	3.8	U	ug/L	3.8	15
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Endosulfan sulfate	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	beta-BHC	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Endrin	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	gamma-BHC	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Aldrin	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Heptachlor epoxide	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	alpha-BHC	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Endosulfan II	3.8	U	ug/L	3.8	15
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Dieldrin	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Dimethyl phthalate	9.5	UJ	ug/L	9.5	38

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Heptachlor	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	delta-BHC	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Priority Organic Pollutants	4,4'-DDD	1.4	U	ug/L	1.4	5.7
2/2/2009 11:30	Effluent D-004 + D-005	Field Parameter	Sample Depth	0.1		m		
2/2/2009 11:30	Effluent D-004 + D-005	Field Parameter	Specific Conductance	3166		umhos/cm		
2/2/2009 11:30	Effluent D-004 + D-005	Field Parameter	Temperature	23.14		C		
2/2/2009 11:30	Effluent D-004 + D-005	Field Parameter	pH	9.66				
2/2/2009 11:10	Equipment Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/2/2009 11:10	Equipment Blank	Metals	Chromium	0.2	U	ug/L	0.2	0.8
2/2/2009 11:10	Equipment Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
2/2/2009 11:10	Equipment Blank	Metals	Silver	0.01	U	ug/L	0.01	0.04
2/2/2009 11:10	Equipment Blank	Metals	Aluminum	60	U	ug/L	60	240
2/2/2009 11:10	Equipment Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
2/2/2009 11:10	Equipment Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
2/2/2009 11:10	Equipment Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/2/2009 11:10	Equipment Blank	Metals	Iron	30	U	ug/L	30	120
2/2/2009 11:10	Equipment Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/2/2009 11:10	Equipment Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
2/2/2009 11:10	Equipment Blank	Metals	Zinc	5	U	ug/L	5	20
2/2/2009 11:10	Equipment Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
2/2/2009 11:10	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
2/2/2009 11:10	Equipment Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
2/2/2009 11:10	Equipment Blank	Nutrients	NO2NO3-N	0.011		mg N/L	0.004	0.01
2/2/2009 11:10	Equipment Blank	Nutrients	Total-P	0.02	U	mg P/L	0.02	0.06
2/2/2009 11:10	Equipment Blank	Nutrients	Color	5	U	PCU	5	5

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:10	Equipment Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
2/2/2009 11:10	Equipment Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
2/2/2009 11:10	Equipment Blank	Overflow	Alpha, Total	0.6	U	pCi/L		
2/2/2009 11:10	Equipment Blank	Overflow	Alpha-Counting Error	0.5		pCi/L		
2/2/2009 11:10	Equipment Blank	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
2/2/2009 11:10	Equipment Blank	Pesticides	Chlorpyrifos Methyl	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Prometryn	0.14	UJ	ug/L	0.14	0.56
2/2/2009 11:10	Equipment Blank	Pesticides	Delta-BHC	0.0096	U	ug/L	0.0096	0.038
2/2/2009 11:10	Equipment Blank	Pesticides	Gamma-BHC	0.0096	U	ug/L	0.0096	0.038
2/2/2009 11:10	Equipment Blank	Pesticides	Methoxychlor	0.048	UJ	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Naled	0.77	U	ug/L	0.77	3.1
2/2/2009 11:10	Equipment Blank	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
2/2/2009 11:10	Equipment Blank	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Beta-BHC	0.0096	U	ug/L	0.0096	0.038
2/2/2009 11:10	Equipment Blank	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
2/2/2009 11:10	Equipment Blank	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Bromacil	0.19	UJ	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Alpha-BHC	0.0096	U	ug/L	0.0096	0.038
2/2/2009 11:10	Equipment Blank	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Fonofos	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Pesticides	Hexazinone	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
2/2/2009 11:10	Equipment Blank	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
2/2/2009 11:10	Equipment Blank	Pesticides	Aldrin	0.0096	U	ug/L	0.0096	0.038
2/2/2009 11:10	Equipment Blank	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Heptachlor	0.0096	U	ug/L	0.0096	0.038

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:10	Equipment Blank	Pesticides	Alachlor	0.58	UJ	ug/L	0.58	2.3
2/2/2009 11:10	Equipment Blank	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Ethoprop	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Pesticides	Metolachlor	0.48	UJ	ug/L	0.48	1.9
2/2/2009 11:10	Equipment Blank	Pesticides	Parathion Methyl	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
2/2/2009 11:10	Equipment Blank	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
2/2/2009 11:10	Equipment Blank	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
2/2/2009 11:10	Equipment Blank	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
2/2/2009 11:10	Equipment Blank	Pesticides	Metribuzin	0.096	U	ug/L	0.096	0.38
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	beta-BHC	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4,4'-DDE	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Dimethyl phthalate	10	UJ	ug/L	10	40
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Endosulfan sulfate	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	delta-BHC	1.5	U	ug/L	1.5	6.1

Appendix E. (continued)

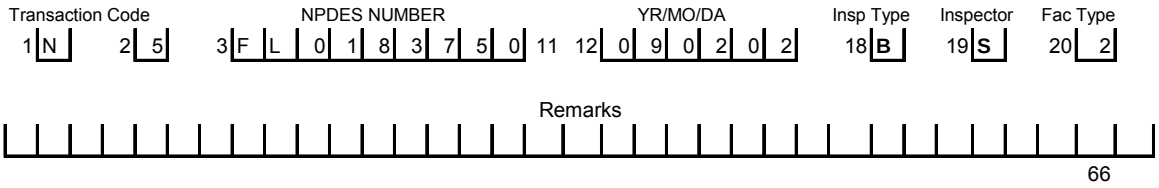
Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Aldrin	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Dieldrin	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Endosulfan II	4	U	ug/L	4	16
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Endosulfan I	4	U	ug/L	4	16
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Endrin aldehyde	4	U	ug/L	4	16
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4,4'-DDD	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Heptachlor	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Results	Remark	Units	MDL	PQL
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	alpha-BHC	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Heptachlor epoxide	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	gamma-BHC	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4,4'-DDT	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Endrin	1.5	U	ug/L	1.5	6.1
2/2/2009 11:10	Equipment Blank	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4
2/2/2009 11:10	Equipment Blank	Field Parameter	Sample Depth	0.1		m		

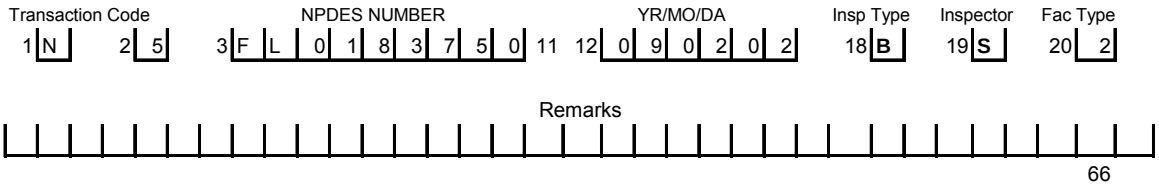
The Bioassay of Indiantown Cogenerating Plant, Industrial Wastewater Emergency Discharge Facility effluent sampled on February 2, 2009. NPDES #FL0183750.

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



The Priority Pollutants Analysis of Indiantown Cogenerating Plant, Industrial Wastewater Emergency Discharge Facility effluent sampled on February 2, 2009. NPDES #FL0183750.

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



Biological Analyses of Indiantown Cogenerating Plant, Industrial Wastewater Emergency Discharge Facility effluent sampled on February 2, 2009. NPDES #FL0183750.

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

