

Biological Assessment of

City of Marianna WWTP

Jackson County

NPDES #FL0020117

Sampled February 1999

October 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:	City of Marianna WWTP
County:	Jackson
NPDES Number:	FL0020117
Permit Expiration Date:	September 30, 1999

Toxics Sampling Inspection (XSI)

Date Sampled: 16 February 1999

Results: Copper (18.1 µg/L) and silver (5.56 µg/L) were detected in the effluent at levels that exceeded Class III freshwater quality standards, violations of Rules 62-302.530 (24) and (60) FAC, respectively. All other metals complied with Class III water quality standards. No organic pollutants were detected in the effluent.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 16 February 1999

Results: The effluent sample 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: 16 February 1999

Results: Most of the quantitative measures of macroinvertebrate community structure suggested degradation at the test site compared to the control site. Taxa richness and EPT Index points showed the greatest shifts. Qualitative sampling showed similar changes in community structure and function, suggesting degradation of the test site when compared to the control site. Although there appears to be degradation at the test site due to the discharge, the SCI scores indicate both study sites still rank in the "excellent" category. Phytoplankton communities were very similar between the control and test sites. Chlorophyll *a* was undetected at both study sites.

Water Quality Inspection (WQI)

Date Sampled: 16 February 1999

Results: Effluent total coliforms (57,000 counts/100 ml) exceeded the facility's permit limit and Class III water quality standards (Rule 62-302.530(7) FAC). Effluent nutrients were elevated, but did not seem to affect the receiving waters. Nutrient levels at the study sites were low with the exception of nitrate+nitrite for which levels at the control and test sites exceeded levels found in 95% of other Florida streams.

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 City of Marianna Wastewater Treatment Plant is located in Jackson County, Florida (see maps in the Appendix). This 2.7 MGD facility has two 1.0 MGD oxidation ditches, one 0.7 MGD trickling filter, and alum added to wastewater for phosphorus removal with final effluent discharged to the Class III Chipola River from Outfall 001. Residuals generated by the wastewater treatment system are treated by anaerobic digestion and dewatered by a belt press system and residuals drying beds. Dried residuals are disposed of in accordance with the Agriculture Use Plan (see Facility Summary in Appendix). The actual flow during this survey was 1.84 MGD.

State permit limits for the Marianna WWTP are listed in Table 1. According to the facility summary, the City of Marianna WWTP is operating under two permits – an EPA NPDES permit and a FDEP permit. The NPDES permit requires that multi-concentration chronic toxicity test be performed on *Ceriodaphnia dubia* (Survival and Reproduction) and *Pimephales promelas* (Larval Survival and Growth Test). The state permit requires that a 96 hour acute screening test be performed using *Ceriodaphnia dubia* and *Cyprinella leedsi*. A review indicates that both species (*C. leedsi* and *P. promelas*) failed the chronic test in 9/95and 5/96. No other toxicity failures were noted. The plant also violated the facility's permit for maximum monthly average daily flow limit in March, 1998, and for the fecal coliform limit in September and October, 1998 (see Facility Summary in Appendix).

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 the Chipola River approximately 300 meters upstream of the discharge) and a test site (located in the Chipola River approximately 100 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. Data for this report was collected on February 16, 1999. The effluent was analyzed for nutrients, metals, and 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. Bacterial populations were analyzed for total and fecal coliforms.

Benthic macroinvertebrates 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 would normally be sampled at both control and test sites by incubating glass microscope slides in a standard periphytometer for 28 days. However, the periphyton rack at the control site was found on the river bank, dry. For this reason, comparisons could not be made between the control and test sites periphyton communities. Phytoplankton were sampled at both the 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 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, the diatom to blue-green algae ratio, 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

Table 1. Effluent limits and summary of chemistry data.

City of Marianna WWTP	Effluent Limits	Effluent Sample	Control Site	Test Site
Organic Constituents (µg/L)				
	-	None Detected	-	-
Metals (µg/L)				
Aluminum	1500 **	874 A	-	-
Arsenic	50 **	20 U	-	-
Cadmium	1.54 **d	0.077 I	-	-
Chromium	11 **	10 U	-	-
Copper	16.53 **d	18.1 A	-	-
Iron	1,000 **	435 A	-	-
Lead	5.242 **d	1.48 A	-	-
Mercury	0.012 **	0.1 U	-	-
Nickel	219.72 **d	6.0 U	-	-
Selenium	5.0 **	35 U	-	-
Silver	0.07 **	5.56	-	-
Zinc	147.79 **d	43 A	-	-
Nutrients (mg/L)				
Ortho-phosphate	-	1.6	0.033	0.013
Total phosphorus	2.0 *a	2.6	0.042	0.027 I
Ammonia	0.02 **	6.9	0.01 U	0.016 I
Un-ionized Ammonia	≤ 0.02	0.02	-	-
Nitrate+Nitrite	-	1.4	1.1	1.1
TKN	-	9.5	0.19 I	0.19 I
Organic Nitrogen	-	2.6	0.18	0.174
Total Nitrogen	16.0 *a	10.9	1.29	1.29
General Phys-Chem Parameters				
Habitat Assessment	-	-	119	114
D.O. (mg/L)	≥ 5.0 *	7.4	8.2	8.7
pH (SU)	6.0 - 8.5 *	6.9	7.2	7.1
Conductivity (µmhos/cm)	-	496	175	173
Temperature (°C)	-	17.4	13.4	12.4
C.B.O.D., 5 day (mg/L)	12.0 *a	8.3	0.2	0.2
TSS (mg/L)	12.0 *a	19	4	4
Flow (MGD)	2.7	1.87	-	-
Hardness (mg $CaCO_3$)	-	148.0	-	-
AGP (mg dry wt/L)	-	-	0.3	0.1
Toxicity (48-hour static, screening bioassay)				
Bioassay - Fish	-	Not Toxic	-	-
Bioassay - Invertebrate	-	Not Toxic	-	-
Microbiology (# counts/100mL)				
Fecal Coliforms	≤ 200 *c	180 AQ	98 Q	132 Q
Total Coliforms	≤ 1,000 *b	57,000 AQ	250 Q	420 Q

* Permit limit
** Class III water quality standard
A - Value is the mean of two or more determinations
I - Value is < the MQL, and ≥ the MDL
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the MDL
a - Annual average
b - Monthly average
c - Maximum
d - Based on hardness

the test site minus control site divided by the control site.

The following personnel were involved in this investigation: Glenn Butts, Kenny Ferguson and Kim Allen (DEP Northwest District), and Julie Baughman, Ken Espy, Marshall Faircloth, Russel Frydenborg, Joy Jackson, Michael Heyn, Vicki McGee, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, Amy Weaver, Steve Wolfe, and David 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.

Results

The chemical and biological results for this report are presented in Table 1 and Table 2.

Discussion

Habitat quality was very similar at the two study sites, which were located approximately 400 meters apart in the Class III Chipola River. The control site habitat assessment score was 119, and the test site scored 114 points (see Habitat Assessment Data Sheets in the Appendix). This segment of the Chipola River was approximately 30 meters wide, 1.5 meters deep, with a water velocity of 0.33 m/sec. The study sites were similar with respect to the physical/chemical parameters, such as conductivity (173 µhmos/cm to 175 µhmos/cm), temperature (13.4°C at the control site and 12.4°C at the test site), pH (7.2 SU at each station), and dissolved oxygen (8.2 mg/L at the control site and 8.7 mg/L at the test site).

Copper (18.1 µg/L) and silver (5.56 µg/L) were detected in the effluent at levels that exceeded Class III freshwater quality standards, violations of Rules 62-302.530 (24) and (60) FAC, respectively. All other metals complied with Class III water quality standards. No pesticides or other priority organic pollutants were detected in the effluent.

Table 2. Community structure of study sites.

City of Marianna WWTP	Control Site	Test Site
Macroinvertebrate Qualitative		
% Dominant Taxon	26.0	22.0
EPT Index	8	5
Florida Index	26	15
Number of Taxa	39	27
SCI	29	29
Community Composition		
% Amphipoda	0.0	1.0
% Coleoptera	0.7	0.0
% Diptera	63.2	69.9
% Ephemeroptera	6.9	9.7
% Gastropoda	9.0	2.1
% Oligochaeta	0.0	3.2
% Pelecypoda	1.4	0.0
% Plecoptera	0.7	0.0
% Trichoptera	15.3	10.8
% Other	2.8	3.3
Functional Feeding Groups		
% Burrowing Deposit Feeders	0.0	3.2
% Predators	8.0	7.8
% Surface Deposit Feeders	27.8	31.7
% Suspension Feeders/Filterers	31.2	31.7
% Scrapers	11.8	7.0
% Shredders	13.5	15.1
Macroinvertebrate Hester-Dendy		
Number of Taxa	43	31
Florida Index	36	28
Shannon-Weaver Diversity	3.75	2.9
EPT Index	12	8
Community Composition		
% Coleoptera	0.8	0.7
% Diptera	69.6	85.8
% Ephemeroptera	22.5	6.4
% Gastropoda	0.8	0.7
% Trichoptera	3.6	6.4
% Other	2.7	0.0
Functional Feeding Groups		
% Predators	7.6	15.4
% Surface Deposit Feeders	45.7	41.0
% Suspension Feeders	7.9	11.9
% Scrapers	11.9	4.0
% Shredders	24.0	27.1
Phytoplankton Algae		
Number of Taxa	8	6
Shannon-Weaver diversity	2.09	2.02
Chlorophyll *a* (µg/L)	1.2 U	1 U
Algal Density (#/mL)	130	92
% Blue-green	1.8	2.2
% Green	12.5	23.9
% Diatoms	67.9	63.0
AGP (mg dry wt/L)	0.3	0.1

U - Analyzed for but not detected; value is the MDL

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

Total coliform bacteria (57,000 counts/100ml) exceeded the facility's permit limit and Class III water quality standards (Rule 62-302.30 (7) FAC). Although the bacteriological samples were held beyond the normal holding time, it is safe to say the levels exceeded acceptable levels. Fecal and total coliforms increased slightly from the control to the test site (Table 1). These measures comply with Class III water quality standards.

Effluent nutrients were extremely elevated, but did not seem to affect the test site levels in the receiving waters (Table 1). Most of the receiving water nutrients were low with the exception of nitrate+nitrite and un-ionized ammonia; the control and test site concentrations exceeded those levels found in 95% of other Florida streams (see *Typical Values for Selected Parameters in Florida Waters* in the Appendix).

Figure 1 represents changes in the phytoplankton community. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. There was very little difference between the control and test site algal communities. Taxa richness, diversity, chlorophyll *a*, algal density, and AGP values were all extremely low, indicating possible algal inhibition in the receiving waters (Table 2).

Figure 2 represents changes in the macroinvertebrate community. Most of the quantitative measures of macroinvertebrate community structure suggested degradation at the test site compared to the control site due to the discharge. For example, the Shannon-Weaver diversity declined 23%, the number of taxa was lower by 28%, the Florida Index by 22%, and the EPT Index experienced a decline of 33%. Qualitative sampling showed similar changes in community structure and function, suggesting degradation of the test site when compared to the control site (Table 2). Taxa richness, EPT Index, and Florida Index points showed the greatest shifts, with declines of 31%, 33%, and 42% respectively, when compared to the control site (Table 2). The Stream Condition Index scores however, placed both study sites in the "excellent" range with 29 points each.

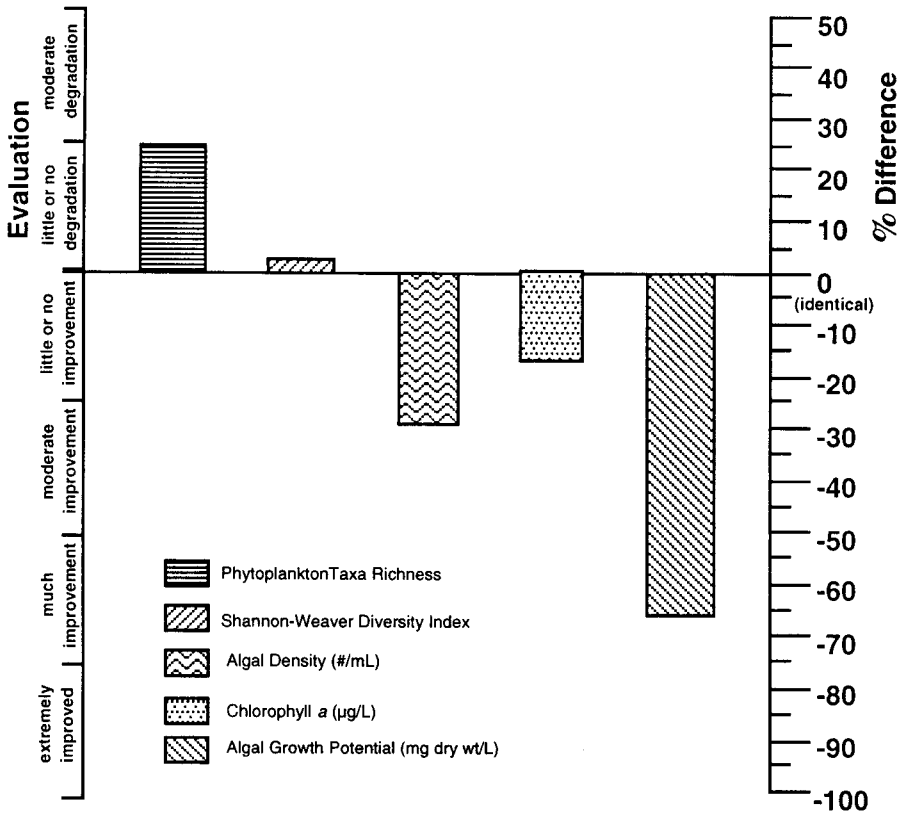


Figure 1. Effect of discharge on the phytoplankton community.

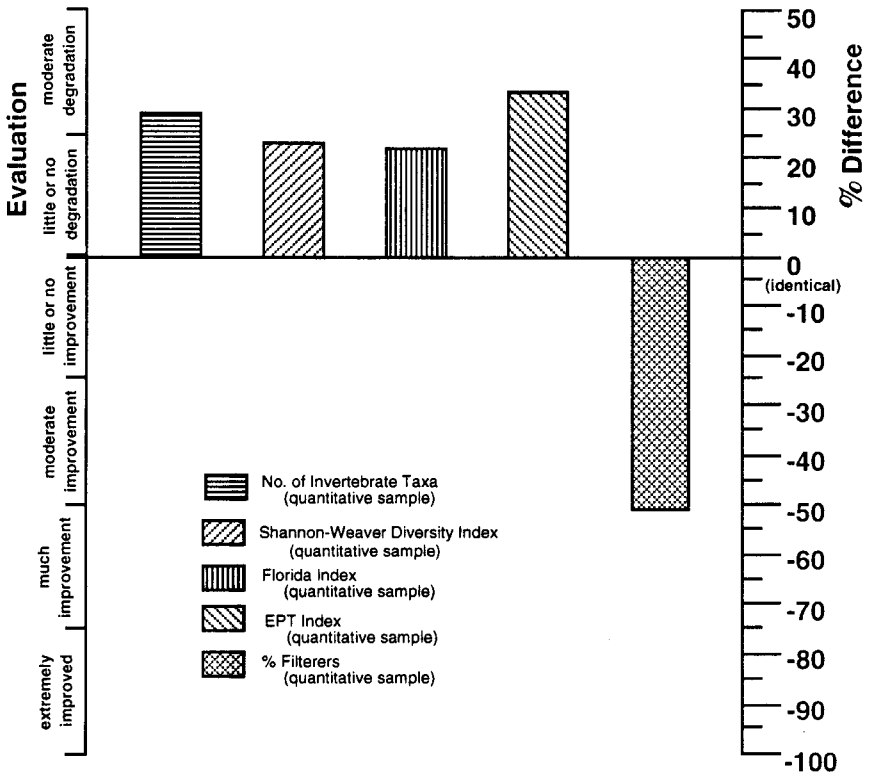


Figure 2. Effect of discharge on the macroinvertebrate community.

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.

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

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).

Facility Summary

Facility Name: City of Marianna WWTP Date Summary Prepared: 3/3/99

Location map: County: Jackson District: Northwest / 10

NPDES Permit # FL0020117 State Permit # DO32-264561 Facility Type: Dom.
expiration date: 9/30/99 expiration date: 3/7/00

Function of facility: To operate a 2.7 MGD WWTP with two 1.0 MGD oxidation ditches, one 0.7 MGD trickling filter, and a chemical system for phosphorus removal. Effluent discharge is to the Chipola River.

Description of treatment process: The facility is a 2.7 MGD WWTP with two 1.0 MGD oxidation ditches, one 0.7 MGD trickling filter, and alum added to wastewater for phosphorus removal with final effluent discharge to the Chipola River from Outfall 001. Residuals generated by the wastewater treatment system are treated by anaerobic digestion and dewatered by belt press system and residuals drying beds. Dried residuals are disposed of in accordance with the Agriculture Use Plan.

Receiving waters: Chipola River Classification III

Design Flow: 2.7 MGD Mean Flow: 1.87 MGD Flow during survey: 1.84 MGD

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/State Effluent Limits

Parameter	Frequency	Sample Type	Limit (units)
Flow*	Continuous	----------	2.7 MGD (mx. mo. avg. daily flow)
pH	Continuous	----------	6.0 (min)

			8.5 (max)
Chlorine Residual mg/L (min) (for disinfection)	Continuous	----------	0.50
Chlorine Residual** mg/L (max) (after disinfection)	Continuous	----------	0.01
Dissolved O_2	7/ week	Grab	5.0 mg/L (min.)
CBOD-5 day mg/L (mx annl. avg.)	Weekly	16 Hr. Comp***	12.0
TSS mg/L (mx annl. avg.)	Weekly	16 Hr. Comp***	12.0
Total Nitrogen mg/L (max. annl. avg.)	Weekly	16 Hr. Comp***	16.0
mo. avg.)			20 mg/L (max.
Total Phosphorus mg/L (mx annl. avg.)	Weekly	16 Hr. Comp***	2.0
Fecal Coliform	Weekly	Grab	200/100 ml (max.)

* Recording flow meter and totalizer
** Prior to discharge to State waters
*** Flow proportional

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

March 1998 - February 1999

Flow (limit of 2.7 MGD max. mo. avg. daily flow)		Fecal Coliform (limit of 200/100 ml max)
-March 1998	2.943 MGD	-September 1998 >2400/100 ml
		-October 1998 >2400/100ml

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

The City of Marianna is still operating under 2 permits - an EPA NPDES permit and a FDEP permit. The NPDES permit requires that a multi-concentration chronic toxicity test be performed on Ceriodaphnia dubia (Survival and Reproduction) and Pimephales promelas (Larval Survival and Growth Test). The state permit requires that a 96-hour

acute screen test be performed for Ceriodaphnia dubia and Cyprinella leedsi. A review indicates that both species (leedsi and promelas) failed the chronic test in 9/95 and 5/96. No other failures were noted.

Previous Impact Bioassessments (December 19, 1994)

Toxics Sampling Inspection (XSI)

No organic priority pollutants or metals were detected in the effluent sample at levels above Class III water quality standards.

Compliance Biomonitoring Inspection (CBI)

The sample of effluent was not toxic to the invertebrate, Ceriodaphnia dubia, or to the fish, Cyprinella leedsi.

Impact Bioassessment Inspection (IBI)

Hester-Dendy taxa richness, the Florida Index, Shannon-Weaver diversity, and the EPT Index were typical of a healthy north Florida lotic system at both sites. The relative similarity between these reference and test site measures of community health suggests that the discharge was not adversely affecting the macroinvertebrate population. Two periphyton parameters, taxa richness and diversity, indicated adverse changes downstream of the discharge. This may be associated with the increase in AGP at the test site.

Water Quality Inspection (WQI)

Total and fecal coliforms in the effluent and at receiving water sites were in compliance with Class III water quality standards and permit limits. The Marianna WWTP discharge caused slight increases in the total phosphorus and ammonia concentrations in waters of the test site. Nitrate-nitrite levels were very elevated at both the reference and test sites, exceeding those values found in over 90% of typical Florida streams. This nitrate-nitrite enrichment is probably attributable to non-point sources (e.g., agricultural runoff). Algal growth potential (AGP) increased from 0.02 mg dry wt/L at the reference site to 7.6 dry wt/L at the test site, where the AGP exceeded the "problem threshold" of 5 mg dry wt/L. Given the nitrogen loading found upstream, the increase in AGP at the test site appears to be related to the facility's addition of phosphorus to the river. It should be noted, however, that effluent total phosphorus (0.3 mg/L) was well within the facility's permit limit of 2.0 mg/L. Effluent AGP was 38.9 mg dry wt/L.

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:

Staff contributing to this review (signature)

Glenn Butts

Biologist

Inspector

Engineer

Kenny Ferguson

Other

Kim Allen

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:
		2/16/99	9:00a	Chipola River

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Jackson	Marianna WWTP Effluent	

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 ☐

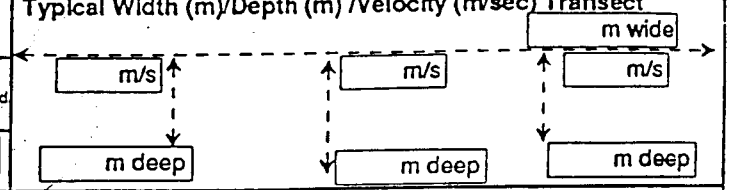
Width of riparian vegetation (m) on least buffered side: ____ *List & map dominant vegetation on back*

Artificially Channelized ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

Artificially Impounded ☐ yes more sinuous

High Water Mark: ____ (m above present water level) + ____ (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)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots				*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		17.38	6.90	7.35	496			
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:

* N 30° 24' 07.9"
W 84° 20' 15.3

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

SAMPLING TEAM:	SIGNATURE:	DATE:

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:
		2/16/99	1320	Chipola River

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Jackson	Marianna Control / Chipola River	CONTROL SITE

RIPARIAN ZONE/INSTREAM FEATURES

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

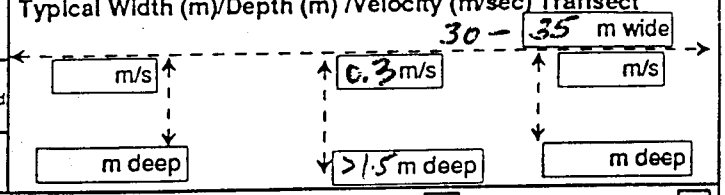
Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
30				10	10		

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: < 15 — *List & map dominant vegetation on back*

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



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

Artificially Impounded ☐ yes

High Water Mark: 1.0 (m above present water level) + >1.5 (present depth in m) = >2.5 (m above bed)

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	1.5	7		Sand	60		
Leaf Packs or Mats	1.5	3		Mud/Muck/Silt	10	2	
Aquatic Vegetation	2.0	4		Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots				*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	0.93	13.36	7.27	8.23	175			
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:

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

SAMPLING TEAM:	SIGNATURE:	DATE:
JK JB MW		2/16/99

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:
		2/16/09	Chipola River

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Jackson	Marianna Chipola River Control	

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), 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 [3]	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 [17]	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 [19]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent
Primary Score [50]	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization [14]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 (14) 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank [10] Left Bank [10]	Stable. No evidence of erosion or bank failure. Little potential for future problems. (10) 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [7] Left Bank [8]	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 [69]				

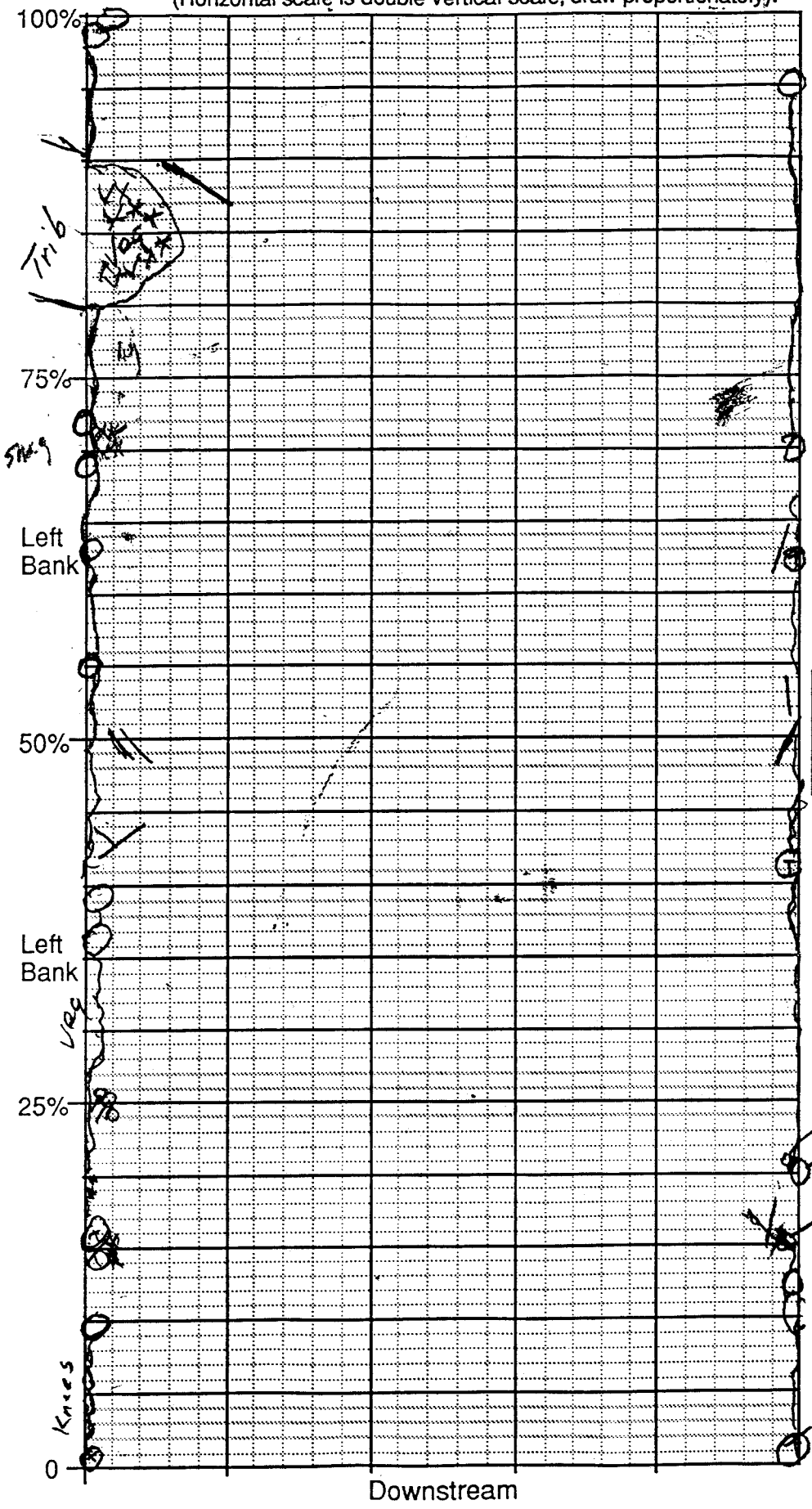
[119] TOTAL SCORE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
2/16/09	JK JS AM	

Control Site

Site Map / Habitat Sketch

Length of grid represents 100m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags |||||| 05%
- Roots/undercut banks
- Leaf Packs (or mats) || 05%
- Macrophytes |||| ||| 2%
- Silt/Sand ||

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 vegetaton is altered or eliminated.

Plants observed/other notes:

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:
		2/16/99	10:30A	Chipola River

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Jackson	Marianna Test	TEST SITE

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)
25				20	55		

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

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

Width of riparian vegetation (m) on least buffered side: 6 m

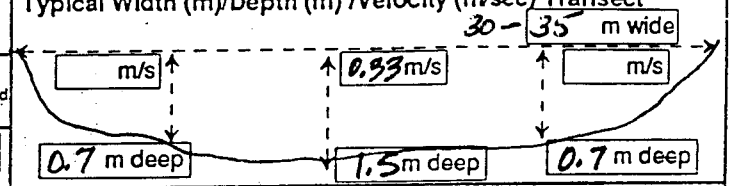
List & map dominant vegetation on back

Artificially Channelized ☐ no ☐ ☐ ☒ (recent, severe, some recovery, mostly recovered)

Artificially Impounded ☐ yes (more sinuous)

High Water Mark: 1 (m above present water level) + 1.5 (present depth in m) = 2.3 (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)	1	4		Sand	40		
Leaf Packs or Mats	1	7		Mud/Muck/Silt	10		
Aquatic Vegetation	1	4		Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots	1	5		*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								1.5
Mid-depth	0.7	12.41	7.12	8.70	173			
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:
clear, cool

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

SAMPLING TEAM:	SIGNATURE:	DATE:
JEJB MH		2/17/99

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): 2/1/99	RECEIVING BODY OF WATER: Chipola River

REMARKS:	COUNTY: Jackson	LOCATION: MARIANNA JCT Chipola River	FIELD ID/NAME:

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), 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 [4]	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 [17]	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 [19]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent
Primary Score [71]	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components Artificial Channelization [15]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern (15) 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank [9] Left Bank [4]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 (9)	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [6] Left Bank [4]	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 [62]				

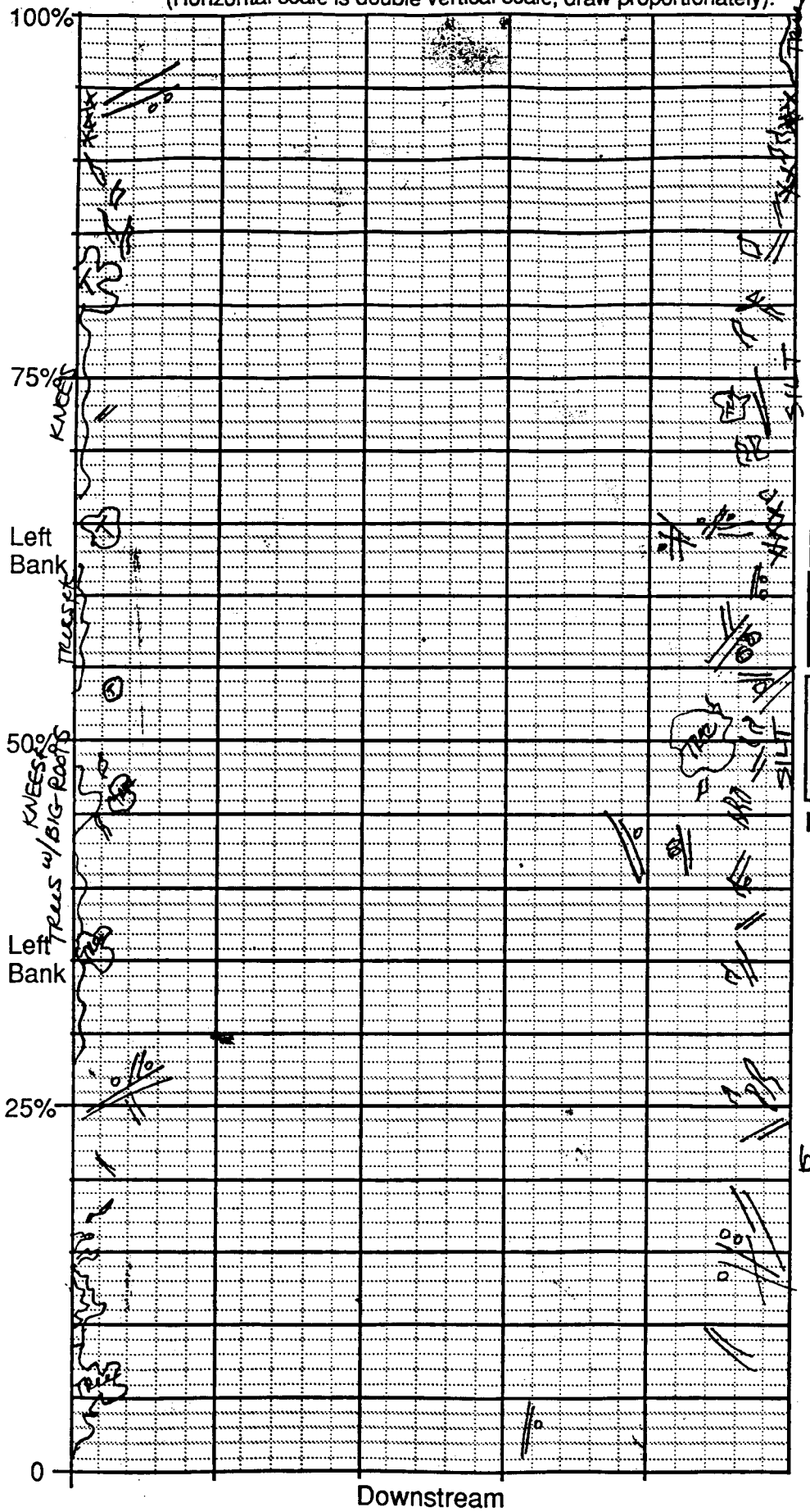
[114] **TOTAL SCORE**

ANALYSIS DATE: 2/16/99	ANALYST: JK, JR, MH	SIGNATURE:

Test Site

Site Map / Habitat Sketch

Length of grid represents 100m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags |||| 1%
- Roots/undercut banks |||| |||
- Leaf Packs (or mats) |||| ||||
- Macrophytes |||| 1%
- TREE w/BIG ROOTS & KNEES
- _____
- _____

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 vegetaton is altered or eliminated.

Plants observed/other notes:

cypress
palms
oak
+u

*Most snags (on map) turned o
be small & we collected leaf packs
there.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: City of Marianna
County: Jackson
Contact / District: Glenn / Butts
NPDES Permit #: FL0020117
LIMS Sample #: 370566 (FW) 2/25/99 / 370572 LIMS Job #: TLH-1999-02-18004 (FW) 19-37
sample log 3/11/99 DW
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 2 of 2
Warm Temperature Range 21.0-24.5°C
Incubator # 3 Temperature range 25.5-26.5°C

Sample Collection: Date 2/16/99 Time 9:00
Test Beginning: Date 2/17/99 Time 13:00
Test Ending: Date 2/19/99 Time 13:15
Organism Batch #: 10 Diluent Batch #: Well
Organism Age: 13 days SRT toxicant batch #: N/A
Test organism: Cyprinella leedsi

Remarks: whitish Particulate matter in samples

Conc.	Chamber #	Number Live (A) 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) (B) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
C+LA	A13	5	5	5	7.9	8.3	8.5	24.4	24.7	25.9	8.0	7.5	7.6	250	265	280
C+L B	A14	5	5	5	7.9	8.3	8.5	24.5	25.7	25.3	8.0	7.7	7.6	250	270	270
C+L C	A15	5	5	5	7.9	8.3	8.5	24.5	25.8	25.4	8.0	7.5	7.6	250	270	270
C+L D	A16	5	5	5	7.9	8.3	8.5	24.6	25.3	25.1	8.0	7.5	7.6	250	265	265
100% A	A17	5	5 4/10	4/10	7.6	8.1	8.2	24.6	25.9	25.2	8.0	7.0	5.5	565	595	610
100% B	A18	5	5	5	7.6	8.1	8.1	24.6	25.5	25.5	8.0	6.8	5.5	580	590	605
100% C	A19	5	5 4/10	4/10	7.6	8.0	8.1	24.6	25.3	25.5	8.0	6.3	4.7	580	580	605
100% D	A20	5	5	5	7.6	8.0	8.1	24.6	25.5	25.3	8.0	6.3	4.9	580	585	595
measured by:		FW	MF	FW	MF	MF	FW	MF	MF	FW	MF	MF	FW	MF	MF	FW
recorded by:		CH	FW	FW	AS	CH	FW	AS	CH	FW	AS	CH	FW	AS	CH	FW

(A) Wrong counts written for 24 h number Live. All fish were alive @ 24 h. (FW) 2/19/99

(B) 48 h D.O.'s 100% readings taken twice. Same results were obtained both times. (FW) 2/19/99

Investigators' Signatures
Courtney Head
Marshall Faircloth
Amber L. Shumaker
Dawn Wood

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured		FW	
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR-100	CH	MF
Alkalinity (mg/L as $CaCO_3$):	130		171	Hach	CH	MF
Hardness (mg/L as $CaCO_3$):	130		150	Hach	CH	MF
Total ammonia (mg/L as N):	<0.017		8.90	Denver Ag Instru.	MF	FW
Salinity:	0		0	YSI	CH/MF	MF

reviewer

form updated 5/22/98

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: City of Marianna
County: Jackson
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0020117
LIMS Sample #: ~~370866~~ ~~370892~~ LIMS Job #: ~~TLH-1999-02-16-24~~ TLH-1999-02-19-37
sample log 3/11/99 ow

Sample Collection: Date 2/16/99 Time 9:00
Test Beginning: Date 2/17/99 Time 11:45
Test Ending: Date 2/19/99 Time 13:00
Organism Batch #: ____ Diluent Batch #: 5
Organism Age: <24 hrs SRT toxicant batch #: N/A
Test organism: Ceriodaphnia dubia

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Test Number: 1 of 2
Room Temperature Range 24.0-24.5°C
Incubator #2 Temperature Range 26.0-27.5°C

Remarks: substantial particulate matter in sample

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
C+L	A	5	5	4[10]	8.0		8.2	24.4		24.6	8.0		8.1	175		180
C+L	B	5	5	5			8.2			24.4			8.0			185
C+L	C	5	5	4[10]			8.2			24.3			8.0			185
C+L	D	5	5	5			8.2			24.2			8.0			190
100%	A	5	5	5	7.6		8.5	24.4		24.2	8.1		7.5	575		545
100%	B	5	5	5			8.5			24.2			7.6			560
100%	C	5	5	5			8.5			24.3			7.6			577
100%	D	5	5	5			8.5			24.3			7.6			570
measured by:		FW	MF	FW	MF		FW	MF		FW	MF		FW	MF		FW
recorded by:		FW	MF	FW	AS		FW	AS		FW	AS		FW	AS		FW

Investigators' Signatures
Frank Blanfield
Marshall Faircloth
Amber E. Shumate
Courtesy Head

reviewer

form updated 5/22/98

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			FW
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR100	CH	MF
Alkalinity (mg/L as $CaCO_3$):		81	171	Hach	CH	MF
Hardness (mg/L as $CaCO_3$):		82	150	Hach	CH	MF
Total ammonia (mg/L as N):		0.022	8.90	Denver Instr. meter	MF	FW
Salinity:		0	0	YSI	CH/MF	MF

Marianna WWTP SCI Control Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	39	≥27	26-14	<14	5
EPT Index	8	≥6	5-3	<3	5
# Chironomid Taxa	17	≥9	8-5	<5	5
% Contribution of Dominant Taxon	26	≤25	26-62	>62	3
% Diptera	63	-	≤60	>60	1
Florida Index	26	≥13	12-7	<7	5
% Suspension feeders/Filterers	31	≥13	12-7	<7	5
Total Score		**Panhandle**			**29**
Interpretation of Scores		**Excellent**			27-33
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Winter Index Period: Stream Condition Index (SCI) for Florida Panhandle (April 1996)

Marianna WWTP SCI Test Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	27	≥27	26-14	<14	5
EPT Index	5	≥6	5-3	<3	3
# Chironomid Taxa	13	≥9	8-5	<5	5
% Contribution of Dominant Taxon	22	≤25	26-62	>62	5
% Diptera	70	-	≤60	>60	1
Florida Index	15	≥13	12-7	<7	5
% Suspension feeders/Filterers	31	≥13	12-7	<7	5
Total Score		**Panhandle**			**29**
Interpretation of Scores		**Excellent**			27-33
		Good			21-26
		Poor			14-20
		Severely Degraded			7-13

Winter Index Period: Stream Condition Index (SCI) for Florida Panhandle (April 1996)

Phytoplankton taxa list and densities (#/mL) for Marianna WWTP, collected via subsurface grabs in Chipola River, on 16 Feburary, 1999.

	Control Site	Test Site
Bacillariophyceae		
Amphora sp.	2	–
Navicula sp.	14	14
Nitzschia sp.	72	38
Pennales sp.	–	6
Chlorophyceae		
Chlamydomonas sp.	9	4
Oocystis sp.	2	–
Undetermined chlorophyceae	5	18
Cryptophyceae		
Chroomonas sp.	9	4
Cryptomonas sp.	14	6
Cyanophyceae		
Anabaena sp.	–	2
Dactylococcopsis sp.	2	–

Benthic macroinvertebrate taxa list for Marianna WWTP, collected via Hester-Dendy artificial substrates in Chipola River, on 16 Feburary, 1999. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site
Coleoptera		
Gyrinus sp.	–	5
Microcylloepus pusillus	3	3
Stenelmis sp.	3	–
Diptera		
Ablabesmyia mallochi	5	–
Chironomidae	29	161
Conchapelopia sp.	3	–
Corynoneura sp. C Epler	3	–
Corynoneura sp.	–	3
Corynoneura taris	16	19
Cricotopus bicinctus	3	–
Cricotopus sp. or *Orthocladius* sp.	3	–
Hemerodromia sp.	11	3
Microtendipes pedellus grp.	5	–
Nilotanypus fimbriatus	3	5
Pentaneura inconspicua	3	–
Pentaneura sp.	–	3
Polypedilum convictum grp.	267	611
Polypedilum fallax	–	3
Polypedilum halterale grp.	3	–
Polypedilum illinoense grp.	3	3
Polypedilum scalaenum grp.	24	3
Polypedilum sp. A Epler	8	–
Rheocricotopus robacki	8	11
Rheotanytarsus distinctissimus grp.	5	19
Rheotanytarsus exiguus grp.	11	29
Rheotanytarsus sp.	3	8
Simulium sp.	–	5
Stempellinella sp.	3	–
Tanytarsus sp. C Epler	13	8
Tanytarsus sp. L Epler	3	–
Tanytarsus sp. M Epler	8	3
Thienemanniella similis	–	8
Thienemanniella sp. A Epler	11	16
Thienemanniella sp. B Epler	11	58
Thienemanniella sp. D Epler	–	5
Thienemanniella sp.	3	3
Thienemanniella xena	–	8
Thienemannimyia grp.	3	5
Ephemeroptera		
Acerpenna pygmaeus	3	–

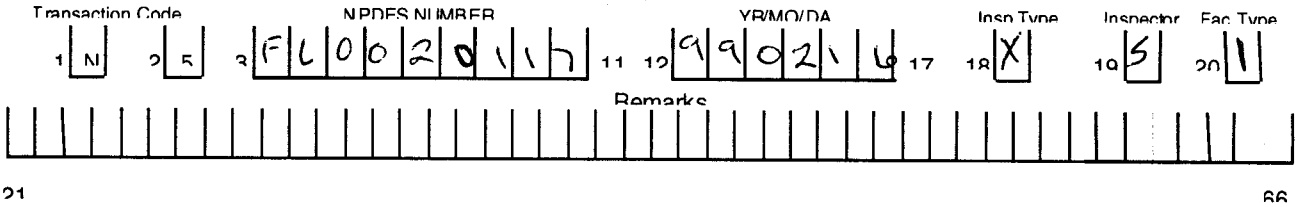
Baetis sp.	8	–
Stenacron floridense	3	3
Stenacron interpunctatum	11	3
Stenacron sp.	5	–
Stenonema exiguum	74	50
Stenonema mexicanum integrum	5	5
Stenonema smithae	13	8
Stenonema sp.	29	5
Gastropoda		
Ancylidae	*3*	*5*
Ferrissia hendersoni	–	3
Rhapinema dacryon	3	–
Odonata		
Boyeria vinosa	3	–
Plecoptera		
Neoperla sp.	3	–
Perlesta sp.	11	–
Trichoptera		
Cheumatopsyche sp.	16	69
Cyrnellus fraternus	3	3
Hydropsyche sp.	3	–
Hydroptila sp.	3	–
Lype diversa	–	3
Trombidiformes		
Limnesia sp.	3	–

Benthic macroinvertebrate taxa list for Marianna WWTP, collected via 20 discrete dip net sweeps in Chipola River, on 16 Feburary, 1999.

	Control Site	Test Site
Amphipoda		
Hyalella azteca	–	1
Coleoptera		
Dytiscidae	1	–
Collembola		
Undetermined Collembola	1	1
Decapoda		
Palaemonetes kadiakensis	1	–
Palaemonetes sp.	–	1
Diptera		
Ablabesmyia annulata	1	–
Ablabesmyia mallochi	4	2
Cecidomyiidae	1	–
Chironomidae	4	1
Chironomus sp.	1	4
Conchapelopia sp.	–	1
Corynoneura taris	1	–
Corynoneura sp.	1	–
Cricotopus bicinctus	–	2
Cryptochironomus sp.	1	–
Hemerodromia sp.	2	2
Labrundinia pilosella	1	–
Labrundinia sp.	1	–
Microtendipes pedellus grp.	–	1
Paralauterborniella nigrohalterale	–	1
Polypedilum convictum grp.	38	20
Polypedilum halterale grp.	–	1
Polypedilum illinoense grp.	–	2
Rheotanytarsus distinctissimus grp.	2	1
Rheotanytarsus exiguus grp.	15	13
Rheotanytarsus sp.	–	2
Simulium sp.	8	7
Stempellina sp.	1	–
Stempellinella sp.	1	–
Tanytarsus sp. C Epler	1	2
Tanytarsus sp. M Epler	1	–
Tanytarsus sp. S Epler	1	–
Tanytarsus sp.	2	1
Thienemanniella similis	1	–
Thienemanniella xena	1	1
Thienemanniella sp.	–	1
Tribelos fuscicornis	1	–

Ephemeroptera		
Baetidae	2	–
Baetis sp.	3	6
Eurylophella doris	2	–
Labiobaetis sp.	–	2
Stenacron sp.	–	1
Stenonema exiguum	3	–
Gastropoda		
Ancylidae	3	–
Campeloma sp.	5	1
Elimia sp.	1	–
Micromenetus dilatatus	1	1
Physella sp.	1	–
Planorbidae	1	–
Undetermined Gastropoda	1	–
Isopoda		
Caecidotea sp.	1	–
Oligochaeta		
Limnodrilus hoffmeisteri	–	3
Pelecypoda		
Sphaeriidae	2	–
Plecoptera		
Perlesta sp.	1	
Trichoptera		
Cheumatopsyche sp.	11	5
Hydropsyche sp.	4	–
Hydroptila sp.	5	3
Hydroptilidae	1	–
Leptoceridae	1	–
Oecetis persimilis	–	2
Trombidiformes		
Arrenurus sp.	1	–
Pionopsis sp.	–	1

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)

