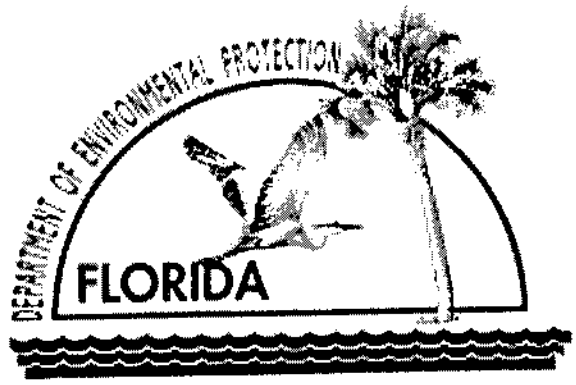


Biological Assessment of

Gulf Coast Recycling

Hillsborough County

NPDES #FL0042854

Sampled September 1998

June 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: Gulf Coast Recycling
County: Hillsborough
NPDES Number: FL0042854
Permit Expiration Date:

Toxics Sampling Inspection (**XSI**)	
Date Sampled:	28 September 1998
Results:	Copper, aluminum, cadmium, and iron were detected in the effluent below their respective permit limits. The concentration of lead (65.1 µg/L) in the effluent exceeded the facility's permit limit of 0.06 µg/L. No organic pollutants were detected in the effluent.

Compliance Biomonitoring Inspection (**CBI**)	
Date Sampled:	28 September 1998
Results:	The effluent was not toxic to the fish, *Cyprinella leedsi*, or to the invertebrate, *Ceriodaphnia dubia*, during 48-hour static, screening bioassays.

Impact Bioassessment Inspection (**IBI**)	
Date Sampled:	28 September 1998
Results:	There were slight changes in the composition of the phytoplankton and macroinvertebrate communities at the test site compared to the control site. These changes may be due to the high levels of lead in the effluent in addition to the elevated nutrients at the test site.

Water Quality Inspection (**WQI**)	
Date Sampled:	28 September 1998
Results:	Nutrient concentrations at the test site were much higher than those of the control site. The facility's contribution to the elevated nutrients at the test site appears to be minor compared to the input from non-point sources. With the exception of nitrate + nitrite, the effluent nutrients were well below the control site concentrations. The AGP values at both study sites greatly exceeded the 5 mg dry wt/L "problem threshold". The effluent AGP value was well below the background level and the problem threshold. The effluent appeared to be responsible for a 122% increase in conductivity at the test site compared to the control site which does not meet the Class III water quality standard (Rule 62-320.530 (23) FAC).

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 Gulf Coast Recycling (GCR) plant is located in Hillsborough County, Florida (see maps in the Appendix). This facility is a secondary lead smelter. Spent lead-acid batteries are recycled and the refined lead is sold back to the battery industry. The spent batteries are cut and the lead bearing materials (elemental lead, lead alloys, lead oxide, and lead sulfate) are treated with sodium carbonate to "desulfurize" the furnace feed in order to reduce sulfur dioxide. After smelting, the lead is melted, refined, and cast into bars. The wastewater generated inside the process building is treated and discharged to the City of Tampa's wastewater treatment plant. The stormwater and dust suppression water generated outside the process building is pumped to a wastewater treatment plant located on the property. At this point, a clarifier is used to remove suspended solids, soluble metals are removed by raising the pH to 9.8 SU with ferrous sulfate, insoluble metals are removed using a filter press, and the pH is then lowered to within 1 SU of the receiving water. The treated water is then pumped into a 1.4 million gallon lined holding pond that discharges into an unnamed ditch that eventually flows 2,000 meters to the Class III Palm River.

The discharge is intermittent and rainfall dependent. According to the plant's monthly operating reports, the actual mean flow from August 1997 to July 1998, was 0.07 MGD.

State permit limits for the facility are listed in Table 1. According to the facility summary, the plant's effluent has a history of being intermittently chronically toxic (Appendix). During the permit renewal process the permittee stated that Best Management Practices have been implemented which should reduce the "tracking" of lead outside of the production areas.

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a control site (located 100 meters upstream of the discharge) and a test site (located 17 meters downstream of the discharge). 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. 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.

Benthic macroinvertebrate communities were evaluated at control and test sites. Invertebrates were collected from multiple substrates (*e.g.*, snags, leaf packs, vegetation) using discrete dip-net sweeps. Normally, additional invertebrate collections would be made using Hester-Dendy multiplate samplers which are incubated for 28 days. However, due to low water levels at the time of sampling, Hester-Dendy samplers were not deployed.

Phytoplankton were sampled at both control and test sites via subsurface grabs. Normally, periphyton would be sampled at both control and test sites by incubating glass microscope slides in a standard periphytometer for 28 days. However, due to low water levels, periphyton racks were not set out. Chlorophyll *a* was determined for phytoplankton communities. *Selenastrum capricornutum* was used as the test organism for the algal growth potential tests.

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'.

Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of the discharge. These measurements include: habitat assessment, taxa richness, Shannon-Weaver Diversity Index, the Florida Index, Ephemeroptera/Plecoptera/Trichoptera (EPT) Index, community composition, functional feeding groups, algal biomass, and the Stream Condition Index (SCI). For a discussion of each of these measures, see *Explanation of Measurements of Community Health* in the Appendix.

For graphical purposes, the percent differences between the control and test sites involving the number of taxa, the diversity index, the Florida Index, the EPT Index, the diatom to blue-green algae ratio, and the % filter-feeders are measured as the control site minus test site divided by the control site. The

Table 1. Effluent limits and summary of chemistry data.

Gulf Coast Recycling	Effluent Limits	Effluent Sample	Control Site	Test Site
Organic Constituents (µg/L)				
	-	None Detected	-	-
Metals (µg/L)				
Aluminum	1.5 *	0.19 A	-	-
Arsenic	50 *	50 U	-	-
Cadmium	5.0 *	1.52	-	-
Chromium	1.0 *	10 U	-	-
Copper	30 *	3.5	-	-
Iron	1,000 *	369	-	-
Lead	0.06 *	65.1	-	-
Mercury	0.2 *	0.1 U	-	-
Nickel	100 *	6 U	-	-
Selenium	25 *	30 U	-	-
Silver	0.3 *	0.05 U	-	-
Zinc	30 *	6 U	-	-
Nutrients (mg/L)				
Ortho-phosphate	-	0.004 U	0.52	0.46
Total phosphorus	-	0.015 U	0.63	0.61
Ammonia	-	0.19 A	0.63	1.8
Nitrate+Nitrite	-	0.99	0.36	0.65
TKN	-	0.39	1.9	7.0
Organic Nitrogen	-	0.20	1.54	7.65
Total Nitrogen	-	1.38	2.26	5.20
General Phys-Chem Parameters				
Habitat Assessment	-	-	59	50
D.O. (mg/L)	≥ 5.0 *	7.3	4.7	5.9
pH (SU)	6.0-8.5 *	6.8	7.2	7.1
Conductivity (µmhos/cm)	≤ 2,700	2,120	604	1,338
Sulfate (mg/L)	Report	1,100		
BOD, 5 Day (mg/L)	-	2 J U	4 J	5 J
TSS (mg/L)	Report	1	3	3
Turbidity (NTU)	-	0.7	4.6	5.6
Temperature (°C)	-	29.2	25.6	26.5
Hardness (mg $CaCO_3$)	-	127.5	-	-
AGP (mg dry wt/L)	-	0.2 I	35.5	40.4
Toxicity (48-hour static, screening bioassay)				
Bioassay - Fish	-	Not Toxic	-	-
Bioassay - Invertebrate	-	Not Toxic	-	-

* Permit limit

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

I - Value reported is < the practical quantitation limit, and ≥ the minimum detection limit

J - Estimated value

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

percent differences between sites involving the % contribution of dominant taxa, 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: Andrea Grainger and Jeff Hilton (DEP Southwest District), and Julie Baughman, Ken Espy, Marshall Faircloth, Russel Frydenborg, Michael Heyn, Joy Jackson, Scott Lashbrook, Elizabeth Miller, Urania Quintana, Johnny Richardson, Lisa Tamburello, Steve Wolfe, David Whiting, and Vicki Whiting (DEP Central Biology Laboratory in Tallahassee). The report was reviewed by the Point Source Studies Review Committee, consisting of Wayne Magley, Chuck Ziegmont, and Michael Tanski, as well as District representatives.

Results

The chemical and biological results for this facility are presented in Table 1 and Table 2.

Discussion

Lead (65.1 µg/L) was detected in the effluent at a level that exceeded the facility's permit limit (0.06 µg/L) (Table 1). All other metals complied with the facility's permit and Class III water quality standards. No organic pollutants were detected in the effluent.

The specific conductance increased from 604 µmhos/cm at the control site to 1,338 µmhos/cm at the test site (Table 1). This 122% increase in conductivity above background does not comply with the Class III water quality standard (Rule 62-302.530 (23) FAC). The facility's effluent appears to be the cause of the increase. The effluent conductivity was 2,120 µmhos/cm which complied with its permit limit of 2,700 µmhos/cm. The dissolved oxygen concentration at the control site (4.7 mg/L) was below the Class III water quality standard (Rule 62-320.530 (31) FAC).

With the exception of orthophosphate and total phosphorus the

Table 2. Benthic community structure of study sites.

Gulf Coast Recycling	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	25	20
Florida Index	4	3
SCI	19	15
EPT Index	0	0
% Dominant Taxon	26	41
Community Composition		
% Amphipoda	26.0	4.0
% Coleoptera	3.0	0.0
% Diptera	27.5	70.4
% Gastropoda	8.8	9.3
% Hemiptera	4.0	1.0
% Odonata	7.0	8.0
% Oligochaeta	15.6	4.6
% Pelecypoda	2.9	0.0
% Other	5.0	3.0
Functional Feeding Groups		
% Predators	20.0	14.0
% Burrowing Deposit Feeders	15.0	4.6
% Surface Deposit Feeders	28.0	39.0
% Suspension Feeders/Filterers	3.0	3.0
% Scrapers	7.0	8.0
% Shredders	18.0	23.0
Phytoplankton Algae		
Number of Taxa	11	8
Shannon-Weaver Diversity Index	3.20	2.93
Chlorophyll *a* (µg/L)	1 U	1 U
Algal Density (#/mL)	281	117
% Blue-green	19	31
% Green	31	8
% Cryptophyceae	12	23
% Euglenophyceae	9	8
% Diatoms	28	31
AGP (mg dry wt/L)	35.5	40.4

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

test site nutrient concentrations were much higher than those found at the control site (Table 1). The increases ranged from 81% higher in the case of nitrate+nitrite, to 397% higher for organic nitrogen (see *Typical Values for Selected Parameters in Florida Waters* in the Appendix). Similar increases were measured for ammonia, total nitrogen, and TKN. Although the test site TKN (7.0 mg/L) increased 186% from the control site (1.9 mg/L), the TKN value at the control site exceeded values found in 90% of other Florida streams which indicates non-point sources of these nutrients in addition to the GCR effluent. TKN in the effluent (0.39 mg/L) appeared to have contributed little to the increase at the test site. The AGP value at the control (35.5 mg dry wt/L) and test sites (40.4 mg dry wt/L) greatly exceeded the 5 mg dry wt/L "problem threshold" (Raschke and Schultz 1987). The effluent AGP was 0.2 mg dry wt/L.

Figure 1 represents changes in the phytoplankton community. Phytoplankton taxa richness declined by 27% and the diversity declined by 8% from the control site to the test site. Algal density decreased by 58% from 281 cells/ml at the control site to 117 cells/ml at the test site. Blue-green algae showed the largest increase in relative abundance over background levels increasing from 19% at the control site to 31% at the test site. Chlorophyll *a* was undetected at both study sites. These changes in phytoplankton community structure may be due in part to the elevated nutrients as well as the elevated lead concentration.

Figure 2 represents changes in the macroinvertebrate community. Habitat quality was "marginal" at both the control and test sites (see Habitat Assessment Field Data Sheets in Appendix). Most of the measures of macroinvertebrate community structure and function were slightly lower at the test site compared to the control site (Table 2). Taxa richness and the percent contribution of the dominant taxon showed the greatest shifts. For example, the number of taxa declined by 20% from the control to the test site and the relative abundance of the dominant taxon increased from 26% to 41%. The Stream Condition Index scores placed both sites in the "poor" category (see the SCI Worksheet in the Appendix). The control site score (19 points) fell into the upper end of the "poor" range while the test site score (15 points) was in the lower range of the "poor" scores.

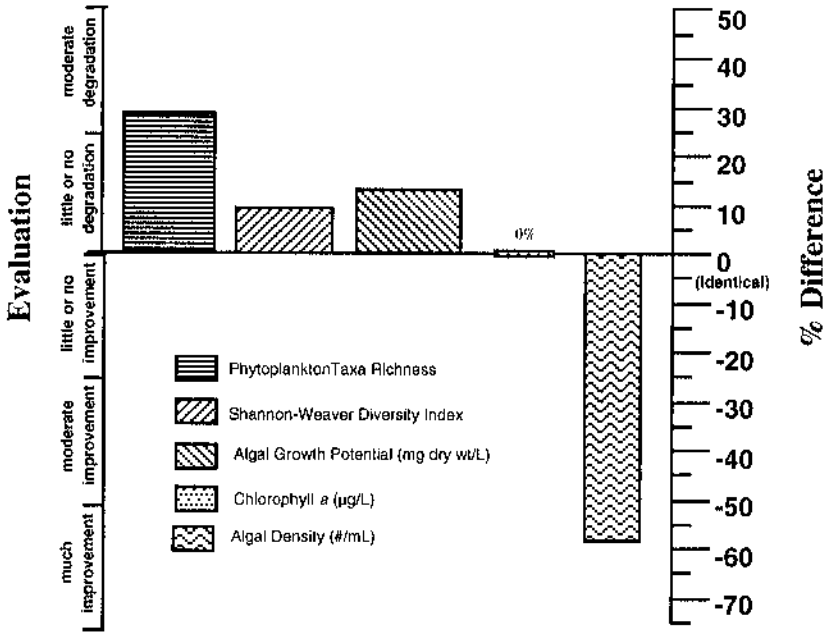


Figure 1. Effect of discharge on the algae community.

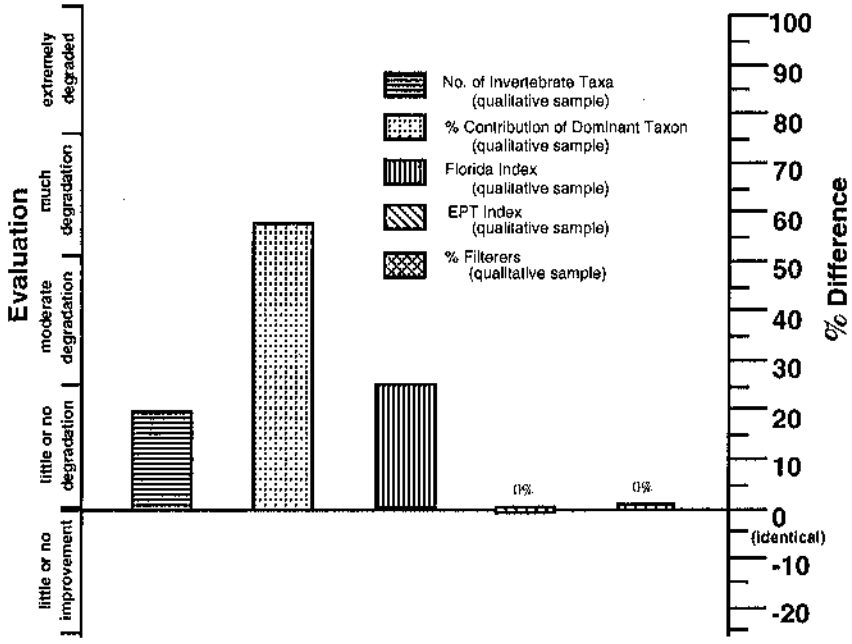


Figure 2. Effect of discharge on the benthic community.

Literature Cited

Barbour, M. T., J. Gerritsen, and J. S. White. 1996. Development of the Stream Condition Index for Florida. Prepared for the Fla. Dept. Environ. Protection. 105 p.

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.

FDEP. 1994. Lake bioassessments for the determination of nonpoint source impairment in Florida. Fla. Dept. Environ. Prot. Biology Section, Tallahassee, Fla. 73 p.

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

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.

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

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.

Explanation of Measurements of Community Health

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

Habitat Assessment: Seven attributes known to have potential effects on the stream biota were evaluated and scored, with 20 possible points for each factor. Based on the sum of these individual scores, overall habitat quality is assigned to one of four categories: Optimal (105-140 points); Suboptimal (70-104 points); Marginal (35-69 points); and Poor (0-34 points).

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

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa.

The Florida Index: Some organisms become rare or absent as the intensity or duration of disturbance increases. 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.

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

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

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.

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

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric (Barbour *et al.* 1996) developed for Florida. The SCI assigns points to a variety of parameters, depending on how closely each parameter approaches an expected control condition (see SCI calculation table in Appendix).

Typical Values for Selected Parameters in Florida Waters

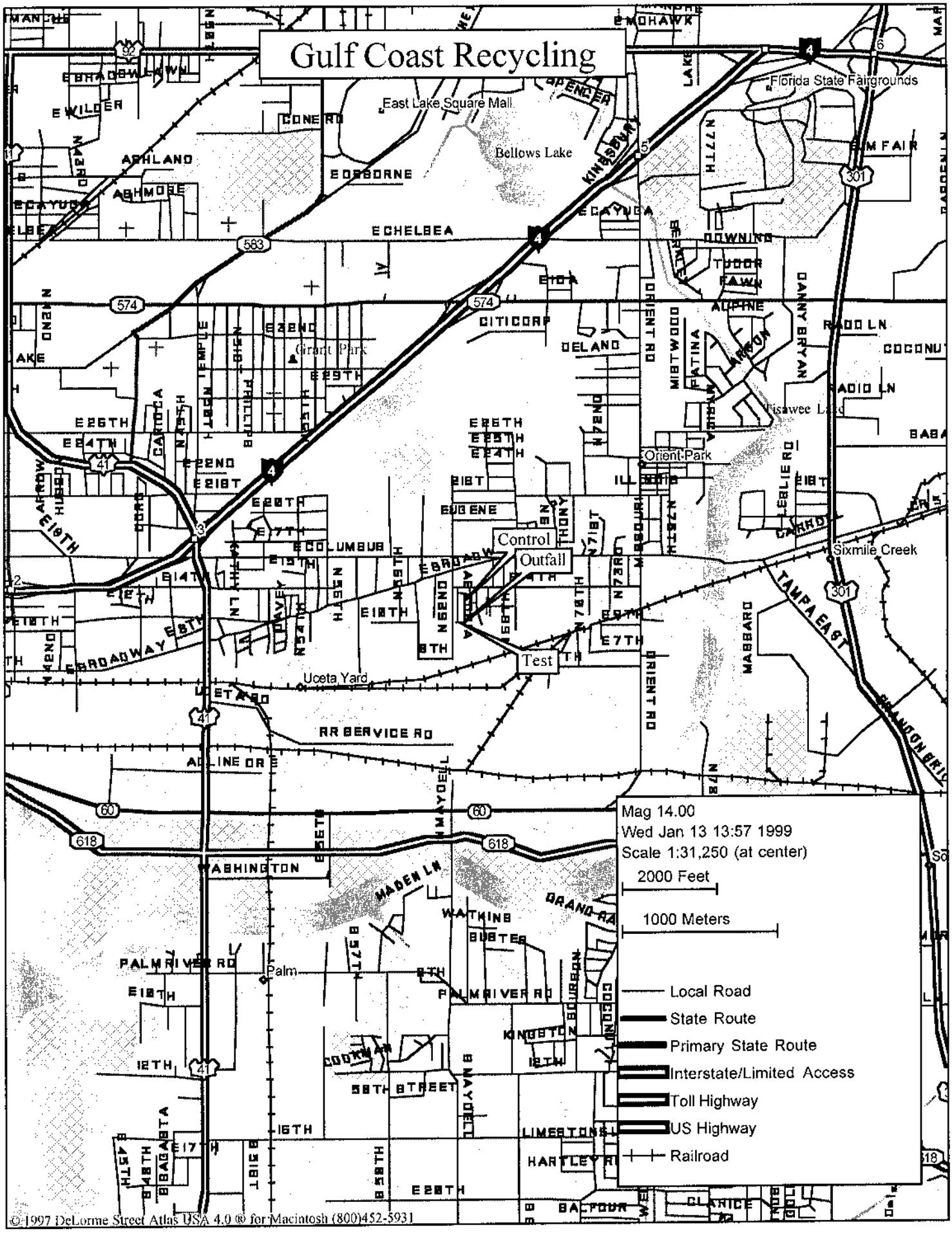
Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

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

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


Gulf Coast Recycling
East Lake Square Mall
Bellows Lake
Florida State Fairgrounds
Grant Park
Orient Park
Tisawee Lake
Sixmile Creek
Control
Outfall
Test
Uceta Yard
Palm
ECHELBEA
CITICORP
DELAND
ADLINE DR
RR SERVICE RD
WASHINGTON
PALM RIVER RD
Mag 14.00
Wed Jan 13 13:57 1999
Scale 1:31,250 (at center)
2000 Feet
1000 Meters
Local Road
State Route
Primary State Route
Interstate/Limited Access
Toll Highway
US Highway
Railroad
© 1997 DeLorme Street Atlas USA 4.0 ® for Macintosh (800)452-5931

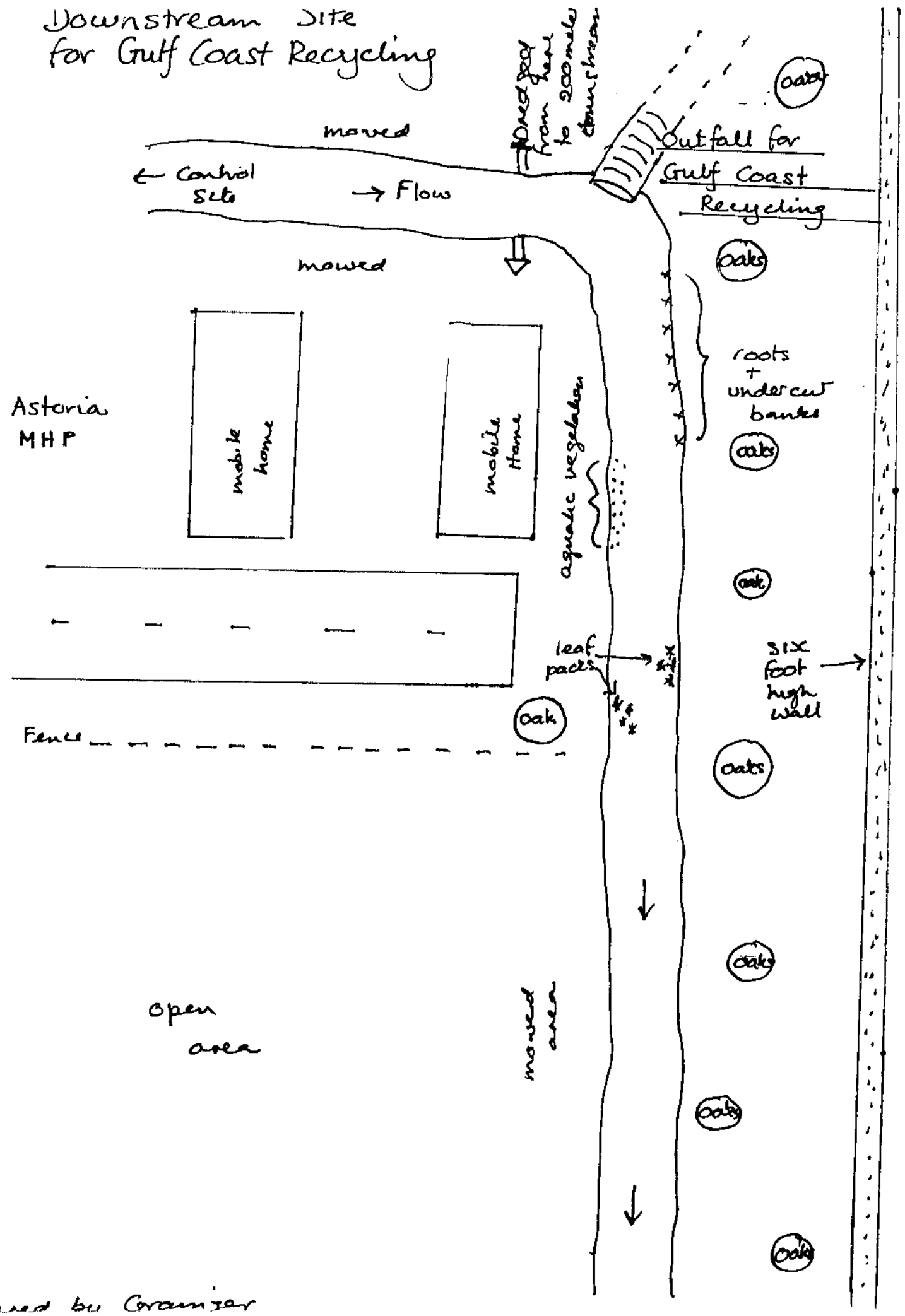
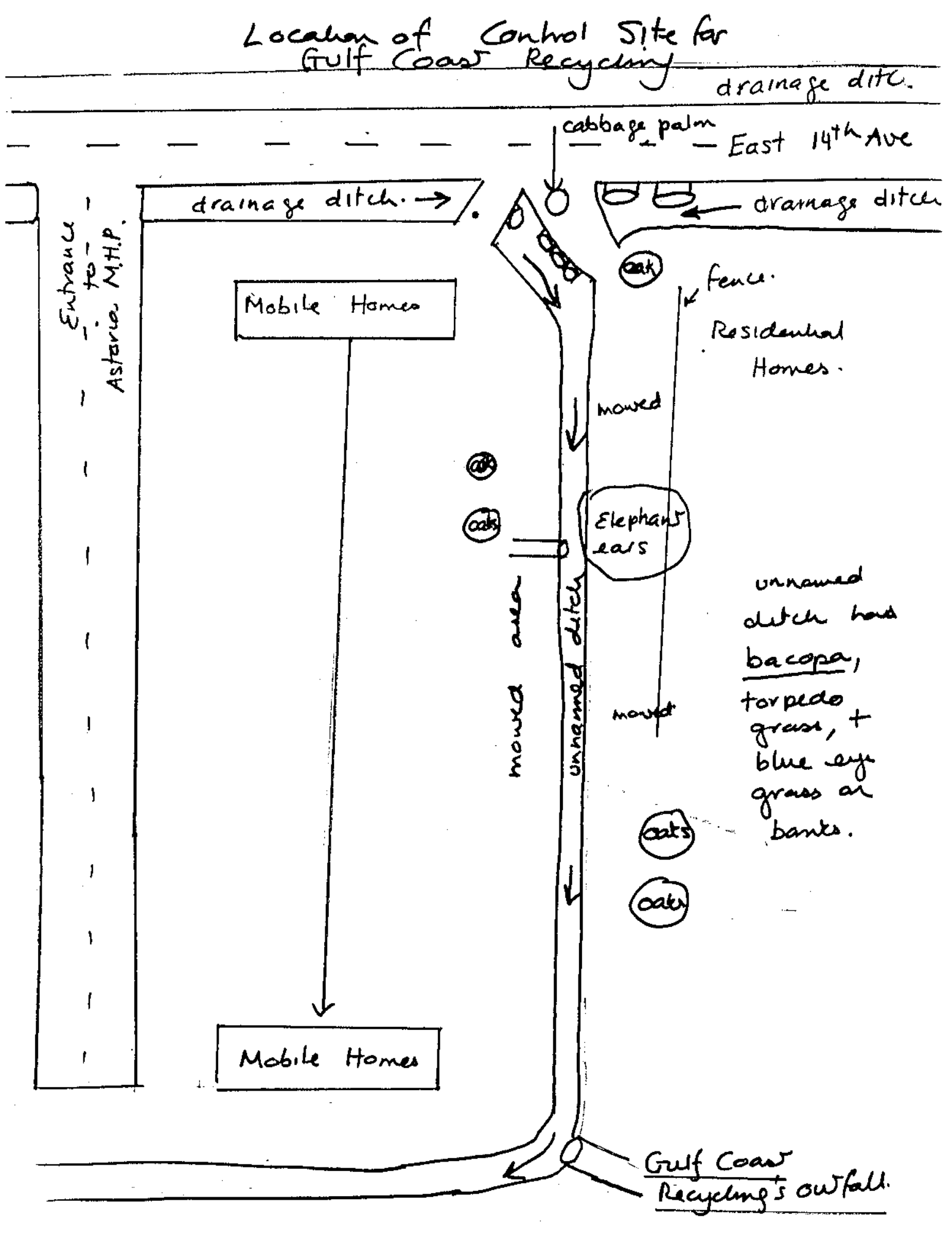


Diagram by Cranmer


Location of Control Site for Gulf Coast Recycling
drainage ditch.
cabbage palm
East 14th Ave
drainage ditch →
drainage ditch
Entrance to Asteria M.H.P.
Mobile Homes
oak
fence.
Residential Homes.
mowed
oaks
Elephant ears
mowed area
unnamed ditch
mowed
unnamed ditch has bacopa, torpedo grass, + blue eye grass on banks.
oaks
oaks
Mobile Homes
Gulf Coast Recycling's outfall.

Facility Sheet for FYI-5

Facility Name: Gulf Coast Recycling (GRC) **Date Summary Prepared:** 9/14/98

Location: send map **County:** Hillsborough **District:** SW District

Function of Facility: GRC is a secondary lead smelter. Spent lead-acid batteries are recycled and the refined lead is then sold back to the battery industry.

Description of Treatment Process: The spent batteries are cut and the lead bearing materials (elemental lead, lead alloys, lead oxide and lead sulfate) are treated with sodium carbonate to "desulfurize" the furnace feed in order to reduce sulfur dioxide. After smelting the lead is melted, refined, and cast into bars or pigs.

All wastewater generated inside the process building is treated and discharged to the City of Tampa's WWTP. The stormwater and dust suppression water generated outside the process building are pumped to a wastewater treatment plant located on the property. At the plant the wastewater undergoes the following treatment:

1. Removal of suspended solids using a clarifier;
2. Removal of soluble metals by raising the pH of 9.8 SU and adding ferrous sulfate;
3. Removal of insoluble metals using a filter press;
4. Lowering the pH tow within 1 SU of the receiving water (unnamed ditch) pH value.

The treated water is then pumped to a 1.4 million gallon lined holding pond which discharges into an unnamed ditch . The unnamed ditch flows into the Palm River at a point approximately 2000 meters downstream of GRC's outfall.

Receiving Waters: Unnamed ditch which flow into the Palm River **Water Classification:** Freshwater Class III

Design Flow: **Mean Flow:** *0.07 mgd **Flow during Survey:**
* mean flow calculated from MORs from August 1997 to July 1998.

Discharge is: Intermittent and rainfall dependent. Best time to sample is after a stormwater event

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

Presently the facility is requesting the Department a variance for specific conductance and chronic toxicity.

List Effluent Limits:

Parameter	Limits
Flow (mgd)	Report
Antimony (µg/L)	Report
Arsenic (µg/L)	50
Beryllium (µg/L)	1100
Cadmium (µg/L)	5.0*
Total Chromium (µg/L)	1.0**
Specific conductance (µhos/cm)	2700***
Copper (µg/L)	0.03
Iron (mg/L)	1.0
Lead (µg/L)	0.06****
Mercury (µg/L)	0.2
Nickel (µg/L)	100
pH (SU)	Min. 6.0, Max. 8.5
Selenium (µg/L)	25
Silver (µg/L)	0.3*****
Sulfate (mg/L)	Report
Zinc (µg/L)	30
Total Solids (mg/L)	Report
TSS (mg/L)	Report
Dissolved Oxygen (mg/L)	Min. 5.0

Describe any special permit conditions and permit modifications:

* The permittee shall either achieve compliance with the standard imposed in Paragraph 17-3.121(9),FAC, within the time frame specified under Specific Condition No. 3.g. or take the appropriate action as described thereunder.

** Shall not exceed 50 µg/L total chromium after reasonable mixing in the receiving water.

*** The permittee shall either achieve compliance with the standard imposed in Paragraph 17-3.061(3)(o), FAC; within the time frame specified under Specific Condition No. 3.g. or take the appropriate action as described thereunder.

**** Shall not vary more than one unit above or below natural background provided the resulting standard is within this range. If natural background is less than six units or greater than eight and one-half units, see Paragraph 17-3.121(21), FAC.

***** The daily maximum limitation, as imposed under Paragraph 17-3.121(26), FAC is 0.07 µg/L. Due to the innate inaccuracies of the testing method at that low concentration, however, a reported value of <0.2 µg/L shall be considered as in compliance with that proviso. The permittee shall either achieve such compliance within the time frame specified under Specific Condition No. 3.g. or take the appropriate action as described thereunder.

Description of permitted outfall: The effluent is discharged from the holding pond *via* an underground plastic pipe (having a diameter of approximately 12 inches) approximately 200 feet to the unnamed ditch. Sampling occurs at the facility in a concrete box below ground level. The sampling box is approximately 15 feet from the north bank of the holding pond

List permit violations and plant upsets that occurred within past 3 years:

The facility's effluent has a history of being intermittently chronically toxic. During the permit renewal process the permittee states that it has implemented BMPs which should reduce the "tracking" of lead outside of the production area. A history of the facility's toxicity is provided below:

1. In July 1994, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *Ceriodaphnia dubia* and *Cyprinella leedsi*. The acute toxicity test demonstrated passing results but the chronic test resulted in a failure as the No-Observed-Effect-Concentration (NOEC) value for *C. dubia* fecundity was less than 100% effluent. The report indicates that the specific conductance levels of the effluent ranged from 3,480 µS to 4,100 µS.

2. In January 1995, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi*. The acute toxicity test resulted in a failure as ***C. dubia* survival rate was 15%** and the chronic test resulted in a failure as the NOEC value for *C. dubia* fecundity was less than 100% effluent. The report states that the specific conductance levels of the effluent ranged from 5,000 µS to 5,400 µS.

3. In July 1995, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi*. The acute toxicity test demonstrated passing results but the chronic toxicity test resulted in a failure as the NOEC value for *C. leedsi* survival was less than 100% effluent. The survival rates of *C. dubia* and *C. leedsi* in the chronic toxicity test were 70% and 71%, respectively. It is not clear why the NOEC value for *C. dubia* survival did not also demonstrate a NOEC value less than 100% effluent. The report states that the specific conductance levels of the effluent ranged from 1,700 µS to 3,000 µS.

4. In January 1996, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi*. The acute toxicity test demonstrated passing results but the chronic toxicity test resulted in a failure as the NOEC value for *C. dubia* fecundity was less than 100% effluent. The report states that the specific conductance levels of the effluent ranged from 3,300 µS to 3,800 µS.

5. In July 1996, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi* for the acute toxicity test and *C. dubia* and *Pimephales promelas* for the chronic toxicity test. Both the acute and chronic toxicity tests demonstrated passing results. The report states that the specific conductance levels of the effluent ranged from 1,400 µS to 1,550 µS.

6. In September 1996, Department personnel conducted a sampling event at GCR. Samples were collected for chronic toxicity testing and water quality analyses of effluent levels of base, neutrals and acids (BNA), metals, alkalinity, sulfate and hardness. The 7-day chronic toxicity test was conducted by the Department using the indicator species *C. dubia* and resulted in a passing test.

The results from the Department's sampling event documented that the effluent specific conductance ranged from 0.7 µS to 0.86 µS, the cadmium levels were 2.11µg/L (total hardness 174 mg/L) and 1.86 µg/L (total hardness 169 mg/L) on 9/16/96 and 9/18/96, respectively, which exceeded surface water standards on both these days as the cadmium standard, dependent on total hardness, on 9/16/96 and 9/18/96 were 1.75 µg/L and 1.17µg/L, respectively, lead levels were 58 µg/L (total hardness 174 mg/L), 48 µg/L (total hardness 169 mg/L) and 47 µg/L (total hardness 190 mg/L) on 9/16/96, 9/18/96, and 9/20/97, respectively, which exceeded surface water standards on all three days as the lead standard, dependent on total hardness, on 9/16/96, 9/18/96, and 9/20/96 were 6.44 µg/L, 6.21 µg/L and 7.20 µg/L L, respectively , and unionized ammonia was potentially in exceedance of surface water quality standards as it ranged from a low of 0.003 mg/L to high of 0.038 mg/L.

During this sampling event, the Department split effluent grab samples with GCR personnel. GCR's water quality analyses did not indicate any exceedances of metals in its effluent. TS/PS does not have the results of GCR sampling event. The facility claimed that the lead and cadmium exceedances in the Department's samples were due to interference in the water matrix. The Department then agreed to repeat the sampling event, which occurred in January 1997.

During the January 1997 sampling event at GCR, Department personnel collected grab samples for analyses of effluent levels of sulfate, metals and hardness. No samples were collected by the Department for chronic toxicity testing, however, GCR did collect samples for acute and chronic toxicity testing. The water quality results documented that GCR's effluent levels of lead and cadmium met surface water quality standards, pH was potentially in exceedance of the state surface water quality standard as the pH value on 1/27/97 was 5.81 SU, specific conductance ranged from 3,300 µS to 3,400 µS, and effluent levels of sulfate and hardness were elevated. The effluent levels of sulfate ranged from 1600 mg/L to 1700 mg/L and hardness ranged from 630 mg/L to 640 mg/L.

According to Dave Whiting of the Department, sulfate levels above 750 mg/L may be toxic to some invertebrates. The results of GCR's toxicity test during this sampling event demonstrated that the effluent was chronically toxic to *C. dubia* at the times of effluent collection.

7. In January 1997, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi* for the acute toxicity test and *C. dubia* and *Pimephales promelas* for the chronic toxicity test. The acute toxicity test demonstrated passing results but the chronic toxicity test resulted in failure as the NOEC value for *C. dubia* fecundity was less than 100% effluent. The report states that the specific conductance levels of the effluent ranged from 3,300 µS to 3,400 µS.

As explained in 6. above, the effluent used to conduct this chronic toxicity test had elevated levels of sulfate and hardness.

8. In July 1997, routine acute and chronic toxicity tests were conducted by GCR, however, the report was never submitted to the Department as GCR believed that the failure of the chronic toxicity test was due to aerial malathion spraying. TS/PS requested in a memo dated 9 March 1998 to Industrial Wastewater Compliance (SWFTA #3732) that GCR submit a copy of the report to the Department but TS/PS has not yet received it.

9. In January 1998, routine acute and chronic toxicity tests were conducted by GCR using the indicator species *C. dubia* and *C. leedsi* for the acute toxicity test and *C. dubia* and *Pimephales promelas* for the chronic toxicity test. Both the acute and chronic toxicity tests demonstrated passing results. The report indicates that the specific conductance levels of the GCR's effluent ranged from 2,600 µS to 3,000 µS.

The results of these tests indicate that chronic toxicity occurs in *C. dubia* when the effluent level of specific conductance exceeds 3,000 µS. The only time during these test that acute toxicity occurred in *C. dubia* was when the specific conductance exceeded 5,000 µS, which is also the highest specific conductance level recorded in the above toxicity tests.

Describe previous impact bioassessments, WQBELs, and previous and current enforcement actions:

The facility conducted sediment and surface water study in the unnamed ditch in 1994. The Department has collected ambient water in the unnamed ditch for lead analysis.

The facility has been under enforcement by the Department since 1991. In May 1994, Gulf Coast Recycling entered into an Agreed Interim Order (AIO) with the Department which addresses the following issues: remedial action, secondary containment, RCRA permit, Industrial Wastewater corrective action, and reporting requirements.

Discuss comparability of MOR/DMR results to past DEP results and whether there are trends in the data set:

See toxicity test results discussed above. The MOR and DMRs indicate exceedances of effluent levels for specific conductance.

Additional Information:

A RCRA inspection by SW District personnel was conducted on the same day as the FYI-5.

Staff contributing to this review:

(Biologist)	Andrea Grainger
(Inspector)	Jeff Hilton
(Engineer)	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-90)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		10/8/98	0955	unnamed ditch

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
Hot, humid, cloudy	Hillsboro	Gulf Coast Recycling	Control Site

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
				25	35	45	

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

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

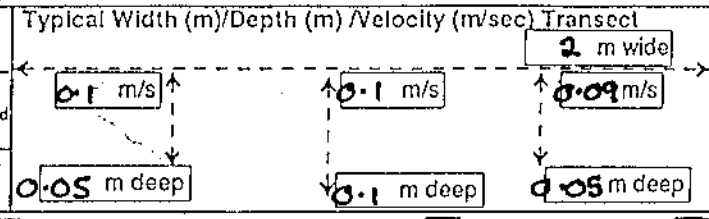
Width of riparian vegetation (m) on least buffered side: | *List & map dominant vegetation on back*

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

Artificially Impounded ☐ yes

High Water Mark: 0.1 (m above present water level) + 0.1 (present depth in m) = 0.2 (m above bed)

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



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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand	60	2	net
Leaf Packs or Mats				Mud/Muck/Silt	10	2	net
Aquatic Vegetation	25	10	net	Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots	5	6	net	*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.1	25.58	7.16	4.69	604			VOB
Mid-depth								
Bottom								

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

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: The area upstream of Gulf Coast Recycling had not been dredged in August 1998. Lots of vegetation, very shallow no HD's

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Grab sed did Ponar instead.	Andrea Franzo	10/8/98

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (v2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		10/8/98	unnamed ditch

REMARKS:	LOCATION:	FIELD ID/NAME:
hot, humid, cloudy	Gulf Coast Recycling	Control Site

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Bottom Substrate/ Available Cover **14**	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs (partially decayed), undercut banks, rubble, or other stable habitat. 20 19 18 17 16	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 (14) 13 12 11	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious, substrates unstable. 5 4 3 2 1
Water Velocity **10**	Max. observed: >0.25 m/sec. but < 2 m/sec 20 19 18 17 16	Max. observed; 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed; 0.05 to 0.1 m/sec (10) 9 8 7 6	Max. observed; <0.05 m/sec, or spate occurring; > 2 m/sec 5 4 3 2 1
Artificial Channelization **7**	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 (7) 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Deposition **10**	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement (10) 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 1
Bank Stability **13**	Stable. No evidence of erosion or bank failure. Little potential for future problems. 20 19 18 17 16	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 15 14 (13) 12 (X) AS	Moderately unstable. Moderate areas of erosion, high erosion potential during floods 10 9 8 7 6	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 5 4 3 2 1
Riparian Buffer Zone Width **2**	Width of native vegetation (least buffered side) greater than 18 m 20 19 18 17 16	Width of native vegetation (least buffered side) 12 m to 18 m 15 14 13 12 11	Width of native vegetation 6 to 12 m, human activities still close to system 10 9 8 7 6	Less than 6 m of native buffer zone due to intensive human activities 5 4 3 (2) 1
Riparian Zone Vegetation Quality **3**	Over 80% of streambank surfaces consist of native plants, including trees understory shrubs, or non-woody macrophytes. Plants growing naturally. 20 19 18 17 16	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. Some disruption in community evident. 15 14 13 12 11	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 10 9 8 7 6	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 5 4 (3) 2 1

59 Add 5 points if cross-sectional area of flow is estimated to be > one square meter during periods of normal flow.

[ ] TOTAL SCORE

Comments: This area was surrounded by homes. Area was mowed

ANALYSIS DATE:	ANALYST:	SIGNATURE:
10/8/98	Granger	Andrea Granger

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		10/8/98	0900	Unnamed ditch

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
Weather is hot, humid + cloudy.	Hillsboro	Gulf Coast Recycling	Downstream site

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
				25	35	45	

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

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

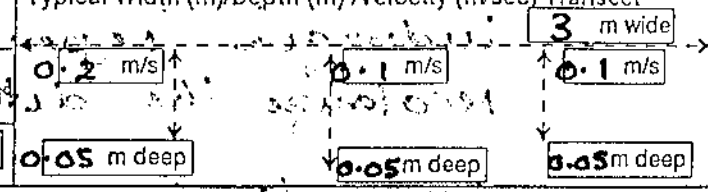
Width of riparian vegetation (m) on least buffered side: 2. | List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark: 0.1 (m above present water level) + 0.05 (present depth in m) = 0.15 (m above bed)

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



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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	2			Sand	80	2	Net
Leaf Packs or Mats	2	3	Net	Mud/Muck/Silt	8	3	Net
Aquatic Vegetation	4	6	Net	Other:			
Rock or Shell Rubble				Other:			
Undercut banks/Roots	6	6	Net	*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.05	26.46	7.13	5.86	1,338			VOB
Mid-depth								
Bottom								

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

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: The ditch was dredged beginning of August 1998. Dredging extended from Outfall to 300 meters down stream. Recent dredging persons noticed

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Grainger	Andrea Granger	10/8/98

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (v2)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		10/8/98	unnamed ditch

REMARKS:	LOCATION:	FIELD ID/NAME:
hot, humid, cloudy	Gulf Coast Recycling	Downstream side

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Bottom Substrate/ Available Cover **8**	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs (partially decayed), undercut banks, rubble, or other stable habitat. 20 19 18 17 16	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat, frequently disturbed or removed. 10 9 **(8)** 7 6	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious, substrates unstable. 5 4 3 2 1
Water Velocity **13**	Max. observed: >0.25 m/sec. but < 2 m/sec 20 19 18 17 16	Max. observed; 0.1 to 0.25 m/sec 15 14 **(13)** 12 11	Max. observed; 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed; <0.05 m/sec, or spate occurring; > 2 m/sec 5 4 3 2 1
Artificial Channelization **2**	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 **(2)** 1
Deposition **5**	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent **(5)** 4 3 2 1
Bank Stability **10**	Stable. No evidence of erosion or bank failure. Little potential for future problems. 20 19 18 17 16	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 15 14 13 12 11	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **(10)** 9 8 7 6	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 5 4 3 2 1
Riparian Buffer Zone Width **2**	Width of native vegetation (least buffered side) greater than 18 m 20 19 18 17 16	Width of native vegetation (least buffered side) 12 m to 18 m 15 14 13 12 11	Width of native vegetation 6 to 12 m, human activities still close to system 10 9 8 7 6	Less than 6 m of native buffer zone due to intensive human activities 5 4 3 **(2)** 1
Riparian Zone Vegetation Quality **10**	Over 80% of streambank surfaces consist of native plants, including trees understory shrubs, or non-woody macrophytes. Plants growing naturally. 20 19 18 17 16	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. Some disruption in community evident. 15 14 13 12 11	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. **(10)** 9 8 7 6	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 5 4 3 2 1

[ ] Add 5 points if cross-sectional area of flow is estimated to be > one square meter during periods of normal flow.

50 TOTAL SCORE

Comments

ANALYSIS DATE:	ANALYST:	SIGNATURE:
October 8, 1998	Granger	Candace Granger

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Gulf Coast Recycling
County: Hillsborough
Contact / District: A. Grainger / Southwest
NPDES Permit #: FL0042854
LIMS Sample #: 348359 LIMS Job #: TLH-1998-09-29-11
sample log 10/9/98DW
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 2

Sample Collection: Date 9/28/98 Time 14:10
Test Beginning: Date 9/29/98 Time 1615
Test Ending: Date 10-1-98 Time 1540
Organism Batch #: 79 Diluent Batch #: well H2O
Organism Age: 12 days SRT toxicant batch #: NA
Test organism: Cyprinella leedsi

Remarks:
Temperature range incubator #3 = 24.9-25.2°C
Temperature range ~~three~~ Culture room = 24.9-25.5°C
for 10/5/98

Conc.	Chamber #	Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
		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
CTL A	B1	5	5	5	8.0	8.2	8.3	24.8	24.9	25.0	7.4	7.9	7.7	255	250	270
CTL B	B2	5	5	5	8.0	8.2	8.3	24.8	24.6	25.2	7.4	7.8	7.8	250	250	270
CTL C	B3	5	5	5	8.0	8.2	8.3	24.7	24.9	25.2	7.5	7.8	7.7	250	270	270
CTL D	B4	5	5	5	8.0	8.2	8.3	24.7	25.1	24.9	7.5	7.8	7.7	250	260	270
100% A	B5	5	5	5	7.8	7.5	8.0	25.0	24.4	24.9	7.4	7.8	7.8	2,120	2030	2170
100% B	B6	5	5	5	7.8	7.5	7.9	25.0	24.6	25.3	7.4	7.8	7.9	2,170	2050	2250
100% C	B7	5	5	5	7.8	7.5	7.8	25.0	25.3	25.1	7.4	7.8	7.8	2,180	2150	2240
100% D	B8	5	5	5	7.8	7.5	7.7	24.9	24.6	25.0	7.4	7.7	7.8	2,180	2120	2200
measured by:		MF	FW	MF	MF	FW	DAW	MF	FW	DAW	MF	FW	DAW	MF	FW	DAW
recorded by:		DAW	FW	MF	DW	FW	CH	DW	FW	CH	DW	FW	CH	DW	FW	CH

Investigators' Signatures

Marshall Faircloth
Counting Hand

reviewer

form updated 5/22/98

	Salt Water Well Water	Water Quality Parameters 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			FW
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR-100	CH	FW
Alkalinity (mg/L as $CaCO_3$):	129	80	24	Hach	CH	FW
Hardness (mg/L as $CaCO_3$):	127	110	141	Hach	CH	FW
Total ammonia (mg/L as N):	<0.017	<0.017	<0.017	ORion	FW	FW
Salinity:	0	FW 10/5/98 0	1.0 ppt	YSI	FW	FW

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Gulf Coast Recycling
County: Hillsborough
Contact / District: A. Grainger / Southwest
NPDES Permit #: FL0042854
LIMS Sample #: 348359 LIMS Job #: TLH-1998-09-29-11
sample log 10/9/98DW
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 1 of 2

Sample Collection: Date 9/28/98 Time 14:10
Test Beginning: Date 9/29/98 Time 1540
Test Ending: Date 10/1-98 Time 1535
Organism Batch #: 43 Diluent Batch #: 45
Organism Age: <24hours SRT toxicant batch #: NA
Test organism: Ceriodaphnia dubia

Remarks:
Temperature range chamber #2 → 26.7 – 26.9 °C
Temperature range Culture Room → 24.9 – 25.5 °C

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
ctr	A	5	5	5	8.3		8.4	24.9		24.5	7.1		8.0	175		700
ctr	B	5	5	5			8.4			24.7			8.0			300
ctr	C	5	5	5			8.4			24.7			8.0			240
ctr	D	5	5	5			8.4			24.7			8.0			230
100%	A	5	5	5	7.5		8.0	24.9		24.8	7.2		8.0	2,261		1880
100%	B	5	5	4			7.8			24.8			8.0			2400
100%	C	5	5	5			7.7			24.8			8.0			2400
100%	D	5	5	5			7.6			24.8			8.0			2600
measured by:		MF	FW	MF	MF		CH	MF		CH	MF		CH	MF		CH
recorded by:		DW	FW	MF	DW		DW	DW		DW	DW		DW	DW		DW

Investigators' Signatures

Salt Water / Well Water

Water Quality Parameters	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):		not measured			FW
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR 100	CH FW
Alkalinity (mg/L as $CaCO_3$):	—	80	24	Hach	CH FW
Hardness (mg/L as $CaCO_3$):	—	110	141	Hach	CH FW
Total ammonia (mg/L as N):	—	<0.017	<0.017	ORION	FW FW
Salinity:	—	0	1.1 ppt	YSI	FW FW

reviewer

form updated 5/22/98

Gulf Coast Recycling

Control Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	25	≥26	25-14	<14	3
EPT Index	0	≥4	3-2	<2	1
# Chironomid Taxa	6	≥7	6-4	<4	3
% Contribution of Dominant Taxon	26	≤29	30-64	>64	5
% Diptera	27	-	≤37	>37	3
Florida Index	4	≥7	6-4	<4	3
% Suspension feeders/Filterers	3	-	≥7	<7	1
Total Score		**Peninsula**			**19**
Interpretation of Scores		**Excellent**			26-32
		Good			20-25
		Poor			**13-19**
		Severely Degraded			7-12

Summer Index Period: Stream Condition Index (SCI) for Florida Peninsula (April 1996)

Test Site

Macroinvertebrate Dip Net (20 sweeps of most productive substrates)	Value	5	3	1	Score
Total Number of Taxa	20	≥26	25-14	<14	3
EPT Index	0	≥4	3-2	<2	1
# Chironomid Taxa	7	≥7	6-4	<4	5
% Contribution of Dominant Taxon	41	≤29	30-64	>64	3
% Diptera	70	-	≤37	>37	1
Florida Index	3	≥7	6-4	<4	1
% Suspension feeders/Filterers	3	-	≥7	<7	1
Total Score		**Peninsula**			**15**
Interpretation of Scores		**Excellent**			26-32
		Good			20-25
		Poor			**13-19**
		Severely Degraded			7-12

Summer Index Period: Stream Condition Index (SCI) for Florida Peninsula (April 1996)

Phytoplankton taxa list and densities (#/mL) for Gulf Coast Recycling, collected via subsurface grabs in an unnamed ditch, on 28 September, 1998.

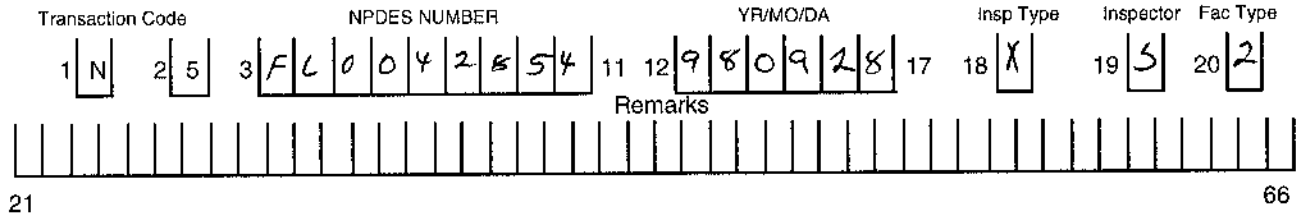
	Control Site	Test Site
Bacillariophyceae		
Capartogramma crucicula	9	–
Gomphonema sp.	26	–
Navicula sp.	–	9
Nitzschia sp.	26	9
Pennales sp.	18	18
Chlorophyceae		
Carteria sp.	18	–
Characium sp.	18	–
Chlamydomonas sp.	–	9
Trochiscia sp.	9	–
Undetermined Chlorophyceae	44	–
Cryptophyceae		
Chroomonas sp.	–	18
Cryptomonas sp.	–	9
Undetermined Cryptophyceae	35	–
Cyanophyceae		
Dactylococcopsis sp.	–	18
Oscillatoria sp.	53	18
Euglenophyceae		
Euglena sp.	9	9
Phacus sp.	9	–
Trachelomonas sp.	9	–

Benthic macroinvertebrate taxa list for Gulf Coast Recycling, collected via 20 discrete dip net sweeps in an unnamed ditch, on 28 September, 1998.

	Control Site	Test Site
Amphipoda		
Hyalella azteca	27	4
Coleoptera		
Copelatus sp.	1	–
Enochrus sp.	2	–
Collembola		
Undetermined Collembola	1	–
Decapoda		
Cambaridae	–	2
Diptera		
Asheum beckae	4	12
Ceratopogonidae	2	2
Chironomidae	3	2
Chironomus sp.	5	1
Goeldichironomus natans	4	2
Goeldichironomus sp.	2	5
Larsia decolorata	3	–
Larsia sp.	–	1
Polypedilum illinoense grp.	4	44
Polypedilum tritum	–	1
Tanytarsus sp. T Epler	–	3
Tanytarsus sp.	1	3
Gastropoda		
Ancylidae	4	–
Hydrobiidae	1	1
Melanoides sp.	3	7
Micromenetus dilatatus avus	1	–
Physella sp.	–	1
Planorbidae	–	1
Hemiptera		
Mesovelia sp.	4	–
Microvelia sp.	–	1
Hirudinea		
Undetermined Hirudinea	1	2
Lepidoptera		
Undetermined Lepidoptera	3	–
Odonata		
Argia sp.	1	1
Coenagrionidae	3	5
Libellulidae	3	–
Orthemis ferruginea	–	2
Oligochaeta		
Eclipidrilus sp.	1	–
Enchytraeidae	–	2

Erpobdellidae	1	–
Limnodrilus hoffmeisteri	14	3
Pelecypoda		
Corbicula sp.	1	–
Sphaeriidae	2	–

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)

