

Biological Assessment of

Tarpon Springs Wastewater Treatment Facility

Pinellas County

NPDES #FL0030406

Sampled April 1995

August 1995

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection

Results of Fifth Year Inspections

Discharger: Tarpon Springs WWTP
County: Pinellas
NPDES Number: FL0030406
State Permit Expiration Date: 14 January 1996

Toxics Sampling Inspection (XSI)

Date Sampled: 3 April 1995

Results: No organic pollutants or metals were detected in the effluent at levels exceeding Class III standards.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 3 April 1995

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

Impact Bioassessment Inspection (IBI)

Date Sampled: 3 April 1995

Results: The presence of excellent taxa richness values, as well as an abundance of many pollution sensitive macroinvertebrate taxa, suggests that the test sites were unaffected by the discharge. Similarly, the facility did not appear to have an adverse effect on the receiving water algal communities.

Water Quality Inspection (WQI)

Date Sampled: 3 April 1995

Results: Nutrient concentrations in the effluent and receiving water stations were very low. The algal growth potential values at the test and reference sites were considerably below the "problem threshold" of 10 mg dry wt/L for marine waters. Fecal and total coliforms complied with Class III standards in the effluent and at the 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 Tarpon Springs Wastewater Treatment Facility is located in Pinellas County, Florida (see maps in Appendix). It is a 4.0 MGD design capacity advanced biological wastewater treatment system (Bardenpho type), with filtration, chlorination for disinfection, and subsequent dechlorination. The effluent is either discharged into the Class III Anclote River or reused within the city.

State permit limits for the discharge into the Anclote River are as follows: carbonaceous BOD_5 (5.0 mg/L as an annual average), TSS (5.0 mg/L as an annual average), total nitrogen (3.0 mg/L as an annual average), total phosphorus (1.0 mg/L as an annual average), total residual chlorine (0.01 mg/L maximum), flow (4.0 MGD maximum), fecal coliforms (non-detectable in 75% of the samples), and pH (6.0 - 8.5 S.U.'s). Additionally, there are provisions for quarterly effluent toxicity testing and water quality monitoring of the receiving waters.

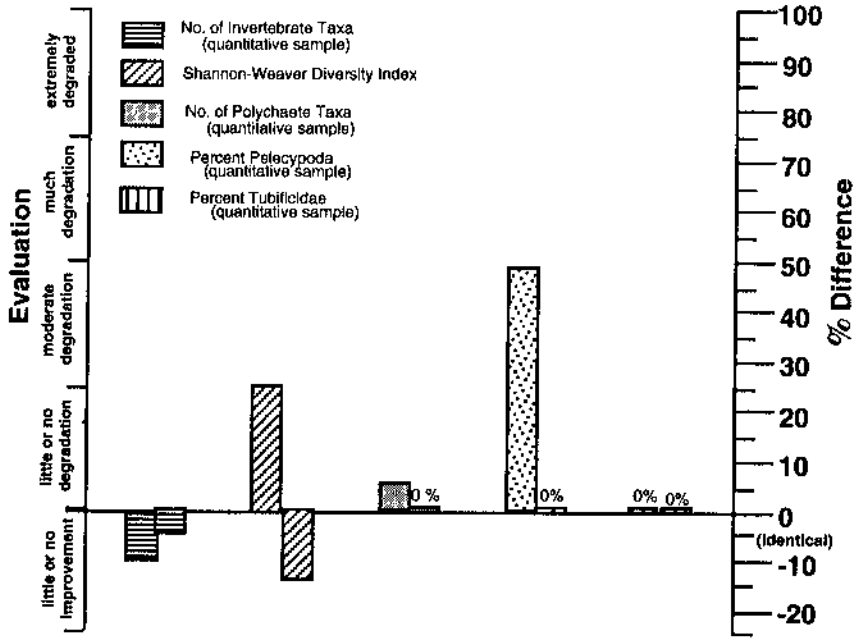
In the past, the facility has generally achieved compliance with the Grizzle-Figg advanced wastewater treatment requirements, as well as toxicity and reuse requirements. Significant and increasing portions of the effluent have been delivered to the public access reuse system. Consequently, the surface water discharge to the Anclote River may be viewed more as a backup system.

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 reference site (located on an adjacent tidal creek of the Anclote River), and two test sites (bracketing the discharge) (see maps in Appendix). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Cyprinella leedsi* as test organisms, were performed on an efflu-

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Ponar			
Number of Taxa	40	44	42
Shannon-Weaver Diversity	3.5	2.6	4
% Polychaeta	26.4	11.9	23.7
% Gastropoda	6	13.2	8.4
% Pelecypoda	9	4.6	9
% Cumacea	3.1	2.8	1.8
% Tanaidacea	5.1	2.6	3.9
% Isopoda	3	0.3	2.8
% Nematoda	0.9	0.3	1.3
% Amphipoda	46.6	64.2	48.8
% Other	0.0	0.1	0.3
% Predator/Carnivores	2.1	1	3.4
% Above-Surface Deposit Feeders	10.6	8.2	22.9
% Below Surface Deposit Feeders	10	4.1	11.8
% Suspension Feeders	61.5	67.2	45.6
% Scavengers	10	6.1	7.3
% Scrapers	6.4	13.6	9
Phytoplankton Algae			
Number of Taxa	4	5	9
Shannon-Weaver Diversity	0.7	0.8	1.3
Chlorophyll a (µg/L)	2.5	3.5	3
Algal Density (#/mL)	4457.8	4109.5	4344.3
% Green	0.0	0.0	1.4
% Diatoms	99.3	100	98
Algal Growth Potential (mg dry wt/l)	1.0	0.2	0.5



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.

ent sample (Weber 1991). The effluent was analyzed for metals and for organic constituents (base neutral and acid extractables, and pesticide extractables). Additionally, nutrient analyses were performed on effluent, reference, and test sites. Methods used for all chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at reference and test sites. Invertebrates were collected from three replicate petite Ponar grabs. Phytoplankton was sampled at both reference and test sites. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential tests, using *Selenastrum capricornutum* for the freshwater effluent, and *Dunaliella tertiolecta* for the marine receiving water sites, followed Miller *et al.* (1978) and EPA (1974). Other parameters such as fecal and total coliforms, TSS, and total residual chlorine were also sampled.

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 Hulbert (1990), Hudson *et al.* (1990), Lenat (1993), Farrell (1992), Chang *et al.* (1992), and Whitmore (1989), are used as appropriate.

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

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).

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

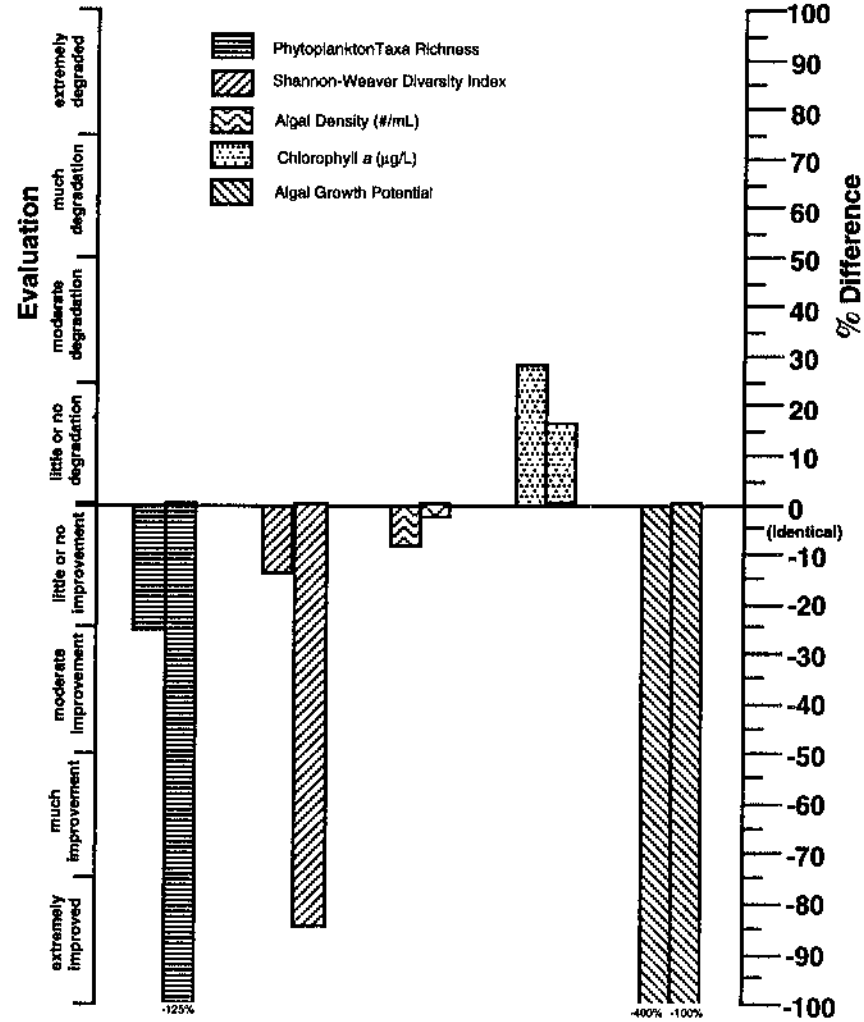
The following personnel were involved in this investigation: Lisa Carter and Stefan Schulze (DEP Southwest District) and Lyn Burton, Michael Corrigan, Marshall Faircloth, Russel Frydenborg, Christy LeDuc, Kathleen Lurding, Tina Mikulski, Elizabeth Miller, Urania Quintana, Bart Richard, Lisa Tamburello, David Whiting, Vicki Whiting, and Greg Wynn (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.

Results and Discussion

Habitat quality at receiving water stations was similar, with 63 points at test site 1, 68 points at test site 2, and 75 points at the reference site. The Anclote River is a high salinity (circa 29 ppt), anastomosed braided system, with numerous interconnected tidal creeks. All three sampling sites were located in tidal creeks adjacent to the main channel, with sediments consisting mainly of sand with some mud, muck, or silt. Waters were clear and slightly green at all stations, with Secchi depths to the bottom (1 m). Dissolved oxygen was adequate at each station, ranging from 6.5 mg/L at test site 2 to 6.8 mg/L at test site 1 and the reference site. Specific conductance (ranging from 43,040 to 45,122 µhmos/cm), temperature (between 20.1° C and 21.1° C), and pH (between 7.6 and 7.8 S.U.'s) were very similar at all three receiving water stations.

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

The pesticide atrazine (0.1 µg/L) was detected in the effluent at a



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.

concentration below the minimum quantitation limit. Since the Lowest Observed Effect Concentration (LOEC) for atrazine is 2 µg/L, the sample concentration is not a cause for concern (AQUIRE, 1994). No other organic priority pollutants were detected in the effluent. Effluent metals were not detected at levels above Class III standards.

Fecal and total coliforms complied with Class III standards in the effluent and at the receiving water sites (see Chemistry Summary Table).

Nutrient concentrations in the effluent were very low (*e.g.*, nitrate-nitrite was 0.5 mg/L, total phosphorus was 0.06 mg/L). Nutrient levels found at the test sites were basically the same as those found at the reference site, and all were less than average for a Florida estuary (see Table of Typical Water Quality Values in Appendix).

As expected from the nutrient analyses, algal growth potential (AGP) at all receiving water stations were considerably less than the "problem threshold" of 10 mg dry wt/L for marine waters (Ron Raschke, USEPA, personal communication). AGP was 1.0 mg dry wt/L at the reference site, 0.2 mg dry wt/L at test site 1, and 0.5 mg dry wt/L at test site 2.

Quantitative measures of benthic macroinvertebrate community health suggested that little or no degradation could be 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.

Macroinvertebrate taxa richness was quite good at all stations, with 40 taxa at the reference site, 44 taxa at test site 1, and 42 taxa at test site 2. These values are better than those found in 80% of other Florida estuaries. Shannon-Weaver diversity was 3. 5 at the reference site, 2.6 at test site 1, and 4.0 at test site 2. The lower diversity at test site 1 can be attributed to the large abundance of the pollution sensitive amphipod, *Corophium acherusicum*, which was the dominant organism at the reference site as well. Taxa indicative of healthy conditions (Farrell 1992), such as the amphipods, *Corophium acherusicum* and *Ampelisca holmsei*, the polychaetes, *Leitoscoloplos* sp. and *Fabricia sabella*, and the cumaceans, *Oxyurostylis* sp. and *Cyclaspis varians* were recovered from both test sites, suggesting that the discharge was exerting no noticeable effects. The number of polychaete taxa was very similar between all three sites, with 17 taxa at the reference site and 16 taxa at both the test sites. While pelecypod abundance was somewhat lower at test site 1, a total of 12 pelecypod taxa were present there. In contrast, only 5 pelecypod taxa were recovered from the reference site. Overall, the excellent taxa richness and the abundance of pollution sensitive taxa suggests that the test sites were largely unaffected by the discharge.

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. Phytoplankton communities were fairly typical for an oligotrophic, well flushed tidal system, with somewhat low taxa richness (9 taxa at test site 2, 5 taxa at test site 1, and 4 taxa at the reference site) and very low chlorophyll *a* (with 2.5 µg/L at the reference site, and 3.5 µg/L and 3.0 µg/L at test sites 1 and 2, respectively). These chlorophyll *a* values are lower than approximately 90% of other Florida estuaries, also suggesting that oligotrophic conditions prevailed in the Anclote River. Algal diversity was reduced at all three sites, with values of 0.7 at the reference site, 0.8 at test site 1, and 1.3 at test site 2. Diatoms (composing 98% to 100% of the total population) were extremely dominant at all three sites. In summary, the phytoplankton data indicate that the facility was having no adverse effects on the receiving water communities.

Conclusions

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

No problem levels of organic pollutants or metals were detected in the effluent.

Fecal and total coliforms complied with Class III standards in the effluent and at the receiving water sites.

Nutrient concentrations in the effluent and receiving water stations were very low.

The algal growth potential values at the test and reference sites were considerably below the "problem threshold" of 10 mg dry wt/L for marine waters.

The presence of excellent taxa richness values, as well as an abundance of many pollution sensitive macroinvertebrate taxa, suggests that the test sites were unaffected by the discharge. Similarly, the facility did not appear to have an adverse effect on the receiving water algal communities.

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Chemistry summary table for

Tarpon Springs WWTP	Effluent	Reference Site	Test Site 1	Test Site 2
Organic Constituents (ug/L)				
Atrazine	0.1 I			
Metals (ug/L)				
Aluminum	100 U			
Arsenic	10 U			
Cadmium	0.1 U			
Copper	3 U			
Chromium	10 U			
Iron	138 A			
Lead	10 U			
Mercury	0.1 U			
Nickel	4 U			
Selenium	30 U			
Zinc	15 A			
Nutrients (mg/L)				
Ortho-phosphate	0.04 A	0.009 I	0.01 I	0.06
Total phosphorus	0.06	0.03 I	0.02 I	0.04
Ammonia	0.02 A	0.01 U	0.01 U	0.01 U
Nitrate+Nitrite	0.5	0.02 U	0.02 U	0.02 U
TKN	0.7	0.5 A	0.6	0.5
General Phys-Chem Parameters				
Habitat Assessment	-	75	63	68
D. O. (mg/L)	7.9	6.8	6.8	6.5
pH (SU's)	7.2	7.8	7.8	7.6
Specific Conductance (µmhos/cm)	1650	45122	45100	43040
Salinity (ppt)	5.3	29.2	29.3	27.7
Temperature (°C)	24.2	21.1	20.1	20.8
Total Suspended Solids (mg/L)	1 K	-	-	-
Biological Oxygen Demand, 5 day (mg/L)	1 J	-	-	-
Algal Growth Potential (mg dry wt/L)	11.4	1	0.2	0.5
Toxicity				
Bioassay Fish	not toxic	-	-	-
Bioassay Invertebrate	not toxic	-	-	-
Microbiological Communities (org/100 mL)				
Fecal Coliform	10 K	10 K	30 J	10 J
Total Coliform	20 K	100 J	1600 L	1600 L

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

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

J - Estimated value

K - Actual value is known to be less than value given

L - Actual value is known to be greater than value given

U - Material analyzed for but not detected; 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)

Percentile Distribution

STREAMS
(1617 stations)

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
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)

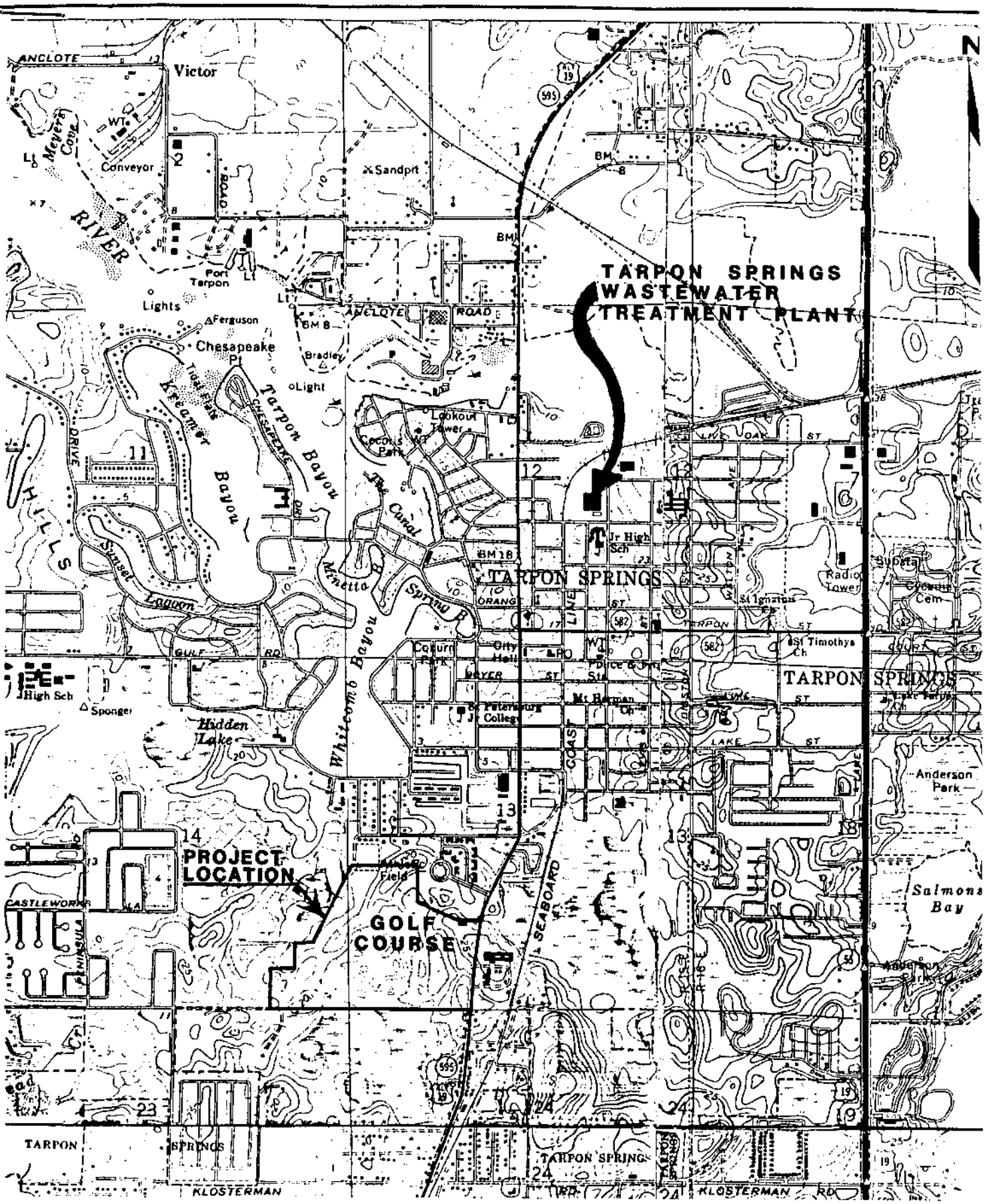
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	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



TAKEN FROM U.S.G.S. MAPS:
- AMS 4440 III SE - SERIES V847
- AMS 4440 II SW - SERIES V847
- AMS 4440 II NW - SERIES V847
- AMS 4440 III NE - SERIES V847

LOCATION MAP

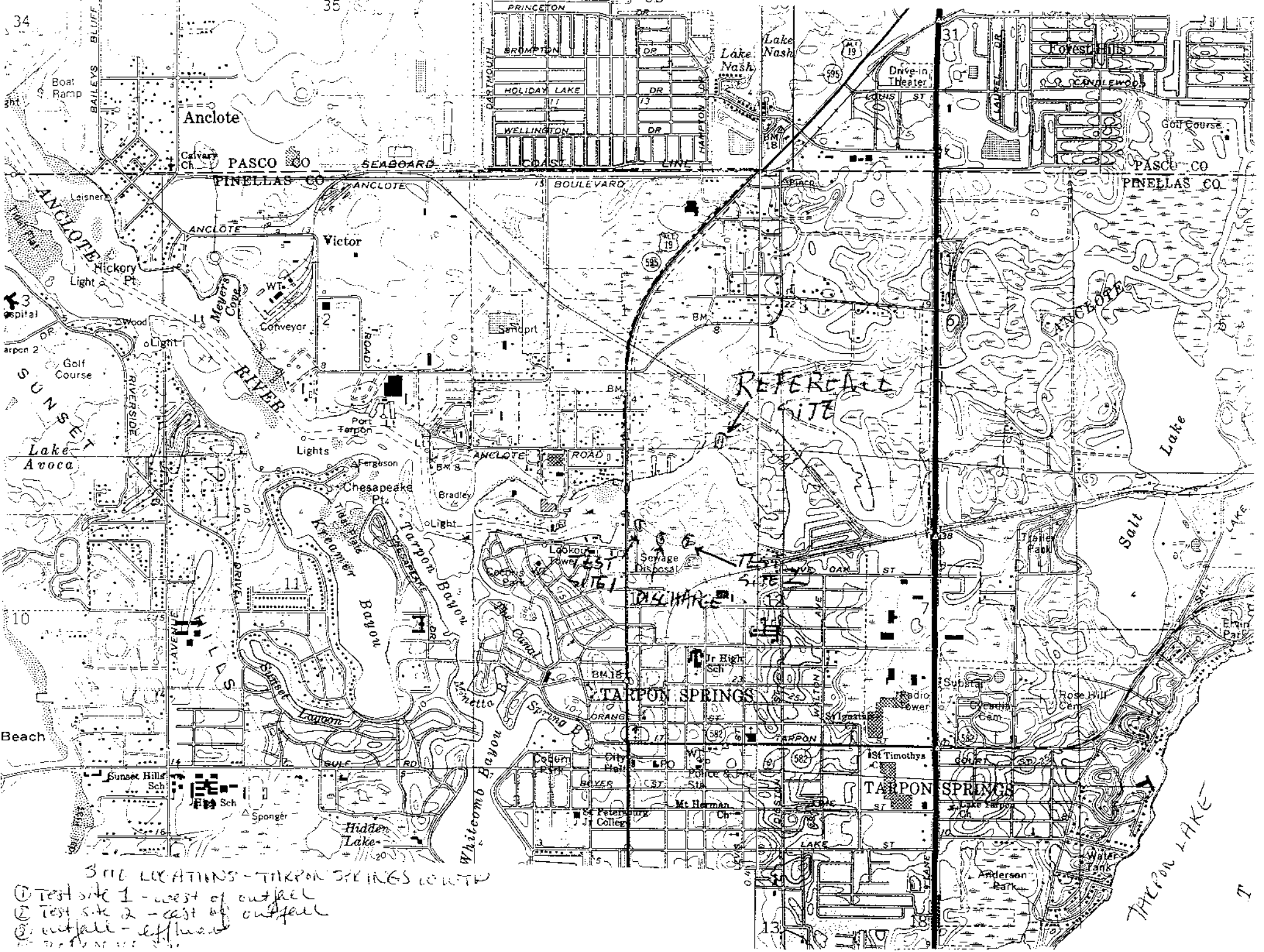
SCALE: 1" = 2000'

TARPON SPRINGS GOLF COURS

GLACE & RADCLIFFE, INC.
CONSULTING ENGINEERS
ST. PETERSBURG & MAITLAND, FLORIDA

PROJECT NO. 86122

1 O



3 SITE LOCATIONS - TARPON SPRINGS WWTP

① Test site 1 - west of outfall
② Test site 2 - east of outfall
③ outfall - effluent

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

FACILITY SUMMARY

Facility Name: TARPON SPRINGS STP		Date Summary Prepared : 4/10/95
Location (attach detailed map): Attached	County: Pinellas (52)	District: Southwest
Federal Permit # FL0030406 and expiration date: 9/30/96	State GMS # and 4052M10007 State expiration date: 11/4/96	Facility Type: Industrial (Municipal) Federal Agricultural Other (list):

Function of facility:

Description of treatment process:
See Attached

Receiving waters: Anclote River		Classification: I II (III)
Design Flow: 4.0 mgd	Mean Flow:	Flow during survey:

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

therefore, the best time to sample is:

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

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

Parameter	Limit (units)
Attached	

Describe special permit conditions and permit modifications:
See Attached

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TARPON SPRINGS
(Facility)

FACILITY SUMMARY

Description of permitted outfall(s):
LISA -- [illegible] flowing directly into the Anclote River

List permit violations (from MOR data or other source) and plant upsets that occurred within past year:
The system has generally achieved compliance with the Grizzle-Figg AWT requirements and toxicity and the reuse requirements.

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:
The system was required to comply with the Grizzle-Figg AWT requirements by October 1990. A [illegible] significant portion of the flow will be going to the reuse system. A review of self-monitoring data indicates compliance with toxicity requirements.

Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set:
The system is complying with AWT requirements and has a Part III public access reuse system that should enable the SW discharge to be used mainly as a back-up system.

Additional information:

Staff contributing to this review (signature):

[signature] (Biologist)

(Inspector)

[signature] (Engineer)

( )

( )

( )

PERMITTEE:
CITY OF TARPON SPRINGS

GMS ID NO.: 4052M10007
PERMIT NO.: DO52-184391

SPECIFIC CONDITIONS:

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.

2. In accordance with Chapter 17-602, F.A.C., the required certified operator on site time is: A Class C or better operator for 24 hours/day for 7 days/week. The lead operator must be a Class A operator.

3A. The discharge of reclaimed water from the outfall pipe into the Anclote River shall be sampled in accordance with Chapter 17-601, F.A.C. and shall meet the following limitations:

Parameter	Unit	Minimum	Maximum	Type Sample	Frequency
CBOD5 & Total Suspended Solids	mg/l	0	5 annual avg.	*fpcb	Daily 7/wk
Fecal coliform	#/100	**Non-detectable	25	grab	Daily
Total Nitrogen (as N)	mg/l	0	3 annual avg.	*fpc	Daily 7/wk
Total Phosphorus (as P)	mg/l	0	1 annual avg.	*fpc	Daily 7/wk
Total Chlorine Residual	mg/l	0	0.01	grab	Daily 7/wk
Flow	mgd	.000	4.0		Daily,5/wk
pH	STD UN	6.00	8.50	grab	Daily,5/wk

The results shall be reported monthly on DER Form 17-1.205(7).

* flow proportioned composite sample

** Non-detectable in at least seventy-five (75%) of the sampled collected during the monthly reporting period. (eg. 23 per 30 samples)

3B. The following effluent limitations shall be met before discharge to the reclaimed water system

Parameter	Unit	Minimum	Maximum	Type Sample	Frequency
TSS	mg/l	0	5.0	grab	Daily
Fecal Coliform	#/100	0	25 any one sample 75% must be non-detectable	grab	Daily

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: SWFD-Tampa	STORET STATION NUMBER:	DATE (M/D/Y): 4-3-95	TIME: 1625	RECEIVING BODY OF WATER: Anclote River

REMARKS:	LOCATION: TARPON SPRINGS WWTP	FIELD ID/NAME: 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)
90%				10%			

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: | ***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 (in above bed): 1.5

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	75%		
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)	25%			***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								
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 Sunny & Cloudy 80°F

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

SAMPLING TEAM:	SIGNATURE	DATE:
K. Carter / S. Schultz	K. M. Carter	4-3-95

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: Shea-Tampa	STORET STATION NUMBER:	DATE (M/D/Y): 4-3-95	RECEIVING BODY OF WATER: Anclote River

REMARKS:	LOCATION: TARPON SPRINGS LOWTP	FIELD ID/NAME: REFERENCE SITE

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 9	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 35	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 8	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 75

COMMENTS:

ANALYSIS DATE: 4-3-95	ANALYST: WALTER / SCHULTZ	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: SCS/Tampa	STORET STATION NUMBER:	DATE (M/D/Y): 4-3-95	TIME: 1543	RECEIVING BODY OF WATER: Anclote River

REMARKS:	LOCATION: TARPON SPRINGS WWTP	FIELD ID/NAME: TEST SITE 1 - West of outfall

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)
40%				40%	10%	10%	

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: ***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): 1 m

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand	80%	3	Ponar Grab
Leaf Packs or Mats				Mud/Muck/Silt	20%		
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)	10%			*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								
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:
Sunny / Partly Cloudy

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

SAMPLING TEAM:	SIGNATURE:	DATE:
4-3-95 CARTER/SCHULTZ		4-3-95

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		4-3-93	Anclote River

REMARKS:	LOCATION:	FIELD ID/NAME:
	TARPON SPRINGS WWTP	TEST SITE 1 - West of outfall

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 8	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-8 points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed: 33	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: 2	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: HI Tide & Brazilian Peppers

ANALYSIS DATE:	ANALYST:	SIGNATURE:
4-3-93	CARTER/SCHULTE	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: SWFWMD-Tampa	STORET STATION NUMBER:	DATE (M/D/Y): 4-3-95	TIME: 1505	RECEIVING BODY OF WATER: Anclote River

REMARKS:	LOCATION: TARPON SPRINGS WWTP	FIELD ID/NAME: TESTSITE 2 (Post-Q Outfall)

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)
40%				40%	10%	10%	Swamp 10%

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: ☑ no ☐ yes (Artificially Impounded)

List & map dominant vegetation on back

Artificially Channelized: ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

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

High Water Mark (m above bed): 1.5

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	25%		
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)	25%						

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		20.75	7.61	6.54	43040/27.7			
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 / Sunny 80°F

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

SAMPLING TEAM:	SIGNATURE:	DATE:
L. CARTER / S. SCHULTZ	Lisa M. Carter	4-3-95

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: Swid-Tampa	STORET STATION NUMBER:	DATE (M/D/Y): 4-3-95	RECEIVING BODY OF WATER: Anclote River

REMARKS:	LOCATION:	FIELD ID/NAME:
	TARPON SPRINGS COWTP	TESTSITE 2 (East of Outfall)

Habitat Parameter score	Excellent	Good	Fair	Poor
Littoral Alterations 8	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 35	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 2	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 68

COMMENTS: High Tide, Brazilian Peppers on S. bank

ANALYSIS DATE:	ANALYST:	SIGNATURE:
4-3-95	CARTER/SCHULTE	

Sample Source: Tarpon Springs WWTP
County:
Contact / District: L. Carter / Southwest
NPDES Permit #: FL00
LIMS Sample #: 103413 LIMS Job #: 95-APR-05-11

Sample Collection: Date 4/4/95 Time 1350
Test Beginning: Date 4/5/95 Time 1300
Test Ending: Date 4/7/95 Time 1300
Organism Batch #: 13 Diluent Batch #: well
Organism Age: 12 days
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 10.0 @ 10.0	23.6 @ 23.7	8.3 @ 24.8 °C	98.9 @ 102.0 981 @ 990 @ 24.1 °C 10300 @ 10175
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.6 @ 23.7	8.4 @ 24.0 °C	98 @ 102.0 970 @ 990 @ 23.9 °C 10300 @ 10175
48 hr	7.0 @ 7.0 10.0 @ 10.0	22.2 @ 22.3	8.3 @ 24.2 °C	100.0 @ 102.0 980 @ 990 @ 24.1 °C 10200 @ 10175

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	210	5	5	3	7.8	8.3	8.4	24.8	24.1	24.0	7.8	7.8	8.0	250	250	256
Control	301	5	5	5	7.8	8.3	8.4			23.9	7.8	7.9	8.0	255	250	249
Control	11	5	5	5	7.8	8.3	8.4			23.8	8.0	7.9	8.0	255	250	248
Control	506	5	5	5	7.8	8.3	8.4			23.8	7.7	7.9	8.1	250	250	249
100 %	120	5	5	5	7.2	7.9	8.2	24.2	24.1	24.1	7.9	7.7	7.7	1650	1645	1664
100 %	77	5	5	5	7.2	7.9	8.2			23.0	7.9	7.7	7.8	1650	1650	1672
100 %	132	5	5	5	7.2	8.0	8.2			23.8	8.0	7.7	7.8	1650	1650	1669
100 %	57	5	5	5	7.2	7.9	8.2			23.6	7.9	7.7	7.9	1650	1660	1676
Recorded by:		TM	MF	TM	JRS	MF	JN	JRS	MF	JN	JRS	MF	JN	JRS	MF	JN
Measured/Loaded by:		MF	MF	TM	MF	MF	JN	MF	MF	JN	MF	MF	JN	MF	MF	JN

Investigators' Signatures

Marshall Faircloth
Jennifer Sparagna
Tina Mikulaga
Tatyana Kader
Reviewer

Water Quality Parameters	Salt Water Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.0	—	Lisa Carter
Lab Total Residual Cl2 (mg/L):		—	<0.03	Dr-100	JRS
Alkalinity (mg/L as $CaCO_3$):	120	—	135	HACH	JRS
Hardness (mg/L as $CaCO_3$):	125	—	275	HACH	JRS
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -59.2 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 1.0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: TArpon Springs WWTP
County:
Contact / District: L. Carter / Southwest
NPDES Permit #: FL00
LIMS Sample #: 103413 **LIMS Job #:** 95-APR-05-11
sample log 4/10/95

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

Test Number: 1 of 2

Remarks:

Sample Collection: Date 4/4/95 Time 1350
Test Beginning: Date 4/5/95 Time 1300
Test Ending: Date 4/7/95 Time 1300
Organism Batch #: 49 **Diluent Batch #:** 14
Organism Age: < 24 hours
Test Organism: *Ceriodaphnia dubia*

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 10.0 @ 10.0	23.6 @ 23.7	8.3 @ 24.8 °C	98.9 @ 102.0 981 @ 990 @ 24.1 °C 10300 @ 10175
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.6 @ 23.7	8.4 @ 24.0 °C	98 @ 102 970 @ 990 @ 23.9 °C 10280 @ 10175
48 hr	7.0 @ 7.0 10.0 @ 10.0	22.2 @ 22.3	8.3 @ 24.2 °C	100.0 @ 102.0 980 @ 990 @ 24.1 °C 10260 @ 10175

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control A	A	5	5	3*	8.2		8.4	23.8		24.4	7.9		8.1	180		200
Control B	B	5	5	5			8.3			24.2			7.9			205
Control C	C	5	5	5			8.3			24.1			8.0			200
Control D	D	5	5	5			8.3			24.0			8.0			200
100% A	A	5	5	5	7.3		8.6	24.0		24.0	8.0		8.1	1570		~~1690~~ 1750
100% B	B	5	5	5			8.6			23.9			8.0			1800
100% C	C	5	5	5			8.6			23.9			8.1			1800
100% D	D	5	5	5			8.6			23.8			8.1			1800
			0R 5													
			wide cyprinella													
			reading in													
			TM													
			4/7/95													
Recorded by:		TM	MF	TM	JRS		JN	JRS		JN	JRS		JN	JRS		JN
Measured/Loaded by:		MF	MF	TM	MF		LW	MF		LW	MF		LW	MF		LW

* TM 4/7/95 anomalous num.

Investigators' Signatures

Marshall Faircloth
Jennifer Sparapani
Tina Mikulski
Tobin C. Keller
Reviewer

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.0	—	L. Carter
Lab Total Residual Cl2 (mg/L):	—	—	<0.03	DR-100	JRS
Alkalinity (mg/L as $CaCO_3$):	—	70	135	HACH	JRS
Hardness (mg/L as $CaCO_3$):	—	80	275	HACH	JRS
Total ammonia (mg/L as N):	—	<0.017	<0.017	anion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -59.2 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 1.0 ppt

form updated 10/05/94

Benthic macroinvertebrate taxa list for Tarpon Springs WWTP, collected via 3 petite Ponar replicates per station, on 3 April, 1995.

	Reference Site	Test Site 1	Test Site 2
Platyhelminthes			
Euplana gracilis	–	42	14
Stylochus sp.	14	–	69
Undetermined Polycladida	–	–	14
Nemertea			
Undetermined Nemertea	292	83	278
Polychaeta			
Arenicola cristata	14	–	–
Aricidea sp.	–	14	–
Aricidea philbinae	139	–	458
Axiothella sp.	583	–	292
Brania sp.	–	56	–
Brania clavata	–	28	–
Capitella capitata	181	69	667
Chone americana	–	–	28
Dispio uncinata	139	250	97
Eteone heteropoda	236	56	292
Fabricia sabella	569	–	458
Glycera americana	–	14	42
Glycinde solitaria	56	28	–
Hobsonia florida	153	–	97
Kinbergonuphis simoni	2986	1917	1458
Leitoscoloplos	1875	417	764
Mediomastus ambiseta	278	778	167
Neanthes micromma	69	14	139
Paraprionospio pinnata	56	–	–
Pectinaria gouldi	–	–	14
Phyllodoce arenae	28	28	–
Prionospio sp.	–	14	–
Prionospio cristata	83	208	125
Tharyx sp.	–	–	14
Typosyllis sp.	–	14	–
Undetermined Sabellidae	1389	–	–
Gastropoda			
Acteocina canaliculata	472	319	139
Acteon punctostriatus	–	42	69
Caecum pulchellum	1486	3903	1319
Cryoturris cerinella	–	14	–
Mitrella lunata	–	14	14
Nassarius vibex	–	14	–
Odostomia sp.	14	14	236
Pelecypoda			
Amygdalum papyrium	–	–	28

Anomalocardia auberiana	139	83	264
Ensis sp.	–	14	–
Ensis minor	–	14	–
Haminoea succinea	–	–	28
Laevicardium laevigatum	28	42	28
Linga amiantus	–	56	–
Lyonsia hyalina floridana	83	28	42
Mulinia lateralis	–	14	–
Mysella planulata	2208	1028	1056
Tellina lineata	–	83	–
Tellina tampaensis	556	139	500
Cumacea			
Cyclaspis varians	431	625	306
Oxyurostylis smithi	611	292	83
Tanaidacea			
Cyathura polita	14	–	–
Halmyrapseudes bahamensis	625	750	264
Leptochelia rapax	681	83	569
Uromunna reynoldsi	–	–	83
Xenanthura brevitelson	986	83	528
Undetermined Tanaidacea	417	–	–
Amphipoda			
Ampelisca abdita	236	333	986
Ampelisca holmesi	1931	1847	2750
Cerapus sp.	69	42	–
Corophium acherusicum	13028	18653	6458
Ericthonius brasiliensis	167	42	292
Gammarus mucronatus	28	–	28
Monoculodes sp.	139	42	–
Undetermined Amphipoda	–	28	–
Sipunculidae			
Undetermined Sipunculidae	–	14	–
Ophiuroidea			
Ophiophragmus filograneus	14	–	–

Phytoplankton taxa list and densities (#/mL) for Tarpon Springs WWTP, collected via subsurface grabs in Anclote River, on 3 April, 1995.

	Refernce Site	Test Site 1	Test Site 2
Bacillariophyceae			
Amphora sp.	–	34	–
Chaetoceros sp.	–	–	59
Cymatosira sp.	–	34	29
Leptocylindrus sp.	3854	3493	3200
Navicula sp.	–	–	29
Nitzschia longissima	67	–	–
Nitzschia sp.	34	–	59
Rhizosolenia sp.	–	34	147
Skeletonema sp.	469	514	734
Chlorophyceae			
Dunaliella sp.	–	–	59
Cryptomonas			
Cryptomonas sp.	34	–	29

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0036046 11	12 970403 17	18 X	19 S	20 1

Remarks

21 66

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0036046 11	12 970403 17	18 B	19 S	20 1

Remarks

21 66