

Biological Assessment of

CF Industries, Inc. – Hardee Complex I (North Pasture Mine)

Hardee County

NPDES #FL0035271

Sampled March 21, 2006

September 2006

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection

Fifth Year Inspection Summary

Discharger:	CF Industries, Inc. – Hardee Complex I (North Pasture Mine)
Physical Address:	East of County Rd. 663, Wauchula, FL 33873
County:	Hardee
NPDES Number:	FL0035271
Permit Expiration:	May 10, 2006

Toxics Sampling Inspection **(XSI)**

Date Sampled: March 21, 2006

Results: Iron was detected in the effluent at a level that complied with the Class III Water Quality Criterion. Arsenic was detected in the effluent between the laboratory method detection limit and practical quantitation limit. Aluminum was detected in the effluent. Aluminum, iron, and lead were elevated in the Test Site samples compared to the Control Site samples, but levels of these metals were not high in the effluent. All metals in the Control and Test Site samples complied with Class III Water Quality Criteria. The effluent oil and grease concentration (17 mg/L) exceeded the Class III Water Quality Criterion of < 5.0 mg/L (62-302.530(50a), F.A.C.); however, the value was estimated. In an effluent sample taken on June 12, 2006, the oil and grease concentration complied with the Class III Water Quality Criterion. No organic priority pollutants were detected in the effluent.

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: March 21, 2006

Results: The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during the 48-hour acute screening bioassays.

Water Quality Inspection **(WQI)**

Date Sampled: March 21, 2006

Results: Total and fecal coliforms were not sampled for this inspection. The effluent concentration of total phosphorus (0.77 mg/L) complied with the permit limit. Total phosphorus and total nitrogen in the Test Site sample (0.77 mg/L, 1.07 mg/L, respectively) were higher than in the Control Site sample (0.59 mg/L, 0.78 mg/L, respectively). Control and Test Site levels of total phosphorus were in the 80^{th} and 90^{th} percentile of levels typical of Florida streams, respectively (Appendix H). At both sites, nitrate + nitrite levels ranked in the 70^{th} percentile and orthophosphate levels ranked in the 80^{th} percentile of levels typical of Florida streams (Appendix H).

Impact Bioassessment Inspection **(IBI)**

Date Sampled: March 21, 2006

Results: Effluent chlorophyll *a* (19 µg/L) was high, but chlorophyll *a* was not detected in the Control or Test Site samples. Algal growth potential (AGP) was above the 5 mg dry wt/L threshold of concern for freshwaters in both the Control (20.6 mg dry weight/L) and Test (20.2 mg dry weight/L) Site samples. The effluent AGP (3.52 mg dry weight/L) was below the threshold of concern. Phytoplankton and periphyton communities were unchanged from the Control Site to the Test Site. Hester-Dendy samplers showed minimal differences between macroinvertebrate communities at the Control Site and Test Site. The SCI score was higher at the Test Site (69) than at the Control Site (55), but both were in the "Fair" category.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions

Introduction

CF Industries, Inc. – Hardee Complex I (North Pasture Mine) is located in Hardee County, Florida (Appendix A). This facility is a reclaimed phosphate mine. Operations at the North Pasture Mine are limited to reclamation activities. This facility's primary wastewater treatment process involves clarification of process wastewater in the N-1 clay settling area. The water recirculation system receives and transports inputs from the reclamation sites and stormwater from the existing mine cuts, dismantled beneficiation plant site, and the North Office Complex. The effluent discharged from this industrial wastewater system consists of excess water received in the storage recirculation system during the rainy season (see Facility Summary in Appendix B). The effluent is discharged at Outfall 003 and then via an approximately 100-200 m-long swale into the Class III fresh water of Payne Creek, which flows into the Peace River (Appendix A). The design flow of the wastewater system is 14 million gallons per day (MGD). The mean monthly flow from February 2005 through January 2006 was 0.722 MGD. The actual mean flow during this survey was 1.15 MGD (Facility information from Jacki Champion of the FDEP Bureau of Mine Reclamation Phosphate Management Program).

Surface Water Quality Criteria and facility permit limits are listed in Table 1. According to the facility's monthly discharge monitoring reports, the plant has not had any exceedances in the past two years (Appendix B).

Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Payne Creek approximately 2.5 meters upstream of the discharge swale, upstream of visible backwater effects from the effluent) and a Test Site (located in Payne Creek immediately downstream of the discharge swale). Detailed methods and their relationship to Florida Administrative Code are given in Appendix C.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see http://www.floridadep.org/labs/qa/2002sops.htm for details) and met FDEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm).

The following were involved in this investigation: Jacki Champion and Scott Rose (FDEP Bureau of Mine Reclamation Phosphate Management Program), and FDEP Central Laboratory in Tallahassee. See Appendix D for the chain of custody form (sample submittal form). The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Shannan Bogdanov, and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix E. No organic pollutants were detected in the effluent. Iron was detected in the effluent (248 µg/L) at a level that complied with the Class III Water Quality Criterion (≤ 1,000 µg/L; 62-302.530(39), F.A.C.). Arsenic was detected in the effluent (1.2 µg/L) between the laboratory method detection limit (MDL) and practical quantitation limit (PQL). Aluminum was detected in the effluent (77 µg/L). The effluent oil and grease concentration (17 mg/L) exceeded the Class III Water Quality Criterion (≤ 5.0 mg/L; 62-302.530(50a), F.A.C.); however, the value was estimated due to a detection of 5.8 mg/L in the equipment blank (Table 1). In an effluent sample taken on June 12, 2006, the oil and grease concentration complied with the Class III Water Quality Criterion.
- More metals were detected in Test Site samples than in those from the Control Site, and several were detected at higher levels at the Test Site. Aluminum levels were higher at the Test Site (307 µg/L) than at the Control Site (102 µg/L). Iron levels were higher at the Test Site (496 µg/L) than at the Control Site (244 µg/L), but both levels complied with the Class III Water Quality Criterion (≤ 1,000 µg/L; 62-302.530(39), F.A.C.). Lead was detected at the Test Site (0.37 µg/L) at a level that complied with the Class III Water Quality Criterion (≤ 6.8 µg/L; 62-302.530(40), F.A.C.). Arsenic, copper, lead, and nickel were detected at the Control Site at levels between the MDL and PQL. Arsenic, copper, nickel, and selenium were detected at the Test Site between the MDL and PQL.
- Conductivity, pH, and dissolved oxygen in the effluent and at the Control and Test Sites complied with Class III Water Quality Criteria (62-302, F.A.C.) and facility permit limits.
- The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during 48-hour acute screening bioassays (See Table 1 for percent mortality, Appendix F for bioassay bench sheets, and Appendix G for supporting standard reference toxicant data). While the 48-hour acute screening toxicity tests do 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.
- Fecal and total coliforms were not measured in this investigation.
- The effluent total phosphorus concentration was 0.77 mg/L, which

Table 1. Effluent limits, Class III Freshwater Criteria, and chemical and toxicological data.

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	Class III Stds	Effluent Limits	Effluent Samples	Control Site	Test Site
Organic Constituents (µg/L)					
None Detected	-	-	-	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	77	102 A	307
Arsenic	≤ 50	-	1.2 l	1.7 l	1.8 l
Cadmium	≤ 1.8 b	-	0.05 U	0.05 U	0.05 U
Calcium (mg/L)	-	-	41.7	27.9 A	28.4
Chromium-III	≤ 140.4 b	-	2 U	2 U	2 U
Copper	≤ 15.5 b	-	0.25 U	0.28 l	0.36 l
Iron	≤ 1000	-	248	244 A	496
Lead	≤ 6.8 b	-	0.075 U	0.12 l	0.37
Magnesium (mg/L)	-	-	18.8	16.2 A	16.3
Nickel	≤ 86.4 b	-	1 U	1.3 l	1 l
Selenium	≤ 5	-	0.5 U	0.66 U	0.69 l
Silver	≤ 0.07	-	0.025 U	0.025 U	0.025 U
Zinc	≤ 198.6 b	-	3 U	3 U	3 U
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.54	0.44	0.42
Total Phosphorus	-	≤ 5.0 s	0.77	0.59	0.77
Ammonia	-	-	0.011 l	0.043	0.048
Unionized Ammonia	≤ 0.02	-	< 0.02 c	< 0.02 c	< 0.02 c
Nitrate+Nitrite	-	-	0.02 U	0.25	0.27
Total Kjeldahl Nitrogen	-	-	0.91	0.53	0.8
Organic Nitrogen	-	-	0.9 c	0.49 c	0.75 c
Total Nitrogen	-	-	0.91 c	0.78 c	1.07 c
General Physical and Chemical Parameters					
Alpha, Total (pCi/L)	≤ 15	-	2.1	-	-
Alpha-Counting Error (pCi/L)	-	-	1.3	-	-
Radium 226 (pCi/L)	-	-	0.2	-	-
Radium 226-Counting Error (pCi/L)	-	-	0.1	-	-
Radium 228 (pCi/L)	-	-	1 U	-	-
Radium 228-Counting Error (pCi/L)	-	-	0.6	-	-
Radium 226 + 228 (pCi/L)	≤ 5	≤ 5	0.7	-	-
Habitat Assessment	-	-	-	128	143
Dissolved Oxygen (mg/L)	≥ 5	≥ 5	7.4	9	8.5
pH (S.U.)	6.0-8.5 s	6.0-8.5 s	7.2	7.5	7.4
Specific Conductance (umhos/cm)	≤ 1275	≤1275	374	388	385
Temperature (C)	-	-	25.8	23.9	22.6
Chlorophyll *a* (µg/L)	-	-	19	0.85 U	0.85 U
Phaeophytin (µg/L)	-	-	1.5	1.5 U	1.5 U
Color (PCU)	-	-	40	-	-
Turbidity (NTU)	31.5 t	-	3.6	2.5	3.7
Total Non-volatile, Non-filterable Residue (FS; mg/L)	-	≤ 25 s	-	-	-
Total Dissolved Solids (TDS; mg/L)	-	-	249	-	-
Total Suspended Solids (TSS; mg/L)	-	≤ 60 s	5 l	4 U	10 l
Chloride (mg/L)	-	-	14	-	-
Fluoride (mg/L)	≤ 10	-	0.92	0.54	0.55
Sulfate (mg/L)	-	-	52	86	85
Oil and Grease (mg/L)	< 5	-	17 J	-	-
Flow (MGD)	-	-	1.15	-	-
Hardness (mg/L)	-	-	181.5 c	136.4 c	138 c
Toxicology Bioassays (48-hour acute screening, % mortality in 100% effluent)					
Fish (*Cyprinella leedsi)*	-	-	0%	-	-
Water flea (*Ceriodaphnia dubia)*	-	-	0%	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness of the effluent sample

c - Value is calculated

s - Single sample, daily maximum

t - Shall not exceed 29 NTUs above background

A - Value reported is the mean of two or more determinations

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

J - Estimated value

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

complied with the permit limit of 5 mg/L (Table 1). Effluent total phosphorus (0.77 mg/L) and total nitrogen (0.91 mg/L) concentrations contributed to higher levels at the Test Site than at the Control Site (Table 1). Test Site levels of total phosphorus and total Kjeldahl nitrogen (TKN) were in the 90th and 30th percentile of levels typical of Florida streams, respectively (Appendix H). Concentrations of total phosphorus and TKN at the Control Site ranked in the 80th and 10th percentiles of typical values for Florida streams, respectively.

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al.* 1978). Raschke and Shultz (1987) found that AGP above 5.0 mg dry wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The effluent sample AGP was below the problem threshold and measured 3.52 mg dry weight/L (Table 2). The AGP values for the upstream Control Site and downstream Test Site samples were 20.6 and 20.2 mg dry wt/L, respectively (Table 2). This indicates there may be nutrient enrichment in this portion of Payne Creek, but it is not solely due to the CF Hardee North Pasture Mine discharge. There was not evidence of growth inhibition in the AGP data (Table 2).

- The chlorophyll-*a* concentration in the effluent was 19 µg/L. This high chlorophyll *a* concentration is an indication that the effluent resides long enough in the open settling area with sufficient nutrients and light for the development of a dense phytoplankton community. However, chlorophyll-*a* was not detected at the Control or Test Sites (Table 1). We note that nutrients in the water column may or may not fuel algal production immediately, depending upon the sum of environmental conditions that limit algal growth at the site (e.g. pH, shading, turbidity).

Table 2. Measured and predicted algal growth potential (AGP) for total soluble nitrogen (TSIN) and total nitrogen (TN) limitation of Pseudokirchneriella subcapitata.

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Samples	3.52	0.42 ± 0.084	34.58 ± 6.916	0.02	1.18
Control Site	20.6	11.13 ± 2.226	29.64 ± 5.928	0.67	1.32
Test Site	20.2	12.08 ± 2.416	40.66 ± 8.132	0.76	1.39

Thus it is not necessarily contradictory for ambient nutrient levels to be high and for no chlorophyll to be detected in water samples.

- There were no differences in phytoplankton or periphyton algal community compositions between the Control and Test Sites (Table 3, Appendix J). Both communities were dominated by diatoms.
- Habitat assessment scores were 128 at the Control Site and 143 at the Test Site (Table 1, data sheets in Appendix I), indicating sufficient macroinvertebrate habitat at both sites.
- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed only minor differences between the Control Site and the Test Site (Table 4, Appendix K). *Polypedilum flavum*, a dipteran tolerant of nutrient-enriched conditions, dominated at both sites. The Test Site had a higher percentage of suspension feeders and lower percentage of surface deposit feeders than the Control Site, possibly due to the slightly increased turbidity and total suspended solids (TSS) at the Test Site.
- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 5 and 6 and in Appendix L. The Control Site SCI score of 55 and the Test Site SCI score of 69 placed them both in the "Fair" category. The higher score at the Test Site is consistent with the higher habitat assessment score at the Test Site. The Test Site had a greater amount and greater diversity of habitat (Appendix I), which resulted in higher numbers of desirable and sensitive macroinvertebrates (Table 5). There was no apparent shift in functional feeding group composition between the Control and Test Sites, though the dominant taxon shifted from a dipteran to a coleopteran. The high habitat assessment scores suggest that both sites should have received higher SCI scores (i.e., in the "Good" category); however, detectable levels of heavy metals and high nutrient levels in the creek could be limiting factors for sensitive taxa.

Table 3a. Periphyton composition

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	Control Site	Test Site
Number of Taxa	56	59
Percent Dominant Taxon	9.8	9.2
Dominant Taxon (name)	*Fragilariaceae*	*Fragilariaceae*
Number of Algal Units Identified	318	316
Percentage Composition		
Blue-green algae	3.1	3.2
Diatoms	96.2	96.2
Green algae	0.3	0.6
Cryptomonads	0.3	0

Summary

Oil and grease in the effluent (17 mg/L) exceeded the Class III Water Quality Criteria (≤ 5.0 mg/L; 62-302.530(50a), F.A.C.); however, the value was estimated due to a detection of 5.8 mg/L in the equipment blank. Aluminum, iron, lead, and selenium were elevated at the Test Site compared to the Control Site, but levels of these metals were not high in the effluent. The effluent total phosphorus concentration did not exceed permit limits; however total phosphorus values in this part of Payne Creek rank in the 80th-90th percentile of typical values for Florida Streams. The effluent from this facility contributes to that high level, but is not the only source; high phosphorus levels at the Control Site may result from upstream discharges by other facilities that also discharge into Payne Creek, including Mosaic Phosphates–Ft. Green Mine Complex, Seminole Electric Cooperative – Payne Creek Power Plant, and Hardee Power Station (Appendix A). The Algal Growth Potential was above the threshold of concern for both sites within Payne Creek, further indicating nutrient enrichment. The Control and Test Sites scored in the "Fair" category for the SCI, despite high habitat assessment scores, suggesting that sensitive species may be limited by factors such as high nutrients or metals from upstream sources.

Table 3b. Phytoplankton composition

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	Control Site	Test Site
Number of Taxa	54	56
Shannon-Weaver Diversity	4.73	4.63
Algal Density (number/cm²)	940	3,616
Percent Dominant Taxon	19.7	22.6
Dominant Taxon (name)	*Navicula germainii*	*Navicula germainii*
Number of Algal Units Identified	302	301
Percentage Composition		
Blue-green algae	2.90	0.7
Cryptomonads	0	0.3
Diatoms	94.9	98.3
Euglenoids	1	0.3
Green algae	1.3	0.3

Literature Cited

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Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.41	3.2
Number of Taxa	48	42
Florida Index	25	26
Number of EPT Taxa	11	14
Percent Dominant Taxon	42.4	36.2
Dominant Taxon (name)	*Polypedilum flavum*	*Polypedilum flavum*
Density of Individuals/m^2	7,152	5,577
Total Number of Individuals Counted	2,702	2,108
Community Composition: Percent of total		
Coleoptera	2	3.3
Diptera	75	55.7
Ephemeroptera	6.4	9.9
Oligochaeta	0	0.1
Trichoptera	15.5	30.1
Other	1	1
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0	0.1
Predators	5.6	5.1
Surface Deposit Feeders	38.9	28.5
Suspension Feeders	25.2	36.9
Scrapers	7.4	9.8
Shredders	22.8	19.6

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Table 5. Macroinvertebrate Dipnet Samples - Qualitative

CF Industries, Inc. Hardee Complex I (North Pasture Mine)	**Control Site**	**Test Site**
Stream Condition Index (value)	55	69
Stream Condition Index (word)	Fair	Fair
Stream Condition Index Metrics		
Number of Taxa	28	31
Number of Ephemeropter Taxa	2	5
Number of Trichoptera Taxa	3	5
Number of Clinger Taxa	5	5
Number of Long-lived Taxa	2	2
Number of Sensitive Taxa	1	2
Percent Dominant Taxon	12.2	21.9
Percent Suspension Feeders and Filterers	15.9	14.8
Percent of Tanytarsini Individuals	15.0	21.9
Percent of Very Tolerant Individuals	26.2	7.6
Total Number of Individuals	107	105
Community Composition: Percent of total		
Dominant Taxon (name)	*Polypedilum flavum*	*Dubiraphia vittata*
Dominant Taxon (group)	Diptera	Coleoptera
Coleoptera	24.3	33.3
Diptera	40.2	31.4
Ephemeroptera	2.8	13.3
Gastropoda	15	2.9
Odonata	0.9	1.9
Oligochaeta	4.7	4.8
Pelecypoda	6.5	1.9
Trichoptera	5.6	10.5
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	4.7	4.8
Predators	2.8	7.1
Surface Deposit Feeders	35	38.1
Suspension Feeders and Filterers	15.9	14.8
Scrapers	30.8	29.5
Shredders	10.8	3.8
Unknown	0	1

Table 6a. Stream Condition Index Metrics - Peninsula

CF Industries, Inc.-Hardee Complex I (North Pasture) Control Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	28	4.8	4.8
Number of Ephemeroptera Taxa	2	4.0	4.0
Number of Trichoptera Taxa	3	4.3	4.3
Number of Clinger Taxa	5	6.3	6.3
Number of Long-lived Taxa	2	5.0	5.0
Number of Sensitive Taxa	1	1.1	1.1
Percent Contribution of Dominant Taxon	12.2	9.5	9.5
Percent Suspension Feeders and Filterers	15.9	3.8	3.8
Percent of Tanytarsini individuals	15	8.4	8.4
Percent of Very Tolerant Individuals	26.2	1.9	1.9
Total Score			**55**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

Table 6b. Stream Condition Index Metrics - Peninsula

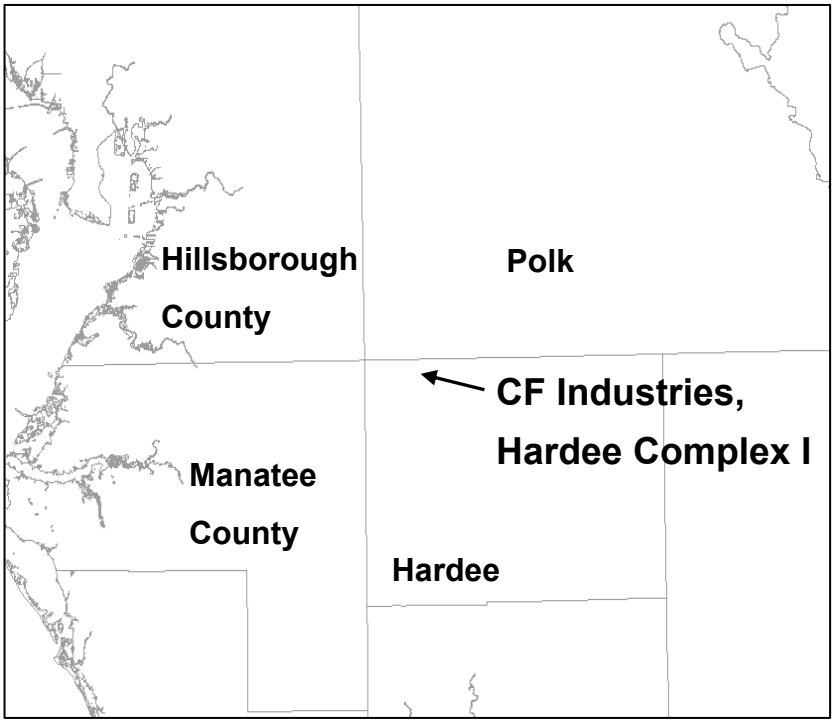
CF Industries, Inc.-Hardee Complex I (North Pasture) Test Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	31	6.0	6.0
Number of Ephemeroptera Taxa	5	10.0	10.0
Number of Trichoptera Taxa	5	7.1	7.1
Number of Clinger Taxa	5	6.3	6.3
Number of Long-lived Taxa	2	5.0	5.0
Number of Sensitive Taxa	2	2.2	2.2
Percent Contribution of Dominant Taxon	22	7.3	7.3
Percent Suspension Feeders and Filterers	14.8	3.5	3.5
Percent of Tanytarsini Individuals	21.9	9.5	9.5
Percent of Very Tolerant individuals	7.6	4.7	4.7
Total Score			**69**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

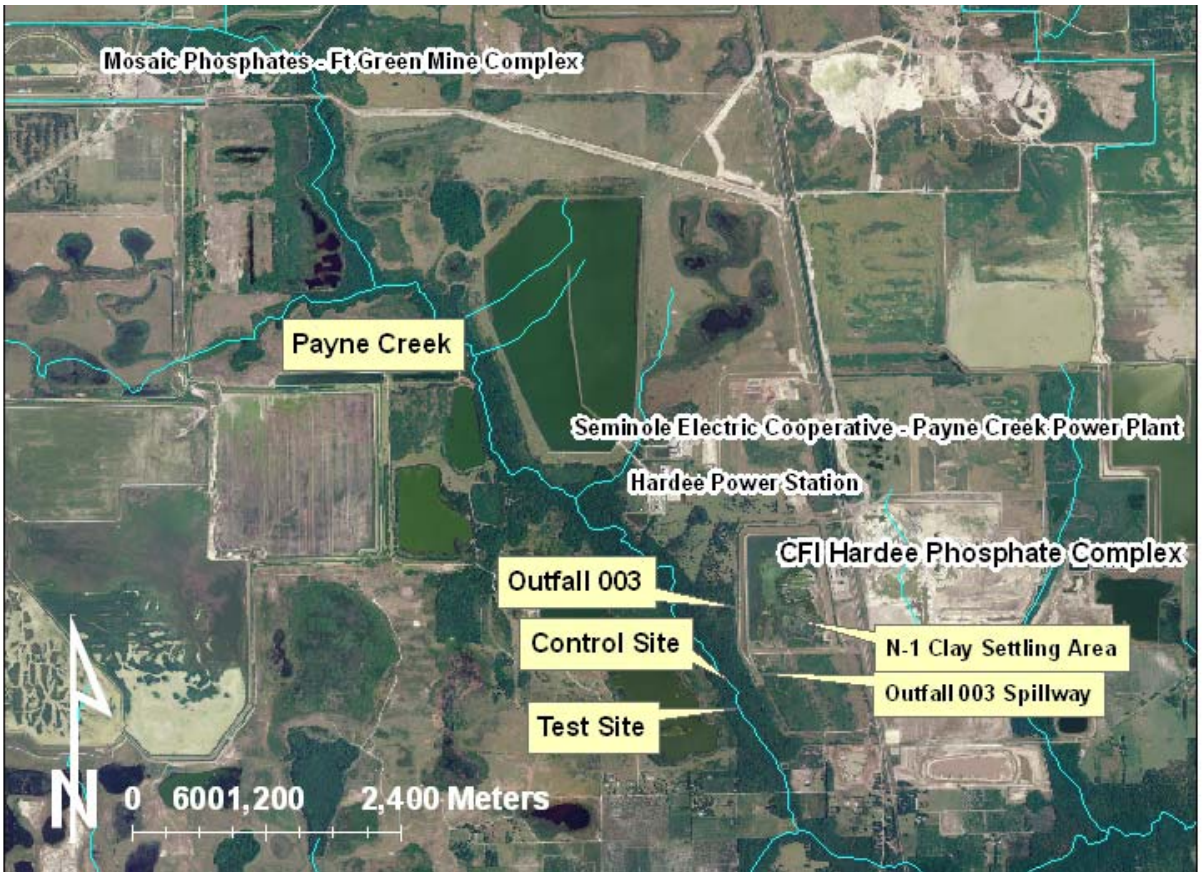
Appendices

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- Appendix C. Explanation of measurements
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- Appendix K1. Phytoplankton: Taxa list and number of individuals counted
- Appendix K2. Phytoplankton: Taxa list and density (number of individuals per mL)
- Appendix L1. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m^2)
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- Appendix M1. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix M2. Dipnet samples: Taxa list and number of macroinvertebrates counted

Appendix A

Map of Facility





Appendix B

State of Florida

Department of Environmental Protection
Facility Introduction & Summary

Facility Name (as it appears on permit): CF Industries, Inc.-Hardee Complex I (North Pasture Mine)		**Former Names:**
Physical Address: East of County Road 663 Wauchula FL 33873	**NPDES Permit No.:** FL0035271 **Expiration Date:** 5/10/06	**Prepared By:** Jacki Champion
County: Hardee	**District:** Phosphate Mgmt.	**Facility Type:** Phosphate Mine

Function of Facility: Mining phosphate, currently there is only reclamation activities at this site.

Sampling Location (actual permit designation of permitted sampling point):
Outfall 003 Lat. 27º37'41"N Long. 81º57'23"W

Description of permitted outfall: Half Moon Riser Weir Structure

Description of treatment process (if multiple discharge points, include a map or diagram of facility):

Operations at the North Pasture Mine are limited to approved reclamation activities. This facility's primary wastewater treatment process involves clarification of process wastewater in the N-1 clay settling area. The water recirculation system will continue to receive and transport inputs from the reclamation sites and stormwater from the existing mine cuts, dismantled beneficiation plant site and the North Office Complex.

The expected discharge from this industrial wastewater system will be based on excess water received in the storage recirculation system during the rainy season.

Receiving Waters: Payne Creek which flows to the Peace River	**Classification (indicate whether fresh or marine):** Class III fresh waters
Temperature (C): 25.83	**Design Flow:** 14 MGD
pH (SU): 7.18	**Mean Flow (for previous 12 months):** 0.722 MGD (2/05-1-06)
Conductivity (umhos/cm): 374	**Flow During Survey:** 800 Gallons per minute
Method of Chlorination NA	**Method of Dechlorination** NA
Dissolved Oxygen (mg/L): 7.36	**Total Residual Chlorine (mg/L) (after disinfection):** NA

Discharge is: Continuous X Intermittent Seasonal X Rainfall Dependent Other

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

2. The permittee shall initiate the series of tests described below, beginning in the first testing period following the effective date of this permit, to evaluate whole effluent toxicity of the discharge from Outfall 003. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-90/027F, or the most current edition. The control water and dilution water used will be moderately hard water as described in EPA/600/4-90/027F, Table 6, or the most current edition. A standard reference toxicant (SRT) quality assurance (QA) acute toxicity test shall be conducted concurrently or no greater than 30 days before the date of the "routine" test, with each species used in the toxicity tests. The results of all toxicity tests shall be submitted with the discharge monitoring report (DMR). Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

a. (1) The permittee shall conduct 96-hour acute static renewal toxicity tests using the daphnid, Ceriodaphnia dubia, and the bannerfin shiner, Cyprinella leedsi. All tests will be conducted on single grab samples final effluent and on a control.

(2) If control mortality exceeds 10% for either species in any test, the test for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species. If, in any separate grab sample test, 100% mortality occurs prior to the end of the test, and control mortality is less than 10% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable acute toxicity.

b. (1) The toxicity tests specified above shall be conducted once, during the winter (dry season) months of December, January and February, but not to exceed one test per year. The sample shall be collected only during an actual discharge event. If no discharge occurs during these months, acute toxicity testing shall be conducted for the first discharge following the specified testing period. These tests are referred to as "routine" tests. The permittee shall monitor the toxicity, as described above, for the life of this permit.

Results from "routine" tests shall be reported according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition), and shall be submitted to:

Florida Department of Environmental Protection
Bureau of Mine Reclamation
Phosphate Management
8407 Laurel Fair Circle
Tampa, FL 33610-7355

c. (1) All "routine" tests shall be conducted using a control (0% effluent) and a test concentration of 100% final effluent.

(2) Mortalities of greater than 50% in a 100% effluent in any "routine" sample or an LC50 of less than 100% effluent in any additional definitive test will constitute a violation of these permit conditions, and Rule 62-302.200(1), Rule 62-302.500(1)(d) and Rule 62-4.244(3)(a), F. A. C.

d. (1) If unacceptable acute toxicity (greater than 20% mortality of either test species in any grab sample test) is found in a "routine" test, the permittee shall conduct three additional tests on each species indicating unacceptable toxicity. The first additional test will include four grab samples taken as described in a.1. and run as four separate definitive analyses. The second and third additional definitive tests will be run on a single grab sample collected on the day and time when the greatest toxicity was identified in the "routine" test. Results for each additional test will include the determination of LC50 values with 95% confidence limits.

(2) The first additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. The dilution series may be modified in the second and third test to more accurately identify the toxicity, such that at least two dilutions above and two dilutions below the target toxicity and a control (0% effluent) are run.

(3) For each additional test, the sample collection requirements and the test acceptability criteria specified in Section a. above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until *three* additional, valid tests are completed. The additional tests will be used to determine if the toxicity found in the "**routine" test is still present.**

(4) Results from additional tests, required due to unacceptable acute toxicity in the "routine" tests, shall be submitted in a single report prepared according to EPA/600/4-90/027F, Section 12, or the most current edition and submitted within 45 days of completion of the third additional, valid tests. Upon completion of the third additional test, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the unacceptable acute toxicity.

(5) If acute toxicity is found, chronic toxicity testing may be required.

Administrative or Consent Orders: None

Facility Mixing Zone Details: None

List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: None

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:
A DEP FYI was done at this site in November of 1993. The phosphorous at the outfall was higher than the receiving stream, however the test site was only slightly higher than the control. Elevated Chlorophyll A was found, but the algal community was similar between the test and control. AGP results were below 5. Macroinvertebrate results indicated no degradation. No toxicity indicated.

Discuss MOR trends to prior data; is trend improving or declining:

List Effluent Limits (include additional sheets as necessary): BELOW

Parameters (units)	**Discharge Limitations**			**Monitoring Requirements**	
	Daily Minimum	**Monthly Average**	**Daily Maximum**	**Sampling Frequency**	**Sample Type**
Flow (MGD)	N/A	Report	Report	Continuous	Recorder
Total Non-filterable Residue [TSS] (mg/l)	N/A	30	60	1/Week	Grab
Total Non-volatile, Non-Filterable Residue [FS]* (mg/l)	N/A	12	25	1/Week	Grab
Total Phosphorus [as P] (mg/l)**	N/A	3.0	5.0	1/Week	Grab
Total Phosphorus [as P] (lbs./day)* **	**N/A**	**N/A**	See Condition **I.A.7.**	**1/Week**	**Calculation**
Total Nitrogen [as N] (mg/l)* **	**N/A**	**N/A**	See Condition **I.A.7.**	**1/Week**	**Grab**
Total Nitrogen [as N] (lbs./day)* **	**N/A**	**N/A**	See Condition **I.A.7.**	**1/Week**	**Calculation**
pH (standard units)	6.0	Report	8.5	1/Week	Grab
Temperature (°C)	Report	Report	Report	1/Week	Grab
Specific Conductance (µmhos/cm)	N/A	**Report**	See Condition I.A.3	1/Week	Grab
Dissolved Oxygen (mg/l)	5.0	Report	N/A	1/Week	Grab
Toxicity	**See Condition I.A.2**				

*** To correct for losses during the testing and analysis, the analytic results from the above specified tests for non-filterable, non-volatile residue (fixed solids) shall be multiplied by a factor of 1.1 to be reported as total non-volatile, non-filterable residue.**

****** Total phosphorus shall be for monitoring and reporting only, except: if monitoring data shows total phosphorus levels exceed 3 mg/l monthly average for more than one 30-day period per calendar year, the permittee, upon

written notification by the Department, shall prepare and file within 120 days (unless the time is extended by the Department) a study consisting of the following:

(1) a chronology of at least one year's discharge data;
(2) an assessment of the cause and origin of the phosphorus constituent of the discharge;
(3) a description of the discharger's current maintenance operation and management practices directly related to the control of phosphorus;
(4) an evaluation of the environmental significance of the phosphorus levels; and
(5) an identification of reasonable methods to abate, to the extent practicable, the influx of phosphorus into the discharge.

Upon receipt of the report, the Department will require the applicant to publish a public notice in a newspaper of general circulation in the affected area which states that the report was received and where it is available for public inspection. The Department will evaluate the report and may amend the discharger's permit to reflect additional requirements (subject to administrative and judicial review), including the implementation of cost-effective management practices or technological advances which reduce or eliminate the phosphorus in the discharge to the maximum extent practicable.

***** Total nitrogen concentration and loading values and total phosphorus loading values which shall be for monitoring and reporting only.**

IA3
The limit for Specific Conductance shall be 1.5 times the background value or 1275 umhos/cm, whichever is greater. The measured effluent value shall be recorded on the DMR in the parameter row for Specific Conductance (effluent). The measured background value shall be recorded on the DMR in the parameter row for Specific Conductance (background). The calculated effluent limit shall be recorded on the DMR in the parameter row for Specific Conductance (calculated limit). Compliance with the effluent limitation is determined by calculating the difference between the measured effluent value and the calculated effluent limit. The compliance value shall be recorded on the DMR in the parameter row for Specific Conductance (effluent minus calculated limit). If the compliance value is greater than 0.00, the permittee will be considered in violation of the limitation.

IA7
Until a Total Maximum Daily Load (TMDL) for total nitrogen and total phosphorus is determined for this facility and this permit modified pursuant to Florida Administrative Code Rules 62-4.080 and 62-620.325, the permittee shall monitor and report only (concentration and loading) for total nitrogen (as N) and loading for total phosphorus (as P), from Outfall 003 as listed in Part I.A.1.

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix D. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, Appendix B). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits. Standard reference toxicant tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

The effluent and water from control and test sites were analyzed for the presence and concentration of total and fecal coliform bacteria following FDEP SOPs MB1_0 and MB1_1. High levels of fecal or total coliform bacteria may constitute violation of 62-302.530(6), 62-302.530(7) and/or facility permit limits.

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The effluent and water from control and test sites are autoclaved, filtered (0.45μm), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum,* USEPA 2002*),* and incubated for 14 days (FDEP SOP TA08_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

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

(7) Algal Phytoplankton and Periphyton Assemblages

Methods: Qualitative periphyton were sampled at both control and test sites by taking subsamples of algae from natural substrates throughout the sample reach (QA Rule FS7220). Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03_1 and AB05).

Chlorophyll *a* Content: Chlorophyll *a* content is measured in phytoplankton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples and number of natural units/cm^2 for periphyton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal

density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present with more equitable abundance among taxa (Magurran 1988). Low diversity scores related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(11) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida. This Index was revised in 2004 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned depending on which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists in and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. Scores are broken into four ordinal groups: Good, Fair, Poor, and Very Poor. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score of "Poor" or "Very Poor" related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(9) Statistical Comparisons

Statistical comparisons of the proportions of taxa, major groups or feeding groups were made using 95% confidence intervals on proportions. A 95% confidence interval is the range of values above and below a given proportion that has a 95% chance of containing the true proportion (Sokal and Rohlf 1995). If the 95% confidence intervals for two proportions do not overlap, then the proportion of X in sample 1 is significantly different from the proportion of X in sample 2 at $p<0.05$. A "$p<0.05$" level of significance means that there is less than a 5% chance that the true proportions in the two samples are the same. All comparisons that are labeled as significant in the text have a probability <0.05 that the proportions are the same.

Appendix D. Chain of Custody Form

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-03-20-19
CF Industries, Inc.-Hardee Complex I, North Pasture Mine

Requester: Shannan Bogdanov
Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA
Collected By: Jacki Champion / Scott Rose
Send Final Report To Vishwas Sathe

Project ID: FYI5
Sampling Agency: FDEP

PMAS: 1163

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Outfall 003-CF Hardee I, NP	☐ Comp ☒ Grab Date 3/21/06 Time 3:35 Eastern Central	Date — Time — Eastern Central	A
	Field ID: Outfall 003	Tot Res Chlorine (mg/L): — Diss Oxygen (mg/L): 7.36	Storet Station Number: —	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O Temp (C): 25.83 pH: 7.18	Sample Depth: .111 ☐ m ☒ ft	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm): 374	NPDES Number: FL0035271
	Latitude o ' " Longitude o ' "	Comments:		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Outfall 003-CF Hardee I, NP	☐ Comp ☒ Grab Date 3/21/06 Time 3:35 Eastern Central	Date — Time — Eastern Central	A
	Field ID: Bioassay-003	Tot Res Chlorine (mg/L): — Diss Oxygen (mg/L): 7.36	Storet Station Number: —	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O Temp (C): 25.83 pH: 7.18	Sample Depth: .111 ☐ m ☒ ft	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm): 374	NPDES Number: FL0035271
	Latitude o ' " Longitude o ' "	Comments:		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Payne Creek-Upstream	☐ Comp ☒ Grab Date 3/21/06 Time 2:00 Eastern Central	Date — Time — Eastern Central	B C
	Field ID: Control Site	Tot Res Chlorine (mg/L): — Diss Oxygen (mg/L): 9.01	Storet Station Number: —	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O Temp (C): 23.87 pH: 7.46	Sample Depth: .485 ☒ m ☐ ft	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm): 389	NPDES Number: —
	Latitude o ' " Longitude o ' "	Comments:		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Payne Creek-Upstream	☒ Comp ~~☐ Grab~~ Date 2/21/06 Time 1330 Eastern Central	Date 3/21/06 Time 2:00 Eastern Central	C
	Field ID: Control-HD1	Tot Res Chlorine (mg/L): — Diss Oxygen (mg/L): —	Storet Station Number: —	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O Temp (C): — pH: —	Sample Depth: ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): —	NPDES Number: —
	Latitude o ' " Longitude o ' "	Comments:		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Jacki Champion	3/21/06 6:15	DHL	ABP	3-22-06				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

BIO ASSAY 1 Jug mf 3/24/06 @ 1:56

Page 1 of 4

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-03-20-19
CF Industries, Inc.-Hardee Complex I, North Pasture Mine

Requester: Shannan Bogdanov
Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA
Collected By: Jacki Champion / Scott Rose
Send Final Report To Vishwas Sathe

Project ID: FYI5
Sampling Agency: FDEP

PMAS: 1163

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Payne Creek - Upstream	☒ Comp ☐ Grab	Date 2/21/06 Time 13:30	Date 3/21/06 Time 2:00	C
	Field ID: Control - HD2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments		

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Payne Creek Upstream	☒ Comp ☐ Grab	Date 2/21/06 Time 13:30	Date 3/21/06 Time 2:00	C
	Field ID: Control - HD3	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments		

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Payne Creek - Downstream	☐ Comp ☒ Grab	Date 3/21/06 Time 11:15	Date — Time —	B/C
	Field ID: Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 9.51	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C): 22.63	pH: 7.39	Sample Depth: .25 ☐ m ☒ ft	385 ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments: *Formalin inadvertantly added to 50mL CHL-PPTN-P tube!		

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Payne Creek - Downstream	☒ Comp ☐ Grab	Date 2/21/06 Time 13:30	Date 3/21/06 Time 11:15	C
	Field ID: Test Site - HD1	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Jacki Champion	3/21/06 6:15	DHL	ABP	3-22-06 9:50				

Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID: [redacted]

Request Number: RQ-2006-03-20-19
CF Industries, Inc.-Hardee Complex I, North Pasture Mine

Requester: Shannan Bogdanov
Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA
Collected By: Jacki Champion/Scott Rose
Send Final Report To Vishwas Sathe

Project ID: FYI5
Sampling Agency: FDEP

PMAS: 1163

Location: Payne Creek-Downstream			☒ Comp ☐ Grab	Collection (begin) Eastern Central: Date 2/21/06 Time 13:30	Collection (end) Eastern Central: Date 3/21/06 Time 11:15	Bottle Group(s)**: C
Field ID: Test Site - HD2			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
Latitude o ' "	Longitude o ' "		Comments			

Location: Payne Creek - Downstream			☒ Comp ☐ Grab	Collection (begin) Eastern Central: Date 2/21/06 Time 1330	Collection (end) Eastern Central: Date 3/21/06 Time 11:15	Bottle Group(s)**: C
Field ID: Test Site - HD3			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
Latitude o ' "	Longitude o ' "		Comments			

Location: Blanks			☐ Comp ☒ Grab	Collection (begin) Eastern Central: Date 3/21/06 Time 3:15	Collection (end) Eastern Central: Date Time	Bottle Group(s)**: D
Field ID: Equipment Blanks			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
Matrix (Include type e.g. Salt, Fresh, etc): Fresh H2O	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
Latitude o ' "	Longitude o ' "		Comments			

Location			☐ Comp ☐ Grab	Collection (begin) Eastern Central: Date Time	Collection (end) Eastern Central: Date Time	Bottle Group(s)**	
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	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number		
Latitude o ' "	Longitude o ' "		Comments				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Jacki Champion	3/21/06 11:15	DHL	ABP	3-22-06 0900				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E

Chemical analysis of effluent and receiving water

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	DWN STRM TEST SITE	Bio-AGP/LimNut	Algal Growth Potential	20.2	mg DryWt/L		0.3	0.9
3/21/06	DWN STRM TEST SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/21/06	DWN STRM TEST SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
3/21/06	DWN STRM TEST SITE	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	5	#Taxa			
3/21/06	DWN STRM TEST SITE	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa	51	#Taxa			
3/21/06	DWN STRM TEST SITE	Metals-Water	Aluminum	307	ug/L		5	20
3/21/06	DWN STRM TEST SITE	Metals-Water	Arsenic	1.8	ug/L	I	0.5	2
3/21/06	DWN STRM TEST SITE	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
3/21/06	DWN STRM TEST SITE	Metals-Water	Calcium	28.4	mg/L		0.05	0.2
3/21/06	DWN STRM TEST SITE	Metals-Water	Chromium	2	ug/L	U	2	8
3/21/06	DWN STRM TEST SITE	Metals-Water	Copper	0.36	ug/L	I	0.25	1
3/21/06	DWN STRM TEST SITE	Metals-Water	Iron	496	ug/L		10	40
3/21/06	DWN STRM TEST SITE	Metals-Water	Lead	0.37	ug/L		0.075	0.3
3/21/06	DWN STRM TEST SITE	Metals-Water	Magnesium	16.3	mg/L		0.01	0
3/21/06	DWN STRM TEST SITE	Metals-Water	Nickel	1	ug/L	I	1	4
3/21/06	DWN STRM TEST SITE	Metals-Water	Selenium	0.69	ug/L	I	0.66	2.6
3/21/06	DWN STRM TEST SITE	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
3/21/06	DWN STRM TEST SITE	Metals-Water	Zinc	3	ug/L	U	3	12
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Ammonia-N	0.048	mg N/L		0.01	0
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Fluoride	0.55	mg F/L		0.05	0.1
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Kjeldahl Nitrogen	0.8	mg N/L		0.08	0.2
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	NO2NO3-N	0.27	mg N/L		0.02	0.1
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	O-Phosphate-P	0.42	mg P/L		0.04	0.1
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Sulfate	85	mg SO4/L		0.4	1
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Total-P	0.77	mg P/L		0.02	0.1
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	TSS	10	mg/L	I	4	16
3/21/06	DWN STRM TEST SITE	Nutrients-Liquid	Turbidity	3.7	NTU		0.05	0.1
3/21/06	DWNSTRM TEST SITE	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	33	# Taxa			
3/21/06	DWNSTRM TEST SITE	Bio-Peri/Phyto	Periphyton-Qualitative-# Diatom Taxa	51	# Taxa			
3/21/06	DWNSTRM TEST SITE	Bio-Peri/Phyto	Periphyton-Qualitative-# Wet Taxa	8	#Taxa			
3/21/06	CONTROL-HD-1	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	30	# Taxa			
3/21/06	CONTROL-HD-2	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	28	# Taxa			
3/21/06	CONTROL-HD-3	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	40	# Taxa			
3/21/06	TEST SITE-HD1	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	31	# Taxa			
3/21/06	TEST SITE-HD2	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	24	# Taxa			
3/21/06	TEST SITE-HD3	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	32	# Taxa			
3/21/06	UPSTREAM CONTROL SITE	Bio-AGP/LimNut	Algal Growth Potential	20.6	mg DryWt/L		0.3	0.9
3/21/06	UPSTREAM CONTROL SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/21/06	UPSTREAM CONTROL SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
3/21/06	UPSTREAM CONTROL SITE	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	11	#Taxa			

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	UPSTREAM CONTROL SITE	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa	44	#Taxa			
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Aluminum	102	ug/L	A	5	20
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Arsenic	1.7	ug/L	I	0.5	2
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Calcium	27.9	mg/L	A	0.05	0.2
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Chromium	2	ug/L	U	2	8
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Copper	0.28	ug/L	I	0.25	1
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Iron	244	ug/L	A	10	40
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Lead	0.12	ug/L	I	0.075	0.3
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Magnesium	16.2	mg/L	A	0.01	0
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Nickel	1.3	ug/L	I	1	4
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Selenium	0.66	ug/L	U	0.66	2.6
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
3/21/06	UPSTREAM CONTROL SITE	Metals-Water	Zinc	3	ug/L	U	3	12
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Ammonia-N	0.043	mg N/L		0.01	0
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Fluoride	0.54	mg F/L		0.05	0.1
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Kjeldahl Nitrogen	0.53	mg N/L		0.08	0.2
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	NO2NO3-N	0.25	mg N/L		0.02	0.1
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	O-Phosphate-P	0.44	mg P/L		0.024	0.1
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Sulfate	86	mg SO4/L		0.4	1
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Total-P	0.59	mg P/L		0.02	0.1
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	TSS	4	mg/L	U	4	16
3/21/06	UPSTREAM CONTROL SITE	Nutrients-Liquid	Turbidity	2.5	NTU		0.05	0.1
3/21/06	UP STRM CONTROL SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Periphyton		mg/m2			
3/21/06	UP STRM CONTROL SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Periphyton		mg/m2			
3/21/06	UP STRM CONTROL SITE	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	18	# Taxa			
3/21/06	UP STRM CONTROL SITE	Bio-Peri/Phyto	Periphyton-Qualitative-# Diatom Taxa	50	# Taxa			
3/21/06	UP STRM CONTROL SITE	Bio-Peri/Phyto	Periphyton-Qualitative-# Wet Taxa	6	#Taxa			
3/21/06	EQUIPMENT BLANK	BNA-Water	1,2,4-Trichlorobenzene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	1,2-Dichlorobenzene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	1,3-Dichlorobenzene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	1,4-Dichlorobenzene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2,4,6-Trichlorophenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2,4-Dichlorophenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2,4-Dimethylphenol	53	ug/L	U	53	210
3/21/06	EQUIPMENT BLANK	BNA-Water	2,4-Dinitrophenol	16	ug/L	U	16	64
3/21/06	EQUIPMENT BLANK	BNA-Water	2,4-Dinitrotoluene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2,6-Dinitrotoluene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2-Chloronaphthalene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2-Chlorophenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	2-Nitrophenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	3,3'-Dichlorobenzidine	43	ug/L	U	43	170

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	EQUIPMENT BLANK	BNA-Water	4,4'-DDD	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	4,4'-DDE	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	4,4'-DDT	1.6	ug/L	UJ	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	4-Bromophenyl phenyl ether	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	4-Chloro-3-methylphenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	4-Chlorophenyl phenyl ether	2.1	ug/L	U	2.1	8.5
3/21/06	EQUIPMENT BLANK	BNA-Water	4-Nitrophenol	16	ug/L	U	16	64
3/21/06	EQUIPMENT BLANK	BNA-Water	Acenaphthene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Acenaphthylene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Aldrin	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	alpha-BHC	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Anthracene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzidine	110	ug/L	UJ	110	430
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzo(a)anthracene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzo(a)pyrene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzo(b)fluoranthene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzo(g,h,i)perylene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Benzo(k)fluoranthene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	beta-BHC	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethoxy)methane	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethyl)ether	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	16	ug/L	U	16	64
3/21/06	EQUIPMENT BLANK	BNA-Water	Butyl benzyl phthalate	5.3	ug/L	U	5.3	21
3/21/06	EQUIPMENT BLANK	BNA-Water	Chrysene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	delta-BHC	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Dibenzo(a,h)anthracene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Dieldrin	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Diethyl phthalate	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Dimethyl phthalate	53	ug/L	U	53	210
3/21/06	EQUIPMENT BLANK	BNA-Water	Di-n-butyl phthalate	5.3	ug/L	U	5.3	21
3/21/06	EQUIPMENT BLANK	BNA-Water	Di-n-octyl phthalate	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Endosulfan I	4.3	ug/L	U	4.3	17
3/21/06	EQUIPMENT BLANK	BNA-Water	Endosulfan II	4.3	ug/L	U	4.3	17
3/21/06	EQUIPMENT BLANK	BNA-Water	Endosulfan sulfate	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Endrin	1.6	ug/L	UJ	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Endrin aldehyde	4.3	ug/L	U	4.3	17
3/21/06	EQUIPMENT BLANK	BNA-Water	Fluoranthene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Fluorene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	gamma-BHC	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Heptachlor	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Heptachlor epoxide	1.6	ug/L	U	1.6	6.4
3/21/06	EQUIPMENT BLANK	BNA-Water	Hexachlorobenzene	1.1	ug/L	U	1.1	4.3

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	EQUIPMENT BLANK	BNA-Water	Hexachlorobutadiene	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Hexachlorocyclopentadiene	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Hexachloroethane	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Isophorone	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Naphthalene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Nitrobenzene	2.1	ug/L	U	2.1	8.5
3/21/06	EQUIPMENT BLANK	BNA-Water	N-Nitrosodimethylamine	2.1	ug/L	U	2.1	8.5
3/21/06	EQUIPMENT BLANK	BNA-Water	N-Nitrosodi-n-propylamine	2.1	ug/L	U	2.1	8.5
3/21/06	EQUIPMENT BLANK	BNA-Water	N-Nitrosodiphenylamine	3.2	ug/L	UJ	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Pentachlorophenol	3.2	ug/L	U	3.2	13
3/21/06	EQUIPMENT BLANK	BNA-Water	Phenanthrene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Phenol	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	BNA-Water	Pyrene	1.1	ug/L	U	1.1	4.3
3/21/06	EQUIPMENT BLANK	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
3/21/06	EQUIPMENT BLANK	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
3/21/06	EQUIPMENT BLANK	GC-Water	Bromacil	0.2	ug/L	UJ	0.2	0.8
3/21/06	EQUIPMENT BLANK	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
3/21/06	EQUIPMENT BLANK	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Ethoprop	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Fenamiphos	0.2	ug/L	UJ	0.2	0.8
3/21/06	EQUIPMENT BLANK	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
3/21/06	EQUIPMENT BLANK	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
3/21/06	EQUIPMENT BLANK	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
3/21/06	EQUIPMENT BLANK	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Mevinphos	0.2	ug/L	UJ	0.2	0.8
3/21/06	EQUIPMENT BLANK	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
3/21/06	EQUIPMENT BLANK	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
3/21/06	EQUIPMENT BLANK	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
3/21/06	EQUIPMENT BLANK	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
3/21/06	EQUIPMENT BLANK	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
3/21/06	EQUIPMENT BLANK	GC-Water	Simazine	0.05	ug/L	UJ	0.05	0.2
3/21/06	EQUIPMENT BLANK	Metals-Water	Aluminum	5	ug/L	U	5	20
3/21/06	EQUIPMENT BLANK	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
3/21/06	EQUIPMENT BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	EQUIPMENT BLANK	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2
3/21/06	EQUIPMENT BLANK	Metals-Water	Chromium	2	ug/L	U	2	8
3/21/06	EQUIPMENT BLANK	Metals-Water	Copper	0.25	ug/L	U	0.25	1
3/21/06	EQUIPMENT BLANK	Metals-Water	Iron	10	ug/L	U	10	40
3/21/06	EQUIPMENT BLANK	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3
3/21/06	EQUIPMENT BLANK	Metals-Water	Magnesium	0.01	mg/L	U	0.01	0
3/21/06	EQUIPMENT BLANK	Metals-Water	Nickel	1	ug/L	U	1	4
3/21/06	EQUIPMENT BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
3/21/06	EQUIPMENT BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
3/21/06	EQUIPMENT BLANK	Metals-Water	Zinc	3	ug/L	U	3	12
3/21/06	EQUIPMENT BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0
3/21/06	EQUIPMENT BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
3/21/06	EQUIPMENT BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0
3/21/06	EQUIPMENT BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0
3/21/06	EQUIPMENT BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.1
3/21/06	EQUIPMENT BLANK	Overflow	Oil and Grease	5.8	mg/L			
3/21/06	OUTFALL 003	Bio-AGP/LimNut	Algal Growth Potential	3.52	mg DryWt/L		0.3	0.9
3/21/06	OUTFALL 003	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	19	ug/L	A	0.85	2.6
3/21/06	OUTFALL 003	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
3/21/06	OUTFALL 003	Bio-Peri/Phyto	Phytoplankton-Quantitative-# Wet Taxa	18	#Taxa			
3/21/06	OUTFALL 003	Bio-Peri/Phyto	Phytoplankton-Quantitative-#Diatom Taxa	28	#Taxa			
3/21/06	OUTFALL 003	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L		
3/21/06	OUTFALL 003	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L		
3/21/06	OUTFALL 003	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2,4-Dichlorophenol	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2,4-Dimethylphenol	51	ug/L	U	51	200
3/21/06	OUTFALL 003	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	61
3/21/06	OUTFALL 003	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2-Chlorophenol	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	2-Methyl-4,6-dinitrophenol	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	2-Nitrophenol	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	3,3'-Dichlorobenzidine	41	ug/L	U	41	160
3/21/06	OUTFALL 003	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	4,4'-DDT	1.5	ug/L	UJ	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	U	1	4.1

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	OUTFALL 003	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8.2
3/21/06	OUTFALL 003	BNA-Water	4-Nitrophenol	15	ug/L	U	15	61
3/21/06	OUTFALL 003	BNA-Water	Acenaphthene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Acenaphthylene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Anthracene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Benzidine	100	ug/L	UJ	100	410
3/21/06	OUTFALL 003	BNA-Water	Benzo(a)anthracene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Bis(2-chloroisopropyl)ether	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	61
3/21/06	OUTFALL 003	BNA-Water	Butyl benzyl phthalate	5.1	ug/L	U	5.1	20
3/21/06	OUTFALL 003	BNA-Water	Chrysene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Diethyl phthalate	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Dimethyl phthalate	51	ug/L	U	51	200
3/21/06	OUTFALL 003	BNA-Water	Di-n-butyl phthalate	5.1	ug/L	U	5.1	20
3/21/06	OUTFALL 003	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Endosulfan I	4.1	ug/L	U	4.1	16
3/21/06	OUTFALL 003	BNA-Water	Endosulfan II	4.1	ug/L	U	4.1	16
3/21/06	OUTFALL 003	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Endrin	1.5	ug/L	UJ	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Endrin aldehyde	4.1	ug/L	U	4.1	16
3/21/06	OUTFALL 003	BNA-Water	Fluoranthene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Fluorene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6.1
3/21/06	OUTFALL 003	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Hexachlorobutadiene	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Hexachlorocyclopentadiene	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Hexachloroethane	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Isophorone	1	ug/L	U	1	4.1

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	OUTFALL 003	BNA-Water	Naphthalene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Nitrobenzene	2	ug/L	U	2	8.2
3/21/06	OUTFALL 003	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	8.2
3/21/06	OUTFALL 003	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8.2
3/21/06	OUTFALL 003	BNA-Water	N-Nitrosodiphenylamine	3.1	ug/L	UJ	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Pentachlorophenol	3.1	ug/L	U	3.1	12
3/21/06	OUTFALL 003	BNA-Water	Phenanthrene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Phenol	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	BNA-Water	Pyrene	1	ug/L	U	1	4.1
3/21/06	OUTFALL 003	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
3/21/06	OUTFALL 003	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
3/21/06	OUTFALL 003	GC-Water	Bromacil	0.2	ug/L	UJ	0.2	0.8
3/21/06	OUTFALL 003	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
3/21/06	OUTFALL 003	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Ethoprop	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Fenamiphos	0.2	ug/L	UJ	0.2	0.8
3/21/06	OUTFALL 003	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
3/21/06	OUTFALL 003	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
3/21/06	OUTFALL 003	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
3/21/06	OUTFALL 003	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Mevinphos	0.2	ug/L	UJ	0.2	0.8
3/21/06	OUTFALL 003	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
3/21/06	OUTFALL 003	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
3/21/06	OUTFALL 003	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
3/21/06	OUTFALL 003	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
3/21/06	OUTFALL 003	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
3/21/06	OUTFALL 003	GC-Water	Simazine	0.05	ug/L	UJ	0.05	0.2
3/21/06	OUTFALL 003	Metals-Water	Aluminum	77	ug/L		5	20
3/21/06	OUTFALL 003	Metals-Water	Arsenic	1.2	ug/L	I	0.5	2
3/21/06	OUTFALL 003	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
3/21/06	OUTFALL 003	Metals-Water	Calcium	41.7	mg/L		0.05	0.2
3/21/06	OUTFALL 003	Metals-Water	Chromium	2	ug/L	U	2	8
3/21/06	OUTFALL 003	Metals-Water	Copper	0.25	ug/L	U	0.25	1
3/21/06	OUTFALL 003	Metals-Water	Iron	248	ug/L		10	40
3/21/06	OUTFALL 003	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/21/06	OUTFALL 003	Metals-Water	Magnesium	18.8	mg/L		0.01	0
3/21/06	OUTFALL 003	Metals-Water	Nickel	1	ug/L	U	1	4
3/21/06	OUTFALL 003	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
3/21/06	OUTFALL 003	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
3/21/06	OUTFALL 003	Metals-Water	Zinc	3	ug/L	U	3	12
3/21/06	OUTFALL 003	Nutrients-Liquid	Ammonia-N	0.011	mg N/L	I	0.01	0
3/21/06	OUTFALL 003	Nutrients-Liquid	Chloride	14	mg Cl/L		0.4	1
3/21/06	OUTFALL 003	Nutrients-Liquid	Color	40	PCU		5	5
3/21/06	OUTFALL 003	Nutrients-Liquid	Fluoride	0.92	mg F/L		0.05	0.1
3/21/06	OUTFALL 003	Nutrients-Liquid	Kjeldahl Nitrogen	0.91	mg N/L		0.08	0.2
3/21/06	OUTFALL 003	Nutrients-Liquid	NO2NO3-N	0.02	mg N/L	U	0.02	0.1
3/21/06	OUTFALL 003	Nutrients-Liquid	O-Phosphate-P	0.54	mg P/L		0.08	0.2
3/21/06	OUTFALL 003	Nutrients-Liquid	Sulfate	52	mg SO4/L		0.4	1
3/21/06	OUTFALL 003	Nutrients-Liquid	TDS	249	mg/L		15	60
3/21/06	OUTFALL 003	Nutrients-Liquid	Total-P	0.77	mg P/L		0.02	0.1
3/21/06	OUTFALL 003	Nutrients-Liquid	TSS	5	mg/L	I	4	16
3/21/06	OUTFALL 003	Nutrients-Liquid	Turbidity	3.6	NTU		0.05	0.1
3/21/06	OUTFALL 003	Overflow	Alpha, Total	2.1	pCi/L			
3/21/06	OUTFALL 003	Overflow	Alpha-Counting Error	1.3	pCi/L			
3/21/06	OUTFALL 003	Overflow	Oil and Grease	17	mg/L	J		
3/21/06	OUTFALL 003	Overflow	Radium 226	0.2	pCi/L			
3/21/06	OUTFALL 003	Overflow	Radium 226-Counting Error	0.1	pCi/L			
3/21/06	OUTFALL 003	Overflow	Radium 228	1	pCi/L	U		
3/21/06	OUTFALL 003	Overflow	Radium 228-Counting Error	0.6	pCi/L			

FDEP Biology Section - Acute Screen Bioassay Bench Sheets

Facility: CF Industries, Inc. Hardee Complex NoAh Pasture Mine
Address: East of County Road 663
City: Wauchula County: Hardee
Contact/District: Jacki Champion / SW District
NPDES Permit #: FL 0035271
LIMS Job #: TLH-2006-03-22-32 LIMS Sample #: 909095
Lims Data Entry: MF 3/29/06 Data Entry Verification: 3-29-06 SB/KD

Sample Collection: Date: 3-21-06 Time: 1535
Hold Time Start: Date: 3-21-06 Time: 1535

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.

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

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: _____

Temperature Range °C
Incubator # 2 Range 24.5-26.1
Room B246: 22.3 - 25.2
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
Sarah Pritchard
Jason Davis
Blair Atkins
Marshall Faircloth
Dan Ann
Nicki Wilkerson
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		MF
Lab Total Residual Cl2 (mg/L)	<0.03	<0.03				<0.03	HACH	SP/SD	MF
Alkalinity (mg/L as $CaCO_3$)	84	145				122	HACH	SA	MF
Hardness (mg/L as $CaCO_3$)	85	136				174	HACH	SA	MF
Total Ammonia (mg/L as N)	<0.017	<0.017				<0.017	DENVER	SP	MF
Salinity (ppth)	<1	<1				<1	YSI (Mettler)	SA SP	MF

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FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 909095 Test #: 1 Test Started: Date 3-22-06 Time: 11:00
Organism: C. dubia SOP #: TA 07_01 Test Ended: Date 3-24-06 Time: 11:00
Organism Batch: 14-06 Diluent/ Batch: DMW / 8-06
Organism Age: <24 hrs Food: YCT *P. subcapitata* *Artemia*
Chamber Size: 30 mL Batch: 5-06 1-06 –
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	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	5			
Organisms loaded by: BA		Checked by:	[redacted]	SP	JD			

Loading Verified by: MF

Comments:

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

Test Results:
% mortality in 100% sample: Ø
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).

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FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 909095 | Test #: 2 | Test Started: Date 3-22-06 Time: 1030

Organism: C. leedsi | SOP #: TA 07_02 | Test Ended: Date 3-24-06 Time: 1045

Organism Batch: 6-06 | Diluent/ Batch: Well H2O / 3-21-06

Organism Age: 14 days | Food: YCT *P. subcapitata* *Artemia*

Chamber Size: 1000 mL | Batch: – – GSI-536-90

Test Volume: 500 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	D13	5	5	5			
	B	D14	5	5	5			
	C	D15	5	5	5			
	D	D16	5	5	5			
100%	A	D17	5	5	5			
	B	D18	5	5	5			
	C	D19	5	5	5			
	D	D20	5	5	5			
Organisms loaded by: JD		Checked by:	[redacted]	SP	JD			

Loading Verified by: SP

Comments:

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

Test Results:

% mortality in 100% sample: Ø

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).

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 909095 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.)	8.1		8.3			
Temperature °C	25.2		24.0			
Dissolved Oxygen mg/L	6.9		7.1			
Conductivity ~~µmhos~~ mmhos BA	0.164		0.332			
(initials) Measured by:	BA		JD			
(initials) Recorded by:	BA		JD			

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.)	7.7		8.4			
Temperature °C	26.0		24.0			
Dissolved Oxygen mg/L	7.4		7.7			
Conductivity ~~µmhos~~ mmhos BA	0.365		0.450			
(initials) Measured by:	BA		JD			
(initials) Recorded by:	BA		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:

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 # : 909095 **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.)	8.0	8.2	8.2			
Temperature °C	25.0	24.6	24.8			
Dissolved Oxygen mg/L	7.7	7.0	7.0			
Conductivity ~~µmhos~~ mmhos	255	268	288			
(initials) Measured by:	BB	BS	JD			
(initials) Recorded by:	BB	BS	JD			

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.)	7.7	8.0	7.9 @			
Temperature °C	25.7	25.2	24.5			
Dissolved Oxygen mg/L	8.4	6.5	6.2			
Conductivity ~~µmhos~~ mmhos	370	396	409			
(initials) Measured by:	BB	BS	JD			
(initials) Recorded by:	BB	BS	JD			

Comments: @ Treatment after 8.0 JD.

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

Appendix G

Standard Reference Toxicant data

FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) | *Menidia beryllina* (Method 2006.0) | *Hyalella azteca* (Method 100.1 EPA-600-R-99-064) | *Ceriodaphnia dubia* (Method 2002.0) | *Cyprinella leedsi* (Method 2000.0) | *Pimephales promelas* (Method 2000.0) | Other:

Method from EPA-821-R-02-012
Test Type: Definitive
Static / Static Renewal
Test Page 1 of 2

Diluent/ Batch#: DMW 1-8-06
Toxicant/ Batch# NaCl 1-4-06

Test Beginning: Date: 3-21-06 Time: 1230
Test Ending: Date: 3-25-06 Time: 1300 (1320) MF

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	MF
Alkalinity (mg/L as $CaCO_3$):	84	Hach	MF
Hardness (mg/L as CaCO3):	85	Hach	MF
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppth):	<1	Mettler	MF

Organism Batch #/ Age: 13-06 / <24 hrs
Feeding: (Prior to test) / Prior to renewal / Daily
Food: YCT P.*subcapitata* Artemia
Food Batch: 5-05 1-06 —
Chamber size: 30 mL
Test volume: 20 mL per replicate

0-48 hours

Conc. µg/L (Cl)	Rep.	Chamber#	Number Live 0 hr	24 hr	48 hr	pH (SU) 0 hr	24 hr	48 hr	Temperature (° C) 0 hr	24 hr	48 hr	D.O. (mg/l) 0 hr	24 hr	48 hr	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhom/cm) 0 hr	24 hr	48 hr
Control	A	A	5	5	5	8.1		8.2	24.0		24.8	7.3		7.8	0.174		0.193
	B	B	5	5	5												
	C	C	5	5	5												
	D	D	5	5	5												
1.5	A	A	5	5	5	8.0		8.1	24.0		24.6	7.4		7.6	2.92		3.38
	B	B	5	5	5												
	C	C	5	5	5												
	D	D	5	5	5												
2.0	A	A	5	5	5	8.2		8.1	24.0		24.5	7.0		7.6	3.81		~~5.34~~ 4.35
	B	B	5	5	4 1D												
	C	C	5	5	5												
	D	D	5	5	5												
2.5	A	A	5	4 1D	4	8.2		8.1	24.1		24.6	7.1		7.4	4.71		6.45 5.34
	B	B	5	5	4 1D												
	C	C	5	4 1D	3 1D												
	D	D	5	5	2 3D												
3.0	A	A	5	4 1D	0 4D	8.2		8.1	24.1		24.6	7.1		7.3	5.63		6.45
	B	B	5	3 2D	0 2D												
	C	C	5	2 3D	0 2D												
	D	D	5	3 2D	1 2D												
4.0	A	A	5	0 5D	—	8.1	7.8	—	24.9	24.6	—	7.2	6.5	—	7.29	7.65	—
	B	B	5	0 5D	—												
	C	C	5	0 5D	—												
	D	D	5	0 5D	—												
	A																
	B																
	C																
	D																
Loaded / measured by:			BA	BA	BA	BA	BA	SP	BA	BA	SP	BA	BA	SP	BA	BA	SP
Recorded by:			BA	BA	BA	BA	BA	MF	BA	BA	SP	BA	BA	SP	BA	BA	SP

Investigators' Signatures
Bruce Anderson
Sarah Pickard
Marshall Faircloth
Jodie Davis
Nicole Mellard
REVIEWER

Concentrations prepared by: BA
Loading verified by: MF
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.4 max. 26.1 mean 25.1
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.2 max. 25.1 mean 25.1

Remarks:

Statistical Results: Method: Spearman-Karber
(48) / 96 hour LC50: 2.55
95% Confidence Interval: lower 2.41 upper 2.69

Revised 03/21/06

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FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0 | *Menidia beryllina* Method 2006.0 | *Hyalella azteca* Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0 | *Cyprinella leedsi* Method 2000.0 | *Pimephales promelas* Method 2000.0 | Other:

Method from EPA-821-R-02-012
Test Type: Definitive / Static / Static Renewal
Test Page 2 of 2

Diluent/ Batch#: DMW / B-06
Toxicant/ Batch# NaCl / 4-06

Test Beginning: Date: 3-21-06 Time: 1230
Test Ending: Date: 3.25.06 Time: 1320 48-96 hours

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	MF
Alkalinity (mg/L as $CaCO_3$):	84	Hach	~~BA by MF~~
Hardness (mg/L as CaCO3):	85	Hach	~~BA by MF~~
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppth):	<1	Mettler	MF

Organism Batch #/ Age: 13-06 / 13-06
Feeding: ~~Prior to test~~ / Prior to renewal / Daily
Food: YCT P.*subcapitata* Artemia
Food Batch: 505 1-06 –
Chamber size: 30 mL
Test volume: 20 mL per replicate

Conc. µg/L (%)	Rep.	Chamber#	Number Live ~~0 hr~~ 48 hr	~~24 hr~~ 72 hr	~~48 hr~~ 96 hr	pH (SU) ~~0 hr~~ 48 hr	~~24 hr~~ 72 hr	~~48 hr~~ 96 hr	Temperature (° C) ~~0 hr~~ 48 hr	~~24 hr~~ 72 hr	~~48 hr~~ 96 hr	D.O. (mg/l) ~~0 hr~~ 48 hr	~~24 hr~~ 72 hr	~~48 hr~~ 96 hr	UNCORRECTED Cond (mmhos/cm) ~~0 hr~~ 48 hr	~~24 hr~~ 72 hr	~~48 hr~~ 96 hr
Control	A	A	5	5	5	8.3			~~24.0~~ 24.3			7.9			0.172		0.248
	B	B	5	5	5			8.2	24.0 BA		24.0			7.7			
	C	C	5	5	5												
	D	D	5	5	5												
1.5	A	A	5	5	5	8.2			24.0			6.7			2.40		3.44
	B	B	5	5	4 ID			8.2		~~24.0~~ MF	24.0			8.3			
	C	C	5	5	5												
	D	D	5	5	5												
2.0	A	A	5	5	5	8.2			24.0			7.0			3.82		
	B	B	4	4	4			8.3		~~24.0~~ MF	24.0			8.5			4.54
	C	C	5	5	5												
	D	D	5	5	5												
2.5	A	A	4	2 2D	2	8.2			24.3	MF		7.2			4.62		
	B	B	4	2 2D	1 1D			8.3		24.0	24.0			8.2			5.95
	C	C	3	3	2 1D												
	D	D	2	0 1D	–												
3.0	A	A	0	–	–	8.2			24.3			7.0			6.56		
	B	B	0	–	–			–		–	–			–			–
	C	C	0	–	–												
	D	D	1	0 D	–		8.0			24.9	~~24.9~~ MF		7.4		~~5.66~~ BA 3.86		
4.0	A	A	–	–	–	–			–			–			–		
	B	B	–	–	–			–			–			–			–
	C	C	–	–	–												
	D	D	–	–	–					~~24.4~~ BA							
	A																
	B																
	C																
	D																
Loaded / measured by:			BA	BA	JD	DA	BA	JD	BA	BA	JD	BA	BA	JD	BA	BA	JD
Recorded by:			BA	BA	JD	BA	BA	JD	BA	BA	JD	BA	BA	JD	BA	BA	JD

Investigators' Signatures
Bruce Arnold
Sarah Pritchard
Marshall Faircloth
James Dodd
Nicole Wellendorf
REVIEWER

Concentrations prepared by: BA
Loading verified by: MF
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min 23.4 max. 26.1 mean 25.1
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.2 max. 25.9 mean 25.1

Remarks: 96 hour temperatures recorded in 72 hour spaces - moved to 96 hour spaces 4-12-06 MF

Statistical Results: Method: Spearman-Karber
48 / 96 hour LC50: 2.33
95% Confidence Interval: lower 2.23 upper ~~2.44~~ BA 2.44

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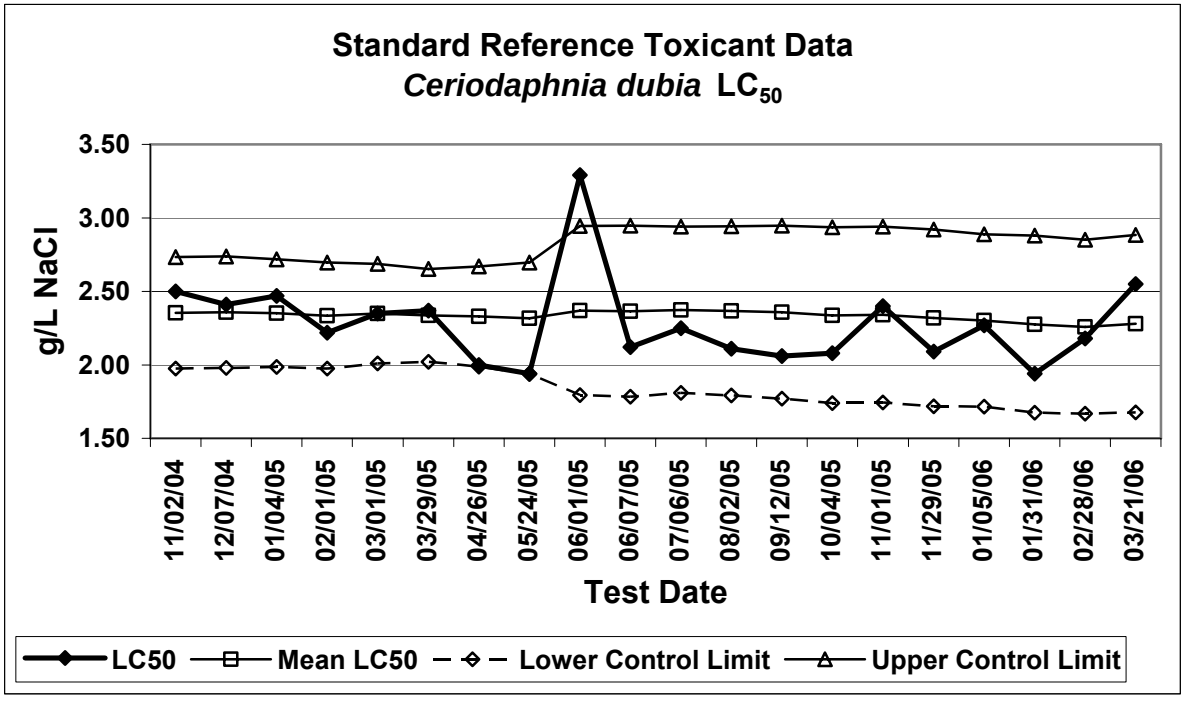
Florida Department of Environmental Protection
Bureau of Laboratories

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
11/02/04	2.50	2.35	0.19	1.97	2.73
12/07/04	2.41	2.36	0.19	1.98	2.74
01/04/05	2.47	2.35	0.18	1.98	2.72
02/01/05	2.22	2.34	0.18	1.98	2.70
03/01/05	2.35	2.35	0.17	2.01	2.69
03/29/05	2.37	2.34	0.16	2.02	2.65
04/26/05	2.00	2.33	0.17	1.99	2.67
05/24/05	1.94	2.32	0.19	1.94	2.70
06/01/05	3.29	2.37	0.29	1.79	2.94
06/07/05	2.12	2.36	0.29	1.78	2.95
07/06/05	2.25	2.37	0.28	1.81	2.94
08/02/05	2.11	2.37	0.29	1.79	2.94
09/12/05	2.06	2.36	0.29	1.77	2.95
10/04/05	2.08	2.34	0.30	1.74	2.94
11/01/05	2.40	2.34	0.30	1.74	2.94
11/29/05	2.09	2.32	0.30	1.72	2.92
01/05/06	2.27	2.30	0.29	1.72	2.89
01/31/06	1.94	2.28	0.30	1.67	2.88
02/28/06	2.18	2.26	0.30	1.67	2.85
03/21/06	2.55	2.28	0.30	1.68	2.88

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

CV = 13.22
EPA reference 75th quartile CV = 29%



FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: Americamysis bahia (Method 2007.0) Menidia beryllina (Method 2006.0) Hyalella azteca (Method 100.1 EPA-600-R-99-064)
Ceriodaphnia dubia (Method 2002.0) Cyprinella leedsi (Method 2000.0) Pimephales promelas (Method 2000.0) Other:_____

Method from EPA-821-R-02-012
Test Type: Definitive / Static / Static Renewal
Test Page 1 of 2

Diluent/ Batch#: well 1&9 3-21-06
Toxicant/ Batch# NaCl 1-4-06

Test Beginning: Date: 3-21-06 Time: 12:50
Test Ending: Date: 3-25-06 Time: 1300

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	mf
Alkalinity (mg/L as $CaCO_3$):	145	Hach	mf
Hardness (mg/L as CaCO3):	136	Hach	mf
Total Ammonia (mg/L as N):	<0.017	Denver	mf
Salinity (ppth):	<1	Mettler	mf

Organism Batch #/ Age: 6-06 / 13 days
Feeding: Prior to test / Prior to renewal / Daily
Food: YCT P.subcapitata Artemia
Food Batch: — — G.SL-536-90
Chamber size: 1000 mL
Test volume: 500 mL per replicate

0-48 hours

Conc. µg/L (Ba)	Rep.	Chamber#	Number Live 0 hr (-48 hr)	Number Live 24 hr (-72 hr)	Number Live 48 hr (-96 hr)	pH (SU) 0 hr (-48 hr)	pH (SU) 24 hr (-72 hr)	pH (SU) 48 hr (-96 hr)	Temperature (°C) 0 hr (-48 hr)	Temperature (°C) 24 hr (-72 hr)	Temperature (°C) 48 hr (-96 hr)	D.O. (mg/l) 0 hr (-48 hr)	D.O. (mg/l) 24 hr (-72 hr)	D.O. (mg/l) 48 hr (-96 hr)	UNCORRECTED Cond (mmhos/cm) Cond (µmhom/cm) 0 hr (-48 hr)	UNCORRECTED Cond (mmhos/cm) Cond (µmhom/cm) 24 hr (-72 hr)	UNCORRECTED Cond (mmhos/cm) Cond (µmhom/cm) 48 hr (-96 hr)
Control	A	A24	10	10	10	7.9		8.1	24.7		25.0	7.7		6.5	0.220		0.283
	B	A2	10	10	10		8.0			24.7			6.6			6323	
	C																
	D																
6	A	A3	10	8 20	8	7.9		8.1	24.8		24.9	7.7		6.1	10.40		10.47
	B	A4	10	10	10		7.4			24.9			6.0			10.32	
	C																
	D																
7	A	A5	10	10	10	7.9		8.0	24.8		24.8	7.5		5.9	12.04		12.10
	B	A6	10	9 10	9		7.9			25.2			5.7			11.93	
	C																
	D																
8	A	A7	10	6 40	6	7.9		8.0	24.9		25.2	7.5		5.6	1337		13.49
	B	A8	10	8 20	7 10		7.8			24.9			5.8			13.39	
	C																
	D																
9	A	A9	10	3 20	3	7.9		8.0	24.9		25.1	7.4		5.6	15.10		15.19
	B	A10	10	4 00	4		7.9			24.8			5.9			15.15	
	C																
	D																
10	A	A11	10	1 40	1	7.9		8.0	24.8		24.9	7.4		5.3	16.73		16.84
	B	A12	10	1 40	1		7.8			25.0			5.2			16.77	
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	MF	BA	MF	MF	JD	MF	MF	BA	MF	MF	BA	MF
Recorded by:			BA	JD	JD	MF	BA	MF	MF	BA	SB	MF	BA	MF	MF	BA	MF

Investigators' Signatures
Bruce Nemeth
Laval Pickard
Marshall Faircloth
Jason Davis
Kevin Long
Nicole Nettenhoff
REVIEWER

Concentrations prepared by: MF
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 24.2 max. 25.9 mean 25.1
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.2 max. 25.9 mean 25.1

Remarks:
48 hr 8.46
lower 8.08
upper 8.86

Statistical Results: Method: Spearman-Karber
48 96 hour LC50: 8.46
95% Confidence Interval: lower 8.08 upper 8.86

Revised 02/21/06

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FDEP Biology Section - Acute SRT Bench Sheet

[redacted]

Test Organism: *Americamysis bahia* Method 2007.0 | *Menidia beryllina* Method 2004.0 | *Hyalella azteca* Method 100.1 EPA-600-R-99-064 | *Ceriodaphnia dubia* Method 2002.0 | (*Cyprinella leedsi* Method 2000.0) | *Pimephales promelas* Method 2000.0 | Other:

Method from EPA-821-R-02-012
Test Type: (Definitive) Static / Static Renewal
Test Page 2 of 2

Diluent/ Batch#: well H2O / 3-21-06
Toxicant/ Batch# NaCl / 4-06

Test Beginning: Date: 3-21-06 Time: 1250
Test Ending: Date: 3-25-06 Time: 1300

48-96 hours

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	mf/sw
Alkalinity (mg/L as $CaCO_3$):	145	Hach	SA/MF
Hardness (mg/L as CaCO3):	130	Hach	SA/MF
Total Ammonia (mg/L as N):	<0.017	Denver	mf/SA
Salinity (ppth):	<1	Mettler	mf

Organism Batch #/ Age: 6-06 / 13 days
Feeding: (Prior to test) Prior to renewal / Daily
Food: YCT — P.subcapitata — Artemia GSL-536-90
Food Batch: — — —
Chamber size: 1000 mL
Test volume: 500 mL per replicate

Conc. µg/L (80)	Rep.	Chamber#	Number Live 0 hr / 24 hr / 48 hr			pH (SU) 0 hr / 24 hr / 48 hr			Temperature (°C) 0 hr / 24 hr / 48 hr			D.O. (mg/l) 0 hr / 24 hr / 48 hr			UNCORRECTED Cond. (mmhos/cm) 0 hr / 24 hr / 48 hr		
			48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr
Control	A	A24	10	10	10	7.9		8.2	24.9		24.0	7.6		7.8	0.264		0.285
	B	A2	10	10	10		7.9			24.4			5.6			0.296	
	C																
	D																
6	A	A3	8	8	8	7.9		8.1	24.8		24.0	7.4		6.4	10.45		11.37
	B	A4	10	10	10		7.9			24.4			5.6			10.79	
	C																
	D																
7	A	A5	10	10	10	7.9		8.1	25.0		24.1	7.5		7.1	12.11		12.77
	B	A6	9	9	9		8.0			24.4			6.0			12.63	
	C																
	D																
8	A	A7	6	6	6	7.9		8.1	24.9		24.0	7.4		7.3	13.52		14.1
	B	A8	7	7	7		8.0			24.4			6.2			14.91	
	C																
	D																
9	A	A9	3	3	3	7.9		8.2	24.9		24.2	7.3		7.4	15.22		16.4
	B	A10	4	4	4		8.0			24.7			6.1			15.88	
	C																
	D																
10	A	A11	1	0 (10)	—	7.9		—	24.8		—	7.3		—	16.83		—
	B	A12	1	1	1		8.0	8.2		24.5	24.1		6.0	7.3		17.30	17.6
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			mf	JD	JD	mf	JD	JD	mf	JD	JD	mf	JD	JD	mf	JD	JD
Recorded by:			mf	JD	JD	mf	JD	JD	mf	JD	JD	mf	JD	JD	mf	JD	JD

Investigators' Signatures

Bruce Neidlaw
Sarah Pinkard
Marshall Faircloth
Eva Berry
James Daniels
Mark Wellendorf
REVIEWER

Concentrations prepared by: mf/BA
Loading verified by: NA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.4 max. 24.1 mean 23.7
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.2 max. 25.9 mean 25.1

Remarks:

Statistical Results: Method: Spearman-Karber
48 (96) hour LC50: 8.43
95% Confidence Interval: lower 8.08 upper 8.81

Revised 02/21/06

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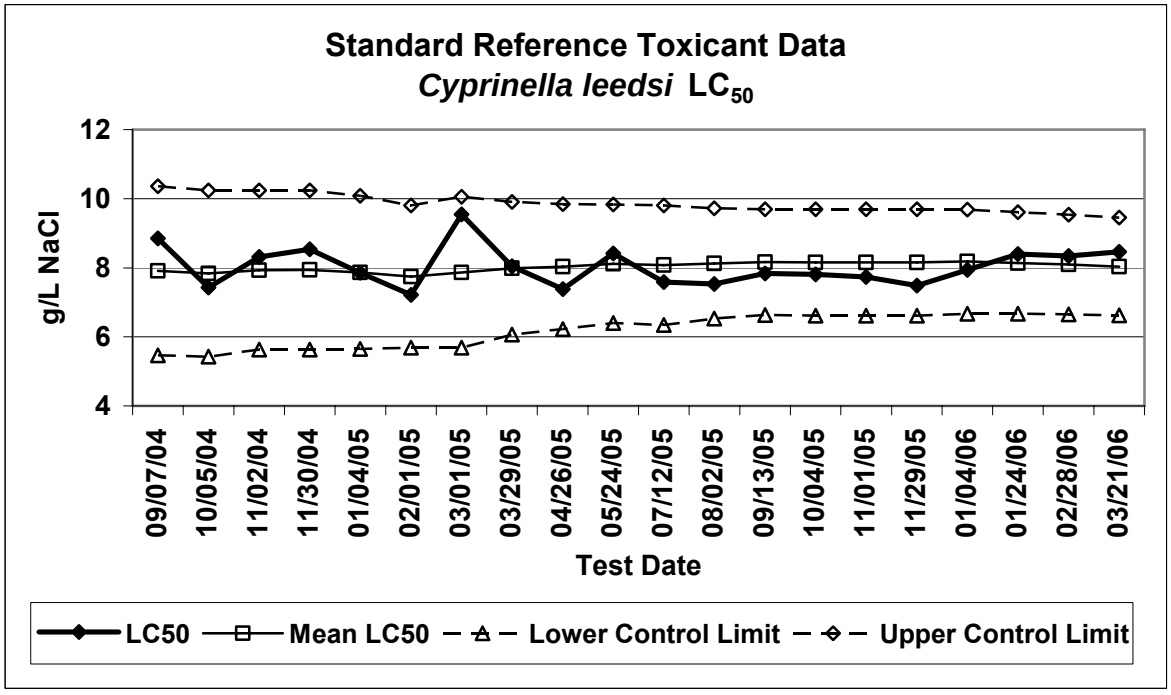
Florida Department of Environmental Protection
Bureau of Laboratories

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
09/07/04	8.85	7.91	1.22	5.46	10.36
10/05/04	7.43	7.83	1.20	5.43	10.24
11/02/04	8.31	7.93	1.15	5.63	10.24
11/30/04	8.53	7.94	1.15	5.63	10.24
01/04/05	7.86	7.87	1.11	5.65	10.08
02/01/05	7.22	7.74	1.03	5.68	9.80
03/01/05	9.54	7.87	1.09	5.68	10.05
03/29/05	8.04	7.99	0.96	6.07	9.91
04/26/05	7.38	8.03	0.90	6.22	9.84
05/24/05	8.41	8.11	0.86	6.40	9.83
07/12/05	7.59	8.08	0.86	6.35	9.81
08/02/05	7.53	8.13	0.80	6.53	9.72
09/13/05	7.84	8.16	0.77	6.63	9.70
10/04/05	7.81	8.16	0.77	6.62	9.69
11/01/05	7.74	8.15	0.77	6.61	9.69
11/29/05	7.49	8.15	0.77	6.61	9.69
01/04/06	7.94	8.18	0.75	6.67	9.68
01/24/06	8.39	8.14	0.74	6.67	9.61
02/28/06	8.34	8.09	0.72	6.65	9.53
03/21/06	8.46	8.04	0.71	6.62	9.45

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

CV = 8.80
EPA reference 75th quartile CV = 19%



Ceriodaphnia dubia Acute Standard Reference Toxicant Test

DATE: 3/21/06 DURATION: 48 h TOXICANT : NaCl
SPECIES: *C. dubia*

RAW DATA:	Concentration (g/L)	Number Exposed	Mortalities
	.00	20	0
	1.50	20	0
	2.00	20	1
	2.50	20	7
	3.00	20	19
	4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC_{50}: 2.55
95% LOWER CONFIDENCE: 2.41
95% UPPER CONFIDENCE: 2.69

Cyprinella leedsi Acute Standard Reference Toxicant Test

DATE: 3/21/06 DURATION: 48 H TOXICANT : NaCl
SPECIES: *C. leedsi*

RAW DATA:	Concentration (g/L)	Number Exposed	Mortalities
	.00	20	0
	6.00	20	2
	7.00	20	1
	8.00	20	7
	9.00	20	13
	10.00	20	18

SPEARMAN-KARBER TRIM: 10.00%

SPEARMAN-KARBER ESTIMATES: LC_{50}: 8.46
95% LOWER CONFIDENCE: 8.08
95% UPPER CONFIDENCE: 8.86

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

11842 Research Circle
Alachua, FL 32615
T: (386) 462-7889
F: (386) 462-7264
www.hydrosphere.net

HYDROSPHERE
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Packaging List

Date	Customer Number	Order Shipped Via
3/20/2006	NA	Hydrosphere Research
Customer		**Order Prepared By**
FDEP Marshall Faircloth Biology Mail Stop 6515 2600 Blair Stone Road Tallahassee, Fl 32399-2400		P. Meyer

Quantity	Description
250	C. leedsi, CL#1047, Hatched 3/8/06

Appendix H

Typical Values for Selected Parameters in Florida Waters

Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**3.41**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**48**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	28	31	37	53	**28**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.53**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.043**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.25**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	**0.59**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	**0.44**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**2.5**

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**3.2**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**42**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	28	31	37	53	**31**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.8**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.048**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.27**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	**0.77**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	**0.42**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**3.7**

Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data.

Appendix I

Habitat Assessment Field Sheets

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DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 3/21/06	TIME 1330	RECEIVING BODY OF WATER: Peace R./ Payne Cr
REMARKS:	COUNTY: Hardee	LOCATION: CF Hardee I, North Pasture Payne Creek - upstream of outfall	FIELD ID/NAME: Control Site/ Payne Cr.	

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
X							

LOCAL WATERSHED EROSION (check box): None ☐ Slight: ☒ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight: ☒ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: > 20

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☒ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT 3.5 m wide

0.2 m/s 0.2 m/s 0.1 m/s

0.2 m deep 0.3 m deep 0.4 m deep

HIGH WATER MARK: 1.5 + 0.4 = 1.9

(m above present water level) (present depth in m) (m above bed)

CANOPY COVER %: OPEN: ☐ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☒ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☒ OTHER: ☐

SEDIMENT OILS: ABSENT: ☒ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE MODERATE SLIGHT SEVERE SILT SMOTHERING: NONE SLIGHT MODERATE SEVERE OTHER: ☐

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	8	IIII		SAND	89	IIII	
LEAF PACKS OR MATS	2			MUD/MUCK/SILT			
AQUATIC VEGETATION	—			OTHER:			
ROCK OR SHELL RUBBLE	—			OTHER:			
UNDERCUT BANKS/ROOTS	2	IIII		DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	CONDUCTIVITY (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH		23.8	7.46	9.01	388			
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER 3RD-4TH ORDER 5TH – 6TH ORDER 7TH ORDER OR GREATER LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☒ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☒ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☒ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☒ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐

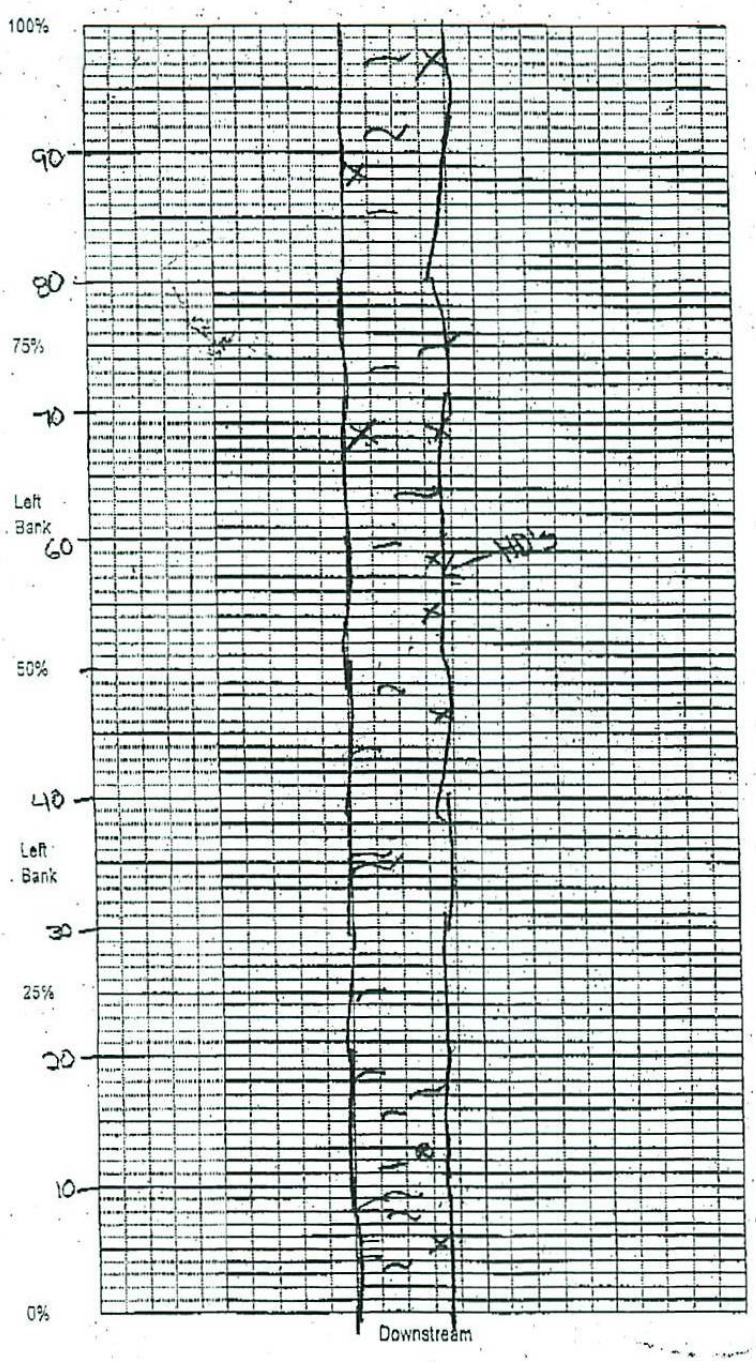
WEATHER CONDITIONS/NOTES: Sunny/warm

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☒	☐
FISH	☐	☐	☒	☐
AQUATIC MACROPHYTES	☒	☐	☐	☐
IRON/SULFUR BACTERIA	☒	☐	☐	☐

SAMPLING TEAM: Jodi Champion / Scott Rose

SIGNATURE: Jodi Champion DATE: 3/21/06

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats) - not enough for square meters
- Macrophytes
- _____
- _____
- _____

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:
CF Hardee I, North Pasture Control Site

N27°37'14.4"
W81°57'25.9"

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (mm/dd/yy): 3/21/06	RECEIVING BODY OF WATER: Payne Creek / Peace R.	
REMARKS:	COUNTY: Hardee	LOCATION: SF Hardee I, North Pasture Payne Creek – Upstream of outfall	FIELD ID/NAME: Control Site / Payne Cr	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 10	Four or more productive habitats present [snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed (10) 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 8	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 (8) 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 12	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 (12) 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 18 Primary Score 48	Less than 20% of habitats affected by sand or silt accumulation 20 19 (18) 17 16	20% -50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50% -80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 20	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 10 Left Bank 10	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60% -80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 10 Secondary Score 80	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

128 **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
3/21/06	Jacki Champion	Jacki Champion

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: _____
SUBMITTING AGENCY NAME: _____

STORET STATION NUMBER:

DATE (M/D/Y): 3/21/06

TIME: 8:45

RECEIVING BODY OF WATER: Peace R

REMARKS:

COUNTY: Hardee

LOCATION: CF Hardee I, North Pasture Payne Creek - Downstream 003

FIELD ID/NAME: Test Site / Payne Cr.

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
X							

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☒ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☒ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: >20

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☒ no ☐ recent, ☐ severe ☐ some recovery ☐ mostly recovered ☐ more sinuous

ARTIFICIALLY IMPOUNDED ☐ yes

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT: 3.5 m wide

0.2 m/s | 0.1 m/s | 0.3 m/s

0.4 m deep | 0.2 m deep | 0.4 m deep

HIGH WATER MARK: 1.4 + 0.4 = 1.8
(m above present water level) (present depth in m) (m above bed)

CANOPY COVER %: OPEN: ☐ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☒ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☒ OTHER: ☐ _____

SEDIMENT OILS: ABSENT: ☒ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE / SLIGHT / MODERATE / SEVERE SILT SMOTHERING: NONE / SLIGHT / MODERATE / SEVERE OTHER: _____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	7	////		SAND	72	////	
LEAF PACKS OR MATS	—			MUD/MUCK/SILT			
AQUATIC VEGETATION	4	////		OTHER:			
ROCK OR SHELL RUBBLE	3	////		OTHER:			
UNDERCUT BANKS/ROOTS	12	////					

DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):		SECCHI (M):
TOP							
MID-DEPTH		22.63	7.39	8.51	385		
BOTTOM							

SYSTEM TYPE: STREAM: 1ST, 2ND ORDER / 3RD, 4TH ORDER / 5TH – 6TH ORDER / 7TH ORDER OR GREATER LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐ _____

WATER ODORS (CHECK BOX): NORMAL: ☒ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐ _____

WATER SURFACE OILS (CHECK BOX): NONE: ☒ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☒ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☒ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐ _____

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☒	☐
FISH	☐	☐	☒	☐
AQUATIC MACROPHYTES	☐	☐	☒	☐
IRON/SULFUR BACTERIA	☒	☐	☐	☐

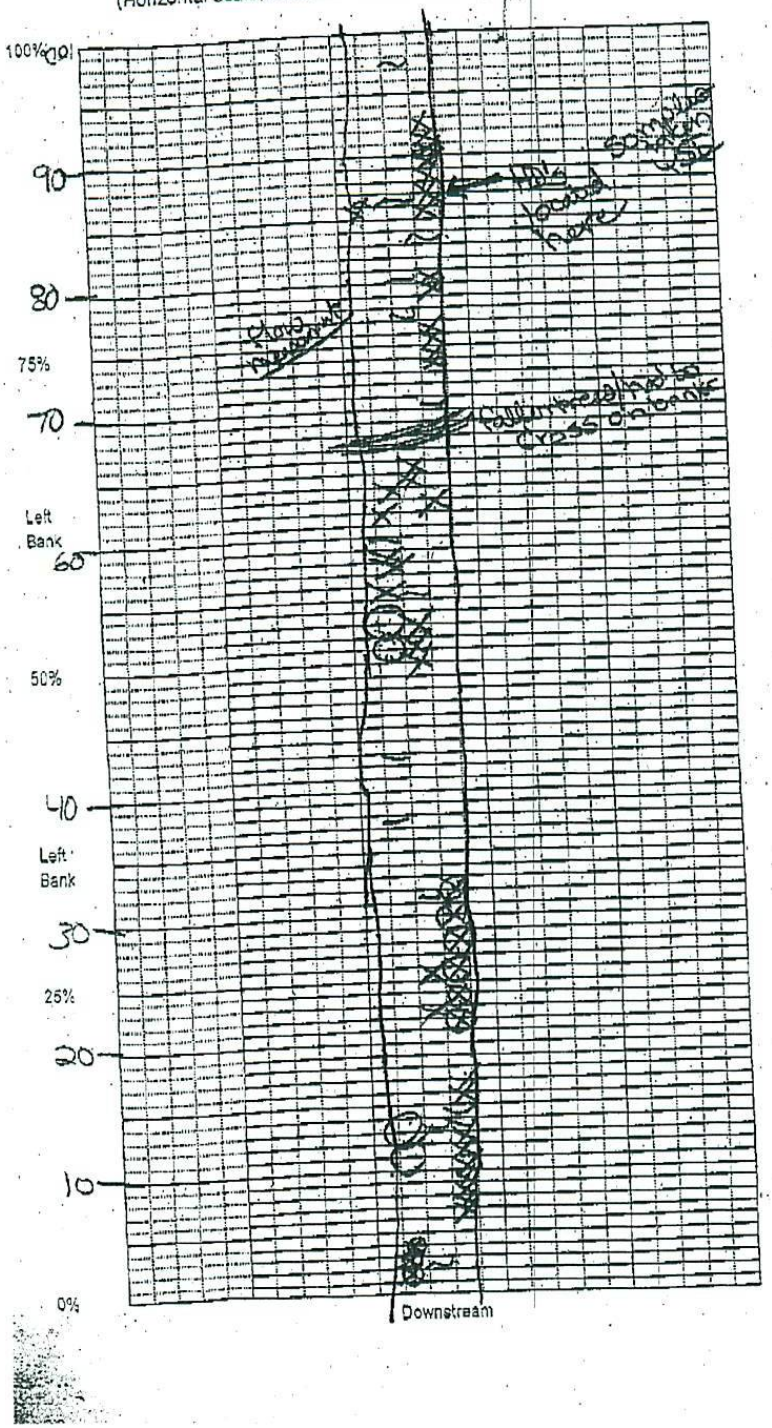
WEATHER CONDITIONS/NOTES: warm / sunny

SAMPLING TEAM: Jacki Champion / Scott Rose

SIGNATURE: Jacki Champion

DATE: 3/21/06

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats)
- Macrophytes
- Shell Rubble
- _____
- _____

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

CF Harden I, North Pasture Test Site

N 27°37' 13.2"
W 81°57' 23.7"

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 3/21/06	RECEIVING BODY OF WATER: Peace R.
REMARKS:	COUNTY: Hardee	LOCATION: CF Hardee F, North Pasture Payne Creek - Downstream 003	FIELD ID/NAME: Test Site / Payne Creek

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 19	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock) 20 (19) 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 15	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent (15) 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 13	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 (13) 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 18 Primary Score 65	Less than 20% of habitats affected by sand or silt accumulation 20 19 (18) 17 16	20% -50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50% -80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 20	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered. fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60% -80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 10 Secondary Score 78	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

143 TOTAL SCORE

ANALYSIS DATE: 3/21/06	ANALYST: Jacki Champion	SIGNATURE: Jacki Champion

Appendix J

Taxa list and number of individuals counted for qualitative natural periphyton collections from CF Industries, Inc. –Hardee complex I (North Pasture) discharge, March 21, 2006.

	Control Site	Test Site
Bacillariophyta		
Achnanthes sp.	1	-
Achnanthes clevei	1	5
Achnanthes curvirostrum	-	1
Achnanthes exigua	6	4
Achnanthes lanceolata	2	4
Achnanthes lanceolata apiculata	3	7
Achnanthes lanceolata rostrata	29	19
Achnanthes rupestoides	1	-
Amphora sp.	4	6
Bacillaria paxillifer	4	-
Bacillariophyceae	10	10
Bacillariophyta	-	5
Capartogramma crucicula	14	12
Cocconeis sp.	-	1
Cocconeis fluviatilis	7	9
Cocconeis neodiminuta	-	3
Cocconeis placentula	-	1
Cyclotella meneghiniana	2	-
Diadesmis confervacea	-	1
Diploneis pseudovalis	3	1
Encyonema minutum	2	-
Encyonema silesiacum	1	-
Eunotia sp.	5	1
Fragilaria sp.	1	1
Fragilaria pinnata	-	1
Fragilariaceae	3	8
Gomphonema sp.	-	1
Gomphonema affine	6	3
Gomphonema parvulum	1	-
Gyrosigma sp.	7	3
Gyrosigma acuminatum	3	-
Hantzschia sp.	1	3
Hippodonta sp.	1	3
Hippodonta capitata	3	4
Hippodonta hungarica	5	4
Melosira sp.	9	6
Navicula sp.	1	2
Navicula constans	21	28
Navicula cryptocephala	1	2
Navicula germainii	-	2
Navicula gysingensis	29	-
Navicula kotschyi	-	28
Navicula minima	1	-
Navicula porifera	3	5
Navicula rostellata	2	-
Navicula seminulum	8	15
Naviculaceae	7	4
Nitzschia sp.	6	9
Nitzschia dissipata	-	2
Nitzschia filiformis	3	2
Nitzschia gracilis	3	7
Nitzschia nana	-	2
Nitzschia palea	10	8
Opephora sp.	3	1

	Control Site	Test Site
Pinnularia sp.	8	11
Planothidium delicatulum	8	1
Pleurosira laevis	3	7
Surirella sp.	14	4
Synedra fasciculata	31	29
Thalassiosira sp.	1	1
Tryblionella acuta	7	5
Tryblionella levidensis	1	2
Chlorophycota		
Cladophora sp.	-	2
Ulothrix sp.	1	-
Cryptophycophyta		
Cryptomonas sp.	1	-
Cyanophycota		
Jaaginema sp.	3	1
Komvophoron schmidlei	-	1
Oscillatoria limosa	-	1
Oscillatoria tenuis	2	1
Planktolyngbya sp.	4	1
Pseudanabaena sp.	1	4
Stigonema sp. -	1	

Appendix K-1

Taxa list and number of individuals counted for phytoplankton collected upstream and downstream of CF Industries, Inc. -Hardee Complex I (North Pasture) discharge, March 21, 2006.

	Control Site	Test Site
Bacillariophyta		
Achnanthes curvirostrum	3	-
Achnanthes exigua	2	1
Achnanthes lanceolata	3	3
Achnanthes lanceolata apiculata	7	9
Achnanthes lanceolata rostrata	3	4
Achnanthes sp.	14	14
Amphipleura pellucida	2	1
Amphora sp.	1	6
Bacillaria paxillifer	-	2
Bacillariophyceae	3	2
Capartogramma crucicula	5	2
Cocconeis fluviatilis	2	5
Cocconeis neodiminuta	7	7
Cocconeis placentula	1	1
Cocconeis sp.	2	2
Cyclotella meneghiniana	-	1
Diadesmis confervacea	3	1
Diploneis pseudovalis	5	1
Fragilaria brevistriata	1	2
Fragilaria pinnata	5	5
Fragilaria sp.	3	1
Fragilariaceae	2	2
Gomphonema parvulum	-	1
Gomphonema sp.	9	11
Gyrosigma acuminatum	-	1
Gyrosigma sp.	2	6
Hippodonta capitata	-	1
Hippodonta hungarica	5	4
Hippodonta sp	9	13
Melosira sp.	18	12
Navicula constans	4	4
Navicula cryptocephala	23	23
Navicula germainii	-	1
Navicula kotschyi	2	1
Navicula minima	59	68
Navicula porifera	-	2
Navicula rostellata	1	1
Navicula sp	1	1
Naviculaceae	28	12
Nitzschia dissipata	11	15
Nitzschia gracilis	5	2
Nitzschia insignis	-	1
Nitzschia intermedia	2	1
Nitzschia palea	3	2
Nitzschia sp.	2	2
Pinnularia sp.	3	1
Planothidium delicatulum	2	8
Pleurosira laevis	-	2
Sellaphora sp.	2	4
Surirella sp.	1	1
Synedra fasciculata	-	1

	Control Site	Test Site
Thalassiosira sp.	17	22
Tryblionella acuta	3	-
Chlorophycota		
Chlamydomonas sp.	1	-
Chlorella sp.	2	-
Scenedesmus quadricauda	1	1
Cryptophycophyta		
Cryptomonas sp.	-	1
Cyanophycota		
Cyanobium parvum	1	-
Jaaginema sp.	1	1
Merismopedia punctata	1	-
Merismopedia tenuissima	2	-
Planktolyngbya sp.	3	-
Schizothrix calcicola	-	1
Synechocystis sp.	1	-
Euglenophycota		
Euglena sp.	-	1
Lepocinclis sp.	2	-
Trachelomonas sp.	1	-

Appendix K-2

Taxa list and density (number/mL) for phytoplankton collected upstream and downstream of CF Industries, Inc. - Hardee Complex I (North Pasture) discharge, March 21, 2006.

	Control Site	Test Site
Bacillariophyta		
Achnanthes sp.	9	-
Achnanthes curvirostrum	6	12
Achnanthes exigua	9	36
Achnanthes lanceolata	22	108
Achnanthes lanceolata apiculata	9	48
Achnanthes lanceolata rostrata	44	168
Amphipleura pellucida	6	12
Amphora sp.	3	72
Bacillaria paxillifer	-	24
Bacillariophyceae	9	24
Capartogramma crucicula	16	24
Cocconeis sp.	6	60
Cocconeis fluviatilis	22	84
Cocconeis neodiminuta	3	12
Cocconeis placentula	6	24
Cyclotella meneghiniana	-	12
Diadesmis confervacea	9	12
Diploneis pseudovalis	16	12
Fragilaria sp.	3	24
Fragilaria brevistriata	16	60
Fragilaria pinnata	9	12
Fragilariaceae	6	24
Gomphonema sp.	-	12
Gomphonema parvulum	28	132
Gyrosigma sp.	-	12
Gyrosigma acuminatum	6	72
Hippodonta sp.	-	12
Hippodonta capitata	16	48
Hippodonta hungarica	28	156
Melosira sp.	57	144
Navicula sp.	13	48
Navicula constans	72	277
Navicula cryptocephala	-	12
Navicula germainii	6	12
Navicula kotschyi	185	818
Navicula minima	-	24
Navicula porifera	3	12
Navicula rostellata	3	12
Naviculaceae sp.	88	144
Nitzschia sp.	35	180
Nitzschia dissipata	16	24
Nitzschia gracilis	-	12
Nitzschia insignis	6	12
Nitzschia intermedia	9	24
Nitzschia palea	6	24
Pinnularia sp.	9	12
Planothidium delicatulum	6	96
Pleurosira laevis	-	24
Sellaphora sp.	6	48
Surirella sp.	3	12
Synedra fasciculata	-	12
Thalassiosira sp.	53	265
Tryblionella acuta	9	-

	Control Site	Test Site
Chlorophycota		
Chlorella sp.	6	-
Chlamydomonas sp.	3	-
Scenedesmus quadricauda	3	12
Cryptophycophyta		
Cryptomonas sp.	-	12
Cyanophycota		
Cyanobium parvum	3	-
Jaaginema sp.	3	12
Merismopedia punctata	3	-
Merismopedia tenuissima	6	-
Planktolyngbya sp.	9	-
Schizothrix calcicola	-	12
Synechocystis sp.	3	-
Euglenophycota		
Euglena sp.	-	12
Lepocinclis sp.	6	-
Trachelomonas sp.	3	-

Appendix L-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the CF Industries, Inc. –Hardee Complex I (North Pasture) and collected March 21, 2006. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site		
Annelida				
Hirudinea				
Rhynchobdellida				
Desserobdella phalera	3	-		
Oligochaeta				
Haplotaxida				
Nais sp.	-	3		
Slavina appendiculata	-	3		
Arthropoda				
Arachnida				
Acariformes				
Atractides sp.	27	27		
Hygrobates sp.	5	-		
Koenikea sp.	3	-		
Crustacea				
Amphipoda				
Hyalella azteca	-	3		
Insecta				
Coleoptera				
Dineutus sp.	3	11		
Dubiraphia vittata	16	-		
Gyrinus sp.	5	3		
Microcylloepus pusillus	43	66		
Stenelmis sp.	74	106		
Diptera				
Ablabesmyia mallochi	50	-		
Ablabesmyia rhamphe grp.	19	-		
Cladotanytarsus cf. daviesi	-	8		
Corynoneura sp.	249	-		
Cricotopus bicinctus	52	11		
Hemerodromia sp.	3	-		
Nilotanypus fimbriatus	30	-		
Nilothauma sp.	36	-		
Palpomyia/bezzia grp.	137	85		
Pentaneura inconspicua	199	184		
Polypedilum fallax	39	25		
Polypedilum flavum	3,034	2,021		
Polypedilum scalaenum grp.	14	-		
Rheocricotopus robacki	124	114		
Rheotanytarsus exiguus grp.	449	435		
Rheotanytarsus pellucidus	149	37		
Simulium sp.	-	21		
Tanytarsus sp. A Epler	189	81		
Tanytarsus sp. C Epler	326	48		
Tanytarsus sp. I epler	26	9		
Tanytarsus sp. S Epler	73	-		
Tanytarsus sp. T Epler	22	12		
Thienemanniella similis	23	-		
Thienemanniella xena	121	11		
Ephemeroptera				
Acentrella alachua	3	4		
Acerpenna pygmaea		306		246
Baetis intercalaris		19		187

	Control Site	Test Site
Caenis sp.	61	19
Maccaffertium exiguum	63	82
Pseudocloeon sp.	-	7
Stenacron sp.	9	8
Odonata		
Argia sedula	-	3
Coenagrionidae	16	-
Hetaerina sp.	5	-
Hetaerina titia	-	5
Trichoptera		
Cheumatopsyche sp.	859	1,286
Hydropsyche sp.	22	189
Neotrichia sp.	225	173
Neureclipsis crepuscularis	3	12
Nyctiophylax sp.	-	3
Oecetis persimilis	3	8
Polycentropus sp.	-	6
Cnidaria		
Hydroida		
Hydra sp.	3	-
Mollusca		
Bivalvia		
Veneroida		
Corbicula fluminea	3	3
Gastropoda		
Basommatophora		
Ferrissia sp	5	-
Ferrissia hendersoni	-	10
Laevapex sp	5	-
Physidae	-	3

Appendix L-2

Benthic macroinvertebrate taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the CF Industries, Inc. -Hardee Complex I (North Pasture) for 28 days and collected March 21, 2006.

	Control Site	Test Site
Annelida		
Hirudinea		
Rhynchobdellida	1	-
Oligochaeta		
Nais sp.	-	1
Slavina appendiculata	-	1
Arthropoda		
Arachnida		
Acariformes		
Atractides sp.	10	10
Hygrobates sp.	2	-
Koenikea sp.	1	-
Crustacea		
Amphipoda		
Hyalella azteca	-	1
Insecta		
Coleoptera		
Dineutus sp.	1	4
Dubiraphia vittata	6	-
Gyrinus sp.	2	1
Microcylloepus pusillus	16	25
Stenelmis sp.	28	40
Diptera		
Ablabesmyia mallochi	18	-
Ablabesmyia rhamphe grp.	7	-
Ceratopogonidae	21	14
Chironomidae	81	59
Cladotanytarsus cf. daviesi	-	3
Corynoneura	90	-
Cricotopus bicinctus	19	4
Hemerodromia sp.	1	-
Nilotanypus fimbriatus	11	-
Nilothauma sp.	13	-
Palpomyia/Bezzia grp.	31	18
Pentaneura inconspicua	72	66
Polypedilum fallax	14	9
Polypedilum flavum	1,100	724
Polypedilum scalaenum grp.	5	-
Rheocricotopus robacki	45	41
Rheotanytarsus exiguus grp.	163	156
Rheotanytarsus pellucidus	54	13
Simulium sp.	-	8
Tanytarsus sp.	82	4
Tanytarsus sp. a epler	44	27
Tanytarsus sp. c epler	76	16
Tanytarsus sp. l epler	6	3
Tanytarsus sp. s epler	17	-
Tanytarsus sp. t epler	5	4
Thienemanniella sp.	14	-
Thienemanniella similis	6	-
Thienemanniella xena	32	4
Ephemeroptera		
Acentrella alachua	1	1

	Control Site	Test Site
Acerpenna pygmaea	111	67
Baetidae	5	47
Baetis intercalaris	7	51
Caenis sp.	23	7
Heptageniidae	11	-
Maccaffertium sp.	4	10
Maccaffertium exiguum	10	21
Pseudocloeon sp.	-	2
Stenacron sp.	2	3
Odonata		
Argia sedula	-	1
Calopterygidae	-	1
Coenagrionidae	6	-
Hetaerina sp.	2	-
Hetaerina titia	-	1
Trichoptera		
Cheumatopsyche sp.	271	462
Hydropsyche sp.	7	68
Hydropsychidae	55	26
Hydroptilidae	24	28
Neotrichia sp.	61	37
Neureclipsis sp.	-	1
Neureclipsis crepuscularis	1	3
Nyctiophylax sp.	-	1
Oecetis sp.	-	1
Oecetis persimilis	1	2
Polycentropodidae	-	1
Polycentropus sp.	-	2
Undetermined	-	2
Cnidaria		
Hydrozoa		
Hydra sp.	1	-
Mollusca		
Bivalvia		
Corbicula fluminea	1	1
Gastropoda		
Ancylidae	2	2
Ferrissia sp.	1	-
Ferrissia hendersoni	-	1
Laevapex sp.	1	-
Physidae	-	1
Undetermined	-	1

Appendix M-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of CF Industries, Inc. –Hardee Complex I (North Pasture), March 21, 2009. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Nais communis complex	5	4
Tubificidae	-	1
Arthropoda		
Coleoptera		
Dubiraphia vittata	9	23
Microcylloepus pusillus	12	4
Ora/scirtes sp.	-	1
Stenelmis sp.	5	7
Diptera		
Ablabesmyia rhamphe grp.	-	1
Ceratopogonidae	1	-
Cladotanytarsus cf. daviesi	2	4
Cricotopus bicinctus	3	-
Cryptochironomus sp.	-	1
Dicrotendipes modestus	2	-
Labrundinia sp.	1	-
Palpomyia/bezzia grp.	-	1
Paralauterborniella nigrohalterale	1	-
Pentaneura inconspicua	-	3
Polypedilum flavum	13	4
Polypedilum illinoense grp.	2	-
Polypedilum scalaenum grp.	4	-
Rheotanytarsus exiguus grp.	1	1
Rheotanytarsus pellucidus	1	1
Tanytarsus sp. A Epler	6	13
Tanytarsus sp. C Epler	6	-
Tanytarsus sp. L Epler	-	4
Ephemeroptera		
Acerpenna pygmaea	-	2
Baetis intercalaris	-	7
Callibaetis sp.	-	1
Centroptilum triangulifer	1	-
Procloeon sp.	-	1
Pseudocloeon sp.	2	3
Odonata		
Calopterygidae	-	1
Macromia sp.	1	1
Trichoptera		
Cheumatopsyche sp.	1	3
Hydroptila sp.	-	1
Nectopsyche pavida	-	1
Neotrichia sp.	4	5
Oecetis sp.	1	-
Oecetis georgia	-	1
Mollusca		
Bivalvia		
Corbicula fluminea	6	2
Eupera cubensis	1	-
Gastropoda		
Haitia sp.	2	-
Micromenetus sp.	-	1
Micromenetus dilatatus	4	-
Pyrgophorus platyrachis	10	2

Appendix M-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of CF Industries, Inc. –Hardee Complex I (North Pasture), March 21, 2006.

	Control Site	Test Site
Annelida		
Oligochaeta		
Nais communis complex	5	4
Tubificidae	-	1
Arthropoda		
Coleoptera		
Dubiraphia vittata	9	23
Microcylloepus pusillus	12	4
Ora/scirtes sp.	-	1
Stenelmis sp.	5	7
Diptera		
Ablabesmyia rhamphe grp.	-	1
Ceratopogonidae	1	-
Chironomidae	3	9
Cladotanytarsus cf. daviesi	2	3
Cricotopus bicinctus	3	-
Cryptochironomus sp.	-	1
Dicrotendipes modestus	2	-
Undetermined Diptera	-	1
Labrundinia sp.	1	-
Palpomyia/bezzia grp.	-	1
Paralauterborniella nigrohalterale	1	-
Pentaneura inconspicua	-	2
Polypedilum flavum	10	3
Polypedilum illinoense grp.	2	-
Polypedilum scalaenum grp.	4	-
Rheotanytarsus exiguus grp.	1	1
Rheotanytarsus pellucidus	1	1
Tanytarsus sp.	-	3
Tanytarsus sp. A Epler	6	5
Tanytarsus sp. C Epler	6	-
Tanytarsus sp. L Epler	-	2
Ephemeroptera		
Acerpenna pygmaea	-	2
Baetidae	1	1
Baetis intercalaris	-	6
Callibaetis sp.	-	1
Centroptilum triangulifer	1	-
Procloeon sp.	-	1
Pseudocloeon sp.	1	3
Odonata		
Calopterygidae	-	1
Macromia sp.	1	1
Trichoptera		
Cheumatopsyche sp.	1	3
Hydroptila sp.	-	1
Hydroptilidae	-	1
Nectopsyche pavida	-	1
Neotrichia sp.	4	4
Oecetis sp.	1	-
Oecetis georgia	-	1
Mollusca		
Bivalvia		
Corbicula fluminea	6	2
Eupera cubensis	1	-

	Control Site	Test Site
Gastropoda		
Haitia sp.	2	-
Micromenetus sp.	-	1
Micromenetus dilatatus	4	-
Pyrgophorus platyrachis	10	2

The Bioassay of CF Industries, Hardee Complex I (North Pasture) effluent sampled on March 21, 2006, NPDES #FL0035271.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 5 2 7 1 11	12 0 6 0 3 2 1	18 **B**	19 **S**	20 2

Remarks

66

The Priority Pollutants Analysis for Bioassay of CF Industries, Hardee Complex I (North Pasture) effluent sampled on March 21, 2006, NPDES #FL0035271.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 5 2 7 1 11	12 0 6 0 3 2 1	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of the CF Industries, Hardee Complex I (North Pasture) effluent sampled on March 21, 2006, NPDES #FL0035271.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 5 2 7 1 11	12 0 6 0 3 2 1	18 **S**	19 **S**	20 2

Remarks

66