

Biological Assessment of

Wewahitchka Wastewater Treatment Facility

Gulf County

NPDES #FL0020125

Sampled June 1 and August 6, 2009

February 2010

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

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EPA End Sheet

Fifth Year Inspection Summary

The Fifth Year Inspection of the Wewahitchka WWTF produced the following notable results. The effluent samples were collected on June 1, 2009, while the in-stream sampling was postponed until August 6, 2009 due to high water. There were no organic constituents detected in the effluent. Copper in the effluent exceeded the Class III Water Quality Criterion (62-302.530(23) F.A.C).

The Wewahitchka WWTF effluent was acutely toxic to the water flea, *Ceriodaphnia dubia*, and to the freshwater fish, *Cyprinella leedsi* during the 48-hour acute screen bioassay which is a violation of the facility's permit limits. Toxicity was likely due to the total residual chlorine (TRC) in the effluent sample which, as measured in the laboratory, exceeded both the Class III Water Quality Criterion (62-302.530(18) F.A.C.) and the effluent permit limit. Effluent unionized ammonia, as measured in the laboratory, also exceeded both the Class III Water Quality Criteria (62-302.530(3) F.A.C) and the effluent permit limit. The aliquot of effluent sample that was dechlorinated in the laboratory was not toxic to either organism.

General physical-chemical and microbiological measurements complied with water quality criteria and effluent permit limits. Algal Growth Potential (AGP) values of the effluent and the in-stream Control and Test Site samples exceeded the "problem" threshold of 5.0 mg dry wt/L for fresh water (Raschke & Schulz, 1987).

Macroinvertebrate communities collected from the Hester Dendy samplers at the Control and Test Sites were almost identical in composition and diversity. Based on the results of this sampling event, it does not appear that the Wewahitchka WWTF effluent is adversely influencing the biota in the Chipola River, likely due to the high level of dilution.

A Consent Order (CO) (OGC File No. 09-0378-23 DW) was executed on July 31, 2009 for this facility due to past violations of total suspended solids (TSS), fecal coliforms, total phosphorus, and total nitrogen that occurred from March 2007 to November 2008.

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.

Facility Overview

The Wewahitchka Wastewater Treatment Facility is an advanced secondary activated sludge Municipal Domestic Wastewater Treatment plant. The effluent is discharged into the Chipola River, a Class III Fresh Outstanding Florida Water (see map in Appendix A). The plant discharges by sequential batch reactor. The design flow of the wastewater system is 0.20 million gallons per day (MGD). The monthly annual average flow for June, 2008 to June, 2009 was 0.105 MGD. The flow was not measured during this survey (DEP Panama City Branch sampling staff).

See the Facility Summary (Appendix B) for a description of the facility, a summary of permit limits, information regarding the consent order (CO) and discharge monitoring report (DMR) information. The facility is operating under a Consent Order (CO) (OGC File No. 09-0378-23 DW) that was executed on 7/31/09 for past violations of total suspended solids (TSS), fecal coliforms, total phosphorus and total nitrogen. The facility was permitted in December 2009 for an expansion (please see updated facility summary in Appendix B).

Methods

The purpose of this investigation was to determine the discharger's effects on the biota of the receiving waters. Effluent grab samples were collected from the discharge pipe after dechlorination (D-001) on June 1, 2009. Due to flooding in the Chipola River, the in-stream sampling was postponed until August 6, 2009. There is a two month gap between effluent sampling and in-stream sampling.

The in-stream sampling was requested by the NW District and performed by Tallahassee Laboratory staff to obtain a background level of biological health in anticipation of pending facility permitting applications for changes to the facility's discharge. Chemical and biological comparisons were made between a Control Site located in the Chipola River approximately 10 m upstream of the point of discharge and a Test Site located approximately 10 m downstream of the point of discharge, also located in the Chipola River.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.floridadep.org/labs/sop/index.htm for details) and met DEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm).

The following were involved in this investigation: Mark Sumner (DEP Panama City Branch Office) and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Michael Tanski and Nancy Ross).

Results and Discussion

Organic Constituents (See Table 1 and Appendix E)

- No organic constituents were detected in the effluent.

Metals (See Table 2 for complete list of metals and Appendix E)

- Effluent copper was detected at a level (30.1 µg/L) that exceeded the Class III Fresh Water Quality Criterion (62-302.530(23) F.A.C.).
- Effluent iron, lead, nickel, and zinc were detected at levels that complied with Class III Fresh Water Quality Criteria.
- Effluent aluminum and arsenic were present at levels between the minimum detection limit (MDL) and practical quantitation limit (PQL) and within the water quality criteria.
- Control and Test Site copper, and iron were detected at levels that complied with Class III Fresh Water Quality Criteria. Iron was detected at levels close to the water quality criterion at both in-stream sites.
- Control and Test Site arsenic, chromium III, lead, nickel, and selenium were present at levels between the MDL and PQL and within the water quality criteria.

Whole Effluent Toxicity Test (See Table 1 and Appendices F and G)

- The effluent sample was acutely toxic to the fish, *Cyprinella leedsi*, and to the water flea, *Ceriodaphnia dubia*, during the 48-hour acute screening bioassays and violated the effluent permit limits. Due to the high levels of chlorine in the effluent as measured in the laboratory, the effluent sample was dechlorinated in the laboratory and the dechlorinated aliquot was not toxic to either test organism.
- The samples were taken at sampling point D-001, after dechlorination, therefore the dechlorination process is not performing according to permit.

Physical and Chemical Parameters (See Table 1 and Appendices D, E and H)

- Habitat assessment scores (114) were identical at the Control Site and Test Site, which places both sites in the suboptimal category. The Test Site had slightly better substrate availability and the Control Site had slightly better bank stability.
- Effluent dissolved oxygen (mg/L), pH (Standard Units), and specific conductance (µmhos/cm) were not measured at the time of sampling. Laboratory measurements of these parameters in the effluent sample complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.

- Total residual chlorine (TRC) in the effluent sample (0.95 mg/L), as measured in the laboratory, exceeded both the Class III Water Quality Criterion (62-302.530(18) F.A.C.) and the effluent permit limit.
- Chlorophyll *a* content estimates algal biomass, and high algal biomass implies nutrient stress (Stevenson and Bahls, 1999). Chlorophyll *a* was 12 μg/L in the effluent sample, while samples from the Control and Test Sites were not processed because they were inadvertently preserved.
- Total suspended solids (mg/L) and Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.

Microbiology (See Table 1 and Appendix E)

- Fecal coliforms were detected in the effluent and at both the Control and Test Sites at very low levels which complied with Class III Fresh Water Quality Criterion (62-302.530(6) F.A.C.) and facility permit limits.

Nutrients (See Table 1 and Appendix E)

- Effluent unionized ammonia, as measured in the laboratory, exceeded the Class III Water Quality Criteria (62-302.530(3) F.A.C) and effluent permit limit.
- Effluent total phosphorus and total nitrogen were detected at levels which complied with the facility's permit limit. Permit limits are based on composite samples, however; grab samples were taken for this inspection.
- Control and Test Site ortho-phosphate samples were detected at levels between the MDL and PQL.
- Nutrient levels were similar between the Control and Test Site. For the in-stream sampling event, there was no detectable nutrient enrichment from the effluent at the Test Site. At the time the Control and Test Site samples were taken, the facility was known to be discharging. The nutrient levels present in the effluent sample either did not occur on the day of in-stream sampling or did occur but were unable to be detected at the Test Site due to the dilution in the Chipola River.

Algal Growth Potential (See Table 3 and Appendix E)

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al*. 1978). Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values in the effluent (167 mg dry wt/L), and both the Control Site (8.1 mg dry wt/L) and the Test Site (11.0 mg dry wt/L) were above the problem threshold. Similar upstream and downstream AGP values do not indicate nutrient enrichment in the Chipola River from the effluent. It should be noted that the Control and Test Site values are estimated as indicated by the "J", and were held beyond the normal holding time as indicated by the "Q". The analytical chemistry suggests that the effluent is nitrogen limited and the receiving water sites are both phosphorus limited.

Bioassessment

Periphyton

- Periphyton samples were not collected due to inappropriate sampling conditions.

Macroinvertebrates (See Table 4 and Appendices I-1 and I-2)

- The Shannon-Weaver diversity scores were nearly identical at the Control and Test Sites (3.71 and 3.70, respectively); however the Test Site had nearly twice as many individuals. Both sites were dominated by trichopterans but at a dominance of about 25%. Both sites had

similar numbers of total taxa (Control Site had 44 taxa and Test Site had 47 taxa) and each site had 19 EPT taxa. There is no indication of benthic invertebrate community impairment from the facility's effluent.

- Qualitative dip-net samples were not taken due to the stream not being appropriate for this type of sampling.

Literature Cited

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

Wewahitchka WWTF	Class III Criteria	Effluent Limits	Effluent 6/1/09	Control Site 8/6/09	Test Site 8/6/09
Organic Constituents (µg/L)					
None Detected	-	-	None Detected		
Nutrients (mg/L)					
Ortho-phosphate	-	-	2	0.006 I	0.009 I
Total Phosphorus	-	≤ 8.0 s,p	2.2 g	0.034	0.033
Total Ammonia	-	-	2.9	0.05 U	0.05 U
Un-ionized Ammonia	≤ 0.02 s	-	0.50 c £	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	1.1	0.47	0.46
Total Kjeldahl Nitrogen	-	-	4.4	0.31	0.33
Organic Nitrogen	-	-	1.5 c	0.285 c	0.305 c
Total Nitrogen	-	≤ 10.0 s,p,†	5.5 c,g	0.78 c	0.79 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	114	114
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	7.5 £	6.2 J	6.0 J
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.3 £	7.9	7.9
Conductivity (µmhos/cm)	≤ 1,275	-	643 £	149	150
Temperature (°C)	-	-	28 J	29.0	29.0
Sample Depth (m)	-	-	-	0.5	0.5
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	0.95 £	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	12	-	-
Phaeophytin (µg/L)	-	-	1 I	-	-
Total Suspended Solids (mg/L)	-	≤ 20.0 s,p	5 I,g	19	19
Turbidity (NTU)	< 41 t	-	2.2	12 A	12
Salinity			0.25 £		
CBOD, 5 day (mg/L), N - inhibited	-	≤ 20.0 s,p	3 A,g	0.43 I	0.54 I
Flow (MGD)	-	0.2 m	0.1 m	-	-
Hardness (mg $CaCO_3$)	-	-	185.83 c	69.81 c	67.90 c
Toxicity (48-hour acute screen, percent mortality in 100% effluent)					
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	LC50 ≥100	< 100%	-	-
Bioassay - Water flea dechlorinated	-	LC50 ≥100	> 100%	-	-
Bioassay - Fish *(Cyprinella leedsi)*	-	LC50 ≥100	< 100%	-	-
Bioassay - Fish dechlorinated	-	LC50 ≥100	90%	-	-
Microbiology (Number of colony forming units/100ml)					
Fecal Coliforms @	≤ 400 s #	≤ 800 s #	25 BQ	50	18 B

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
g - grab sample taken
m- monthly average daily flow
p - 8 hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
† - limit ≤ 20 mg/L under Consent Order (09-0378-23-DW) executed July 2009
£ - Measured in Central Labs and entered into Tox sheets
@ - Fecal coliform analysis performed by Central lab

Table 2. Effluent limits, Class III Freshwater Criteria and metals data. Class III Criteria based on hardness are presented individually for each site based on hardness at that site.

Wewahitchka WWTF	Effluent 6/1/09 Class III Criteria	Effluent Limits	Effluent 6/1/09	Control Site 8/6/09 Class III Criteria	Control Site 8/6/09	Test Site 8/6/09 Class III Criteria	Test Site 8/6/09
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	68 I	-	910	-	860
Arsenic	≤ 50	-	0.46 I	≤ 50	0.53 I	≤ 50	0.51 I
Cadmium	≤ 0.4 b	-	0.03 U	≤ 0.21 b	0.03 U	≤ 0.20 b	0.03 U
Calcium (mg/L)	-	-	38.8	-	23.8	-	23.3
Chromium-III	≤ 143.2 b	-	0.3 U	≤ 64.20 b	1.1 I	≤ 62.76 b	1.1 I
Copper	≤ 15.8 b	-	30.1	≤ 6.86 b	0.81	≤ 6.70 b	0.83
Iron	≤ 1,000	-	140	≤ 1,000	830	≤ 1,000	820
Lead	≤ 7.0 b	-	3.46	≤ 2.01 b	0.46 I	≤ 1.94 b	0.45 I
Magnesium (mg/L)	-	-	21.6	-	2.52	-	2.36
Nickel	≤ 88.1 b	-	1.66	≤ 38.49 b	0.59 I	≤ 37.59 b	0.5 I
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.21 I	≤ 5.0	0.21 I
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Zinc	≤ 202.6 b	-	46	≤ 88.36 b	5 U	≤ 86.31 b	5 U

See Table 1 for calculated hardness.

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

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

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

Table 3. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), orthophosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus.

Wewahitchka WWTF						
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	167.0 A	152.0 ± 30.4		209.0 ± 41.8		2.0	2.5
Control Site	8.1 JQ		2.6 ± 0.5		14.6 ± 2.9	86.7	22.9
Test Site	11.0 JQ		3.9 ± 0.8		14.2 ± 2.8	56.7	23.9

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

J - Estimated value

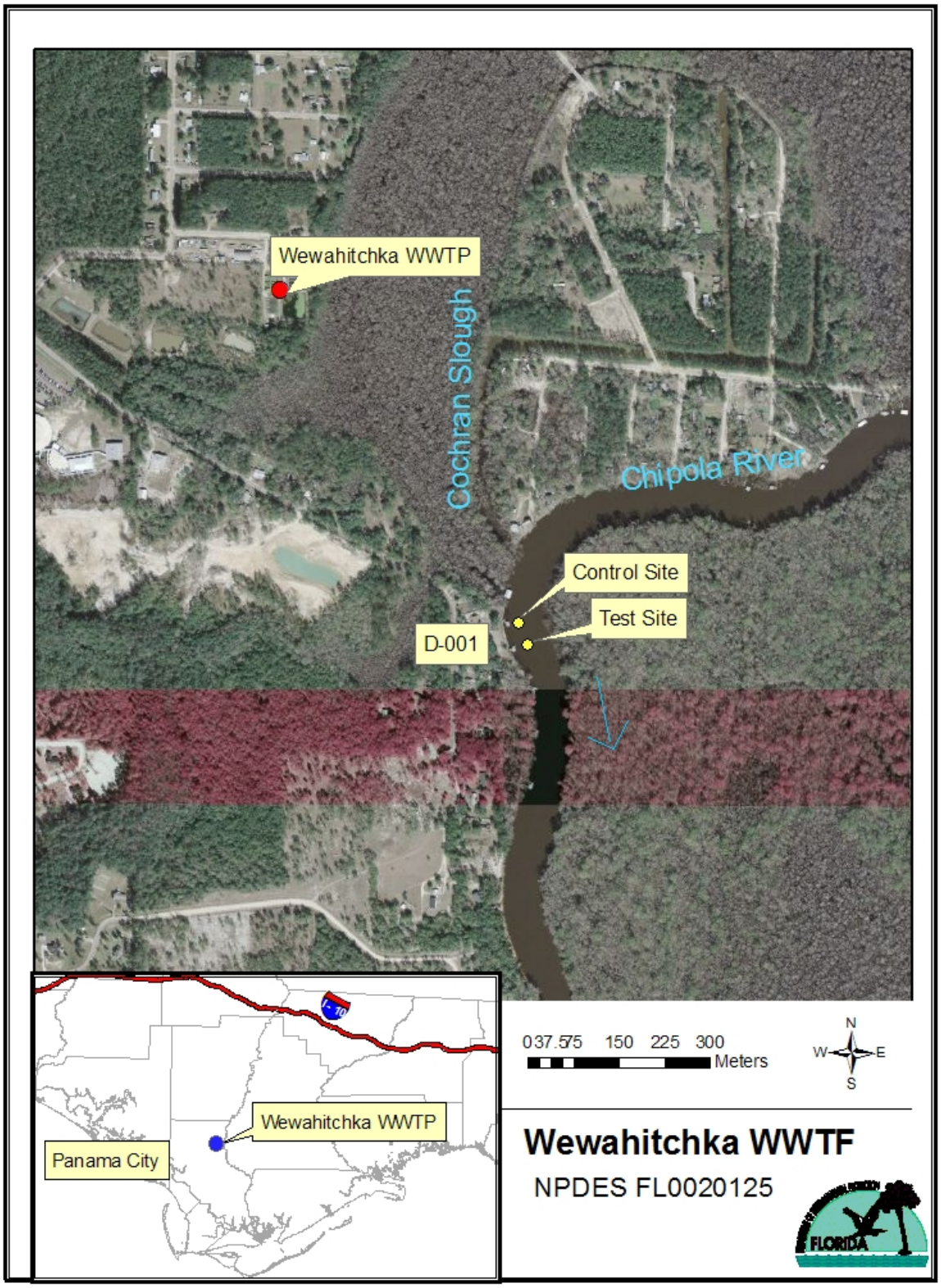
Q - Sample held beyond normal holding time

Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Wewahitchka WWTF	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.71	3.70
Number of Taxa	44	47
Number of EPT Taxa	19	19
Percent Dominant Taxon	25.1	26.3
Dominant Taxon Name	*Hydropsyche incommoda* (Trichoptera)	*Hydropsyche* sp. (Trichoptera)
Total Number of Individuals (counted)	1,495	2,508
Total Number of Individuals (#/m^2)	2,969	4,979
Community Composition: Percent of total		
Bivalvia	0.1	0.0
Coleoptera	0.9	1.1
Diptera	13.6	13.7
Ephemeroptera	27.2	30.5
Odonata	0.0	0.1
Oligochaeta	0.5	0.1
Plecoptera	0.3	0.1
Trichoptera	52.1	50.8
Other	5.2	3.7
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0.5	0.1
Piercers	3.1	1.5
Predators	9.7	9.5
Scrapers	7.2	8.3
Shredders	4.4	4.9
Surface Deposit Feeders	15.5	16.5
Suspension Feeders	52.0	48.5
Unknown	7.7	10.8

Appendix A

Map of Facility



Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** 595-8300 ext. 1185
Facility Name (as it appears on permit): Wewahitchka WWTF	**Former Names:**
NPDES Permit Number: FL0020125	**Permit Expiration Date:** **12/15/14**
Physical Address: 804 East Sycamore Street, Wewahitchka, FL 32465	
District: NWD	**County:** Gulf
Function of Facility: Municipal domestic wastewater treatment facility.	
Facility Type: DW	**Permitted Capacity (MGD):** Permitted flow is limited to 0.200 MGD monthly average daily flow (MADF) until completion of the treatment plant modifications. Following completion of treatment plant upgrades and upon Department approval flow will be limited to 0.330 MGD AADF until completion of construction of the Part II slow-rate restricted public access reuse system R-001. Following completion of the Part II slow-rate restricted public access reuse system the facility will be flow limited to 0.495 MGD.
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 .101 mgd (11/08-10/09)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☒ **Other, please specify** Currently Intermittent Cycle Extended Aeration System (ICEAS) process treatment system; new permit authorizes replacing with SBR	

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

Monitoring Site	Description of Monitoring Site
FLW-01	Effluent Flow Metering: Stevens Meter at Effluent Weir at Chlorine Contact Chamber
EFF-01	Final Effluent Sampling at Effluent Transfer Pump Basin: Auto Sampler at Pump Holding Basin or Sampling Port in discharge pipe
EFB-01	Sampling before Chlorination: Effluent Sampling after filtration in the Filter Effluent Box
EFA-01	Sampling after Chlorination: Effluent Weir at Chlorine Contact Chamber
EFD-01	Sampling after Dechlorination: Sampling Port in discharge pipe at Effluent Transfer Pump Basin
CAL-01	Calculated Value

Description of Permitted Outfall(s):

An expanded 0.330 MGD annual average daily flow to discharge to Chipola River, Class III fresh waters, Outstanding Florida Water, WBID 51. The outfall is approximately 2 feet in length and at a depth of approximately 2 feet. The point of discharge is located approximately at latitude 30°6' 6.3" N, longitude 85°10' 55" W.

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

An expanded 0.500 MGD design capacity. 0.495 MGD permitted capacity, annual average daily flow (AADF) modified activated sludge process using Sequential Batch Reactors (SBR). The system includes mechanical bars screens, a Grit Separator, two 321,000-gallon SBR units with alum injection, a 127,500-gallon Post Equalization Tank, two 107sq-ft cloth filters, two 19,780-gallon Chlorine Contact Chambers, Effluent Transfer Pump Station with Sulfur Dioxide Injection for dechlorination, a 0.330 MG Effluent Reject Pond, a 224,000-gallon Aerobic Digester and Sludge Drying Beds. Effluent receives high level disinfection for discharge to the Chipola River and basic disinfection for reuse via a new slow-rate/ restricted public access spray irrigation system. Residuals are aerobically digested, dewatered on drying beds and land applied at agricultural land application sites.

Treatment plant modifications include replacing the existing 0.200 MGD activated sludge, Intermittent Cycle Extended Aeration System (ICEAS) process treatment system with a Sequential Batch Reactor (SBR) process system. Construction will include a new headworks with a Mechanical Bar Screen, influent sampler and flow measurement, Grit Separator and Master Pump Station; two new SBR units; a Post Equalization Tank; two new cloth Filters; replacement of existing Effluent Transfer Pumps; expansion of an existing 0.200 MG Effluent Reject Pond to 0.330 MG; ten new Sludge Drying Beds.
The new Part II slow-rate/ restricted public access spray irrigation system includes construction of a force main from the WWTP to a lined 1.5 MG wet weather storage pond and pumping station located at the spray irrigation site.
Construction shall be as described in the application and supporting materials received on April 7, 2009; and additional information received on June 18th, June 26th and August 28th.

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes

The discharge limitations for the following parameters shall apply from the effective date of this order until such time as the wastewater treatment plant modifications are completed and placed into service. The requirement to meet basic disinfection limitations for Chlorine Residual and Fecal Coliform shall apply for twelve (12) months after the effective date of this order. The requirement to meet intermediate disinfection limitations for Chlorine Residual and Fecal Coliform shall apply after twelve (12) months from the effective date of this order.

Discharge Monitoring and Reporting Requirements Permit Section I.A.1

Parameter	Effluent Limitation	Measurement Frequency	Sample Type	Sample Location	Notes
Flow, MGD	0.200 Max. Monthly Avg.	5 days/week	Flow Meter	FLW-01	See I.A.3
Chlorine, Total Residual (For Disinfection), mg/L	0.5/1.0 Minimum* Single Sample	5 days/week	Grab	EFA-01	See I.A.5
	*The limit for Chlorine Residual shall be 0.5 mg/L for twelve (12) months following the effective date of this order and shall be 1.0 mg/L after twelve (12) months until completion of construction of facility modifications as specified in paragraph III.5 of this order.				
Coliform, Fecal, #/100mL	Basic Disinfection 200 Max. Annual Average 200 Max. Mnth. Geo. Mean* 800 Max. Single sample	Bi-weekly; every 2 weeks	Grab	EFF-01	
	Intermediate Disinfection 14 Max. Annual Average 14 Max. Monthly Median* 86 Max. Single sample				
	*The effluent limitation for the monthly geometric mean (or median) for fecal coliform is only applicable if 10 or more values are reported. If fewer than 10 values are reported, the monthly geometric mean (or median) shall be calculated and reported on the Discharge Monitoring Report. *[62-600.440(6)(c)]*				
Solids, Total Suspended, mg/L	10.0 Max. Annual Average 12.5 Max. Monthly Average 15.0 Max. Weekly Average 20.0 Max. Single Sample	Bi-weekly; every 2 weeks	8-hr FPC	EFF-01	
Solids, Total Suspended, mg/L	Monitoring before disinfection is not required			EFB-01	
Turbidity, NTU	Monitoring before disinfection is not required			EFB-01	
BOD, Carbonaceous 5 day, 20 C, lb/day	Report Max. Monthly Avg.	Monthly	Calc.	CAL-01	
Nitrogen, Total, lb/day	Report Max. Monthly Avg.	Monthly	Calc.	CAL-01	
Phosphorous, Total (as P), lb/day	Report Max. Monthly Avg.	Monthly	Calc.	CAL-01	
Giardia, cysts/100L	Monitoring is not required			EFF-01	
Cryptosporidium, oocysts/100L	Monitoring is not required			EFF-01	

DMR Data

Monitoring Date	Outfall Indicator	Parameter Description	Data	Limit	Statistical Base	Units
6/30/2008	001-1	NITROGEN, TOTAL	5.6	5	ANNL AVG	MG/L
7/31/2008	001-1	NITROGEN, TOTAL	5.5	5	ANNL AVG	MG/L
7/31/2008	001-1	PHOSPHORUS, TOTAL (AS P)	5.7	5	MO AVG	MG/L
7/31/2008	001-1	PHOSPHORUS, TOTAL (AS P)	5.7	6	WKLY AVG	MG/L
7/31/2008	001-1	PHOSPHORUS, TOTAL (AS P)	6.23	8	MAXIMUM	MG/L
8/31/2008	001-1	NITROGEN, TOTAL	5.6	5	ANNL AVG	MG/L
9/30/2008	001-1	NITROGEN, TOTAL	5.5	5	ANNL AVG	MG/L
10/31/2008	001-1	NITROGEN, TOTAL	5.4	5	ANNL AVG	MG/L
11/30/2008	001-1	NITROGEN, TOTAL	8.9	6.25	MO AVG	MG/L
11/30/2008	001-1	NITROGEN, TOTAL	8.9	7.5	WKLY AVG	MG/L
11/30/2008	001-1	NITROGEN, TOTAL	11.78	10	MAXIMUM	MG/L
11/30/2008	001-1	NITROGEN, TOTAL	5.6	5	ANNL AVG	MG/L
12/31/2008	001-1	NITROGEN, TOTAL	10	6.25	MO AVG	MG/L
12/31/2008	001-1	NITROGEN, TOTAL	10	7.5	WKLY AVG	MG/L
12/31/2008	001-1	NITROGEN, TOTAL	22.4	10	MAXIMUM	MG/L
12/31/2008	001-1	NITROGEN, TOTAL	5.8	5	ANNL AVG	MG/L
1/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	23	12.5	MO AVG	MG/L
1/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	23	15	WKLY AVG	MG/L
1/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	35	20	MAXIMUM	MG/L
1/31/2009	001-1	NITROGEN, TOTAL	7.6	6.25	MO AVG	MG/L
1/31/2009	001-1	NITROGEN, TOTAL	7.6	7.5	WKLY AVG	MG/L
1/31/2009	001-1	NITROGEN, TOTAL	7.98	10	MAXIMUM	MG/L
1/31/2009	001-1	NITROGEN, TOTAL	6.4	5	ANNL AVG	MG/L
2/28/2009	001-1	SOLIDS, TOTAL SUSPENDED	28	12.5	MO AVG	MG/L
2/28/2009	001-1	SOLIDS, TOTAL SUSPENDED	28	15	WKLY AVG	MG/L
2/28/2009	001-1	SOLIDS, TOTAL SUSPENDED	33	20	MAXIMUM	MG/L
2/28/2009	001-1	NITROGEN, TOTAL	10.75	6.25	MO AVG	MG/L
2/28/2009	001-1	NITROGEN, TOTAL	10.75	7.5	WKLY AVG	MG/L
2/28/2009	001-1	NITROGEN, TOTAL	11.87	10	MAXIMUM	MG/L
2/28/2009	001-1	NITROGEN, TOTAL	6.4	5	ANNL AVG	MG/L
3/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	23	12.5	MO AVG	MG/L
3/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	23	15	WKLY AVG	MG/L
3/31/2009	001-1	SOLIDS, TOTAL SUSPENDED	42	20	MAXIMUM	MG/L
3/31/2009	001-1	NITROGEN, TOTAL	6.5	5	ANNL AVG	MG/L
4/30/2009	001-1	NITROGEN, TOTAL	6	5	ANNL AVG	MG/L
4/30/2009	001-1	PHOSPHORUS, TOTAL (AS P)	4.6	4	ANNL AVG	MG/L
5/31/2009	001-1	NITROGEN, TOTAL	13	6.25	MO AVG	MG/L
5/31/2009	001-1	NITROGEN, TOTAL	13	7.5	WKLY AVG	MG/L
5/31/2009	001-1	NITROGEN, TOTAL	13.3	10	MAXIMUM	MG/L
5/31/2009	001-1	NITROGEN, TOTAL	6.4	5	ANNL AVG	MG/L

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. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedence of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedences of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedence of 62-302.530(6) and/or a violation of 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 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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

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

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

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

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton 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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(8) Benthic Macroinvertebrate Assemblages

Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. 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.

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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) 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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

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 (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) 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 and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) 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 constitute exceedences of 62-302.530(10) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et. al. 2007). This Index was revised in 2007 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 according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -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. As human disturbance increases, it is expected that taxa richness, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon, and percent contribution of very tolerant taxa will increase.

Scores are broken into three categories (1, 2, and 3). Sites in Category 1 are described as having higher diversity than Category 2 sites, particularly for Ephemeroptera and Trichoptera. A Category 1 site may have several more clinger and sensitive taxa, a higher proportion of Tanytarsini, and a lower percent of a dominant taxon than a site in Category 2. The site will also have a very small percentage of very tolerant individuals, if any.

Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative to sites in Category 1. Very tolerant taxa represent a small percentage of individuals but are noticeably increased as compared to sites in Category 1.

Sites in Category 3 are described as having a notable loss in taxonomic diversity, and Ephemeroptera, Trichoptera, long-lived, clinger and sensitive taxa are uncommon or rare. Filter feeders are reduced by at least 50%. The site is dominated by a tolerant taxon, and very tolerant individuals represent a large proportion of the individuals collected.

SCI 2007 categories are from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), December 3, 2008. 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 in Category 3, if it is shown to be related to a facility's effluent, may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or a violation of 62-302.530(61).

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-06-01-39
Wewahitchka WWTP

Requester: Jennifer Paris
Field Report Prepared By:

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Collected By: Mark Sumner
Send Final Report To Greg Smith

Sampling Agency: DEP - RCO

Lab ID *	Location / Field ID / Matrix / Latitude / Longitude	Comp / Grab; Collection (begin) Eastern Central; Collection (end) Eastern Central; Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number; Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number; Temp (C); pH; Comments	Bottle Group(s)**
	Location: City of Wewahitchka WWTP	Grab; Collection (begin) Date 6/1/09 Time 10:35 Central; Collection (end) Date 6/1/09 Time 10:50 Central	
	Field ID	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc); Temp (C); pH	Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number	
	Latitude o ' " ; Longitude o ' "	Comments	
	Location	Comp / Grab; Collection (begin) Date Time Eastern Central; Collection (end) Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc); Temp (C); pH	Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number	
	Latitude o ' " ; Longitude o ' "	Comments	
	Location	Comp / Grab; Collection (begin) Date Time Eastern Central; Collection (end) Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc); Temp (C); pH	Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number	
	Latitude o ' " ; Longitude o ' "	Comments	
	Location	Comp / Grab; Collection (begin) Date Time Eastern Central; Collection (end) Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc); Temp (C); pH	Sample Depth m/ft; Salinity (PPTh); Sp Conductance (umho/cm); NPDES Number	
	Latitude o ' " ; Longitude o ' "	Comments: 2 bottles Reed inter by JD. 6.2.09 10:37	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
							SK	6.2.09/9:25a

* 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 *

Request Number: RQ-2009-05-18-21
Wewahitchka WWTP

Customer: NW-DIST

Project ID: FYI5

PMAS: 1143

Requester: Jennifer Paris

Collected By:

Sampling Agency:

Field Report Prepared By:

Send Final Report To Greg Smith

Lab ID *: [illegible]
Location: Chipola R. upstr Wewahitchka WWTP
Field ID: upstream
Matrix (Include type e.g. Salt, Fresh, etc): Fresh
Temp (C): 29
pH: 7.86
Latitude: o ' " Longitude: o ' "
☐ Comp ☑ Grab
Collection (begin) Eastern Date 6 Aug 09 Time 10:45 Central
Collection (end) Eastern Date Time Central
Tot Res Chlorine (mg/L): —
Diss Oxygen (mg/L): 6.19 J
Storet Station Number:
Sample Depth ☑ m ☐ ft: 0.5
Salinity (PPTh) ☐ Sp Conductance (umho/cm): 149 J
NPDES Number:
Bottle Group(s)**: 6B 3C
Comments: J = meters did not verify

Lab ID *: [illegible]
Location: Chipola R. downstream Wewahitchka WWTP
Field ID: downstream
Matrix (Include type e.g. Salt, Fresh, etc): Water
Temp (C): 29.0
pH: 7.93
Latitude: o ' " Longitude: o ' "
☐ Comp ☑ Grab
Collection (begin) Eastern Date 6 Aug 09 Time 10:45 Central
Collection (end) Eastern Date Time Central
Tot Res Chlorine (mg/L):
Diss Oxygen (mg/L): 6.01 J
Storet Station Number:
Sample Depth ☐ m ☐ ft: 0.5
Salinity (PPTh) ☐ Sp Conductance (umho/cm): 150 J
NPDES Number:
Bottle Group(s)**: 3C 6B
Comments: J = meters did not verify

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

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	6/8/09 14:19		Tahmeyer Chatham	08/06/09 14:14				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

Top Cooler 1°C (HW)
Bottom Cooler 2°C (HW)

last revised October 1, 2003

JW 2 Back
6/6/09
1424.

Appendix E

Chemical analysis of effluent and receiving water

Date_Sampled	Field_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
6/1/2009	Effluent	WEWAHITCHKA	AGP/LN	Algal Growth Potential	167	A	mg DryWt/L	0.3	0.9
6/1/2009	Effluent	WEWAHITCHKA	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1	I	ug/L	0.4	1.2
6/1/2009	Effluent	WEWAHITCHKA	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	12		ug/L	0.55	1.7
6/1/2009	Effluent	WEWAHITCHKA	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3	A	mg/L	0.2	2
6/1/2009	Effluent	WEWAHITCHKA	Microbiology	Fecal Coliforms-Membrane Filter	25	BQ	#/100 mL	2	2
6/1/2009	Effluent	WEWAHITCHKA	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	K	LC50		
6/1/2009	Effluent	WEWAHITCHKA	Toxicology	Bioassy-Acute-Scrn-FW-Cdubia,LC50-dechlr	100	L	LC50		
6/1/2009	Effluent	WEWAHITCHKA	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	K	LC50		
6/1/2009	Effluent	WEWAHITCHKA	Toxicology	Bioassay-Acute-Scrn-FW-Fish,LC50-dechlr	100	L	LC50		
6/1/2009	Effluent	WEWAHITCHKA	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/1/2009	Effluent	WEWAHITCHKA	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/1/2009	Effluent	WEWAHITCHKA	Metals	Copper	30.1		ug/L	0.5	0.5
6/1/2009	Effluent	WEWAHITCHKA	Metals	Chromium	0.3	U	ug/L	0.3	1.2
6/1/2009	Effluent	WEWAHITCHKA	Metals	Arsenic	0.46	I	ug/L	0.25	1
6/1/2009	Effluent	WEWAHITCHKA	Metals	Zinc	46		ug/L	5	20
6/1/2009	Effluent	WEWAHITCHKA	Metals	Calcium	38.8		mg/L	0.075	0.3
6/1/2009	Effluent	WEWAHITCHKA	Metals	Nickel	1.66		ug/L	0.25	1
6/1/2009	Effluent	WEWAHITCHKA	Metals	Aluminum	68	I	ug/L	60	240
6/1/2009	Effluent	WEWAHITCHKA	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Metals	Lead	3.46		ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Metals	Iron	140		ug/L	30	120
6/1/2009	Effluent	WEWAHITCHKA	Metals	Magnesium	21.6		mg/L	0.04	0.16
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	NO2NO3-N	1.1		mg N/L	0.04	0.1
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	TSS	5	I	mg/L	4	16
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	Turbidity	2.2		NTU	0.1	0.1
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	Ammonia-N	2.9		mg N/L	0.05	0.1
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	O-Phosphate-P	2		mg P/L	0.12	0.3
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	Total-P	2.2		mg P/L	0.04	0.1
6/1/2009	Effluent	WEWAHITCHKA	Nutrients	Kjeldahl Nitrogen	4.4		mg N/L	0.4	1
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2

Date_Sampled	Field_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Fenamiphos	0.2	UJ	ug/L	0.2	0.8
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
6/1/2009	Effluent	WEWAHITCHKA	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4

Date_Sampled	Field_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	60
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Di-n-butyl phthalate	5	U	ug/L	5	20
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Pentachlorophenol	3	UJ	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	60
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	UJ	ug/L	40	160
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	60
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400

Date_Sampled	Field_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	Butyl benzyl phthalate	5	U	ug/L	5	20
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
6/1/2009	Effluent	WEWAHITCHKA	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
8/6/2009	Control Site	WEWAHITCHKA	AGP/LN	Algal Growth Potential	8.12	JQ	mg DryWt/L	0.3	0.9
8/6/2009	Control Site	WEWAHITCHKA	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.43	I	mg/L	0.2	2
8/6/2009	Control Site	WEWAHITCHKA	Microbiology	Fecal Coliforms-Membrane Filter	50		#/100 mL	2	2
8/6/2009	Control Site	WEWAHITCHKA	Metals	Magnesium	2.52		mg/L	0.04	0.16
8/6/2009	Control Site	WEWAHITCHKA	Metals	Selenium	0.21	I	ug/L	0.2	0.8
8/6/2009	Control Site	WEWAHITCHKA	Metals	Zinc	5	U	ug/L	5	20
8/6/2009	Control Site	WEWAHITCHKA	Metals	Nickel	0.59	I	ug/L	0.25	1
8/6/2009	Control Site	WEWAHITCHKA	Metals	Arsenic	0.53	I	ug/L	0.25	1
8/6/2009	Control Site	WEWAHITCHKA	Metals	Aluminum	910		ug/L	60	240
8/6/2009	Control Site	WEWAHITCHKA	Metals	Copper	0.81		ug/L	0.5	0.5
8/6/2009	Control Site	WEWAHITCHKA	Metals	Iron	830		ug/L	30	120
8/6/2009	Control Site	WEWAHITCHKA	Metals	Calcium	23.8		mg/L	0.075	0.3
8/6/2009	Control Site	WEWAHITCHKA	Metals	Lead	0.46	I	ug/L	0.2	0.8
8/6/2009	Control Site	WEWAHITCHKA	Metals	Chromium	1.1	I	ug/L	0.3	1.2
8/6/2009	Control Site	WEWAHITCHKA	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/6/2009	Control Site	WEWAHITCHKA	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	TSS	19		mg/L	4	16
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Ammonia-N	0.05	U	mg N/L	0.05	0.1
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	O-Phosphate-P	0.006	I	mg P/L	0.004	0.01
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Total-P	0.034		mg P/L	0.004	0.01
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Turbidity	12	A	NTU	0.1	0.1
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	NO2NO3-N	0.47		mg N/L	0.004	0.01
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Kjeldahl Nitrogen	0.31		mg N/L	0.08	0.2
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	pH	7.86				
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Sample Depth	0.5		m		
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Dissolved Oxygen	6.19		mg/L		
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Specific Conductance	149		umhos/cm		
8/6/2009	Control Site	WEWAHITCHKA	Nutrients	Temperature	29		C		
8/6/2009	Test Site	WEWAHITCHKA	AGP/LN	Algal Growth Potential	11	JQ	mg DryWt/L	0.3	0.9
8/6/2009	Test Site	WEWAHITCHKA	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.54	I	mg/L	0.2	2
8/6/2009	Test Site	WEWAHITCHKA	Microbiology	Fecal Coliforms-Membrane Filter	18	B	#/100 mL	2	2
8/6/2009	Test Site	WEWAHITCHKA	Metals	Lead	0.45	I	ug/L	0.2	0.8
8/6/2009	Test Site	WEWAHITCHKA	Metals	Calcium	23.3		mg/L	0.075	0.3
8/6/2009	Test Site	WEWAHITCHKA	Metals	Aluminum	860		ug/L	60	240
8/6/2009	Test Site	WEWAHITCHKA	Metals	Iron	820		ug/L	30	120
8/6/2009	Test Site	WEWAHITCHKA	Metals	Magnesium	2.36		mg/L	0.04	0.16
8/6/2009	Test Site	WEWAHITCHKA	Metals	Silver	0.025	U	ug/L	0.025	0.1

Date_Sampled	Field_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
8/6/2009	Test Site	WEWAHITCHKA	Metals	Arsenic	0.51	I	ug/L	0.25	1
8/6/2009	Test Site	WEWAHITCHKA	Metals	Zinc	5	U	ug/L	5	20
8/6/2009	Test Site	WEWAHITCHKA	Metals	Nickel	0.5	I	ug/L	0.25	1
8/6/2009	Test Site	WEWAHITCHKA	Metals	Chromium	1.1	I	ug/L	0.3	1.2
8/6/2009	Test Site	WEWAHITCHKA	Metals	Selenium	0.21	I	ug/L	0.2	0.8
8/6/2009	Test Site	WEWAHITCHKA	Metals	Copper	0.83		ug/L	0.5	0.5
8/6/2009	Test Site	WEWAHITCHKA	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	O-Phosphate-P	0.009	I	mg P/L	0.004	0.01
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Turbidity	12		NTU	0.1	0.1
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Total-P	0.033		mg P/L	0.004	0.01
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Kjeldahl Nitrogen	0.33		mg N/L	0.08	0.2
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	NO2NO3-N	0.46		mg N/L	0.004	0.01
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	TSS	19		mg/L	4	16
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Ammonia-N	0.05	U	mg N/L	0.05	0.1
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Temperature	29		C		
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Dissolved Oxygen	6.01		mg/L		
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Sample Depth	0.5		m		
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	pH	7.93				
8/6/2009	Test Site	WEWAHITCHKA	Nutrients	Specific Conductance	150		umhos/cm		

Appendix F

Toxicological results

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Wewahitchka STP

Address: 804 East Sycamore Street

City: Wewahitchka County: Gulf

Contact/District: NWD/Kim Allen

NPDES Permit #: FL0020125

LIMS Job #: TLH-2009-06-02-36 LIMS Sample #: 1191364

Lims Data Entry: 6-5-09 BA Data Entry Verification: 6-5-09 BA

Sample Collection: Date: 6-1-09 Time: 1035

Hold Time Start: Date: 6-1-09 Time: 1035

Comments: Sample contained 0.9 mg/L chlorine. An aliquot of sample was dechlorinated by the addition of 1.0 mL of 0.025 N sodium thiosulfate per liter of sample. MF 6-2-09

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

Test Type: (Screen)

Static Static-Renewal / Flow-through

Test Duration: (48) 96 Hours (A)

(A) incorrectly circled by MF 6/3/09

Test 1 validation: Test 1: SOP TA 07 01

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07 02

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

(✓one)

Test 1 incubated in: ☑ Incubator #: 2 ☐ Waterbath #:

Test 2 incubated in: ☑ Incubator #: 2 ☐ Waterbath #:

Initial sample handling:

PH adjustment : yes (no) Initial pH: ____ 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 1.0 mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: <0.03

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C: (If used)

Incubator # 2 min 26.0 max 26.5 mean 26.3

Incubator # ____ min ____ max ____ mean ____

Waterbath # ____ min ____ max ____ mean ____

Room B246 min 25.1 max 25.7 mean 25.4

Sample Validation:

Temperature: Shipped ≤6°C (Yes) No — IF Hand Delivered: Cooling (received °C < collected °C) Yes No

Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures

James Brady

Marshall Faircloth

Brady Alderson

Jeff Brodz

Debra C. Wolfe

REVIEWER

Batch #	5-18-09	6-1-09							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Dechlorinator Other: Sample	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A		not measured	MF	
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03				<0.03	0.95	MF/JD	JD/MF
Alkalinity (mg/L as $CaCO_3$):	88	160					162	BA	JB
Hardness (mg/L as $CaCO_3$):	96	153					176	QA	JB
Total Ammonia (mg/L as N):	<0.017	<0.017				—	2.015	MF	BA
Conductivity: µmhos mmhos	0.215	0.279					0.642	BA/SD	MF
Salinity (ppth):	<1	<1					0.25	JD	QA

V 1.6 7/8/08

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FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 191364 Test #: 1/2 SOP#:TA 07 01 Test Started: Date 6.2.09 Time: 1325

Organism/Batch/Age: C dubia / 19-09 / <24hrs Test Ended: Date 6.4.09 Time: 1205

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: DMW / 5-18-09 Test Duration: ~~48~~ 96 hr

Food/Batch: ☑ YCT 1-22-09 ☑ P.sub 2-13-09

☐ Artemia Lot#_____ Batch #: 0hr_____ 24hr_____ 48hr_____ 72hr_____

Feeding: ☒ Prior to Test ☐ Prior to Renewal ☑ 0 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
100%	A	A	5	0 SDA	-			
	B	B	5	0 SDA	-			
	C	C	5	0 SDA	-			
	D	D	5	0 SDA	-			
Dechlorinated Control	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
Dechlorinated 100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
_____								
_____								
_____								
_____								

Loaded/Verified by: BA / MF Checked by: MF MF/BA ~~BA~~

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

Comments: (A) all dead within 2 hours of loading MF 6-7-09

Test Results:

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

% mortality in 100% sample: 100% LC50: ~~100%~~ ~~>100%~~ <100% Incorrect sign MF corrected for BA 6-8-09

Dechlorinated sample LC50 = >100% MF 6/8/09

If Calculated: 95% CI_____ Method_____ V 2.3 7/15/2008

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

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1191364 Test #: 2/2 SOP#:TA 07_02 Test Started: Date 6-2-09 Time: 1315

Organism/Batch/Age: C.leedsi / 6-2-09 / 12 days Test Ended: Date 6-4-09 Time: 1200

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Well / 6-1-09 Test Duration: 48 hr / 96 hr

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

[ ] Artemia Lot# 38438 Batch #: 0hr 7-1-09 24hr____ 48hr____ 72hr____

Feeding: [X] Prior to Test [ ] Prior to Renewal [✓] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	B17 MF	10	10	9 1D			
	B	B18	10	10	10			
	C mf							
	D mf							
100%	A	B21	10	0 10 D (A)	—			
	B	B22	10	0 10 D (A)	—			
	C mf							
	D mf							
Dechlorinated Control	A	B19	10	10	10			
	B	B20	10	9 1D	9			
Dechlorinated 100%	A	B23	10	10	9 1D			
	B	B24	10	10	9 1D			
Loaded/Verified by: JW / BA		Checked by:	BA	JD	JD			

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

Comments: (A) all dead within 30 minutes of loading into test vessels. MF 6-2-09

Test Results:

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

% mortality in 100% sample: 100% LC50: ~~>100%~~ <100% Incorrect sign MF corrected for BA 6/8/09

LC50 = >100% for dechlorinated sample MF 6/8/09

If Calculated: 95% CI_________ Method_________ V 2.3 7/15/2008

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

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 119134 Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: [X] *Ceriodaphnia dubia* [ ] *Cyprinella leedsi* [ ] *Pimephales promelas*

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

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.6		8.3			
Temperature °C	24.3		24.5			
Dissolved Oxygen mg/L aerate if < 4	6.8		7.6			
Conductivity µmhos (mmhos)	0.181		0.215			
Salinity ppth	—		—			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.4		7.5			
Temperature °C	26.0		25.8			
Dissolved Oxygen mg/L aerate if < 4	6.9 ~~7.4~~		7.1			
Conductivity µmhos (mmhos)	0.642		0.630			
Salinity ppth	—		—			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Salinity only needs measuring if saltwater.

Concentration dechlor Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.7		8.3			
Temperature °C	24.4		24.4			
Dissolved Oxygen mg/L aerate if < 4	6.2		8.0			
Conductivity µmhos (mmhos)	0.185		0.220			
Salinity ppth	—		—			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration dechlor 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.5		8.5			
Temperature °C	25.8		24.4			
Dissolved Oxygen mg/L aerate if < 4	7.0		7.9			
Conductivity µmhos (mmhos)	0.646		0.630			
Salinity ppth	—		—			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 119364 **Test #:** 2 of 2

TEST SOP #: TA07_ 02 **Test Species:** ☐ *Ceriodaphnia dubia* ☒ *Cyprinella leedsi* ☐ *Pimephales promelas*

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

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	7.7	8.0	8.1			
Temperature °C	24.3	24.9	24.0			
Dissolved Oxygen mg/L aerate if < 4	7.6	6.4	6.5			
Conductivity (umhos) mmhos	279	296	299			
Salinity ppth	—	—	—			
(initials) Measured by:	JB	JB	JB			
(initials) Recorded by:	JB	JB	JB			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	7.5					
Temperature °C	25.8					
Dissolved Oxygen mg/L aerate if < 4	7.2					
Conductivity (umhos) mmhos	628					
Salinity ppth	—	—				
(initials) Measured by:	JB	JB				
(initials) Recorded by:	JB	JB				

Comments:

Salinity only needs measuring if saltwater.

Concentration dechlor ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	7.7	8.0	8.2			
Temperature °C	24.4	24.7	24.1			
Dissolved Oxygen mg/L aerate if < 4	7.5	6.3	6.5			
Conductivity (umhos) mmhos	290	304	299			
Salinity ppth	—	—	—			
(initials) Measured by:	JB	JB	JB			
(initials) Recorded by:	JB	JB	JB			

Comments:

Concentration dechlor 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	7.5	8.0	8.2			
Temperature °C	25.9	24.8	24.3			
Dissolved Oxygen mg/L aerate if < 4	7.4	6.3	6.5			
Conductivity (umhos) mmhos	648	647	654			
Salinity ppth	—	—	—			
(initials) Measured by:	JB	JB	JB			
(initials) Recorded by:	JB	JB	JB			

Comments:

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Bioassay Instrument ID

Test ID: Wewahitchka STP Dates: 6-2-09 - 6-4-09

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

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)
Entered by BA (MF 6-8-09)

V 1.1 6/12/08 MF

PAGE

Appendix G

Standard Reference Toxicant Data

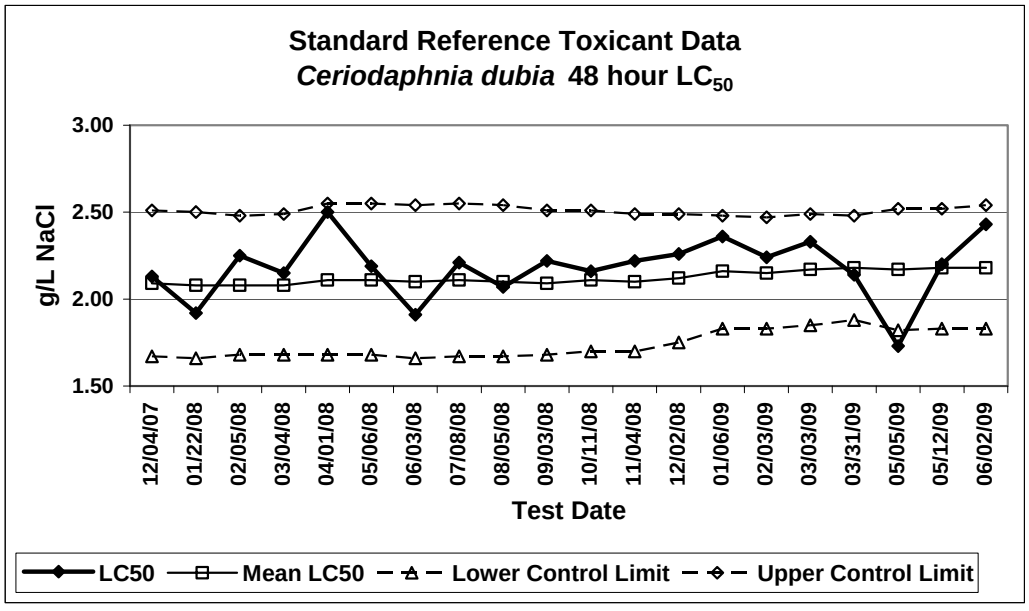
Florida Department of Environmental Protection
Bureau of Laboratories

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
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54
09/03/08	2.22	2.09	0.21	1.68	2.51
10/11/08	2.16	2.11	0.20	1.70	2.51
11/04/08	2.22	2.10	0.20	1.70	2.49
12/02/08	2.26	2.12	0.19	1.75	2.49
01/06/09	2.36	2.16	0.16	1.83	2.48
02/03/09	2.24	2.15	0.16	1.83	2.47
03/03/09	2.33	2.17	0.16	1.85	2.49
03/31/09	2.14	2.18	0.15	1.88	2.48
05/05/09	1.73	2.17	0.18	1.82	2.52
05/12/09	2.20	2.18	0.17	1.83	2.52
06/02/09	2.43	2.18	0.18	1.83	2.54

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

CV = 8.15
EPA reference 75th quartile CV = 29%



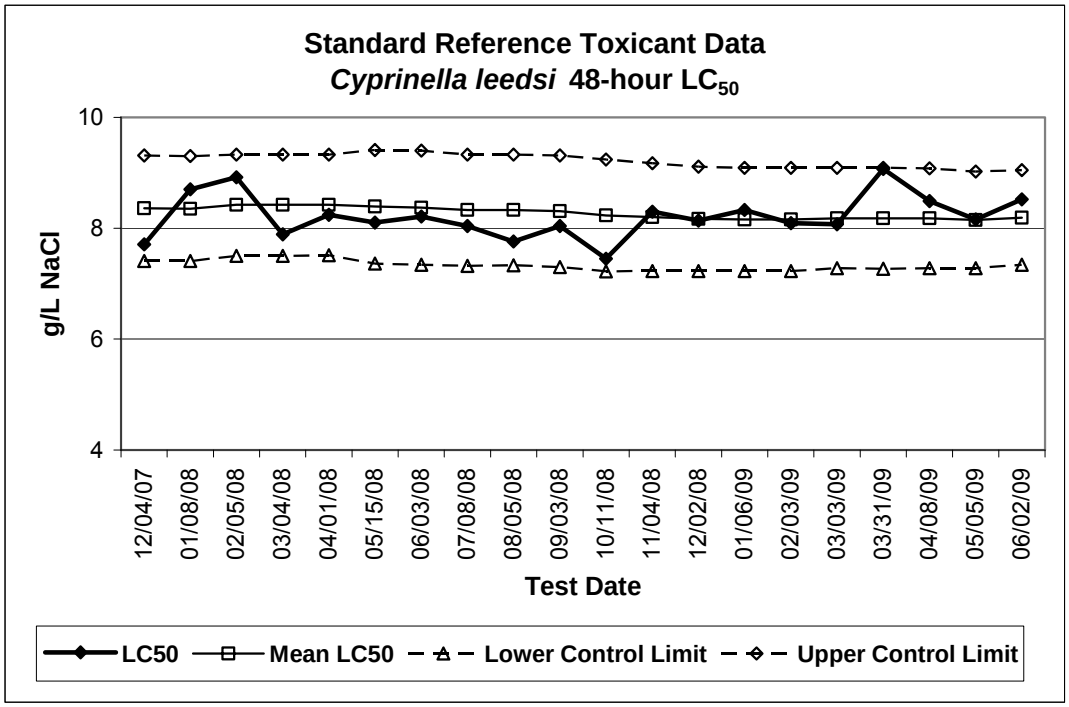
Florida Department of Environmental Protection
Bureau of Laboratories

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
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33
09/03/08	8.04	8.31	0.50	7.30	9.31
10/11/08	7.45	8.23	0.51	7.22	9.24
11/04/08	8.3	8.20	0.48	7.23	9.17
12/02/08	8.14	8.17	0.47	7.23	9.11
01/06/09	8.33	8.16	0.47	7.23	9.09
02/03/09	8.09	8.16	0.47	7.23	9.09
03/03/09	8.07	8.18	0.45	7.28	9.09
03/31/09	9.07	8.18	0.45	7.27	9.09
04/08/09	8.49	8.18	0.45	7.28	9.08
05/05/09	8.16	8.15	0.43	7.28	9.02
06/02/09	8.52	8.19	0.43	7.34	9.05

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

CV = 5.22
EPA reference 75th quartile CV = 19%



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: DMW 1.5-18-09 **Organism Batch:** 19-09 **Test Beginning:** Date: 6-2-09 Time: 13:25

Toxicant/ Batch#: NaCl 1 Age: <24hrs **Test Ending:** Date: 6-6-09 Time: 1200

6-6-09 Post wet

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<.003	TA06_22	MF
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	96	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: ~~umhos~~ (mmhos)	0.181	TA06_25	DD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	1.12.09
☑ *P. subcapitata*	2.13.09
☐ Artemia Lot #	

Artemia Batch:

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

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: BA Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 25.8 max. 26.7 mean 26.3

Light Intensity: 50-100 Ft. candles Waterbath # ___ min.____ max.____ mean____

Photoperiod: 16 hours Light / 8 hours dark Room B246 min 24.9 max. 26.0 mean 25.5

Feeding: √as needed

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

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	@ 4d 10	4	3 10	2 10
	B	B	5	5	5	5	5	5
	C	C	5	5	4 10	4	4	4
	D	D	5	5	5	5	5	5
2.5	A	A	5	5	3 20	3	1 20	0 10
	B	B	5	3 20	2 10	2	0 20	—
	C	C	5	5	0 5d	0	—	—
	A	D	5	4 1d	1 1d	1	1	1
3.0	A	A	5	5	1 4d	1	0 10	—
	B	B	5	3 20 @	—	—	—	—
	C	C	5	3 20	1 4d	1	0 10	—
	D	D	5	3 1d	1 4d	1	0 10	—
4.0	A	A	5	0 5d	0 5d	—	—	—
	B	B	5	2 3d	0 5d	—	—	—
	C	C	5	0 5d	0 5d	—	—	—
	D	D	5	0 5d	0 5d	—	—	—

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

Organisms loaded by: BA Checked by: MF ABR ABR ABR ABR

Loading Verified by: MF AR = after renewal

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

Comments: @ spilled vial after counting ABR 6-05-09

(B) transcription error ABR 6-04-09

Investigators' Signatures

Marshall Faircloth

Amelia Rankin

Bree Alexander

Reviewer: Britta Wolfe

Method: TSK

Statistics: LC50

	95% confidence intervals Lower	Upper
48 hour: 2.43	2.26	2.61
96 hour: 2.15	2.04	2.26

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Revised 7/15/2008 mf

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

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

Test Page 2 of 2

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

Test Beginning: Date: 6.2.09 Time: 1325
Test Ending: Date: 6.6.09 Time: 1200

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control		0 hr	7.8	24.6	7.2	0.181	—
		24 hr	—	—	—	—	—
		48 hr BR	8.0	24.2	6.7	0.276	
		48 hr AR	8.1	24.5	7.3	0.181	
		72 hr	—	—	—	—	
		96 hr	7.9	24.3	7.7	0.189	
1.5		0 hr	7.8	24.1	7.3	2.88	—
		24 hr	—	—	—	—	
		48 hr BR	8.0	24.2	6.7	3.06	
		48 hr AR	8.1	24.7	7.1	2.91	
		72 hr	—	—	—	—	
		96 hr	7.9	24.4	7.4	2.99	
2.0		0 hr	7.8	24.1	7.2	3.88	—
		24 hr	—	—	—	—	
		48 hr BR	8.0	24.2	6.8	4.55	
		48 hr AR	8.2	24.7	7.1	3.83	
		72 hr	—	—	—	—	
		96 hr	8.0	24.4	7.4	3.99	
3.5		0 hr	7.9	24.0	7.3	4.69	—
		24 hr	—	—	—	—	
		48 hr BR	8.0	24.2	6.9	5.50	
		48 hr AR	8.2	24.8	7.2	4.73	
		72 hr	—	—	—	—	
		96 hr	8.0	24.2	7.0	4.55	
3.0		0 hr	7.9	24.0	7.3	5.59	—
		24 hr	—	—	—	—	
		48 hr BR	8.1	24.2	6.9	6.47	
		48 hr AR	8.2	24.7	7.1	5.56	
	A	72 hr	8.1	24.4	7.1	5.65	
		96 hr					
4.0		0 hr	8.0	24.0	7.1	7.28	—
		24 hr	—	—	—	—	
		48 hr BR	8.1	24.2	6.9	8.83	
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures

Measured by:
0 hr: SA
24 hr: —
48 hr BR: A&R
48 hr AR: A&R
72 hr:
96 hr: SA

Measure/record salinity for marine tests

Comments:

Reviewed By:

Revised 07/15/2008 MF

FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: Well 1 6.1.09
Toxicant/ Batch#: NaCl 16.1.09

Organism Batch: 6.2.09
Age: 0days

Test Beginning: Date: 6.2.09 Time: 1310
Test Ending: Date: 6.6.09 Time: 1400

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	CF
Alkalinity (mg/L as $CaCO_3$):	160	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	153	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: ~~umhos~~ (mmhos)	0.277	TA06_25	SB
Salinity (ppth):	—	TA06_25	—

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

Artemia Batch:
0 hr: 71-09
24 hr:
48 hr: 73.09
72 hr:

Chamber size: 1000 mL
Test volume: 500 mL per replicate

Concentrations prepared by: JD
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 25.8 max. 26.7 mean 26.3
Light Intensity: 50-100 Ft. candles Waterbath # ___ min.____ max.____ mean____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 24.9 max. 26.0 mean 25.5

Feeding: √as needed

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

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration µg/L mg/L ‰	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	D1	10	10	10	10	10	10
	B	D2	10	10	10	10	10	10
6	A	D3	10	10	10	10	10	10
	B	D4	10	10	10	10	10	10
7	A	D5	10	10	10	10	10	10
	B	D6	10	10	10	10	10	10
8	A	D7	10	10	10	10	10	10
	B	D8	10	8 2D	8	8	8	8
9	A	D9	10	1 4D	0 6D	—	—	—
	B	D10	10	3 7D	3	3	3	3
10	A	D11	10	0 8D	—	—	—	—
	B	D12	10	5 6D	—	—	—	—

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

Organisms loaded by: JD Checked by: JD
Loading Verified by: DS AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Comments:

Investigators' Signatures
Jason Daniel
Chris Funk
Brad Alsobrook
Amelia Parkin
Marshall Faircloth
Reviewer: Mitch Wolfe

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.52	8.31	8.73
96 hour: 8.52	8.31	8.73

Revised 7/15/2008 mf

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

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

Test Page 2 of 2

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

Test Beginning: Date: 6.2.09 Time: 1210
Test Ending: Date: 6.6.09 Time: 1100

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (☒ µmhos ☐ mmhos)	Salinity (ppth)
Control	A	0 hr	7.6.	24.0	7.4	0.277	–
	B	24 hr	8.0	24.2	6.5	0.284	–
	A	48 hr BR	8.1	25.5	6.5	0.286	–
	A	48 hr AR	8.1	24.8	7.5	0.284	–
	B	72 hr	7.9	25.3	5.1	0.280	–
	A	96 hr	7.6	25.6	6.0	0.295	–
6	A	0 hr	7.6	24.0	7.7	11.30	–
	B	24 hr	8.0	24.1	6.6	11.08	–
	A	48 hr BR	8.1	25.3	6.3	10.89	–
	A	48 hr AR	8.0	24.6	7.1	11.04	–
	B	72 hr	7.9	25.5	4.7	11.1	–
	A	96 hr	7.7	25.6	5.4	11.4	–
7	A	0 hr	7.7	24.0	7.7	12.96	–
	B	24 hr	8.0	24.1	6.5	12.96	–
	A	48 hr BR	8.1	25.4	6.2	12.80	–
	A	48 hr AR	8.0	24.6	7.1	12.80	–
	B	72 hr	7.9	25.4	4.9	12.8	–
	A	96 hr	7.8	25.6	5.5	13.1	–
8	A	0 hr	7.8	24.0	7.7	14.66	–
	B	24 hr	8.0	24.0	6.5	14.69	–
	A	48 hr BR	8.1	25.2	6.2	14.18	–
	A	48 hr AR	8.0	24.6	7.0	14.12	–
	B	72 hr	8.0	25.4	5.4	14.2	–
	A	96 hr	7.9	25.5	5.8	14.5	–
9	A	0 hr	7.9	24.0	7.7	16.36	–
	B	24 hr	7.9	24.0	6.3 59	16.62	–
	A	48 hr BR	8.1	25.2	6.4	16.13	–
	A	48 hr AR	8.0	24.6	6.9	16.31	–
	B	72 hr	8.0	25.4	5.6	16.4	–
	A	96 hr	8.0	25.6	6.1	16.7	–
10	A	0 hr	7.8	24.0	7.6	17.96	–
	B	24 hr	7.5	24.8	5.3	17.64	–
	–	48 hr BR	–	–	–	–	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures
Mary Dimick
Charles Fenn
Vicki Evans
Bill Allen
Amelia Rankin
Marshall Faircloth
Reviewed By: Annette Wolfe

Measured by:
0 hr: JA
24 hr: JB
48 hr BR: JB
48 hr AR: JB
72 hr: JB
96 hr: JB

Measure/record salinity for marine tests

Comments: (A) transcription error AR 6-03-09

PAGE 00 062

Revised 07/15/2008 MF

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

DATE: 6-2-09 DURATION: 48 h TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	0
2.00	20	2
2.50	20	14
3.00	15	12
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: **2.43**
95% LOWER CONFIDENCE: 2.26
95% UPPER CONFIDENCE: 2.61

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

DATE: 6-2-09 DURATION: 48 h TOXICANT: NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	0
7.00	20	0
8.00	20	2
9.00	20	17
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: **8.52**
95% LOWER CONFIDENCE: 8.31
95% UPPER CONFIDENCE: 8.73

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 6/1/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	150	4 DAYS	M2090528	25°C	7.9 s.u	20‰
Menidia beryllina	150	12 DAYS	SS090520	25°C	7.9 s.u.	20‰
						Hardness
Cyprinella leedsi	200	11 DAYS	FM090521	25°C	7.8 s.u	80mg/L
Pimephales promelas	150	8 DAYS	FM090524	25°C	7.8 s.u	80mg/L

Packed by: _____

Shipped Via: FedEx

Notes: _____

Thank you for your order.

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

Appendix H
Physical/Chemical and Habitat Assessment field sheets

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

E: FS

SAMPLE ID : _____ ORG ID : _____

COUNTY : Gulf STORET # : _____

DATE : 6 Aug 2009 TIME : 10:45

Latitude : (degrees) (minutes) (seconds) Longitude : (degrees) (minutes) (seconds)

SITE NAME : Wewahitchka WWTP - Upstream SAMPLE COMPLETE ? _____

FIELD ID/NAME : _____ RECEIVING BODY OF WATER : Chipola R

RIPARIAN ZONE / STREAM FEATURES

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

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)

Local Watershed Erosion (select one) : ☐ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank : _____ Right Bank : _____

High Water Mark: _____ + _____ = _____

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

Artificially Impounded ☐ Yes ☐ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

_____ m wide

_____ m/s _____ m/s _____ m/s

_____ m deep _____ m deep _____ m deep

Artificially Channelized : ☐ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

Canopy Cover % : ☐ Open ☐ Lightly Shaded (11-45%) ☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

Sediment Deposition ☐ Sludge ☐ Other (Specify) :

Sand Smothering : None Slight Moderate Severe

Silt Smothering : None Slight Moderate Severe

SUBSTRATE TYPE

Assessment Tool: ☐ SCI ☐ BioRecon ☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)			
Undercut Banks / Roots			
Leaf Packs or Mat			
Aquatic Vegetation			
Rock or Shell Rubble..			
Sand.....			
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.5	29.0	7.86	6.19	149		
Mid-Depth :							☐ VOB
Bottom :							

Water Surface Oils : ☐ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) :

Water Sample Taken ? ☐ Yes ☐ No

Algae Sample Taken ? ☐ Yes ☐ No

SYSTEM TYPE ☐ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☐ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES :

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton :	☐	☐	☐	☐
Fish :	☐	☐	☐	☐
Aquatic Macrophytes :	☐	☐	☐	☐
Iron/Sulfur Bacteria :	☐	☐	☐	☐

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

SAMPLING TEAM : M. Heyn + T. Risk **SIGNATURE** _____ **DATE :** 6 Aug 09

Revision Date: September 5, 2008

DEP-SOP-001/01: Form FD 9000-5

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):	RECEIVING BODY OF WATER:

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gulf	Chipola River 10m Upstream of outfall	Control Site

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 11	Four or more productive habitats present [snags, tree roots, 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 5	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 20	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 20 Primary Score 56	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. (20) 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 10 Left Bank 4	(Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. (10) 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 (4)	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 2	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 (2) 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 2 Secondary Score 58	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 (2) 1

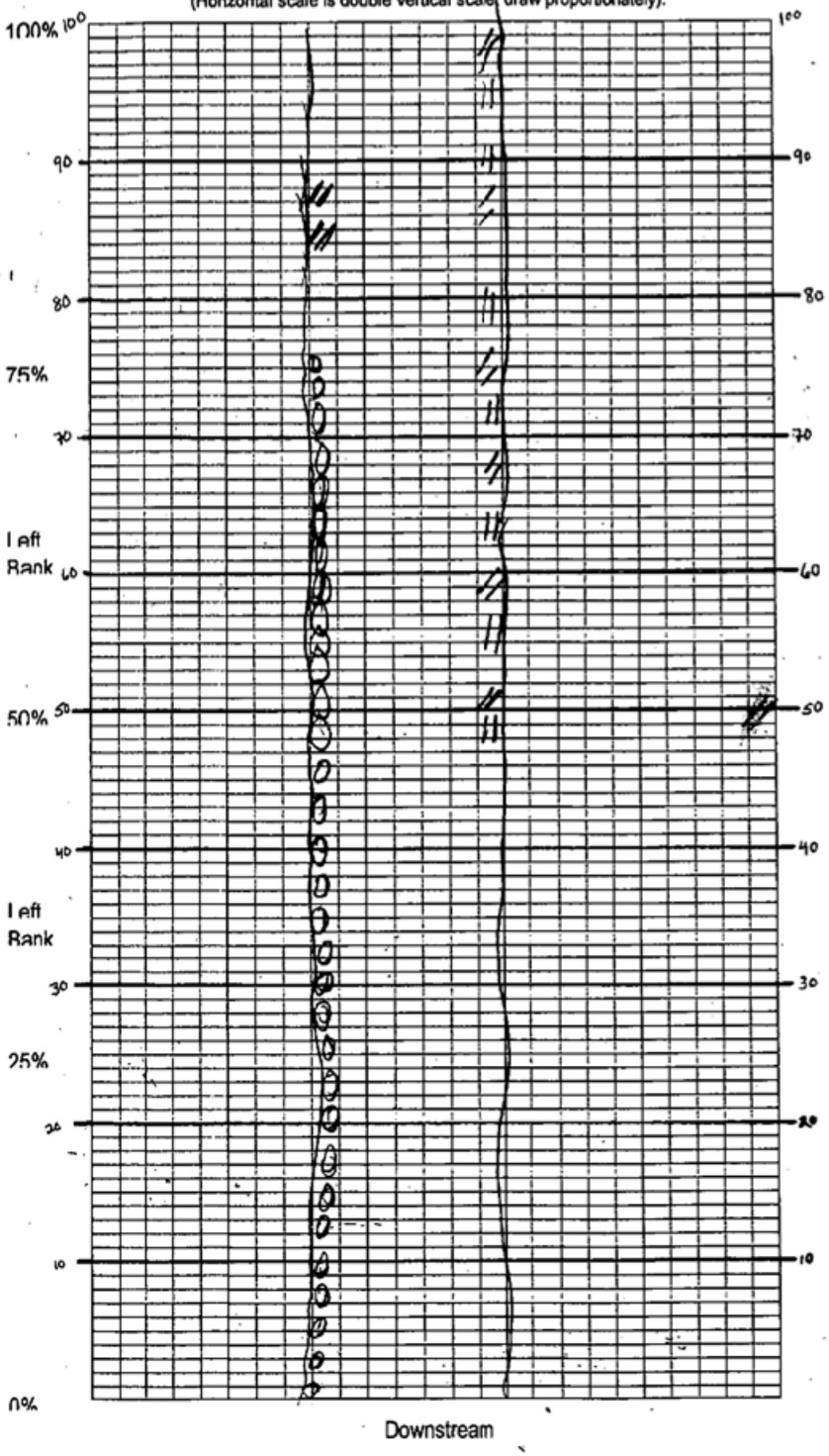
114 **TOTAL SCORE**

Date:	Analyst:	Signature:

DEP-SOP-001/01: Form FD 9000-6

Stream/River Habitat Sketch Sheet

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
- ☒ Rock
- ☐ _____
- ☐ _____

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:

Control Site

Revision Date: February 1, 2004

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

E: :S

SAMPLE ID : _____ ORG ID : _____

COUNTY : Gulf STORET # : _____

DATE : 8-6-09 TIME : 10:30

Latitude : (degrees) (minutes) (seconds) | Longitude : (degrees) (minutes) (seconds)

SITE NAME : Wewa Litchka WWTP - Downstream SAMPLE COMPLETE ? _____

FIELD ID/NAME : Downstream RECEIVING BODY OF WATER : Chipola R.

RIPARIAN ZONE / STREAM FEATURES

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

Forest/Natural ☐ | silviculture ☐ | Field/Pasture ☐ | Agricultural ☐ | Residential ☐ | Commercial ☐ | Industry ☐ | Other (Specify) ☐

Local Watershed Erosion (select one) : ☐ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank : ☐ Right Bank : ☐

High Water Mark: ☐ (m) + ☐ (above present water level) = ☐ (present depth) (above bed)

Artificially Impounded ☐ Yes ☐ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

☐ m wide

☐ m/s ☐ m/s ☐ m/s

☐ m deep ☐ m deep ☐ m deep

Artificially Channelized : ☐ NO ☐ Mostly recovered, more sinuous ☐ Some recovery ☐ Recent, severe

Canopy Cover % : ☐ Open ☐ Lightly Shaded (11-45%) ☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

Sediment Deposition ☐ Sludge Sand Smothering : None Slight Moderate Severe Silt Smothering : None Slight Moderate Severe ☐ Other (Specify) :

SUBSTRATE TYPE

Assessment Tool: ☐ SCI ☐ BioRecon ☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)			
Undercut Banks / Roots			
Leaf Packs or Mat			
Aquatic Vegetation			
Rock or Shell Rubble..			
Sand.....			
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.5	29.0	7.93	6.01	150		
Mid-Depth :							☐ VOB
Bottom :							

Water Surface Oils : ☐ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) :

Water Sample Taken ? ☐ Yes ☐ No

Algae Sample Taken ? ☐ Yes ☐ No

SYSTEM TYPE ☐ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☐ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES :

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton :	☐	☐	☐	☐
Fish :	☐	☐	☐	☐
Aquatic Macrophytes :	☐	☐	☐	☐
Iron/Sulfur Bacteria :	☐	☐	☐	☐

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

SAMPLING TEAM : M. Heyn + T. Risk **SIGNATURE** _____ **DATE :** 6 Aug 09

Revision Date: September 5, 2008

DEP-SOP-001/01: Form FD 9000-5

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): 7/9/09	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: Gulf	LOCATION: Clipola River 10 m downstream of outfall	FIELD ID/NAME: Test Site

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 11	Four or more productive habitats present [snags, tree roots, 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 6	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 20	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 20 Primary Score 57	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. (20) 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank (6)	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 (9)	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 (6)	Only meets 1 of the 3 requirements for optimal bank stability. 5 (4)	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 2	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 (2) 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 2 Secondary Score 59	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 (2) 1

118 **TOTAL SCORE** left Bank a lot less than desirable

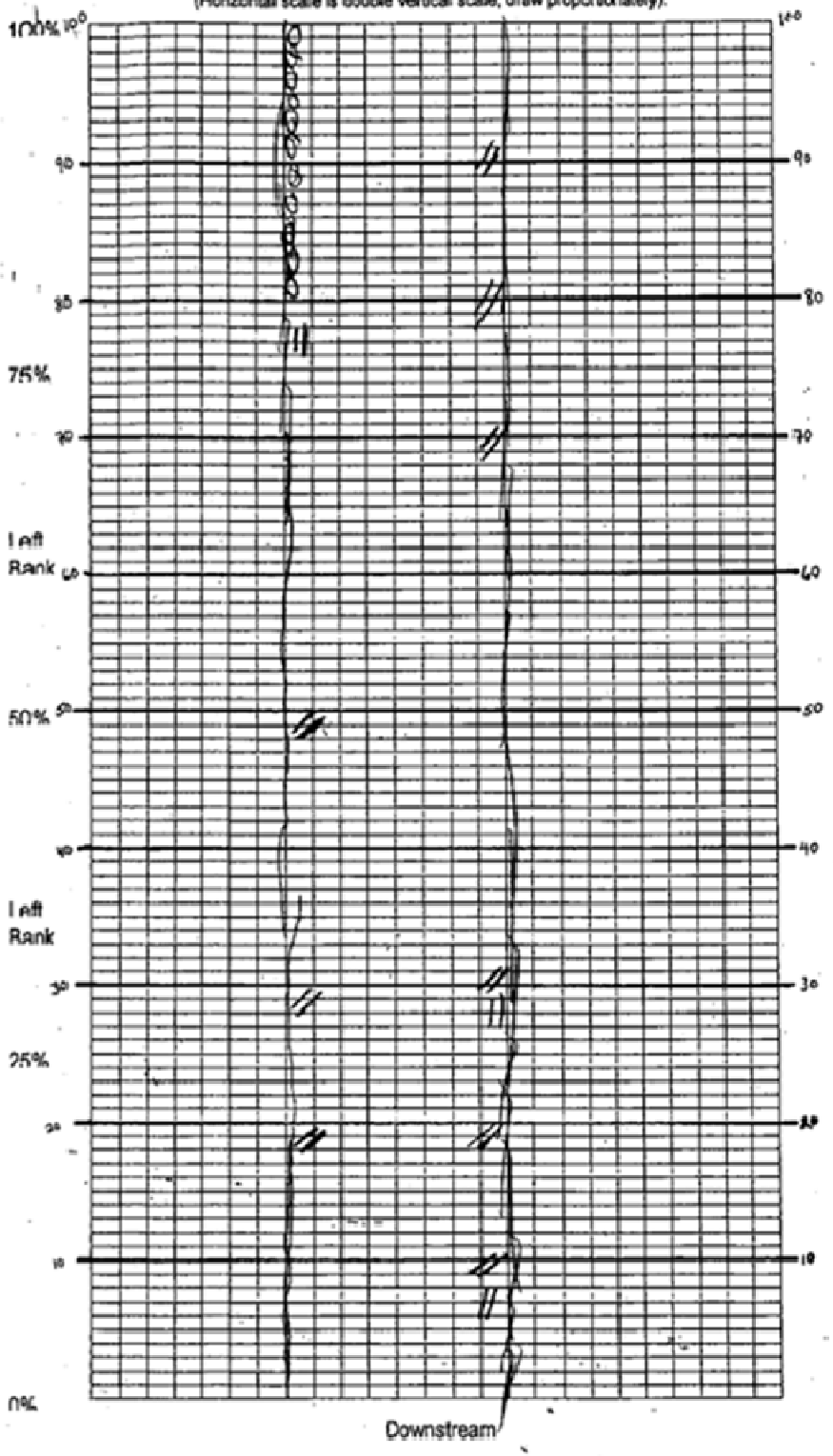
Date: 7/9/09	Analyst: Blake Spencer + Mike Hyer	Signature:

Form FD 9000-5 Revision Date: June 6, 2008

DEP-SOP-001/01: Form FD 9000-6

Stream/River Habitat Sketch Sheet

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
- ☐ Rock
- ☐ _____
- ☐ _____

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:

Test Site

Revision Date: February 1, 200

Appendix I-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 4 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Wewahitchka WWTP facility and collected on 8/6/09. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Dero sp.	-	4
Nais communis complex	14	-
Arthropoda		
Insecta		
Coleoptera		
Macronychus glabratus	10	24
Microcylloepus pusillus	2	2
Stenelmis sp.	-	30
Stenelmis antennalis	16	-
Diptera		
Ablabesmyia rhamphe grp.	2	8
Corynoneura sp.	2	2
Cricotopus bicinctus	15	81
Cricotopus or *orthocladius* sp.	56	16
Dicrotendipes sp.	2	-
Dicrotendipes simpsoni	-	2
Hemerodromia sp.	32	77
Nanocladius sp.	-	4
Palpomyia/bezzia grp.	2	6
Pentaneura inconspicua	8	13
Polypedilum beckae	2	-
Polypedilum flavum	152	304
Polypedilum halterale grp.	-	19
Polypedilum scalaenum grp.	-	10
Rheotanytarsus exiguus grp.	12	27
Simulium sp.	50	14
Stelechomyia perpulchra	-	6
Stenochironomus sp.	21	21
Tanytarsus sp. A Epler	2	2
Tanytarsus sp. C Epler	2	-
Tanytarsus sp. S Epler	-	4
Thienemanniella lobapodema	12	15
Thienemanniella xena	-	4
Thienemannimyia grp.	29	42
Tribelos fuscicornis	2	2
Ephemeroptera		
Baetis intercalaris	196	415
Caenis punctata	226	538
Isonychia sp.	101	-

Appendix I-1 (continued)

Isonychia sicca	-	117
Maccaffertium exiguum	183	170
Maccaffertium mexicanum integrum	-	36
*Procloeon*sp.	2	-
Pseudocloeon ephippiatum	23	143
Stenacron sp.	-	4
Tricorythodes albilineatus	77	93
Megaloptera		
Chauliodes sp.	8	-
Corydalus cornutus	147	183
Odonata		
Neurocordulia sp.	-	4
Plecoptera		
Acroneuria sp.	3	3
Paragnetina sp.	-	3
Paragnetina kansensis	7	-
Trichoptera		
Ceraclea sp.	6	16
Chimarra sp.	-	2
Cyrnellus fraternus	2	13
Hydropsyche sp.	-	1,310
Hydropsyche incommoda	745	-
Hydroptila sp.	91	74
Macrostemum carolina	568	753
Nectopsyche exquisita	2	-
Neureclipsis crepuscularis	4	8
Neureclipsis melco	117	338
Oecetis sp.	8	-
Oecetis persimilis	-	16
Oxyethira sp.	4	-
Mollusca		
Bivalvia		
Corbicula fluminea	2	-

Appendix I-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 4 samples) incubated upstream and downstream of the Wewahitchka WWTP facility for 28 days and collected on 8/6/09.

	Control Site	Test Site
Annelida		
Oligochaeta		
Dero sp.	-	1
Naididae	3	1
Nais communis complex	4	-
Arthropoda		
Insecta		
Coleoptera		
Macronychus glabratus	5	12
Microcylloepus pusillus	1	1
Stenelmis sp.	7	15
Stenelmis antennalis	1	-
Diptera		
Ablabesmyia rhamphe grp.	1	4
Chironomidae	6	12
Corynoneura sp.	1	1
Cricotopus sp.	5	19
Cricotopus bicinctus	2	20
Cricotopus or *orthocladius*	27	8
Dicrotendipes sp.	1	-
Dicrotendipes simpsoni	-	1
Hemerodromia sp.	16	39
Nanocladius sp.	-	2
Palpomyia/bezzia grp.	1	3
Pentaneura inconspicua	4	6
Polypedilum beckae	1	-
Polypedilum flavum	74	147
Polypedilum halterale grp.	-	9
Polypedilum scalaenum grp.	-	5
Rheotanytarsus exiguus grp.	6	13
Simulium sp.	25	7
Stelechomyia perpulchra	-	3
Stenochironomus sp.	10	10
Tanytarsus sp. A Epler	1	1
Tanytarsus sp. C Epler	1	-
Tanytarsus sp. S Epler	-	2
Thienemanniella sp.	5	4
Thienemanniella lobapodema	1	4
Thienemanniella xena	-	1
Thienemannimyia grp.	14	20
Tribelos fuscicornis	1	1
Ephemeroptera		
Baetidae	3	78
Baetis intercalaris	96	151

Caenis sp.	46	162
Caenis punctata	68	109
Heptageniidae	9	4
Isonychia sp.	51	58
Isonychia sicca	-	1
Maccaffertium sp.	33	77
Maccaffertium exiguum	50	19
Maccaffertium mexicanum integrum	-	4
Procloeon sp.	1	-
Pseudocloeon sp.	7	43
Pseudocloeon ephippiatum	4	9
Stenacron sp.	-	2
Tricorythodes albilineatus	39	47
Megaloptera		
Chauliodes sp.	4	-
Corydalidae	-	9
Corydalus cornutus	74	77
Undetermined Megaloptera	-	6
Odonata		
Libellulidae	-	1
Neurocordulia sp.	-	1
Plecoptera		
Acroneuria sp.	1	1
Paragnetina sp.	-	1
Paragnetina kansensis	2	-
Perlidae	2	1
Trichoptera		
Ceraclea sp.	3	8
Chimarra sp.	-	1
Cyrnellus fraternus	1	6
Hydropsyche sp.	324	633
Hydropsyche incommoda	42	-
Hydropsychidae	16	28
Hydroptila sp.	46	37
Macrostemum carolina	279	364
Nectopsyche exquisita	1	-
Neureclipsis sp.	-	80
Neureclipsis crepuscularis	2	2
Neureclipsis melco	55	82
Oecetis sp.	4	6
Oecetis persimilis	-	2
Oxyethira sp.	2	-
Polycentropodidae	4	8
Undetermined Trichoptera	1	18
Mollusca		
Bivalvia		
Veneroida		
Corbicula fluminea	1	-

The Bioassay of Wewahitchka WWTF effluent sampled on June 1, 2009. NPDES #FL0020125.

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

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

Remarks

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The Priority Pollutants Analysis of Wewahitchka WWTF effluent sampled on June 1, 2009. NPDES #FL0020125.

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

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

Remarks

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Biological Analyses of Wewahitchka WWTF effluent sampled on June 1, 2009. NPDES #FL0020125.

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

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

Remarks

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