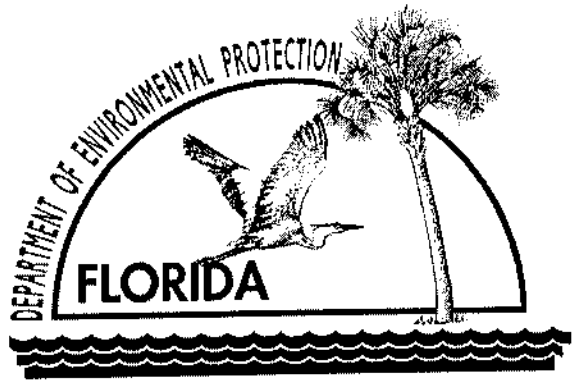
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Biological Assessment of

Bay County WWTP

Bay County

NPDES #FL0002631

Sampled July 1998

March 1999

Biology Section
Division of Administrative and Technical Services
Bureau of Laboratories

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection

Results of Fifth Year Inspections

Discharger:	Bay County WWTP
County:	Bay
NPDES Number:	FL0002631
Permit Expiration Date:	9/30/95

Toxics Sampling Inspection (XSI)

Date Sampled: 28 July 1998

Results: Iron (373 µg/L) was detected in the effluent sample at a level that exceeded Class III marine water quality standard, however, the sample was taken within the facility's permitted mixing zone. No organic pollutants were detected in the effluent sample.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 28 July 1998

Results: The effluent was not toxic to the invertebrate, *Ceriodaphnia dubia* and although the 100% effluent sample was not toxic to the fish, *Cyprinella leedsi,* the test was invalid due to control mortality.

Impact Bioassessment Inspection (IBI)

Date Sampled: 28 July 1998

Results: The diversity at test site 1 was 44% lower than the control site (Rule 62-302.530(11) FAC). This reduction in diversity was due to the dominance of the typically pollution-sensitive group, pelecypoda, which could be due to differences in substrate type rather than an effect of the discharge. Several pollution-sensitive groups were found at all three study areas, including amphipods, cumaceans, and mysid shrimp. Pelecypods dominated all three study sites. Algal communities did not appear to be affected by the discharge.

Water Quality Inspection (WQI)

Date Sampled: 28 July 1998

Results: Nutrient concentrations in the effluent sample appeared to contribute to elevated levels at the test sites. Ammonia levels at the test sites exceeded those levels normally found in 95% of Florida's estuaries. Total phosphorus and TKN levels were also elevated at test site 1. As expected, the Algal Growth Potential (AGP) exceeded the 10 mg dry wt/L "problem threshold" at test site 1 (11.3 mg dry wt/L). The effluent AGP was also elevated (133.8 mg dry wt/L).

This Biological Assessment was prepared by DEP staff to provide information to be used in reviewing an NPDES permit renewal application for the subject facility. This assessment will be used in conjunction with other information concerning the facility and its receiving water body to determine appropriate final permit conditions.

Introduction

The Bay County Wastewater Treatment Plant is located southeast of Panama City, Florida (see map in Appendix). This industrial/domestic facility has a 37 MGD design capacity and acts as a secondary wastewater treatment system for two industrial contributors and four domestic contributors. The two industrial contributors are Stone Container (24 MGD) and Arizona Chemical (3.0 MGD). The four domestic contributors are the following wastewater treatment plants, Cherry Street (4.0 MGD), Panama City/Millville (3.0 MGD), Tyndall Airforce Base (1.0 MGD), and the City of Lynn Haven (2.0 MGD). For a description of each facility's treatment process, see the Facility Summary in the Appendix. Final discharge is to the Class III waters of St. Andrew Bay. Flow during this survey was 31 MGD. A mixing zone, comprising a volume of water with a 200 meter radius around the discharge point from the surface to the bottom of St. Andrew Bay, has been granted for aluminum, iron, and fecal coliform bacteria (see Facility Summary in Appendix).

State permit limits for the Bay County Wastewater Treatment Plant are listed in Table 1. According to the facility's monthly operating reports, there have been several exceedences of copper and iron within the past year. In January, 1998, a bioassay test resulted in 60% mortality of the mysid shrimp. Toxicity was also observed in bioassays in 1997, with ammonia as the possible toxicant (see Facility Summary in Appendix).

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a control site (approximately 100 meters off Palmetto Point in St. Andrew Bay) and two test sites bracketing the discharge. A habitat assessment was performed *in situ* to establish comparability between sites, and supplemental physical/chemical data were also collected at the effluent and study sites on July 28, 1998. The effluent was analyzed for nutrients, metals, and for organic constituents (base neutral and acid extractables, and pesticide extractables). Methods used for all chemical analyses are on file at the DEP Central Chemistry Laboratory in Tallahassee.

Acute screening toxicity bioassays, using the invertebrate, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi*, as test organisms, were performed on an effluent sample. Bacterial populations were analyzed for total and fecal coliforms. Sediments from control and test sites were analyzed for grain size and percent organic matter.

Phytoplankton were sampled at both control and test sites via subsurface grabs. Chlorophyll *a* was also determined for phytoplankton communities. Algal Growth Potential (AGP) tests were performed using *Selenastrum capricornutum* as the test organism for the freshwater effluent and *Dunaliella tertiolecta* for the marine receiving-water sites.

Benthic macroinvertebrate communities were evaluated at control and test sites using three replicate petite Ponar grabs. Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of the discharge. These measurements include: taxa richness, Shannon-Weaver Diversity Index, community composition, functional feeding groups, and algal biomass. For a discussion of each of these measures see the *Explanation of Measurements of Community Health* in the Appendix. All field and laboratory biological methods were carried out following Biology Section Standard Operating Procedures (SOP's). The latest version of the SOP's can be viewed on our web site at 'www.dep.state.fl.us/labs/sops.htm'.

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

The following personnel were involved in this investigation: Glenn Butts and Laurence Donelan (DEP Northwest District), and Julie Baughman, Ken Espy, Marshall Faircloth, Russel Frydenborg, Joy Jackson, Scott Lashbrook, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, David Whiting, and Vicki Whiting (DEP Central Biology Laboratory in Tallahassee). The report was reviewed by the Point Source Studies Review Committee, consist-

Table 1. Effluent limits and summary of chemistry data.

Bay County WWTP	Effluent Limits	Effluent Samples	Control Site	Test Site 1	Test Site 2
Organic Constituents (µg/L)					
	-	None Detected	-	-	-
Metals (µg/L)					
Aluminum	1500 **	1,260	-	-	-
Arsenic	50 **	9 I	-	-	-
Cadmium	9.3 **	0.08 I	-	-	-
Chromium	50 **	1.7 I	-	-	-
Copper	2.9 **	2.7 J	-	-	-
Iron	300 **	373	-	-	-
Lead	5.6 **	1.19	-	-	-
Mercury	0.025 **	0.1 U	-	-	-
Nickel	8.3 **	5 I	-	-	-
Selenium	71 **	3 U	-	-	-
Silver	2.3 **	0.18 I	-	-	-
Zinc	86 **	15 I	-	-	-
Nutrients (mg/L)					
Ortho-phosphate	10 *s	0.85 Q	0.004 I	0.04	0.016
Total phosphorus	10 *s	1.0 A	0.056	0.16	0.1
Ammonia	-	5.6 A	0.012 IQ	0.53	0.2 Q
Nitrate+Nitrite	-	0.004 U	0.02 U	0.02 U	0.02 U
TKN	-	8.6 A	0.21	0.89	0.42
Organic Nitrogen	-	3	0.198	0.36	0.22
Total Nitrogen	10 *s	8.6	0.23	0.91	0.44
General Phys-Chem Parameters					
Habitat Assessment	-	-	70	50	52
D.O. (mg/L) - top	**	0.3	6.6	5.4	5.8
D.O. (mg/L) - mid-depth	-	-	5.3	5.5	5.5
D.O. (mg/L) - bottom	-	-	4.8	4.1	5.8
pH (SU)	6.0 - 8.5 *s	7.0	8	7.1	8.0
Conductivity (µmhos/cm) - top	-	1,772	41,494	40,737	40,854
Conductivity (µmhos/cm) - mid-depth	-	-	41,970	41,701	41,495
Conductivity (µmhos/cm) - bottom	-	-	43,725	43,200	41,637
Salinity (ppt) - top	-	0.0	26.6	25.5	26.2
Salinity (ppt) - mid-depth	-	-	26.9	26.7	26.6
Salinity (ppt) - bottom	-	-	28.2	27.7	26.7
Temperature (°C) - top	-	32.3	30.1	29.2	29.5
Temperature (°C) - mid-depth	-	-	29.2	29.3	29.3
Temperature (°C) - bottom	37 *s	-	27.9	28.3	29.4
B.O.D., 5 day (lbs/day)	13,950 *f	9,573	1.6 mg/L	1.9 mg/L	2.3 mg/L
Total Suspended Solids (lbs/day)	53,820 *f	-	-	-	-
Turbidity (ntu)	2.9 *s	17	1	2 A	2
Flow (MGD)	30 *s	31	-	-	-
Hardness (mg $CaCO_3$)	-	199	6050	8150	6000

A - Value reported is the mean of two or more determinations
J - Estimated value
Q - Sample held beyond normal holding time
I - Value is < the minimum quantitation limit, and ≥ the minimum detection limit
U - Material analyzed for but not detected; value is the minimum detection limit

*f - Federal permit limit
*s - State permit limit
** Class III water quality standard

Table 2. Summary of effluent biomonitoring results.

Bay County WWTP	Effluent Limits	Effluent Samples	Control Site	Test Site 1	Test Site 2
Toxicity (48-hour static, screening bioassay)					
C. leedsi - fish	-	Invalid	-	-	-
C. dubia - invertebrate	-	Not Toxic	-	-	-
Microbiology (# counts/100ml)					
Fecal Coliforms	200 **	200 Q	20 U	20 U	20 U
Total Coliforms	≤ 1000 **	500 Q	20 U	140 Q	20 U
AGP (mg dry wt/L)	-	133.8	0.1	11.3	5.6

** Class III water quality standard
U - Material analyzed for but not detected; value is the minimum detection limit
Q - Sample held beyond normal holding time

ing of Wayne Magley, Chuck Ziegmont, and Michael Tanski, as well as District representatives.

Results

Shorelines were mostly natural at all three study sites. Substrate at the control site consisted of a combination of sand, gravel and shell, while the two test sites were made up of a mixture of sand and mud. Ninety percent of the substrate at the control site and 78% of that at test site 1 consisted of course sand (particles 0.25 mm–2.0 mm in diameter). Eighty-nine percent of test site 2 consisted of fine sand (particles 0.25 mm–0.5 mm in diameter). Habitat scores at all three sites were in the "good" category (70 points at the control site and 50 and 52 points at test sites 1 and 2, respectively) (see Habitat Assessment Field Data Sheets in Appendix). The remaining results are presented in Tables 1, 2, and 3.

Discussion

Aluminum, lead, arsenic, cadmium, chromium, nickel, and silver were all detected at levels that complied with Class III water quality standards (Table 1). Iron was detected at a level that exceeded Class III water quality standards for a marine system. The sample, however, was taken within the permited mixing zone.

The effluent was not toxic to the invertebrate, *Ceriodaphnia dubia*. Although the 100% effluent sample was not toxic to the fish, *Cyprinella leedsi*, the test was invalid due to control mortality (Appendix).

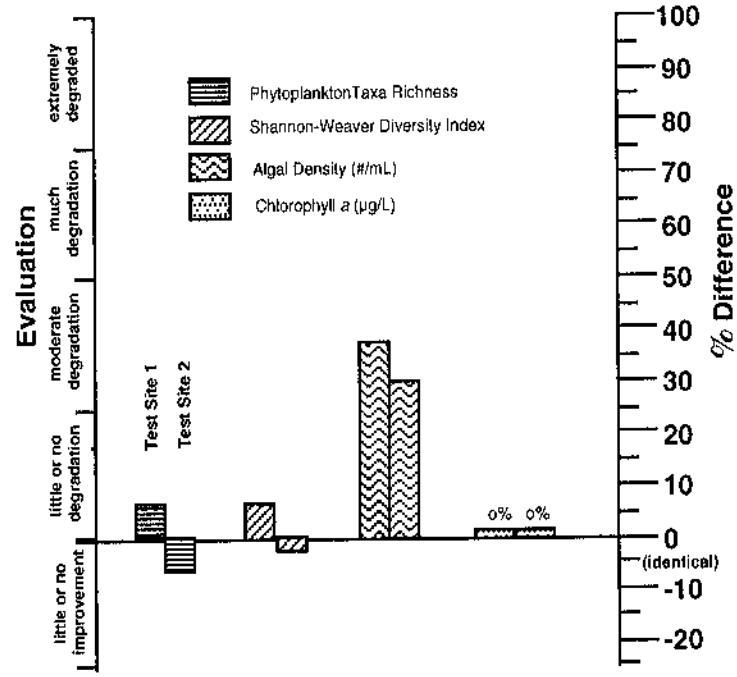


Figure 1. Effect of discharge on the algae community.

Table 3. Community structure of control and test sites.

Bay County WWTP	Control Site	Test Site 1	Test Site 2
Macroinvertebrate Quantitative			
Number of Taxa	58	47	64
Shannon-Weaver Diversity	4.8	2.7	3.7
No. Polychaete Taxa	25	20	29
Community Composition			
% Amphipoda	11	1	11
% Decapoda	3	1	1
% Gastropoda	8	4	2
% Nemertea	5	1	2
% Pelecypoda	32	83	60
% Polychaeta	35	7	19
% Tanaidacea	2	2	4
% Other	4	1	1
Functional Feeding Groups			
% Browsers-grazers	6	1	5
% Burrowing Deposit Feeders	18	1	8
% Predators/Carnivores	13	6	8
% Scavengers	7	1	5
% Surface Deposit Feeders	10	1	3
% Suspension Feeders	41	86	68
% Other	5	4	3
Phytoplankton Algae			
Number of Taxa	15	14	16
Shannon-Weaver Diversity	3.2	3	3.3
Chlorophyll *a* (µg/L)	1.12 U	1.12 U	1.12 U
Algal Density (#/mL)	1,432	1,970	1,861
% Blue-green	1	37	13
% Cryptophytes	11	26	23
% Chrysophytes	12	4	9
% Diatoms	69	31	50
% Dinoflagellates	6	0	4
% Green	0	2	0

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

Although the effluent nutrients complied with the facility's permit limits, they appeared to contribute to nutrient enrichment at the test sites (Table 1). All of the nutrients at the test sites exceeded those of the control site. Ammonia levels were elevated at both the test sites, exceeding 95% of other Florida estuaries, although the sample taken at test site 2 was held beyond the normal holding time (see *Typical Values for Selected Parameters in Florida in Waters* in the Appendix). Total phosphorus and TKN levels at test site 1 exceeded those levels normally found in at least 60% of Florida's estuaries.

AGP, which measures bioavailable nutrients via algal response, was below the 10 mg dry wt/L "problem threshold" at the control site and test site 2 (Ron Raschke, U.S. EPA, pers. comm.) and slightly above the threshold at test site 1 (Table 2).

The increased nutrients at the test sites do not appear to have altered the phytoplankton communities at the test sites (Figure 1). Algal densities were fairly low for a marine system and chlorophyll *a* was undetected at all three study sites (Table 3).

The macroinvertebrate community diversity at test site 1 was 44% lower than the control site, which does not comply with Class III water quality standards (Rule 62-302.530(11) FAC) (Table 3). This decrease in diversity is a result of the high numbers of pelecypods (83% of the total sample) at test site 1. This increase could be due to the differences in substrate type. Pelecypods, normally considered "good water quality indicators", dominated all three sites (Table 3). All three study sites contained pollution-sensitive organisms. The pollution-sensitive amphipod, *Metharpinia floridana*, and cumacean, *Cyclaspis* sp., were present at the control site (see Macroinvertebrate Taxa Lists in the Appendix). *Cyclaspis* sp. was also found at test site 1 along with the pollution–sensitive mysid shrimp, *Americamysis* species. Several pollution-sensitive groups were also found at test site 2, including the amphipod, *Ampelisca vadorum*, the cumacean, *Cyclaspis* sp., and the isopod, *Serolis mgrayi*.

Literature Cited

EA Engineering, Science, and Technology and Tetra Tech, Inc. 1994. Bioassessment for the nonpoint source program (draft). Prepared for the Fla. Dept. Environ. Protection. Unpaginated.

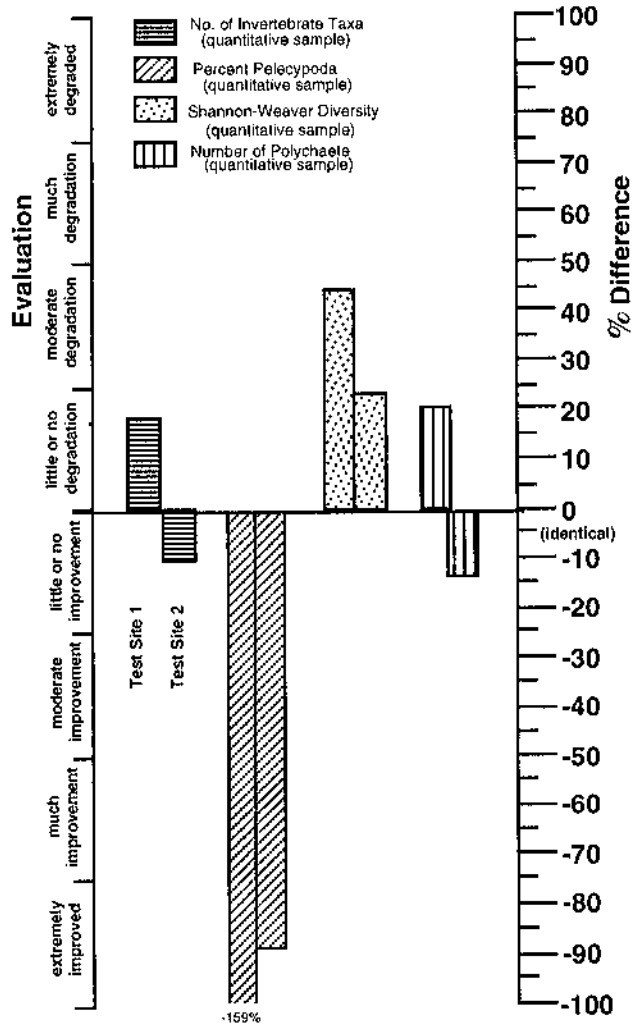


Figure 2. Effect of discharge on the benthic community.

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

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

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Weber, C. I. 1993. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 4th edition. EPA/600/4-90/027. U. S. EPA, Cincinnati, Ohio. 216 pp.

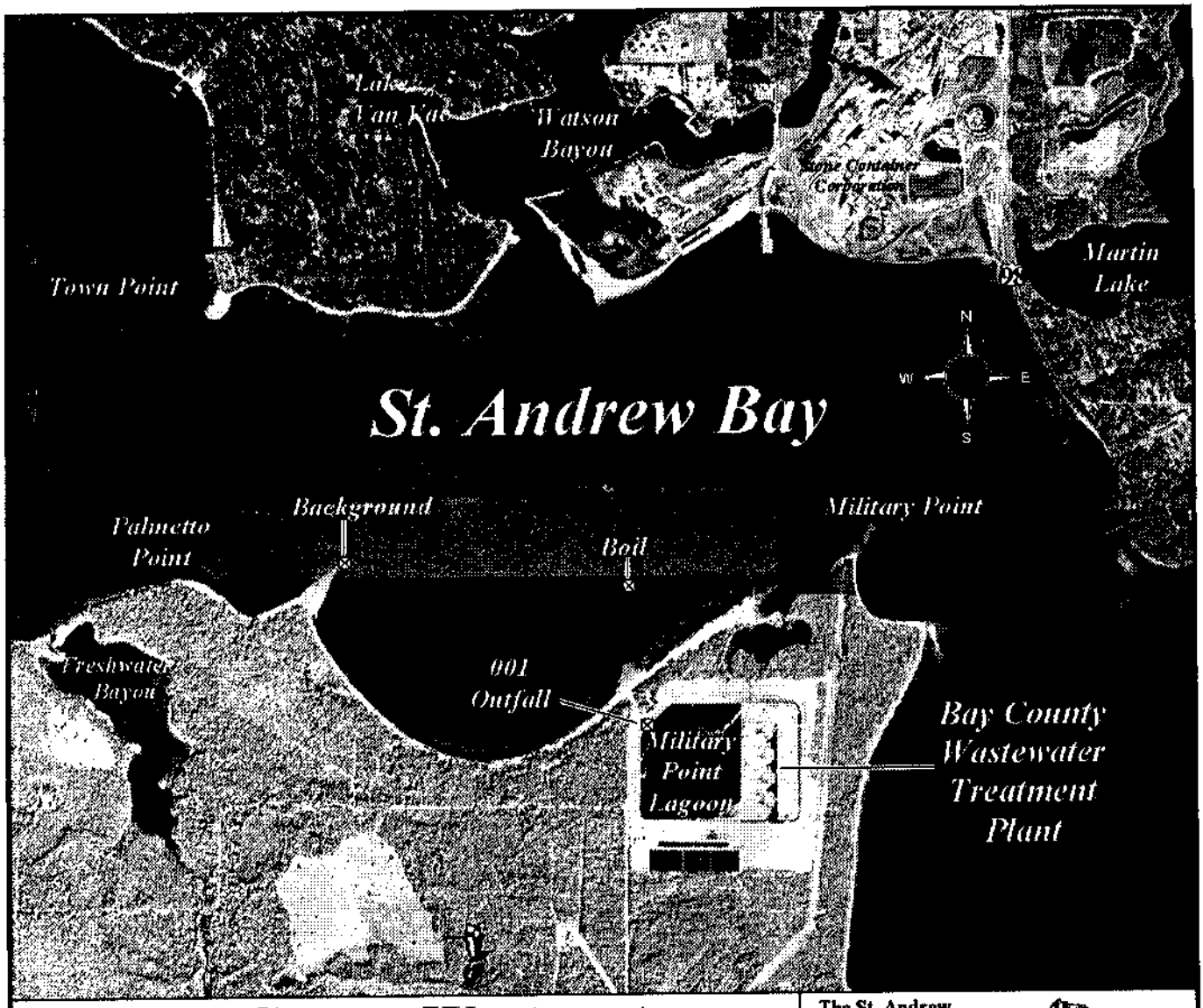
Typical Values for Selected Parameters in Florida Waters

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

Percentile Distribution

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

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



Bay County Wastewater Treatment Plant

Fifth Year Survey Sample Locations —⊠

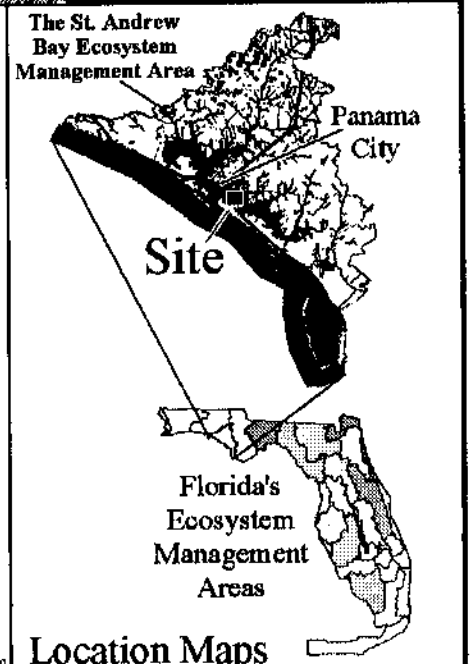
1000 0 1000 2000 3000 4000 Feet

200 0 200 400 600 800 1000 1200 1400 Meters

The Aerial Photos (Orthophotos) combine the image characteristics of a photograph with the geometric qualities of a map. The primary digital orthophotoquad (DOQ) is a 1-meter ground resolution, quarter-quadrangle (3.75-minutes of latitude by 3.75-minutes of longitude) image cast on the Universal Transverse Mercator Projection (UTM) on the North American Datum of 1983 (NAD83). The geographic extent of the DOQ is roughly equivalent to a quarter-quad.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA

July 22, 1998, by Eric P. Eaton (850) 595-8300



Location Maps

Facility Summary

Facility Name: Bay County WWTF **Date Summary Prepared:** 7/31/98

Location map: **County:** Bay **District:** Northwest/10
3410 Transmitter Road
Panama City, Florida 32404

NPDES Permit # FL0002631 **State Permit #** DT03-168127 **Facility Type: Ind.**
expiration date: 9/30/95 **expiration date:** 9/30/95
(permits remain effective due to timely application for renewal)

Function of facility: To operate a 37.0 MGD WWTF with final effluent discharge to St. Andrews Bay.

Description of treatment process:
WASTEWATER TREATMENT:

A 37 mgd design flow secondary wastewater treatment system for:

Two industrial contributors (27 mgd)

Stone Container (24.0 mgd) (primary clarifier, sludge is both landfilled on site and dewatered and incinerated on site)

Arizona Chemical (3.0 mgd) (oil/water separator and flow equalization)

Four domestic contributors (10 mgd)

Cherry Street WWTP (4.0 mgd) (primary treatment with chlorination, sludge has aerobic digestion, drying beds with disposal to a landfill) (Cherry Street WWTP services Callaway (1.69 mgd), Parker (0.66 mgd), Springfield (1.0 mgd), Cedar Grove (0.25 mgd) and Bay County (0.40 mgd)

Panama City Millville WWTP (3.0 mgd) (primary and secondary treatment by a trickling filter and secondary clarifier with chlorination, sludge has anaerobic digestion, drying beds with disposal to land application)

City of Lynn Haven WWTP (2.0 mgd) (primary and secondary treatment by activated sludge and secondary clarifier with chlorination, sludge has aerobic digestion with disposal to land application)

Tyndall AFB WWTP (1.0 mgd) (primary and secondary treatment by a trickling filter and secondary clarifier with chlorination, sludge has aerobic digestion, drying beds with disposal to land application)

Military Point Aerated Lagoon's secondary treatment system consists of a 69 acre lagoon divided into 4 cells by curtain walls to direct flow and create an aerated stabilization cells with forty five 75 horsepower aerators and a quiescent cell, Cell # 4, for solids settling.

A sludge handling facility, constructed in 1992, consists of two lined ponds, approximately 8.8 acres, the thickening pond is built with 6 inches of concrete over a 20 mil visquine lining and the decant pond is built with a 20 mil PVC lining. Solids are dredged from the solids settling cell, Cell # 4, of the 69 acre lagoon on a routine basis into the sludge handling facility. Decanted water is returned to Cell 1 of the 69 acre lagoon. Residuals from the sludge handling facility are land applied at agronomic rates to farm land. Currently, the approved land application sites are Gulf County Farms, Inc. and the Jim Austin property.

EFFLUENT DISPOSAL:

Surface Water Discharge: A 37.0 mgd monthly average daily permitted discharge to St. Andrew Bay, Class III waters, at a submerged outfall #D001. The St. Andrew Bay outfall #D001 is a 42 inch diameter prestressed concrete pipe is approximately 1,300 feet in length. There are fifteen 8inch diameter diffuser ports on top of the pipe and a single 24 inch diffuser port at the end of the pipe. The 8 inch ports are spaced approximately 16.5 foot intervals along the terminal end of the pipe. The 8 inch port nearest the shore is approximately 17 feet below the surface and the 24 inch port on the end of the pipe is approximately 25 feet below the surface. The point of discharge is located approximately at Latitude: 30° 07' 31" N and Longitude: 85° 37' 48" W

Receiving waters: St. Andrew Bay **Classification: III**

Design Flow: 37.0 MGD **Mean Flow:** 29.8 MGD **Flow during survey:** 31.0 MGD

Discharge is: Continuous

Best time to sample is: N/A

If facility has a mixing zone, give details (size, parameters, etc.) A mixing zone comprising a volume of water with a radius of 200 meters around the discharge point extending from surface to the bottom of St. Andrew Bay is granted for aluminum, iron, and fecal coliform.

List effluent limits (attach relevant paperwork):

Federal Permit Effluent Limits

Parameter	Frequency	Sample Type	Limit (units)
BOD	Daily, 6/week	24 Hr. Comp.	9400 lbs/day (mo. avg) 13950 lbs/day (daily avg)
pH	Daily	Grab	6.0 (min) to 8.5 (max)
TSS	Daily, 6/week	Grab	26910 lbs/day (mo. avg) 53820 lbs/day (daily avg)
Flow	Continuous	----------	Report MGD (mo. avg) Report MGD (daily mx)
Fecal Coliform	Daily, 6/week	Grab	Report (geometric mean)

State Permit Effluent Limits

Parameter	Frequency	Sample Type	Limit (units)
BOD	Daily, 6/week	24 Hr. Comp.	9,490 lbs/day (mo. avg) 14,100 lbs/day (daily avg)

TSS	Daily, 7/week	Grab	27,080 lbs/day (mo. avg) 54,160 lbs/day (daily mx)
Fecal Coliform	Daily, 6/week	Grab	8,000/100 ml (mo. avg) 40,000/100 ml (daily mx)
Flow	Continuous	-------	30 MGD
Temp Water	Daily, 7/week	Grab	37.0 deg C (daily mx)
Arsenic (As)	2/year	24 Hr. Com	50 ug/l (daily mx)
Cadmium (Cd)	2/year	24 Hr. Com	5 ug/l (daily mx)
Chromium (Cr)	2/year	24 Hr. Com	1000 ug/l (daily mx)
Copper (Cu)	2/year	24 Hr. Com	15 ug/l (daily mx)
Lead (Pb)	2/year	24 Hr. Com	50 ug/l (daily mx)
Mercury (Hg)	2/year	24 Hr. Com	.1 ug/l (daily mx)
Nickel (Ni)	2/year	24 Hr. Com	100 ug/l (daily mx)
Selenium (Se)	2/year	24 Hr. Com	25 ug/l (daily mx)
Zinc (Zn)	2/year	24 Hr. Com	1000 ug/l (daily mx)
Aluminum (Al)	2/year	24 Hr. Com	1500 ug/l (daily mx)
Oil-Grs-Freon	1/week	Grab	5.00 mg/l (daily mx)
Res Susp Solids	7/week	24 Hr. Com	27080 #/day (daily mx)
Silver (Ag)	7/week	24 Hr. Com	1. ug/l (daily mx)
Bioasy TLM48Hr	2/year	Grab	Percent
Carbon Tot Org	1/week	24 Hr. Com	8000.0 mg/l (daily mx)
Nitrogen (N) Kjel	2/week	24 Hr. Com	10.000 mg/l (daily mx)
Phosphorus Tot	2/week	24 Hr. Com	10.000 mg/l (daily mx)
P Ortho	2/week	24 Hr. Com	10.000 mg/l (daily mx)
Color	1/week	24 Hr. Com	500 ntus (daily mx)
Turbitity, NTU	1/week	Grab	29.0 ntu (daily mx)
2 Chlorophenol	2/month	Grab	2.100 ug/l (daily mx)
2, 4Dichlrpheni	2/month	Grab	2.300 ug/l (daily mx)

2, 4Dintrophenl	2/month	Grab	1.800 ug/l (daily mx)
Pentachlrphenl	2/month	Grab	5.900 ug/l (daily mx)
Phenolsinglecpd	2/month	Grab	3.200 ug/l (daily mx)
2, 4, 6Triclphenol	2/month	Grab	2.300 ug/l (daily mx)
P-Cl-M-Cresol	2/month	Grab	4.6 ug/l (daily mx)
245-Triclphenol	2/month	Grab	1.200 ug/l (daily mx)
pH, Minimum	5/week	Grab	6.00 min / 8.50 mx std un
pH, Maximum	5/week	Grab	6.00 min / 8.50 mx std un

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

(1) In October 97, the facility exceeded their permitted limitation of 2.9 ug/l for Cu with a value of 3.3 ug/l and 0.30 mg/l for Fe with a value of 0.39 mg/l.

(2) In July 97, the facility exceeded their permitted limitation for Cu with a result of 4.3 ug/l and Fe with a value of 0.42 mg/l.

(3) In February 98, the facility exceeded their permitted limitation for Cu with a result of 3.7 ug/l.

(March - May 98 data unavailable due to data processing in Tallahassee)

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

The January 1998 bioassay resulted in 60% mortality occurring in the Mysidopsis bahia (mysid shrimp). Subsequently, two definitives were run, with one failing and one passing. A TIE was initiated to determine the toxicant. This office has not yet received these results.

Toxicity was also observed in the 1997 bioassays. Ammonia was thought to be the toxicant.

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

No definite trends can be identified within the data set.

Additional information:

N/A

Staff contributing to this review (signature)

Glenn Butts_____ **Biologist**

_____ **Inspector**

_____ **Engineer**

Other

Kenny Ferguson **Other**

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 2010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.OM14	DATE (M/D/Y): 07-28-98	TIME 1330	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: OFF PALMETTO POINT	FIELD ID/NAME: # 4
CONTROL SITE		

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
						SALT MARSH

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

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

Point-Source Pollution (list location and describe):

Estimated System Width (range, m):	Estimated System Depth (range, m):	yes
High Water Mark (m above bed):	Velocity (range, m/s):	Impounded [ ] Channelized [ ]

Canopy Cover % : Open : [X] Lightly Shaded (11-45%): [ ] Moderately Shaded (46-80%): [ ] Heavily Shaded: [ ]

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: [X] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Anaerobic: [ ] Other: [ ]

Sediment Oils: Absent: [X] Slight: [ ] Moderate: [ ] Profuse: [ ]

Sediment Deposits: Sludge: [ ] Paper Fiber: [ ] Mud: [ ] Sand: [X] Shell: [X] Other: [X] ORGANICS

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Riffles			
Leaf Packs				Sand	50		
Aquatic Vegetation				Mud/Muck/Silt	30		
Rock or Shell Rubble	20			Benthic leaf mats			
Undercut Banks/Roots				Other:			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):	SAL		Secchi (m):
Top	0.4	30.08	8.02	6.55	41794	26.6		2.4
Mid-depth	4.5	29.23	7.97	5.29	41970	26.9		
Bottom	8.9	27.86	7.96	4.81	43725	28.2		

System Type : Stream: [ ] (Sand Bottomed / Sand Bot w/ Spring / Swamp & Bog / Calcareous / Alluvial / Misc.) Lake: [ ] Wetland: [ ] Estuary: [X] Other: [ ]

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

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

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

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

Weather Conditions:
OVERCAST, RAIN SQUAL NORTH OF SITE.

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

SAMPLING TEAM:	SIGNATURE:	DATE:
G. BUTTS / L. DONELAN	Glenn Butts	

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

SUBMITTING AGENCY CODE: 8010 SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0M14	DATE (M/D/Y): 07-28-98	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: OFF PALMETTO POINT	FIELD ID/NAME:
CONTROL SITE		# 4

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 30	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 4	>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 7	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type 12	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE 70

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
07-28-98	G. BUTTS	Glenn Butts

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0M21	DATE (M/DY): 07-28-98	TIME: 1054	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: AT BAY COUNTY WWTP	FIELD ID/NAME:
TEST SITE 1	BOIL	# 2

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
					50	50

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

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

Point-Source Pollution (list location and describe): BAY COUNTY WWTP OUTFALL

			yes
Estimated System Width (range, m):	Estimated System Depth (range, m):	Impounded	[ ]
High Water Mark (m above bed):	Velocity (range, m/s):	Channelized	[ ]

Canopy Cover % : Open : [X] Lightly Shaded (11-45%): [ ] Moderately Shaded (46-80%): [ ] Heavily Shaded: [ ]

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: [ ] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Anaerobic: [X] Other: [ ] H_2S

Sediment Oils: Absent: [X] Slight: [ ] Moderate: [ ] Profuse: [ ]

Sediment Deposits: Sludge: [ ] Paper Fiber: [ ] Mud: [X] Sand: [X] Shell: [ ] Other: [ ]

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Riffles			
Leaf Packs				Sand	20		
Aquatic Vegetation				Mud/Muck/Silt	70		
Rock or Shell Rubble	10			Benthic leaf mats			
Undercut Banks/Roots				Other:			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):	SAL		Secchi (m):
Top	0.4	29.15	7.11	5.93	40737	25.5		1.4
Mid-depth	4.5	29.39	7.79	5.96	41701	26.7		
Bottom	8.9	28.31	7.65	4.05	43200	27.7		

System Type : Stream: [ ] (Sand Bottomed / Sand Bot w/ Spring / Swamp & Bog / Calcareous / Alluvial / Misc.) Lake: [ ] Wetland: [ ] Estuary: [ ] Other: [ ]

Water Odors (check box): Normal: [ ] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Other: [X] P. MILL

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

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

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

Weather Conditions: OVERCAST

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

SAMPLING TEAM:	SIGNATURE:	DATE:
G. BUTTS / L. DONELAN	Glenn Butts	

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

SUBMITTING AGENCY CODE: 801D SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0M21	DATE (M/D/Y): 07-28-98	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: AT BAY COUNTY WWTP	FIELD ID/NAME:
TEST SITE 1	BOIL	# 2

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 27	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 4	>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 6	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 6	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 4	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 50

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
07-28-98	G. Butts	Glenn Butts

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 4)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.OM15	DATE (M/D/Y): 07-28-98	TIME 1130	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: 100 YDS SOUTH OF BAY COUNTY WWTP BOIL	FIELD ID/NAME: # 3
TEST SITE 2		

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
	40				60	

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

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

Point-Source Pollution (list location and describe): BAY COUNTY WWTP OUTFALL

Estimated System Width (range, m):	Estimated System Depth (range, m):	yes
High Water Mark (m above bed):	Velocity (range, m/s):	Impounded [ ] Channelized [ ]

Canopy Cover % : Open : [X] Lightly Shaded (11-45%): [ ] Moderately Shaded (46-80%): [ ] Heavily Shaded: [ ]

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: [X] Sewage: [ ] Petroleum: [ ] Chemical: [ ] Anaerobic: [ ] Other: [X] ORGANIC

Sediment Oils: Absent: [X] Slight: [ ] Moderate: [ ] Profuse: [ ]

Sediment Deposits: Sludge: [ ] Paper Fiber: [ ] Mud: [X] Sand: [X] Shell: [ ] Other: [ ]

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Riffles			
Leaf Packs				Sand	30		
Aquatic Vegetation				Mud/Muck/Silt	50		
Rock or Shell Rubble	20			Benthic leaf mats			
Undercut Banks/Roots				Other:			

WATER QUALITY

	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm):	Sal		Secchi (m):
Top	.4	27.5	7.95	5.78	40854	26.2		1.6
Mid-depth	2.4	29.32	7.98	5.53	41475	26.6		
Bottom	4.8	29.37	7.99	5.79	41637	26.7		

System Type : Stream: [ ] (Sand Bottomed, Swamp & Bog, Alluvial, Sand Bot w/ Spring, Calcareous, Misc.) Lake: [ ] Wetland: [ ] Estuary: [X] Other: [ ]

Water Odors (check box): Normal: [ ] Sewage: [ ] Petroleum: [ ] Chemical: [X] Other: [ ] PAPER MILL

Water Surface Oils (check box): None: [ ] Sheen: [ ] Globs: [ ] Slick: [X] TANNIC BOIL

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

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

Weather Conditions: OVER CAST

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

SAMPLING TEAM:	SIGNATURE:	DATE:
G. BUTTS / L. DONELAN	Glenn Butts	

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

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NW D	STORET STATION NUMBER: 32.03.0M15	DATE (M/D/Y): 07-28-98	RECEIVING BODY OF WATER: ST ANDREW BAY

REMARKS:	LOCATION: 100 YDS SOUTH OF BAY COUNTY WWTP BOIL	FIELD ID/NAME:
TEST SITE 2		# 3

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: 21	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: 4	>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: 6	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: 6	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: 6	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 52

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
07-28-98	G. BUTTS	Glenn Butts

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Bay County Regional WWTP
County: Bay
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0002631
LIMS Sample #: 33746.0 LIMS Job #: TL4-1998-0728-05
sample log ~~8/11/98~~ 8/11/98 DW
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 2 of 2

Sample Collection: Date 7/27/98 Time 1030
Test Beginning: Date 7-28-98 Time 1430
Test Ending: Date 7/30/98 Time 14:30
Organism Batch #: 56 Diluent Batch #: 2wellH2O
Organism Age: 12 d SRT toxicant batch #: NA
Test organism: Cyprinella leedsi

Remarks: Initial DO of sample was 3.0 mg/L @ 21.5°C. Sample was aerated for 30 minutes. DO was 7.6 mg/L @ 25.3°C. MF 7/28/98

Incubator #3 temperature range = 24.5-25.0 °C; Room temperature range = 23.5-25.7 °C.

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	F1	5	5	0 50	7.9	8.1	8.2	24.8	25.9	25.2	~~7.8~~ 5 DW	7.4	7.4	255	270	270
Control B	F2	5	5	5	7.9	8.1	8.2	24.9	25.3	25.1	7.5	7.4	7.6	255	270	275
Control C	F3	5	5	5	7.9	8.1	8.2	24.6	25.5	25.8	7.7	7.5	7.6	255	265	275
Control D	F4	5	5	5	7.9	8.1	8.2	24.5	25.8	25.7	7.7	7.6	7.5	250	280	280
100 % A	F5	5	5	5	8.0	7.9	8.0	25.4	25.7	25.4	7.6	6.0	6.4	1935	1830	1865
100 % B	F6	5	5	5	8.0	7.9	7.9	25.4	25.5	25.5	7.6	6.0	6.2	1935	1920	1945
100 % C	F7	5	5	5	8.0	7.9	7.9	25.4	26.5	25.4	7.6	5.6	5.6	1935	1975	1950
100 % D	E8	5	5	5	8.0	7.9	7.9	25.4	25.2	25.2	7.6	5.6	5.8	1940	1990	1950
measured by:		CH	CH DAW	CH	MF	CH	DAW	MF	CH	CH	MF	CH	DAW	MF	CH	DAW
recorded by:			CH	DAW	FW	DAW	CH	FW	DAW	DAW	FW	DAW	CH	FW	DAW	CH

(A) wrote wrong number. (FW) 7/... (B) Began to write wrong # DAW 7/29/98

Investigators' Signatures

Marshall Faircloth
Quinton Hess
David Hamilton
Dawn Neubold

reviewer

form updated 5/22/98

Water Quality Parameters	Salt Water Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NOT MEASURED			DAW
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR-100	CH	DAW
Alkalinity (mg/L as $CaCO_3$):	127	74	166	HACH	CH	DAW
Hardness (mg/L as $CaCO_3$):	140	100	200	HACH	CH	DAW
Total ammonia (mg/L as N):	<0.017	<0.017	3.81	ORION	MF	DAW
Salinity:	0	0	1.0	YSI	DAW	DAW

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Bay County Regional WWTP
County: BAY
Contact / District: Glenn Batts / Northwest
NPDES Permit #: FL0002631
LIMS Sample #: 337460 LIMS Job #: TLH-1998-07-28-05
sample log 8/11/98 DW
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 1 of 2
Incubator #1 temperature range: 23.6-24.7°C ; Room temperature range = 23.5-25.7°C.

Sample Collection: Date 7/27/98 Time 1030
Test Beginning: Date 7-28-98 Time 1430
Test Ending: Date 7/30/98 Time 1430
Organism Batch #: 33 Diluent Batch #: 35
Organism Age: <24 hours SRT toxicant batch #: NA
Test organism: Ceriodaphnia dubia

Remarks: Initial DO of Sample was 3.0 mg/L @ 21.5°C. Sample was aerated for 30 minutes. DO was 7.6 @ 25.3°C. mg/L mf 7/28/98

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	A	5	5	5	8.1		7.9	24.3		24.9	7.8		7.3	170		185
Control B	B	5	5	5			7.9			24.8			7.4			185
Control C	C	5	5	5			7.9			24.8			8.0			185
Control D	D	5	5	5			7.9			24.8			7.8			195
100% A	A	5	5	5	8.0		8.3	25.1		24.8	7.5		7.6	1830		1865
100% B	B	5	5	5			8.3			24.9			7.6			1800
100% C	C	5	5	5			8.3			24.9			7.4			1890
100% D	D	5	5	5			8.3			25.0			7.4			1855
measured by:		CH	DAW	DAW	MF		DAW	MF		DAW	MF		DAW	MF		DAW
recorded by:		CH	CH	DAW	MF		CH	FW		CH	FW		CH	FW		CH

Investigators' Signatures

Marshall Faircloth
Carleen Head
David Wilmington

Water Quality Parameters	Salt Water: Well Water	Salt Water: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NOT MEASURED			DAW
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR-100	CH	DAW
Alkalinity (mg/L as $CaCO_3$):	127	74	160	HACH	CH	DAW
Hardness (mg/L as $CaCO_3$):	140	100	200	HACH	CH	DAW
Total ammonia (mg/L as N):	<0.017	<0.017	3.81	ORION	MF	DAW
Salinity:	0	0	1.0%	YSI	DAW	DAW

reviewer

form updated 5/22/98

Phytoplankton taxa list and densities (#/mL) for Bay County WWTP, collected via subsurface grabs in St. Andrew's Bay on 28 July, 1998.

	Control Site	Test Site 1	Test Site 2
Bacillariophyceae			
Centrales sp.	-	5	-
Chaetoceros sp.	240	118	231
Corethron sp.	26	-	32
Coscinodiscus sp.	-	26	24
Cyclotella sp.	193	206	299
Cylindrotheca sp.	26	15	44
Hemiaulus sp.	9	-	-
Leptocylindrus sp.	51	-	36
Nitzschia sp.	296	87	190
Rhizosolenia sp.	94	129	36
Thalassiothrix sp.	17	-	28
Undetermined Pennales	30	21	16
Chlorophyceae			
Undetermined Chlorophyceae	4	41	-
Chrysophyceae			
Undetermined Chrysophyceae	167	82	170
Cryptophyceae			
Chroomonas sp.	154	509	421
Cyanophycea			
Gloeocapsa sp.	-	5	-
Merismopedia sp.	13	520	210
Microcystis sp.	-	134	32
Oscillatoria sp.	-	67	4
Dinophyceae			
Prorocentrum sp.	13	5	16
Undetermined Dinophyceae	77	-	49
Prasinophyceae			
Tetraselmis sp.	21	-	20

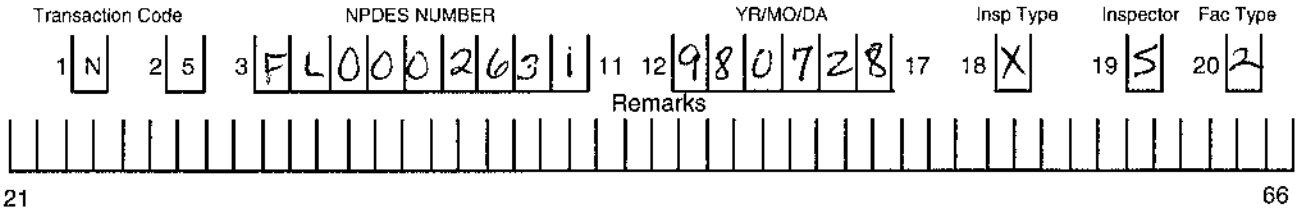
Benthic macroinvertebrate taxa list for Bay County WWTP, collected via Ponar grab samples in St. Andrew's Bay, on 28 July, 1998. Densities, in number/m^2, represent the mean of three replicates.

	Control Site	Test Site 1	Test Site 2
Amphipoda			
Ampelisca abdita	-	-	569
Ampelisca cristata	-	-	208
Ampelisca sp.	181	125	486
Ampelisca vadorum	-	-	97
Grandidierella bonnieroides	28	14	208
Lembos sp.	-	-	83
Listriella barnardi	42	-	-
Metharpinia floridana	139	-	-
Undetermined Amphipoda	-	14	-
Aoridae	167	28	167
Haustoriidae	28	-	-
Isaeidae	56	14	431
Oedicerotidae	-	-	14
Phoxocephalidae	306	-	-
Cumacea			
Cyclaspis sp.	14	14	14
Oxyurostylis sp.	14	-	-
Decapoda			
Emerita sp.	-	-	14
Lucifer sp.	28	56	42
Pinnixa sp.	139	-	28
Unsetermined Decapoda	69	83	83
Xanthidae	28	14	56
Echinodermata			
Amphiuridae	-	14	-
Ophiuroidea	97	-	-
Ophiurida	-	-	14
Gastropoda			
Acteocina canaliculata	69	83	14
Caecum cooperi	28	-	-
Caecum imbricatum	-	-	14
Caecum nitidum	-	-	14
Caecum pulchellum	-	-	56
Caecum sp.	264	-	-
Haminoea sp.	-	14	28
Haminoea succinea	-	-	14
Jaspidella sp.	14	-	-
Natica canrena	56	83	83
Natica sp.	14	-	-
Prunum sp.	56	-	-
Ancylidae	14	14	-

Naticidae	-	153	83
Neritidae	-	-	28
Olividae	83	-	42
Vitrinellidae	42	2-8	-
Urosalpinx sp.	28	-	-
Isopoda			
Cyathura polita	69	-	14
Serolis mgrayi	14	-	-
Anthuridae	-	-	28
Mysidacea			
Americamysis sp.	28	14	-
Bowmaniella sp.	28	-	-
Nemertea			
Undetermined Nemertea	444	167	458
Pelecypoda			
Anadara sp.	-	-	14
Cyrenoida floridana	-	-	97
Laevicardium sp.	14	-	-
Lucina sp.	194	3292	653
Mercenaria campechiensis	-	14	-
Mercenaria sp.	-	-	28
Nuculana sp.	222	1347	792
Tagelus sp.	-	-	167
Tellina sp.	861	-	-
Tellina versicolor	694	5708	8944
Cardiidae	-	56	14
Cyrenoididae	-	-	347
Lucinidae	250	1472	1167
Mactridae	222	83	-
Mytilidae	-	14	14
Undetermined Pelecypoda	56	14	194
Semelidae	42	194	139
Tellinidae	69	-	-
Polychaeta			
Aglaophamus verrilli	-	-	42
Apoprionospio sp.	28	14	14
Aricidea sp.	-	-	28
Armandia maculata	361	-	28
Armandia sp.	431	56	333
Chone sp.	-	-	153
Cirrophorus sp.	-	-	14
Diopatra sp.	14	14	-
Glycera sp.	28	28	14
Laeonereis culveri	-	-	14
Leitoscoloplos fragilis	28	-	14
Leitoscoloplos robustus	-	-	28
Leitoscoloplos sp.	42	-	-
Lumbrineris sp.	139	375	97
Malmgreniella sp.	-	14	14

Mediomastus ambiseta	111	42	278
Mediomastus sp.	42	-	542
Megalomma sp.	-	-	97
Minuspio longibranchiata	83	-	-
Nephtys simoni	-	-	14
Nephtys sp.	14	14	42
Nereis succinea	56	14	28
Paraprionospio pinnata	125	139	14
Pectinaria gouldi	-	14	14
Phyllodoce mucosa	56	56	417
Pista sp.	83	-	181
Prionospio heterobranchia	-	14	14
Prionospio sp.	264	14	375
Prionospio steenstrupi	-	-	111
Sigambra sp.	14	-	97
Sigambra tentaculata	42	28	56
Spiophanes sp.	-	14	-
Sthenelais sp.	42	-	-
Sthenelanella sp.	-	-	14
Travisia sp.	97	-	222
Ampharetidae	14	-	-
Capitellidae	14	14	14
Chaetopteridae	14	14	-
Cirratulidae	264	-	222
Flabelligeridae	28	-	-
Glyceridae	56	-	-
Goniadidae	-	14	42
Hesionidae	56	28	14
Lumbrineridae	28	-	28
Nereidae	-	56	-
Opheliidae	14	-	-
Orbiniidae	28	-	-
Paraonidae	-	-	14
Phyllodoce	28	14	-
Phyllodocidae	14	-	-
Polychaeta	-	-	14
Sabellidae	42	-	222
Spionidae	139	-	-
Syllidae	42	14	111
Terebellidae	28	-	97
Tanaidacea			
Apseudes sp.	-	14	-
Hargeria rapax	-	14	-
Kalliapseudes sp.	153	306	917
Turbellaria			
Stylochus sp.	-	-	56
Stylochidae	-	97	97
Undetermined Turbellaria	-	-	14

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



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

