

Bioassays of

CF Industries, Inc. Tampa Ammonia Terminal

Hillsborough County

NPDES #FL0187313

Sampled November 29, 2005

February 2006

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

CF Industries, Inc. Tampa Ammonia Terminal, 3222 Maritime Boulevard, Tampa, Hillsborough County, Florida, NPDES #FL0187313. Effluent samples for this facility were collected on November 29, 2005.

Introduction

CF Industries, Inc. Tampa Ammonia Terminal is a bulk anhydrous ammonia storage and transfer facility located near the waterfront of Hooker's Point within the City of Tampa. The main function of this facility is to receive anhydrous ammonia by ship, store the refrigerated liquid product in a 38,000-ton tank, and distribute the product by pipeline, rail and semi-trailer truck. The facility does not have a design flow. Discharge from the facility is intermittent and rainfall dependent. The average daily flow (Outfall 002) from January 2005 through December 2005 was 0.02915 million gallons per day (MGD). The flow during the survey was 0.184 MGD.

The permittee is authorized to discharge conventional and industrial stormwater run-off from three outfalls. Outfall 002 (latitude 27°55'02" N, longitude 82°26'23" W) discharges contaminated and non-contaminated stormwater from various areas of the facility into a roadside ditch along the north side of GATX Drive (formerly known as Drawdy Drive) that flows into the Class III Freshwaters of an unnamed roadside ditch thence into Hillsborough Bay, a segment of Tampa Bay. Outfall SP1-N (latitude 27°55'06" N, longitude 82°26'25" W) and Outfall SP2-S (latitude 27°55'04"N, longitude 82°26'23" W), both permitted under a Multi-Sector Generic Permit (MSGP), discharge stormwater runoff only into the Port of Tampa's stormwater system, and then into Hillsborough Bay. Stormwater within the containment dike for the bulk ammonia tank is treated by settling and can be detained onsite, if necessary criteria for discharge are not met. Stormwater runoff from non-operational areas flows from the idled North and South Solar ponds directly to the stormwater treatment sewer system permitted, maintained, and monitored by the Tampa Port Authority.

There are no Administrative Orders or Consent Orders for this facility. There have been no permit violations or plant upsets within the past year. (Facility information provided by Jacki Champion of FDEP Southwest District Phosphate Management).

Methods

Samples were collected from Outfall 002 by Jackie Champion and Scott Rose (FDEP Southwest District Phosphate Management) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOP's are available on the web at: http://www.floridadep.org/labs/qa/sops.htm

The 48-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOP's TA07_01 through TA07_04 and TA08_01 through TA08_09. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp. While the 48-hour acute screening toxicity test does not reflect the permit required conditions, the Department uses it to provide reasonable assurance that the facility does not adversely affect waters of the state.

The toxicity language in the NPDES permit for this facility specifies that freshwater organisms (*Ceriodaphnia dubia, Cyprinella leedsi*) are to be used in toxicity tests. Due to the apparent salinity of the sample (1.8 parts per thousand (ppth)) and the availability of marine test organisms (*Americamysis bahia, Menidia beryllina)*, additional tests were performed on the effluent samples. Per conversation with FDEP District Personnel, the bioassay sample for the *Americamysis bahia* test was salinity adjusted from an apparent salinity of approximately 1.8 ppth to approximately 8.8 ppth using 40 Fathoms® artificial sea salts. The salt control used for this test was prepared by diluting artificial seawater (ASW) of 20 ppth salinity with well water to a salinity of approximately 1.8 ppth. The salinity of this solution was then adjusted with artificial sea salts to approximately 8.8 ppth. The purpose of the salt control was to confirm that there was no effect of adding artificial

sea salts to the sample. There was 5% mortality in the salt control of the *Americamysis bahia*. The salinity of the sample aliquot for the *Menidia beryllina* test was not adjusted.

An aliquot of the AGP sample was salt adjusted to meet the minimum salinity requirements of the marine test species.

Toxicity Test Results

Tests were performed November 30 – December 2, 2005.

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

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

Americamysis bahia 48-hour acute screening bioassay – LC_{50} > 100%, 15% mortality* in 100% sample at 48 hours

Menidia beryllina 48-hour acute screening bioassay – LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

The bioassay samples were not acutely toxic to either the freshwater or marine test organisms.

See Appendix 1 for bioassay bench sheets.

*NOTE: In a 48-hour acute screening test of 100% effluent, mortality of <20% provides reasonable assurance 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% mortality indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% provides reasonable assurance 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 26.4 mg dry wt/L of the freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited. The predicted AGP based on inorganic nitrogen concentrations was 10.79 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

The effluent Algal Growth Potential (AGP) for the saltwater species *Dunaliella tertiolecta* was not determined. Clumping of the algae within the test flasks precluded measuring cell density.

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected in the bioassay sample in the laboratory at a concentration of 0.0869 mg/L. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.2 mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Aluminum was detected in the effluent. Copper, lead, nickel, and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria. Selenium was detected between the laboratory method detection limit (MDL) and practical quantitation limit (PQL). The effluent concentration of iron (1,300 µg/L) and conductivity (2,302 µmhos/cm) exceeded their respective Class III freshwater quality criteria of 1,000 µg/L (62-302.530(39), F.A.C.) and 1,275 µmhos/cm (62-302.530(23), F.A.C.).

See Table 2 for results of analytes detected in the effluent, and corresponding limits.

See Appendix 2 for a complete list of chemical analyses performed.

Conclusion

The effluent sample collected from Outfall 002 for this facility on November 29, 2005, was not acutely toxic to either the freshwater or marine test species during the acute screen 48-hour bioassays. The effluent AGP result exceeded the "problem" threshold for fresh receiving waters, suggesting nutrient enrichment may be an issue. The effluent iron concentration and conductivity exceeded Class III fresh water quality criteria.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry wt/L) of Pseudokirchneriella subcapitata *for total soluble nitrogen (TSIN) and total nitrogen (TN) limitation and ratios of nitrogen to phosphorus for samples collected from CF Industries, Inc. Tampa Ammonia Terminal on November 29, 2005.*

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Samples	26.4	10.79 ± 2.158	181.79 ± 36.358	0.56	4.35

Table 2. Effluent limits, Class III Freshwater Criteria, and chemical data for samples collected from CF Industries, Inc. Tampa Ammonia Terminal on November 29, 2005.

CF Industries, Inc. Tampa Ammonia Terminal NPDES# FL0187313	Class III Freshwater Stds	Effluent Limits	Effluent Samples
Organic Constituents (µg/L)			
None Detected	-	-	-
Metals (µg/L unless otherwise noted)			
Aluminum	-	-	115 f
Arsenic	≤ 50	-	12 U
Cadmium	≤ 3.4 b	-	0.25 U
Calcium (mg/L)	-	-	171
Chromium-III	≤ 268.2 b	-	1 U
Copper	≤ 30.5 b	-	5.7
Iron	≤ 1,000	-	1,300
Lead	≤ 18.6 b	-	1.9
Magnesium (mg/L)	-	-	35.4
Nickel	≤ 168.5 b	-	4.7
Selenium	≤ 5	-	4 I
Silver	≤ 0.07	-	0.12 U
Zinc	≤ 387.8 b	-	13
Nutrients (mg/L)			
Ortho-phosphate	-	-	0.51
Total Phosphorus	-	-	1.1
Ammonia	-	Report	0.2
Unionized Ammonia	≤ 0.02	Report	< 0.02 c
Nitrate+Nitrite	-	-	0.084
Total Kjeldahl Nitrogen	-	-	4.7
Organic Nitrogen	-	-	4.5 c
Total Nitrogen	-	Report	4.78 c
General Physical and Chemical Parameters			
Alpha, Total (pCi/L)	≤ 15	-	7.4 U
Alpha-Counting Error (pCi/L)	-	-	4.9
Radium 226 (pCi/L)	-	-	0.9
Radium 226-Counting Error (pCi/L)	-	-	0.1
Radium 228 (pCi/L)	-	-	0.9 U
Radium 228-Counting Error (pCi/L)	-	-	0.5
Radium 226+228 (pCi/L)	≤ 5	-	0.9 c
Dissolved Oxygen (mg/L)	≥ 5	-	5.9
pH (S.U.)	6.0-8.5	6.5-8.5	7.5
Conductivity (umhos/cm)	≤ 1,275	Report	2,302
Temperature (C)	-	Report	21
Flow (MGD)	-	Report	0.0292 q
Hardness (mg/L)	-	-	572.8 c
Color (PCU)	-	-	150
TDS (mg/L)	-	-	2,080
TSS (mg/L)	-	-	9 I
Turbidity (NTU)	≤ 29 t	Report	7.8
Oil and Grease (mg/L)	≤ 5	-	1.9 I
Fluoride (mg/L)	≤ 10	-	1.6
Chloride (mg/L)	-	-	570
Sulfate (mg/L)	-	-	630

Value exceeds the Class III Fresh Water Quality Criteria (62-302, F.A.C.) and/or Effluent Limits

b - Value is calculated based on hardness

c - Calculated value

f - Aluminum was detected in the field blank at a concentration of 5 µg/L I

q - quarterly average

t - Shall not exceed 29 NTUs above background

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 minimum detection limit

FDEP Biology Section - Acute Screen Bioassay Bench Sheets

Facility: CF Industries – Tampa Ammonia Terminal
Address: 3222 Maritime Blvd.
City: Tampa County: Hillsborough
Contact/District: Jacki Champion / Southwest
NPDES Permit #: FL 0187313
LIMS Job #: TLH-2005-12-N-08 LIMS Sample #: 883951
Lims Data Entry: 12-08-05 ML Data Entry Verification: 12-8-05 SS

Sample Collection: Date: 11-29-05 Time: 11:25
Hold Time Start: Date: 11-29-05 Time: 11:25

Comments:

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.
Light Intensity : 50 - 100 ft. candles.
Photoperiod : 16 hours light 8 hours dark.
Initial sample handling:
PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops ml. Final pH: ____
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: ____

Test 1 validation: Test 1: SOP TA 07 ~~03~~ 01
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No
Test 2 validation: Test 2: SOP TA 07 ~~04~~ 02
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Temperature Range °C
Incubator # 3 Range 248-264
Room 0246 232-244
Waterbath NA

Sample Validation:
Temperature: Shipped ≤6°C (Yes) No 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
Sarah Fairclough
Marshell Fairclough
Erica Wiley
Jane Davis
Mike Wetherington
REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ Well Water	Salt Water ASW nSW Test 1	Salt Water ASW nSW Test 2	Other:	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L)	N/A	N/A	N/A	N/A		not measured	–	SS	
Lab Total Residual Cl2 (mg/L)	<0.03	<0.03				<0.03	HACH	SP	MF
Alkalinity (mg/L as $CaCO_3$)	89	142				251	HACH	EW/JD	MF
Hardness (mg/L as $CaCO_3$)	99	138.5				573	HACH	EW/JD	MF
Total Ammonia (mg/L as N)	<0.017	<0.017				~~2.049~~ (B)	DENVER	MF	EW
Salinity (ppth)	<1	<1				1.8	YSI / Mettler	SP	MF

(B) 0.0369 recalculated MF 11-30-05

V 1.4 9/12/05

Appendix 1. Bench Sheets (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 882951 | Test #: 1 | Test Started: Date 11-30-05 Time: 1500
Organism: C. dubia | SOP #: TA 07_01 | Test Ended: Date 12-2-05 Time: 1240
Organism Batch: 44-05 | Diluent/ Batch: DMW 135-05
Organism Age: <24 hrs | Food: YCT *P. subcapitata* *Artemia*
Chamber Size: ~~100~~ 30 mL | Batch: 04-05 06-05 –
Test Volume: 20 mL | Feeding: (Prior to test) - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	A	5	5	4 1D			
	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	5			
Organisms loaded by: SP		Checked by:	[redacted]	SP	MF			

Loading Verified by: MF

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:
% mortality in 100% sample: 0
LC_{50}: >100 If Calculated: 95% CI______ Method:______

Screening Tests:
Report LC50 as >100%, =100%, or <100%.
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

V 2.1 11/01/2005

Page 000022

Appendix 1. Bench Sheets (continued)

[redacted]

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 882951 | Test #: 2 | Test Started: Date 11-30-05 Time: 1400
Organism: C. leedsi | SOP #: TA 07_02 | Test Ended: Date 12-2-05 Time: 1330
Organism Batch: 35-05 | Diluent/ Batch: Well H2O 11-29-05
Organism Age: 13 days | Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL | Batch: – – GSL 536-90
Test Volume: 400 mL | Feeding: Prior to test - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	F1	5	5	5			
	B	F2	5	5	5			
	C	F3	5	5	5			
	D	F4	5	5	5			
100%	A	F5	5	5	5			
	B	F6	5	5	5			
	C	F7	5	5	5			
	D	F8	5	5	5			
Organisms loaded by: JP		Checked by:	[redacted]	JR	SP			

Loading Verified by: SP

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:

% mortality in 100% sample: 0

LC_{50}: >100 If Calculated: 95% CI________ Method:________

Screening Tests:

Report LC50 as >100%, =100%, or <100%.

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

V 2.1 11/01/2005

Page 000023

Appendix 1. Bench Sheets (continued)

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample #: 882351 Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *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			
pH (S.U.)	7.4		7.7			
Temperature °C	24.5		24.1	24.2		
Dissolved Oxygen mg/L	8.0		6.3			
Conductivity µmhos mmhos	0.190		0.198			
(initials) Measured by:	MF		MF			
(initials) Recorded by:	MF		MF			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B			
pH (S.U.)	7.8		8.2			
Temperature °C	24.5		24.3	24.6		
Dissolved Oxygen mg/L	6.9		6.7			
Conductivity µmhos mmhos	3.55		3.96			
(initials) Measured by:	MF		MF			
(initials) Recorded by:	MF		MF			

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V2.0 2/24/14

Page 1 of 1 24

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 882951 Test #: 2 of 2

TEST SOP #: TA07_02 Test Species: *Ceriodaphnia dubia* (*Cyprinella leedsi*) *Pimephales promelas* *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	C			
pH (S.U.)	8.2	8.3	8.3			
Temperature °C	25.0	24.5	24.2			
Dissolved Oxygen mg/L	8.1	6.3	7.4			
Conductivity µmhos (mmhos)	0.285	0.275	0.294			
(initials) Measured by:	MF	JH	JH			
(initials) Recorded by:	MF	JH	JH			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.8	8.2	8.3			
Temperature °C	25.0	24.3	24.3			
Dissolved Oxygen mg/L	6.8	6.0	7.8			
Conductivity µmhos (mmhos)	3.48	3.31	3.49			
(initials) Measured by:	MF	JH	JH			
(initials) Recorded by:	MF	JH	JH			

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V 2.0 2/24/04

FDEP Biology Section - Acute Screen Bioassay Bench Sheets

Facility: CF Industries – Tampa Ammonia terminal
Address: 3322 Maritime Blvd.
City: Tampa County: Hillsborough
Contact/District: Jacki champion / Southwest
NPDES Permit #: FL 0187313
LIMS Job #: TLH-2005-12-01-08 LIMS Sample #: 892951
Lims Data Entry: 12-05-05 MK Data Entry Verification: 12-8-05 BB

Sample Collection: Date: 11-29-05 Time: 1125
Hold Time Start: Date: 11-29-05 Time: 1125

Comments: mysid test sample salinity adjusted from original sample salinity of 1.8 parts per thousand (ppth) to ~ 8.8 ppth by the addition of artificial sea salts. MF 11-30-05 SALT control prepared by diluting 30 ppth salinity artificial seawater with well water to a salinity of ~ 1.8 ppth then adding seasalt to obtain a salinity of ~ 8.8 ppth. MF 11-30-05 meridia test was not salinity adjusted per district personnel. MF 12-15-05

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.
Light Intensity : 50 - 100 ft. candles.
Photoperiod : 16 hours light 8 hours dark.

Test 1 validation: Test 1: SOP TA 07 03
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07 04
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Initial sample handling:

PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops ml. Final pH: ____
Aeration : yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~ ____bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 1.8 Final Salinity: 8.8 (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: ____

Temperature Range °C
Incubator # 3 Range 24/26 4°C
Room 1246: 23.3 - 24.4°C
Waterbath: N/A

Sample Validation:
Temperature: Shipped ≤6°C (Yes) No 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
Jacki Pharland
Marshall Faircloth
Erin Wiggins
Jason Davis
Nicole Mitchell
REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ Well Water	Salt Water (ASW) NSW Test 1	Salt Water (ASW) NSW Test 2	Other Salted Control Test 1	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	N/A	N/A	N/A	N/A	— (C)	~~<0.03~~	not measured -	SP	MF
Lab Total Residual Cl2 (mg/L):			<0.03	<0.03	<0.03	<0.03	HACH	SP	MF
Alkalinity (mg/L as $CaCO_3$):			— (D)	(B)	191	251	HACH	JD	MF
Hardness (mg/L as $CaCO_3$):			—	(B)	—	573	HACH	JD	MF
Total Ammonia (mg/L as N):			<0.017	<0.017	<0.017	<0.017 (A)	DENVER	MF	SP
Salinity (ppth)			1.8	1.8	8.8	1.8	YSI / (Mettler)	SP	MF

(B) laberror - measurement not made mf on 12-30-05
(A) recording error 0.0869 MF 11-30-05
(C) transfer error - chlorine not measured SP

V 1.4 9/12/05

Appendix 1. Bench Sheets (continued)

[redacted]

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 882951 | Test #: 1 | Test Started: Date 11-30-05 Time: 1410
Organism: A. bahia | SOP #: TA 07_03 | Test Ended: Date 12-2-05 Time: 1300
Organism Batch: 27-05 | Diluent/ Batch: ASW 32ppt / 11-30-05 from ASW 16-05
Organism Age: 4days | Food: YCT — Batch: - | *P. subcapitata* — Batch: - | *Artemia* — Batch: GSL 536-90
Chamber Size: 400 mL
Test Volume: 250 mL | Feeding: ~~Prior to test~~ (circled) - Prior to renewal - ✓Daily

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	Tox 1	5	5	5			
	B	Tox 2	5	5	5			
	C	Tox 3	5	5	5			
	D	Tox 4	5	5	5			
Salt CTRL ~~100%~~ 30	A	Tox 5	5	5	5			
	B	Tox 6	5	5	5			
	C	Tox 7	5	5	4 1D			
	D	Tox 8	5	5	5			
100%	A	Tox 9	5	5	4 1M			
	B	Tox 10	5	4 1D	4			
	C	Tox 11	5	5	5			
	D	Tox 12	5	5	4 1D			
Organisms loaded by: LF		Checked by:	[redacted]	TJ	SP			

Loading Verified by: SP

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:
% mortality in 100% sample: 15
LC_{50}: >100 If Calculated: 95% CI______ Method:______

Screening Tests:
Report LC50 as >100%, =100%, or <100%.
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

V 2.1 11/01/2005

Page 000027

Appendix 1. Bench Sheets (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 882951 | Test #: 2 | Test Started: Date 11-30-05 Time: 1430
Organism: M. beryllina | SOP #: TA 07_C4 | Test Ended: Date 12-2-05 Time: 1330
Organism Batch: 29-05 | Diluent/ Batch: ASW (8ppt), 11-30-05 from ASW 16-05
Organism Age: 10 days | Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL | Batch: — — GSL 536-90
Test Volume: 400 mL | Feeding: ~~Prior to test~~ - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	5	5	5	5			
	B	5	5	5	5			
	C	5	5	5	5			
	D	5	5	5	5			
100%	A	5	5	5	5			
	B	5	5	5	5			
	C	5	5	5	5			
	D	5	5	5	5			
Organisms loaded by: JD		Checked by:	[redacted]	JD	SP			

Loading Verified by: SP

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:
% mortality in 100% sample: 0
LC_{50}: >100 If Calculated: 95% CI__________ Method:__________
Screening Tests:
Report LC50 as >100%, =100%, or <100%.
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

V 2.1 11/01/2005

Page 000028

[redacted]

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 882951 Test #: 1 of 2

TEST SOP #: TA07_03 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* (*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	C			
pH (S.U.)	8.2	7.9	7.8			
Temperature °C	24.6	24.0	24.6			
Dissolved Oxygen mg/L	8.1	4.8	5.0			
Conductivity µmhos (mmhos)	14.5	15.5	15.6			..
(initials) Measured by:	MF	JD	JD			
(initials) Recorded by:	MF	JD	JD			

Comments:

Concentration Salt CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.5	8.2	7.9			
Temperature °C	24.9	24.0	24.8			
Dissolved Oxygen mg/L	8.1	~~4.9~~ (B)	5.0			
Conductivity µmhos (mmhos)	15.2	15.8	16.4			
(initials) Measured by:	MF	JD	JD			
(initials) Recorded by:	MF	JD	JD			

Comments: (B) effl 5.9

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.4	8.3	8.1			
Temperature °C	24.9	24.0	25.1			
Dissolved Oxygen mg/L	6.9	4.5	4.4			
Conductivity µmhos (mmhos)	15.2	15.9	16.7			
(initials) Measured by:	MF	JD	JD			
(initials) Recorded by:	MF	JD	JD			

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V 2.0 2/24/04

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 882951 Test #: 2 of 2

TEST SOP #: TA07_ 04 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *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	C			
pH (S.U.)	8.1	8.3	8.2			
Temperature °C	24.8	24.0	24.9			
Dissolved Oxygen mg/L	8.1	5.5	7.1			
Conductivity µmhos (mmhos)	3.61	40	4.1			
(initials) Measured by:	MF	JD	JD			
(initials) Recorded by:	MF	JD	JD			

Comments:

Concentration Salt CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	NA					
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.9	8.2	8.3			
Temperature °C	24.9	24.0	24.7			
Dissolved Oxygen mg/L	6.9	5.6	7.6			
Conductivity µmhos (mmhos)	3.55	40	3.8			
(initials) Measured by:	MF	JD	JD			
(initials) Recorded by:	MF	JD	JD			

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						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V 2.0 2/24/04

Appendix 2. Chemical Analyses performed on the effluent from the CF Industries, Inc. Tampa Ammonia Terminal Outfall 002, sampled on November 29, 2005.

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 11:25	EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential	26.4	mg DryWt/L		0.3	0.9
11/29/2005 11:25	EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	No Result	mg DryWt/L			
11/29/2005 11:25	EFFLUENT	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	48	ug/L	A	1.9	5.8
11/29/2005 11:25	EFFLUENT	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	7.8	ug/L	A	1.9	5.8
11/29/2005 11:25	EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L		
11/29/2005 11:25	EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L		
11/29/2005 11:25	EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
11/29/2005 11:25	EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
11/29/2005 11:25	EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
11/29/2005 11:25	EFFLUENT	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	58
11/29/2005 11:25	EFFLUENT	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	2-Nitrophenol	0.96	ug/L	UJ	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	UJ	38	150
11/29/2005 11:25	EFFLUENT	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
11/29/2005 11:25	EFFLUENT	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
11/29/2005 11:25	EFFLUENT	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzidine	96	ug/L	U	96	380

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
11/29/2005 11:25	EFFLUENT	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
11/29/2005 11:25	EFFLUENT	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
11/29/2005 11:25	EFFLUENT	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
11/29/2005 11:25	EFFLUENT	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
11/29/2005 11:25	EFFLUENT	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
11/29/2005 11:25	EFFLUENT	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
11/29/2005 11:25	EFFLUENT	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 11:25	EFFLUENT	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
11/29/2005 11:25	EFFLUENT	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
11/29/2005 11:25	EFFLUENT	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
11/29/2005 11:25	EFFLUENT	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
11/29/2005 11:25	EFFLUENT	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
11/29/2005 12:20	BLANK	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
11/29/2005 12:20	BLANK	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
11/29/2005 12:20	BLANK	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	2-Nitrophenol	0.95	ug/L	UJ	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	UJ	38	150
11/29/2005 12:20	BLANK	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
11/29/2005 12:20	BLANK	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
11/29/2005 12:20	BLANK	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Benzidine	95	ug/L	U	95	380
11/29/2005 12:20	BLANK	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 12:20	BLANK	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
11/29/2005 12:20	BLANK	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
11/29/2005 12:20	BLANK	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
11/29/2005 12:20	BLANK	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
11/29/2005 12:20	BLANK	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
11/29/2005 12:20	BLANK	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
11/29/2005 12:20	BLANK	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
11/29/2005 12:20	BLANK	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
11/29/2005 12:20	BLANK	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
11/29/2005 12:20	BLANK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
11/29/2005 12:20	BLANK	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 12:20	BLANK	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	11
11/29/2005 12:20	BLANK	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
11/29/2005 12:20	BLANK	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
11/29/2005 11:25	EFFLUENT	GC-Water	Alachlor	0.58	ug/L	U	0.58	2.3
11/29/2005 11:25	EFFLUENT	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
11/29/2005 11:25	EFFLUENT	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
11/29/2005 11:25	EFFLUENT	GC-Water	Butylate	0.19	ug/L	UJ	0.19	0.76
11/29/2005 11:25	EFFLUENT	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Chlorpyrifos Methyl	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Diazinon	0.048	ug/L	UJ	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Ethion	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Ethoprop	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
11/29/2005 11:25	EFFLUENT	GC-Water	Fonofos	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Hexazinone	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Malathion	0.14	ug/L	UJ	0.14	0.56
11/29/2005 11:25	EFFLUENT	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
11/29/2005 11:25	EFFLUENT	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.9
11/29/2005 11:25	EFFLUENT	GC-Water	Metribuzin	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
11/29/2005 11:25	EFFLUENT	GC-Water	Naled	0.77	ug/L	U	0.77	3.1
11/29/2005 11:25	EFFLUENT	GC-Water	Norflurazon	0.14	ug/L	U	0.14	0.56
11/29/2005 11:25	EFFLUENT	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
11/29/2005 11:25	EFFLUENT	GC-Water	Parathion Methyl	0.096	ug/L	U	0.096	0.38
11/29/2005 11:25	EFFLUENT	GC-Water	Phorate	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
11/29/2005 11:25	EFFLUENT	GC-Water	Simazine	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.3
11/29/2005 12:20	BLANK	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
11/29/2005 12:20	BLANK	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
11/29/2005 12:20	BLANK	GC-Water	Butylate	0.19	ug/L	UJ	0.19	0.76

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 12:20	BLANK	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Diazinon	0.048	ug/L	UJ	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Ethion	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
11/29/2005 12:20	BLANK	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Malathion	0.14	ug/L	UJ	0.14	0.56
11/29/2005 12:20	BLANK	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
11/29/2005 12:20	BLANK	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.9
11/29/2005 12:20	BLANK	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
11/29/2005 12:20	BLANK	GC-Water	Naled	0.76	ug/L	U	0.76	3
11/29/2005 12:20	BLANK	GC-Water	Norflurazon	0.14	ug/L	U	0.14	0.56
11/29/2005 12:20	BLANK	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
11/29/2005 12:20	BLANK	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
11/29/2005 12:20	BLANK	GC-Water	Phorate	0.048	ug/L	U	0.048	0.19
11/29/2005 12:20	BLANK	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
11/29/2005 12:20	BLANK	GC-Water	Simazine	0.048	ug/L	U	0.048	0.19
11/29/2005 11:25	EFFLUENT	Metals-Water	Aluminum	115	ug/L		5	20
11/29/2005 11:25	EFFLUENT	Metals-Water	Arsenic	12	ug/L	U	12	48
11/29/2005 11:25	EFFLUENT	Metals-Water	Cadmium	0.25	ug/L	U	0.25	1
11/29/2005 11:25	EFFLUENT	Metals-Water	Calcium	171	mg/L		0.05	0.2
11/29/2005 11:25	EFFLUENT	Metals-Water	Chromium	1	ug/L	U	1	4
11/29/2005 11:25	EFFLUENT	Metals-Water	Copper	5.7	ug/L		1.2	5
11/29/2005 11:25	EFFLUENT	Metals-Water	Iron	1.30E+03	ug/L		10	40
11/29/2005 11:25	EFFLUENT	Metals-Water	Lead	1.9	ug/L		0.38	1.5
11/29/2005 11:25	EFFLUENT	Metals-Water	Magnesium	35.4	mg/L		0.01	0.04
11/29/2005 11:25	EFFLUENT	Metals-Water	Nickel	4.7	ug/L		1	4
11/29/2005 11:25	EFFLUENT	Metals-Water	Selenium	4	ug/L	I	2.5	10
11/29/2005 11:25	EFFLUENT	Metals-Water	Silver	0.12	ug/L	U	0.12	0.5
11/29/2005 11:25	EFFLUENT	Metals-Water	Zinc	13	ug/L		3	12
11/29/2005 12:20	BLANK	Metals-Water	Aluminum	5	ug/L	I	5	20
11/29/2005 12:20	BLANK	Metals-Water	Arsenic	4	ug/L	U	4	16
11/29/2005 12:20	BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
11/29/2005 12:20	BLANK	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2

Appendix 2. Chemical Analyses (continued)

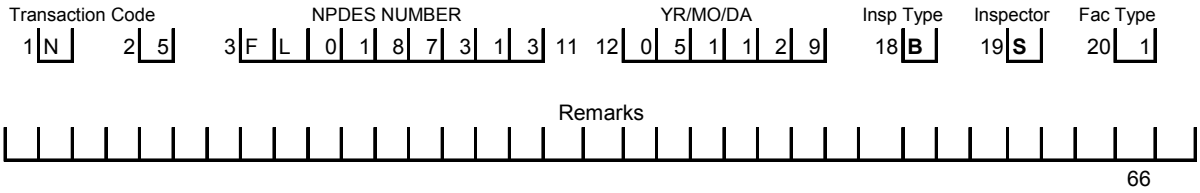
Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 12:20	BLANK	Metals-Water	Chromium	1	ug/L	U	1	4
11/29/2005 12:20	BLANK	Metals-Water	Copper	0.25	ug/L	U	0.25	1
11/29/2005 12:20	BLANK	Metals-Water	Iron	10	ug/L	U	10	40
11/29/2005 12:20	BLANK	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3
11/29/2005 12:20	BLANK	Metals-Water	Magnesium	0.01	mg/L	U	0.01	0.04
11/29/2005 12:20	BLANK	Metals-Water	Nickel	1	ug/L	U	1	4
11/29/2005 12:20	BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
11/29/2005 12:20	BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
11/29/2005 12:20	BLANK	Metals-Water	Zinc	3	ug/L	U	3	12
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Ammonia-N	0.2	mg N/L		0.01	0.02
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Chloride	570	mg Cl/L		10	25
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Color	150	PCU		25	25
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Fluoride	1.6	mg F/L		0.05	0.1
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Kjeldahl Nitrogen	4.7	mg N/L		0.16	0.4
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	NO2NO3-N	0.084	mg N/L		0.004	0.01
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	O-Phosphate-P	0.51	mg P/L		0.08	0.2
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Sulfate	630	mg SO4/L		10	25
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Sulfate		mg SO4/L			
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	TDS	2.08E+03	mg/L		15	60
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Total-P	1.1	mg P/L		0.04	0.12
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	TSS	9	mg/L	I	4	16
11/29/2005 11:25	EFFLUENT	Nutrients-Liquid	Turbidity	7.8	NTU		0.05	0.05
11/29/2005 12:20	BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
11/29/2005 12:20	BLANK	Nutrients-Liquid	Fluoride	0.05	mg F/L	U	0.05	0.1
11/29/2005 12:20	BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
11/29/2005 12:20	BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
11/29/2005 12:20	BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
11/29/2005 12:20	BLANK	Nutrients-Liquid	Sulfate	0.2	mg SO4/L	U	0.2	0.5
11/29/2005 12:20	BLANK	Nutrients-Liquid	Total-P	0.004	mg P/L	U	0.004	0.01
11/29/2005 11:25	EFFLUENT	Overflow	Alpha, Total	7.4	pCi/L	U		
11/29/2005 11:25	EFFLUENT	Overflow	Alpha-Counting Error	4.9	pCi/L			
11/29/2005 11:25	EFFLUENT	Overflow	Oil and Grease	1.9	mg/L	I		
11/29/2005 11:25	EFFLUENT	Overflow	Radium 226	0.9	pCi/L			
11/29/2005 11:25	EFFLUENT	Overflow	Radium 226-Counting Error	0.1	pCi/L			
11/29/2005 11:25	EFFLUENT	Overflow	Radium 228	0.9	pCi/L	U		
11/29/2005 11:25	EFFLUENT	Overflow	Radium 228-Counting Error	0.5	pCi/L			
11/29/2005 12:20	BLANK	Overflow	Alpha, Total	0.8	pCi/L	U		

Appendix 2. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
11/29/2005 12:20	BLANK	Overflow	Alpha-Counting Error	0.4	pCi/L			
11/29/2005 12:20	BLANK	Overflow	Radium 226	0.1	pCi/L			
11/29/2005 12:20	BLANK	Overflow	Radium 226-Counting Error	0.1	pCi/L			
11/29/2005 12:20	BLANK	Overflow	Radium 228	0.8	pCi/L	U		
11/29/2005 12:20	BLANK	Overflow	Radium 228-Counting Error	0.5	pCi/L			

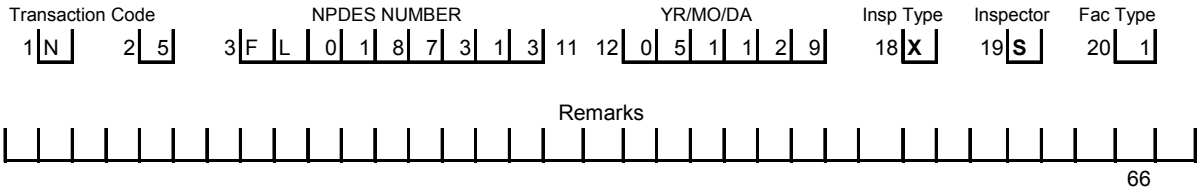
The Bioassay of CF Industries, Inc. Tampa Ammonia Terminal effluent sampled on November 29, 2005. NPDES #FL0187313.

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



The Priority Pollutants Analysis of CF Industries, Inc. Tampa Ammonia Terminal effluent sampled on November 29, 2005. NPDES #FL0187313.

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



Biological Analyses of CF Industries, Inc. Tampa Ammonia Terminal effluent sampled on November 29, 2005. NPDES #FL0187313.

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

