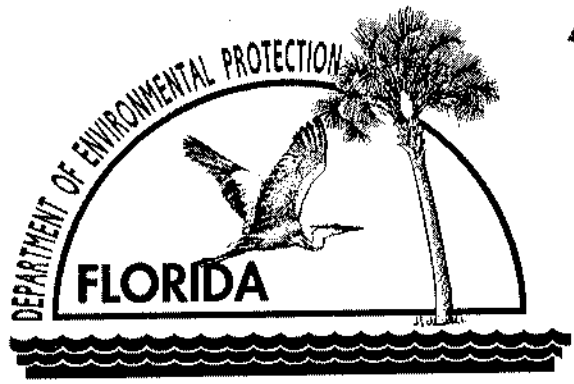
238

FILE COPY
DO NOT REMOVE



Biological Assessment of

City of St. Augustine - Facility #1

St. Johns County

NPDES #FL0021938

Sampled April 1998

February 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 St. Augustine - Facility #1
County: St. Johns
NPDES Number: FL0021938
State Permit Expiration Date: 3 May 2003

Toxics Sampling Inspection (**XSI**)

Date Sampled: 7 April 1998

Results: Atrazine was detected in the effluent at a non-problem level. Copper, iron, lead, silver, and zinc were detected in the effluent at levels that complied with Class III water quality standards.

Compliance Biomonitoring Inspection (**CBI**)

Date Sampled: 7 April 1998

Results: The effluent was not acutely toxic to the invertebrate, *Ceriodaphnia dubia,* or to the fish, *Cyprinella leedsi.*

Impact Bioassessment Inspection (**IBI**)

Date Sampled: 7 April 1998

Results: Measures of macroinvertebrate community health indicated that the discharge was not adversely affecting the receiving water communities. Several benthic community parameters at both test sites were either similar to or better than the control site. Pollution-sensitive organisms were represented at all three study sites. Algal densities were low at all three study sites, and chlorophyll *a* was undetected. Overall, the facility did not appear to have an adverse effect on the receiving water algal communities.

Water Quality Inspection (**WQI**)

Date Sampled: 7 April 1998

Results: Nutrient concentrations were relatively low in the effluent, and there appeared to be no nutrient increases at the test sites that could be attributed to the discharge. Algal growth potential did not exceed the 10 mg dry wt/L problem threshold at any of the study sites. The effluent AGP was 49.7 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 St. Augustine Wastewater Treatment Facility #1, is located in St. Johns County, on the Matanzas River (see map in Appendix). This municipal facility handles domestic waste and has a design capacity of 5.0 MGD, and a permitted capacity of 4.5 MGD. The facility is a complete mix-loop reactor (activated sludge), with disinfection, dechlorination, and post aeration for disposal through a 24-inch outfall pipe into the Class III Matanzas River. The discharge pipe is located 50 meters from the shoreline in approximately 1 meter of water. The actual flow during the survey was 3.04 MGD.

The state permit limits for the facility are listed in Table 1. Although there have been problems noted with the collection system, the plant has maintained an excellent quality of effluent, and was nominated by the Northeast District DEP for the EPA Operation and Maintenance Excellence Award.

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 at marker 37 within the Intercoastal Waterway) and two test sites bracketing the discharge (see map in Appendix). 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 fresh-water invertebrate, *Ceriodaphnia dubia,* and the fresh-water 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 using three replicate petite Ponar grabs.

Phytoplankton were sampled at both control and test sites via subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities. Algal Growth Potential (AGP) tests were performed using *Selenastrum capricornutum* as the test organism for the fresh-water effluent and *Dunaliella tertiolecta* for the marine receiving-water sites. Bacterial populations were analyzed for total and fecal coliforms. Sediment from control and test sites was analyzed for particle grain size. 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, community composition, functional feeding groups, and algal biomass. 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 number of polychaete taxa, and the % pelecypods are measured as the control site minus test site divided by the control site. The percent differences between sites involving the % tubificids, 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: Tim McKelvey, Pat O'Connor, and Kathleen Gerard (DEP Northeast District) and 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.

Results and Discussion

Habitat quality at the control site (96 points) was better than test site 1 (84 points) and test site 2 (74 points) (see Habitat Assessment Field Data Sheets in Appendix). Shorelines at all three study sites

consisted mostly of natural non-altered shoreline. Substrate at the two test sites were made up of mostly mud, while the control site was mostly mud with some sand (see Marine Habitat Assessment Sheets). Physical/chemical measurements were similar among the three study sites with the exception of salinity (Table 1). Salinity levels were 30 ppt at both test sites 1 and 2, and 25 ppt at the control site.

Atrazine (0.12 µg/L) was detected in the effluent at a level that was less than the minimum quantitation limit, and greater than or equal to the minimum detection limit (Table 1). Copper (1.1 µg/L) and iron (82 µg/L), were detected in the effluent at concentrations that complied with Class III water quality standards. Lead, silver, and zinc were detected at levels that were less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

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

Nutrient levels are shown in Table 1. The effluent total nitrogen concentration was 2.78 mg/L. Effluent total phosphorus (0.36 mg/L), ortho-phosphate (0.3 mg/L), and nitrate+nitrite (1.9 mg/L) also appeared typical for this type of treatment system. AGP, which measures bioavailable nutrients via algal response, was sampled at the receiving water sites and in the effluent. AGP at all sites (control = 2.6 mg dry wt/L, test site 1 = 3.6 mg dry wt/L, and test site 2 = 3.8 mg dry wt/L) were below the 10 mg dry wt/L "problem threshold" (Ron Raschke, USEPA, pers. comm.). The effluent AGP was 49.7 mg dry wt/L. Nutrient levels at all three study areas were low and fairly typical of a marine system.

Phytoplankton data were used to assess algal community health (Figure 1). Taxa richness was high at both test sites, with 26 taxa at test site 2, 24 taxa at test site 1, although the control site was slightly lower with 19 taxa (Table 2). Similarly, Shannon-Weaver diversity was highest at the two test sites, with 3.8 at test site 2, 3.4 at test site 1, and 2.7 at the control site. Algal densities were fairly low for a marine system, and similar among the three sites. Chlorophyll *a* was undetected at all three sites.

Effluent total coliforms (500 counts/100 ml) and fecal coliforms (120 counts/100 ml) complied with Class III marine water quality standards (Table 1).

Sediments at the two test sites were similar (see Marine Habitat Assessment Sheets). They consisted mostly of mud, while the control site was made up mostly of mud and muck with some sand. Sediment particle sizes differed slightly among study sites. The majority of the substrate at the control site consisted of particles 0.5 mm in diameter and less, while the grain size at the two test sites was somewhat finer, with the majority of the substrate 0.25 mm in diameter and less.

Quantitative measures of macroinvertebrate community health showed little or no degradation at the test sites (Figure 2). Taxa richness was highest at test site 2 (35 taxa), lowest at the control site (13 taxa), and intermediate at test site

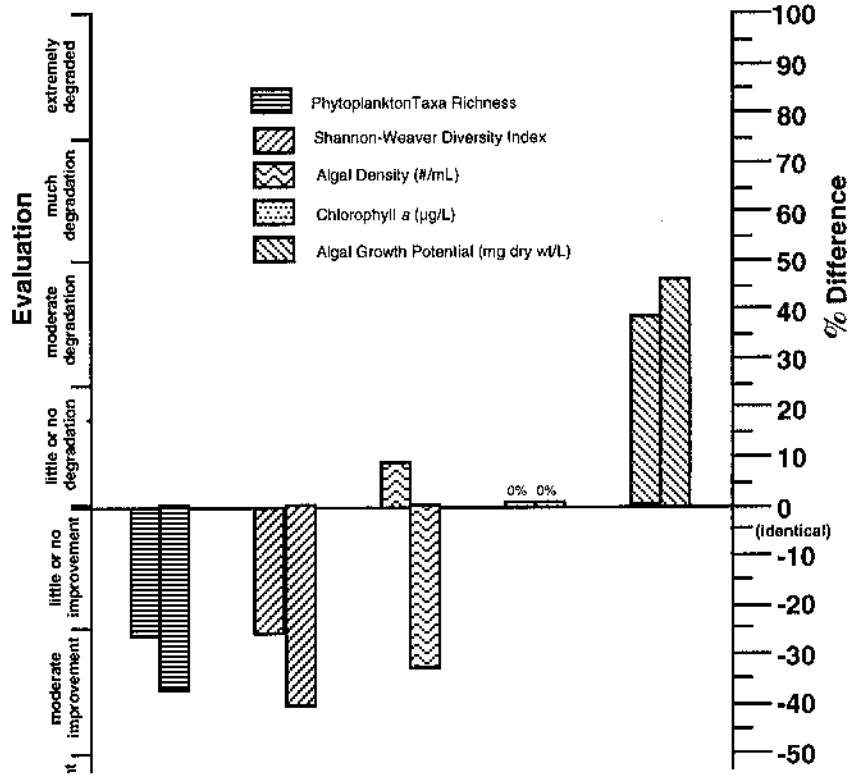


Figure 1. Effect of discharge on the phytoplankton community.

Table 1. Effluent limits and summary of chemistry data.

St. Augustine WWTP # 1	Effluent Limits	Effluent Sample	Control Site	Test Site 1	Test Site 2
Organic Constituents (µg/L)					
Atrazine	–	0.12 I	–	–	–
Metals (µg/L)					
Aluminum	≤ 1500 **	50 U	–	–	–
Arsenic	≤ 50 **	40 U	–	–	–
Cadmium	≤ 9.3 **	0.02 U	–	–	–
Chromium	≤ 50 **	10 U	–	–	–
Copper	≤ 2.9 **	1.1 A	–	–	–
Iron	≤ 300 **	82 A	–	–	–
Lead	≤ 5.6 **	0.3 I	–	–	–
Mercury	≤ 0.025 **	0.1 U	–	–	–
Nickel	≤ 8.3 **	7 U	–	–	–
Selenium	≤ 71 **	50 U	–	–	–
Silver	Report b*	0.07 I	–	–	–
Zinc	≤ 86 **	14 I	–	–	–
Nutrients (mg/L)					
Ortho-phosphate	Report c*	0.3 A	0.027	0.032	0.03
Total phosphorus	Report c*	0.36	0.094	0.071	0.13
Ammonia	Report c*	0.04 A	0.043 I	0.04 U	0.04 U
Nitrate+nitrite	Report c*	1.9 A	0.008 I	0.037	0.019
TKN	14 a*	0.88 I	0.49	0.49	0.35
Organic Nitrogen	Report c*	0.84	0.45	0.45	0.31
Total Nitrogen	Report c*	2.78	0.5	0.53	0.37
General Phys-Chem Parameters					
Habitat Assessment	–	–	96	84	74
D.O. (mg/L)	5.1 a*	5.2	6.7	6	6.2
pH (SU)	6.0 - 8.5 a*	7	7.4	7.5	7.5
Conductivity (µmhos/cm)	–	100.7	38,387	46,199	45,924
Salinity (ppt)	–	–	24	30	30
Temperature (°C)	–	23.5	22.4	21	21.2
T.S.S. (mg/L)	20 a*	–	–	–	–
Chlorine (mg/L)	0.5 a*	–	–	–	–
Residual Chlorine (mg/L)	0.01 a*	≤ 0.01	–	–	–
C.B.O.D., 5 day (mg/L)	20 a*	–	–	–	–
Flow (MGD)	4.5 b*	3.04	–	–	–
AGP (mg dry wt/L)	–	49.7	2.6	3.6	3.8
Toxicity					
Bioassay - Fish	–	Not Toxic	–	–	–
Bioassay - Invertebrate	–	Not Toxic	–	–	–
Microbiology (# counts/100mL)					
Fecal Coliforms	200 a*	120	≤3	20	20
Total Coliforms	≤1,000 b**	500	10	120	180

A - Value reported is the mean of two or more determinations
I - Value reported < the minimum quantitation limit, and ≥ the minimum detection limit
U - Material analyzed for but not detected; value reported is the minimum detection limit
* Permit Limit
** Class III water quality standard

a - Annual average
b - Monthly average
c - Quarterly

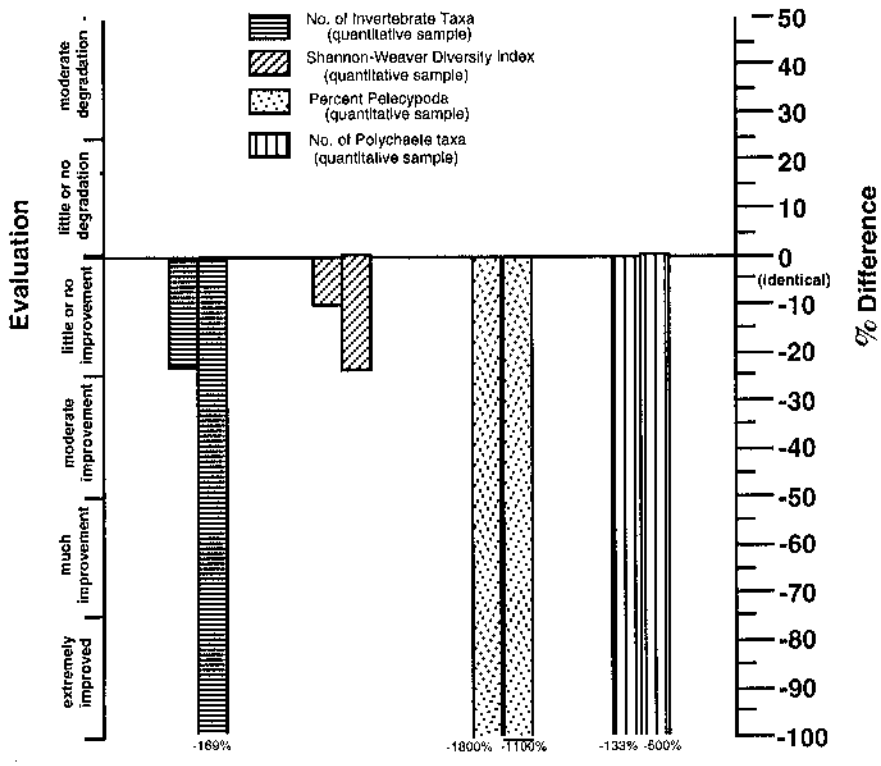


Figure 2. Effect of discharge on the benthic macroinvertebrate community.

1 (16 taxa). Similarly, Shannon-Weaver diversity was highest at test site 2 (3.6), lowest at the control site (2.9), and intermediate at test site 1 (3.2). Polychaete taxa richness was 500% higher at test site 2 and 133% higher at test site 1 than the control site. This may be due to differences in substrate types. All three study sites contained pollution-sensitive groups such as amphipods, cumaceans, and pelecypods. The control site was dominated by the pollution-sensitive amphipod, *Protohaustorius deichmannae*. Similarly, test site 1 was dominated by a pollution-sensitive cumacean, *Oxyurostylis* sp. Test site 2, while dominated by the pollution-tolerant polychaete, *Capitella* sp, also contained *P. deichmannae*.

Conclusions

Effluent metals such as copper, iron, lead, silver, and zinc were detected at levels that complied with Class III water quality standards. Atrazine was detected at non-problem levels.

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

The effluent nutrient levels were fairly typical of the wastewater treatment process and did not seem to be having an adverse effect on the study areas. AGP values at both the control site and test sites were below the 10 mg dry wt/L "problem threshold".

Examining the phytoplankton community data in conjunction with the AGP values, it does not appear the effluent was adversely affecting the algal communities.

Habitat quality was "good" to "fair" at all three study sites. Quantitative measures of macroinvertebrate community health showed no adverse affects on the benthic community. All three study areas contained both pollution-sensitive and pollution-tolerant organisms in roughly equal numbers.

Literature Cited

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.

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 2. Major characteristics of community structure of control and test sites.

St. Augustine WWTP #1	Control Site	Test Site 1	Test Site 2
Macroinvertebrate Quantitative			
Number of Taxa	13	16	35
Shannon-Weaver Diversity	2.9	3.2	3.6
No. Polychaete Taxa	3	7	18
Community Composition			
% Amphipoda	66	28	9
% Cumacea	18	22	3
% Decapoda	4	0	0.3
% Echinodermata	0	0	1
% Isopoda	0	1	1
% Nemertea	1	0	7
% Pelecypoda	1	19	12
% Polychaeta	11	31	67
% Other	0	0	0
Functional Feeding Groups			
% Browsers-grazers	8	10	5
% Burrowing Deposit Feeders	8	1	31
% Predators/Carnivores	3	6	13
% Scavengers	8	10	5
% Surface Deposit Feeders	1	13	15
% Suspension Feeders	72	60	30
% Unknown	0	0	1
Phytoplankton Algae			
Number of Taxa	19	24	26
Shannon-Weaver Diversity	2.7	3.4	3.8
Chlorophyll *a* (µg/L)	1.12 U	1.12 U	1.12 U
Algal Density (#/mL)	1,898	2,076	1,265
% Blue-green	0.5	1	7
% Cryptophytes	2	5	2
% Diatoms	94	86	77
% Green	2	1	10
AGP (mg dry wt/L)	2.6	3.6	3.8

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

Explanation of Measurements of Community Health

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

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. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

Numbers of pollution sensitive taxa: Some organisms become rare or absent as the intensity or duration of disturbance increases. Species sensitivity data from other sources, such as Chang *et al.* (1992), Farrell (1992), Hudson *et al.* (1990), Hulbert (1990), Lenat (1993), and Whitmore (1989), are used as appropriate.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to control conditions, may indicate degradation. In marine systems, an increase in the % tubificid oligochaetes, a decrease in the % pelecypods, and a decrease in the number of polychaete taxa are all considered indicators of disturbance (Engel *et al.* 1994).

Trophic composition/feeding guilds: 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).

Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress.

Typical Values for Selected Parameters in Florida Waters

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

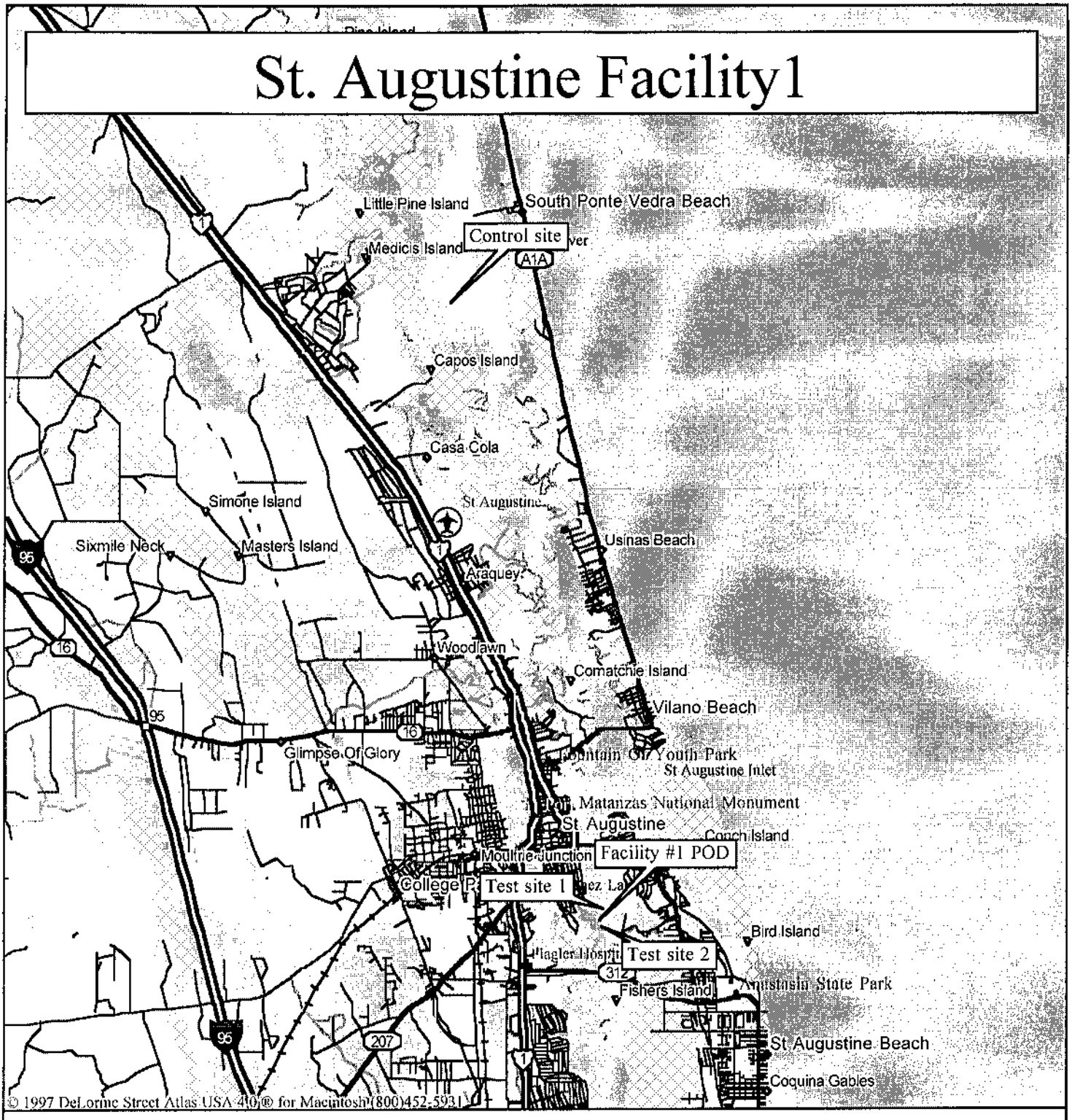
Percentile Distribution

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 Phosphorus	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
LAKES (477 stations)											
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	3.46
NH3+NH4	0.01	0.02	0.02	0.03	0.04	0.06	0.08	0.12	0.15	0.21	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.10	0.14	0.23
Total Phosphorus	0.01	0.02	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.23	0.42
Ortho-Phosphorus	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.21	0.32
Turbidity	1.00	1.25	1.55	2.05	2.75	4.50	6.45	9.60	14.10	26.00	40.00
ESTUARIES (690 stations)											
Phytoplankton Chlorophyll *a*	2.14	3.28	4.49	5.13	6.00	6.93	7.94	9.60	12.40	17.60	22.20
Dredge Diversity	1.34	1.53	1.91	2.28	2.56	2.90	3.15	3.59	4.01	4.53	4.98
Dredge Taxa Richness	4.00	6.00	9.00	11.00	15.00	18.50	25.00	35.00	41.00	62.00	90.00
TKN	0.26	0.34	0.42	0.50	0.59	0.69	0.76	0.82	0.95	1.30	1.49
NH3+NH4	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.13	0.22	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.17	0.23
Total Phosphorus	0.01	0.02	0.06	0.07	0.10	0.11	0.14	0.17	0.23	0.43	0.59
Ortho-Phosphorus	0.01	0.02	0.03	0.04	0.04	0.05	0.07	0.09	0.12	0.21	0.44
Turbidity	3.50	4.00	4.50	5.05	5.40	5.60	6.30	6.80	8.00	11.40	11.75

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

St. Augustine Facility1



Mag 12.00
Tue Jan 26 09:45 1999
Scale 1:125,000 (at center)

2 Miles

2 KM

- Local Road
- Major Connector
- State Route
- Primary State Route
- Trail
- Interstate/Limited Access
- US Highway
- Railroad
- Small Town
- Geographic Feature
- Hospital
- Park/Reservation
- Locale
- City

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FACILITY SUMMARY

Facility Name: City of St. Augustine WWTP No. 1		Prepared by: Kathleen Gerard Date: April 21, 1998
Location (attach detailed map): See attachment	County St. Johns	District Northeast District
Federal Permit # and expiration date: FL 0021938 (Permit application is	State GMS # and State expiration date: 3155M 00939 pending)	Facility Type: Industrial (Municipal) Federal, Agricultural Other (list):

Function of facility:
Wastewater Treatment Facility.

Description of treatment process:
The facility is designed as a 5.0 MGD complete mix loop reacter activated sludge wastewater treatment facility with disinfected treated effluent dechlorinated and post aerated For disposal through a 24-inch outfall to the Matanzas River. the permitted capacity is limited to 4.5 MGD AADF.

Receiving waters: Matanzas River	Classification: III
Design Flow: 5.0 MGD	Actual Mean Flow: 3.04 MGD

Discharge is: (Continuous) Intermittent Seasonal Rainfall dependent
Other (describe)

therefore, the best time to sample is:

If facility has a mixing zone, give details (size, parameters affected, etc.):
No mixing zone.

List effluent limits:

Parameter	Limit (units)	
	annual	monthly
$CBOD_5$	20 ✓	25 mg/L
TSS	20 ✓	30 mg/L
TKN	14 ✓	17.5 mg/L
fecal coliforms	200 ✓	200 No/100mL
pH	minimum ✓	6.0
	maximum	8.5
Chlorine	minimum	✓0.5 mg/L.
Chlorine (afterdect)	maximum	✓0.01 mg/L.
DO	minimum ✓	5.1 mg/L.

Describe special permit conditions and permit modifications:
-See attached Conditions!
I.A.1, 9, 10, 11 of Permit FL0021938

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

City of St. Augustine WWTP No. 1 (Facility) FACILITY SUMMARY

Description of permitted outfall(s):

The outfall is permitted as a 24" diameter pipe that extends 1600' from the wastewater treatment plant into the Matanzas River. The discharge location is approximately 150' from shore and discharge is at a depth of approximately 3.5 feet. WWTP personnel were recently notified of a break in the outfall line.

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

Effluent quality for this facility is very good. Although there have been problems noted with the collection system, the WWTP maintains an excellent quality of effluent.

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

Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set:

Data submitted by WWTF personnel on DMRs/MORs is consistent with sampling results obtained during past inspections by department personnel.

Additional information:

This facility was nominated by the Northeast District DEP for the EPA Operation and Maintenance Excellence Awards.

GMST36 3155X00029 050053 080082 000530 031501 04/20/98
PARAMETER RESULT TRENDS 16:59:59

0 Y FOR 3155M00939 - ST. AUGUSTINE, CITY OF #1
SITE NAME - S.T.P. FINAL EFFLUENT - ST. AUGUSTI

RPT DATE	FLOW,MONTH AVG 050053 MGD	BIOCHEM OXY DEM 080082 MG/L	RES SUSP 000530 MG/L	COLI MF 031501 #/100
02/00/98	5.104	4.0	3.	NO RESULT
01/00/98	3.603	4.0	3.	NO RESULT
12/00/97	4.213	4.0	3.	18.
11/00/97	3.319	3.0	3.	37.
10/00/97	2.680	3.0	3.	62.
09/00/97	2.244	3.0	3.	58.
08/00/97	2.680	3.0	3.	72.
07/00/97	2.116	4.0	3.	48.
06/00/97	2.896	3.0	2.	41.
05/00/97	2.973	3.0	2.	60.
04/00/97	2.664	4.0	2.	52.
03/00/97	2.020	4.0	2.	59.
02/00/97	2.095 3.043	3.0	2.	34.
01/00/97	2.130	3.0	2.	40.
AVERAGE:	2.64281	3.23810	2.82540	42.28333
STD DEV:	0.79475	1.24062	1.27683	15.98527

XMIT HERE FOR NEXT PAGE

GMST36 3155X00029 000625 000300 900242 900243 04/20/98
PARAMETER RESULT TRENDS 17:01:12

0 Y FOR 3155M00939 - ST. AUGUSTINE, CITY OF #1
SITE NAME - S.T.P. FINAL EFFLUENT - ST. AUGUSTI

RPT DATE	NITROGEN(N)KJEL 000625 MG/L	DO 000300 MG/L	PH, MAXIMUM 900242 STD UN	CHLOR RES, MIN 900243 MG/L
02/00/98	2.400	5.8	8.00	.5
01/00/98	3.200	6.1	7.80	.5
12/00/97	2.100	6.3	7.50	.5
11/00/97	1.300	6.0	7.40	.5
10/00/97	1.100	6.0	7.50	.5
09/00/97	1.100	6.2	7.40	.5
08/00/97	1.100	6.0	7.40	.5
07/00/97	1.100	6.0	7.00	.5
06/00/97	1.500	6.1	7.40	.5
05/00/97	2.800	6.5	7.80	.5
04/00/97	6.300	6.4	7.60	.5
03/00/97	1.500	6.2	7.90	.5
02/00/97	1.100	6.8	7.50	.5
01/00/97	1.000	6.5	7.50	.5
AVERAGE:	1.80476	6.54127	7.64286	0.50000
STD DEV:	1.25511	0.56100	0.26310	0.00000

XMIT HERE FOR NEXT PAGE

PERMITTEE: City of St. Augustine
Post Office Drawer 210
St. Augustine, FL 32085

PERMIT NUMBER: FL0021938
ISSUE DATE: Draft
EXPIRATION DATE: Draft

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D001 to Matanzas River (ICW). Such discharge shall be limited and monitored by the permittee as specified below:

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	mgd	Maximum	4.5	Report	-	-	Continuous	Recording flow meters and totalizers	EFD-1	See Cond.I.A.4
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	Maximum	20.0	25.0	40.0	60.0	Weekly	24-hour flow proportioned composite	EFD-1	
CBOD5 % Removal	%	Minimum	-	85.0	-	-	Weekly	Calculated	EFD-1	
Total Suspended Solids	mg/L	Maximum	20.0	30.0	45.0	60.0	Weekly	24-hour flow proportioned composite	EFD-1	
TSS % Removal	%	Minimum	-	85.0	-	-	Weekly	Calculated	EFD-1	
Total Kjeldahl Nitrogen	mg/L	Maximum	14.0	17.5	21.0	28.0	Weekly	24-hour flow proportioned composite	EFD-1	
pH	std. units	Range	-	-	-	6.5 to 8.5	Continuous	Grab	EFD-1	See Cond.I.A.3
Fecal Coliform Bacteria	See Permit Condition I.A.5.						Weekly	Grab	EFD-1	
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	0.5	Continuous	Grab	EFA-1	See Cond.I.A.3, 6
Dissolved Oxygen	mg/L	Minimum	-	-	-	5.1	Daily	Grab	EFD-1	
Total Residual Chlorine (For Dechlorination)	mg/L	Maximum	-	-	-	0.01	Daily	Grab	EFD-1	
Whole Effluent Toxicity	See Permit Condition I.A. 8. & 9.									
Stream Monitoring	See Permit Condition I. A.10.									
Mercury, Total Recoverable	ug/L	Maximum	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond.I.A.11

Chloro-dibromo-methane	ug/L	Maximum	Report	-	-	-	Monthly	Grab	EFD-1	See Cond.I.A.11
Dichloro-bromo-methane	ug/L	Maximum	Report	-	-	-	Monthly	Grab	EFD-1	See Cond.I.A.11
Silver, Total Recoverable	ug/L	Maximum	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond.I.A.11
Nitrogen, Total as N	mg/L as N	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	
Nitrogen, Organic, Total as N	mg/L as N	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	
NO2+NO3, Total 1 DET. as N	mg/L as N	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	
Ammonia, Total as N	mg/L as N	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	
Phosphorus, Total as P	mg/L as P	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	
Phosphorus, Tot. Orthophoshphate as P	mg/L as P	Maximum	-	-	-	Report	Quarterly	24-hour flow proportioned composite	EFD-1	

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location Site Number	Description of Monitoring Location
EFA-1	Effluent following disinfection but prior to dechlorination
EFD-1	Effluent following dechlorination

3. Hourly measurement of pH and total residual chlorine for disinfection during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 2, Footnotes 1 and 2, 5-31-93]*

4. The facility design flow is 5.0 mgd AADF. In accordance with the permittee's request letter dated January 12, 1998, the permitted capacity is limited to 4.5 mgd AADF. Recording flow meters and totalizers shall be utilized to measure flow and calibrated at least annually. *[62-601.200(17) and .500(6), 5-31-93]*

5. The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of effluent sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of effluent each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. *[62-600.440(4)(c), 6-8-93]*

6. A minimum of 0.5 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b), 6-8-93]*

7. The approved analytical methods and corresponding required MDL (method detection limit) and PQL (practical quantification limit) for parameters at Outfall D001 are:

Parameter	Analytical Method
CBOD	405.1
TSS	160.2
pH	150.1
Fecal Coliform	600/8-78-017
TRC (disinfection)	330.1, 330.4, or 330.5
TRC (dechlor.)	330.1
Nitrogen, Total	351.2 or 351.3 -and- 353.1, 353.2, or 353.3
Phosphorus, Total	365.1, 365.2, 365.3, or 365.4
Ammonia, Total	350.1 or 350.3
Nitrate + Nitrite	353.1, 353.2, or 353.3
Orthophosphorus	300.0 or 365.1
TKN	351.2 or 351.3
Organic Nitrogen	calculated
Total Recoverable Mercury	245.1 or 245.2
Dibromochloromethane	624/601
Dichlorobromomethane	624/601
Total Recoverable Silver	272.2
Dissolved Oxygen	360.1 or 360.2

Only the methods listed above shall be used unless an alternative method is approved in the laboratory's FDEP approved CompQAP. The laboratory shall report the MDL (method detection limit) and PQL (practical quantification limit) for each analytical method listed above for all sample results. The Permittee shall maintain records of all sample results in accordance with Section V.5. of this permit. Compliance with regard to sample results shall be determined as described in 62-4.246(6)(c), F.A.C. Unless otherwise specified, sample results shall be reported as follows:

a) results greater than or equal to the PQL shall be reported as the measured quantity.
b) results less than the PQL and greater than the or equal to the MDL shall be reported as the PQL followed by the lab code "m", and shall be deemed equal to the MDL when necessary to calculate an average for that parameter.
c) results less than the MDL shall be reported as the MDL followed by the lab code "u". A value of one half the MDL or half the effluent limit, whichever is lower, shall be used for that sample when necessary to calculate an average for that parameter. Values less than the MDL are considered to demonstrate compliance with an effluent limit or monitoring requirement.

[62-4.246, 6-13-96]

8. Mortalities of 50% or greater in any sample of 100% effluent in a test of 96 hours duration or less, or a LC50 of less than 100% effluent in any additional definitive test, will constitute a violation of Florida Administrative Code (FAC) and the terms of this permit. The testing for this requirement must conform with Permit Condition I.A.9 of this permit. [62-4.244(3)(a)FAC]

9. In accordance with Rules 62-302.500(1)(d) and 62-303.200(1) FAC , the Permittee shall initiate the series of tests described below within six months of permit issuance to evaluate whole effluent toxicity of the discharge from outfall D001. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and

Marine Organisms, EPA/600/4-90/027F (4th edition), or the most current edition. The salinity of the control water and the effluent used will be adjusted using artificial sea salts as described in EPA/600/4-90/027F, Section 9, or the most current edition. The tests salinity shall be 20ppt for the mysid shrimp and 20ppt for the inland silverside minnow. A standard reference toxicant quality assurance test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the discharge monitoring report (DMR). Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be submitted with the DMR. Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

Routine Tests

a. The permittee shall conduct 96 hour acute static renewal toxicity tests using the mysid shrimp, Mysidopsis bahia and the inland silverside minnow, Menidia beryilina . All tests shall be conducted on four separate grab samples collected at evenly spaced 6 hour intervals over a 24 hour period and used in four separate tests in order to catch any peaks of toxicity and to account for daily variations in effluent quality. Results of the four tests are not to be combined or averaged, but are to be reported separately.

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

c. The Toxicity tests specified above shall be conducted using a control (0% effluent) and a test concentration of 100% final effluent and shall be conducted once every six (6) months for the duration of the permit, unless notified otherwise by the Department. These tests are referred to as "routine tests".

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

Florida Department of Environmental Protection
Northeast District
7825 Baymeadows Way Suite B-200
Jacksonville, Florida 32256
Attn.: Toxicity Coordinator

The results shall be entered on the DMR in the following manner: if an LC50 of less than 100% occurs in any of the four separate grab sample tests, " <100% " shall be entered on the DMR for that species. If an LC50 of 100% 0r greater occurs in all four separate grab sample tests, " >100% " shall be entered.

Additional Tests

a. If acute toxicity (defined as greater than 20% mortality in 100% effluent) is determined in a routine test, the permittee shall conduct a minimum of three (3) valid additional 96 hour acute static renewal definitive tests on each species indicating toxicity. The first test shall begin within 7 days of the failed routine test and be conducted weekly thereafter until three valid additional tests are complete. The additional tests sample collection requirements and test acceptability criteria specified in paragraphs 'a' and 'b' above must be met for the tests to be considered valid.

All additional definitive tests shall be conducted with a control (0% effluent) and effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The dilution series may be modified in the second and third tests to more accurately identify the toxicity, such that at least two dilutions above and two dilutions below the target toxicity and a control (0% effluent) are run. The additional tests will be used to determine if the toxicity found in the routine test is still present

b. Results for each additional test will include the determination of LC50 values with 95% confidence limits. Results from the additional tests, required due to acute toxicity in the "routine" tests, shall be submitted in a single report prepared according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition) and submitted within 45 days of completion of the third additional valid test. If the additional tests demonstrate acute toxicity, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the acute toxicity.

[Rule 62-302.500(1)(d), FAC]

10. The Permittee shall continue regular monitoring of the segment of the Matanzas River near the outfall for maintaining data on the impact of the discharge to the water quality of the surface water body. Monitoring shall be on a semi-annual basis and shall coincide with the quarterly nutrient monitoring of the facility effluent discharge. The monitoring sites are described as follows:

Station ASD6:	STORET No.: 27010160 - located on north side of Mickler O'Connel Bridge, center channel.
Station ASD8:	STORET No.: 27010153 - located at St. Augustine #1 WWTF point of discharge and at the center of channel.
Station ASD9:	STORET No.: 27010161 - located at channel marker #12

The parameters to be measured shall include the following:

DO, pH, temperature, conductivity, salinity, Secchi Disk, $CBOD_5$, NH_3-N, TKN, NO_2-N and NO_3-N, TP, Ortho-Phosphorus, Chlorophyll A, tide stage, alkalinity, color, chloride

Metered parameters (DO, pH, temperature, conductivity, salinity) shall be sampled at the surface, mid-depth and at the bottom. Grab samples at mid depth for the other parameters is adequate.

Reporting of river monitoring shall be in accordance with the following schedule:

Sample Period	Report Due Date
Summer (July)	August 28
Winter (January)	February 28

The results of instream monitoring shall be submitted to the Northeast District Office.
[62-4.240(3)(c), 4-30-95]

11. The permittee shall sample the effluent at monitoring station EFD-1 monthly for total recoverable Mercury, total recoverable Silver, Dibromochloromethane and Dichlorobromomethane for one year. If the analyses of samples indicate that water quality standards as defined by Rule 62-302, FAC, are exceeded, the department shall require and the permittee shall submit a plan of action outlining the steps to be taken to come into compliance and submit a request for permit revision, if necessary. The metals sample collection and sample analysis shall be performed using 'clean' techniques and for the methods specified under specific condition I.A.7. The department reserves the right to require and establish effluent limitations for these parameters.
[Rules 62-4.244(1), 4-30-95 and 62-302.510, F.A.C.]

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8037 / SUBMITTING AGENCY NAME: NERR	STORET STATION NUMBER: 27010202	DATE (M/D/Y): 4-7-98	TIME: 1430	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY

REMARKS: GPS for Both St Aug #1 and #2	COUNTY: St. Johns	LOCATION: MARKER 37, ICW	FIELD ID/NAME: Reference 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)
100							MARSH

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: 718 — List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

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

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

m wide | m/s | m/s | m/s

Tidally influenced

m deep | m deep | m deep

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	80	1	ponar
Leaf Packs or Mats				Mud/Muck/Silt	10	1	ponar
Aquatic Vegetation				Other:			
Rock or Shell Rubble	10	1	ponar	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):	SAL.		Secchi (m):
Top	0		7.44					
Mid-depth	.8	22.44	6.44	6.70	38387	24.4		.6
Bottom	1.5							

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): Slightly Tannic: ☒ Green (algae): ☐ Clear: ☒ Other: ☐ ____

Weather Conditions/Notes: Windy, SE 15-20 Knots
Mostly Cloudy

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey / Pat O'Connor	Tim McKelvey	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 805 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 270 10202	DATE (M/D/Y): 4-7-98	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY

REMARKS: FYI'S reference for both St Aug. #1 and #2.	LOCATION: MARKER 37, ICW 100 ft eastern shore	FIELD ID/NAME: REFERENCE SITE

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations 10	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed 50	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation 5	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations 10	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 8-10 points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 96

COMMENTS: falling tide

ANALYSIS DATE: 4/7/98	ANALYST: Tina McKelvey	SIGNATURE: Tina McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 27010161	DATE (M/D/Y): 4-7-98	TIME: 1330	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
ST. AUG. #1 FWIS	ST. JOHNS	150 YARDS NORTH OF ST. AUG #1 POD, 100 FT. off WESTERN SHORE	TEST SITE #3 - NORTH

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)
10				40	50		

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: 76m

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

m wide

m/s | m/s | m/s

tidally influenced

m deep | m deep | m deep

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):	SAL.		Secchi (m):
Top	0							
Mid-depth	~~3.75~~	20.99	7.52	6.01	46.199	30.2		
Bottom	1.5							

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: Windy 15 Knots SE.

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

SAMPLING TEAM: Tim McKelvey, Pat O'Connor

SIGNATURE: Tim McKelvey

DATE: 4/7/98

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 27010161	DATE (M/D/Y): 4-7-98	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY

REMARKS: ST AUG #1 · FY15	LOCATION: 150 YARDS NORTH OF ST/AUG. #1 POD, 100 FT OF WEST SHORE	FIELD ID/NAME: TEST SITE #3 1 - NORTH

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 9	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed: 40	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation: 5	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations: 10	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action: 9	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 8-10 points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type: 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 84

COMMENTS: Falling tide. This is in the plume along western shoreline.

ANALYSIS DATE: 4/7/98	ANALYST: Tina McKelvey	SIGNATURE: Tina McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 27010153	DATE (M/D/Y): 4-7-98	TIME: 1230	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY

REMARKS: ST AUG #1 & #2 FDIS's combined.	COUNTY: ST JOHNS	LOCATION: 500 yards north of 312 bridge midway between FDI's 100 ft. off west bank.	FIELD ID/NAME: TEST SITE #2 - MID

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)
15				25	60		

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: 218m

List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

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

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

m wide

m/s	m/s	m/s
m deep	m deep	m deep

tidally influenced

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	10	1	PONAR
Leaf Packs or Mats				Mud/Muck/Silt	80	1	PONAR
Aquatic Vegetation				Other:			
Rock or Shell Rubble	10	1	PONAR	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):	SAL.		Secchi (m):
Top	0							.6
Mid-depth	1	21.18	7.48	6.22	45924	29.9		
Bottom	2							

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: WINDY 15 KNOTS SE

500 YARDS NORTH OF 312 BRIDGE.
MID POINT BETWEEN OUTFALLS OF ST. AUG #1 and ST. AUG #2, WESTERN SHORE, 100 FT OFF.

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

SAMPLING TEAM: McKelvey / OConnor

SIGNATURE: Arnold McKelvey

DATE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NED	STORET STATION NUMBER: 27010153	DATE (M/D/Y): 4-7-98	RECEIVING BODY OF WATER: INTRACOASTAL WATERWAY
REMARKS: MIDPOINT BETWEEN ST. AUG #1 & ST AUG. #2 Pod's	LOCATION: 500 YARDS NORTH OF 312 BRIDGE, MID POINT BETWEEN POD'S 100 FT off WEST BANK	FIELD ID/NAME: TEST SITE #2 - MID MIDPOINT	

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations — 10	None—Unaltered shoreline. 9-10 points (Marina across waterway)	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed — 40	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points	Two or three communities observed from those listed. 26-37 points	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation — 5	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations — 10	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-8 points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action — 2	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type — 7	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE — 74

COMMENTS: St. AUG #1 & St. AUG #2 FDS (COMBINED) OUTGOING TIDE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
4-7-98	McKelvey	Lynn McKelvey

FDEP Biology Section — Acute Bi

Sample Source: St. Augustine Effluent #1
Sample [illegible] Time 11:30
Test [illegible] Time 1400
County: Flagler
Contact / District: Tim McKelvey / Northeast
T [illegible] Date 4/1/98 Time 13:40
Organism Batch #: 17 Diluent Batch #: 16
NPDES Permit #: FL0021938
Organism Age: <24 hours
LIMS Sample #: 317172 LIMS Job #: T&H-1998-04-07-11-01
Test Organism: Ceriodaphnia dubia
sample log: 4/13/98

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24.0-25.0°C
incubator 23.3-24.4°C
Test Number: 1 of 2
Remarks: D = dead, M = missing

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.6	8.6 @ 9.1 °C	100.7 @ 96.3 997 @ 1005 @ 25.5 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.5 @ 24.6	8.1 @ 25.5 °C	96.3 995 @ 1005 @ 25.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.7 @ 24.7	8.2 @ 25.5 °C	100.1 @ 96.3 995 @ 1005 @ 25.1 °C

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	A	5	5	5	8.0		7.9	24.9		25.1	8.2		8.6	170		193
Control B	B	5	5	5			8.0			25.0			8.5			188
Control C	C	5	5	5			8.1			25.0			8.5			189
Control D	D	5	5	5			8.1			25.0			8.5			191
100 % A	A	5	5	5	7.5		8.0	25.6		25.0	7.6		8.4	1450		1365
100 % B	B	5	5	5			8.1			25.1			8.5			1335
100 % C	C	5	5	5			8.2			25.0			8.5			1479
100 % D	D	5	5	5			8.2			25.0			8.5			1490
Measured/Loaded by:		MF	MF	FW	MF		DAW	MF		DAW	MF		DAW	MF		DAW
Recorded by:		MF	MF	FW	MF		FW	MF		FW	MF		FW	MF		FW

A - wrote pH in control column MF 4/7/98

Investigators' Signatures
Marshall Faircloth
Tyrell Cooper
David Worrington

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample (verified by MF)	Method	Measured by
Field Total Residual Cl2 (mg/L)			<0.01	—	Tim McKelvey
Lab Total Residual Cl2 (mg/L)		<0.03	<0.03	DR-100	DAW
Alkalinity (mg/L as $CaCO_3$)		68	93	Hach	DAW
Hardness (mg/L as $CaCO_3$)		88	281	Hach	DAW
Total ammonia (mg/L as N)		<0.017	<0.017	Orion	FW

Ammonia Control Sample ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: St. Augustine Effluent #7
County: Flagler
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0021938
LIMS Sample #: 317172 **LIMS Job #:** TLH 1998-04-07-11-01
sample log: 4/13/98

Sample Collection: Date 4/6/98 Time 11:30
Test Beginning: Date 4/7/98 Time 1420
Test Ending: Date 4/9/98 Time 13:40
Organism Batch #: 24 **Diluent Batch #:** well H_2O
Organism Age: 12 days
Test Organism: Cyprinella leedsi

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Temperature range: room 24.0-25.0 °C
incubator ~~23.5~~ 25.0-26.5°C MF 9/14/98 wrong incubator temperature
Test Number: 2 of 2
Remarks: D = dead, M = missing

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.6	8.2 @ 25.1 °C	100.7 @ 963 997 @ 1005 @ 25.5 °C 9950 @ 1010.7
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.5 @ 24.6	8.1 @ 25.5 °C	1013 @ 963 995 @ 1005 @ 25.0 °C 9980 @ 1010.7
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.7 @ 24.7	8.2 @ 25.5 °C	100.1 @ 96.3 995 @ 1005 @ 25.1 °C 9970 @ 1010.7

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	E1	5	5	5	7.9	8.1	8.3	24.9	26.5	25.9	8.1	6.9	8.2	255	250	275
Control B	E2	5	5	5	7.9	8.1	8.3	24.8	26.6	25.9	8.1	7.1	8.1	255	265	270
Control C	E3	5	5	5	7.9	8.1	8.3	24.7	25.9	25.9	8.2	6.9	8.1	250	260	270
Control D	E4	5	5	5	7.9	8.2	8.3	24.7	25.8	25.7	8.2	7.3	8.1	255	260	265
100% A	E5	5	5	5	7.5	7.9	8.1	25.5	25.9	25.5	7.8	7.0	8.0	1490	1490	1480
100% B	E6	5	5	5	7.5	7.9	8.1	25.5	26.4	26.2	7.8	7.1	8.0	1495	1540	1555
100% C	E7	5	5	5	7.5	7.9	8.2	25.5	25.3	26.7	7.7	7.3	7.9	1495	1510	1555
100% D	E8	5	5	5	7.5	7.9	8.2	25.6	25.4	25.4	7.7	7.4	7.8	1495	1505	1520
Measured/Loaded by:		FW	DAW	FW	MF	DAW	DAW	MF	DAW	DAW	MF	DAW	DAW	MF	DAW	DAW
Recorded by:		MF	DAW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW

Investigators' Signatures

reviewer form updated 4/01/96

Water Quality Parameters (Verified by MF)	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			<0.01	—	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR-100	DAW
Alkalinity (mg/L as $CaCO_3$):	119		93	HACH	DAW
Hardness (mg/L as $CaCO_3$):	127		281	Hach	DAW
Total ammonia (mg/L as N):	<0.017		<0.017	Orion	FW

Ammonia Meter #98136 Meter Slope: -60.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: <1 ppt

Phytoplankton taxa list and densities (#/mL) for St. Augustine Facility #1, collected via subsurface grabs in the Matanzas River on 7 April, 1998.

	Control Site	Test Site 1	Test Site 2
Bacillariophyceae			
Achnanthes sp.	-	-	15
Amphora sp.	-	8	-
Asterionella sp.	-	139	23
Biddulphia sp.	-	23	8
Chaetoceros sp.	974	-	-
Cocconeis sp.	10	-	15
Corethron sp.	68	-	-
Coscinodiscus sp.	49	23	31
Cyclotella sp.	127	177	108
Cylindrotheca sp.	58	224	39
Entomoneis sp.	10	23	-
Fragilaria sp.	-	-	31
Leptocylindrus sp.	97	15	-
Melosira sp.	-	8	131
Navicula sp.	10	39	-
Nitzschia sp.	78	93	85
Pennales sp.	58	139	77
Rhizosolenia sp.	10	46	8
Skeletonema sp.	234	718	370
Thalassiosira sp.	-	69	15
Thalassiothrix sp.	-	39	15
Chlorophyceae			
Chlamydomonas sp.	19	15	39
Dunaliella sp.	-	-	15
Pediastrum sp.	-	-	8
Pyramimonas sp.	19	-	-
Scenedesmus sp.	-	-	46
Selenastrum sp.	10	-	-
Spermatozoopsis sp.	-	-	8
Tetraedron sp.	-	-	8
Tetraselmis sp.	19	93	54
Tetrastrum sp.	-	-	8
Undetermined Chlorophyceae	-	8	-
Chrysophycea			
Undetermined Chrysophyceae	10	23	-
Cryptophycea			
Chroomonas sp.	29	108	23
Cyanophycea			
Aphanocapsa sp.	-	8	8
Chroococcus sp.	-	8	-
Dactylococcopsis sp.	10	8	69

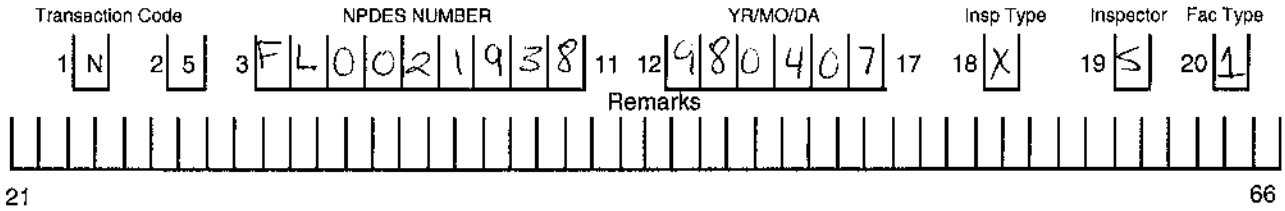
Lyngbya contorta	-	-	8
Dinophyceae			
Undetermined Dinophyceae	-	15	-
Euglenophyceae			
Eutreptia sp.	-	8	-

Benthic macroinvertebrate taxa list for the City of St. Augustine Facility #1, collected via Ponar grab samples in Matanzas River, on 7 April, 1998. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site 1	Test Site 2
Amphipoda			
Acanthohaustorius sp.	139	-	-
Ampelisca sp.	-	56	97
Batea catharinensis	-	-	28
Corophium sp.	-	-	28
Grandidierella bonnieroides	-	-	14
Metharpinia floridana	-	-	56
Monoculodes sp.	28	-	-
Parahaustorius sp.	-	83	-
Protohaustorius deichmannae	139	42	-
Protohaustorius sp.	181	-	-
Synchelidium americanum	14	28	-
Undetermined Haustoriidae	167	42	-
Undetermined Oedicerotidae	97	42	83
Undetermined Phoxocephalidae	14	264	181
Bryozoa			
Undetermined Bryozoa	-	-	28
Cumacea			
Cyclaspis varians	42	-	-
Cyclaspis sp.	42	-	-
Oxyurostylis sp.	125	431	167
Decapoda			
Undetermined Decapoda	-	-	14
Undetermined Penaeidae	42	-	-
Echinodermata			
Amphioplus sp.	-	-	28
Undetermined Ophiuroidea	-	-	14
Isopoda			
Ancinus	-	14	-
Cyathura polita	-	-	42
Nemertea			
Nemertea sp.	14	-	361
Oligochaeta			
Undetermined Oligochaeta	-	-	14
Pelecypoda			
Corbula contracta	-	-	42
Mactra fragilis	-	125	56
Tellina versicolor	-	194	42
Tellina sp.	14	42	472
Undetermined Pelecypoda	-	14	-

Polchaeta			
Aglaophamus verrilli	-	-	56
Apoprionospio sp.	-	14	-
Armandia maculata	-	14	-
Capitella sp.	-	14	1597
Eteone heteropoda	-	-	14
Glycera sp.	14	-	42
Laeonereis culveri	-	-	14
Leitoscoloplos sp.	97	-	-
Malmgreniella sp.	-	-	28
Minuspio sp.	-	-	444
Naineris sp.	-	-	14
Nephtys picta	-	83	56
Nephtys sp.	-	-	28
Phyllodoce sp.	-	-	28
Sigambra tentaculata	-	28	42
Spiophanes bombyx	-	417	97
Streblospio benedicti	-	-	528
Synelmis sp.	-	-	14
Undetermined Ampharetidae	-	-	14
Undetermined Cirratulidae	-	28	14
Undetermined Maldanidae	-	-	42
Undetermined Phyllodocidae	-	-	28
Undetermined Polynoidae	-	-	28
Undetermined Sabellidae	-	-	14
Undetermined Spionidae	-	14	431
Websterinereis tridentata	14	-	-

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)

