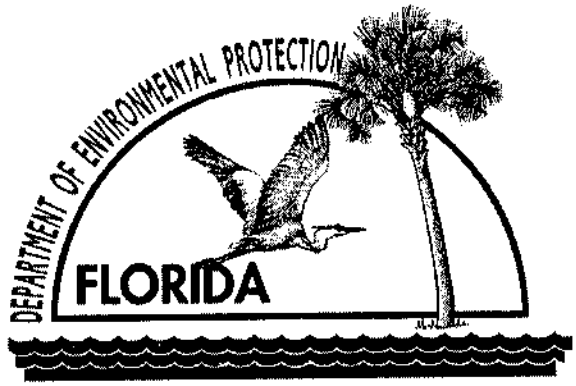


Biological Assessment of

Ortega Utilities/Blanding Plant

Duval County

NPDES #FL0033553

Sampled October 1995

March 1996

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger: Ortega Utilities/Blanding WWTF
County: Duval
NPDES Number: FL0033553
State Permit Expiration Date: 30 June 1996

Toxics Sampling Inspection (XSI)

Date Sampled: 23 October 1995

Results: No organic pollutants were detected in the effluent above quantitation limits. No metals were detected in excess of Class III standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 23 October 1995

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

Impact Bioassessment Inspection (IBI)

Date Sampled: 23 October 1995

Results: While most macroinvertebrate parameters were somewhat depressed throughout this portion of the Ortega River, they generally showed improvement at the test sites, compared with the reference site. This apparent stress seen in the biota may be attributed to the low levels of dissolved oxygen and to the fluctuating conductivities found at this transitional, pre-estuarine reach. The choice of sampling gear used in this study (Ponar dredge rather than dipnets and Hester-Dendys) is another potential reason for collecting a somewhat depauperate freshwater community. The phytoplankton communities were typical of a low nutrient system, with very low algal densities (below 709 cells/mL) and low chlorophyll *a* values (0.55 µg/L or less) at all three Ortega River sites. Algal taxa richness and diversity was higher at the test sites than at the reference site.

Water Quality Inspection (WQI)

Date Sampled: 23 October 1995

Results: Dissolved oxygen at the reference site (2.9 mg/L), test site 1 (2.4 mg/L), and test site 2 (3.0 mg/L) were all less than the Class III Water Quality Standard (Rule 62-302.530(31) FAC). Decomposing vegetation from surrounding wetlands is a potential cause for the depressed dissolved oxygen values in the river. The specific conductance, ranging from 122 µhmos/cm to 127 µhmos/cm, indicated that freshwater dominated the river during this study. Despite relatively elevated concentrations of nitrate-nitrite in the effluent (8.8 mg/L), no nutrient enrichment was observed at any receiving water site. Nutrient values at all three sites were either average or below average for a typical Florida stream. Algal growth potential values coincided with the nutrient results, with elevated AGP in the effluent (122.8 mg dry wt/L), and all receiving water sites below the 5.0 mg dry wt/L "problem threshold" for fresh waters. Fecal and total coliform bacteria complied with Class III Water Quality Standards in the effluent and at all three receiving water sites.

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 Ortega Utilities/Blanding Plant is located in Duval County, Florida (see maps in Appendix). Treatment at this 1.1 MGD extended aeration facility includes screening, flow stabilization, aeration, secondary clarification, chlorination for disinfection, and dechlorination. The effluent is discharged into a drainage ditch, which then flows into a borrow pit. From there, the effluent flows through 300 meters of wetlands and into the Class III Ortega River. Average flow from the facility has been 0.650 MGD.

Permit limits for the effluent are as follows: flow (1.1 MGD), CBOD (3.0 mg/L as a monthly average), TSS (5.0 mg/L as an annual average), TKN (1.5 mg/L as an annual average), unionized ammonia (0.02 mg/L maximum), dissolved oxygen (7.0 mg/L minimum), pH (6.0 to 8.5 SU), chlorine (0.01 mg/L maximum after dechlorination), fecal coliforms (< 200 organisms/100 mL maximum).

The only problem reported for this facility involves the discharge of solids from the clarifier on seven occasions, usually after heavy rainfall.

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Ponar			
Number of Taxa	12	20	23
Shannon-Weaver Diversity	2.1	3.4	3.0
Florida Index	2	5	4
EPT Index	0	2	4
% Oligochaeta	59.2	23.8	54.4
% Diptera	5.9	19.1	24.0
% Gastropoda	14.2	8.6	0.8
% Isopoda	13.6	24.8	11.2
% Ephemeroptera	0	2.9	3.2
% Amphipoda	3.0	20.0	5.6
% Other	4.1	0	0.8
% Predator/Carnivores	0.3	5.7	2.4
% Above-Surface Deposit Feeders	2.1	12.4	18.8
% Below Surface Deposit Feeders	59.2	23.8	52.0
%Browser/Grazers	6.8	18.6	7.2
% Scavengers	6.8	19.5	7.2
% Suspension Feeders	4.1	2.4	2.0
%Shredders	4.1	9.5	6.8
% Scrapers	14.2	8.1	1.2
%Other	2.4	0	2.4
Phytoplankton Algae			
Number of Taxa	11	17	13
Shannon-Weaver Diversity	2.4	3.3	3.1
Chlorophyll a (µg/L)	0.47	0.55	0.55
Algal Density (#/mL)	401	709	473
% Blue-green	5.1	44.9	23.9
% Green	30.8	17.4	10.9
% Cryptophyceae	51.3	23.2	15.2
% Dinophyceae	2.6	2.9	2.2
% Euglenophyceae	0	1.5	0
% Diatoms	10.3	10.1	47.8
Algal Growth Potential (mg dry wt/l)	1.8	2.2	3.2

Methods

The focus of this investigation was to determine the discharge's effects on the surrounding waters. A comparison of biological community health was made between a reference site (located in the Ortega River approximately 1500 meters northeast of the facility), and two test sites (also in the Ortega River, bracketing the discharge) (see maps in Appendix). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical and nutrient data were also collected on the study sites and the effluent. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Cyprinella leedsi* as test organisms, were performed on an effluent sample (Weber 1991). The effluent was analyzed for organic constituents (base neutral and acid extractables, and pesticide extractables) and metals. Additionally, nutrient analyses were performed on the effluent, reference, and both test sites. Methods used for all

chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at the reference and test sites. Invertebrates were collected via three combined Ponar grabs per site (Ross 1990). Phytoplankton was also sampled at the reference and test sites. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential tests, using *Selenastrum capricornutum* as the test organism were performed on the reference and test sites, following Miller *et al.* (1978).

Explanation of Measurements of Community Health

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

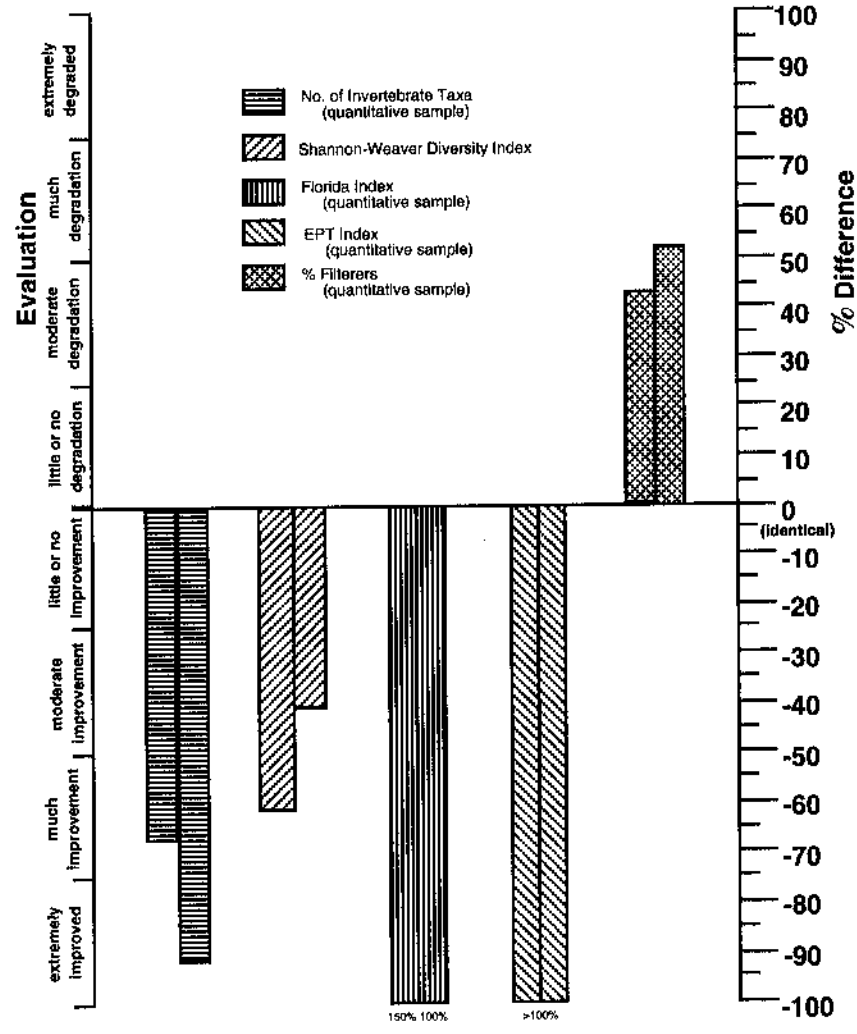
Taxa richness: Stress tends to reduce the number of different types of organisms present in a system, although moderate nutrient enrichment may sometimes be correlated with increased algal taxa richness.

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

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

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

Community structure: Substantial shifts in proportions of major groups of organisms, compared to reference conditions, may indicate degradation. In marine systems, an increase in the % tubi-



Effect of discharge on the benthic macroinvertebrate community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

ficid oligochaetes, a decrease in the % pelecypods, and a decrease in the number of polychaete taxa are all considered indicators of disturbance (Engel *et al.* 1994).

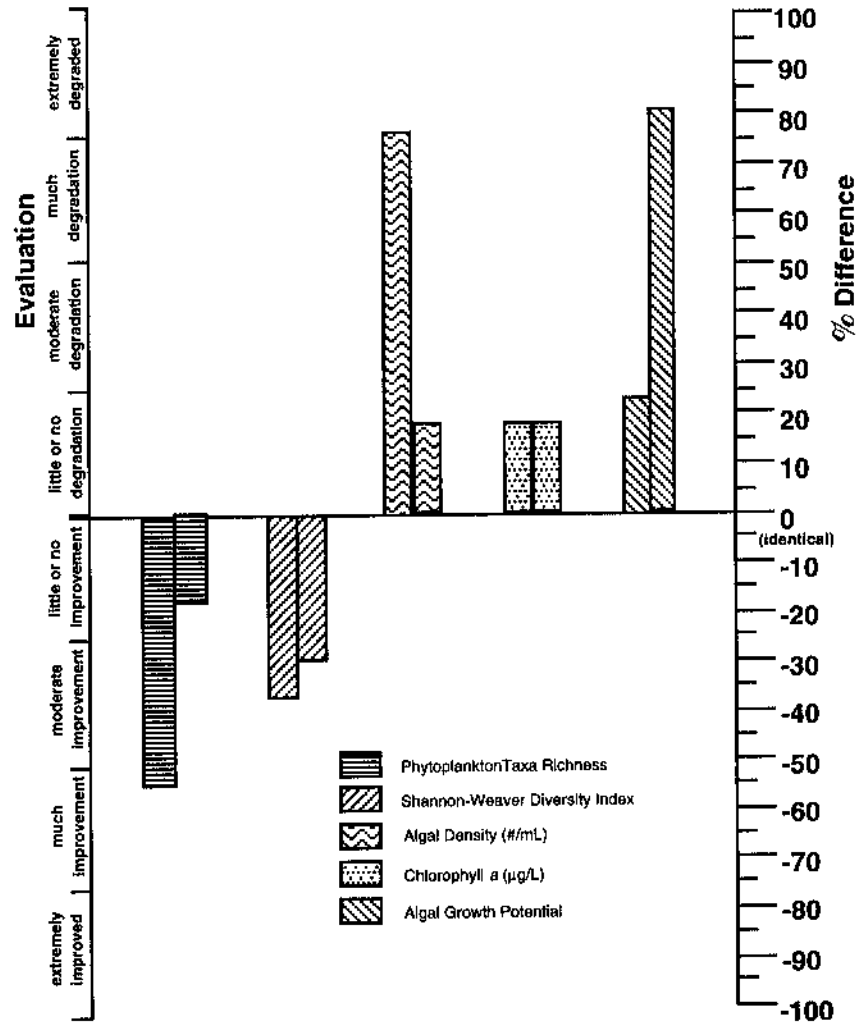
Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress. A decreased diatom to blue-green algae ratio (calculated by dividing the number of individuals in the Bacillariophyta by the number of individuals in the Bacillariophyta + Cyanophyta) is often indicative of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

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

The Stream Condition Index for Florida (SCI) is a composite macroinvertebrate metric (EA Engineering 1994). The SCI assigns points to a variety of parameters, depending on how closely each parameter approaches an expected reference condition (see SCI calculation table in Appendix).

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

The following personnel were involved in this investigation: Ruth Bouman, Tim McKelvey, Pat O'Conner, and Amy Kalmbacher (DEP Northeast District) and Marshall Faircloth, Russel Frydenborg, Maosen Hua, Joy Jackson, Kathleen Lurding, Tina Mikulski, Elizabeth Miller, Joe North, Urania Quintana, Tobin Rader, David Ross, and Lisa Tamburello (Tallahassee Biology Laboratory). 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.



Effect of discharge on the algal community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

Results and Discussion

In the past, water quality in the Ortega River has been ranked as only fair (due to low dissolved oxygen and elevated phosphorus), thought to be at least partially related to the domestic and industrial discharges in the area, and to urban runoff (Hand and Paulic 1992). Fluctuating and occasionally elevated conductivity (averaging

up to 1077 µmhos/cm) is an added natural stress in this tidally influenced reach (Hand and Paulic 1992). The wide riparian zone in this portion of the Ortega River is heavily vegetated with plants typical of a freshwater wetland/swamp system, including red maple, cypress, and sweet bay. Decomposing vegetation from these wetlands would also tend to depress dissolved oxygen values in the river, particularly under flooded conditions, as were present during this study. Habitat quality ranged from 66 points at the reference site, to 62 points at each test site. It should be noted that these habitat assessments were based on marine criteria, and may not be completely applicable to this predominantly freshwater system.

The reference and test sites were similar with respect to most physical and chemical parameters. Dissolved oxygen at the reference site (2.9 mg/L), test site 1 (2.4 mg/L), and test site 2 (3.0 mg/L) were all less than the Class III Water Quality Standard (Rule 62-302.530(31) FAC). These levels of dissolved oxygen are inadequate for the survival of many aquatic organisms. The specific conductance, ranging from 122 µhmos/cm to 127 µhmos/cm, indicated that freshwater dominated the river during this study. This is important, since the biological sampling (Ponar dredges) was oriented towards marine systems. Water was acidic at all three sites (pH was 5.9 SU at the reference site, 5.8 SU at test site 1, and 6.1 SU at test site 2) reflecting blackwater stream input. Water temperature ranged from 19.0° C to 20.1° C. Stream velocity was the same at all three sites (0.2 m/sec).

No organic pollutants were detected in the effluent. A non-problem level of atrazine (0.01 µg/L) was present at a concentration less than the criterion for detection. No metals were detected at levels exceeding ambient standards.

The sample of effluent was not acutely toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Cyprinella leedsi* (Appendix).

Despite relatively elevated concentrations of nitrate-nitrite in the effluent (8.8 mg/L), no nutrient enrichment was observed at any receiving water site. Nutrient values at all three sites were either average or below average for a typical Florida stream (see Chemistry Summary Table in Appendix).

Algal Growth Potential (AGP) values coincided with the nutrient results. Though effluent AGP was elevated (122.8 mg dry wt/L), no receiving water site exceeded the 5.0 mg dry wt/L "problem threshold" for fresh waters (Raschke and Schultz 1987). The AGP was determined to be 1.8 mg dry wt/L at the reference site, 2.2 mg dry wt/L at test site 1, and 3.2 mg dry wt/L at test site 2.

Fecal coliform bacteria, at 67 organisms/100 mL at the reference site, 80 organisms/100 mL at test site 1, and 50 organisms/100 mL at test site 2, complied with Class III Water Quality Standards. Similarly, total coliforms (ranging from 300 organisms/100 mL to 465 organisms/100 mL) complied with Class III standards. Effluent levels of fecal coliforms (8 organisms/100 mL) and total coliforms (30 organisms/100 mL) were lower than receiving water values.

Quantitative measures of benthic macroinvertebrate community health indicated no adverse effects associated with the discharge. The Figure on p. 2 indicates the degree of difference between the invertebrate populations of the reference 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 reference.

While most macroinvertebrate parameters were somewhat depressed throughout this portion of the Ortega River, they generally showed improvement at the test sites, compared with the reference site. Taxa richness at test site 1 (with 20 taxa) and at test site 2 (with 23 taxa), both exceeded the reference site value (12 taxa). The Shannon-Weaver Diversity Index was also better at the test sites (with scores of 3.4 and 3.0 at test site 1 and 2, respectively) than at the reference site (with a diversity of 2.1). Similarly, while the Florida Index and EPT Index values were low throughout the study area, these scores at both test sites were better than those determined for the reference site (see Biology Table). This apparent stress seen in the biota may be attributed to the low levels of dissolved oxygen and to the fluctuating conductivities found at this transitional, pre-estuarine reach. Some of the more common taxa at all three sites, including the oligochaete, *Limnodrilus hoffmeisteri*, the isopods, *Cyathura polita* and *Cassidinidea ovalis*, and the amphipod, *Gammarus* sp., are often found in the upper, very low salinity portions of estuaries. The choice of sampling gear used in this study (Ponar dredge rather than dipnets and Hester-Dendys) is another potential reason for collecting a somewhat depauperate freshwater community.

The Figure on p. 3 represents changes in the phytoplankton algal community. As was noted with the macroinvertebrates, larger differences (that is, higher percentages) correspond with greater degrees of degradation. In general, the phytoplank-

ton communities were typical of a low nutrient system, with very low algal densities (below 709 cells/mL) and low chlorophyll *a* values (0.55 µg/L or less) at all three Ortega River sites. Again, taxa richness at test site 1 (with 17 taxa) and at test site 2 (with 13 taxa), was higher than that of the reference site (11 taxa). Shannon-Weaver diversities were also higher at test site 1 (3.3) and test site 2 (3.1), than at the reference site (2.4).

Conclusions

Dissolved oxygen at the reference site (2.9 mg/L), test site 1 (2.4 mg/L), and test site 2 (3.0 mg/L) were all less than the Class III Water Quality Standard (Rule 62-302.530(31) FAC). Decomposing vegetation from surrounding wetlands is a potential cause for the depressed dissolved oxygen values in the river. The specific conductance, ranging from 122 µhmos/cm to 127 µhmos/cm, indicated that freshwater dominated the river during this study.

No organic pollutants were detected in the effluent above quantitation limits. No metals were detected in excess of ambient standards.

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

Despite relatively elevated concentrations of nitrate-nitrite in the effluent (8.8 mg/L), no nutrient enrichment was observed at any receiving water site. Nutrient values at all three sites were either average or below average for a typical Florida stream.

Algal Growth Potential results coincided with the nutrient concentrations, with high values in the effluent and no receiving water site exceeding the 5.0 mg dry wt/L "problem threshold" for fresh waters.

Fecal and total coliform bacteria complied with Class III Water Quality Standards in the effluent and at all three receiving water sites.

While most macroinvertebrate parameters were somewhat depressed throughout this portion of the Ortega River, they generally showed improvement at the test sites, compared with the reference site. This apparent stress seen in the biota may be attributed to the low levels of dissolved oxygen and to the fluctuating conductivities found at this transitional, pre-estuarine reach. The choice of sampling gear used in this study (Ponar dredge rather than dipnets and Hester-Dendys) is another potential reason for collecting a somewhat depauperate freshwater community.

The phytoplankton communities were typical of a low nutrient system, with very low algal densities (below 709 cells/mL) and low chlorophyll *a* values (0.55 µg/L or less) at all three Ortega River sites. Algal taxa richness and diversity were higher at the test sites than at the reference site.

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Chemistry summary table for Ortega Utilities/Blanding Plant

	Effluent	Reference Site	Test Site 1	Test Site 2
Organic Constituents (ug/L)				
Atrazine	0.010 T			
Metals (ug/L)				
Aluminum	100 U			
Arsenic	10 U			
Cadmium	.08 U			
Copper	6 I			
Chromium	10 U			
Iron	28			
Lead	10 U			
Mercury	0.10 U			
Nickel	4 U			
Selenium	30 U			
Silver	0.05 U			
Zinc	28			
Nutrients (mg/L)				
Ortho-phosphate	1.2	0.081	0.072 A	0.075
Total phosphorus	1.3	0.10	0.10	
Ammonia	0.035 I	0.048	0.048	0.043
Nitrate+Nitrite	8.8	0.032 I	0.028 I	0.023 I
TKN	0.81	2.1	2.2	2.3
General Phys-Chem Parameters				
Habitat Assessment		66	63	63
D. O. (mg/L)	7.4	2.9	2.4	3.0
pH (SU)	6.6	5.9	5.8	6.1
Specific Conductance (µmhos/cm	551	127	122	124
Temperature (°C)	26.5	20.1	19.0	19.2
Total Suspended Solids (mg/L)	< 1	2	2	3
CBOD5 (mg/L)	< 2	< 2	< 2	< 2
Hardness (mg CaCO3)	127.8			
Algal Growth Potential (mg dry wt/L)	122.8 A	1.8	2.2	3.2
Toxicity				
Bioassay Fish	Not toxic			
Bioassay Invertebrate	Not toxic			
Microbiological Communities (org/100 mL)				
Fecal Coliform	8 Q	67 AQ	80 Q	50 Q
Total Coliform	30 Q	465 AQ	300 Q	360 Q

A - Value reported is the mean of two or more determinations.

I - Value reported is less than the minimum quantitatin limit, and greater than or equal to the detection limit.

Q - Sampled held beyond normal holding time.

T - Value reported is less than the criterion for detection.

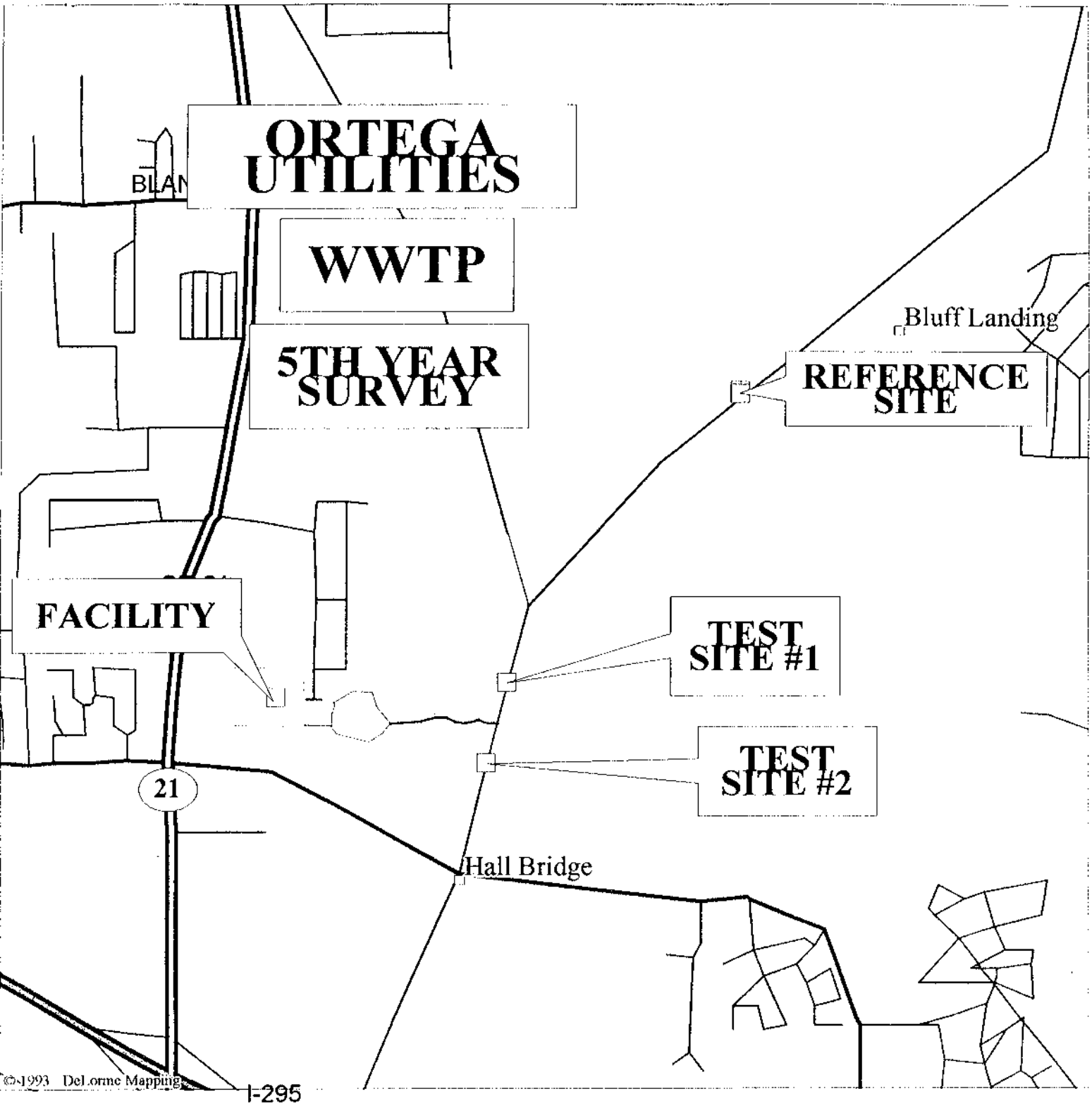
U - Material was analyzed for but not detected; The value reported is the minimum detection limit.

Typical Values for Selected Parameters in Florida Waters

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

Parameter	Percentile Distribution 5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
STREAMS (1617 stations)											
Phytoplankton Chlorophyll *a*	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	48.70
Periphyton Chlorophyll *a*	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85
H-D Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90
Qualitative Taxa Richness	9.00	12.00	17.00	20.00	22.00	24.50	26.00	28.00	31.00	37.00	53.00
H-D Taxa Richness	6.00	6.50	9.00	11.50	13.00	15.00	17.00	21.50	26.00	29.00	32.00
TKN	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80
Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60
NO2-NO3	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51
Ortho Phosphorus	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37
Turbidity	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30
LAKES (477 stations)											
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	3.46
NH3+NH4	0.01	0.02	0.02	0.03	0.04	0.06	0.08	0.12	0.15	0.21	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.10	0.14	0.23
Total Phosphorus	0.01	0.02	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.23	0.42
Ortho-Phosphorus	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.21	0.32
Turbidity	1.00	1.25	1.55	2.05	2.75	4.50	6.45	9.60	14.10	26.00	40.00
ESTUARIES (690 stations)											
Phytoplankton Chlorophyll *a*	2.14	3.28	4.49	5.13	6.00	6.93	7.94	9.60	12.40	17.60	22.20
Dredge Diversity	1.34	1.53	1.91	2.28	2.56	2.90	3.15	3.59	4.01	4.53	4.98
Dredge Taxa Richness	4.00	6.00	9.00	11.00	15.00	18.50	25.00	35.00	41.00	62.00	90.00
TKN	0.26	0.34	0.42	0.50	0.59	0.69	0.76	0.82	0.95	1.30	1.49
NH3+NH4	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.13	0.22	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.17	0.23
Total Phosphorus	0.01	0.02	0.06	0.07	0.10	0.11	0.14	0.17	0.23	0.43	0.59
Ortho-Phosphorus	0.01	0.02	0.03	0.04	0.04	0.05	0.07	0.09	0.12	0.21	0.44
Turbidity	3.50	4.00	4.50	5.05	5.40	5.60	6.30	6.80	8.00	11.40	11.75

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



LEGEND

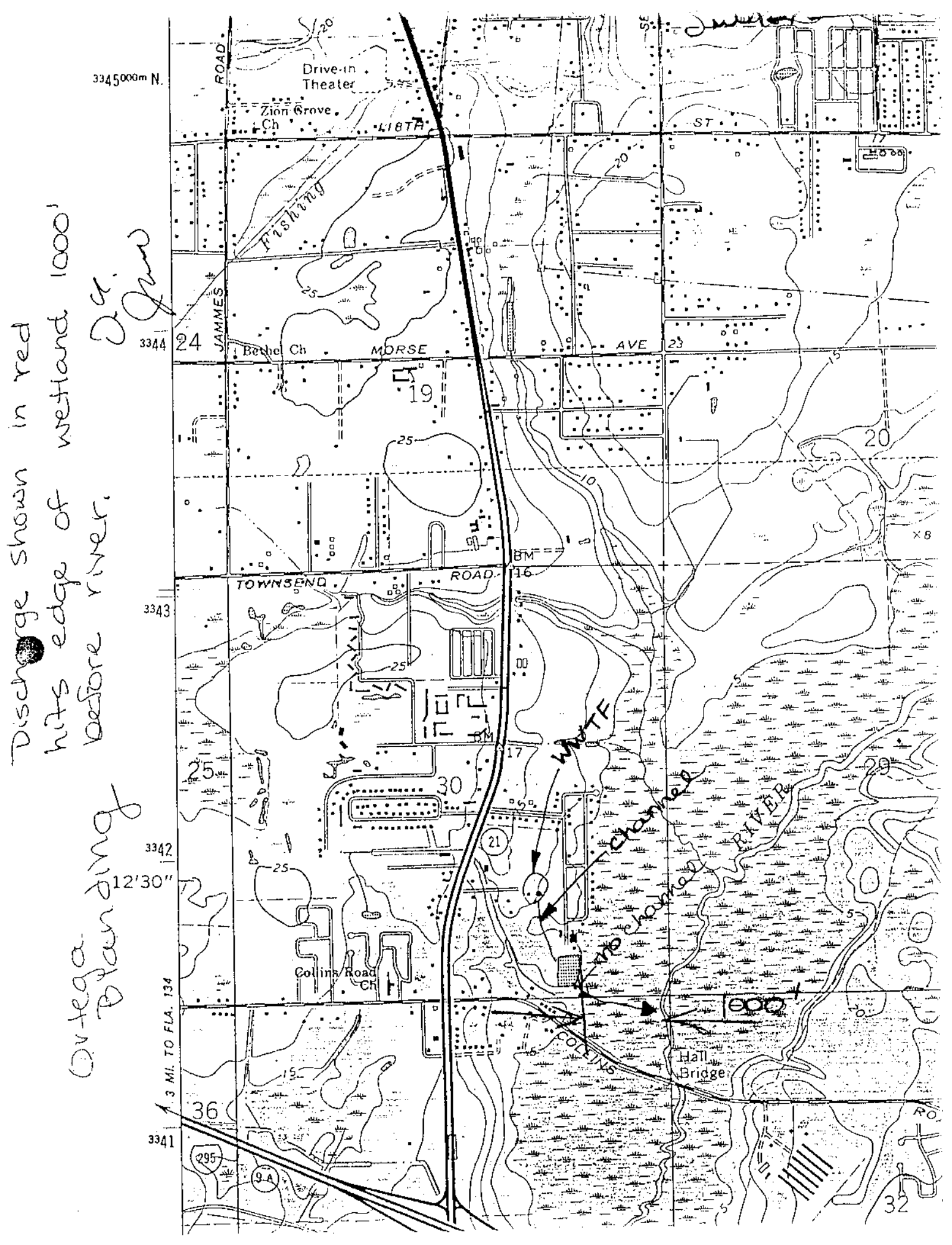
- State Route
- Geo Feature
- Hill
- US Highway
- Population Center
- Street, Road
- Hwy Ramp
- Major Street/Road
- Interstate Highway
- State Route
- US Highway
- Railroad
- RR in Tunnel
- River

Scale 1:15,625 (at center)

1000 Feet

500 Meters

Mag 14.00
Thu Nov 02 13:03:59 1995


Discharge shown in red hits edge of wetland 1000' before river.
Ortega Branding
12'30"
3345000m N.
3344
3343
3342
3341
Drive-In Theater
Zion Grove Ch
LIBERTY
ST
JAMMES ROAD
Fishing
Bethel Ch
MORSE
AVE
TOWNSEND ROAD
BM
WWTF
channel
RIVER
Collins Road Ch
COLLINS
Hall Bridge
1.3 MI. TO FLA. 134
295
9A
24
19
20
25
30
21
36
32
29

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

FACILITY SUMMARY

Facility Name: ORTEGA UTILITIES / BLANDING		Date Summary Prepared: 10-24-95
Location (attach detailed map):	County: Duval	District: Northeast
Federal Permit # FL00 33553 and expiration date: 6-30-96	State GMS # and 3116 P03428 State expiration date: 2-28-99	Facility Type: Industrial (Municipal) Federal Agricultural Other (list):

Function of facility: To treat domestic waste for single family homes, trailer parks and commercial establishments (car-lots, Publix, Ekards, restaurants)

Description of treatment process: 1.1 MGD extended aeration plant which includes an influent pump station, bar screens, surge tank, aeration basin; secondary clarifier, chlorination and dechlorination by sulfur dioxide.

Receiving waters: 10001 of wetlands along Ortega River	Classification: I II (III)

Design Flow: 1.1 MGD	Mean Flow: 0.650	Flow during survey:

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

therefore, the best time to sample is: during the day

If facility has a mixing zone, give details (size, parameters affected, etc.): n/a

List effluent limits (if necessary, attach relevant paperwork):

Parameter	Limit (units)
Flow	1.1 MGD
CBOD5 monthly ave.	3.0 mg/l
TSS annual ave.	5 mg/l
TKN annual ave.	1.5 mg/l
Un-ionized Ammonia	0.02 mg/l
Fecal Coliform	< 200 count/mL
Chlorine	0.01 mg/l max
pH	6.0 - 8.5
DO	min. 7.0 mg/l

Describe special permit conditions and permit modifications:

last modification 10-18-95 to correct operator coverage and require sampling during peak loading.

Seasonal Loading - from Sept 1 - April 30, CBOD5 monthly ave. is 5.0 mg/l

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

FACILITY SUMMARY

_____ (Facility)

Description of permitted outfall(s): Discharge is to a drainage ditch which flows to a borrow pit at the end of Clubdudley road. From the borrow pit, the discharge flow through approximatley 1,000 feet of wetlands into the Ortega River.

List permit violations (from MOR data or other source) and plant upsets that occurred within past year: samples are composited at night for mors which may not be representative.

According to the on-site logs, solids washed out on the following days:

April 6, 1995
May 14, 1995
June 5, 1995
July 18, 1995
August 25, 1995
October 10, 1995
and possibly October 15, 1995.

All events were directly related to rainfall.

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

no current enforcement

Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set: not enough data

Additional information:

Staff contributing to this review (signature):

(Biologist)

Kristen Smeltzer (Inspector)

Kristen Smeltzer (Engineer)

( )

( )

( )

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8021 / SUBMITTING AGENCY NAME: FDEP-NERD	STORET STATION NUMBER: 20030555	DATE (M/D/Y): 10-23-95	TIME: 1305	RECEIVING BODY OF WATER: Ortega River

REMARKS:	LOCATION:	FIELD ID/NAME:
Ortega Utilities	Ortega River S. of Blff Landing	Reference Site

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
70				10	20		

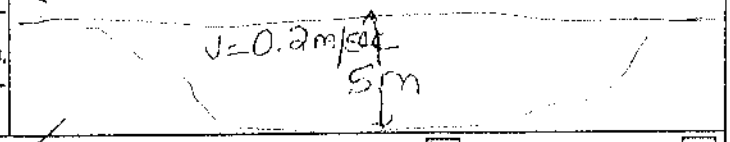
Local Watershed Erosion (check box): None [✓] Slight [ ] Moderate [ ] Heavy [ ]

Local Watershed NPS Pollution (check box): No evidence [ ] Some potential sources [✓] Obvious sources [ ]

Width of riparian vegetation (m) on least buffered side: 720m

List & map dominant vegetation on back

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



Artificially Channelized [ ] no [ ] [ ] [ ]
Artificially Impounded [ ] yes
recent, severe | some recovery | mostly recovered, more sinuous

High Water Mark (m above bed): 5m

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	50	3	grab
Leaf Packs or Mats	50	3	grab	Mud/Muck/Silt	20	3	grab
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.5	30.14	5.94	2.87	121			0.4
Mid-depth								
Bottom								

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

Water Odors (check box): Normal: [✓] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Other: [ ]

Water Surface Oils (check box): None: [✓] Sheen: [ ] Globs: [ ] Slick: [ ]

Clarity (check box): Clear: [ ] Slightly turbid: [✓] Turbid: [ ] Opaque: [ ]

Color (check box): Tannic: [✓] Green (algae): [ ] Clear: [ ] Other: [ ]

Weather Conditions/Notes: Partly cloudy, warm, slight breeze.
Immediate vicinity is natural wetland but beyond that is heavily developed (see back →)

Abundance:	Absent	Rare	Common	Abundant
Periphyton	[✓]	[ ]	[ ]	[ ]
Fish	[✓]	[ ]	[ ]	[ ]
Aquatic Macrophytes	[ ]	[ ]	[✓]	[ ]
Iron/sulfur Bacteria	[✓]	[ ]	[ ]	[ ]

SAMPLING TEAM: Brown / O'Connor / Holmbacher

SIGNATURE: [signature]

DATE:

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

SUBMITTING AGENCY CODE: 6021 SUBMITTING AGENCY NAME: FDER-NED	STORET STATION NUMBER: 2COO3O555	DATE (M/DY): 10-23-95	RECEIVING BODY OF WATER: Ortega River

REMARKS:	LOCATION:	FIELD ID/NAME:
Ortega Utilities	Ortega River South of Blanding	Reference Site

Habitat Parameter score	Excellent	Good	Fair	Poor
Littoral Alterations 10	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed 28	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 2	>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 10	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 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 66

COMMENTS: Poor area, most discharges + runoff from Ortega Utilities Road feeding Ortega River

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10-23-95	Beth Bruner	Beth Bruner

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8021 / SUBMITTING AGENCY NAME: EDP NEJ	STORET STATION NUMBER	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER
	20030553	10/2/95	1135	Cortage River

REMARKS:	LOCATION:	FIELD ID/NAME:
Cortage Utilities	Cortage River North of PRD	Test Site #1

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
70				10	20		

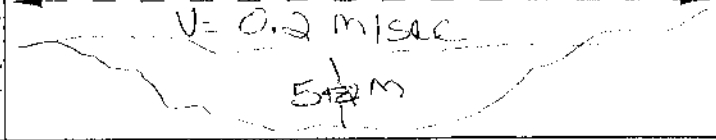
Local Watershed Erosion (check box): None ☑ Slight ☐ Moderate ☐ Heavy ☐

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

Width of riparian vegetation (m) on least buffered side: 720 m

List & map dominant vegetation on back

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



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

Artificially Impounded ☐ yes

High Water Mark (m above bed): 5

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	40	3	grab
Leaf Packs or Mats	20	3	grab	Mud/Muck/Silt	40	3	grab
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut Banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.5	17.3	5.81	2.34	42			0.8
Mid-depth								
Bottom								

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

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

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

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

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

Weather Conditions/Notes: Partly cloudy
rain slight breeze
Immediate vicinity is natural wetland, but beyond that is heavily developed (Data poor)

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Bowman/Cornor/Blanchard	Ruth Bowman	

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

SUBMITTING AGENCY CODE: 6031 / SUBMITTING AGENCY NAME: DEP-NED	STORET STATION NUMBER: 20030553	DATE (M/D/Y): 10/23/95	RECEIVING BODY OF WATER: Ortega River

REMARKS:	LOCATION:	FIELD ID/NAME:
Ortega Utilities	Ortega River North of POD	Test Site # 1

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations — 10	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed — 28	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 Swamp Tidal Creek	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation — 2	>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 — 10	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	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 63

COMMENTS: POD and most downstream sample site through Ortega Utilities Dam. Access on Shore.

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10-23-95	Kathy Bowman	Kathy Bowman

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME: F DEP-NWD	STORET STATION NUMBER: 21FLDEP2 30554	DATE (M/D/Y): 10-23-99	TIME: 1225	RECEIVING BODY OF WATER: Cottage River

REMARKS:	LOCATION:	FIELD ID/NAME:
Cottage (Williams)	Cottage River South of PCO	Test Site #2

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
70				10	20		

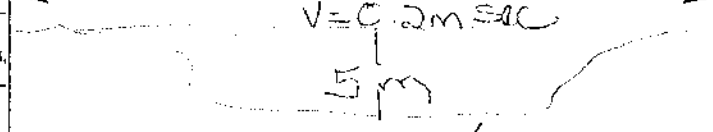
Local Watershed Erosion (check box): None ☑ Slight ☐ Moderate ☐ Heavy ☐

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

Width of riparian vegetation (m) on least buffered side: 20m

List & map dominant vegetation on back

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)



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

Artificially Impounded ☐ yes

High Water Mark (m above bed): 5

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	40	3	poss
Leaf Packs or Mats	20	3	poss	Mud/Muck/Silt	20	3	poss
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut Banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.5	19.2	6.08	2.16	124			0.7
Mid-depth								
Bottom								

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

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

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

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

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

Weather Conditions/Notes: partly cloudy, windy

Intermediate vegetation, natural vegetation, but beyond that is naturally old cutover. (see map)

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Bowers/Conn/Kalmbacher	Ruth Kalmbacher	

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

SUBMITTING AGENCY CODE: 2031 / SUBMITTING AGENCY NAME: FDEP/FWRD	STORET STATION NUMBER: 20020554	DATE (M/D/Y): 10-23-95	RECEIVING BODY OF WATER: Ortega River

REMARKS:	LOCATION:	FIELD ID/NAME:
Ortega Habitat	Ortega River South of PBD	Test Site #5

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations — 10	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed — 28	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 Swamp Tidal Creeks	One community observed from those listed. 13-25 points	No communities observed from those listed. 0-12 points
Tidal Fluctuation — 2	>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 — 10	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	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 63

COMMENTS: Point west discharge stream flow through culvert before sampling event

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10-23-95	Ruth Bowman	Ruth Bowman

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Ortega / Blanding Utilities
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL00 33553
LIMS Sample #: 120764 (sample by 10-27-95) **LIMS Job #:** 95-Oct-24-22

Sample Collection: Date 10/23/95 Time 1430
Test Beginning: Date 10/24/95 Time 1200
Test Ending: Date 10/26/95 Time 1200
Organism Batch #: 50 **Diluent Batch #:** 43
Organism Age: <24 hrs
Test Organism: Ceriodaphnia dubia

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through

Test Number: 1 of 2

Remarks:

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	24.7 @ 24.7	8.4 @ 24.1 °C	110.8 @ 1023 994 @ 1013 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.1 @ 24.1	8.4 @ 23.9 °C	109.9 @ 1023 990 @ 1013 @ 23.3 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 22.6	8.4 @ 24.1 °C	104.3 @ 1023 980 @ 1013 @ 23.1 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 48 h
CTL	A	5	5	5	8.2		8.2	23.2		24.7	7.7		7.3	170		205
CTL	B	5	5	5			8.2			24.8			7.3			190
CTL	C	5	5	5			8.2			24.8			7.3			190
CTL	D	5	5	5			8.2			24.7			7.4			190
100%	A	5	5	5	7.2		8.3	23.5		24.6	7.7		7.6	500		540
100%	B	5	5	5			8.3			24.5			7.6			550
100%	C	5	5	5			8.3			24.4			7.6			560
100%	D	5	5	5			8.3			24.3			7.6			560
Measured/Loaded by:		MF	TR	TR	TR		DR	TR		TR	TR		TR	TR		TR
Recorded by:		MF	DR	TR	DR		TR	DR		TR	DR		TR	DR		TR

Investigators' Signatures

Tim M. McKelvey
Tracy L. Kadle
David A. Ross
Marshall Faircloth
Jennifer Smith
Jason Nelson
(reviewer)

Water Quality Parameters

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			—	—	—
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-150	TR
Alkalinity (mg/L as $CaCO_3$):	—	70	90	HACH	TR
Hardness (mg/L as $CaCO_3$):	—	80	155	HACH	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Meter Slope: -55.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Ortega/Blanding Utilities
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL00 33553
LIMS Sample #: 120764 (sample log 10-27-95) LIMS Job #: 95-Oct-24-22

Sample Collection: Date 10/23/95 Time 1430
Test Beginning: Date 10/24/95 Time 1200
Test Ending: Date 10/26/95 Time 1200
Organism Batch #: 56 Diluent Batch #: Well
Organism Age: 11 days old
Test Organism: Cyprinella leedsi

Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 2 of 2
Remarks:

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	24.7 @ 24.7	8.4 @ 24.1 °C	1108 @ 1023 994 @ 1013 @ 23.9 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.1 @ 24.1	8.4 @ 23.9 °C	1099 @ 1023 990 @ 1013 @ 23.3 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.7 @ 22.6	8.4 @ 24.1 °C	1093 @ 1023 980 @ 1013 @ 23.1 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
CTL A	G-12	5	5	5	7.8	8.3	8.3	24.6	23.4	23.0	7.8	7.9	8.1	250	245	245
CTL B	9	5	5	5	7.9	8.3	8.3	24.6	23.3	22.9	7.8	7.9	8.1	256	245	245
CTL C	G-6	5	5	5	7.9	8.3	8.3	24.6	23.3	22.8	7.8	8.0	8.0	250	245	245
CTL D	20	5	5	5	7.9	8.3	8.3	24.6	23.4	22.9	7.8	8.0	8.0	250	245	245
100% A	G-13	5	5	5	7.1	7.8	8.1	24.5	23.4	22.9	7.8	8.1	8.0	525	515	515
100% B	302	5	5	5	7.1	7.8	8.1	24.5	23.3	22.7	7.8	8.0	7.9	525	515	515
100% C	118	5	5	5	7.1	7.8	8.1	24.5	23.2	22.7	7.8	8.0	7.9	525	515	515
100% D	28	5	5	5	7.1	7.8	8.1	24.5	23.1	22.7	7.8	8.0	7.9	525	515	515
Measured/Loaded by:		TM	TR	TR	TR	JLS	TR	TR	JLS	TR	TR	JLS	TR	TR	JLS	TR
Recorded by:		MF	TR	TR	DR	TR	TR	DR	TR	TR	DR	TR	TR	DR	TR	TR

Investigators' Signatures

reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water: Well Water / 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):		—	—	—
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	DR-850	TR
Alkalinity (mg/L as $CaCO_3$):	125	90	HACH	TR
Hardness (mg/L as $CaCO_3$):	120	155	HACH	TR
Total ammonia (mg/L as N):	<0.017	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -55.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

Benthic macroinvertebrate taxa list for Ortega Utilities/Blanding Plant, collected via Ponar grab samples in the Ortega River, on 23 October 1995. Densities, in number/m^2, represent the mean of three replicates.

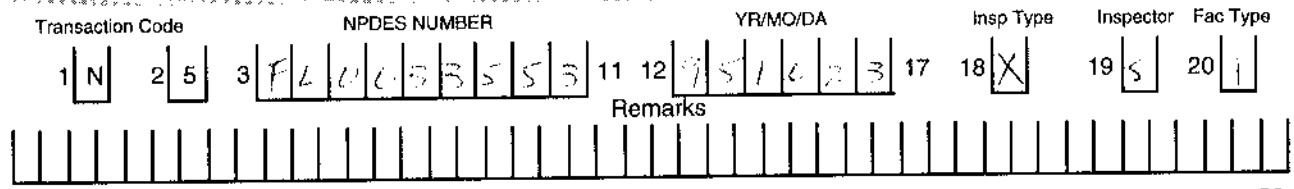
	Reference Site	Test Site 1	Test Site 2
Oligochaeta			
Aulodrilus pigueti	1	–	1
Dero trifida	–	1	–
Eclipidrilus sp.	–	–	1
Haber speciosus	–	–	3
Limnodrilus hoffmeisteri	99	24	63
Gastropoda			
Laevapex peninsulae	–	1	–
Littoridinops sp.	23	–	–
Micromenetus dilatatus	1	–	–
Undetermined Ancylidae	–	6	1
Undetermined Hydrobiidae	–	2	–
Pelecypoda			
Undetermined Pisidiidae	7	–	–
Trombidiformes			
Koenikea sp.	–	1	–
Isopoda			
Caecidotea sp.	–	1	–
Cassidinidea ovalis	5	7	3
Cyathura polita	18	18	11
Amphipoda			
Gammarus sp.	5	21	7
Ephemeroptera			
Caenis sp.	–	1	1
Hexagenia sp.	–	–	1
Hexagenia limbata	–	–	2
Stenacron sp.	–	2	–
Trichoptera			
Oecetis sp.	–	–	1
Diptera			
Ablabesmyia rhamphe grp.	–	–	1
Cladotanytarsus sp.	–	1	–
Cryptochironomus sp.	–	3	–
Cryptotendipes sp.	–	–	2
Dicrotendipes simpsoni	–	1	–
Epoicocladius flavens	–	–	1
Nilothauma sp.	–	–	1
Palpomyia / Bezzia grp.	1	4	3
Paralauterborniella nigrohalterale	1	–	4
Polypedilum sp.	2	–	–

Polypedilum halterale grp.	2	4	9
Polypedilum illinoense grp.	–	1	–
Polypedilum scalaenum grp.	–	–	1
Stenochironomus sp.	–	1	–
Tanytarsus sp.	–	1	1
Tanytarsus sp. L Epler	–	–	2
Tanytarsus sp. R Epler	–	–	1
Tanytarsus sp. T Epler	–	2	1
Tribelos fuscicornis	–	2	2
Undetermined Chironomidae	4	–	1

Phytoplankton taxa list and densities (#/mL) for Ortega Utilities/Blanding Plant, collected via subsurface grabs in Ortega River, on 23 October, 1995.

	Reference Site	Test Site 1	Test Site 2
Cyanophyceae			
Aphanocapsa sp.	–	21	–
Aphanothece sp.	–	–	10
Chroococcus sp.	–	10	10
Dactylococcopsis sp.	–	21	–
Lyngbya sp.	–	134	21
Microcystis sp.	–	21	–
Oscillatoria sp.	–	103	31
Phormidium sp.	10	–	41
Romeria sp.	10	–	–
Scytonema sp.	–	10	–
Bacillariophyceae			
Bacillaria sp.	10	10	–
Caloneis sp.	–	–	10
Cyclotella sp.	10	10	21
Mastogloia sp.	–	10	–
Navicula sp.	–	–	10
Nitzschia sp.	21	41	10
Skeletonema sp.	–	–	154
Pennales	–	–	21
Chlorophyceae			
Botryococcus sp.	21	–	–
Chlamydomonas sp.	62	113	41
Chlorella sp.	10	–	–
Chlorococcum sp.	21	–	–
Scenedesmus sp.	–	10	–
Undetermined Chlorophyceae	10	–	10
Euglenophyceae			
Undetermined Euglenophyceae	–	10	–
Dinophyceae			
Peridinium sp.	10	–	10
Undetermined Dinophyceae	–	21	–
Cryptophyceae			
Chroomonas sp.	205	154	72
Cryptomonas sp.	–	10	–

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)

