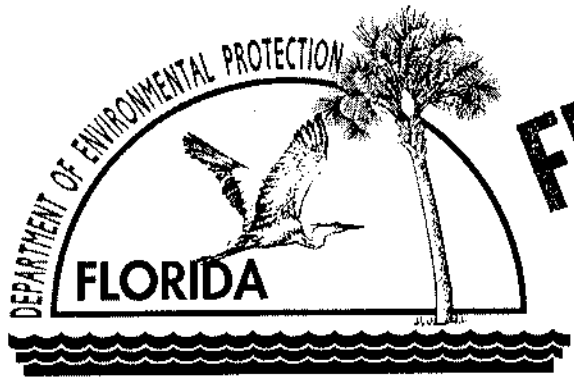
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Biological Assessment of

Chattahoochee WWTP

Gadsden County

NPDES #FL0027669

Sampled October 1998

June 1999

Biology Section
Division of Administrative and Technical Services
Bureau of Laboratories

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection

Results of Fifth Year Inspections

Discharger:	Chattahoochee WWTP
County:	Gadsden
NPDES Number:	FL0027669
Permit Expiration Date:	2/1/2004

Toxics Sampling Inspection (XSI)

Date Sampled: 13 October 1998

Results: No organic pollutants or metals were detected at levels that exceeded Class III water quality standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 13 October 1998

Results: The effluent was not toxic to the fish, *Cyprinella leedsi,* or to the invertebrate, *Ceriodaphnia dubia,* during the 48-hour bioassay.

Impact Bioassessment Inspection (IBI)

Date Sampled: 13 October 1998

Results: The Hester-Dendy samplers at the control site were completely buried by shifting sand by the end of the 28-day incubation period as a result of bridge construction upstream of the discharge. Mosquito Creek meanders immediately downstream of the control site resulting in sand deposition above this point. Thus, the Hester-Dendy samplers at the test site were not affected and indicated a healthy macroinvertebrate community. The SCI scores based on the qualitative sampling, placed both study sites in the "excellent" category. There were no negative effects on the macroinvertebrate community due to the facility's discharge. The algal data showed no significant changes that could be attributed to the discharge.

Water Quality Inspection (WQI)

Date Sampled: 13 October 1998

Results: Effluent nutrient concentrations had little to no effect on the concentrations at the test site. The results at the control and test sites were very similar. The effluent AGP value was 70.5 mg dry wt/L.

This Biological Assessment was prepared by DEP staff to provide information to be used in reviewing an NPDES permit renewal application for the subject facility. This assessment will be used in conjunction with other information concerning the facility and its receiving water body to determine appropriate final permit conditions.

Introduction

The Chattahoochee Wastewater Treatment Plant is located in Gadsden County, Florida (see maps in the Appendix). This facility is a municipal wastewater treatment plant serving the city of Chattahoochee. Treatment of domestic waste includes contact/stabilization, aeration, clarification, chlorination, and dechlorination. The design flow of the wastewater system is 0.50 MGD. At the time of this survey, mean flow was 0.515 MGD. The treated effluent is continuously discharged into the Class III Mosquito Creek and ultimately flows into the Apalachicola River.

State permit limits for the Chattahoochee WWTP are listed in Table 1. According to the facility's monthly operating reports, the plant has had several violations for fecal coliforms, total residual chlorine (after dechlorination), and flow. Since July, 1997 the facility has passed every bioassay, with one exception, in January, 1998.

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a control site (located in Mosquito Creek approximately 10 meters upstream of the discharge) and a test site (located in Mosquito Creek approximately 10 meters downstream of the discharge). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. The effluent was analyzed for nutrients, metals, and for organic constituents (base neutral and acid extractables, and pesticide extractables). Methods used for all chemical analyses are on file at the DEP Central Chemistry Laboratory in Tallahassee.

Acute screening toxicity bioassays, using the invertebrate, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi*, as test organisms, were performed on an effluent sample.

Benthic macroinvertebrate communities were evaluated at control and test sites. Invertebrates were collected from multiple substrates (*e.g.*, snags, leaf packs, vegetation) using discrete dip-net sweeps. Additional invertebrate collections were accomplished using Hester-Dendy multiplate samplers that were incubated for 28 days.

Periphyton are typically sampled by incubating glass microscope slides in a standard periphytometer for 28 days. Periphytometers were deployed but due to extreme flooding, were not recovered from either the control or the test site. Phytoplankton were sampled at both control and test sites via subsurface grabs. Chlorophyll *a* was determined for the phytoplankton communities. *Selenastrum capricornutum* was used as the test organism for algal growth potential tests. All field and laboratory biological methods were carried out following Biology Section Standard Operating Procedures (SOP's). The latest version of the SOP's can be viewed on our web site at <www.dep.state.fl.us/labs/sops.htm>.

Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of the discharge. These measurements include: habitat assessment, taxa richness, Shannon-Weaver Diversity Index, the Florida Index, Ephemeroptera/Plecoptera/Trichoptera (EPT) Index, community composition, functional feeding groups, algal biomass, and the Stream Condition Index (SCI). For a discussion of each of these measures, see *Explanation of Measurements of Community Health* in the Appendix.

For graphical purposes, the percent differences between the control and test sites involving the number of taxa, the diversity index, the Florida Index, the EPT Index, and the % filter-feeders are measured as the control site minus test site divided by the control site. The percent differences between sites involving the % contribution, algal density, chlorophyll *a*, and algal growth potential are measured as the test site minus control site divided by the control site.

The following personnel were involved in this investigation: Julie Baughman, Ken Espy, Marshall Faircloth, Russel Frydenborg, Joy Jackson, Scott Lashbrook, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, Steve Wolfe, David Whiting, and Vicki Whiting (DEP Central Biology Laboratory in Tallahassee). The report was reviewed by the Point Source Studies Review Committee, consisting of Wayne Magley, Chuck Ziegmont, and Michael Tanski, as well as District representatives.

Table 1. Effluent limits and summary of chemistry data.

Chattahoochee WWTP	Effluent Limits	Effluent Samples	Control Site	Test Site
Organic Constituents (µg/L)				
	-	None Detected	-	-
Metals (µg/L)				
Aluminum	1,500 **	50 U	-	-
Arsenic	50 **	20 U	-	-
Cadmium	1.31 **a	0.05 U	-	-
Chromium	241 **a	10 U	-	-
Copper	13.8 **a	1.0 I	-	-
Iron	1,000 **	96.7 A	-	-
Lead	4.02 **a	0.42 A	-	-
Mercury	0.012 **	0.10 U	-	-
Nickel	184 **a	6.0 U	-	-
Selenium	5.0 **	30 U	-	-
Silver	0.07 **	0.05 U	-	-
Zinc	124 a	14 I	-	-
Nutrients (mg/L)				
Ortho-phosphate	-	0.31 A	0.040 U	0.040 U
Total phosphorus	-	0.44 A	0.11	0.094
Ammonia	10.0 b*	3.3 e	0.014 I	0.091
Nitrate+Nitrite	-	0.29	0.68 Q	0.66
TKN	20.0 b*	4.3 e	0.26	0.38
Organic Nitrogen	-	0.90	0.246	0.289
Total Nitrogen	-	2.79	0.94	1.04
General Phys-Chem Parameters				
Habitat Assessment	-	-	111	121
D.O. (mg/L)	5.0 *	6.4	8.7	8.4
pH (SU)	6.0 - 8.5 *	6.95	6.9	6.8
Conductivity (µmhos/cm)	**	385	60	60
Temperature (°C)	**	25.4	21.0	20.4
C.B.O.D., 5 day (mg/L)	24.0 b *	3.50 Ab	-	-
TSS (mg/L)	24.0 b*	4.0 b	-	-
Flow (MGD)	0.50 *	-	-	-
Hardness (mg $CaCO_3$)	-	120	-	-
AGP (mg dry wt/L)	-	70.5	2.2	2.4
Toxicity (48-hour static, screening bioassay)				
Bioassay - Fish	-	Not Toxic	-	-
Bioassay - Invertebrate	-	Not Toxic	-	-
Microbiology (# counts/100 ml)				
Fecal Coliforms	≤ 200 c*	32 AQ	160 Q	250 Q
Total Coliforms	≤ 2,400 **	55 AQ	800 Q	1000 Q

* Permit limit
** Class III water quality standard
A - Value is the mean of two or more determinations
I - Value is < the practical quantitation limit, and ≥ the minimum detection limit
Q - Sample held beyond normal holding time
U - Analyzed for but not detected; value reported is the minimum detection limit
a - hardness based
b - 8-hr composite sample
c - daily maximum

Results

The chemical and biological results for the Chattahoochee WWTP effluent and receiving water sites are presented in Tables 1, 2, and 3.

Discussion

At the time of the survey, the mean flow was 0.515 MGD, which exceeds the permit limit and design flow of the wastewater system (0.50 MGD). Effluent metals complied with Class III water quality standards. No organic pollutants were detected in the effluent.

The effluent sample was not toxic to the fish, *Cyprinella leedsi*, or to the invertebrate, *Ceriodaphnia dubia*, during the 48-hour bioassay.

Most of the nutrients at the test site were only slightly elevated compared to the control site (Table 1). Effluent levels of total phosphorus, ortho-phosphate, and nitrate+nitrite concentrations did not appear to effect concentrations of these nutrients at the test site. The nitrate+nitrite sample from the control site was held beyond the normal holding time, but was comparable to the test site sample.

The AGP values at the control and test site did not exceed the 5 mg dry wt/L "problem threshold" (Raschke and Schultz 1987) (Table 1). The effluent AGP was elevated (70.5 mg dry wt/L) but did not appear to adversely affect the phytoplankton communities at the test site (Figure 1). Although the test site algal density was 76% higher than the control site, it was low for a freshwater system (Table 2).

Table 2. Algal community structure of study sites.

Chattahoochee WWTP	Control Site	Test Site
Phytoplankton Algae		
Number of Taxa	11	11
Shannon-Weaver Diversity	2.99	2.81
Chlorophyll *a* (µg/L)	1.00 U	1.00 U
Algal Density (#/mL)	91	158
% Blue-green	19	15
% Green	51	65
% Diatoms	19	18
AGP (mg dry wt/L)	2.2	2.4

U - Material not detected; value is the minimum detection limit

The Hester-Dendy samplers at the control site experienced severe sand smothering apparently as a result of bridge construction approximately 500 meters upstream of the discharge (see Habitat Assessments Data Sheets in the Appendix). On three separate visits to this site, major shifts in the stream bed sediments were observed at the control site. The Hester-Dendy samplers at the control site were completely buried in the sand by the end of the 28-day incubation period. Mosquito Creek meanders immediately downstream of the control site resulting in sand deposition above this point (see map in the Appendix). The Hester-Dendy samplers at the test site were not affected to the same degree by the sand smothering as the control site and for this reason were not comparable. For example, only two taxa were recovered from the control site compared to 32 taxa at the test site (Table 3). The diversity was 340% higher at the test site (4.05) compared to the control site (0.92). Pollution-sensitive organisms were completely absent from the control site. The test site, on the other hand, received good scores on the Florida (22 points) and EPT indices (7 points) (Table 3). Shannon-Weaver diversity, and taxa richness at the test site were higher than 90% of other Florida streams (*see Typical Values for Selected Parameters in Florida Waters* in the Appendix).

It does not appear that the facility was impacting the macroinvertebrate community at the test site. These results suggest that the bridge construction upstream of the discharge was having a detrimental effect on the benthic communities above the discharge point where Mosquito Creek meanders.

The SCI scores calculated from the qualitative macroinvertebrate samples placed the control site (with 29 points) and the test site (with 31 points) in the "excellent" category (see SCI Worksheet in the Appendix). The total number of taxa, EPT and Florida Index scores compared very favorably to other streams in the Florida Panhandle. These results suggest that there is currently enough productive habitat in Mosquito Creek to support the macroinvertebrate communities. However, further loss of habitat from sand smothering may cause a decline in macroinvertebrate community health at the study sites over time.

Literature Cited

Barbour, M. T., J. Gerritsen, and J. S. White. 1996. Development of the Stream Condition Index for Florida. Prepared for the Fla. Dept. Environ. Protection. 105 p.

EA Engineering, Science, and Technology and Tetra Tech, Inc. 1994. Bioassessment for the nonpoint source program (draft). Prepared for the Fla. Dept. Environ. Protection. Unpaginated.

FDEP. 1994. Lake bioassessments for the determination of nonpoint source impairment in Florida. Fla. Dept. Environ. Prot. Biology Section, Tallahassee, Fla. 73 p.

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

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

Ross, L. T. 1990. Methods for aquatic biology. Fla. Dept. Environ. Reg. Tech. Ser. 10(1): 1-47.

Weber, C. I. 1993. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 4th edition. EPA/600/4-90/027. U. S. EPA, Cincinnati, Ohio. 216 pp.

Table 3. Benthic community structure of study sites

Chattahoochee WWTP	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	29	39
Florida Index	21	29
SCI	29	31
EPT Index	10	9
% Dominant Taxon	17	12
Community Composition		
% Coleoptera	10.0	6.0
% Diptera	64.0	71.0
% Ephemeroptera	16.0	13.0
% Plecoptera	1.0	1.0
% Trichoptera	4.0	4.0
% Other	5.0	4.0
Functional Feeding Groups		
% Predators	8.0	15.0
% Burrowing Deposit Feeders	3.0	2.0
% Surface Deposit Feeders	24.0	31.0
% Filter Feeders	41.0	28.0
% Scrapers	9.0	7.0
% Shredders	11.0	14.0
Macroinvertebrate Hester-Dendy		
Number of Taxa	2	32
Florida Index	0	22
Shannon-Weaver diversity	0.92	4.05
EPT Index	0	7
Community Composition		
% Coleoptera	67.0	5.0
% Diptera	33.0	74.0
% Ephemeroptera	0.0	17.0
% Trichoptera	0.0	3.0
% Other	0.0	2.0
Functional Feeding Groups		
% Predators	0.0	18.0
% Surface Deposit Feeders	33.0	36.0
% Suspension Feeders	0.0	17.0
% Scrapers	33.0	11.0
% Shredders	0.0	17.0

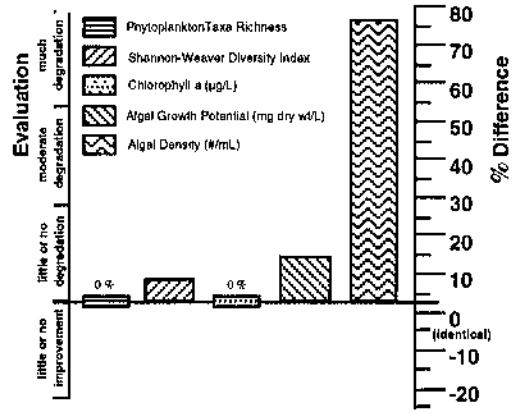


Figure 1. Effect of discharge on the algal community.

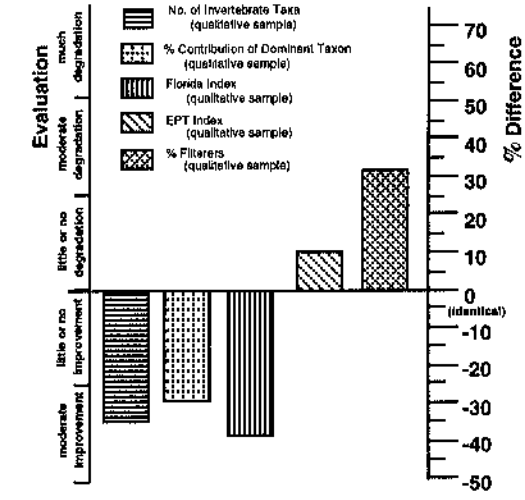


Figure 2. Effect of discharge on the benthic community.

Explanation of Measurements of Community Health

Several different measurements of macroinvertebrate and algal community health may have been employed to determine the effects of a discharge. These are briefly discussed here.

Habitat Assessment: Seven attributes known to have potential effects on the stream biota were evaluated and scored, with 20 possible points for each factor. Based on the sum of these individual scores, overall habitat quality is assigned to one of four categories: Optimal (105-140 points); Suboptimal (70-104 points); Marginal (35-69 points); and Poor (0-34 points).

Taxa richness: Stress tends to reduce the number of different types of organisms present in a system, although moderate nutrient enrichment may sometimes be correlated with increased algal taxa richness.

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa.

The Florida Index: Some organisms become rare or absent as the intensity or duration of disturbance increases. The Florida Index, assigns points to stream-dwelling macroinvertebrates based on their sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy.

Ephemeroptera/Plecoptera/Trichoptera (EPT) Index: This index is the sum of the number of EPT taxa present. Higher EPT values are associated with healthier systems.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to control conditions, may indicate degradation.

Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress. A decreased diatom to blue-green algae ratio (calculated by dividing the number of individuals in the Bacillariophyta by the number of individuals in the Bacillariophyta + Cyanophyta) is often indicative of nutrient enriched conditions in flowing streams.

Functional Feeding Groups: Disturbance can shift the feeding strategies of invertebrates. In Florida, for example, pollution may be responsible for reducing the numbers of filter-feeders (FDEP 1994) and shredders (EA Engineering 1994).

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric (Barbour *et al.* 1996) developed for Florida. The SCI assigns points to a variety of parameters, depending on how closely each parameter approaches an expected control condition (see SCI calculation table in Appendix).

Typical Values for Selected Parameters in Florida Waters

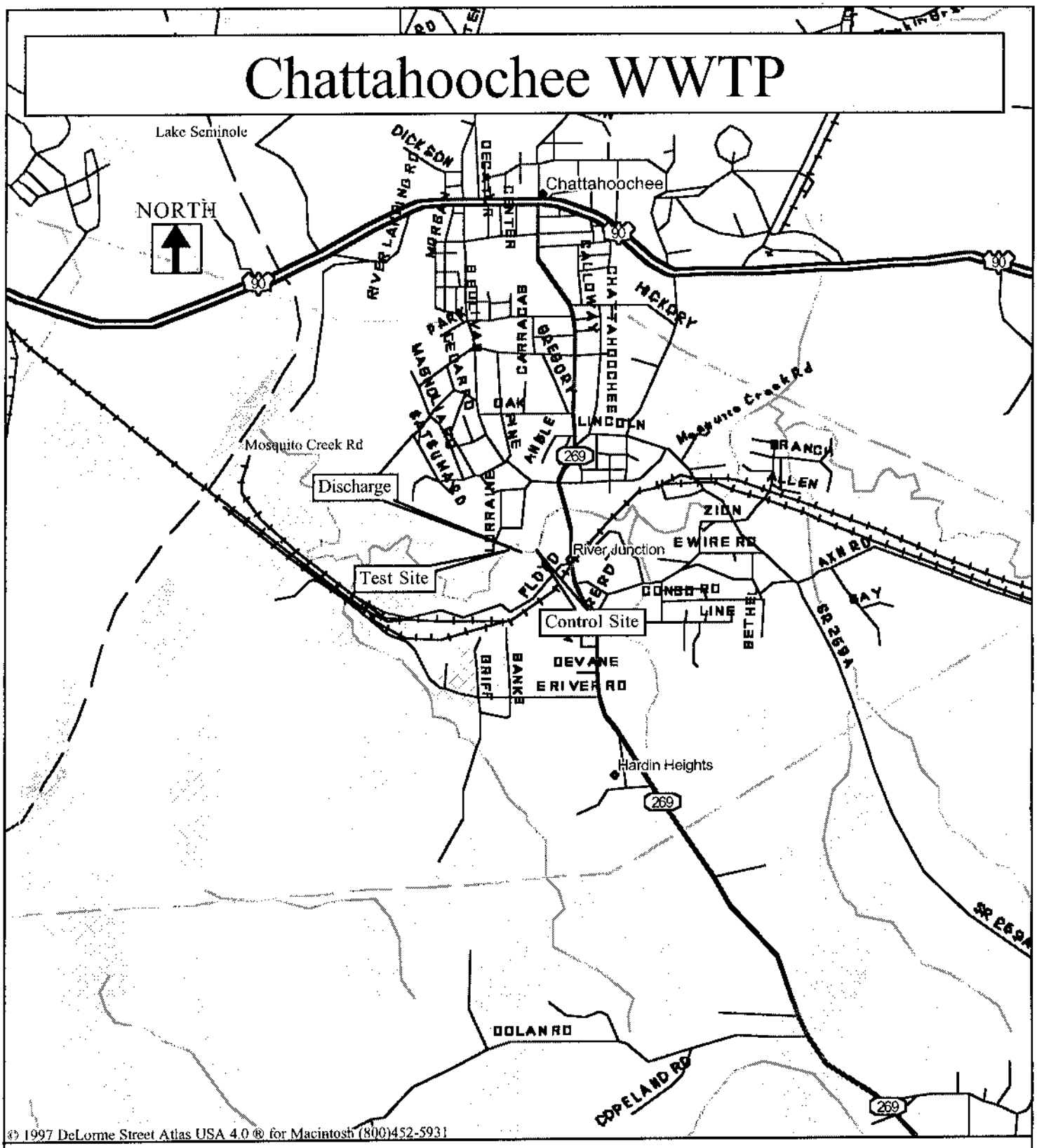
Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

Percentile Distribution

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
STREAMS (1617 stations)											
Phytoplankton Chlorophyll *a*	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	48.70
Periphyton Chlorophyll *a*	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85
H-D Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90
Qualitative Taxa Richness	9.00	12.00	17.00	20.00	22.00	24.50	26.00	28.00	31.00	37.00	53.00
H-D Taxa Richness	6.00	6.50	9.00	11.50	13.00	15.00	17.00	21.50	26.00	29.00	32.00
TKN	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80
Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60
NO2-NO3	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51
Ortho Phosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37
Turbidity	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30

Units:
Phytoplankton Chlorophyll *a* (ug/L), Periphyton Chlorophyll *a* (mg/m^2), Nutrients (mg/L), Turbidity (NTU), Taxa richness and diversity values are for macroinvertebrates

Chattahoochee WWTP



© 1997 DeLorme Street Atlas USA 4.0 ® for Macintosh (800)452-5931

Mag 14.00
Mon Mar 29 11:41 1999
Scale 1:31,250 (at center)
2000 Feet
1000 Meters

- Local Road
- State Route
- US Highway
- Utility/Pipe
- Railroad
- Small Town
- Locale
- County Boundary
- State Boundary
- Land

Facility Summary

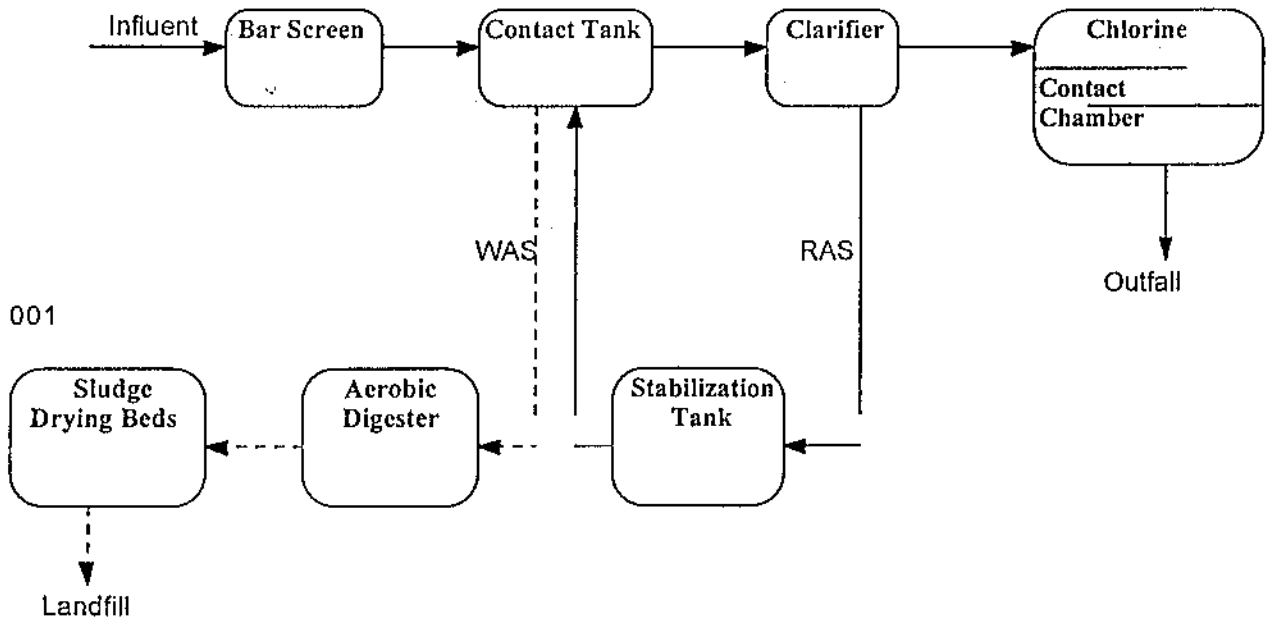
Facility Name: Chatahoochee WWTF Date Summary Prepared: 9/23/98

Location map: County: Gadsden District: Northwest/10

NPDES Permit # FL0027669 expiration date: 5/31/99 State Permit # DT20-258936 expiration date: 5/1/99 Facility Type: Dom.

Function of facility: To operate a 0.50 MGD WWTF with final effluent discharge to Mosquito Creek to the Apalachicola River.

Description of treatment process: The facility is a Municipal wastewater treatment plant serving the residents of the City of Chattahoochee. Waste is treated by contact/stabilization aeration activated sludge facility with a design capacity of 0.50 MGD. The treated effluent is descharged from Outfall 001 into Mosquito Creek. The facility's treatment plant is described in the following flow diagram.



Receiving waters: Mosquito Creek to Apilachicola River Classification: III

Design Flow: 0. 50 MGD Mean Flow: MGD Flow during survey:

Discharge is: Continuous Best time to sample is: N/A

If facility has a mixing zone, give details (size, parameters, etc.) N/A

List effluent limits (attach relevant paperwork):

Federal Permit Effluent Limits

Parameter	Frequency	Sample Type	Limit (units)
Oxygen, Dissolved (daily min.)	Daily	Grab	5.0 mg/L
pH	Daily	Grab	6.0 (min) to 8.5 (max)
TSS (wkly. avg.)	1/week	8 Hr. Composite	20.0 mg/L (mo. avg.) 24.0 mg/L
Total Ammonia (as N) (mo. avg.) (Nov. 1 - Mar. 31)	1/week	8 Hr. Composite	10.0 mg/L
Total Ammonia (as N) mg/L (mo. avg.) (April 1 - Oct. 31)	1/week	8 Hr. Composite	Report
Flow avg.)	Continuous	Flow Meter	Report MGD (mo. avg) Report MGD (wkly
Total Residual Chlorine (daily max.) (for Dechlorination)	1/week	Grab	0.01 mg/L
Coliform, Fecal max.)	1/month	Grab	200/100 ml (annl avg.) 800/100 ml (daily
BOD, Carbonaceous 5-day	1/week	8 Hr. Composite	20.0 mg/L (mo. avg.) 24.0 mg/L (wkly avg.)
Total Kjeldahl Nitrogen (as N) (TKN)	1/month	8 Hr. Composite	20.0 mg/

State Permit Effluent Limits

Parameter	Frequency	Sample Type	Limit (units)

Flow, In Conduit or Thru Treatment Plant	7 days/week	flow meter	0.50 MGD (max. mo. avg. daily flow)
BOD, Carbonaceous 5 day, 20C	1/week	8 Hr. Composite***	10.0 mg/L (max. annl. avg.)
Total Nitrogen	1/week	8 Hr. Composite***	N/A
Phosphorus, Total (as P)	1/week	8 Hr. Composite***	N/A
TSS (max. annl.	1/week	8 Hr. Composite***	15.0 mg/L avg.)
Oxygen, Dissolved	7 days/week	Grab	5.0 mg/L (daily min.)
pH	7 days/week	Grab (hourly)	6.0 min. to 8.5 max.
Coliform, Fecal max.)	1/week	Grab	200/100 ml (daily
Total Residual Chlorine (for Dechlorination)	7 days/week	Grab (hourly)	0.01 mg/L (daily max.)
Total Residual Chlorine (for Disinfection)	7 days/week	Grab	0.5 mg/L (daily min.)
TKN	1/week	8 Hr. Composite***	20 mg/L (daily max.)

*** Flow proportional sampling

List permit violations (from MOR data or other source) and plant upsets within past year:

Fecal (limit 200/100 ml daily max)

date	#/100 ml
9/24/97	>2400
10/15/97	920
11/12,26/97	>2400
5/20,27/98	>2400
6/24/98	>2400
7/29/98	590

Total Chlorine Residual (for disinfection) (limit 0.5 mg/L daily min)

date	# mg/L
8/24,31/97	0.4
9/24,26/97	0.4
10/15,26/97	0.4
11/10-14/97	0.4,0.3,0.3,0.4
1/1,15,18,26/98	0.4,0.3,0.4,0.4
2/5,6,8,9,12,18,24-28/98	0.4,0.4,0.3,0.4,0.4,0.4, 0.3,0.4,0.3,0.3,0.3
4/12,17,19-24/98	0.4 x 5,0.3,0.2
6/3,21,26,30/98	0.4 x 4
7/2,5,13-21/98	0.4,0.4.0.3,0.4,0.3,0.3,

0.2 x 5

Flow (limit- 0.5 MGD max. mo. avg. daily flow)		Total Residual Chlorine (after dechlorination) (limit- 0.01 mg/l daily max.)	
date	# MGD	date	# mg/L
11/97	0.529	5/3/98	0.05
7/98	0.561	6/2/98	0.04

MOR unavailable for 3/98 *Flow meter offline for 2/98-4/98*

Describe previous impact bioassessments, WQBEL's and previous or current enforcement actions:

Since 7/97, the facility has passed all but one bioassay. The failure occured in the sample run 1/20 thru 1/27, with an LC50 35.4% and an NOEC concentration of .5% for Ceriodaphnia dubia. Subsequent additional testing passed. The most recent available bioassay performed 6/16 thru 6/23 passed with an LC50>100% and an NOEC of 51% for Ceriodaphnia dubia and an LC50>100% and NOEC of 100% for Pimephales promelas.

Discuss comparability of MOR results to past FDEP results and whether there are trends (improving, declining) in the data set: No definite trends can be identified within the data set.

Additional information:

Timely submission of DMR's and MOR's have been a continuous problem with this facility.

Staff contributing to this review (signature)

Glenn Butts

Biologist

Inspector

Engineer

Kenny Ferguson Other

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	31010076	10/13/98	2:30	Mosquito Creek to Apalachicola

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Upstream - approx. 10m of discharge	Control - Chattahoochee wtp

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
		40		60	10		BRIDGE

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☑

Local Watershed NPS Pollution (check box): No evidence ☑ Slight ☐ Moderate potential ☐ Obvious sources ☐

Width of riparian vegetation (m) on least buffered side: 4 m

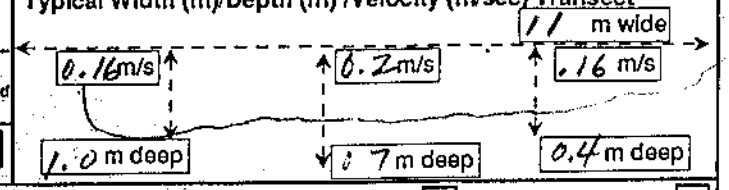
List & map dominant vegetation on back

Artificially Channelized ☑ no ☐ ☐ ☐ (recent, severe; some recovery; mostly recovered; more sinuous)

Artificially Impounded ☐ yes

High Water Mark: 2.5 (m above present water level) + 0.7 (present depth in m) = ____ (m above bed)

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



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

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐ ____

Sediment Oils: Absent: ☑ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none slight (moderate severe) Silt smothering: none slight moderate severe Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	4	6		Sand	92	2	
Leaf Packs or Mats	1	6		Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots	3	6		Draw aerial view sketch of habitats found in 100 m section			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.1	24.0	6.87	8.66	60			
Mid-depth								
Bottom								

System Type: Stream: ☐ (1st - 2nd order; 3rd - 4th order; 5th - 6th order; 7th order or greater) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐ ____

Water Odors (check box): Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐ ____

Water Surface Oils (check box): None: ☑ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☑ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☑ Other: ☐ ____

Weather Conditions/Notes:
SEVERE SAND SHIFTING & DEPOSITION
- CONSTRUCTION OF BRIDGE UPSTREAM
Periphyton Rack lost & Hester-Dendy buried

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☑	☐
Fish	☐	☐	☑	☐
Aquatic Macrophytes	☑	☐	☐	☐
Iron/sulfur Bacteria	☑	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Jay Jackson, Julie Baughman	Jay A Jackson	10/13/98

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	3010076	10/13/98	Mosquito Creek to Apalachicola River

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Jackson	Upstream - approx 10m of discharge	Control - Chattahoochee WWTP

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** [14]	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, rock). 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 (14) 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability [8]	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15 % productive habitat 10 9 (8) 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity [15]	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 [16]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 (6)	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 1
Primary Score [43]				
Secondary Habitat Components **Artificial Channelization** [20]	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank [6] Left Bank [7]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 (7) (6) - RT	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [10] Left Bank [5]	Width of native vegetation (least buffered side) greater than 18 m (10) 9	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system (5) 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank [10] Left Bank [10]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. (10) 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Secondary Score [60]				

TOTAL SCORE [118] (111)

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10/13/98	Julie Baughman Joy Jackson	Julie Baughman

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	31010125	10/13/98	1:15	Mosquito Creek to Apalachicola

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Downstream approx 10m of discharge	Test - Chattahoochee WWTF

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☒ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☒ Moderate potential ☐ Obvious sources ☒

Width of riparian vegetation (m) on least buffered side: >18 m

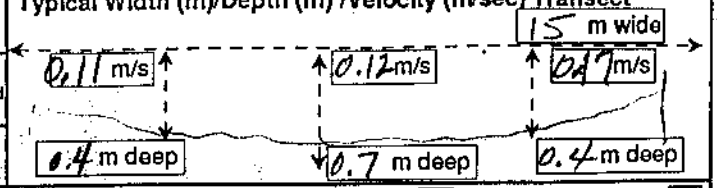
List & map dominant vegetation on back

Artificially Channelized ☒ no ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark: 2.0 (m above present water level) + 0.7 (present depth in m) = ____ (m above bed)

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



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

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none slight (moderate) severe Silt smothering: none slight moderate severe Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	10	6	DIPNET	Sand		2	DIPNET
Leaf Packs or Mats	1	6		Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots	3	6	V	*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.1	20.4	6.84	8.4	60			
Mid-depth								
Bottom								

System Type : Stream: ☑ (1st - 2nd order, 3rd - 4th order, 5th - 6th order, 7th order or greater) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☐ Sheen: ☑ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☑ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☑ Other: ☐

Weather Conditions/Notes:
SUNNY & WARM - MAJOR STORM HAD COME THRU SINCE HOT PERI DEPLOYMENT - SEVERAL SAND SHIFTING - PERI RACK LOST

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☒	☐	☐
Fish	☐	☐	☒	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Jay Jackson, Julie Baughman	Jay Jackson	10/13/98

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	31010175	10/13/98	Mosquito Creek to Apalachicola R.

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Downstream approx 10m of discharge	Test - Chattahoochee WWTP

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components				
Substrate Diversity [15]	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, 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 [10]	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15 % productive habitat (10) 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity [13]	Max. observed at typical transect: >0.25 m/sec. but < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 (13) 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect <0.05 m/sec, or spate occurring; > 1 m/sec 5 4 3 2 1
Habitat Smothering [6]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 (6)	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 1
Primary Score [74]				
Secondary Habitat Components				
Artificial Channelization [20]	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 (9) LT	Moderately stable. Infrequent or small areas of erosion, mostly healed over. RT (8) 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Right Bank [8]				
Left Bank [9]				
Riparian Buffer Zone Width	Width of native vegetation (least buffered side) greater than 18 m (10) 9	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Right Bank [10]				
Left Bank [10]				
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. (10) 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Right Bank [10]				
Left Bank [10]				
Secondary Score [77]				

[121] TOTAL SCORE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10/13/98	Julie Baughman Joy Jackson	Julie Baughman

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Chattahoochee
County: Gadsden
Contact / District: Joy Jackson / Laboratory
NPDES Permit #: FL0027669
LIMS Sample #: 351589 LIMS Job #: TLH-1998-10-14.29
sample log 10/16/98 DW
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 2
Incubator #3 Temp. Range = 24.9-26.0°C
Room Temp Rage 24.5-25.5°C

Remarks:

Sample Collection: Date 10-13-98 Time 1430
Test Beginning: Date 10-14-98 Time 1055
Test Ending: Date 10/16/98 Time 11:15
Organism Batch #: 78 Diluent Batch #: well
Organism Age: 13 Day SRT toxicant batch #: NA
Test organism: Cyprinella leedsi

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	H9	5	5	5	8.0	8.3	8.2	24.5	24.7	25.2	8.3	7.4	8.4	225	240	280
Control B	H10	5	5	5	8.0	8.3	8.2	24.5	24.4	25.2	8.3	7.4	8.4	240	260	275
Control C	H11	5	5	5	8.0	8.3	8.2	24.4	24.1	25.1	8.3	7.4	8.4	240	260	270
Control D	H12	5	5	5	8.0	8.3	8.2	24.5	24.2	25.1	8.5	7.5	8.4	245	265	275
100% A	H13	5	5	5	7.2	8.0	8.1	25.1	24.4	25.0	7.7	7.4	8.2	370	400	410
100% B	H14	5	5	5	7.2	8.0	8.1	25.3	24.2	25.3	7.7	7.2	8.2	385	405	425
100% C	H15	5	5	5	7.2	8.0	8.1	25.3	24.1	25.4	7.7	7.2	8.2	390	400	420
100% D	H16	5	5	5	7.2	8.0	8.1	25.4	24.2	25.4	7.7	7.3	8.2	390	405	425
measured by:		MF	DW	FW	FW	CH	CH	FW	CH	CH	FW	CH	FW	FW	CH	FW
recorded by:		MF	FW	MF	CH	FW	FW	CH	FW	FW	CH	FW	CH	CH	FW	CH

Investigators' Signatures
Marshall Faircloth
Courtenay Head
Tom Wood P.T.
Dan O. Wright

reviewer

form updated 5/22/98

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NOT measured			
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-10	CH	
Alkalinity (mg/L as $CaCO_3$):	132	—	126	Hach	CH	
Hardness (mg/L as $CaCO_3$):	126	—	131	Hach	CH	
Total ammonia (mg/L as N):	<0.017	—	0.660	Orion	FW	
Salinity:	0	—	0	YSI	DW	

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Chattahoochee WWTP
County: Gadsden
Contact / District: Joy Jackson / Laboratory
NPDES Permit #: FL0027669
LIMS Sample #: 351389 LIMS Job #: TLH-1998-10-A-29
sample log 10/26/98 DW
Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Test Number: 1 of 2
Incubator #1 Temp Range = 23.9°C - 24.7°C
Room Temp Range 24.5-25.5°C

Remarks:

Sample Collection: Date 10-13-98 Time 1430
Test Beginning: Date 10-14-98 Time 1030
Test Ending: Date 10-16-98 Time 11:00
Organism Batch #: 46 Diluent Batch #: 46
Organism Age: <24 hours SRT toxicant batch #: NA
Test organism: Ceriodaphnia dubia

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	A	5	5	5	8.2		8.1	24.8	24.4	8.2	8.2		8.2	165		175
Control B	B	5	5	5			8.1		24.4	8.3			8.2			185
Control C	C	5	5	5			8.1		24.4	8.3			8.3			190
Control D	D	5	5	5			8.1		24.3	8.3			8.3			200
100% A	A	5	5	5	7.3		8.4	25.2	24.3	8.4	7.5		8.4	370		370
100% B	B	5	5	5			8.4		24.4	8.4			8.4			400
100% C	C	5	5	5			8.4		24.3	8.4			8.4			420
100% D	D	5	5	5			8.4		24.2	8.4	(A)		8.4			435
measured by:		MF	DW	FW	FW		FW	FW	FW		FW		FW	FW		FW
recorded by:		FW	DW	FW	CH		CH	CH	CH		CH		CH	CH		CH

(A) D.O. readings were taken using a YSI field unit. Eight hour readings were taken using a Hach field unit.
CH 10/16/98

Investigators' Signatures

Marshall Faircloth
Courtney Head
Tina Wilson-Clay
David T. Washington

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	CH	FW
Alkalinity (mg/L as $CaCO_3$):	—	79	126	Hach	CH	FW
Hardness (mg/L as $CaCO_3$):	—	86	131	Hach	CH	FW
Total ammonia (mg/L as N):	—	<0.017	0.660	Orion	FW	FW
Salinity:	—	0	0	YSI	DW	FW

reviewer form updated 5/22/98

Chattahoochee WWTP - Control Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	29	≥31	30-16	<16	3
EPT Index	10	≥7	6-4	<4	5
# Chironomid Taxa	12	≥9	8-5	<5	5
% Contribution of Dominant Taxon	17	≤22	23-61	>61	5
% Diptera	64	-	≤50	>50	1
Florida Index	21	≥16	15-8	<8	5
% Suspension feeders/Filterers	41	≥12	11-6	<6	5
Total Score		**Panhandle**			**29**
Interpretation of Scores		**Excellent**			27-33
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Summer Index Period: Stream Condition Index (SCI) for Florida Panhandle (April1996)

Chattahoochee WWTP - Test Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	39	≥31	30-16	<16	5
EPT Index	9	≥7	6-4	<4	5
# Chironomid Taxa	21	≥9	8-5	<5	5
% Contribution of Dominant Taxon	12	≤22	23-61	>61	5
% Diptera	71	-	≤50	>50	1
Florida Index	29	≥16	15-8	<8	5
% Suspension feeders/Filterers	28	≥12	11-6	<6	5
Total Score		**Panhandle**			**31**
Interpretation of Scores		**Excellent**			27-33
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Summer Index Period: Stream Condition Index (SCI) for Florida Panhandle (April1996)

Phytoplankton taxa list and densities (#/mL) for Chattahoochee WWTP, collected via subsurface grabs in Mosquito Creek, on 13 October, 1998.

	Control Site	Test Site
Bacillariophyceae		
Cyclotella sp.	–	8
Diatomaceae	2	–
Navicula sp.	2	–
Nitzschia sp.	4	20
Pennales sp.	8	–
Chlorophyceae		
Ankistrodesmus sp.	2	–
Chlamydomonas sp.	23	59
Crucigenia sp.	2	8
Kirchneriella sp.	–	4
Oocystis sp.	–	4
Scenedesmus sp.	17	2
Tetraedron sp.	2	–
Cyanophyceae		
Anabaena sp.	–	4
Dactylococcopsis sp.	17	12
Lyngbya sp.	–	8
Dinophyceae		
Peridinium sp.	4	4
Euglenophyceae		
Phacus sp.	6	–

Benthic macroinvertebrate taxa list for Chattahoochee WWTP, collected via 20 discrete dip net sweeps in Mosquito Creek, on 13 October, 1998.

	Control Site	Test Site
Acarina		
Atractides sp.	–	1
Hygrobates sp.	–	1
Oribatei sp.	–	1
Coleoptera		
Ancyronyx variegatus	3	–
Elmidae	1	–
Macronychus glabratus	2	–
Microcylloepus pusillus	6	6
Stenelmis sp.	–	1
Decapoda		
Cambaridae	3	–
Diptera		
Ablabesmyia mallochi	1	2
Ablabesmyia rhamphe grp.	1	–
Chironomidae	3	5
Chironomus sp.	–	3
Corynoneura sp.	–	3
Cricotopus bicinctus grp.	1	–
Labrundinia pilosella	–	3
Labrundinia sp.	2	–
Nanocladius sp.	–	1
Nilotanypus fimbriatus	–	1
Paramerina sp.	1	–
Pentaneura inconspicua	–	2
Polypedilum aviceps	–	1
Polypedilum convictum grp.	17	5
Polypedilum illinoense grp.	–	4
Polypedilum scalaenum grp.	2	2
Rheocricotopus robacki	4	14
Rheotanytarsus distinctissimus grp.	–	1
Rheotanytarsus exiguus grp.	17	12
Rheotanytarsus sp.	3	3
Simulium sp.	18	15
Stempellinella sp.	–	1
Stenochironomus sp.	2	1
Tanytarsus sp. M Epler	2	–
Tanytarsus sp.	1	–
Thienemanniella sp. A Epler	–	1
Thienemanniella sp. B Epler	–	2
Thienemanniella sp.	–	1
Thienemanniella xena	1	1
Thienemannimyia grp.	–	1

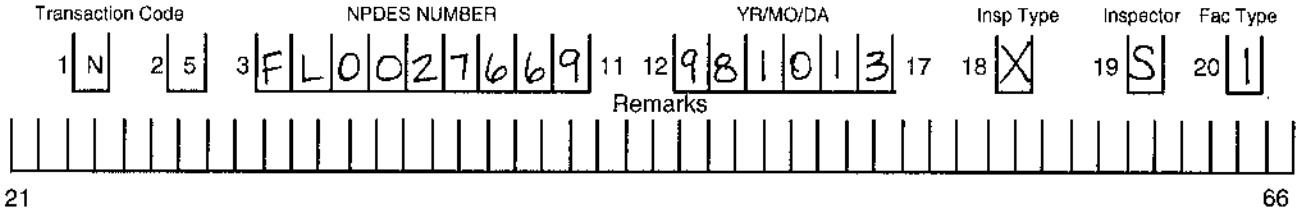
Xestochironomus sp.	–	1
Ephemeroptera		
Baetis sp.	1	3
Caenis sp.	–	2
Eurylophella doris	5	4
Isonychia sp.	5	1
Labiobaetis sp.	1	2
Leptophlebiidae	1	2
Serratella deficiens	1	–
Stenonema exiguum	3	–
Stenonema sp.	2	1
Undetermined Ephemeroptera	–	1
Lepidoptera		
Undetermined Lepidoptera	–	1
Odonata		
Argia sp.	–	1
Oligochaeta		
Nais behningi	2	–
Pristina aequiseta	1	–
Pristina sp.	–	1
Pristina synclites	–	1
Plecoptera		
Agnetina sp.	–	1
Perlidae	1	–
Trichoptera		
Cheumatopsyche sp.	3	1
Hydropsyche sp.	1	–
Leptoceridae	–	2
Oecetis morsei or *sphyra*	1	–
Oecetis sp.	–	2

Benthic macroinvertebrate taxa list for Chattahoochee WWTP, collected via Hester-Dendy artificial substrates in Mosquito Creek, on 13 October, 1998. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site
Acarina		
Oribatei sp.	–	3
Coleoptera		
Macronychus glabratus	–	11
Stenelmis sp.	5	21
Diptera		
Chironomidae	3	98
Dicrotendipes neomodestus	–	3
Hemerodromia sp.	–	5
Nilotanypus fimbriatus	–	3
Nilotanypus sp.	–	3
Orthocladiinae	–	3
Paratanytarsus sp. C Epler	–	3
Pentaneura inconspicua sp.	–	5
Polypedilum convictum grp.	–	103
Polypedilum illinoense grp.	–	8
Polypedilum scalaenum grp.	–	5
Polypedilum sp.	–	3
Rheocricotopus robacki	–	93
Rheotanytarsus distinctissimus grp.	–	5
Rheotanytarsus exiguus grp.	–	50
Rheotanytarsus sp.	–	3
Simulium sp.	–	24
Tanytarsus sp. A Epler	–	3
Tanytarsus sp. L Epler	–	3
Thienemanniella similis	–	3
Thienemanniella sp. A Epler	–	11
Thienemanniella sp. B Epler	–	11
Thienemanniella sp.	–	19
Thienemanniella xena	–	8
Tvetenia discoloripes grp.	–	3
Ephemeroptera		
Attenella attenuata	–	13
Baetis sp.	–	56
Caenis sp.	–	5
Eurylophella doris	–	3
Isonychia sp.	–	3
Stenonema exiguum	–	19
Stenonema sp.	–	8
Gastropoda		
Ancylidae	–	5

Megaloptera		
Corydalus cornutus	–	3
Odonata		
Coenagrionidae	–	3
Trichoptera		
Cheumatopsyche sp.	–	16

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



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

