

Biological Assessment of

Scholz Generating Plant

Jackson County, Florida

NPDES #FL0002283

Sampled August 28, 1990

November 1990

Biology Section
Division of Administrative and Technical Services

Introduction

Biological, chemical, and toxicological data concerning the Scholz Power Plant discharge were collected on 28 August 1990 and analyzed. This information will be used to evaluate the facility's permit criteria. The Scholz Power Plant is located near Sneads, Jackson County, Florida. This coal fired steam electricity generating facility has a capacity of 98 megawatts and an average flow of 84.8 MGD. Effluent from the Scholz facility is discharged to the Apalachicola River and consists of non-contact cooling water (001), metal cleaning wastes and ash pond discharge (002), boiler blowdown (004), and construction runoff (006).

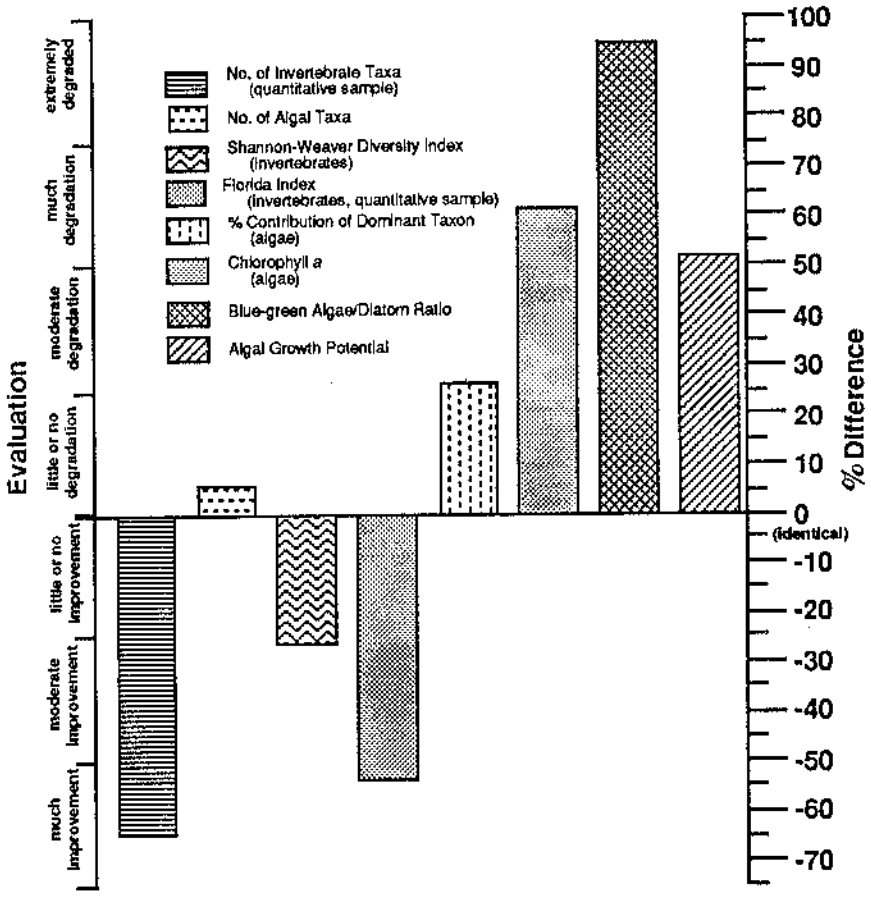
In 1982, the plant experienced a pH control problem during periods of heavy rain (pH in the ash pond exceeded the permitted range on three occasions). These problems were abated by increasing retention time and caustic treatments. Iron concentrations were found above permit limitations in 1982 and 1983. Aside from these problems, no major permit violations are on record for the Scholz Plant.

In December of 1985, the DER Biology Section performed static acute bioassays on this facility using *Daphnia pulex* and *Notropis leedsi* as test organisms. The effluent was not acutely toxic to either animal.

The following personnel were involved in this investigation: Lyn Burton, Russel Frydenborg, Kathleen Lurding, and Sandra McClure (Tallahassee Central Biology Laboratory).

Major characteristics of community structure of control and test sites.

	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	52	34
Florida Index	20	14
% Contribution of Dominant Taxon	45.5	42.1
% Oligochaeta	1.8	2.9
% Diptera	86.1	80.5
% Ephemeroptera	0.8	0
% Pelycepoda	6.6	13.6
% Gastropoda	1.9	1.1
% Coleoptera	1.3	0.8
% Other	1.5	1.1
% Predators	27.9	8.7
% Collector-Gatherers	33.1	40.0
% Collector-Filterers	15.2	37.1
% Scrapers	2.7	2.7
% Shredders	21.1	11.5
Macroinvertebrate Hester-Dendy		
Number of Taxa	20	33
Florida Index	13	20
Shannon-Weaver Diversity	3.0	3.8
% Diptera	34.1	42.3
% Ephemeroptera	33.0	29.9
% Trichoptera	26.1	13.3
% Gastropoda	4.1	9.8
% Malacostraca	1.2	0.7
% Odonata	0.4	2.9
% Other	1.1	1.1
% Predators	9.1	17.2
% Collector-Gatherers	37.5	38.7
% Collector-Filterers	34.0	25.0
% Scrapers	18.1	15.2
% Shredders	1.3	3.9
Periphyton Algae		
Number of Taxa	16	15
% Contribution of Dominant Taxon	42.3	53.3
Chlorophyll a (mg/mm^2)	12.9	20.8
Blue-green/Diatom Abundance Ratio	0.06	1.28
% Blue-green	5.5	56.1
% Green	4.5	0
% Diatoms	90.0	43.9
Algal Growth Potential (mg dry wt/l)	4.1	6.2



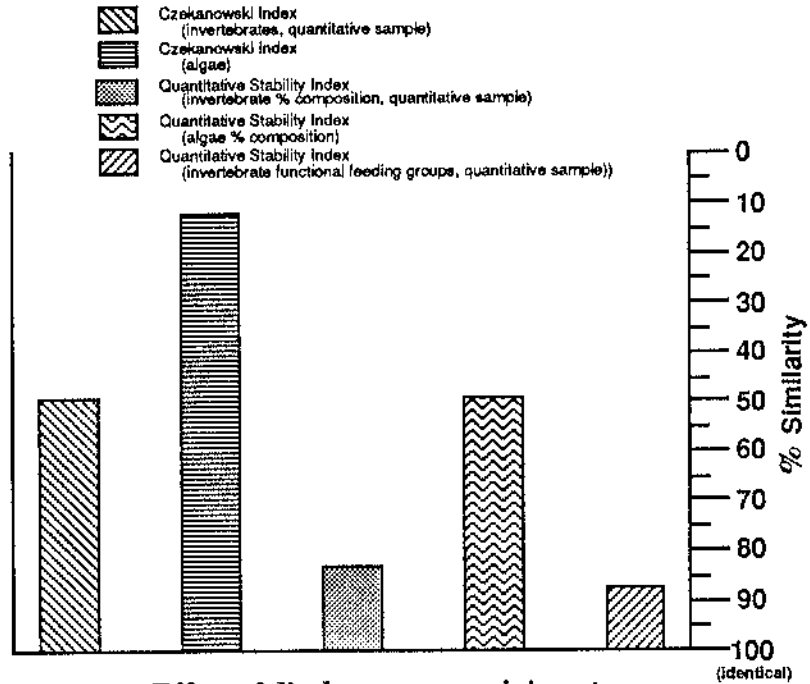
Effect of discharge on receiving stream
(measured as difference between control and test sites).

(Peltier and Weber 1985, FDER 1985). The effluent was also analyzed for organic constituents (base neutrals, acid extractables, and pesticide extractables) and metals. Additionally, nutrient analyses were performed on reference and test sites. Methods used for all chemical analyses are on file at the Tallahassee DER Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at the reference and test sites. Collection methods consisted of a timed (one hour per site) multi-substrate (e.g, snags, vegetation, sediment) semi-quantitative effort. Additional invertebrate collections were accomplished using Hester-Dendy multiplate samplers which were incubated for 28 days (Ross 1990). Periphyton was sampled at both reference and test sites by incubating glass microscope slides in a standard periphytometer for 28 days (Ross 1990). Chlorophyll *a* was also determined for periphyton communities (Ross 1990). Bacterial populations were

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 Apalachicola River upstream of the Scholz outfall) and a test site (the area just downstream of the discharge). A habitat assessment was performed *in situ* to establish comparability between sites (Appendix). Supplemental physical/chemical data were also collected on the effluent and study sites (Appendix). Acute screening toxicity tests using *Ceriodaphnia dubia* and *Notropis leedsi* as test organisms were performed on an effluent sample



Effect of discharge on receiving stream
(measured as similarity between control and test sites).

analyzed for total and fecal coliform bacteria following the methods of APHA (1989). Algal Growth Potential tests, using *Selenastrum capricornutum* as the test organism, followed Miller *et al.* (1978). Sediment from the reference and test sites was analyzed for grain size and percent organic matter (Ross 1990).

Explanation of Measurements of Community Health

Several different measurements of macroinvertebrate and algal community health have been employed. Many of these, such as the number of taxa, Shannon-Weaver Diversity Index, and chlorophyll *a* are well known. Others are briefly explained here. The Florida Index assigns points to stream-dwelling macroinvertebrates based on their sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy (i.e., many clean-water organisms are present). Excessive numerical dominance of a single type of organism (a high % contribution of dominant taxon) is usually associated with disturbance. An elevated blue-green algae to diatom ratio (calculated by dividing the number of individuals in the Cyanophyta by the number of individuals in the Bacillariophyta) is often indicative of nutrient enriched conditions. Czekanowski's Similarity Index is a multivariate ordination procedure which compares organism abundance and taxonomic structure between sites. The determination of the Quantitative Similarity Index (for taxonomic % contribution) is a two step process. First, the relative proportions of major taxonomic groups are calculated for each site. Then, the lesser of the two percentages for each discrete taxonomic group is totaled. A QSI (% composition) of 100% means that the two sites being compared are identical. This same type of procedure is used for calculating the QSI (functional feeding groups).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, and the Florida Index are measured as the control site minus test site divided by the control site. The percent differences between sites involving the percent contribution of dominant taxon, chlorophyll *a*, blue-green algae to diatom ratio, and algal growth potential are measured as the test site minus control site divided by the control site.

Results and Discussion

Habitat quality at the test site (Habitat Score = 50) was comparable to that of the control site (Habitat Score = 53, Appendix). Both sites were typical of an alluvial river system. The pH was 7.6 at both sampling locations. Dissolved oxygen was above 6.5 mg/l at both sites but conductivity was slightly higher downstream of the effluent (160 μmhos/cm^2 at the study site, 140 μmhos/cm^2 at the reference site). The water temperature was about 3°C higher below the discharge (at 30.0°C). While more snag habitat was available at the control site, the water velocity was more favorable to macroinvertebrates at the test site (velocity was 0.3 m/sec at the test site and 0.2 m/sec upstream)(Appendix). Although the sediment organic fraction was low at both sites, the downstream location had a higher percent of fine sediment particles (Appendix).

All effluent organic constituents determined from a single grab sample were below detection limits (Appendix). Copper was the only metal detected in the effluent, at a concentration of 12 μg/l. In soft water, copper has been shown to be acutely toxic to *Daphnia pulicaria* at 7.24 μg/l (US EPA Ambient Water Quality Criteria). However, the effluent did not cause mortality to either the fish, *Notropis leedsi*, or the invertebrate, *Ceriodaphnia dubia*, in 48 hour acute static toxicity tests (Appendix).

Ortho-phosphate concentrations were slightly elevated downstream of the outfall (from less than 0.05 mg/l above the discharge to 0.067 mg/l below the outfall), although total phosphorus levels were reduced at the test site (Appendix). Bioreactive nitrogen concentrations did not change appreciably between sites. Algal Growth Potential increased from 4.1 mg algal dry weight/l at the control site to 6.2 mg/l downstream of the effluent. Values above 5.0 mg algal dry weight/l are considered undesirable. Total and fecal coliforms were low at both the control and test sites (Appendix).

Quantitative measures of benthic macroinvertebrate community health indicated that the test site was better than the control (see table on page 1 and figures on page 2). The upper left figure 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. The lower right figure summarizes similarities between the sites. Smaller similarities (lower percentages) generally correspond with greater degradation. In this

particular case, though, the lack of similarity between macroinvertebrate communities at the two sites is indicative of improvement, and is probably related to the increased water velocity at the test site.

Measures of periphyton community structure indicated fairly large differences between sites upstream and downstream of the plant (Table). Although the number of taxa was only slightly reduced at the test site, only four were common to both stations (see taxa list in Appendix). While diatoms comprised 90% of the periphyton community at the control site, this proportion declined to 43.9% downstream and was accompanied by a substantial increase in cyanophytes. *Lyngbya*, a large blue-green alga, was dominant at the test site (53.3% contribution). *Achnanthes linearis* made up 42.3% of the total number of diatoms at the control site. Algal biomass, measured as mg/mm^2 chlorophyll *a*, increased by 61.2% downstream. Measures of community similarity also supported these community changes, as the Quantitative Stability Index based on percent composition was 49.4%, and Czekanowski's Index was only 12.1%, in this case, both indicating degradation

Conclusions

Macroinvertebrate communities were healthy downstream of the discharge. Bioassay tests were not toxic. Results of priority pollutant chemical analyses indicated that no toxic substances, except for small amounts of copper, were present in the effluent. However, the periphyton community was somewhat degraded below the outfall. The algae could be responding to the slight elevation in ortho-phosphate and increased water temperature observed downstream of the discharge.

Literature Cited

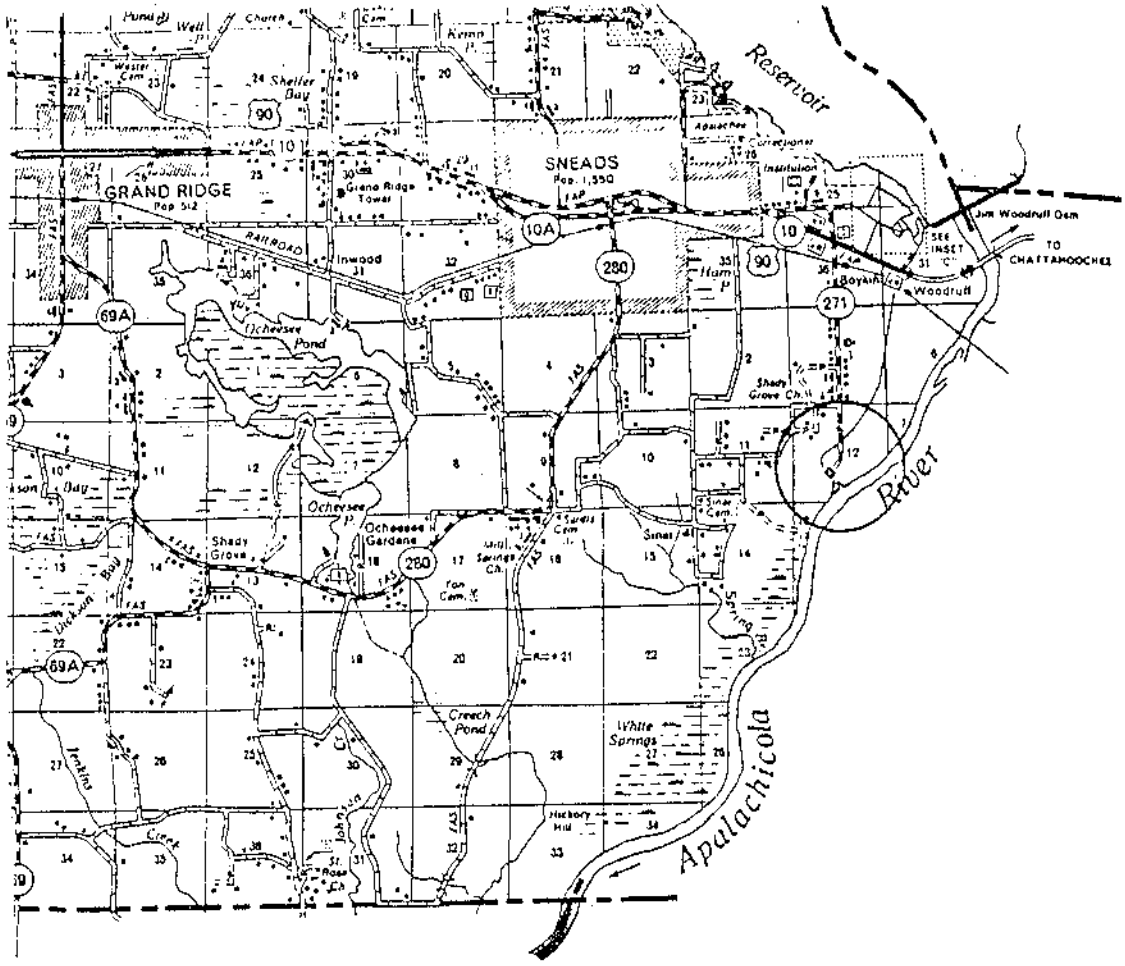
American Public Health Assoc., American Water Works Assoc., and Water Pollution Control Federation. 1989. Standard Methods for the Examination of Water and Wastewater, 17th ed. New York, N.Y. 1268 p.

Florida Department of Environmental Regulation. 1985. Quality assurance manual for performing acute toxicity tests. 2nd edition. Fla. Dept. Environmental Regulation, Biology Section, Tallahassee. 53 p.

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

Peltier, W. H. and C. I. Weber. 1985. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 3rd edition. EPA/600/4-85/013. U. S. EPA, Cincinnati, Ohio. 216 p.

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



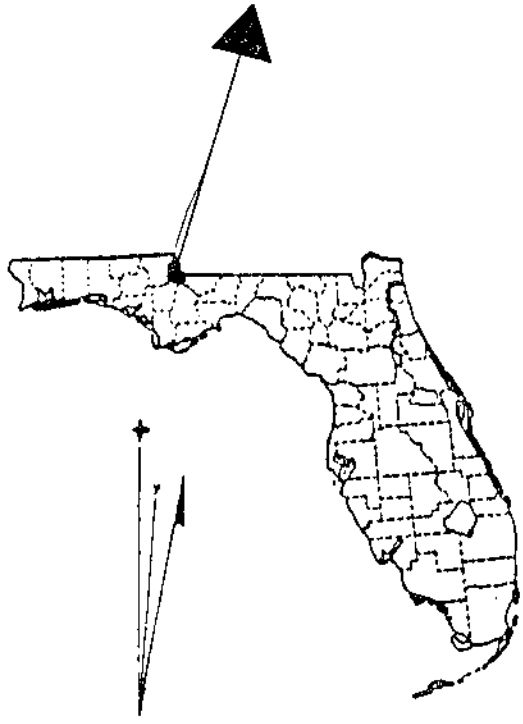


Figure 1. Portion of Jackson County, Florida, including location of the Scholtz Power Plant.

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

11:30 AM

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		8-28-90	APPALACHICOLA R.

REMARKS:	LOCATION:	FIELD ID/NAME:
SCHOLTZ PLANT	UPSTREAM OF SCHOLTZ INTAKE CANAL	UPSTREAM

Habitat Parameter / score	Excellent	Good	Fair	Poor
Bottom Substrate/ Available Cover 15	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs, undercut banks, rubble, or other stable habitat. **23-30 points**	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. **16-22 points**	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat. **8-15 points**	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious. **0-7 points**
Water Velocity 18	Max. observed; >0.3 m/sec. **23-30 points**	Max. observed; 0.1 to 0.3 m/sec **16-22 points**	Max. observed; 0.05 to 0.1 m/sec **8-15 points**	Max. observed; <0.05 m/sec **0-7 points**
Artificial Channel/ Flow Alteration 3	No artificial channelization. Little activity (impervious surface) in watershed which would cause scouring during spates. **12-15 points**	—	—	Artificially channelized, or scouring present during spates because of excess impervious surface in watershed. **0-3 points**
Bank Stability 4	Stable. No evidence of erosion or bank failure. Little potential for future problems. **9-10 points**	Moderately stable. Infrequent or small areas of erosion, mostly healed over. **6-8 points**	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **3-5 points**	Unstable. Many raw, eroded areas. Obvious bank sloughing. **0-2 points**
Riparian Zone Vegetation Quality 9	Over 80% of streambank surfaces consist of native plants, classified as: bottomland hardwoods, understory shrubs, or non-woody macrophytes. **9-10 points**	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. **6-8 points**	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. **3-5 points**	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture) present. **0-2 points**

Adjustments		TOTAL SCORE
5	Add **5 points** if cross-sectional area of flow is estimated to be greater than one square meter during periods of normal flow.	53

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
8-28-90		Ernest Hendon

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET 10:05 AM

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		8/28/90	Apalachicola River

REMARKS:	LOCATION:	FIELD ID/NAME:
	Downstream Scholz Generating Plant	OUTFALL

Habitat Parameter / score	Excellent	Good	Fair	Poor
Bottom Substrate/ Available Cover 5	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs, undercut banks, rubble, or other stable habitat. **23-30 points**	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. **16-22 points**	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat. **8-15 points**	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious. **0-7 points**
Water Velocity 25	Max. observed; >0.3 m/sec. **23-30 points**	Max. observed; 0.1 to 0.3 m/sec **16-22 points**	Max. observed; 0.05 to 0.1 m/sec **8-15 points**	Max. observed; <0.05 m/sec **0-7 points**
Artificial Channel/ Flow Alteration 3	No artificial channelization. Little activity (impervious surface) in watershed which would cause scouring during spates. **12-15 points**	—	—	Artificially channelized, or scouring present during spates because of excess impervious surface in watershed. **0-3 points**
Bank Stability 4	Stable. No evidence of erosion or bank failure. Little potential for future problems. **9-10 points**	Moderately stable. Infrequent or small areas of erosion, mostly healed over. **6-8 points**	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **3-5 points**	Unstable. Many raw, eroded areas. Obvious bank sloughing. **0-2 points**
Riparian Zone Vegetation Quality 8	Over 80% of streambank surfaces consist of native plants, classified as: bottomland hardwoods, understory shrubs, or non-woody macrophytes. **9-10 points**	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. **6-8 points**	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. **3-5 points**	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture) present. **0-2 points**

Adjustments		TOTAL SCORE
5	Add **5 points** if cross-sectional area of flow is estimated to be greater than one square meter during periods of normal flow.	50

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
	R. FRYDENBORG	Russell Frydenborg

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET

11:30 AM

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 8/28/90	RECEIVING BODY OF WATER: Apalachicola River
REMARKS:	LOCATION: UPSTREAM OF SCHOLTZ INTAKE CANAL		FIELD ID/NAME:

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
50		35			15	

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

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

Point-Source Pollution (list location and describe):

Estimated Stream Width (range, m): 120	Estimated Stream Depth (range, m): 3.0		yes
High Water Mark (m above bed): 3	Velocity (range, m/s): 0.2		Impounded ☐ Channelized ☐

Canopy Cover % (check box): Open: ☑ Lightly Shaded: ☐ Moderately Shaded: ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

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

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

Sediment Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☐ Sand: ☒ Shell: ☒ Other: ☐

Substrate Types (estimated % surface coverage):

Limestone:		Sand/Silt/Clay Mix:	20
Consolidated Clay:		Clay/Silt (inorganic):	
Gravel/Shell	30	Coarse Organic Debris:	
Sand:	50	Mud/Muck (organic):	

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
			Secchi Depth (m):	1.4
Top	26.8	6.8	pH (SU):	7.6
Mid-depth	26.8	6.8	Conductivity (µmho/cm):	140
Bottom	26.8	6.8	Other Parameters:	

Stream Type (check box): Blackwater: ☐ Deep Aquifer Fed: ☐ Surficial Aquifer Fed: ☐ Alluvial: ☒ Other: ☐

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

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

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

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

Weather Conditions: SUNNY HOT SLIGHT BREEZE FROM NW

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

ANALYSIS DATE:	ANALYST:	SIGNATURE:
8-28-90		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET 10:05 AM

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		8/28/90	Apalachicola River

REMARKS:	LOCATION: DOWNSTREAM Sholz generating Plant	FIELD ID/NAME:
	DISCHARGE	

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
50%	35%	35%			15%	

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

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☐ Obvious sources ☑ Ga + Fla

Point-Source Pollution (list location and describe):

Estimated Stream Width (range, m):	120m	Estimated Stream Depth (range, m):	~4.0m	yes
High Water Mark (m above bed):	3m	Velocity (range, m/s): 0.3	>0.3	Impounded ☐ Channelized ☑

Canopy Cover % (check box): Open: ☑ Lightly Shaded: ☐ Moderately Shaded: ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

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

Sediment Oils: Absent: ☐ brownish sludge Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☐ Sand: ☑ Shell: ☑ Other: ☐

Substrate Types (estimated % surface coverage):

Limestone:		Sand/Silt/Clay Mix:	
Consolidated Clay:		Clay/Silt (inorganic):	
Gravel/Shell	30%	Coarse Organic Debris:	
Sand:	50%	Mud/Muck (organic):	

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
			Secchi Depth (m):	1.0
Top	30.0	6.4	pH (SU):	7.6
Mid-depth	29.0	6.5	Conductivity (µmho/cm):	160
Bottom	28.0	6.8	Other Parameters:	

Stream Type (check box): Blackwater: ☐ Deep Aquifer Fed: ☐ Surficial Aquifer Fed: ☐ Alluvial: ☑ Other: ☐

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

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

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

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

Weather Conditions: Cloudy, warm

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

ANALYSIS DATE:	ANALYST:	SIGNATURE:

LAB ID: 7a

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY SEDIMENT BENCH SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: FLA DEP	STORET STATION NUMBER:	DATE (M/DY): 8/28/90	RECEIVING BODY OF WATER:	DEPTH, FEET:

REMARKS:	LOCATION: Scholz Gen. Apalachicola R.	FIELD ID/NAME: upstream

Aliquot #1

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (a) _____

Sediment Dry Weight (105°C): (for 1 aliquot method of wet or dry sieving, or for calculating dry wt. of aliquot #2) (b) 25.13

Aliquot #2

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (c) _____

Aliquot #3 (for % organics)

Crucible Weight: (d) 56.28

Crucible + Dry Sediment (105°C) Wt.: (e) 102.50

Crucible + Ashed Sediment (550°C) Wt.: (f) 101.92

Percent Organics Calculation:

Sediment Dry (105°C) Weight: (e) - (d) = 102.50 − 56.28 = (g) 46.22

Sediment Ash (550°C) Weight: (f) - (d) = 101.92 − 56.28 = (h) 45.64

$$\text{Percent Organics} = \frac{((g) - (h)) \times 100}{(g)} = \frac{(46.22 - 45.64) \times 100}{46.22} = 1.25\%$$

Size Fraction Determination:

Dry Weight Calculation: (for 2 aliquot method of wet sieving)

$$\frac{(b)}{(a)} \times (c) = \frac{\quad}{\quad} \times \quad = (i) \quad$$

weight (gms.) of material retained by:			% composition (divide 1st column by (n) [dry sieve] or by (b) [wet sieve; 1 aliquot] or by (l) [wet sieve; 2 aliquot], and multiply by 100)
#10 sieve	(>2.0 mm)	(j) 0.08	0.32
#35 sieve	(0.5-2.0 mm)	(k) 0.09	0.36
#60 sieve	(0.25-0.5 mm)	(l) 0.19	0.76
#120 sieve	(0.125-0.25 mm)	(m) 7.00	27.86
#230 sieve	(0.063-0.125 mm)	(n) 15.24	60.64
Pan (dry sieve only)	(<0.063 mm)	(o) _____	
Total (dry sieve) ((j) + (k)...+ (o))		(p) _____	
Total Retained (wet sieve) ((j) + (k)...+ (n))		(q) 22.60	
Wet sieve fines ((b) - (q)) [1 aliquot method], or ((i) - (q)) [2 aliquots]	(<0.063 mm)	2.53	10.07
Wet sieve coarse fraction (after fines removal)	(>0.063 mm)	23.43	

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10/2/90	L Burton/R Hu	Lyn Burton Hall

LAB ID: 6a

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY SEDIMENT BENCH SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: TLH DER	STORET STATION NUMBER:	DATE (M/D/Y): 8/28/90	RECEIVING BODY OF WATER:	DEPTH, FEET:

REMARKS:	LOCATION: Schale Gen. Apalachicola R.	FIELD ID/NAME: downstream

Aliquot #1
Sediment Wet Weight: (for 2 aliquot method of wet sieving) (a) _____
Sediment Dry Weight (105°C): (for 1 aliquot method of wet or dry sieving, or for calculating dry wt. of aliquot #2) (b) 31.18

Aliquot #2
Sediment Wet Weight: (for 2 aliquot method of wet sieving) (c) _____

Aliquot #3 (for % organics)
Crucible Weight: (d) 50.65
Crucible + Dry Sediment (105°C) Wt.: (e) 101.81
Crucible + Ashed Sediment (550°C) Wt.: (f) 101.31

Percent Organics Calculation:

Sediment Dry (105°C) Weight: (e) - (d) = 101.81 − 50.65 = (g) 51.16

Sediment Ash (550°C) Weight: (f) - (d) = 101.31 − 50.65 = (h) 50.66

Percent Organics $\frac{((g) - (h)) \times 100}{(g)} = \frac{(51.16 - 50.66) \times 100}{51.16} =$ 0.98%

Size Fraction Determination:

Dry Weight Calculation: (for 2 aliquot method of wet sieving)

$\frac{(b)}{(a)} \times (c) = \frac{\quad}{\quad} \times \quad =$ (i) _____

weight (gms.) of material retained by:			% composition (divide 1st column by (n) [dry sieve] or by (b) [wet sieve; 1 aliquot] or by (i) [wet sieve; 2 aliquot], and multiply by 100)
#10 sieve	(>2.0 mm)	(j) 6.49	20.81
#35 sieve	(0.5-2.0 mm)	(k) 0.23	0.74
#60 sieve	(0.25-0.5 mm)	(l) 0.54	1.73
#120 sieve	(0.125-0.25 mm)	(m) 10.31	33.07
#230 sieve	(0.063-0.125 mm)	(n) 8.58	27.52
Pan (dry sieve only)	(<0.063 mm)	(o) _____	
Total (dry sieve) ((j) + (k)...+ (o))		(p) _____	
Total Retained (wet sieve) ((j) + (k)...+ (n))		(q) 26.15	
Wet sieve fines ((b) − (q)) [1 aliquot method], or ((i) - (q)) [2 aliquots]	(<0.063 mm)	5.03	16.13
Wet sieve coarse fraction (after fines removal)	(>0.063 mm)	26.24	

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10/12/90	C Burton / Atkinson	Lynn Burton

Sample Number: 90-AUG-28-19-01
Sample Location: Sholz Generating Plant
Field ID: Metals
Date/Time Collected: 28-AUG-1990 09:50:47.29
Comments:

Sample Status: Authorized by Tim Fitzpatrick
Matrix: Effluent
Storet Station Number:

Sample Number: 90-AUG-28-19-01
Analysis Id: W-ICP-23

Test status: Authorized by Tim Fitzpatrick
Analysis Description: ICP multielement analysis for water samples

Storet Number	Analyte	Result	Units
01106	Aluminum	NR	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	NR	ug/L
01007	Barium	NR	ug/L
01012	Beryllium	NR	ug/L
01027	Cadmium	NR	ug/L
00916	Calcium	NR	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	NR	ug/L
01042	Copper	12	ug/L
01045	Iron	NR	ug/L
01051	Lead	NR	ug/L
00927	Magnesium	NR	mg/L
01055	Manganese	NR	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	NR	mg/L
01147	Selenium	NR	ug/L
01077	Silver	NR	ug/L
00929	Sodium	NR	mg/L
01082	Strontium	NR	ug/L
01059	Thallium	NR	ug/L
01087	Vanadium	NR	ug/L
01092	Zinc	10 U	ug/L

Sample Number: 90-AUG-28-19-01
Analysis Id: AG-G-W

Test status: Authorized by Tim Fitzpatrick
Analysis Description: Silver in water by furnace AA

Storet Number	Analyte	Result	Units
01077	Silver	0.2 U	ug/L

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N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the mimimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-AUG-28-19-01 Test status: Authorized by Tim Fitzpatrick
Analysis Id: HG-H-W Analysis Description: Mercury by cold vapor using hydride sys.-water

Storet Number	Analyte	Result	Units
71900	Mercury	0.2 U	ug/L

Sample Number: 90-AUG-28-19-01 Test status: Authorized by Jack Merritt
Analysis Id: CD-G-W Analysis Description: Cadmium by graphite furnace for water saple

Storet Number	Analyte	Result	Units
01027	Cadmium	0.2 K	ug/L

Sample Number: 90-AUG-28-19-02 Sample Status: Authorized by Tim Fitzpatrick
Sample Location: Sholz Generating Plant Matrix: Field Blank
Field ID: metals blank Storet Station Number:
Date/Time Collected: 28-AUG-1990 09:50:47.29
Comments:

Sample Number: 90-AUG-28-19-02 Test status: Authorized by Tim Fitzpatrick
Analysis Id: W-ICP-23 Analysis Description: ICP multielement analysis for water samples

Storet Number	Analyte	Result	Units
01106	Aluminum	NR	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	NR	ug/L
01007	Barium	NR	ug/L
01012	Beryllium	NR	ug/L
01027	Cadmium	NR	ug/L
00916	Calcium	NR	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	NR	ug/L
01042	Copper	5 U	ug/L
01045	Iron	NR	ug/L
01051	Lead	NR	ug/L
00927	Magnesium	NR	mg/L
01055	Manganese	NR	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	NR	mg/L
01147	Selenium	NR	ug/L
01077	Silver	NR	ug/L
00929	Sodium	NR	mg/L

Continued

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Cont. from previous page for Sample Number: 90-AUG-28-19-02 Analysis_id: W-ICP-23

01082	Strontium	NR	ug/L
01059	Thallium	NR	ug/L
01087	Vanadium	NR	ug/L
01092	Zinc	10 U	ug/L

Sample Number: 90-AUG-28-19-02 Test status: Authorized by Tim Fitzpatrick
Analysis Id: AG-G-W Analysis Description: Silver in water by furnace AA

Storet Number	Analyte	Result	Units
01077	Silver	0.2 U	ug/L

Sample Number: 90-AUG-28-19-02 Test status: Authorized by Tim Fitzpatrick
Analysis Id: HG-H-W Analysis Description: Mercury by cold vapor using hydride sys.-water

Storet Number	Analyte	Result	Units
71900	Mercury	0.2 U	ug/L

Sample Number: 90-AUG-28-19-02 Test status: Authorized by Jack Merritt
Analysis Id: CD-G-W Analysis Description: Cadmium by graphite furnace for water saple

Storet Number	Analyte	Result	Units
01027	Cadmium	0.2 U	ug/L

End of Report

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N/A - Not applicable NR - Not requested

Sample Number: 90-AUG-28-18-01
Sample Location: Sholz generating Plant
Field ID: organics
Date/Time Collected: 28-AUG-1990 09:50:39.34
Comments:

Sample Status: Authorized by Liang T. Lin
Matrix: Effluent
Storet Station Number:

Sample Number: 90-AUG-28-18-01
Analysis Id: W-BNA

Test status: Authorized by Laura Harrison
Analysis Description: base-neutral-acid water analysis

Storet Number	Analyte	Result	Units
34205	Acenaphthene	10 U	ug/L
34200	Acenaphthylene	10 U	ug/L
39330	Aldrin	10 U	ug/L
34220	Anthracene	10 U	ug/L
34526	Benzo(a)anthracene	10 U	ug/L
34230	Benzo(b)fluoranthene	10 U	ug/L
34242	Benzo(k)fluoranthene	10 U	ug/L
34247	Benzo(a)pyrene	10 U	ug/L
34521	Benzo(g,h,i)perylene	20 U	ug/L
34292	Benzyl butyl phthalate	10 U	ug/L
	a-BHC	10 U	ug/L
39337	b-BHC	10 U	ug/L
39340	d-BHC	10 U	ug/L
	g-BHC	10 U	ug/L
39120	Benzidine	10 U	ug/L
34273	Bis(2-chloroethyl)ether	10 U	ug/L
34278	Bis(2-chloroethoxy)methane	20 U	ug/L
34283	Bis(2-chloroisopropyl)ether	20 U	ug/L
39100	Bis(2-ethylhexyl)phthalate	10 U	ug/L
34636	4-Bromophenyl phenyl ether	10 U	ug/L
34581	2-Chloronaphthalene	10 U	ug/L
34641	4-Chlorophenyl phenyl ether	10 U	ug/L
34320	Chrysene	10 U	ug/L
39310	4,4'-DDD	10 U	ug/L
39320	4,4'-DDE	10 U	ug/L
39300	4,4'-DDT	10 U	ug/L
34556	Dibenzo(a,h)anthracene	25 U	ug/L
39110	Di-n-butyl phthalate	10 U	ug/L
34536	1,2-Dichlorobenzene	10 U	ug/L
34566	1,3-Dichlorobenzene	10 U	ug/L
34571	1,4-Dichlorobenzene	10 U	ug/L
34631	3,3'-Dichlorobenzidine	10 U	ug/L
39380	Dieldrin	10 U	ug/L
34336	Diethylphthalate	10 U	ug/L
34341	Dimethylphthalate	10 U	ug/L
34611	2,4-Dinitrotoluene	10 U	ug/L
34626	2,6-Dinitrotoluene	10 U	ug/L
34596	Di-n-octyl phthalate	10 U	ug/L
34361	Endosulfan-I	10 U	ug/L

Continued

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Cont. from previous page for Sample Number: 90-AUG-28-18-01 Analysis_id: W-ENA

34356	Endosulfan-II	10 U	ug/L
34351	Endosulfan-sulfate	10 U	ug/L
39390	Endrin	10 U	ug/L
34366	Endrin-aldehyde	10 U	ug/L
34376	Fluoranthene	10 U	ug/L
34381	Fluorene	10 U	ug/L
39410	Heptachlor	10 U	ug/L
39420	Heptachlor-epoxide	10 U	ug/L
39700	Hexachlorobenzene	20 U	ug/L
34391	Hexachlorobutadiene	10 U	ug/L
34396	Hexachloroethane	60 U	ug/L
34386	Hexachlorocyclopentadiene	10 U	ug/L
34403	Indeno(1,2,3-cd)pyrene	10 U	ug/L
34408	Isophorone	10 U	ug/L
34696	Naphthalene	10 U	ug/L
34447	Nitrobenzene	10 U	ug/L
34438	N-Nitrosodimethylamine	50 U	ug/L
34428	N-Nitrosodi-n-propylamine	10 U	ug/L
34433	N-Nitrosodiphenylamine	15 U	ug/L
34671	PCB-1016	10 U	ug/L
39488	PCB-1221	10 U	ug/L
39492	PCB-1232	10 U	ug/L
39496	PCB-1242	10 U	ug/L
39500	PCB-1248	10 U	ug/L
39504	PCB-1254	10 U	ug/L
39508	PCB-1260	10 U	ug/L
	PCB-1262	10 U	ug/L
34461	Phenanthrene	10 U	ug/L
34469	Pyrene	10 U	ug/L
39400	Toxaphene	10 U	ug/L
34551	1,2,4-Trichlorobenzene	10 U	ug/L
34462	4-Chloro-3-methyl phenol	20 U	ug/L
34586	2-Chlorophenol	20 U	ug/L
34601	2,4-Dichlorophenol	20 U	ug/L
34606	2,4-Dimethylphenol	20 U	ug/L
34616	2,4-Dinitrophenol	30 U	ug/L
34657	2-Methyl-4,6-dinitrophenol	30 U	ug/L
34591	2-Nitrophenol	30 U	ug/L
34646	4-Nitrophenol	50 U	ug/L
39032	Pentachlorophenol	30 U	ug/L
34694	Phenol	20 U	ug/L
34621	2,4,6-Trichlorophenol	20 U	ug/L

Comments (1):
(2):
(3):
(4):
(5):
(6):

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Sample Number: 90-AUG-28-21-01 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: Sholz Generating Plant-upstream Matrix: Fresh Surf Water
Field ID: Phosphorus Series Storet Station Number:
Date/Time Collected: 28-AUG-1990 11:30:45.59
Comments:

Sample Number: 90-AUG-28-21-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-PO4 Analysis Description: Orthophosphate analysis for water samples

Storet Number	Analyte	Result	Units
70507	Orthophosphate-P	0.050 K	mg P/L

Sample Number: 90-AUG-28-21-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TP Analysis Description: Analysis for total phosphorus in water

Storet Number	Analyte	Result	Units
00665	Total Phosphorus	0.16	mg P/L

Sample Number: 90-AUG-28-21-02 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: Sholz Generating Plant-Downstream Matrix: Fresh Surf Water
Field ID: Phosphorus Series Storet Station Number:
Date/Time Collected: 28-AUG-1990 10:05:45.59
Comments:

Sample Number: 90-AUG-28-21-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-PO4 Analysis Description: Orthophosphate analysis for water samples

Storet Number	Analyte	Result	Units
70507	Orthophosphate-P	0.067	mg P/L

Sample Number: 90-AUG-28-21-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TP Analysis Description: Analysis for total phosphorus in water

Storet Number	Analyte	Result	Units
00665	Total Phosphorus	0.079	mg P/L

End of Report

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L - Actual value is known to be greater than value given
N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the minimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-AUG-28-20-01 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: Scholtz Elect. Plant (Upstream) Matrix: Fresh Surf Water
Field ID: Nitrogen Series Storet Station Number:
Date/Time Collected: 28-AUG-1990 11:30:08.43
Comments:

Sample Number: 90-AUG-28-20-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TKN Analysis Description: TKN for water sample

Storet Number	Analyte	Result	Units
00625	N KJEL TOT	0.25	mg N/L

Sample Number: 90-AUG-28-20-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NO2NO3 Analysis Description: Analysis for nitrite+nitrate in water

Storet Number	Analyte	Result	Units
00630	Nitrate-Nitrite-N	0.090	mg N/L

Sample Number: 90-AUG-28-20-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NH3 Analysis Description: Analysis for ammonia in water

Storet Number	Analyte	Result	Units
00610	Ammonia-N	0.068	mg N/L

Sample Number: 90-AUG-28-20-02 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: Scholtz Elect. Plant (Downstream) Matrix: Fresh Surf Water
Field ID: Nitrogen Series Storet Station Number:
Date/Time Collected: 28-AUG-1990 10:05:08.43
Comments:

Sample Number: 90-AUG-28-20-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TKN Analysis Description: TKN for water sample

Storet Number	Analyte	Result	Units
00625	N KJEL TOT	0.50	mg N/L

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T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the mimimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-AUG-28-20-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NO2NO3 Analysis Description: Analysis for nitrite+nitrate in water

Storet Number	Analyte	Result	Units
00630	Nitrate-Nitrite-N	0.094	mg N/L

Sample Number: 90-AUG-28-20-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NH3 Analysis Description: Analysis for ammonia in water

Storet Number	Analyte	Result	Units
00610	Ammonia-N	0.063	mg N/L

End of Report

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N/A - Not applicable NR - Not requested

DER Biology Section — Acute Bioassay Worksheet

Sample Source: SCHOLZ ELECT. PLANT
Address/City:
County: JACKSON
Contact/District:
NPDES Permit #: _____ **Outfall #:** _____

Sample Collection: Date 8-28-90 Time 1005
Test Beginning: Date 8/29/90 Time 830
Test Ending: Date 8/30/90 Time 830
Test Organism: N. LEEDSI
Life Stage/Age: 2 days

Test Number: 1 of 2 **Test Type:** ~~Screening~~ | Definitive
Static | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	101.109	8.0@23°	1380@24°C	24°C
24 hr	7at7.9a19	8.7@23°		23°C
48 hr	7.a17.9a19	8.1@23°	1316@23°	23°C

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	3	5	5	5	7.9	7.7	7.3	7.7	8.1	8.4	22.1	24.5	23.1			
Control	16	5	5	5	8.0	7.7	7.3	7.7	8.2	8.4				238		254
100%	7	5	5	5	7.0	7.8	7.3	7.6	7.8	8.0	23.5	24.5	23.8			
100%	12	5	5	5	9.0	7.8	7.3	7.5	7.8	8.0				127		138
Measured/Loaded by:		EBF	KML	KML	LB	KML	LB	LB	KML	LB	LB	KML	LB	LB		LB
Recorded by:			KML	KML	KML	LB	KML	KML	LB	KML	KML	LB	KML	KML		KML

Investigators' Signatures

Russell Frydenborg
Kathleen M. Lardner
Lyn Benton

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:	115	—	45	Hach	KML
Hardness:	122	—	47	Hach	KML
Total Ammonia:			0		EBF

DEK Biology Section — Acute Bioassay Bench Sheet

Sample Source: SCHOLZ ELECT. PLANT
Address/City:
County: JACKSON
Contact/District: NW
NPDES Permit #: Outfall #:

Sample Collection: Date 8-28-90 Time 1005
Test Beginning: Date 8/29/90 Time 830
Test Ending: Date 8-31-90 Time 830
Test Organism: C. DUBIA
Life Stage/Age: NEONATE

Test Number: 2 of 2 Test Type: (Screening) | Definitive
Static | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control		5	1	1	8.0		7.8	8.1		8.4	21.5		22.8	168		184
"		5	4	1	8.1		7.8	8.2		8.4						
"		5	3	1	8.0		7.8	8.2		8.4						
"		5	3	2	8.1		7.8	8.2		8.4						
100%		5	5	5	8.3		7.6	7.7		8.3	22.0		23.0	114		137
"		5	5	5	8.4		7.6	7.7		8.3						
"		5	5	5	8.5		7.6	7.7		8.3						
"		5	5	5	8.4		7.6	7.7		8.3						
Measured/Loaded by:		KML	KML	LB	RLB		LB	LB		LB	RLB		LB	RLB		LB
Recorded by:			KML	KML	KML		KML	KML		KML	KML		KML	KML		KML

Investigators' Signatures

Ryan Lundeborg
Kathleen M. Lurding
Lyn Benton

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:	—	66	45	Hach	KML
Hardness:	—	85	47	Hach	KML
Total Ammonia:					

Ammonia meter slope:

JOB ID: _____

SAMPLE ID: _____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 1

COLLECTION TIME (E) — GRAB SAMPLE

COLLECTION TIME (E) — COMPOSITE SAMPLE
BEGIN:
END:

SUBMITTING AGENCY CODE:	SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	COLLECTION DATE (MO/DY):	DEPTH, FEET:
			8/29/90	Surface

COUNTY OF SAMPLE ORIGIN:	SAMPLE LOCATION:	FIELD ID/NAME:
Jackson	Shell Generating Plant	upstream

WATER
- [x] SURFACE (FRESH)
- [ ] GROUND
- [ ] SURFACE (SALT)
- [ ] EFFLUENT
- [ ] DRINKING
- [ ] TRIP BLANK
- [ ] FIELD BLANK
- [ ] EQUIPMENT BLANK

SOIL/SEDIMENT
- [ ] SOIL
- [ ] FRESHWATER SEDIMENT
- [ ] MARINE SEDIMENT
- [ ] SLUDGE

TISSUE
- [ ] PLANT
- [ ] FISH
- [ ] SHELLFISH
- [ ] OTHER

CHEMICAL WASTE
- [ ]

PROGRAM, MOG #	NPDES NUMBER (& OUTFALL NO., IF APPLICABLE) (required for all discharge related samples)
1300	FL0002283 001

FIELD PARAMETER(S) MEASURED BY (NAME):
(SIGNATURE): R. B. Frydenborg

SAMPLED BY (NAME):
(SIGNATURE): Kathy Lurding

FIELD REPORT PREPARED BY (NAME):
(SIGNATURE): Kathy Lurding

FIELD PARAMETERS	UNITS	CODE*	VALUE
CHLORINE, TOTAL RESIDUAL	mg/l	50060	
DISSOLVED OXYGEN (PROBE)	mg/l	00299	
pH	std. units	00400	
SALINITY	PPTH	00480	
SECCHI DEPTH	m	00078	
SPECIFIC CONDUCTANCE	umho/cm	00094	
TEMPERATURE	°C	00010	

ANALYSIS/METHOD REQUESTED	SAMPLE CONTAINER DESCRIPTION	NO. OF CONTAINERS SUBMITTED	PRESERVATIVE USED

NOTE, FILL OUT PAGE 2 (REVERSE) IF ANY LAB PARAMETERS LISTED THERE ARE DESIRED

SEND COPIES OF ANALYSIS REPORT TO:
- [ ] SUBMITTING AGENCY
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____

*STORET CODES MAY ONLY APPLY TO FIELD MEASUREMENTS

[ ] SUBMITTING OFFICE FILL IN SHADED AREAS

PLEASE TYPE OR PRINT CLEARLY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 2

✓	LAB PARAMETERS	UNITS	CODE	VALUE
✓	CHLOROPHYLL-a (CORRECTED)	µg/l	32220	
	CHLOROPHYLL-a (NON-CORRECTED)	µg/l	32210	
	CHLOROPHYLL-b	µg/l	32212	
	CHLOROPHYLL-c	µg/l	32214	
	PHAEOPHYTIN-a	µg/l	32218	
	BOD, 5-DAY CARBONACEOUS	mg/l	80082	
	BOD, 5-DAY N. NITRIFIED	mg/l	00314	
✓	FECAL COLIFORMS, MEMBRANE	no/100 ml	31616	30
	FECAL COLIFORMS, TUBE	no/100 ml	31615	
	TOTAL COLIFORMS, MEMBRANE	no/100 ml	31501	
✓	TOTAL COLIFORMS, TUBE	no/100 ml	31505	120
	FECAL STREPTOCOCCI, MEMBRANE	no/100 ml	31673	
	HETEROTROPHIC PLATE COUNT	no/1 ml	31701	
✓	SEDIMENT PRTCL SIZE, >2.0mm	%	80256	
✓	SEDIMENT PRTCL SIZE, 2.5-2.0mm	%	80254	
✓	SEDIMENT PRTCL SIZE, 0.125-0.5mm	%	46551	
✓	SEDIMENT PRTCL SIZE, 0.063-0.125mm	%	80251	
✓	SEDIMENT PRTCL SIZE, <0.063mm	%	80250	
	SEDIMENT PRTCL SIZE, 0.25-0.5mm	%	80253	
	SEDIMENT PRTCL SIZE, 0.125-0.25mm	%	80252	
✓	SEDIMENT ORGANIC FRACTION	%	80260	
	ALGAL ASSAY, LIMITING NUTRIENT	—	—	REPORT

✓	LAB PARAMETERS	UNITS	CODE	VALUE
✓	ALGAL ASSAY, GROWTH POTENTIAL	mg/l	85209	
	INVERT, DIVERSITY INDX, ART SUBST	—	81455	
	INVERT, DI, AS, 95% CONF INT	—	81456	
✓	INVERT, DIVERSITY INDX, NAT SUBST	—	81453	
	INVERT, DI, NS, 95% CONF INT	—	81454	
	INVERT, ART SUBST, NO. SPP.	—	81457	
	INVERT, NAT SUBST, NO. SPP	—	81458	
	INVERT, FLORIDA INDEX	—	—	
	INVERT, SPECIES ID/COUNT	—	—	REPORT
	PERIPHYTON, SPECIES ID/COUNT	—	—	REPORT
	PHYTOPLNKTN, SPECIES ID/COUNT	—	—	REPORT
	TOXICITY ASSAY, MICROTOX	—	—	REPORT
	TOXICITY ASSAY, ACUTE, SCRNG	—	—	REPORT
	TOXICITY ASSAY, ACUTE, DFNTV	—	—	REPORT
	TOXICITY ASSAY, FLOW-THROUGH	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, SCRNG	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, DFNTV	—	—	REPORT

REMARKS: SCHOLZ UP STREAM

ANALYST: [signature] DATE: 9/6/90

REVIEWED BY: DATE:

PLEASE TYPE OR PRINT CLEARLY

JOB ID: _____

SAMPLE ID: _____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 1

COLLECTION TIME A.— GRAB SAMPLE

COLLECTION TIME B.— COMPOSITE SAMPLE
BEGIN: _____
END: _____

SUBMITTING AGENCY CODE:	SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	COLLECTION DATE (MO/DY/YR): 8/29/90	DEPTH, FEET: Surface

COUNTY OF SAMPLE ORIGIN:	SAMPLE LOCATION:	FIELD ID NAME:
Jackson	State Correctional Plant	Administration

WATER
- [x] SURFACE (FRESH)
- [ ] GROUND
- [ ] SURFACE (SALT)
- [ ] EFFLUENT
- [ ] DRINKING
- [x] TRIP BLANK
- [ ] FIELD BLANK
- [ ] EQUIPMENT BLANK

SOIL/SEDIMENT
- [ ] SOIL
- [ ] FRESHWATER SEDIMENT
- [ ] MARINE SEDIMENT
- [ ] SLUDGE

TISSUE
- [ ] PLANT
- [ ] FISH
- [ ] SHELLFISH
- [ ] OTHER

CHEMICAL WASH
- [ ]

PROGRAM, MOD. #	NPDES NUMBER (& OUTFALL NO., IF APPLICABLE) (required for all discharge related samples)
1300	FL0002283 001

FIELD PARAMETERS MEASURED BY (NAME):

(SIGNATURE): R B Fredericks

SAMPLED BY (NAME):

(SIGNATURE): Kathy Lindsey

FIELD REPORT PREPARED BY (NAME):

(SIGNATURE): Kathy Lindsey

FIELD PARAMETERS	UNITS	CODE*	VALUE
CHLORINE, TOTAL RESIDUAL	mg/l	50060	
DISSOLVED OXYGEN (PROBE)	mg/l	00299	
pH	std. units	00400	
SALINITY	PPTh	00480	
SECCHI DEPTH	m	00078	
SPECIFIC CONDUCTANCE	µmhos/cm	00094	
TEMPERATURE	°C	00010	

ANALYSIS/METHOD REQUESTED	SAMPLE CONTAINER DESCRIPTION	NO. OF CONTAINERS SUBMITTED	PRESERVATIVE USED

NOTE, FILL OUT PAGE 2 (REVERSE) IF ANY LAB PARAMETERS LISTED THERE ARE DESIRED

SEND COPIES OF ANALYSIS REPORT TO:
- [ ] SUBMITTING AGENCY
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____

*STORET CODES MAY ONLY APPLY TO FIELD MEASUREMENTS

[ ] SUBMITTING OFFICE FILL IN SHADED AREAS

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 2

✓	LAB PARAMETERS	UNITS	CODE	VALUE	✓	LAB PARAMETERS	UNITS	CODE	VALUE
	CHLOROPHYLL-a (CORRECTED)	µg/l	32220			ALGAL ASSAY, GROWTH POTENTIAL	mg/l	35209	
	CHLOROPHYLL-a (NON-CORRECTED)	µg/l	32210			INVERT, DIVERSITY INDX, ART SUBST	—	61455	
	CHLOROPHYLL-b	µg/l	32212			INVERT, CI, NS, 95% CONF INT	—	61456	
	CHLOROPHYLL-c	µg/l	32214			INVERT, DIVERSITY INDX, NAT SUBST	—	61463	
	PHAEOPHYTIN a	µg/l	32218			INVERT, CI, NS, 95% CONF INT	—	61464	
	BOD, 5-DAY CARBONACEOUS	mg/l	80082			INVERT, ART SUBST, NO. SPP.	—	61467	
	BOD, 5 DAY N-INHIBITED	mg/l	00314			INVERT, NAT SUBST, NO. SPP.	—	61468	
✓	FECAL COLIFORMS, MEMBRANE	no/100 ml	31616	20		INVERT, FLORIDA INDEX	—	—	
	FECAL COLIFORMS, TUBE	no/100 ml	31615			INVERT, SPECIES IDCOUNT	—	—	REPORT
✓	TOTAL COLIFORMS, MEMBRANE	no/100 ml	31501	140		PERIPHYTON, SPECIES IDCOUNT	—	—	REPORT
	TOTAL COLIFORMS, TUBE	no/100 ml	31505			PHYTOFLNKTN, SPECIES IDCOUNT	—	—	REPORT
	FECAL STREPTOCOCCI, MEMBRANE	no/100 ml	31673			TOXICITY ASSAY, MICROTOX	—	—	REPORT
	HETEROTROPHIC PLATE COUNT	no/1 ml	31751			TOXICITY ASSAY, ACUTE, SCRNG	—	—	REPORT
	SEDIMENT PRTCL SIZE, >2.0mm	%	80256			TOXICITY ASSAY, ACUTE, DFNTV	—	—	REPORT
	SEDIMENT PRTCL SIZE, 0.5-2.0mm	%	80254			TOXICITY ASSAY, FLOW-THROUGH	—	—	REPORT
	SEDIMENT PRTCL SIZE, 0.125-0.5mm	%	46531			TOXICITY ASSAY, CHRONIC, SCRNG	—	—	REPORT
	SEDIMENT PRTCL SIZE, 0.063-0.125mm	%	80251			TOXICITY ASSAY, CHRONIC, DFNTV	—	—	REPORT
	SEDIMENT PRTCL SIZE, <0.063mm	%	80250						
	SEDIMENT PRTCL SIZE, 0.25-0.5mm	%	80253						
	SEDIMENT PRTCL SIZE, 0.125-0.25mm	%	80252						
	SEDIMENT ORGANIC FRACTION	%	80090						
	ALGAL ASSAY, LIMITING NUTRIENT	—	—	REPORT					

REMARKS:

SCHULZ DOWNSTREAM

ANALYST: [signature] DATE: 9/27/90

REVIEWED BY: DATE:

PLEASE TYPE OR PRINT CLEARLY

Benthic macroinvertebrate taxa list collected on Hester-Dendy multiplate samplers for Scholz Generating Plant, Jackson County, Florida.

	Control Site	Test Site
Coleoptera		
Dineutus sp.	+	–
Stenelmis sp.	–	+
Diptera		
Ablabesmyia mallochi	+	–
Ablabesmyia parajanta	+	+
Coelotanypus concinnus	+	+
Cricotopus/Orthocladius grp. sp.	+	+
Cryptochironomus fulvus grp.	–	+
Dicrotendipes modestus	+	+
Dicrotendipes neomodestus	+	+
Glyptotendipes lobiferus	–	+
Nanocladius distinctus	–	+
Palpomyia grp. sp.	–	+
Polypedilum halterale grp.	+	+
Polypedilum scalaenum	+	+
Psectrocladius sp.	–	+
Undetermined Dipteran Pupae	+	+
Stenochironomus hilaris	–	+
Tanytarsus sp.	–	+
Tribelos fuscicorne	+	+
Ephemeroptera		
Caenis diminuta	–	+
Stenacron floridense	+	+
Tricorythodes albilineatus	+	+
Gastropoda		
Elimia floridensis	+	+
Physella heterostropha pomila	+	+
Helobdella elongata	–	+
Malacostraca		
Corophium lacustre	+	+
Crangonyx sp.	+	–
Odonata		
Argia apicalis	–	+
Argia fumipennis	–	+
Argia sedula	–	+
Argia sp.	+	–
Enallagma sp.	–	+
Neurocordulia alabamensis	–	+
Neurocordulia molesta	–	+
Pelycepoda		
Undetermined Pelecypod sp.	–	+
Platyhelminthes		
Dugesia tigrina	+	–
Trichoptera		
Cyrnellus fraternus	+	+
Neureclipsis sp.	–	+
TOTAL	20	33

Benthic macroinvertebrate taxa list collected by timed qualitative sampling effort for Scholz Generating Plant, Jackson County, Florida.

	Control Site	Test Site
Coleoptera		
Berosus striatus	–	+
Dineutus sp.	+	+
Undetermined Dytiscidae	–	+
Peltodytes sexmaculata	+	–
Tropisternus sp.	+	–
Diptera		
Ablabesmyia mallochi	+	+
Ablabesmyia parajanta	+	+
Ablabesmyia peleensis	+	+
Ablabesmyia sp.	+	–
Apedilum elachistus	+	+
Chaoborus punctipennis	+	+
Chironomus sp.	+	+
Cladotanytarsus sp.	+	+
Cricotopus/Orthocladius grp. sp.	+	+
Cryptochironomus fulvus grp.	+	+
Demicryptochironomus sp.	+	–
Dicrotendipes incurvus	+	–
Dicrotendipes modestus	–	+
Dicrotendipes neomodestus	+	+
Glyptotendipes lobiferus	–	+
Goeldichironomus holoprasinus	+	–
Hemerodromia sp.	+	–
Larsia lurida	+	–
Limnophila sp.	–	+
Palpomyia grp. sp.	+	+
Polypedilum fallax grp.	+	–
Polypedilum halterale grp.	+	+
Polypedilum illinoense	+	+
Procladius bellus	+	–
Pseudochironomus fulviventris	+	–
Pseudochironomus sp.	+	–
Undetermined Dipteran Pupae	+	+
Undetermined Dipteran Species	+	–
Stenochironomus hilaris	+	+
Tanytarsus sp.	+	+
Tipula sp.	–	+
Tribelos fuscicorne	+	+
Ephemeroptera		
Callibaetis pretiosus	+	–
Tricorythodes albilineatus	+	–
Gastropoda		
Campeloma geniculum	+	–

Elimia floridensis	+	+
Physella heterostropha pomila	+	+
Hemiptera		
Immature Corixidae	+	–
Hirudinia		
Helobdella elongata	+	–
Helobdella fusca	+	–
Undetermined Hirudinean sp.	–	+
Lepidoptera		
Parapoynx sp.	+	–
Undetermined Lepidopteran sp.	+	–
Malacostraca		
Hyalella azteca	+	–
Odonata		
Argia sp.	+	–
Undetermined Coenagriidae	–	+
Gomphus pallidus	–	+
Macromia taeniolata	–	+
Oligochaeta		
Aulodrilus pigueti	+	–
Aulodrilus pleuriseta	–	+
Dero furcata	–	+
Nais communis	+	–
Undetermined Tubificid W/o Capilliform Setae	+	+
Pelycepoda		
Corbicula manilensis	+	+
Elliptio lanceolata	+	–
Uniomerus caroliniana	–	+
Undetermined Unionidae	+	–
Trichoptera		
Cyrnellus fraternus	+	–
Hydroptila sp.	+	–
Molanna tryphena	+	–
TOTAL	52	35

APPENDIX

Periphyton taxa list for Scholz Generating Plant, Jackson County, Fla., collected September 25, 1990.

	Control Site	Test Site
Diatoms		
Achnanthes exigua	+	–
Achnanthes lanceolata	+	–
Achnanthes linearis	+	+
Achnanthes microcephala	+	+
Achnanthes lanceolata v. *omissa*	–	+
Cocconeis placentula	+	+
Cyclotella stelligera	–	+
Cymbella minuta	+	–
Eunotia maior	+	–
Eunotia sp.	–	+
Gomphonema sphaerophorum	+	–
Melosira distans	+	–
Navicula exigua	–	+
Navicula radiosa	–	+
Nitzschia palea	–	+
Nitzschia parvula	–	+
Pinnularia braunii v. *amphicephala*	–	+
Pinnularia obscura	–	+
Chlorophyta		
Cosmarium sp.	+	–
Protoderma sp.	+	–
Scenedesmus sp.	+	–
Cyanophyta		
Anabaena sp.	+	–
Chroococcus sp.	–	+
Gloeocapsa sp.	+	–
Lyngbya sp. 1	+	+
Lyngbya sp. 2	–	+
Microcystis sp.	+	–
TOTAL	16	15

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger:	Scholz Electric Generating Plant
County:	Jackson
NPDES Number:	FL0002283
State Permit Expiration Date:	January, 1991?

Toxics Sampling Inspection (XSI)

Date Sampled:	28 August 1990
Results:	No priority pollutants found except for small amounts of copper (12 µg/l).

Compliance Biomonitoring Inspection (CBI)

Date Sampled:	28 August 1990
Results:	Not toxic to *Ceriodaphnia dubia* or *Notropis leedsi.*

Impact Bioassessment Inspection (IBI)

Date Sampled:	28 August 1990 and 25 September 1990
Results:	Benthic macroinvertebrate communities were healthy, but periphyton communities were degraded below the discharge.

Water Quality Inspection (WQI)

Date Sampled:

Results:

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