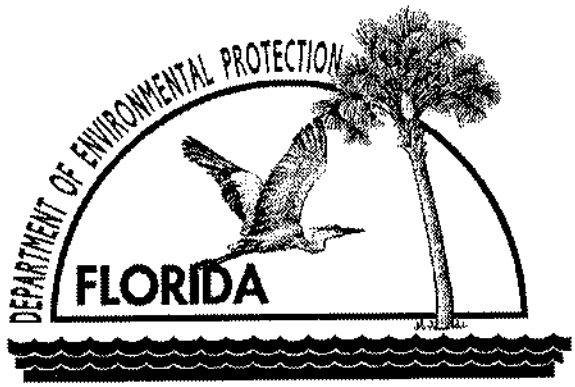
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Biological Assessment of

JEA Northside Generating Station

Duval County

NPDES #FL0001031

Sampled September 1997

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August 1998

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger:	JEA Northside Generating Station
County:	Duval
NPDES Number:	FL0001031
State Permit Expiration Date:	30 September 1999

Toxics Sampling Inspection (XSI)

Date Sampled: 29 September 1997

Results: Several metals were detected in the effluent and influent samples. Iron (320 µg/L) was the only metal detected in the effluent sample at a concentration which exceeded Class III water quality standards of (≤ 300 µg/L) for marine waters, a violation of Rule 62-302.530(39) FAC. No organic constituents were detected in either the effluent or the influent.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 29 September 1997

Results: The effluent was not acutely toxic to the invertebrate, *Americamysis bahia,* or the fish, *Menidia beryllina.*

Impact Bioassessment Inspection (IBI)

Date Sampled: 29 September 1997

Results: Measures of the macroinvertebrate community health indicated 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. Some minor differences in the benthic communitites could be explained by differences in substrate type rather than by effects of the discharge. 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: 29 September 1997

Results: Nutrient concentrations were relatively low in the effluent, and there appeared to be no nutrient increases at the test sites that could be associated with the discharge. Algal growth potential did not exceed the 10 mg dry wt/L problem threshold at any site.

These fifth year inspections provide the necessary information to evaluate the facility's impact on its receiving waters and to provide the basis for specific condition recommendations for permit renewal.

Introduction

The Jacksonville Electrical Authority (JEA) Northside Generating Station, an electric power plant, is located in Duval County, Florida (see maps in Appendix). There are several permitted waste streams at this facility, one continuous outfall into the St. Johns River and two emergency overflows to San Carlos Creek which drains into the St. Johns River. The treatment systems and associated waste-streams include the following: 1) a 827 MGD non-contact, once-through, condenser cooling water system (with chlorination and optional use of a bromide additive for control of biological growth), discharging into the St. Johns River; 2) a 3.0 MGD (design) chemical waste treatment facility, (with two sludge settling ponds and a neutralization system discharging to two evaporation/percolation ponds), with a permitted emergency overflow to San Carlos Creek; 3) a potable water tank overflow discharge to San Carlos Creek, and; 4) the operation of a 0.005 MGD sewage treatment plant (with extended aeration, chlorination, and discharge to a 1,600 gallon holding tank) that discharges into the St. Johns River after commingling with the non-contact, once-through condenser cooling water system.

The permit effluent limits shown in Table 1 are for the waste streams discharging to the St. Johns River only. This includes the non-contact, once-through condenser cooling water system and the sewage treatment system. Discharge to San Carlos Creek from the potable water overflow has not occurred since September, 1996. One of the chemical waste treatment facility evaporation ponds overflowed in March, 1994, at a rate of 0.0012 MGD. In the past year, the facility has had no plant upsets (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 St. Johns River, at the eastern end of Blount Island), test site 1 (50 meters south of the discharge, near the mouth of the San Carlos Creek), and test site 2 (50 meters north of the discharge) (see maps 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.

Algal Growth Potential (AGP) tests were performed using *Dunaliella tertiolecta* for the effluent and marine receiving water sites. Phytoplankton were sampled at both control and test sites via subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities. Benthic macroinvertebrate communities were evaluated at control and test sites. Invertebrates were collected using three replicate petite Ponar grabs. Sediment from control and test sites was analyzed for particle grain size. Acute screening toxicity bioassays, using the mysid shrimp, *Americamysis bahia,* and the fish, *Menidia beryllina,* as test organisms, were performed on the effluent sample. 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

The effluent and influent were analyzed for metals, and nutrient analyses were performed on effluent, control, and test site samples. Methods used for all chemical analyses are on file at the DEP Central Chemistry Laboratory in Tallahassee.

Explanation of Measurements of Community Health

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

Habitat Assessment: Six attributes known to have potential effects on the estuarine biota were evaluated and scored. Based on the sum of these individual scores, overall habitat quality is assigned to one of four categories: Excellent (81-100 points); Good (39-80 points); Fair (25-38 points); or Poor (0-24 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.

Numbers of pollution sensitive taxa: Some organisms become rare or absent as the intensity or duration of disturbance increases.

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

For graphical purposes, the percent differences between the control and test sites involving the number of taxa, the diversity, number of polychaete taxa and percent Pelecypoda are measured as the control site minus test site divided by the control site. The percent differences between sites involving algal density, chlorophyll *a*, algal growth potential, and percent tubificidae are measured as the test site minus control site divided by the control site.

The following personnel were involved in this investigation: Tim McKelvey and Jeff Martin (Northeast District), Jennifer Eichelberger, Ken Espy, Marshall Faircloth, Russel Frydenborg, Joy Jackson, Scott Lashbrook, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, 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, Jan Mandrup-Poulsen, and Michael Tanski, as well as District representatives.

Results and Discussion

This study took place in a high-salinity portion of the St. Johns River during an outgoing tide. The facility is approximately 6 miles from where the river discharges into the Atlantic Ocean. Habitat quality at the control site (87 points) was 18% and 20% higher than test site 1 or 2 (which had 71 and 69 points, respectively). All sites received good to excellent scores for community types present (see Marine Habitat Assessment Sheets in Appendix). The shoreline at the control site was mostly natural, while those of the test sites were largely riprap. Test site 1 was located 50 meters south of the point of discharge (POD), near the mouth of San Carlos Creek, approximately 17 meters from the north bank of the river, with bottom substrate similar to the control site. The depth was approximately 2 to 3 meters. Test site 2 was located approximately 50 meters north of the POD, near the fuel loading docks for the facility, and approximately 10 meters from the north bank of the river. The bottom substrate at test site 2 consisted mainly of mud and muck. There is a large commercial and industrial shipping port across the river from the discharge area that could have an effect on all three stations.

The pH was near neutral at all three sites (Table 1). The salinity ranged from 17.2 ppt at the control site to 16.5 ppt at test site 1 (Table 1). All three sites were adequately oxygenated (ranging from 4.3 to 4.5 mg/L) and similar in clarity (see Physical/Chemical Data Sheets in Appendix).

No organic pollutants were detected in either the combined effluent or the influent samples.

Several metals were detected in the effluent and influent samples (Table 1). In the effluent, copper and barium were detected at levels that complied with Class III water quality standards. Iron (320 mg/L) was detected in the effluent sample at a concentration that exceeded Class III water quality standards (≤ 300 mg/L) for marine waters, a violation of Rule 62-302.530(39) FAC. In the influent sample, aluminum, barium, cadmium, copper, iron, lead, and silver were detected at levels that complied with Class III water quality standards for a marine system.

The sample of effluent was not acutely toxic to the invertebrate, *Americamysis bahia,* or to the fish, *Menidia beryllina,* during the 48-hour bioassays (Appendix).

Nutrient concentrations were relatively low in the effluent, and there appeared to be no nutrient increases at the test sites that could be associated with the discharge (Table 1).

Algal Growth Potential (AGP) values at all three study sites were at or below the 10.0 mg dry wt/L "problem threshold" (Raschke and Schultz 1987) for marine waters (Table 1). The AGP of the effluent was slightly higher with 11.1 mg dry wt/L.

Algal community structure was similar throughout the study area, with all three sites dominated by diatoms. Figure 1 indicates the degree of difference between the control and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean that the test site is better than the control. Although algal density was higher at the control site than at test site 1, the actual values for all three sites were low (Table 2). As expected from the low densities, chlorophyll *a* was undetected at all three sites. Shannon-Weaver diversity was somewhat higher at the control site (3.1) than at test site 1 (2.4) and test site 2 (2.5). The facility did not appear to be causing any

Table 1. Effluent limits and summary of chemistry data.

JEA Northside Generating Station	Effluent Limits	Effluent Sample	Influent Sample	Control Site	Test Site 1	Test Site 2
Organic Constituents (µg/L)						
None Detected	-	-	-	-	-	-
Metals (µg/L)						
Aluminum	≤ 1500 **	500 U	296	-	-	-
Arsenic	≤ 50 **	400 U	40 U	-	-	-
Barium	-	14 I	12.8	-	-	-
Cadium	≤ 9.3 **	0.2 U	0.05 I	-	-	-
Chromium	≤ 50 **	100 U	10 U	-	-	-
Copper	≤ 2.9 **	1.3 I	1.3 I	-	-	-
Iron	≤ 300 **	320	267	-	-	-
Lead	≤ 5.6 **	1.0 I	0.55	-	-	-
Mercury	≤ 0.025 **	0.1 U	0.1 U	-	-	-
Nickel	≤ 8.3 **	70 U	7 U	-	-	-
Selenium	≤ 71 **	500 U	50 U	-	-	-
Silver	≤ 2.3 **	0.5 U	0.08 I	-	-	-
Zinc	≤ 86 **	100 U	10 U	-	-	-
Nutrients (mg/L)						
Ortho-phosphate	-	0.06 A	-	0.067	0.053 A	0.063
Total phosphorus	-	0.12	-	0.13	0.14	0.13
Ammonia	-	0.029 I	-	0.022	0.047 A	0.034
Nitrate+Nitrite	-	0.16	-	0.14	0.1	0.13
TKN	-	0.76	-	0.45 I	0.92	0.64
General Phys-Chem Parameters						
Habitat Assessment	-	-	-	87	71	69
D.O. (mg/L)	-	4.7	-	4.6	4.8	4.3
pH (SU)	-	7.1	-	7.3	6.9	7.1
Conductivity (µmhos/cm)	-	27,714	-	28,167	26,790	27,415
Salinity (ppt)	-	17	-	17.2	16.5	16.7
Temperature (°C)	≤ 40 *	31.9	-	28.6	28.2	28.3
CBOD (mg/L)	60 *b	< 2	-	< 2	< 2	< 2
TSS (mg/L)	60 *b	12	-	11	11	12
Flow (MGD)	Report *	506 c	-	-	-	-
AGP (mg dry wt/L)	-	11.1	-	7.8	10	9.2
Toxicity						
Bioassay Fish	-	Not Toxic	-	-	-	-
Bioassay Invertebrate	-	Not Toxic	-	-	-	-
Microbiology (# organisms/100 mL)						
Fecal Coliforms	200 *a	-	-	-	-	-

* Permit limit
** Class III water quality standard
a - Annual average
b - Daily maximum
c - Average daily maixmum
A - Value reported is the mean of two or more determinations
I - Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit
U - Material analyzed for but not detected; value reported is the minimum detection limit

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

	Control Site	Test Site 1	Test Site 2
Macroinvertebrate Qualitative			
Number of Taxa	15	12	16
Shannon-Weaver Diversity	2.9	2.9	2.8
No. Polychaete Taxa	4	6	9
Community Composition			
% Amphipoda	9	0.0	28
% Cumacea	4	0.0	0.0
% Decapoda	2	0.0	1
% Gastropoda	4	0.0	1
% Mysidacea	13	2	1
% Pelecypoda	9	10	2
% Polychaeta	53	69	43
% Tubificidae	0.0	12	25
% Other	6	7	0.0
Functional Feeding Groups			
% Browser-grazers	5	0.0	14
% Burrowing Deposit Feeders	47	69	27
% Predators/Carnivores	6	8	10
% Scavengers	5	0.0	14
% Surface Deposit Feeders	3	7	15
% Suspension Feeders	29	15	18
% Unknown	5	1	2
Phytoplankton Algae			
Number of Taxa	18	13	13
Shannon-Weaver Diversity	3.1	2.4	2.5
Chlorophyll a (µg/L)	0.88 U	0.94 U	0.94 U
Algal Density (#/mL)	1,011	653	1,083
% Blue-green	12	4	0.9
% Diatoms	87	93	91
% Green	1	2	6
AGP (mg dry wt/L)	7.8	10	9.2

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

negative effects on the algal communities in the study area.

Quantitative measures of benthic macroinvertebrate community health indicated no significant degradation at the test sites. Figure 2 indicates the degree of difference between the control and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean that the test site is better than the control.

Macroinvertebrate taxa richness was similar between the control site (15 taxa) and test site 2 (16 taxa) (Table 2). There was, however, a 20% decrease in taxa richness at test site 1 (12 taxa). Shannon-Weaver diversity was similar among the three stations, ranging from 2.8 to 2.9 (Table 2). The number of polychaete taxa at the control site (4 taxa) was 33% lower than test site 1 (6 taxa) and 56% lower than test site 2 (9 taxa). Although test site 1 and the control site were dominated by the pollution-tolerant polychaete, *Capitella capitata,* (making up 33% and 45% of the community, respectively), these sites also contained a number of pollution-sensitive organisms such as the mysid shrimp, *Americamysis bahia* and *Bowmaniella* sp., and the pelecypod, *Mactra fragilis*. Similarly, test site 2, which was located closest to the discharge, was dominated by the

somewhat pollution-tolerant amphipod, *Grandidierella bonnieroides* (27% of the community), yet contained several pollution-sensitive taxa such as the mysid shrimp, *Bowmaniella* sp., and the polychaetes, *Leitoscoloplos fragilis* and *Parahesione luteola*. Tubificids (normally considered indicators of pollution) were present at both test sites and absent from the control site. Tubificids made up 24% of the community at test site 2 and 12% of that at test site 1. Because tubificids were absent from the control site, no graphical comparisons showing percent difference were made between the stations.

Sediments at the control site and test site 1 consisted mostly of sand, mud, and shell, while test site 2 was mostly organic muck. Consistent with this, the sediment particle sizes were very similar at the control site and test site 1 (with 66% and 79% of the substrate consisting of particles ranging from 0.125 mm-0.25 mm, respectively), while sediments at test site 2 were, on the whole, much smaller (with 62% less than 0.063 mm).

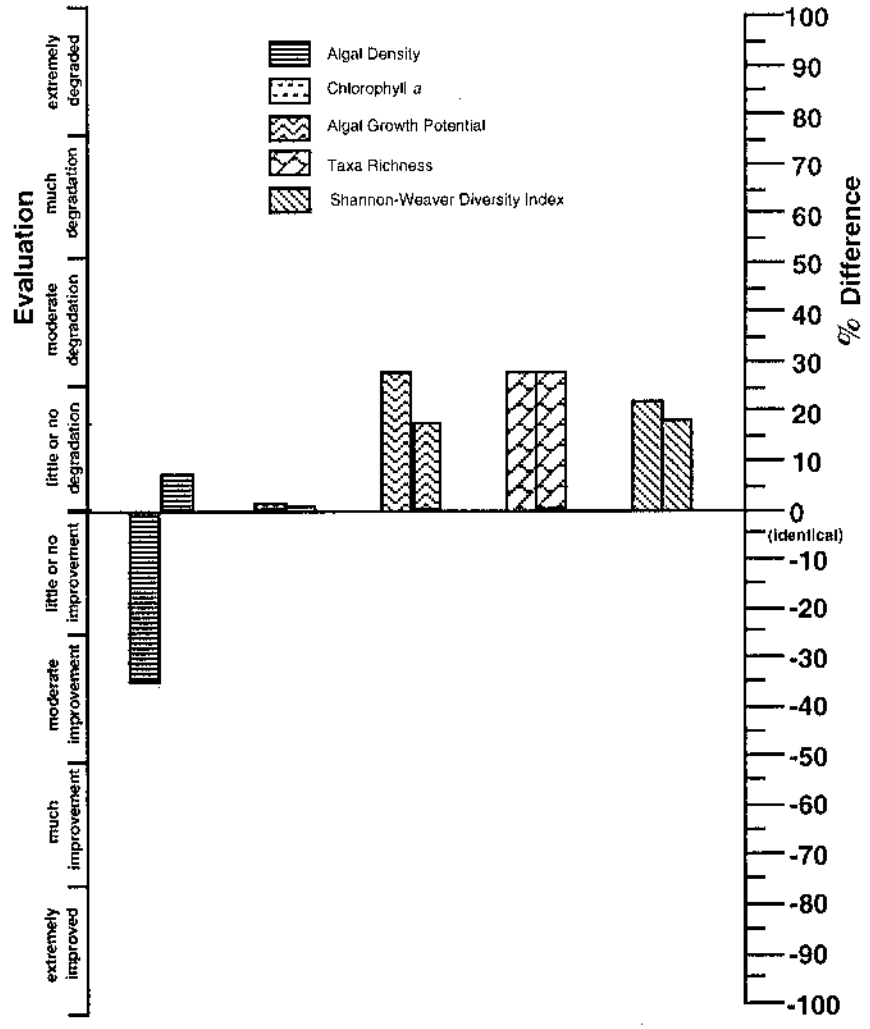


Figure 1. Effect of discharge on the phytoplankton community.

Conclusions

No organic pollutants were detected in either the effluent or the influent samples.

Although several metals were detected in the effluent and influent samples, only iron (320 mg/L) was detected in the effluent at a level that exceeded Class III water quality standards, a violation of Rule 62-302.530(39) FAC.

The sample of effluent was not acutely toxic to the invertebrate, *Americamysis bahia,* or to the fish, *Menidia beryllina,* during the 48-hour bioassays.

Nutrient concentrations were relatively low in the effluent, and there appeared to be no nutrient increases at the test sites that could be associated with the discharge. Algal growth potential did not exceed the 10 mg dry wt/L problem threshold at any site.

The algal community throughout the study area appeared to be healthy, with low algal density and good diversity. The discharge did not appear to be having any adverse effects on the algal community.

Quantitative measures of the benthic macroinvertebrate community health indicated no significant degradation at the test sites. Pollution-tolerant and pollution-sensitive organisms were found at all three sites, with test site 2 and the control site containing several "good water quality indicators". The facility does not appear to be having a negative effect on the macroinvertebrate community.

Literature Cited

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.

Weber, C. I. 1991. 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.

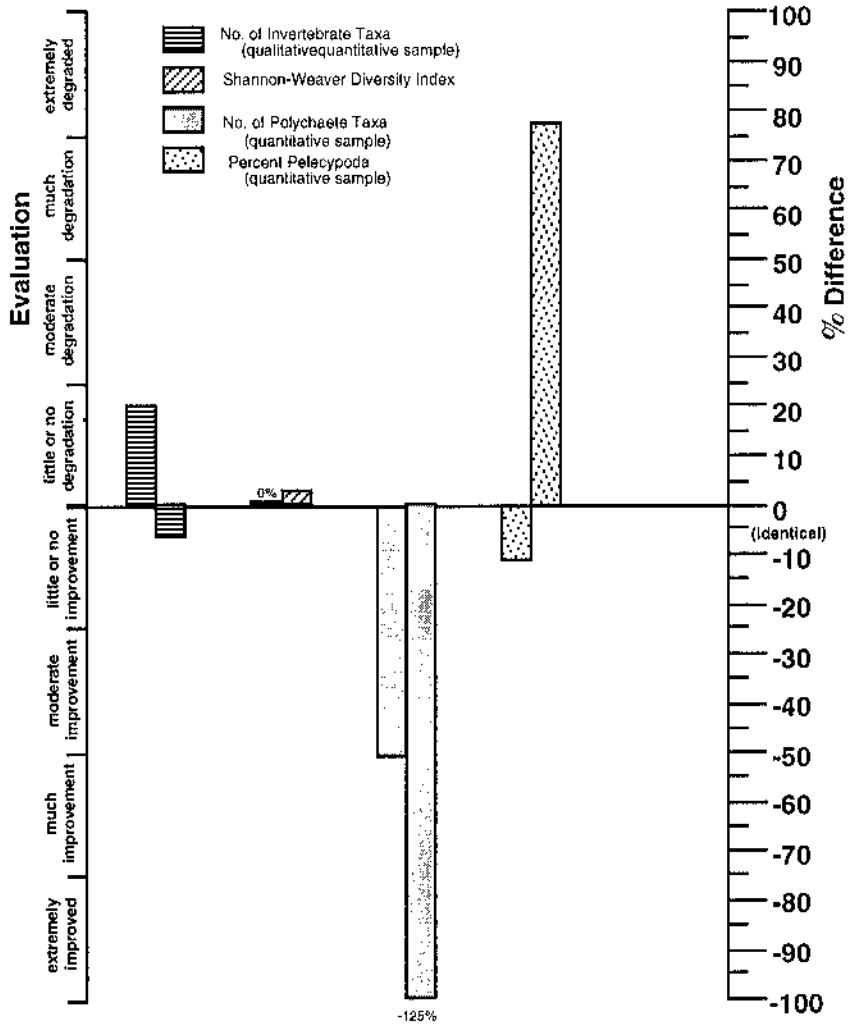


Figure 2. Effect of discharge on the benthic macroinvertebrate community

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

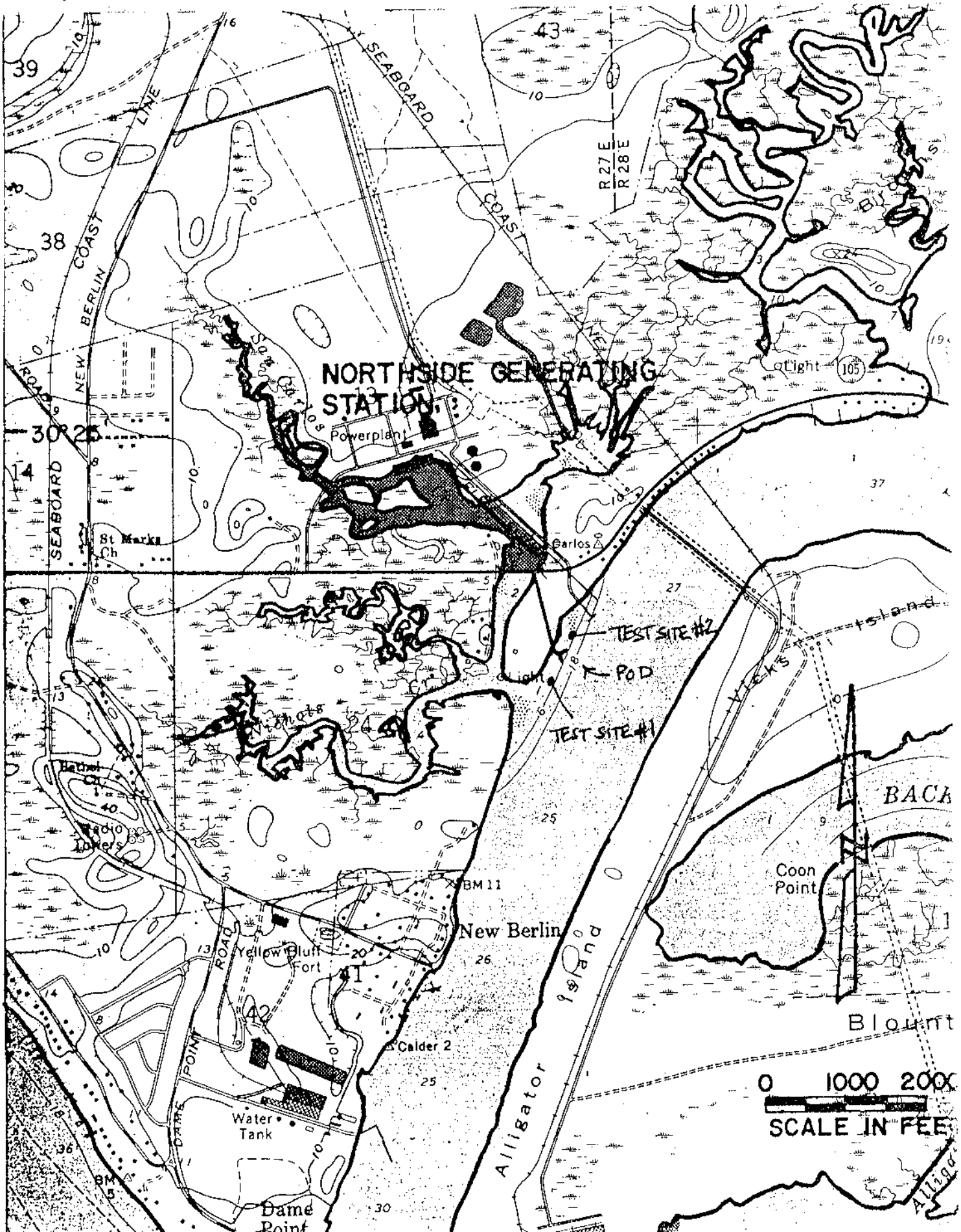
Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
STREAMS (1617 stations)											
Phytoplankton Chlorophyll *a*	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	48.70
Periphyton Chlorophyll *a*	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85
H-D Diversity	0.84	2.12	2.48	2.74	2.88	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
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-Phosphate	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-Phosphate	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

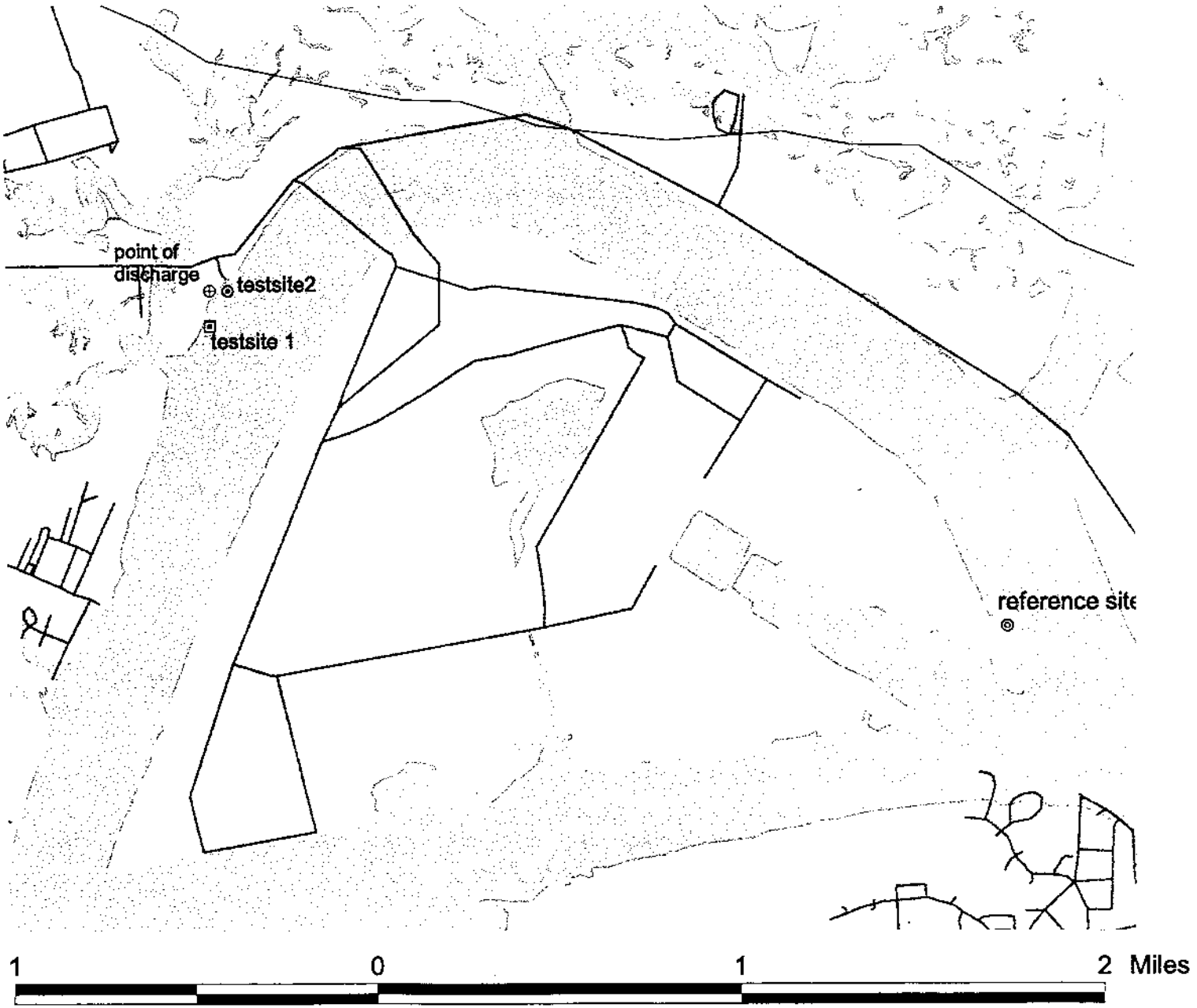
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OUTFALL AND TEST SITES

JEA NORTHSIDE FYIS



JEA Northside FYI5



State of Florida
Department of Environmental Protection
Facility Summary

Facility Name: JEA - Northside Generating Sta.	**Prepared By:** Teresa Valdespino **Date:** 9/25/97

Location: (See Attached Map)	**County:** 16 - Duval	**District:** Northeast

Federal Permit No.: FL0001031 **Expiration Date:** 9/30/99	**State GMS #:** 3116M00199 **State Expiration Dates:** 10/8/97 and 4/21/98	**Facility Type:** Industrial

Function of Facility: Electric Generating Station

Description of treatment process: There are several waste streams at this facility with one continuous outfall into the St. Johns River and two emergency overflows to the San Carlos Creek. The waste streams are as follows: 1) Operation of a 827 MGD non-contact once-through condenser cooling water system with chlorination, sodium hypochlorite addition and optional use of bromide additive for biological growth control, with discharge to the St. Johns River; 2) the operation of a 3.0 MGD (design) Chemical Waste Treatment Facility (CWTF) consisting of two lined surge basins, a lime injection and flocculation system, two sludge settling ponds and a neutralization system with discharge to two evaporation/percolation ponds with a permitted emergency overflow to San Carlos Creek; 3) a Potable Water (PW) storage tank overflow discharged to San Carlos Creek; and, 4) the operation of a Sewage Treatment Plant consisting of a 0.005 MGD extended aeration system with chlorination discharging to a 1,600 gallon wetwell (holding tank) and final discharge to the St. Johns River after commingling with the non-contact once-through condenser cooling water system.

Receiving Waters: St. Johns River	**Classification:** Class III
Design Flow: 827 MGD	**Actual Mean Flow: (From DMR's of January 1996 to April 1997)**
(Design Flow reported is for the discharge to the St. Johns River only. Discharge to the San Carlos Creek from the PW overflow has not occurred since 9/96 of which they only monitor flow, and only one of the CWTF evap. ponds overflowed which occurred in 3/94 at a rate of 0.0012 MGD.	356 MGD Average Monthly Average 506 MGD Average Daily Maximum

Discharge is: Continuous * Intermittent Seasonal Rainfall Dependent Other

Facility Mixing Zone Details: no mixing zone

List effluent limits:

PARAMETER	LIMIT (unit)	Describe special permit conditions:
Non-Contact Cooling Water		**The effluent limits described here are for the waste streams discharging to the St. Johns River ONLY! This includes the non-contact once-through condenser cooling water system (827 MGD) and the sewage treatment plant (0.005 MGD).**
Flow	Report (MGD)	
Effluent Temperature	104 (deg F, max) 40°C	
Temperature Rise	19 (deg F, max)	
TRO	0.10 (mg/l, max)	
Time of Chlorina'n	**120 (minutes, max)**	
Intake Temperature	**Report (deg F)**	
Acute Toxicity		

Sewage Treatment Plant Flow	Report (MGD)	
CBOD (Ann Avg.)	20 (mg/l)	
CBOD (Mo. Avg.)	30 (mg/l)	
CBOD (Weekly Avg)	45 (mg/l)	
CBOD (Daily Max)	60 (mg/l)	
TSS (Ann Avg.)	20 (mg/l)	
TSS (Mo. Avg.)	30 (mg/l)	
TSS (Weekly Avg.)	45 (mg/l)	
TSS (Daily Max)	60 (mg/l)	
Fecal Coliform (Annual Avg.)	200 #/100ml)	
Fecal Coliform (Weekly Avg.)	800 (#/100ml)	

Description of permitted outfall:
Final discharge is from the pipeline, commingling with the discharge from St. Johns River Power Park and then through a submerged diffuser into the St. Johns River.

List permit violations (MOR data) and plant upsets that occurred at the plant within the past year:
none

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:
none

Additional Information: none.

JEA NORTHSIDE Generating Station FYI5 - September 29, 1997

Plant Inspection by Teresa Valdespino, Engineer II, Industrial Waste Section.
Sampling done by Tim McKelvey, ES III, Domestic Waste Biologist, assisted by Jeff Martin, PE, NPDES Program Supervisor and Margaret Walsh, JEA Environmental Section.

FIELD NOTES and OBSERVATIONS:

Test Site #1: Located approximately 50 yards west of the POD, near the mouth of San Carlos Creek. Approximately 50 feet from the north bank of the river. Depth was approximately 7-9 feet. The bottom substrate consisted of mud and sand with some shell and detritus. It was noted that there was also a fibrous material in the sample, almost like cotton fibers or something similar. There is a large commercial and industrial shipping port across the river from this and the second test site. On the north bank where the test sites are located there is a natural shoreline and a riparian zone that remains unaffected by the development along the road. However, across the river on the Port of Entry island, Blount Island, there is a large portion of the shoreline covered by riprap. The tide was falling at the time of sampling, so this site was not being directly influenced by the effluent outfall.

Test Site #2: Located approximately 50 yards east of the POD, near the fuel loading docks for the facility. Approximately 30 feet from the north bank of the river. Depth was approximately 9-11 feet. The bottom substrate consisted of a heavy, black silt and muck mixture that had an anaerobic smell. Again, as in the first test site, there was a fibrous material in the sediment after all the silt had been sieved out. It was thick and black and would not readily sieve through a 30 mesh size screen bucket. Felt oily to the touch although not a definite petroleum odor. At this site it was noted there was a great number of bubbles rising continuously to the surface, possibly caused by some de-nitrification in the bottom muck. This had not been noted at the first test site. The site is in an area where the ships that carry the fuel oil for the facility are moored while unloading. At the time of sampling the tide was falling and this site was directly affected by the effluent outfall.

Reference Site: Located as far as possible from any outfall in this portion of the river, but had to remain in this back river area to be somewhat comparable to the test sites. It was located at the eastern end of Blount Island, Port of Entry for Jacksonville. Both test sites were located on the northern shore of the river but, the northern shoreline of this portion of the river was heavily riprapped and all residential. Not very comparable to the riparian and

shoreline or use of the two test sites. The site chosen was along the shoreline of the island that there were more similarities. In actuality, all that was done between the sites was to swap sides of the river. The sampling depth was slightly less due to the dredging in this area that created such a drop off the depth of sampling would have been too great. Additionally, the dredging exposed rock when the sand layer was removed, making this impossible to sample by Petite Ponar. The bottom in this area of sampling was primarily sand with some shell and detritus, no mud. The sampling depth was approximately 3-5 feet.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: DEP	STORET STATION NUMBER:	DATE (M/D/Y): 9-29-97	TIME 1445	RECEIVING BODY OF WATER: St. Johns River

REMARKS: falling tide	COUNTY: DUVAL	LOCATION: eastern shore eastern most tip of Blount Island.	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)
				50	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: 5 — *List & map dominant vegetation on back*

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

m wide

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

Artificially Channelized ☑ no ☐ 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)

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	100%	3	ponar
Aquatic Vegetation				Other: gravel			
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):	salinity		Secchi (m):
Top								1.3
Mid-depth	4.0	28.6	7.3	4.6	28167	17.2		
Bottom	6.0							

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:
hard to sample rock on bottom where dredged, had to sample in sand closer to shore.

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

SAMPLING TEAM: Tim McKelvey / Jeff Martin

SIGNATURE: Tim McKelvey

DATE: 9/29/97

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:	DATE (MO/YR): 9/29/97	RECEIVING BODY OF WATER: St. Johns River
REMARKS: SAND OR ROCK bottom.	LOCATION: eastern shore of Blount Island 1000 yds from main River, Fulton Cut		FIELD NAME: Reference Site

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 — 45	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, [redacted] 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 — 3	>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 — 9	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. 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 — 12	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

Boat ground unaltered manmade altered shore

TOTAL SCORE 87

COMMENTS: sand bottom closer to shoreline, rock out from shoreline.

ANALYSIS DATE: 9-29-97	ANALYST: Tim McKelvey	SIGNATURE: Tim McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030646	DATE (M/D/Y): 9/29/97	TIME: 1315	RECEIVING BODY OF WATER: ST. JOHNS RIVER

REMARKS: OUTGOING TIDE	COUNTY: DUVAL	LOCATION: 150 yds WEST OF POD	FIELD ID/NAME: TEST SITE #1

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)
0	0	0	0	10	60	30	0

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: 10M

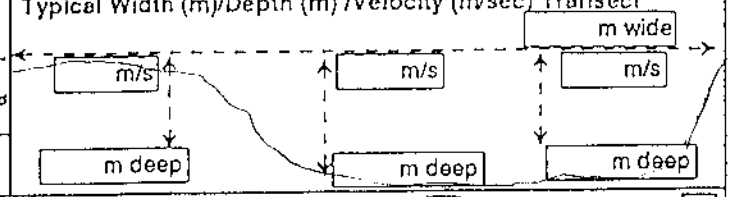
List & map dominant vegetation on back

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

Artificially Impounded ☑ ~~yes~~

High Water Mark: 0.5 (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/Shell	100	3	PONAR
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):	Salinity		Secchi (m):
Top	0							1.0
Mid-depth	4.5	28.2	6.9	4.8	26790	16.5		
Bottom	9'							

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

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

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

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

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

Weather Conditions/Notes: Sunny, breezy at 5-15 from N.E., falling tide.

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey / Jeff Martin / Margaret Walsh	Tim McKelvey	9/29/97

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

SUBMITTING AGENCY CODE: 805T / SUBMITTING AGENCY NAME: JAX-JAX	STORET STATION NUMBER: 20030646	DATE (M/D/Y): 9/29/97	RECEIVING BODY OF WATER: St. JOHN'S RIVER
REMARKS: FALLING TIDE	LOCATION: 50 YDS WEST OF POD, ON NORTH BANK NEAR SAN CARLOS CREEK	FIELD ID/NAME: TEST SITE #1	

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 8	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: 38	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: 3	>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: 5	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. (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: 8	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. (8)11 points + SOME SHELL	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 71

COMMENTS: between back of POD and mouth of San Carlos creek.

ANALYSIS DATE: 9-29-97	ANALYST: Toni McKelvey	SIGNATURE: Toni McKelvey

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NERRJAX	STORET STATION NUMBER:	DATE (M/D/Y): 9-29-97	TIME: 1410	RECEIVING BODY OF WATER: ST. JOHNS RIVER

REMARKS: falling tide	COUNTY: DUVAL	LOCATION: 50 yard east of POD, west of fuel docks, 30 ft from North bank	FIELD ID/NAME: TEST SITE #2

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	60	30	

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: 18m

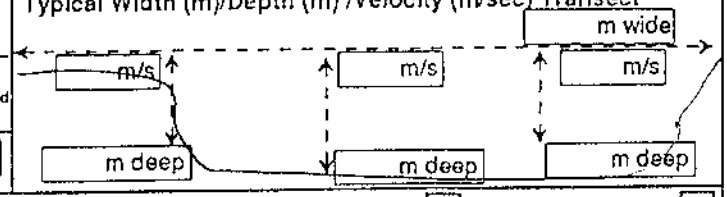
List & map dominant vegetation on back

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



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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt	100%	3	PONAR
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):	Salinity		Secchi (m):
Top								0.9 – 1.0
Mid-depth	4'	28.3	7.1	4.3	27415	16.7		
Bottom	8'							

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

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

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

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

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

Weather Conditions/Notes: Sunny, breeze from NE @ 5-15

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

SAMPLING TEAM:	SIGNATURE:	DATE:
TM McKelvey / Jeff Manton	Tim McKelvey	

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

1410

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: NERD JAX	STORET STATION NUMBER:	DATE (M/D/Y): 9/29/97	RECEIVING BODY OF WATER: St. John's River

REMARKS: outgoing tide, site impacted by effluent at surface

LOCATION: ~~Eastern tip of [illegible] Island~~ 150 yards east of POD, west of fieldocks

FIELD NAME: TEST SITE #2

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations 8	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 38	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 3	>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 8	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. (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. (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 3	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 w/ fibrous material

TOTAL SCORE 69

COMMENTS: ~~nitrogen~~ nitrogen (?) bubbles coming up from bottom.

ANALYSIS DATE: 9-29-97	ANALYST: Tim McKelvey	SIGNATURE: Tim McKelvey

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: JEA - Northside
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0001031
LIMS Sample #: 193178 LIMS Job #: 97-Sep-30-23
sample log: 10297 KR
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Temperature range: room N/A
incubator 25.0 26.0 °C
Test Number: 1 of 2
Remarks: D = dead, M = missing

Sample Collection: Date 9-29-97 Time not received
Test Beginning: Date 9-30-97 Time 15:15
Test Ending: Date 10-2-97 Time 1515
Organism Batch #: 269 Diluent Batch #: 16 ASW
Organism Age: 4 days
Test Organism: Americamysis bahia

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 | 24.3 @ 24.3 | 8.4 @ 24.0 °C | 106.5 @ 101.6 | 1001 @ 1005 @ 25.0 °C (1004 on 10044)
24 hr 7.0 @ 7.0, 9.0 @ 9.0 | 24.4 @ 24.5 | 8.1 @ 25.6 °C | 105.1 @ 101.4 | 1009 @ 1005 @ 25.2 °C (10044 on 10044)
48 hr 7.02 @ 7.0, 9.0 @ 9.0 | 23.5 @ 23.6 | 8.1 @ 25.4 °C | 1035 @ 1036 | 1004 @ 1005 @ 25.2 °C (10050 @ 10044)

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	B1	5	5	5	8.3	8.3	8.3	25.3	25.9	24.6	7.1	6.7	6.6	26.2	27.9	27.4
Control B	B2	5	5	5	8.3	8.3	8.3	25.2	25.6	24.6	7.1	6.7	6.6	26.4	27.2	27.1
Control C	B3	5	5	5	8.2	8.3	8.3	25.2	25.1	24.5	7.2	6.8	6.7	26.4	26.9	27.0
Control D	B4	5	5	5	8.3	8.3	8.3	25.2	24.5	24.5	7.2	6.8	6.6	26.1	26.8	27.1
100% A	B5	5	5	5	7.8	8.0	8.0	24.7	25.2	25.2	7.0	6.8	6.8	27.3	28.4	29.0
100% B	B6	5	5	5	7.8	8.0	8.0	24.6	25.1	24.8	7.0	6.8	6.7	27.3	28.0	28.2
100% C	B7	5	5	5	7.8	8.0	7.9	24.6	24.4	24.7	7.0	6.8	6.8	27.3	27.7	28.2
100% D	B8	5	5	5	7.8	8.0	7.9	24.6	25.5	24.6	7.0	6.8	6.7	27.2	28.6	28.4
Measured/Loaded by:		ND	MF	TK	MF	MF	DW	MF	MF	DW	MF	MF	DW	MF	MF	DW
Recorded by:		DW	MF	TK	DW	KR	TK	DW	KR	TK	DW	KR	TK	DW	KR	TK

Investigators' Signatures
Marshall Faircloth
Kellie Ralston
Tina Kesler

Water Quality Parameters verified by MF

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	—	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	KR
Alkalinity (mg/L as $CaCO_3$):	155		85	Hach	ND
Hardness (mg/L as $CaCO_3$):	—		—	—	—
Total ammonia (mg/L as N):	0.94		<0.01	Orion	MF/KR

Ammonia Ammonia Ammonia Blank: <0.01 (corrected value 10/2/97 MF)
Meter #98136 Meter Slope: 56.2
Control Salinity: 16.4 ppt
Sample Salinity: 16.4 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: JEA - Northside
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0001031
LIMS Sample #: 193178 LIMS Job #: 97-Sep-30-23
sample log: 10290KR

Sample Collection: Date 9-29-97 Time not received
Test Beginning: Date 9-30-97 Time 1515
Test Ending: Date 10-2-97 Time 1515
Organism Batch #: 38 Diluent Batch #: 16 Aug
Organism Age: 13 days
Test Organism: Mendia beryllina

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Temperature range: room N/A
incubator 25.0 - 26.0°C
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	24.3 @ 24.3	4.4 @ 24.0°C	1065 @ 101.6 1001 @ 1005 @ 25.0 °C 1000 @ 1004
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.4 @ 24.5	8.1 @ 25.6°C	105.1 @ 106 1007 @ 1005 @ 25.2 °C 1000 @ 1004
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.6	8.1 @ 25.4 °C	103.5 @ 106 1000 @ 1004 1004 @ 1005 @ 25.2 °C 1000 @ 1004

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	B13	5	5	5	8.3	8.3	8.3	25.2	24.2	24.7	7.4	6.8	6.9	26.6	26.5	27.0
Control B	B14	5	5	5	8.4	8.3	8.3	25.2	24.3	24.9	7.4	6.8	6.9	26.6	26.6	27.4
Control C	B15	5	5	5	8.4	8.3	8.3	25.2	24.5	24.6	7.4	6.8	6.8	26.6	26.7	27.1
Control D	B16	5	5	5	8.4	8.3	8.3	25.2	24.4	24.5	7.4	6.8	6.8	26.6	26.7	27.2
100% A	B17	5	5	5	7.8	7.9	8.0	24.6	24.2	24.5	7.0	6.9	6.8	27.2	27.5	28.1
100% B	B18	5	5	5	7.8	7.9	8.0	24.6	24.3	24.5	6.9	6.9	6.8	27.2	27.7	28.1
100% C	B19	5	5	5	7.8	7.9	8.0	24.6	24.4	24.5	6.9	6.9	6.8	27.2	27.6	28.0
100% D	B20	5	5	5	7.8	7.9	8.0	24.6	24.3	24.7	6.9	6.9	6.9	27.3	27.8	28.5
Measured/Loaded by:		ND	KR	DW	MF	MF	DW	MF	MF	DW	MF	MF	DW	MF	MF	DW
Recorded by:		DW	KR	TK	DW	KR	TK	DW	KR	TK	DW	KR	TK	DW	KR	TK

Investigators' Signatures

reviewer form updated 4/01/96

Salt Water
Well Water | 20% Min Water

Water Quality Parameters verified by MF

	Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	—	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	KR
Alkalinity (mg/L as $CaCO_3$):	155		85	Hach	ND
Hardness (mg/L as $CaCO_3$):	—		—	—	—
Total ammonia (mg/L as N):	0.94		<0.017	Orion	MF/KR

Ammonia Meter #98136 Ammonia Meter Slope: -56.2 Ammonia Blank: <0.017 Control Salinity: 16.4 ppt Sample Salinity: 16.4 ppt

Phytoplankton taxa list and densities (#/mL) for JEA Northside Generating Station, collected via subsurface grabs in the St. Johns River, on 29 September, 1997.

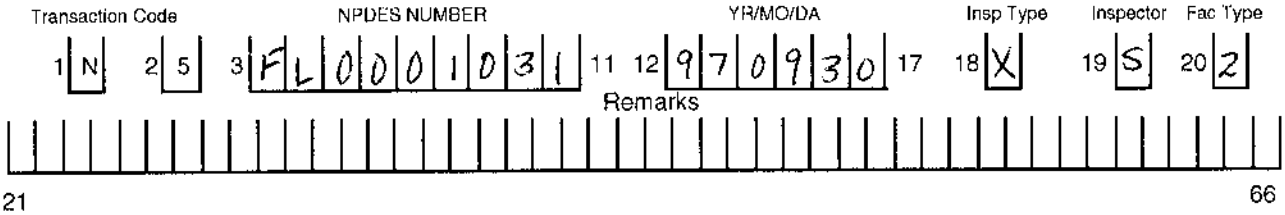
	Control Site	Test Site 1	Test Site 2
Bacillariophycea			
Achnanthes sp.	22	7	-
Biddulphia sp.	-	7	-
Chaetoceros sp.	-	7	19
Cocconeis sp.	4	-	-
Coscinodiscus sp.	27	22	39
Cyclotella sp.	54	79	164
Cymbella sp.	220	-	-
Diploneis sp.	13	14	10
Epithemia sp.	4	-	-
Gomphonema sp.	31	-	-
Gyrosigma sp.	-	-	10
Hemianlus sp.	-	-	19
Mastogloia sp.	4	-	-
Navicula sp.	-	-	19
Neidium sp.	4	7	10
Nitzschia sp.	13	230	300
Skeletonema sp.	225	158	309
Synedra sp.	-	7	10
Undetermined Centrales	-	29	-
Undetermined Diatomaceae	31	-	-
Undetermined Pennales	220	43	97
Chlorophycea			
Crucigenia sp.	-	7	-
Oedogonium sp.	9	-	-
Scenedesmus sp.	4	-	19
Undetermined Chlorophyceae	-	7	48
Cyanophyceae			
Anabaena sp.	27	-	-
Aphanothece sp.	-	-	10
Dactylococcopsis sp.	-	22	-
Gloeocapsa sp.	13	7	-
Merismopedia sp.	13	-	-
Oscillatoria sp.	67	-	-

Benthic macroinvertebrate taxa list for JEA Northside Generating Station, collected via Ponar grab samples in St. John's River, on 29 September, 1997. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site 1	Test Site 2
Actiniaria			
Undetermined Actiniaria	14	14	-
Amphipoda			
Grandidierella bonnieroides	14	-	556
Melita sp.	56	-	-
Cirripedia			
Undetermined Thoracica	14	-	-
Cumacea			
Cyclaspis varians	28	-	-
Decapoda			
Rhithropanopeus harrisii	14	-	-
Undetermined Alpheidae	-	-	14
Gastropoda			
Leucozonia sp.	28	-	-
Polinices duplicatus	-	-	14
Mysidacea			
Americmysis bahia	97	-	-
Bowmaniella sp.	-	14	14
Nemertea			
Tubulanus sp.	28	-	-
Undetermined Nemertea	-	28	-
Pelecypoda			
Abra aequalis	-	14	-
Corbula contracta	-	-	28
Lyonsia sp.	42	-	-
Mactra fragilis	28	-	-
Tellina versicolor	-	42	14
Undetermined Semelidae	-	14	-
Polychaeta			
Armandia sp.	14	-	-
Capitella capitata	264	125	28
Capitella sp.	83	97	-
Leanira sp.	-	-	28
Leitoscoloplos fragilis	-	-	14
Magelona sp.	-	28	-
Mediomastus californiensis	-	125	-
Mediomastus sp.	-	42	-
Minuspio sp.	-	-	292
Parahesione luteola	-	-	14
Paraprionospio pinnata	-	28	42
Polydora sp.	-	-	14
Sigambra tentaculata	-	14	167

Streblospio benedicti	28	14	264
Undetermined Nereidae	14	-	-
Tubificidae			
Undetermined Tubificidae	-	83	486

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)

