Biological Assessment of

SCM Glidco Organics Corporation

Duval County

NPDES #FL0000884

Sampled February 1997

August 1997

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger: SCM Glidco Organics Corporation
County: Duval
NPDES Number: FL0000884
State Permit Expiration Date: 30 September 1998

Toxics Sampling Inspection (**XSI**)

Date Sampled: 24 February 1997

Results: No organic compounds were detected in the effluent. With the exception of low concentrations of iron (120 µg/L), metals were not detected in the effluent.

Compliance Biomonitoring Inspection (**CBI**)

Date Sampled: 24 February 1997

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

Impact Bioassessment Inspection (**IBI**)

Date Sampled: 24 February 1997

Results: Variations in benthic macroinvertebrate community characteristics between the reference site and the test sites can probably be attributed to factors such as recruitment patterns and system size, rather than to the discharge. The majority of the taxa present at all sites are considered by Farrell (1992) to be pollution tolerant. Shannon-Weaver diversity was 2.2 at all sites, a value less than those found in approximately 70% of other Florida estuaries. The low diversities and relative absence of sensitive taxa throughout the area may be due to the widespread human influences (*e.g.*, urban and industrial) associated with the city of Jacksonville. One potential indicator of disturbance at the test sites was the relatively high proportion of tubificid oligochaetes (from 46.4% to 52.8% of the total population) found there. Due to the factors mentioned above, this observation may not have been related to the SCM discharge. The phytoplankton assemblages at all three receiving water sites were dominated by diatoms, had relatively normal diversity scores, and were low in chlorophyll *a* (undetected at 0.88 µg/L). There appeared to be no negative effects associated with the discharge.

Water Quality Inspection (**WQI**)

Date Sampled: 24 February 1997

Results: Fecal and total coliforms complied with Class III water quality standards in the effluent sample, as well as at the three study sites. Nutrient concentrations were relatively low in the effluent, and the facility did not appear to be causing significant nutrient enrichment in Moncrief Creek. However, total phosphorus and nitrate-nitrite concentrations at all three sites were higher than those found in approximately 60% to 65% of other Florida estuaries. Algal growth potential (AGP) exceeded the "problem threshold" of 10 mg dry wt/L at all three receiving water sites. AGP was 13 mg dry wt/L at the reference site, 14.3 mg dry wt/L at test site 1, and 12.5 mg dry wt/L at test site 2. In contrast, the effluent AGP was 7.4 mg dry wt/L, suggesting sources other than the facility for the moderately elevated AGP values in the receiving waters.

Introduction

SCM Glidco Organics Corporation (now known as Millenium Specialty Chemicals) is located in Jacksonville, Duval County, Florida (see maps in Appendix). This plant produces various flavor and perfume compounds from turpentine. Contaminated stormwater, boiler/softener blowdown, cooling tower blowdown, cooling water discharges, and steam condensate wastewaters are collected and treated at a 5.0 MGD industrial wastewater facility. Steam condensate wastewater is treated with sodium zeolite prior to joining the other wastewater streams. All wastewater passes through an oil skimmer and recirculating spray aerators for cooling. Effluent is discharged to Moncrief Creek, which flows into Trout River, and then to the St. Johns River. From November, 1995, to October, 1996, the average daily maximum flow has been 1.5 MGD. Uncontaminated stormwater is retained and disposed of via a percolation flowfield.

Major characteristics of community structure of study sites.

	Reference Site	Test Site 1	Test Site 2
Macroinvertebrate Ponar			
Number of Taxa	8	17	11
Shannon-Weaver Diversity	2.2	2.2	2.2
# Polychaete Taxa	2	5	3
% Tubificidae	4.4	52.8	46.4
% Polychaeta	27.5	32.8	38.6
% Pelecypoda	42.9	0.5	1.3
% Cumacea	28.3	0	8.2
% Gastropoda	0	3.8	0
% Other	0	1.8	2.1
% Predator/Carnivores	3.3	13	11.8
% Above-Surface Deposit Feeders	25.8	25	31.5
% Below Surface Deposit Feeders	4.4	52.3	0
% Scavengers	0	0.5	1.1
% Suspension Feeders	53.3	1.8	2.2
% Shredders	12.1	3.2	5.2
Phytoplankton Algae			
Number of Taxa	17	21	17
Shannon-Weaver Diversity	3.5	3.4	3.2
Chlorophyll a (µg/L)	0.88 U	0.88 U	0.88 U
Algal Density (#/mL)	1017	707	981
% Blue-green	9.9	5.4	10.7
% Green	5.8	9.0	0
% Diatoms	83.5	81.4	77.9
Algal Growth Potential (mg dry wt/l)	13.0	14.3	12.5

Effluent permit limits are as follows: flow (5.0 MGD), oil and grease (5.0 mg/L maximum), temperature (100° F maximum), pH (6.5 to 8.5 SU), acute toxicity (LC_{50} must be greater than 300%), phenolic compounds (300 µg/ maximum), copper (2.9 µg/L maximum), lead (5.6 µg/L maximum), zinc (86 µg/L maximum), bromine (0.1 mg/L maximum) and total residual chlorine (0.01 mg/L maximum). The facility is also required to report effluent COD and hexavalent chromium.

During the period from January, 1996, through October, 1996, the facility has violated permit limits for copper (8 times), toxicity (twice), oil and grease (3 times), temperature (twice), lead (once) and zinc (once). A warning letter was issued to SCM in December, 1996, requiring the facility to determine the causes of the violations, and correct the deficiencies.

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a reference site (located in Trout River approximately 1 mile north of the confluence of Moncrief Creek and Trout River) and two test sites (bracketing the discharge in Moncrief Creek (see maps in Appendix). A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Cyprinella leedsi*, were performed on an effluent sample (Weber 1991). The effluent was analyzed for metals and for organic con-

stituents (base neutral and acid extractables, and pesticide extractables). Additionally, nutrient analyses were performed on effluent, reference, and test sites. Methods used for all chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at reference and test sites. Invertebrates were collected using three replicate petite Ponar grabs. Phytoplankton was sampled at both reference and test sites via subsurface grabs (Ross 1990). Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential (AGP) tests were performed, using *Selenastrum capricornutum* as the test organism for the freshwater effluent (Miller *et al.* 1978) and *Dunaliella tertiolecta* for the marine receiving waters (EPA 1974). Bacterial populations were analyzed for total and fecal coliforms following the methods of APHA (1989). Sediment from reference and test sites was analyzed for particle grain size (Ross 1990).

Explanation of Measurements of Community Health

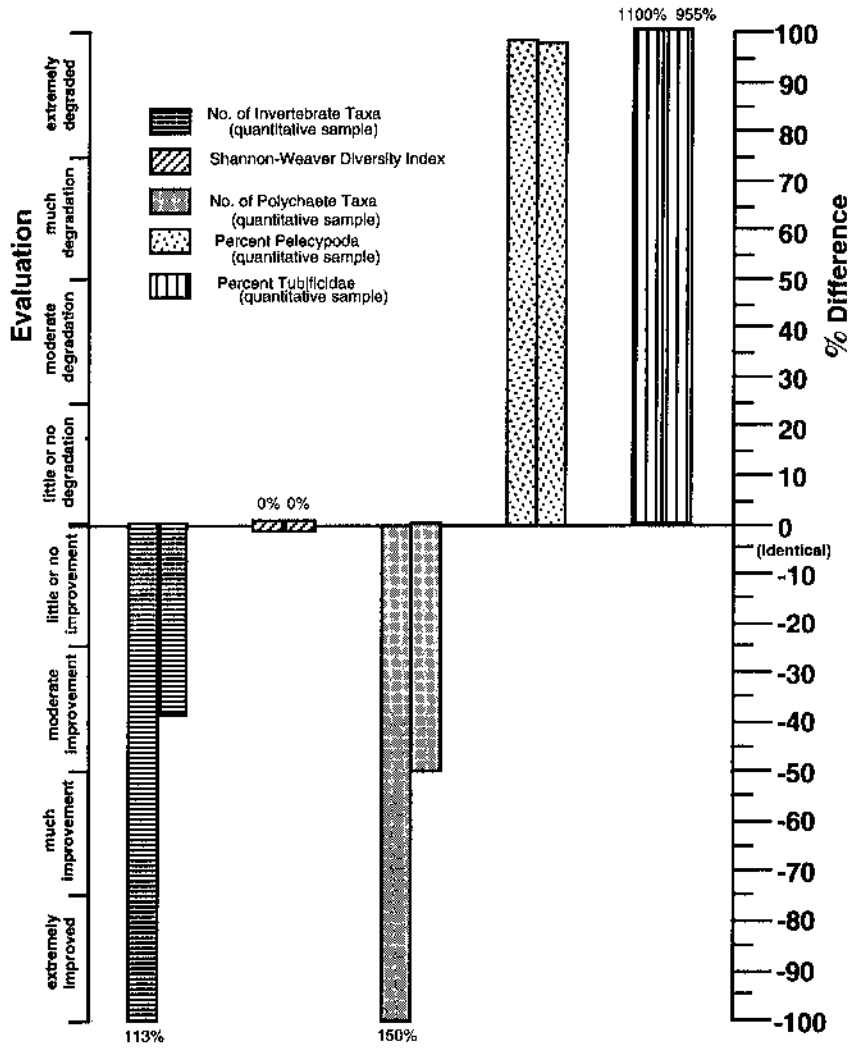
Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of a discharge. These are briefly discussed here.

Habitat Assessment: Six attributes known to have potential effects on the estuarine biota were evaluated and scored. Based on the sum of these individual scores, overall habitat quality is assigned to one of four categories: Optimal (75-100 points); Suboptimal (50-74 points); Marginal (25-49 points); or Poor (0-24 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. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

Numbers of pollution sensitive taxa: Some organisms become rare



Effect of discharge on the benthic macroinvertebrate community.

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

or absent as the intensity or duration of disturbance increases. For example, the Florida Index assigns points to stream-dwelling macroinvertebrates based on their sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy. Species sensitivity data from other sources, such as Farrell (1992), Hudson *et al.* (1990), Lenat (1993), and Chang *et al.* (1992) are used as appropriate.

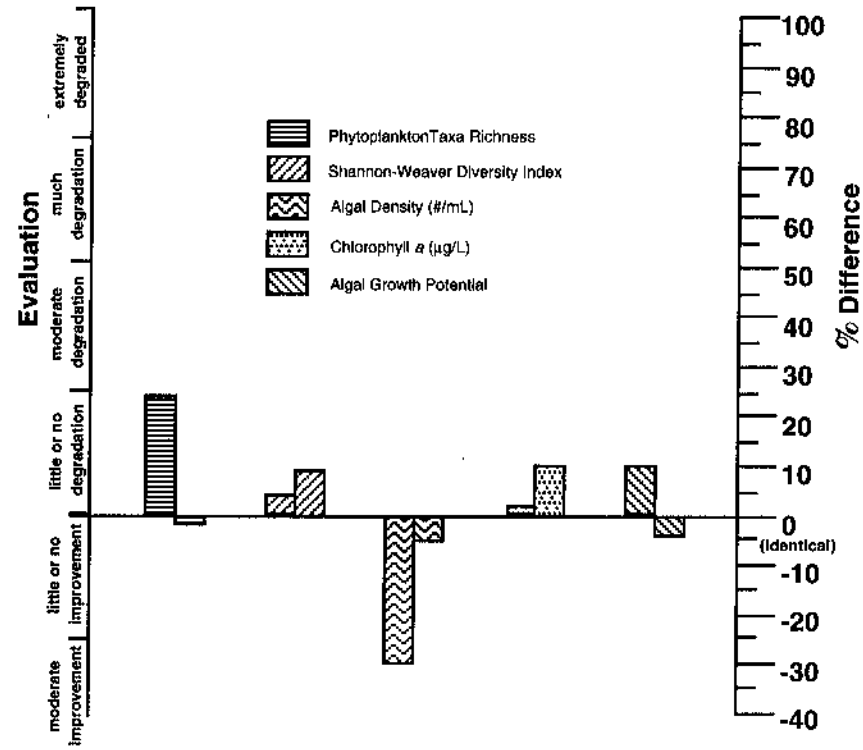
Community structure: Substantial shifts in proportions of major groups of organisms, compared to reference conditions, may indicate degradation.

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 systems.

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

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

For graphical purposes, the percent differences between the reference and test sites involving



Effect of discharge on the algal community.

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

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

The following personnel were involved in this investigation: Tim McKelvey and Pat O'Conner (Northeast District) and Lyn Burton, Jennifer Eichelberger, Ken Espy, Marshall Faircloth, Russel Frydenborg, Maosen Hua, Joy Jackson, Kathleen Lurding, Elizabeth Miller, Urania Quintana, Bart Richard, Landon Ross, Lisa Tamburello, David Whiting and Vicki Whiting (Tallahassee Biology Laboratory). The report was reviewed by the Point Source Studies Review Committee, consisting of Wayne Magley, Jan Mandrup-Poulsen, and Michael Tanski, as well as District representatives.

Results and Discussion

The receiving waters in this study (Moncrief Creek for the test sites and Trout River for the reference site) can be characterized as low salinity, *Spartina* and *Juncus* dominated, tidal estuaries. The reference site received an optimal habitat assessment score, with 90

points, while the test sites (each with 71 points) were ranked at the upper end of the suboptimal category. The test sites lost points in the categories of littoral zone alterations (increased sea walls or riprap), community types observed (fewer than the reference site), and freshwater discharges (due to increased stormwater runoff). Note that the reference site was also situated in a much wider (1,200 m) system than the test sites (20 m).

Sediments throughout the study area consisted primarily of sand, with lesser amounts of mud, muck, and silt. Grain size distribution at the test sites was similar to that of the reference site, with the majority of particles in the 0.125 to 0.25 mm size class (ranging from 69% to 86% of the total particles, by weight, at all sites). Physical/chemical attributes of the three study areas were also quite similar. For example, mid-depth dissolved oxygen values ranged from 8.3 mg/L to 8.5 mg/L, pH varied from 7.2 SU to 7.3 SU, salinity was between 7.2 ppt and 9.5 ppt, and temperature ranged from 16.2° C to 17.2° C.

No organic compounds were detected in the effluent. With the exception of low concentrations of iron (120 µg/L), metals were not detected in the effluent.

The sample of final effluent was not acutely toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Cyprinella leedsi*. Note that 10% of the fish died in the full strength effluent (see Appendix).

Fecal and total coliforms complied with Class III water quality standards in the effluent sample, as well as at the three study sites. Fecal coliform concentrations were less than 600 organisms/100 mL in the effluent, 43 organisms/100 mL at the reference site, 420 organisms/100 mL at test site 1, and 370 organisms/100 mL at test site 2. Total coliform counts were less than 800 organisms/100 mL in the effluent, 230 organisms/100 mL at the reference site, 1,460 organisms/100 mL at test site 1, and 1,680 organisms/100 mL at test site 2

The amount of total suspended solids (TSS) in the effluent (3 mg/L) was less than the levels found in the receiving waters (8 mg/L to 9 mg/L). Although Biochemical Oxygen Demand (BOD) was 6 mg/L in the effluent, it was less than 2 mg/L at all receiving water sites and no dissolved oxygen depletion at the test sites was noted at the time of sampling.

Nutrient concentrations were relatively low in the effluent, and the facility did not appear to be causing significant nutrient enrichment in Moncrief Creek. For example, while total phosphorus in the effluent was 0.8 mg/L, total phosphorus at test site 1 (0.16 mg/L) and test site 2 (0.14 mg/L) were very similar to the reference site value (0.14 mg/L). Similarly, effluent nitrate-nitrite was 0.087 mg/L, while nitrate-nitrite at test site 1 (0.041 mg/L) and test site 2 (0.040 mg/L) were similar to the reference site concentration (0.031 mg/L). Note that total phosphorus and nitrate-nitrite concentrations at all three sites were higher than those found in approximately 60% to 65% of other Florida estuaries.

Algal growth potential (AGP) exceeded the "problem threshold" of 10 mg dry wt/L (Ron Raschke, U.S. EPA, personal communication) at all three receiving water sites. AGP was 13 mg dry wt/L at the reference site, 14.3 mg dry wt/L at test site 1, and 12.5 mg dry wt/L at test site 2. In contrast, the effluent AGP was 7.4 mg dry wt/L, suggesting sources other than the facility for the moderately elevated AGP values in the receiving waters.

Variations in benthic macroinvertebrate community characteristics between the reference site and the test sites can probably be attributed to factors other than the discharge. The figure on p. 2 indicates the degree of difference between the invertebrate populations of the reference and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean the test site is better than the reference site.

Taxa richness at the reference site (8 taxa) was reduced when compared with the test sites (17 and 11 taxa at test sites 1 and 2, respectively). The increase in taxa richness at the test sites consisted of additional polychaete, amphipod, and/or chironomid taxa not found at the reference site (see taxa list in Appendix). The reference site was located in the Trout River (approximately 1 mile from the SCM discharge). At this location, the Trout River is 1,200 m wide, and would tend to receive much of the invertebrate recruitment from the saline portions of the St. Johns River. Conversely, the test sites were located in a 20 m wide portion of Moncrief Creek, from which recruitment of the invertebrates would be expected via downstream drift (from freshwater areas), as well as from incoming (saline) tides. This appears to be reflected in the invertebrate communities. For example, a higher number of freshwater chironomid taxa was found at the test sites when compared with the reference site.

Shannon-Weaver diversity was 2.2 at all sites, a value less than

those found in approximately 70% of other Florida estuaries. More polychaete taxa were recovered from the test sites (5 from test site 1 and 3 from test site 2) than from the reference site (with 2 polychaete taxa). Pelecypod abundance (42.9% of the total population) was considerably higher at the reference site than at the test sites (where pelecypod abundance ranged from 0.5% to 1.3%). Note however, that the same taxon, *Tellina versicolor*, was common to all three sites, where the presence of oyster beds was also noted. One potential indicator of disturbance at the test sites was the relatively high proportion of tubificid oligochaetes (from 46.4 % to 52.8% of the total population) found there. Due to the factors mentioned above, this observation may not be related to the SCM discharge.

The majority of the taxa present at all sites are considered by Farrell (1992) to be pollution tolerant. The relative absence of sensitive taxa throughout the area may be due to the widespread human influences *(e.g.*, urban and industrial) associated with the city of Jacksonville.

The figure on p. 3 represents changes in the phytoplankton algal community. As was noted with the macroinvertebrates, lower differences (that is, smaller percentages) correspond with lower degrees of degradation. There was a high degree of similarity between the reference site algal community and those found at the test sites. The phytoplankton assemblages at all three receiving water sites were dominated by diatoms (from 77.9% of the population at test site 2 to 83.5% at the reference site). Shannon-Weaver diversity varied from 3.2 to 3.5, while chlorophyll *a* was low (undetected at 0.88 µg/L) throughout the study area. There appeared to be no negative effects associated with the discharge.

Conclusions

No organic compounds were detected in the effluent. With the exception of low concentrations of iron (120 µg/L), metals were not detected in the effluent.

The sample of final effluent was not acutely toxic to the invertebrate, *Ceriodaphnia dubia*, or to the fish, *Cyprinella leedsi*. Note that 10% of the fish died in the full strength sample.

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There was a high degree of similarity between the reference site algal community and those found at the test sites. The phytoplankton assemblages at all three receiving water sites were dominated by diatoms, had relatively normal diversity scores, and were low in chlorophyll *a* (undetected at 0.88 µg/L). There appeared to be no negative effects associated with the discharge.

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Chemistry Summary Table for SCM Glidco - Organics.	Effluent	Reference Site	Test Site 1	Test Site 2
Organic Constituents (ug/L)				
None Detected	None Detected			
Metals (ug/L)				
Aluminum	200 U			
Arsenic	10 U			
Cadmium	5 U			
Copper	25 U			
Chromium	10 U			
Iron	120			
Lead	5 U			
Mercury	0.10 U			
Nickel	5 U			
Selenium	10 U			
Silver	5 U			
Zinc	20 U			
Nutrients (mg/L)				
Ortho-phosphate	0.64	0.087	0.10	0.087
Total phosphorus	0.80 A	0.14	0.16	0.14
Ammonia	0.40 A	0.061 J	0.079 J	0.069 J
Nitrate+Nitrite	0.087	0.031 I	0.041 I	0.040 I
TKN	0.65	0.73	0.76	0.81
General Phys-Chem Parameters				
Habitat Assessment		90	71	71
Mid-depth Dissolved Oxygen (mg/L)	7.5	8.5	8.3	8.3
Mid-depth pH (SU)	8.6	7.2	7.3	7.3
Mid-depth Specific Conductance (µmhos/cm)	739	16,137	12,639	13,323
Mid-depth Temperature (°C)	26.2	17.2	16.5	16.2
Total Suspended Solids (mg/L)	3	9	8	9
Biological Oxygen Demand, 5 day (mg/L)	6	2 U	2 U	2 U
Hardness (mg CaCO3)	209.7			
Algal Growth Potential (mg dry wt/L)	7.4	13.0	14.3	12.5
Toxicity				
Bioassay Fish-Chlorinated	Not Toxic			
Bioassay Invertebrate-Chlorinated	Not Toxic			
Microbiological Communities (org/100 mL)				
Fecal Coliform	600 U	43	420	370
Total Coliform	800 U	230	1,460	1,680

J - Estimated value.
I - Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.
A - Value given is the average of two or more measurements.
U - Material analyzed for but not detected; value reported is the minimum detection limit

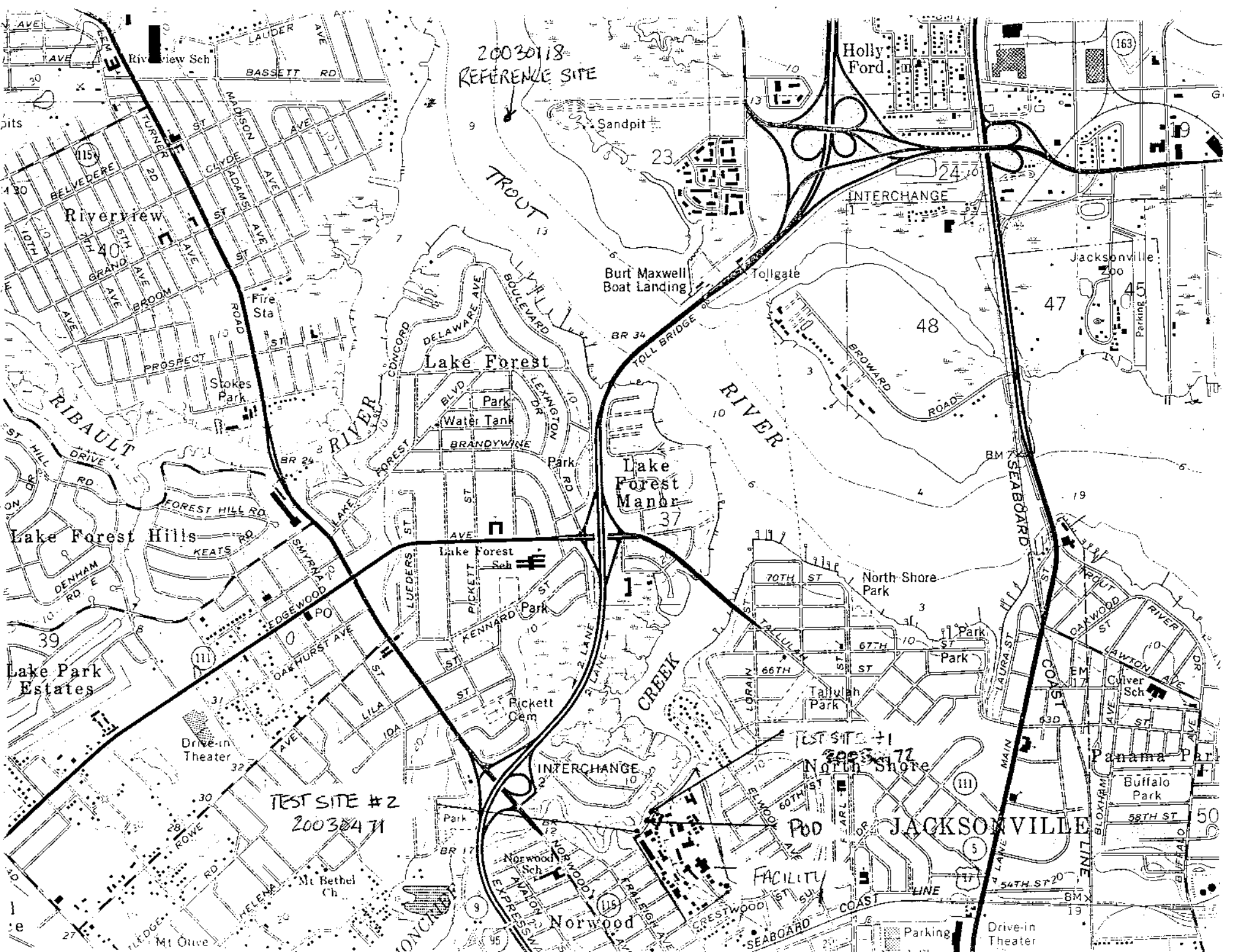
Typical Values for Selected Parameters in Florida Waters

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

Percentile Distribution

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 Phosphorus	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37
Turbidity	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30
LAKES (477 stations)											
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	3.46
NH3+NH4	0.01	0.02	0.02	0.03	0.04	0.06	0.08	0.12	0.15	0.21	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.10	0.14	0.23
Total Phosphorus	0.01	0.02	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.23	0.42
Ortho-Phosphorus	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.21	0.32
Turbidity	1.00	1.25	1.55	2.05	2.75	4.50	6.45	9.60	14.10	26.00	40.00
ESTUARIES (690 stations)											
Phytoplankton Chlorophyll *a*	2.14	3.28	4.49	5.13	6.00	6.93	7.94	9.60	12.40	17.60	22.20
Dredge Diversity	1.34	1.53	1.91	2.28	2.56	2.90	3.15	3.59	4.01	4.53	4.98
Dredge Taxa Richness	4.00	6.00	9.00	11.00	15.00	18.50	25.00	35.00	41.00	62.00	90.00
TKN	0.26	0.34	0.42	0.50	0.59	0.69	0.76	0.82	0.95	1.30	1.49
NH3+NH4	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.13	0.22	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.17	0.23
Total Phosphorus	0.01	0.02	0.06	0.07	0.10	0.11	0.14	0.17	0.23	0.43	0.59
Ortho-Phosphorus	0.01	0.02	0.03	0.04	0.04	0.05	0.07	0.09	0.12	0.21	0.44
Turbidity	3.50	4.00	4.50	5.05	5.40	5.60	6.30	6.80	8.00	11.40	11.75

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


20030118
REFERENCE SITE
Holly Ford
Sandpit
TROUT
INTERCHANGE
Riverview
Burt Maxwell Boat Landing
Tollgate
Jacksonville Zoo
Parking
Fire Sta
Stokes Park
Lake Forest
Park
Water Tank
RIBAULT
RIVER
BR 34
TOLL BRIDGE
BROWARD ROAD
Lake Forest Manor
BM 7
SEABOARD
Lake Forest Hills
Lake Forest Sch
North Shore Park
Lake Park Estates
Drive-in Theater
Pickett Cem
CREEK
INTERCHANGE
TEST SITE #2
20030471
TEST SITE #1
20030472
North Shore
Panama Park
Buffalo Park
Culver Sch
Tallulah Park
Norwood
Norwood Sch
Mt Bethel Ch
Mt Olive
FACILITY
JACKSONVILLE
LINE
Parking
Drive-in Theater
COAST

State of Florida
Department of Environmental Protection
Facility Summary

Facility Name: SCM Glidco - Organics	**Prepared By:** Khalid Al-Nahdy **Date:** 2/21/97

Location: (See Attached Map)	**County:** 16 - Duval	**District:** Northeast

Federal Permit No.: FL0000884 **Expiration Date:** 9/30/98	**State GMS #:** 3116P01073 **State Expiration Date:** 11/30/97	**Facility Type:** Industrial

Function of Facility: Organic Chemicals -Main product is terpines (Alpha and Beta Pinene)

Description of treatment process: Operation of a 5.0 MGD wastewater treatment system for treating wastewater from spill retention, contaminated stormwater, non-contact cooling water, boiler blowdown/softener blowdown, cooling tower blowdown, cooling water discharges and steam condensate wastewater which is treated with sodium zeolite. Treatment consists of an oil skimmer including recirculating cooling sprays with effluent discharge to outfall D002.

Receiving Waters: Moncrief Creek to Trout River to St. Johns River	Classification: Class III
Design Flow: 5.0 MGD	**Actual Mean Flow: (Nov. 1995 - October 1996)**
	1.5 MGD Daily Maximum

Discharge is: Continuous * Intermittent Seasonal Rainfall Dependent Other

Facility Mixing Zone Details: There is no mixing zone granted for this facility.

List effluent limits:

PARAMETER	LIMIT (unit)	Describe special permit conditions and permit modifications
Effluent		
Flow (MGD)	5.0 MGD	
COD (mg/l)	Report	
Oil & Grease	5.0 mg/l	
Phenolic Compounds	300 ug/l	
Hexavalent Chromium	Report	Total chromium may be reported instead of hexavalent chromium if total chromium is less than 50 ug/l
Copper	2.9 ug/l	
Lead	5.6 ug/l	
Zinc	86 ug/l	
Bromine	0.1 mg/l	May be reported if added in the waste stream
Total Residual Chlorine	0.01 mg/l	May be reported if added in the waste stream
Temperature	100 F	
pH	6.5 Min 8.5 Max	
Acute Toxicity	LC50>300%	96-Hour static screen acute toxicity for C. dubia 96 Hour static screen acute toxicity for N. Leedsi O% control and 100% effluent

Description of permitted outfall:
The Outfall consists of an overflow weir before its discharge to Moncrief Creek to Trout River to St. Johns River. The effluent flow is continuos. The DEP monitoring point is at the overflow weir.

List permit violations (MOR data) and plant upsets that occurred at the plant within the past year:

On December 24, 1996 a warning letter was issued to the facility for 16 reported permit limit exceedances. The permit limit exceedances occurred from January 1996 through October 1996. Permit limit exceedances include eight copper, two temperature, three oil and grease, one lead and one zinc.

A copy of the warning letter is attached.

The facility is currently doing a study to determine a cause of these exceedances and a report will be submitted to the Department by the facility by February 28, 1997.

There were no plant upsets reported by the facility during this period.

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:
The facility is in the process of resolving past permit limit exceedances with the Department. The Department is waiting for a cause and effect report from the facility. The report will submitted by February 28, 1997.

The facility has failed toxicity requirements twice in the last 12 months. The two routine test had 0% mortality. However, follow up definitive test demonstrated no toxicity.

Discuss MOR trends to prior data; is the trend improving or declining: The trend appears to fluctuate, especially in regards to copper levels in the effluent. The Department is currently addressing this trend in the existing enforcement case.

Additional Information: none.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030118	DATE (M/D/Y): 2/24/97	TIME: 1330	RECEIVING BODY OF WATER: Moncrief Creek / TROUT RIVER

REMARKS:	COUNTY: DUVAL	LOCATION: APPROX. 1 mile North of where Moncrief Creek joins Trout R.	FIELD ID/NAME: REFERENCE 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)
5				90	5		

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: <1eM

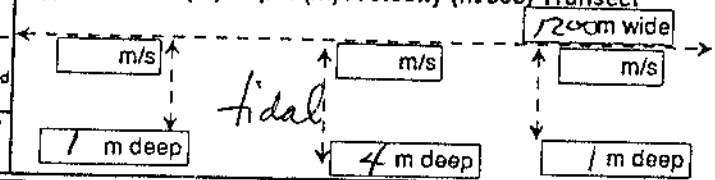
List & map dominant vegetation on back

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

Artificially Impounded ☐ yes

High Water Mark: 1m (m above present water level) + 1.3m (present depth in m) = 2.3 (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	70	1	P. ponar
Leaf Packs or Mats				Mud/Muck/Silt	15	1	P. ponar
Aquatic Vegetation				Other:			
Rock or Shell Rubble	15	1	P. ponar	Other:			
Undercut banks/Roots							

Draw aerial view sketch of habitats found in 100 m section

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	Sal (ppt)		Secchi (m):
Top								
Mid-depth	2	17.23	7.21	8.47	16,137	9.0		.9
Bottom	5 ~~10~~							

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

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

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

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

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

Weather Conditions/Notes:
N.E. wind @ 25 mph
Overcast with intermittent rain
Cool, mid 60's °F.

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Tim McKelvey / Pat O'Connor	Tim McKelvey / Pat O'Connor	2/24/97

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030118	DATE (M/D/Y): 2/24/97	RECEIVING BODY OF WATER: TROUT RIVER

REMARKS:	LOCATION: 1 mile upstream on Trout River from Moncrief Creek.	FIELD ID/NAME: REFERENCE SITE

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 8	None—Unaltered shoreline. 9-10 points	Mostly natural shoreline, but with occasional riprap. 6-(8) points	Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points	Shoreline consisting almost entirely of vertical seawalls. 0-2 points
Community Types Observed: 50	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: 3	>0.75 m. 4-5 points	0.5 - 0.75 m. 3 points	0.25 - 0.5 m. 2 points	<0.25 m. 0-1 point
Freshwater Discharges/ Alterations: 8	Only natural runoff.. 9-10 points	Mostly natural runoff, but with a few, small stormwater sources. 6-(8) points	Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points	Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points
Flow and Wave Action: 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-(10) points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type: 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE: 90

COMMENTS:

ANALYSIS DATE:	ANALYST: McKelvey / O'Connor	SIGNATURE: Ann McKelvey / Bill O'Connor

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 21003471	DATE (M/D/Y): 2-24-97	TIME 1230	RECEIVING BODY OF WATER: Moncrief Creek

REMARKS: tide beginning to move out.	COUNTY: DUVAL	LOCATION: 50 meters east of P.P.D. in Moncrief Creek.	FIELD ID/NAME: E TEST SITE #1

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)
				50	25	25	

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: < 3m

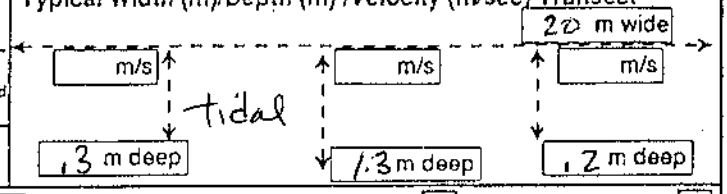
List & map dominant vegetation on back

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

Artificially Impounded ☒ yes ☐ more sinuous

High Water Mark: .3 (m above present water level) + 1.3 (present depth in m) = 1.6 (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	70	1	p. grab
Leaf Packs or Mats				Mud/Muck/Silt	20	1	"
Aquatic Vegetation				Other: detritus	10	1	"
Rock or Shell Rubble				Other:			
Undercut banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	Sal. (ppt)		Secchi (m):
Top								.7
Mid-depth	2'	16.49	7.31	8.31	12,639	7.2		
Bottom	4'							

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

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

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

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

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

Weather Conditions/Notes:

NE winds @ 25 mph overcast w/ intermittent rain Cool, Mid 60°F's.

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

SAMPLING TEAM:	SIGNATURE:	DATE:
TIM McKELVEY / PAT O'CONNOR	Tim McKelvey / Pat O'Connor	2/24/97

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030471	DATE (M/D/Y): 2-24-97	RECEIVING BODY OF WATER: MORRIEF CREEK

REMARKS: tide beginning to move out.	LOCATION: 50 meters east of POD. in Morrief Creek.	FIELD ID NAME: E TEST SITE #1

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations — 5	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 — 40	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 — 3	>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 — 3	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 — 9	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points	———	———	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type — 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud. 0-3 points

TOTAL SCORE — 71

COMMENTS: test sites #1 and #2 (bracket the POD) are within 100 meters of each other so there is no change in the habitat.

ANALYSIS DATE:	ANALYST:	SIGNATURE:
2-24-97	McKelvey / O'Connor	McKelvey / O'Conn

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

SUBMITTING AGENCY CODE: 8031 / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 20030472	DATE (M/D/Y): 2/24/97	TIME 1150	RECEIVING BODY OF WATER: Moncrief Creek

REMARKS: ~~Rainfall~~ high tide	COUNTY: DUVAL	LOCATION: Moncrief Creek, 50 m west of P.O.D.	FIELD ID/NAME: W TEST SITE #2

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)
				50	25	25	

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: 23m

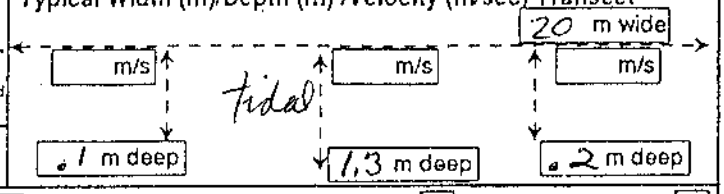
List & map dominant vegetation on back

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

Artificially Impounded ☒ yes

High Water Mark: .3 (m above present water level) + 1.3 (present depth in m) = 1.6 (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	70	1	P. ponar
Leaf Packs or Mats				Mud/Muck/Silt	20	1	11
Aquatic Vegetation				Other: detritus	10	1	4
Rock or Shell Rubble				Other:			
Undercut banks/Roots				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	SAL. ppt		Secchi (m):
Top								
Mid-depth	2'	16.19	7.26	8.31	13,323	7.7		.8
Bottom	4'							

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

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

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

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

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

Weather Conditions/Notes:
NE wind @ 25 mph
Overcast w/ intermittent rain
Cool, Mid 60's °F.

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

SAMPLING TEAM: Tim McKelvey / Pat O'Connor

SIGNATURE: Tim McKelvey / Pat O'Connor

DATE: 2/24/97

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
	20030472	7/24/97	Moncrief Creek

REMARKS:	LOCATION:	FIELD ID/NAME:
tide at stand of high	50 meters west of P.O.D in Moncrief Creek.	TEST SITE #2 W

Habitat Parameter / SCORE	Excellent	Good	Fair	Poor
Littoral Alterations — 6	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 — 40	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 — 3	>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 — 3	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 — 9	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points
Sediment Type — 11	Combination of sand, gravel, and shell. 12-15 points	Primarily sand, with small areas of mud. 8-11 points	Mixture of sand and mud, or well-aerated mud only. 4-7 points	Anaerobic mud 0-3 points

TOTAL SCORE — 71

COMMENTS: test sites #1 and #2 (bracket the POD) are within 100 meters of each other so there is no change in habitat.

ANALYSIS DATE:	ANALYST:	SIGNATURE:
	McKelvey / O'Connor	Eric McKelvey / Pat O'Connor

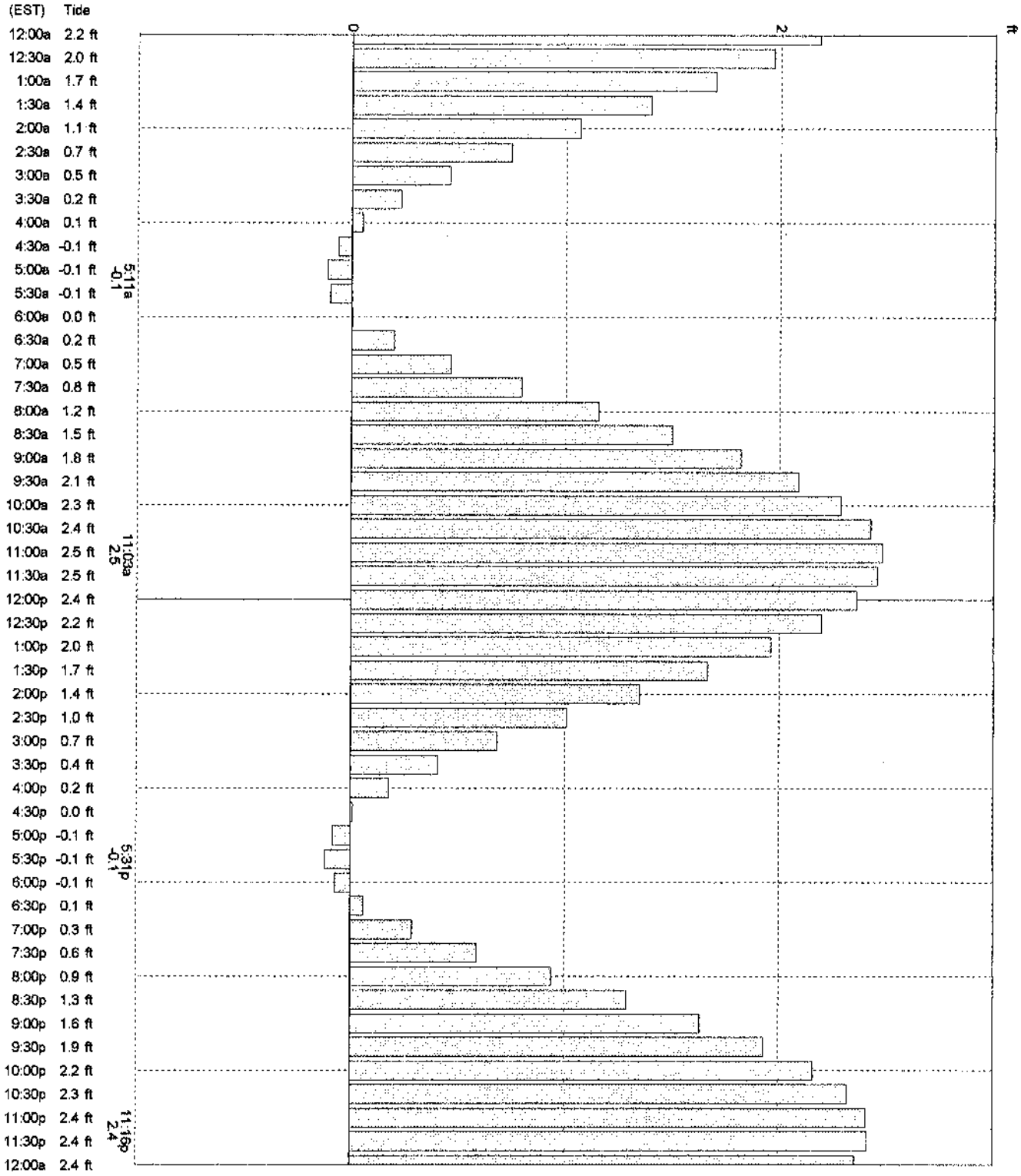
Tides-Moncrief Creek entrance

based on Mayport, Florida (NOAA)
30° 23.05 N 81° 39.07 W

Monday, February 24, 1997

Average Tides	
Mean Range:	2.6 ft
MHHW:	3.0 ft
Mean Tide:	1.4 ft

Daily Highs & Lows		
5:11a	-0.1 ft	Low
11:03a	2.5 ft	High
5:31p	-0.1 ft	Low
11:16p	2.4 ft	High



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FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: SCM CORP
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0000 884
LIMS Sample #: 169389 LIMS Job #: 97-Feb-25-48
sample log: 2-27-97
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Temperature range: room 24.8-25.8°C
incubator 24.4-25.6°C
Test Number: 1 of 2
Remarks: D = dead, M = missing

Sample Collection: Date 2-24-97 Time 1015
Test Beginning: Date 2-25-97 Time 1400
Test Ending: Date 2-27-97 Time 1410
Organism Batch #: 6 Diluent Batch #: 6
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.0 °C	1028 @ 1018 980 @ 1001 @ 24.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.3 °C	1038 @ 1018 996 @ 1001 @ 25.2 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.3	8.2 @ 25.1 °C	1034 @ 1018 996 @ 1001 @ 25.0 °C

MF 2-27-97 meter 2/26/96 value

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	A	5	5	5	8.2		8.2	23.6		24.7	8.0		7.8	155		165
Control B	B	5	5	5			8.3			24.6			7.8			170
Control C	C	5	5	5			8.3			24.5			7.8			170
Control D	D	5	5	5			8.3			24.6			7.8			165
100% A	A	5	5	5	9.1		8.7	25.3		24.7	7.1		7.7	700		760
100% B	B	5	5	5			8.7			24.6			7.7			770
100% C	C	5	5	5			8.7			24.6			7.8			775
100% D	D	5	5	5			8.7			24.5			7.8			760
Measured/Loaded by:		MF	KR	JS	MF		KR	MF		KR	MF		KR	MF		KR
Recorded by:		MF	KR	JS	KR		JS	KR		JS	KR		JS	KR		JS

Investigators' Signatures
Marshall Fairchild
Kelly Ralston
Julie Sharpe

A H Wolfe
reviewer

prm updated 4/01/96

Water Quality Parameters

	Salt Water: Well Water	Salt Water: 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	-	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR100	JS
Alkalinity (mg/L as $CaCO_3$):	125	70	5	hach	KR/ND
Hardness (mg/L as $CaCO_3$):	130	90	220	hach	KR/ND
Total ammonia (mg/L as N):	<0.017	<0.017	0.102 0.102	OHION	MF

Ammonia Meter #98136 Meter Slope: -54.0
Ammonia Blank: <0.017
Control Salinity: 0 ppt
Sample Salinity 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: SCM CORP.
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0000884
LIMS Sample #: 169389 **LIMS Job #:** 97-Feb-25-48
sample log: 2-27-97
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Temperature range: room 24.8-25.8°C
incubator 24.4-25.6°C
Test Number: 2 of 2
Remarks: D = dead, M = missing

Sample Collection: Date 2-24-97 Time 1015
Test Beginning: Date 2-25-97 Time 1440
Test Ending: Date 2-27-97 Time 1440
Organism Batch #: 12 **Diluent Batch #:** well H2O
Organism Age: 10 days
Test Organism: Cyprinella leedsi

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.0 °C	1028 @ 1018 980 @ 1001 @ 24.2 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.3 °C	1058 @ 1018 996 @ 1001 @ 25.2 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.3	8.2 @ 25.1 °C	1034 @ 1018 MF entered 2/26/97 ME by MF 996 @ 1001 @ 25.0 °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	D13	5	5	5	7.9	8.2	8.4	23.6	24.1	24.0	7.7	7.8	6.9	245	250	250
Control B	D14	5	5	5	7.9	8.2	8.4	23.5	23.9	23.9	7.7	7.9	6.4	245	250	250
Control C	D15	5	5	5	7.9	8.2	8.4	23.4	23.8	23.8	7.6	7.9	6.9	245	250	250
Control D	D16	5	5	5	7.9	8.3	8.4	23.5	23.8	23.8	7.6	7.9	6.7	245	250	250
100% A	D17	5	5	4 ND	9.0	8.7	8.7	26.2	24.0	24.0	6.8	6.6	6.3	760	740	750
100% B	D18	5	5	5	9.0	8.8	8.7	26.3	23.9	24.0	6.8	6.7	6.3	770	745	750
100% C	D19	5	5	5	9.0	8.8	8.7	26.4	23.9	24.0	6.7	6.7	6.4	770	740	750
100% D	D20	5	5	4 ND	9.0	8.8	8.7	26.2	23.8	23.9	6.7	6.8	6.4	765	745	755
Measured/Loaded by:		JS	ND	ND	ME	ND	KR	ME	ND	MF	ME	ND	ME	ME	ND	MF
Recorded by:		JF	ND	ME	KR	KR	JS	KR	KR	JS	KR	KR	JS	KR	KR	JS

Investigators' Signatures
Marshall Faircloth
Julie Sharpe
Billie Ralston
Tim McKelvey
Art Wolfe

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	—	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR-102	JS
Alkalinity (mg/L as $CaCO_3$):	125	70	5	Hach	KR/ND
Hardness (mg/L as $CaCO_3$):	130	90	20	Hach	KR/ND
Total ammonia (mg/L as N):	<0.017	<0.017	0.102	Orion	MF

Ammonia Ammonia Ammonia Control Sample
ppt ppt

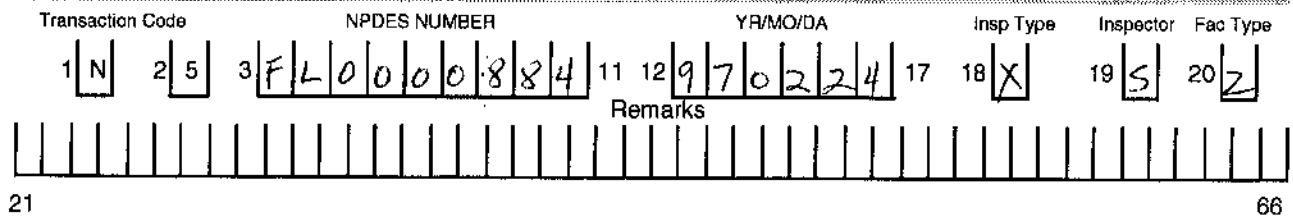
Benthic macroinvertebrate taxa list and densities (#/m^2) for SCM Glidco, collected via 3 petite Ponar grabs per station in Moncrief Creek (test sites) and Trout River (reference site) on 24 February 1997.

	Reference Site	Test Site 1	Test Site 2
Nemertea	–	28	–
Polychaeta			
Laeonereis culveri	83	1278	764
Spionidae	–	14	28
Polydora sp.	–	14	–
Streblospio benedicti	264	56	14
Dispio sp.	–	14	–
Hobsonia florida	–	556	444
Oligochaeta	–	319	–
Tubificidae	56	2764	1125
Tectidrilus sp.	–	–	375
Hirudinea			
Glossiphoniidae	–	28	–
Gastropoda			
Hydrobiidae	–	194	–
Littoridinops monroensis	–	28	–
Pelecypoda			
Mactridae	14	–	–
Tellinidae	–	14	–
Tellina sp.	–	–	28
Tellina versicolor	528	42	14
Ispoda			
Idoteidae	–	14	–
Edotea montosa	–	14	42
Amphipoda			
Grandidierella bonnieroides	–	14	–
Oedicerotidae	–	14	28
Chironomidae	14	56	28
Procladius sp.	–	14	–
Tanypus sp.	–	14	–
Tanypus clavatus	–	28	–
Chironomus sp.	14	306	167
Dicrotendipes simpsoni	–	–	14
Polypedilum sp.	–	28	14
Polypedilum scalaenum grp.	292	42	153

Phytoplankton taxa list and densities (#/mL) for SCM Glidco, collected via 3 subsurface grabs in Moncrief Creek, on 24 February 1997.

Scientific Name	Reference Site	Test Site 1	Test Site 2
Cyanophyceace			
Gomphosphaeria sp.	8	–	–
Merismopedia sp.	–	–	16
Lyngbya sp.	–	13	–
Spirulina sp.			
Bacillariophyceace	–	–	8
Bacillariophyta	8	–	–
Melosira sp.	8	4	–
Skeletonema sp.	193	152	225
Cyclotella sp.	17	13	32
Coscinodiscus sp.	42	4	–
Rhizosolenia sp.	50	21	8
Pennales sp.	–	25	72
Rhaphoneis sp.	–	4	–
Eunotia sp.	–	4	–
Achnanthes sp.	84	110	249
Cocconeis sp.	8	8	16
Navicula sp.	42	4	8
Gyrosigma sp.	17	47	40
Nitzschia sp.	50	34	24
Nitzschia longissima	109	17	8
Bacillaria sp.	160	114	56
Hantzschia sp.	–	–	8
Cylindrotheca sp.	59	8	16
Surirella sp.			
Chlorophyceace	–	4	–
Chlorophyta	42	59	80
Tetraedron sp.	8	–	–
Scenedesmus sp.	8	–	–
Golenkinia sp.	–	4	–
Spermatozoopsis sp.			
Euglenophyceace	–	8	8
Euglena sp.			
Cryptophyceace	–	8	–
Chroomonas sp.	67	13	40
Cryptomonas sp.	34	25	64

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)

