



Biological Assessment of
Mosaic Fertilizer, LLC – Bartow Chemical Complex

Polk County

NPDES #FL0001589

Sampled April 21, 2008

October 2008

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection
Fifth Year Inspection Summary

Discharger: Mosaic Fertilizer, LLC – Bartow Chemical Complex
Physical Address: 3200 Highway 60 West, Bartow, FL
County: Polk
NPDES Number: FL0001589
Permit Expiration: February 16, 2009

Toxics Sampling Inspection (XSI)

Date Sampled: April 21, 2008

Results: Bromacil and hexazinone were detected in EFF-001 at levels above the minimum detection limit (MDL) but below the practical quantitation limit (PQL). There is no Class III Water Quality Criterion for either of these compounds. Iron detected in EFF-002 (1050 µg/L) was in violation of Class III Water Quality Criteria (62-302.530(38) and the facility's permit limit. Iron was also detected in EFF-001 and at both the Control and Test Sites at levels that met Class III Water Quality Criteria and permit limits. Aluminum was detected at the Test Site, but there is no Water Quality Criterion for aluminum. Other metals detected in EFF-001, EFF-002 and the Control and Test Sites were in compliance with Class III Water Quality Criteria and/or permit limits. Radium²²⁶ + Radium²²⁸ (PCI/L) in EFF-002 complied with facility permit limits.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: April 21, 2008

Results: Neither effluent sample was acutely toxic to the fish, *Cyprinella leedsii*, or to the water flea, *Ceriodaphnia dubia*, during the 48-hour acute bioassays.

Water Quality Inspection (WQI)

Date Sampled: April 21, 2008

Results: Nutrient levels in EFF-001 may be contributing to elevated nutrient levels at the Test Site when compared to the Control Site. However, there appears to be an additional source of nutrient input at the Test Site which is elevating the ortho-phosphorus (9.6 mg/L) and total phosphate (10 mg/L) levels as much as 10 times the levels in EFF-001 (1.1 and 1.4 mg/L OP and TP, respectively). Nutrient levels in EFF-002 were also elevated, but that effluent does not directly affect the Test Site in Skinned Sapling Creek. Dissolved oxygen (D.O.), pH, and temperature at the Control and Test Sites complied with Class III Water Quality Criteria, but D.O. could not be measured in the effluents due to equipment malfunction. Temperature, pH, total suspended solids (TSS), fluoride, and sulfate in EFF-001 and temperature and pH of EFF-002 complied with facility permit limits and Class III Water Quality Criteria. Although the high conductivity of EFF-001 (698 µmhos/cm) contributed to the elevated conductivity of the Test Site

(744 $\mu\text{mhos/cm}$), this does not constitute a violation of Class III Water Quality Criteria (62-302.530(22) F.A.C.) since it did not exceed 1275 $\mu\text{mhos/cm}$. Stormwater runoff in the area and groundwater seepage from a neighboring gypsum stack may also be contributing to the elevated conductivity at the Test Site. AGP values of both effluents and of the Control and Test Sites exceeded the 5.0 mg dry wt/L "problem threshold". The AGP value of the Test Site (125.0 mg dry wt/L) was more than ten times higher than the AGP value of the Control Site (11.7 mg dry wt/L) and almost three times higher than the AGP value of EFF-001 (45.9 mg dry wt/L), which again indicates an additional source of nutrient input at the Test Site other than the effluent.

Impact Bioassessment Inspection (IBI)

Date Sampled: April 21, 2008

Results: Differences in the periphyton and phytoplankton communities, with the exception of phytoplankton algal density, could not be exclusively attributed to the facility discharge because of the evidence that there are other sources of nutrient input in the area. Phytoplankton algal density at the Test Site was more than 100 times that of the Control Site, reflecting the higher nutrients at that site. Habitat assessment scores from the reconnaissance trip on March 6, 2008 placed the Control Site in the "Optimal" category (138) and the Test Site in the "Suboptimal" category (112). Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers indicated a violation of the Class III Water Quality Biological Integrity Criterion (62-302.530(10) F.A.C.) at the Test Site when compared to the Control Site. The Test Site Shannon-Weaver Diversity was 1.87 while the Control Site Shannon-Weaver Diversity was 4.07. Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples also showed degradation at the Test Site when compared to the Control Site. The Control Site Stream Condition Index (SCI) score of 70A placed it in Category 1, the highest category; while the Test Site SCI score (36A) placed it on the low end of Category 2. The Test Site SCI samples contained no ephemeropteran taxa, no long-lived taxa, and no sensitive taxa, all of which indicate healthier conditions. The Test Site SCI samples also contained a much larger percentage of very tolerant taxa (oligochaetes and some dipterans) than the Control Site.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions

Introduction

The Mosaic Fertilizer, LLC – Bartow Chemical Complex is located in Polk County, Florida (Appendix A). This facility is a phosphate chemical fertilizer manufacturing facility with phosphogypsum stacks. Activities at this plant include the production of sulfuric acid, phosphoric acid, fluorosilicic acid, ammoniated phosphate and micronutrient added fertilizers (see Facility Summary in Appendix B). Phosphogypsum is produced as a byproduct of the phosphoric acid production and is disposed of by stacking in the South Phosphogypsum Stack (approximately 575 acres) located on the south side of Highway 60 (see map Appendix A). When it is necessary to discharge process water, treatment occurs by two-stage liming and acidulation. Spray aeration is used for ammonia removal. Outfall D-001 discharges excess non-contact process wastewater and stormwater to Skinned Sapling Creek (Class III Fresh waters) and essentially forms the headwaters of this stream. Outfall D-002 discharges treated process wastewater and stormwater to an unnamed collection ditch that flows into the Mosaic Fertilizer, LLC Noralyn Mine water recirculation system from where it can be released to the Peace River (Class III Fresh waters) through any one of several outfalls.

The facility has the potential for ground water discharges. Therefore, a Ground Water Monitoring Plan (GWMP), extended Horizontal Zone of Discharge, and Vertical Zones of Discharge have been approved for this site to address potential impacts to the underlying aquifer systems. Ground water monitoring conditions authorized under Consent Order No. 90-1541 are part of the facility's permit and include installation of soil-bentonite cut-off walls designed to contain off-site migration of contaminants. The facility is also in the process of getting a Reverse Osmosis treatment system.

Surface Water Quality Criteria and facility permit limits are listed in Table 1.

According to the facility's monthly discharge monitoring reports, the plant has had no violations of permit limits in the past year (Appendix B).

Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Little Fishhawk Creek approximately 15 miles from the discharge) and a Test Site (located in Skinned Sapling Creek approximately 2 miles downstream of the discharge). Since the headwaters of Skinned Sapling Creek are essentially formed by the discharge from D-001 and stormwater runoff, it was not possible to find a Control Site upstream from the discharge. A Test Site closer to the outfall could not be found because the upper portions of Skinned Sapling Creek were inaccessible due to overgrown vegetation and alligators. As a result, the Test Site is also under the potential influence of stormwater runoff during rainfall events from a sulfuric acid plant area and occasional runoff from a nutrient enriched lake in the area as well as groundwater seepage from the Mulberry Gypsum Stack to the north of this site (personal communication, Jacki Champion). Seepage from the Mulberry Gypsum stack was documented in a Contamination Assessment Report ("Contamination Assessment in Area outside existing Cut-off Wall", December, 1999) prepared by Ardaman & Associates, Inc. for Mulberry Phosphates, Inc. and submitted to FDEP. A slurry wall was installed to prevent the seepage, but it has not functioned as intended. The lake is locally known as South Pool, and is most likely an old mine cut. Detailed methods and their relationship to Florida Administrative Code are given in Appendix C.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see

<http://www.floridadep.org/labs/qa/2002sops.htm> for details) and met FDEP quality assurance/quality control standards (see <http://www.floridadep.org/labs/qa/index.htm>).

The following were involved in this investigation: Jacki Champion and Scott Rose (FDEP Phosphate Management, Bureau of Mining and Minerals Regulation), and FDEP Central Laboratory in Tallahassee. See Appendix D for the chain of custody form (sample submittal form). The report was reviewed by District representatives and the Point Source Studies Review Committee (Jennifer Paris, Nancy Ross, and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Tables 1 and 2, and a complete list of chemical analytes can be reviewed in Appendix E. Bromacil and hexazinone were detected in EFF-001 at levels above the minimum detection limit (MDL) but below the practical quantitation limit (PQL). There is no Class III Water Quality Criterion for either substance. Iron detected in EFF-002 (1050 µg/L) was in violation of Class III Water Quality Criteria (62-302.530(38) F.A.C.) and the facility's permit limit. Iron was also detected in EFF-001 and at both the Control and Test Sites at levels that complied with facility permit limits and/or Class III Water Quality Criteria (62-302.530 F.A.C). Aluminum was detected at the Test Site, but there is no Water Quality Criterion for aluminum. Arsenic, nickel, and selenium were detected in EFF-002 at levels that complied with Class III Water Quality Criteria and/or facility permit limits. Cadmium detected at the Control Site and arsenic, cadmium, and nickel detected at the Test Site were detected at levels that complied with Class III Water Quality Criteria. All other metals detected in EFF-001,

Table 1. Effluent limits, Class III Freshwater Criteria and chemical, microbiological and toxicological data.

Mosaic Fertilizer, LLC - Bartow Chemical Plant	Class III Criteria	Effluent Limits EFF-001	EFF-001	Effluent Limits EFF-002	EFF-002	Control Site	Test Site
Organic Constituents (µg/L)							
Bromacil	-	-	0.21 I	-	-	-	-
Hexazinone	-	-	0.33 I	-	-	-	-
Nutrients (mg/L)							
Ortho-phosphate	-	Report	1.1	Report	3.5	0.37	9.6
Total Phosphorus	-	≤ 20.0 s	1.4	≤ 20.0 s	4.1	0.44	10
Total Ammonia	-	-	0.9	-	0.3	0.017 I	0.54
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 s	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	0.099	-	2.5	0.12	0.99
Total Kjeldahl Nitrogen	-	-	2.4	-	0.89	0.31	2
Organic Nitrogen	-	-	1.5 c	-	0.59 c	0.293 c	1.46 c
Total Nitrogen	-	Report	2.499 c	Report	3.39 c	0.43 c	2.99 c
General Physical and Chemical Parameters							
Habitat Assessment	-	-	-	-	-	138	112
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	- ^	≥ 5.0	- ^	8.7	5.8
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.0	6.0 - 8.5	6.7	7.4	6.4
Conductivity (µmhos/cm)	≤ 1,275	≤ 1,275	698	≤ 1,275 *	1033	217	744
Temperature (°C)	-	Report	23.8	Report	23.1	19.7	20.5
Salinity	-	-	≤ 0.35 c	-	≤ 0.53 c	≤ 0.12 c	≤ 0.40 c
Sample Depth (m)	-	-	0	-	0	0.2	0.2
Total Residual Chlorine (mg/L)	≤ 0.01	-	0	-	0	0	0
Chlorophyll a (µg/L) - Corrected	-	-	66	-	4.5	0.7 I	44
Phaeophytin (µg/L)	-	-	6.6	-	2.0	0.68 I	20
Total Suspended Solids (mg/L)	-	150 s	12 I	-	6 I	-	-
Total Dissolved Solids (mg/L)	-	-	446 A	-	689	-	-
Turbidity (NTU)	< 29 t	Report	-	-	-	1.6	11
CBOD, 5 day (mg/L), N - inhibited	-	-	3.5	-	0.3 I	-	-
Oils and Greases (mg/L)	≤ 5.0	-	2.8 I	-	1.7 U	-	-
Chloride (mg/L)	-	-	20	-	23	-	-
Cyanide (µg/L)	≤ 5.2	-	-	-	-	-	-
Fluoride (mg/L)	≤ 10.0	≤ 10.0	1.2	≤ 10.0	2.5	0.29	3.4
Sodium (mg/L)	-	-	47.3	Report	125	14.6	60.7 A
Sulfate (mg/L)	-	Report	210	Report	410	11	280
Alpha, Total (pCi/L)	≤ 15	-	1.3 U	≤ 15	1.8	-	-
Alpha-Counting Error (pCi/L)	-	-	0.8	-	1.2	-	-
Radium 226 (pCi/L)	-	-	0.5 €	-	1 €	-	-
Radium 226-Counting Error (pCi/L)	-	-	0.1	-	0.2	-	-
Radium 228 (pCi/L)	-	-	0.9 U	-	0.8 €	-	-
Radium 228-Counting Error (pCi/L)	-	-	0.6	-	0.6	-	-
Radium 226 + 228 (pCi/L)	≤ 5	-	0.5 c€	≤ 5	1.8 c€	-	-
Flow (MGD)	-	Report	0.32	Report	1.32	-	-
Hardness (mg CaCO ₃)	-	-	261.34 c	Report	254.06 c	71.90 c	255.09 c
Toxicity (48-hour acute screening bioassay, percent mortality in 100% effluent)							
Bioassay - Water flea (<i>Ceriodaphnia dubia</i>)	-	≤ 20	-	≤ 20	0	-	-
Bioassay - Fish (<i>Cyprinella leedsii</i>)	-	≤ 20	0	≤ 20	0	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

^ - Dissolved oxygen not measured due to loss of membrane on probe.

€ - Analyte detected in sample and in equipment blank.

* - Limit when not discharging process water. Conductivity limit is ≤ 6000 µmhos/cm when discharging process water.

c - Value is calculated

s - Single sample

t - Shall not exceed 29 NTUs above background

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

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

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

EFF-002, the Control Site or the Test Site were detected at levels above the MDL but below the PQL, which complied with facility permit limits and/or Class III Water Quality Criteria. Radium²²⁶ + Radium²²⁸ (PCI/L) in EFF-002 complied with facility permit limits.

- Dissolved oxygen (D.O.), pH, and temperature at the Control and Test

Sites complied with Class III Water Quality Criteria. D.O. could not be measured in either of the effluents due to equipment malfunction. Temperature, pH, total suspended solids (TSS), fluoride, and sulfate in EFF-001 and temperature and pH of EFF-002 complied with facility permit limits and Class III Water Quality Criteria (Table 1, 62-302.530 F.A.C.). Although the high conduc-

tivity of EFF-001 (698 µmhos/cm) contributed to the elevated conductivity of the Test Site (744 µmhos/cm), this does not constitute a violation of the Class III Water Quality Criterion (62-302.530(22) F.A.C.) since it did not exceed 1275 µmhos/cm. There may also be other inputs from surrounding mining operations that contribute to the elevated conductivity at the Test Site.

Table 2. Effluent limits, Class III Freshwater Criteria and metals data. Class III Criteria based on hardness are presented individually for each site based on hardness at that site.

Mosaic Fertilizer, LLC - Bartow Chemical Plant	EFF-001 Class III Criteria	EFF-001 Limits	EFF-001	EFF-002 Class III Criteria	EFF-002 Limits	EFF-002	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)										
Aluminum	-	-	60 U	-	-	90 I	-	94 I	-	540 A
Arsenic	≤ 50	-	1.7 I	≤ 50	≤ 50	3.2	≤ 50	0.52 I	≤ 50	2.9 A
Cadmium	≤ 0.6 b	-	0.02 U	≤ 0.54 b	≤ 0.54 b	0.02 U	≤ 0.21 b	0.11	≤ 0.54 b	0.15 A
Calcium (mg/L)	-	-	66.4	-	-	62	-	18.9	-	70 A
Chromium III	≤ 189.3 b	-	1 U	≤ 184.95 b	≤ 184.95 b	1.2 I	≤ 65.78 b	1 U	≤ 185.56 b	2.3 I
Chromium VI	-	-	-	≤ 11	≤ 11	-	-	-	-	-
Copper	≤ 21.2 b	-	0.5 U	≤ 20.69 b	≤ 20.69 b	0.5 U	≤ 7.04 b	1.2 I*	≤ 20.77 b	0.63 I*
Iron	≤ 1,000	-	480	≤ 1,000	≤ 1,000	1050	≤ 1,000	360	≤ 1,000	680 A
Lead	≤ 10.8 b	-	0.2 U	≤ 10.43 b	≤ 10.43 b	0.2 U	≤ 2.09 b	0.2 U	≤ 10.48 b	0.78 I
Magnesium (mg/L)	-	-	23.2	-	-	24.1	-	6	-	19.5 A
Nickel	≤ 117.6 b	-	0.35 I	≤ 114.80 b	-	3.65	≤ 39.46 b	0.43 I	≤ 115.19 b	6.24 A
Selenium	≤ 5.0	-	0.59 I	≤ 5.0	-	2.9	≤ 5.0	0.5 U	≤ 5.0	0.51 I
Silver	≤ 0.07	-	0.025 U	≤ 0.07	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Zinc	≤ 270.4 b	-	5 U	≤ 264.01 b	-	5 U	≤ 90.60 b	5 U	≤ 264.92 b	5 U

Value exceeds the Class III Water Quality Criteria or permit limits

* - Analyte was detected in both sample and equipment blank.

b - Value is calculated based on hardness

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

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

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

- Neither effluent sample was acutely toxic to the fish, *Cyprinella leedsii*, or to the water flea, *Ceriodaphnia dubia*, during 48-hour acute screening bioassays (See Table 1 for percent mortality, Appendix F for bioassay bench sheets, and Appendix G for supporting standard reference toxicant data). Although the 48-hour acute screening toxicity test does not reflect the required permit conditions, passing test results provide confidence that the required permit conditions would likely be met.
- Elevated nutrient levels in EFF-001 appeared to be contributing to elevated nutrient levels at the Test Site when compared to the Control Site. However, the Test Site was also

under the influence of groundwater seepage from the Mulberry Gypsum Stack to the north. Ortho-phosphate (9.6 mg/L) and total phosphorus (10 mg/L) levels at the Test Site were as much as 10 times the levels in EFF-001 (1.1 and 1.4 mg/L OP and TP, respectively). Other nutrient levels (TKN, total nitrogen, and total ammonia) were similar at the Test Site to those in EFF-001 and were much higher than levels at the Control Site. Nutrient levels in EFF-002 were also elevated, but that effluent does not directly affect the Test Site in Skinned Sapling Creek.

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al.* 1978).

Raschke and Shultz (1987) found that AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. EFF-001 AGP was 45.9 mg dry weight/L, and EFF-002 AGP was 200.0 mg dry wt/L (Table 3). The AGP values at the Little Fishhawk Creek Control Site and Skinned Sapling Creek Test Site were 11.7 A and 125.0 mg dry weight/L, respectively. All AGP values were above the “problem” threshold. This is further evidence of the nutrient enrichment related to the Mosaic Fertilizer discharge in this portion of Skinned Sapling Creek as well as the other sources of nutrient input in the area (i.e. storm-water runoff and groundwater seepage). The analytical chemistry suggests that the effluent is nitrogen-limited. There was no evidence of growth inhibition in AGP data (Table 2).

- Chlorophyll-*a* was detected in water samples of both effluents (66 and 4.5 µg/L in EFF-001 and EFF-002, respectively) and from the Control (0.7 I µg/L) and Test Sites (44 µg/L, Table 1). The elevated chlorophyll-*a* in EFF-001 and at the Test Site are further evidence of nutrient enrichment from the Mosaic Fertilizer

Table 3. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus.

Mosaic Fertilizer, LLC - Bartow Chemical Plant					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Outfall 001	45.9	38.0 ± 7.6	95.0 ± 19.0	0.9	1.8
Outfall 002	200.0	106.4 ± 21.3	128.8 ± 25.8	0.8	0.8
Control Site	11.7 A	5.2 ± 1.0	16.3 ± 3.3	0.4	1.0
Test Site	125.0	58.1 ± 11.6	113.6 ± 22.7	0.2	0.3

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

Table 4a. Periphyton Composition - Qualitative.

Mosaic Fertilizer, LLC - Bartow Chemical Plant	Control Site	Test Site
Number of Wet Taxa	6	17
Number of Wet Algal Units Identified	300	303
Percent Dominant Wet Taxon	77.7	23.3
Dominant Wet Taxon Name	<i>Jaaginema</i> sp. (Blue-green)	<i>Carteria cordiformis</i> (Green)
Was sample dominated by diatoms?	yes	yes
Number of Diatom Taxa	62	51
Number of Diatom Valves Identified	510	500
Percent Dominant Diatom Taxon	10.0	12.0
Dominant Diatom Taxon Name	<i>Cocconeis fluviatilis</i>	<i>Cyclotella atomus</i>
Percentage Composition for Wet Algae		
Blue-green algae	42.7	3.0
Green algae	0.7	14.2
Diatoms	56.7	80.2
Cryptophytes	0.0	0.3
Euglenophytes	0.0	1.0
Pyrrophytes	0.0	1.3

Table 4b. Phytoplankton Composition

Mosaic Fertilizer, LLC - Bartow Chemical Plant	Control Site	Test Site
Number of Wet Taxa	16	34
Number of Wet Algal Units Identified	117 *	301
Algal density (number/mL)	168	17930
Percent Dominant Wet Taxon	35.0	35.0
Dominant Wet Taxon Name	<i>Jaaginema</i> sp. (Blue-green)	<i>Chlamydomonas</i> sp. (Green)
Number of Diatom Taxa	58	33
Number of Diatom Valves Identified	501	501
Percent Dominant Diatom Taxon	22.6	20.6
Dominant Diatom Taxon Name	<i>Navicula</i> sp.	<i>Cyclotella meneghiniana</i>
Percentage Composition for Wet Algae		
Blue-green algae	39.3	21.6
Green algae	23.2	59.8
Diatoms	32.7	6.6
Chrysophytes	0.0	3.3
Cryptophytes	0.0	2.0
Euglenophytes	4.8	1.0
Pyrrophytes	0.0	4.3
Other	0.0	1.4

*Per counting rules in SOP AB-05, counting was stopped before 300 units were encountered

mining operations in this portion of Skinned Sapling Creek and groundwater influence from the Mulberry Gypsum Stack to the north.

- Although the periphyton communities at both the Control and Test Sites were dominated by diatoms, the Control Site had a lower percentage of diatoms (56.7%) than the Test Site

(80.2%), and the remaining community at the Control Site was mostly blue-green algae (42.7%). The remainder of the periphyton community at the Test Site consisted of green algae (14.2%), blue-green algae (3.0%) and cryptophytes, euglenophytes and dinoflagellates (2.6%) (Table 4a, Appendix H-1).

- The phytoplankton communities at the Control and Test Sites were considerably different with the Control Site community being almost equally composed of blue-green algae and diatoms (39.3% and 32.7%, respectively) with a slightly smaller percentage of green algae (23.2%). The remainder of the community consisted of euglenophytes. In contrast, the Test Site had very few diatoms (6.6%) and was dominated by green algae (59.8%) with some blue-green algae (21.6%) and small contributions from other groups such as chrysophytes (3.3%), cryptophytes (2.0%), euglenophytes (1.0%), and dinoflagellates (4.3%). Phytoplankton algal density at the Test Site was more than 100 times that of the control Site. (Table 4b, Appendix I-1). Although this is most likely related to the elevated nutrients at the Test Site and additional nutrient input from groundwater seepage from the Mulberry Gypsum Stack, it may also be affected by the open canopy cover at the Test Site compared to a more shaded canopy cover at the Control Site. Therefore, differences in phytoplankton communities cannot be exclusively attributed to the Mosaic Fertilizer, LLC – Bartow Chemical Plant discharge.
- Habitat assessment scores from the reconnaissance trip on March 6, 2008 were 138 (Optimal) at the Control Site and 112 (Suboptimal) at the Test Site (Table 1, data sheets in Appendix H). While the Test Site had more diverse substrate than the Control Site, that habitat was not abundant and it was subject to smothering by moving sediments. The Control Site had more available habitat and more deep pools, which indicates natural conditions without scouring and habitat smothering.
- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed much higher diversity at the Control Site compared to the Test Site (Table 5,

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Mosaic Fertilizer, LLC - Bartow Chemical Plant	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	4.07 *	1.87
Number of Taxa	32	40
Florida Index	20	24
Number of EPT Taxa	5	3
Percent Dominant Taxon	19.6	71.7
Dominant Taxon Name	<i>Polypedilum flavum</i> (Diptera)	<i>Cheumatopsyche</i> sp. (Trichoptera)
Total Number of Individuals (counted)	231	4,746
Total Number of Individuals (#/m ²)	613	12,556
Community Composition: Percent of total		
Amphipoda	0.4	2.7
Bivalvia	0.4	0.0
Coleoptera	5.2	0.3
Diptera	69.2	23.6
Ephemeroptera	9.1	0.1
Gastropoda	0.0	0.7
Isopoda	6.9	0.0
Odonata	0.9	0.2
Oligochaeta	1.7	0.2
Plecoptera	0.0	0.0
Trichoptera	6.1	72.2
Other	0.0	0.1
Functional Feeding Groups: Percent of total		
Browser-Grazers	3.5	0.0
Burrowing Deposit Feeders	1.7	0.2
Predators	13.0	6.9
Scavengers	3.5	0.1
Scrapers	7.2	0.8
Shredders	18.6	4.1
Surface Deposit Feeders	41.5	8.7
Suspension Feeders	11.1	79.4

* - Shannon Weaver Diversity scores calculated on samples with < 300 individuals have the potential for negative bias (lower diversity scores compared to sites with more individuals).

Appendix J-1 & J-2). Although Shannon-Weaver Diversity may be underestimated at the Control Site due to the low number of organisms recovered there (<300 individuals), the diversity is still more than 75% greater at the Control Site (4.07) than at the Test Site (1.87) which is a violation of Class III Water Quality Criterion (62-302.530(10) F.A.C.). The Test Site was heavily dominated by the trichopteran, *Cheu-*

matopsyche sp. (72.2%), which is most likely a result of the high nutrients at that site.

- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Table 6 and in Appendices J-1 and J-2. The Control Site SCI score of 70A placed it in Category 1 while the Test Site SCI score of 36A placed it at the low end of Category 2.

As was seen in the Hester-Dendy samples, the Test Site community was dominated by the trichopteran, *Cheumatopsyche* sp. In contrast to the Control Site, the Test Site SCI samples contained no ephemeroptera taxa, no long-lived taxa, and no sensitive taxa. The Test Site also had more very tolerant individuals (14.7% and 14.5% in replicate 1 and replicate 2, respectively) than the Control Site (0.7% and 0.0% in replicate 1 and replicate 2, respectively).

Summary

While DMR data from the last year showed no violations, data from this inspection indicate exceedance of iron in EFF-002 by this facility which is a violation of Class III Water Quality Criterion (62-302.530(38) F.A.C.) and facility permit limits. Although Shannon-Weaver Diversity may be underestimated at the Control Site due to the low number of organisms recovered there (<300 individuals), the diversity was still more than 75% greater at the Control Site (4.07) than at the Test Site (1.87) which is a violation of Class III Water Quality Criterion (62-302.530(10) F.A.C.). In addition, elevated nutrients in EFF-001 and nutrient inputs from groundwater seepage from the Mulberry Gypsum Stack to the north appear to be adversely affecting the biota in this portion of Skinned Sapling Creek. Although there is potential for storm-water runoff during rain events from a sulfuric acid plant area and a nutrient enriched lake in the area, the facility is currently working on a clean-up plan for the lake and is attempting to decrease discharges from the lake. Reevaluation of monitoring frequency for iron in EFF-002 may be warranted.

Literature Cited

- Barbour, M. T. and J. B. Stribling. 1994. A technique for assessing stream habitat structure. In: Proceedings of

Table 6. Macroinvertebrate Dipnet Samples - Qualitative.

Mosaic Fertilizer, LLC - Bartow Chemical Plant	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	70 A		36 A	
Stream Condition Index 2007 (category) *	Category 1		Category 2	
Stream Condition Index Metrics	Rep 1	Rep 2	Rep 1	Rep 2
Number of Total Taxa	26	23	21	21
Number of Ephemeroptera Taxa	3	4	0	0
Number of Trichoptera Taxa	4	3	1	2
Number of Clinger Taxa	5	5	2	2
Number of Long-lived Taxa	2	2	0	0
Number of Sensitive Taxa	4	5	0	0
Percent of Dominant Taxon	20.0	31.5	44.0	35.5
Percent Suspension Feeders and Filterers	46.6	34.2	66.0	65.8
Percent of Tanytarsini Individuals	8.3	4.7	17.3	25.7
Percent of Very Tolerant Individuals	0.7	0.0	14.7	14.5
Total Number of Individuals	145	149	150	152
Community Composition: Percent of total				
Dominant Taxon Name	<i>Microcylloepus pusillus</i> Coleoptera	<i>Microcylloepus pusillus</i> Coleoptera	<i>Cheumatopsyche</i> sp. Trichoptera	<i>Cheumatopsyche</i> sp. Trichoptera
Acariformes	0.7	0.0	0.0	0.0
Amphipoda	0.7	2.0	6.0	7.2
Bivalvia	6.9	2.0	4.7	4.6
Coleoptera	21.4	36.2	3.3	2.6
Decapoda	0.7	1.3	0.0	0.0
Diptera	29.7	25.5	30.7	38.8
Ephemeroptera	4.8	4.0	0.0	0.0
Gastropoda	0.0	0.7	2.0	0.0
Isopoda	9.7	10.1	0.0	0.0
Odonata	4.1	2.0	2.0	1.3
Oligochaeta	0.7	0.7	7.3	9.2
Plecoptera	0.0	0.0	0.0	0.0
Trichoptera	20.0	15.4	44.0	36.2
Other	0.6	0.1	0	0.1
Functional Feeding Groups: Percent of total				
Browser-Grazers	4.8	5.0	0.0	0.0
Burrowing Deposit Feeders	0.7	0.7	7.3	9.2
Piercers	0.0	0.0	0.0	0.7
Predators	5.9	4.4	5.7	3.3
Scavengers	5.2	5.7	0.0	0.0
Scrapers	15.9	22.2	1.3	0.3
Shredders	3.8	4.0	9.3	9.5
Surface Deposit Feeders	17.2	23.8	10.3	11.2
Suspension Feeders	46.6	34.2	66.0	65.8

A - Value reported is the mean of two determinations

* SCI_2007 categories from Table LT 7200-2 of Draft DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), September 17, 2007: Values 0 ≤ 34 are Category III; Values 35 < 67 are Category II; Values 68 ≤ 100 are Category I

- Riparian Ecosystems in the Humid United States: Functions and Values. U. S. Dept. Agriculture. 15-18 March 1993, Atlanta, Ga. 22 pp.
- Beck, W. M. Jr. 1954. Studies in stream pollution biology 1. A simplified ecological classification of organisms. *Quart. J. Fla. Acad. Sci.* 17(4): 211-227.
- Fore, L. 2004. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams.
- Fore, L. et. al. 2007. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams.
- Karr, J.R. & E.W. Chu. 1998. Restoring life in running waters: Better biological monitoring. Island Press. Covelo, California. 200 p.
- Magurran, A. E. 1988. Ecological diversity and its measurement. Princeton University Press, Princeton, New Jersey.
- Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.
- Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U. S. EPA, Office of Water Regulations and Standards, Washington D.C., EPA 440-4-89-001.
- 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. Florida Department of Environmental Regulation Technical Series 10(1): 1-47.
- Sokal, R. R. and F. J. Rohlf. 1995. Biometry, Third edition. W. H. Freeman and Company, New York.
- Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.
- Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.
- Wallace, J. B., J. W. Grubaugh and M. R. Whiles. 1996. Biotic indices and stream ecosystem processes: results from an experimental study. *Ecol. Appl.* 6(1): 140-151.
- USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.
- USEPA 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. 5th Edition. EPA-821-R-02-012.

Appendices

- Appendix A. Map of facility
- Appendix B. Facility summary and DMR data
- Appendix C. Explanation of measurements
- Appendix D. Chain of Custody form
- Appendix E. Chemical analyses of effluent and receiving water.
- Appendix F. Additional physical, chemical, toxicological and/or microbiological data
- Appendix G. Standard Reference Toxicant test data
- Appendix H. Habitat Assessment field sheets
- Appendix I1. Periphyton Wet Algae: Taxa list and number of individuals counted
- Appendix I2. Periphyton Diatoms: Taxa list and number of individuals counted
- Appendix J1. Phytoplankton Wet Algae: Taxa list and algal density (number of individuals per mL)
- Appendix J2. Phytoplankton Diatoms: Taxa list and number of individuals counted
- Appendix K1. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m²)
- Appendix K2. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m²)
- Appendix L1. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix L2. Dipnet samples: Taxa list and number of macroinvertebrates counted

Appendix B

Facility Summary and DMR data

Facility Name (as it appears on permit): Mosaic Fertilizer, L.L.C.- Bartow Chemical Complex		Former Names: Cargill Fertilizer, Inc.- Bartow Chemical Complex and W.R. Grace Inc.
Physical Address: 3200 Highway 60 West Bartow, FL	NPDES Permit No.: FL0001589 Expiration Date: 2/16/09	Prepared By: Jacki Champion
County: Polk	District: FDEP BMR- Phosphate Management	Facility Type: Phosphate Chemical fertilizer manufacturing facility; Phosphogypsum stack
Function of Facility: Produces sulfuric acid, phosphoric acid, fluorosilicic acid, ammoniated phosphates and micronutrient added fertilizers		
Sampling Location (actual permit designation of permitted sampling point): EFF-001 and EFF-002		
Description of permitted outfall: D-001-5 foot rectangular sharp crested weir, D-002-6 foot rectangular sharp crested weir		
Description of treatment process (if multiple discharge points, include a map or diagram of facility): When it is necessary to discharge process water, treatment occurs by two-stage liming and acidulation. Spray aeration is used for ammonia removal.		
Receiving Waters: D-001 discharges to Skinned Sapling Creek, a tributary of the North Prong Alafia River, and D-002 discharges into the Noralyn Mine system and eventually enters the Peace River	Classification (indicate whether fresh or marine): Class III Freshwaters	
Temperature (C): 23.83 (001), 23.05 (002)	Design Flow: na	
pH (SU): 7.03 (001), 6.65 (002)	Mean Flow (for previous 12 months): 4/07-3/08: 0.17 mgd (001), 1.23 mgd (002)	
Conductivity (umhos/cm): 698 (001), 1,033 (002)	Flow During Survey: 0.32 MGD (001), 1.32 MGD (002)	
Method of Chlorination na	Method of Dechlorination na	
Dissolved Oxygen (mg/L): unavailable due to loss of membrane on probe	Total Residual Chlorine (mg/L) (after disinfection): na	
Discharge is: Continuous <input checked="" type="checkbox"/> Intermittent Seasonal <input checked="" type="checkbox"/> Rainfall Dependent Other		
Toxicity Test Requirements (routine and/or additional test language test species, salinity adjustment, etc.): See Below		
Administrative or Consent Orders: A consent order exists for a groundwater monitoring plan.		
Facility Mixing Zone Details: None		
List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: none		
Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: Previous samples collected at the Outfall D-001 by FDEP were not toxic and did not have unexpected constituents.		

Discuss MOR trends to prior data; is trend improving or declining:

List Effluent Limits (include additional sheets as necessary):

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge excess non-contact process wastewater, cooling tower blow down, and stormwater from Outfall D-001 (Attachment B). The discharge shall not exceed the effluent limitations and shall be monitored and limited by the permittee as specified below. The sample shall be taken at the point nearest the discharge prior to mixing with the receiving water body.

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Minimum	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	N/A	Report	Report	Continuous	Recorder	EFF-001
pH (SU)	6.0	Report	8.5	Weekly	Grab	EFF-001
Solids, Total Suspended (MG/L)	N/A	50.0	150.0	Monthly	Grab	EFF-001
Temperature (C), Water (DEG.C)	N/A	Report	Report	Weekly	Grab	EFF-001
Oxygen, Dissolved (DO) (MG/L)	5.0	Report	NA	Weekly	Grab (See I.A.8.)	EFF-001
Specific Conductance (UMHOS/CM)	N/A	Report	1275 (See I.A.12.)	Monthly	Grab	EFF-001
Nitrogen, Total (as N) (MG/L)	N/A	Report	Report	Weekly	Grab	EFF-001
Nitrogen, Total (as N) (LBS/DAY)	N/A	Report	Report (See I.A.3.)	Weekly	Calculation	EFF-001
Phosphorus, Total (as P) (MG/L)	N/A	15.0	20.0	Weekly	Grab	EFF-001
Phosphorus, Total (as P) (LBS/DAY)	N/A	Report	Report (See I.A.3.)	Weekly	Calculation	EFF-001
Phosphate, Ortho (as PO ₄) (MG/L)	N/A	Report	Report	Weekly	Grab	EFF-001
Fluoride, Total (as F) (MG/L)	N/A	Report	10.0	Weekly	Grab	EFF-001
Sulfate, Total (MG/L)	N/A	Report	Report	Monthly	Grab	EFF-001
Turbidity (NTU)	N/A	N/A	Report (See I.A.10.)	Monthly	Grab	EFF-001
Whole Effluent Toxicity – Acute	See Permit Condition I.A.20.			--	--	EFF-001

4. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge treated process wastewater and stormwater from Outfall D-002 (Attachment B). Such discharge shall be limited and monitored by the permittee as specified below. The sample shall be taken at the point nearest the discharge prior to mixing with the receiving water body.

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Minimum	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	N/A	Report	Report	Continuou s	Grab	EFF-002
pH (SU)	6.0	Report	8.5	Weekly	Grab	EFF-002
Temperature (C), Water (DEG.C)	N/A	Report	Report	Weekly	Grab	EFF-002
Oxygen, Dissolved (DO) (MG/L)	5.0	N/A	Report (See I.A.8.)	Weekly	Grab	EFF-002

Ammonia, Unionized (MG/L)	N/A	Report	0.02 (See I.A.11.)	Weekly	Calculation	EFF-002
Nitrogen, Ammonia, Total (as NH ₃) (MG/L)	N/A	Report	Report	Weekly	Grab	EFF-002
Nitrogen, Total (as N) (MG/L)	N/A	Report	Report	Weekly	Grab	EFF-002
Nitrogen, Total (as N) (LBS/DAY)	N/A	Report	Report	Weekly	Calculation	EFF-002
Phosphorus, Total (as P) (MG/L)	N/A	15.0	20.0	Weekly	Grab	EFF-002
Phosphorus, Total (as P) (LBS/DAY)	N/A	Report	Report	Weekly	Calculation	EFF-002
Phosphate, Ortho (as PO ₄) (MG/L)	N/A	Report	Report	Weekly	Grab	EFF-002
Sulfate, Total (MG/L)	N/A	N/A	Report	Monthly	Grab	EFF-002
Specific Conductance (UMHOS/CM)	N/A	Report	1275 (See I.A.12.)	Weekly	Grab	EFF-002
Fluoride, Total (as F) (MG/L)	N/A	Report	10.0	Weekly	Grab	EFF-002
Sodium, Total Recoverable (MG/L)	N/A	N/A	Report	Monthly	Grab	EFF-002
Hardness, Total (as CaCO ₃) (MG/L) *	N/A	N/A	Report	Monthly	Grab	EFF-002
Alpha, Gross Particle Activity (PCIL)	N/A	N/A	15 (See I.A.19.)	Monthly	Grab	EFF-002
Radon ²²² , Total (PCIL)	N/A	N/A	Report (See I.A.19.)	Monthly	Grab	EFF-002
Uranium, Total (PCIL)	N/A	N/A	Report (See I.A.19.)	Monthly	Grab	EFF-002
Radium ²²⁶ + Radium ²²⁸ , Total (PCIL)	N/A	N/A	5.0 (See I.A.19.)	Monthly	Grab	EFF-002
Arsenic, Total Recoverable (UG/L) *	N/A	N/A	50	Monthly	Grab	EFF-002
Cadmium, Total Recoverable (UG/L) *	N/A	N/A	(See I.A.9)	Monthly	Grab	EFF-002
Chromium, Hexavalent Total Recoverable (UG/L) **	N/A	N/A	11	Monthly	Grab	EFF-002
Lead, Total Recoverable (UG/L) *	N/A	N/A	(See I.A.9)	Monthly	Grab	EFF-002
Mercury, Total Recoverable (UG/L) *	N/A	N/A	0.012	Monthly	Grab	EFF-002
Silver, Total Recoverable (UG/L) *	N/A	N/A	0.07	Monthly	Grab	EFF-002
Copper, Total Recoverable (UG/L) *	N/A	N/A	(See I.A.9)	Monthly	Grab	EFF-002
Iron, Total Recoverable (MG/L) *	N/A	N/A	1.0	Monthly	Grab	EFF-002
Whole Effluent Toxicity – Acute	See Permit Condition I.A.20.			--	--	EFF-002

* Sampling and analyses of these metals shall be required only when discharging process (treated) wastewater. EPA Method 1631 shall be utilized for the analysis of mercury. After twelve monthly samples are collected and analyzed and if the contaminant levels are significantly less than State water quality standards (Rule 62-302, F.A.C.), the permittee may submit a proposal to the Department to decrease the sampling frequency from monthly to quarterly.

** Sampling and analysis for Hexavalent Chromium shall be conducted for the first twelve monthly samples, and if the levels are significantly less than the State water quality standard (Rule 62-302, F.A.C.) the permittee may submit a proposal to the Department to discontinue this parameter from future analyses.

The permittee shall initiate the series of tests described below beginning during the first discharge event or within 60 days following the effective date of this permit, whichever occurs later and twice per year thereafter to evaluate whole effluent toxicity of the discharge from Outfalls D-001 and D-002. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute

5. Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA821-R-02-012, or the most current edition. The control water and dilution water used will be moderately hard water as described in EPA821-R-02-012, Table 6, or the most current edition. A standard reference toxicant (SRT) quality assurance (QA) acute toxicity test shall be conducted concurrently or no greater than 30 days before the date of the “routine” test, with each species used in the toxicity tests. The results of all toxicity tests shall be submitted with the discharge monitoring report (DMR). Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.
- a.
 - (1) The permittee shall conduct 96-hour acute static renewal toxicity tests using the daphnid, Ceriodaphnia dubia, and the bannerfin shiner, Cyprinella leedsi. All tests will be conducted on a one grab sample.
 - (2) If control mortality exceeds 10% for either species in any test, the test for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species.
 - b.
 - (1) The toxicity tests specified above shall be conducted twice per year in December, January or February and July, August or September. These tests are referred to as “routine” tests. Upon the completion of six valid tests, which demonstrate that no unacceptable toxicity (as defined in d.1.) has been identified, the permittee may petition the Department for a reduction in monitoring frequency.
 - (2) Results from “routine” tests shall be reported according to EPA821-R-02-012, Section 12, Report Preparation (or the most current edition), and shall be submitted to the Department at the address listed in Condition I.A.3. below:
 - (3) Results from “routine” tests shall be reported on the Discharge Monitoring Report (DMR) as follows:
 - i. If greater than 50% mortality occurs for the test species, “<100” (less than 100% effluent) should be entered on the DMR for that test species.
 - ii. If 50% or less mortality occurs for the test species, “>100” (greater than 100% effluent) should be entered on the DMR for that test species.
 - iii. For each of the additional tests required, the calculated LC50 value should be entered on the DMR for that test species.
 - c. All “routine” tests shall be conducted using a control (0% effluent) and a test concentration of 100% final effluent.
 - d.
 - (1) If unacceptable acute toxicity (greater than 20% mortality in 100% effluent of either test species in any grab sample test) is found in a “routine” test, the permittee shall conduct three additional tests on each species indicating unacceptable toxicity. Results for each additional test will include the determination of LC50 values with 95% confidence limits.
 - (2) The first additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. The dilution series may be modified in the second and third test to more accurately identify the toxicity, such that at least two dilutions above and two dilutions below the target toxicity and a control (0% effluent) are run.
 - (3) For each additional test, the sample collection requirements and the test acceptability criteria specified in section a. above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the “routine” tests, and shall be conducted weekly thereafter until three additional, valid tests are completed. The additional tests will be used to determine if the toxicity found in the “routine” test is still present.
- (4) Results from additional tests shall be submitted in a single report prepared according to EPA821-R-02-012, Section 12, or the most current edition and submitted within 45 days of completion of the third

additional, valid test. Upon completion of the third additional test, the permittee will meet with the Department within 30 days of the report submittal to identify any corrective actions necessary to remedy the unacceptable acute toxicity.

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at <http://www.floridadep.org/labs/sop/index.htm> and/or <http://www.floridadep.org/labs/qa/index.htm>.

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix E. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Tables 1 and 2, Appendix B). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/or facility permit limits.

(3) Toxicity Bioassays

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia*, and the fish, *Cyprinella leedsii* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(20), 62-302.530(61) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

The effluent and water from control and test sites were analyzed for the presence and concentration of total and fecal coliform bacteria following FDEP SOPs MB1_0 and MB1_1. High levels of fecal or total coliform bacteria may constitute violation of 62-302.530(6), 62-302.530(7) and/or facility permit limits.

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The effluent and water from control and test sites are autoclaved, filtered (0.45 μ m), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum*, USEPA 2002), and incubated for 14 days (FDEP SOP TA08_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al.* 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm 20\%$. When the ratio of nitrogen to phosphorus (N:P) is less than 10:1, nitrogen limitation of algal production is likely. When the N:P ratio is 20:1 or greater, phosphorus limitation is

likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(61) F.A.C..

(7) Algal Phytoplankton and Periphyton Assemblages

Methods: Qualitative periphyton were sampled at both control and test sites by taking subsamples of algae from natural substrates throughout the sample reach (QA Rule FS7220). Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03_1 and AB05). Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll a Content: Chlorophyll a content is measured in phytoplankton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al.*, 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(10) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et al, 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et al, 2007). This Index was revised in 2007 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. Scores are broken into three categories (I, II, and III). SCI 2007 categories are from Table LT 7200-2 of Draft DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), September 17, 2007. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score in Category I, if it is shown to be related to a facility's effluent, may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(9) Statistical Comparisons

Statistical comparisons of the proportions of taxa, major groups or feeding groups were made using 95% confidence intervals on proportions. A 95% confidence interval is the range of values above and below a given proportion that has a 95% chance of containing the true proportion (Sokal and Rohlf 1995). If the 95% confidence intervals for two proportions do not overlap, then the proportion of X in sample 1 is significantly different from the proportion of X in sample 2 at $p < 0.05$. A " $p < 0.05$ " level of significance means that there is less than a 5% chance that the true proportions in the two samples are the same. All comparisons that are labeled as significant in the text have a probability < 0.05 that the proportions are the same.

Florida Department of Environmental Protection

Request Number: RQ-2008-04-21-44
Mosaic Fertilizer, LLC - Bartow Chemical Plant

Central Laboratory Sample Submittal Form

Event ID *

Requester: Jennifer Paris

Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA

Collected By: Jacki Champion / Scott Rose

Project ID: FY15

Sampling Agency: FDEP

Send Final Report To: Vishwas Sathe

PMAS: 1143

Lab ID *	Location	Collection (begin) Date: <u>3/24/08</u> Time: <u>08:00</u>	Eastern Central	Collection (end) Date: <u>4/3/08</u> Time: <u>10:15</u>	Eastern Central	Bottle Group(s)**
	Skinned Sapling Creek					B/C
Field ID	Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Salinity (PPTH)	NPOES Number	
			744			
Matrix (Include type e.g. Salt, Fresh, etc)	Fresh Water	Sample Depth (m)		Sp Conductance (umho/cm)		
		0.39				
Latitude	Longitude	Temp (C)	pH	Comments: <u>includes S.C.I. inverts.</u>		
		20.54	6.39			

Lab ID *	Location	Collection (begin) Date: <u>3/24/08</u> Time: <u>08:00</u>	Eastern Central	Collection (end) Date: <u>4/3/08</u> Time: <u>10:15</u>	Eastern Central	Bottle Group(s)**
	Skinned Sapling Creek					C
Field ID	Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Salinity (PPTH)	NPOES Number	
			744			
Matrix (Include type e.g. Salt, Fresh, etc)	Fresh inverts	Sample Depth (m)		Sp Conductance (umho/cm)		
Latitude	Longitude	Temp (C)	pH	Comments: <u>HO #1</u>		
		20.54	6.39			

Lab ID *	Location	Collection (begin) Date: <u>3/24/08</u> Time: <u>08:00</u>	Eastern Central	Collection (end) Date: <u>4/3/08</u> Time: <u>10:15</u>	Eastern Central	Bottle Group(s)**
	Skinned Sapling Creek					C
Field ID	Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Salinity (PPTH)	NPOES Number	
			744			
Matrix (Include type e.g. Salt, Fresh, etc)	Fresh inverts	Sample Depth (m)		Sp Conductance (umho/cm)		
Latitude	Longitude	Temp (C)	pH	Comments: <u>HO #2</u>		
		20.54	6.39			

Lab ID *	Location	Collection (begin) Date: <u>3/24/08</u> Time: <u>08:00</u>	Eastern Central	Collection (end) Date: <u>4/3/08</u> Time: <u>10:15</u>	Eastern Central	Bottle Group(s)**
	Skinned Sapling Creek					C
Field ID	Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Salinity (PPTH)	NPOES Number	
			744			
Matrix (Include type e.g. Salt, Fresh, etc)	Fresh inverts	Sample Depth (m)		Sp Conductance (umho/cm)		
Latitude	Longitude	Temp (C)	pH	Comments: <u>HO #3</u>		
		20.54	6.39			

Relinquished By:	Date/Time	Shipping Method	Recalculated By:	Date/Time	Received By:	Date/Time
<u>J Champion</u>	<u>4/21/08</u>	<u>DHL</u>	<u>ASB</u>	<u>08:45</u>		

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection
Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2008-04-21-44
 Mosaic Fertilizer, LLC - Bartow Chemical Plant

Requester: Jennifer Paris

Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA

Collected By: Jacki Champion, Scott Rose

Send Final Report To: Vishwas Sathe

Project ID: FY15

Sampling Agency: FDEP

PMAS: 1143

Lab ID *	Location <u>Mosaic Bartow</u>	Collection (begin) Date <u>11/30/08</u>	Eastern Central	Collection (end) Date <u>11/30/08</u>	Eastern Central	Bottle Group(s)** <u>D</u>
	Field ID <u>Blanks</u>	Time <u>10:35</u>		Time <u>10:35</u>		
	Matrix (Include type e.g. Salt, Fresh, etc) <u>Fresh water</u>	Diss Oxygen (mg/L)		Diss Oxygen (mg/L)		
	Latitude	Sample Depth <input type="checkbox"/> m <input type="checkbox"/> ft		Salinity (PPT)		NPDES Number
		Longitude		Sp Conductance (umho/cm)		
			Comments: <u>-Blanks-</u>			
Lab ID *	Location	Collection (begin) Date	Eastern Central	Collection (end) Date	Eastern Central	Bottle Group(s)**
	Field ID	Time		Time		
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C)	Diss Oxygen (mg/L)		Diss Oxygen (mg/L)		
	Latitude	Sample Depth <input type="checkbox"/> m <input type="checkbox"/> ft		Salinity (PPT)		NPDES Number
		Longitude		Sp Conductance (umho/cm)		
			Comments			
Lab ID *	Location	Collection (begin) Date	Eastern Central	Collection (end) Date	Eastern Central	Bottle Group(s)**
	Field ID	Time		Time		
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C)	Diss Oxygen (mg/L)		Diss Oxygen (mg/L)		
	Latitude	Sample Depth <input type="checkbox"/> m <input type="checkbox"/> ft		Salinity (PPT)		NPDES Number
		Longitude		Sp Conductance (umho/cm)		
			Comments			
Lab ID *	Location	Collection (begin) Date	Eastern Central	Collection (end) Date	Eastern Central	Bottle Group(s)**
	Field ID	Time		Time		
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C)	Diss Oxygen (mg/L)		Diss Oxygen (mg/L)		
	Latitude	Sample Depth <input type="checkbox"/> m <input type="checkbox"/> ft		Salinity (PPT)		NPDES Number
		Longitude		Sp Conductance (umho/cm)		
			Comments			

Relinquished By <u>J Champion</u>	Date/Time <u>11/30/08</u>	Relinquished By <u>ASB</u>	Date/Time <u>11/30/08</u>	Received By	Date/Time
Shipping Method <u>DHL</u>					

* Shaded Areas for Lab use only. 08:05
 ** Please see reverse side for Bottle Group Information. last revised October 1, 2003

Appendix E

Chemical analysis of effluent and receiving water

Date Sampled	Field Sample ID	SCH Group	Component	Result	Units	MDL	PQL
4/21/2008 12:15	OUT FALL 001	AGP/LN	Algal Growth Potential	45.9	mg DryWt/L	0.3	0.9
4/21/2008 12:15	OUT FALL 001	Chlorophyll/Grain Size/BOD	Phaeophytin-a	6.6	ug/L	0.48	1.4
4/21/2008 12:15	OUT FALL 001	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3.5	mg/L	0.2	2
4/21/2008 12:15	OUT FALL 001	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	66	ug/L	1.1	3.4
4/21/2008 12:15	OUT FALL 001	Microbiology	Total Coliforms-Membrane Filter		#/100 mL		
4/21/2008 12:15	OUT FALL 001	Overflow	Fecal Coliforms-Membrane Filter		#/100 mL		
4/21/2008 12:15	OUT FALL 001	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100 L	LC50		
4/21/2008 12:15	OUT FALL 001	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100 L	LC50		
4/21/2008 12:15	OUT FALL 001	Metals	Zinc	5.0 U	ug/L	5	20
4/21/2008 12:15	OUT FALL 001	Metals	Silver	0.025 U	ug/L	0.025	0.1
4/21/2008 12:15	OUT FALL 001	Metals	Magnesium	23.2	mg/L	0.04	0.16
4/21/2008 12:15	OUT FALL 001	Metals	Calcium	66.4	mg/L	0.075	0.3
4/21/2008 12:15	OUT FALL 001	Metals	Selenium	0.59 I	ug/L	0.5	2
4/21/2008 12:15	OUT FALL 001	Metals	Copper	0.50 U	ug/L	0.5	2
4/21/2008 12:15	OUT FALL 001	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
4/21/2008 12:15	OUT FALL 001	Metals	Arsenic	1.7 I	ug/L	0.5	2
4/21/2008 12:15	OUT FALL 001	Metals	Nickel	0.35 I	ug/L	0.25	1
4/21/2008 12:15	OUT FALL 001	Metals	Lead	0.20 U	ug/L	0.2	0.8
4/21/2008 12:15	OUT FALL 001	Metals	Chromium	1.0 U	ug/L	1	4
4/21/2008 12:15	OUT FALL 001	Metals	Sodium	47.3	mg/L	0.5	2
4/21/2008 12:15	OUT FALL 001	Metals	Aluminum	60 U	ug/L	60	240
4/21/2008 12:15	OUT FALL 001	Metals	Iron	480	ug/L	30	120
4/21/2008 12:15	OUT FALL 001	Nutrients	TDS	446 A	mg/L	15	60
4/21/2008 12:15	OUT FALL 001	Nutrients	Fluoride	1.2	mg F/L	0.05	0.1
4/21/2008 12:15	OUT FALL 001	Nutrients	TSS	12 I	mg/L	4	16
4/21/2008 12:15	OUT FALL 001	Nutrients	Kjeldahl Nitrogen	2.4	mg N/L	0.08	0.2
4/21/2008 12:15	OUT FALL 001	Nutrients	Chloride	20	mg Cl/L	0.4	2
4/21/2008 12:15	OUT FALL 001	Nutrients	Ammonia-N	0.9	mg N/L	0.01	0.02
4/21/2008 12:15	OUT FALL 001	Nutrients	Sulfate	210	mg SO4/L	2	5
4/21/2008 12:15	OUT FALL 001	Nutrients	O-Phosphate-P	1.1	mg P/L	0.04	0.1
4/21/2008 12:15	OUT FALL 001	Nutrients	Total-P	1.4	mg P/L	0.04	0.12
4/21/2008 12:15	OUT FALL 001	Nutrients	NO2NO3-N	0.099	mg N/L	0.004	0.01
4/21/2008 12:15	OUT FALL 001	Overflow	Radium 228-Counting Error	0.6	pCi/L		
4/21/2008 12:15	OUT FALL 001	Overflow	Radium 228	0.9 U	pCi/L		
4/21/2008 12:15	OUT FALL 001	Overflow	Oil and Grease	2.8 I	mg/L	1.7	5
4/21/2008 12:15	OUT FALL 001	Overflow	Radium 226	0.5	pCi/L		

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 12:15	OUT FALL 001	Overflow	Alpha, Total	1.3 U	pCi/L		
4/21/2008 12:15	OUT FALL 001	Overflow	Radium 226-Counting Error	0.1	pCi/L		
4/21/2008 12:15	OUT FALL 001	Overflow	Alpha-Counting Error	0.8	pCi/L		
4/21/2008 12:15	OUT FALL 001	Pesticides	Hexazinone	0.33 I	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Parathion Methyl	0.096 U	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Ethoprop	0.096 U	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Bromacil	0.21 I	ug/L	0.19	0.76
4/21/2008 12:15	OUT FALL 001	Pesticides	Chlorpyrifos Methyl	0.096 U	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Fenamiphos	0.19 U	ug/L	0.19	0.76
4/21/2008 12:15	OUT FALL 001	Pesticides	Metribuzin	0.096 U	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Simazine	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Metolachlor	0.48 U	ug/L	0.48	1.9
4/21/2008 12:15	OUT FALL 001	Pesticides	Chlorpyrifos Ethyl	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Butylate	0.19 U	ug/L	0.19	0.76
4/21/2008 12:15	OUT FALL 001	Pesticides	Ametryn	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Atrazine	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Prometryn	0.14 U	ug/L	0.14	0.56
4/21/2008 12:15	OUT FALL 001	Pesticides	Parathion Ethyl	0.14 U	ug/L	0.14	0.56
4/21/2008 12:15	OUT FALL 001	Pesticides	Malathion	0.14 U	ug/L	0.14	0.56
4/21/2008 12:15	OUT FALL 001	Pesticides	Ethion	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Naled	0.77 U	ug/L	0.77	3.1
4/21/2008 12:15	OUT FALL 001	Pesticides	Fonofos	0.096 U	ug/L	0.096	0.38
4/21/2008 12:15	OUT FALL 001	Pesticides	Azinphos Methyl	0.19 U	ug/L	0.19	0.76
4/21/2008 12:15	OUT FALL 001	Pesticides	Alachlor	0.58 U	ug/L	0.58	2.3
4/21/2008 12:15	OUT FALL 001	Pesticides	Diazinon	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Metalaxyl	0.24 U	ug/L	0.24	0.96
4/21/2008 12:15	OUT FALL 001	Pesticides	Phorate	0.048 U	ug/L	0.048	0.19
4/21/2008 12:15	OUT FALL 001	Pesticides	Mevinphos	0.19 U	ug/L	0.19	0.76
4/21/2008 12:15	OUT FALL 001	Pesticides	Norflurazon	0.14 U	ug/L	0.14	0.56
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4,4'-DDE	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Endosulfan II	3.8 U	ug/L	3.8	15
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Fluorene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	58
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4,4'-DDD	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	58
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Acenaphthylene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzo(b)fluoranthene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14 U	ug/L	14	58
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.7

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Phenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	delta-BHC	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,4-Dimethylphenol	9.6 U	ug/L	9.6	38
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Acenaphthene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Aldrin	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Anthracene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzo(a)anthracene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Di-n-butyl phthalate	4.8 U	ug/L	4.8	19
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Endrin aldehyde	3.8 UJ	ug/L	3.8	15
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.7
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Phenanthrene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	alpha-BHC	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2-Chlorophenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzidine	96 U	ug/L	96	380
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzo(a)pyrene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.96 UJ	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Butyl benzyl phthalate	4.8 U	ug/L	4.8	19
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Chrysene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Di-n-octyl phthalate	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Dieldrin	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Endosulfan sulfate	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Isophorone	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Naphthalene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Pentachlorophenol	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,4-Dichlorophenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2-Chloronaphthalene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.7
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Hexachlorobenzene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	gamma-BHC	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 UJ	ug/L	38	150
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4,4'-DDT	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.96 U	ug/L	0.96	3.8

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Endrin	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Heptachlor	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Endosulfan I	3.8 U	ug/L	3.8	15
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Fluoranthene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Pyrene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	2-Nitrophenol	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Benzo(k)fluoranthene	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Diethyl phthalate	0.96 U	ug/L	0.96	3.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Dimethyl phthalate	9.6 U	ug/L	9.6	38
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	Heptachlor epoxide	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.7
4/21/2008 12:15	OUT FALL 001	Priority Organic Pollutants	beta-BHC	1.4 U	ug/L	1.4	5.8
4/21/2008 12:15	OUT FALL 001	Nutrients	pH	7.03			
4/21/2008 12:15	OUT FALL 001	Nutrients	Temperature	23.83	C		
4/21/2008 12:15	OUT FALL 001	Nutrients	Sample Depth		m		
4/21/2008 12:15	OUT FALL 001	Nutrients	Specific Conductance	698	umhos/cm		
4/21/2008 12:15	OUT FALL 001	Nutrients	Salinity		PPT		
4/21/2008 12:15	OUT FALL 001	Nutrients	Total Residual Chlorine		mg/L		
4/21/2008 12:15	OUT FALL 001	Nutrients	Dissolved Oxygen		mg/L		
4/21/2008 13:15	OUT FALL 002	AGP/LN	Algal Growth Potential	200	mg DryWt/L	0.3	0.9
4/21/2008 13:15	OUT FALL 002	Chlorophyll/Grain Size/BOD	Phaeophytin-a	2	ug/L	0.24	0.71
4/21/2008 13:15	OUT FALL 002	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	4.5	ug/L	0.55	1.7
4/21/2008 13:15	OUT FALL 002	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.30 I	mg/L	0.2	2
4/21/2008 13:15	OUT FALL 002	Microbiology	Total Coliforms-Membrane Filter		#/100 mL		
4/21/2008 13:15	OUT FALL 002	Overflow	Fecal Coliforms-Membrane Filter		#/100 mL		
4/21/2008 13:15	OUT FALL 002	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100 L	LC50		
4/21/2008 13:15	OUT FALL 002	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100 L	LC50		
4/21/2008 13:15	OUT FALL 002	Metals	Magnesium	24.1	mg/L	0.04	0.16
4/21/2008 13:15	OUT FALL 002	Metals	Zinc	5.0 U	ug/L	5	20
4/21/2008 13:15	OUT FALL 002	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
4/21/2008 13:15	OUT FALL 002	Metals	Copper	0.50 U	ug/L	0.5	2
4/21/2008 13:15	OUT FALL 002	Metals	Selenium	2.9	ug/L	0.5	2
4/21/2008 13:15	OUT FALL 002	Metals	Arsenic	3.2	ug/L	0.5	2
4/21/2008 13:15	OUT FALL 002	Metals	Nickel	3.65	ug/L	0.25	1
4/21/2008 13:15	OUT FALL 002	Metals	Iron	1.05E+03	ug/L	30	120
4/21/2008 13:15	OUT FALL 002	Metals	Chromium	1.2 I	ug/L	1	4
4/21/2008 13:15	OUT FALL 002	Metals	Lead	0.20 U	ug/L	0.2	0.8
4/21/2008 13:15	OUT FALL 002	Metals	Sodium	125	mg/L	0.5	2

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 13:15	OUT FALL 002	Metals	Silver	0.025 U	ug/L	0.025	0.1
4/21/2008 13:15	OUT FALL 002	Metals	Aluminum	90 I	ug/L	60	240
4/21/2008 13:15	OUT FALL 002	Metals	Calcium	62	mg/L	0.075	0.3
4/21/2008 13:15	OUT FALL 002	Nutrients	TDS	689	mg/L	15	60
4/21/2008 13:15	OUT FALL 002	Nutrients	Total-P	4.1	mg P/L	0.1	0.3
4/21/2008 13:15	OUT FALL 002	Nutrients	NO2NO3-N	2.5	mg N/L	0.04	0.1
4/21/2008 13:15	OUT FALL 002	Nutrients	TSS	6 I	mg/L	4	16
4/21/2008 13:15	OUT FALL 002	Nutrients	Chloride	23	mg Cl/L	2	10
4/21/2008 13:15	OUT FALL 002	Nutrients	O-Phosphate-P	3.5	mg P/L	0.08	0.2
4/21/2008 13:15	OUT FALL 002	Nutrients	Kjeldahl Nitrogen	0.89	mg N/L	0.08	0.2
4/21/2008 13:15	OUT FALL 002	Nutrients	Ammonia-N	0.3	mg N/L	0.01	0.02
4/21/2008 13:15	OUT FALL 002	Nutrients	Sulfate	410	mg SO4/L	2	5
4/21/2008 13:15	OUT FALL 002	Nutrients	Fluoride	2.5	mg F/L	0.05	0.1
4/21/2008 13:15	OUT FALL 002	Overflow	Radium 226	1	pCi/L		
4/21/2008 13:15	OUT FALL 002	Overflow	Oil and Grease	1.7 U	mg/L	1.7	5
4/21/2008 13:15	OUT FALL 002	Overflow	Radium 226-Counting Error	0.2	pCi/L		
4/21/2008 13:15	OUT FALL 002	Overflow	Alpha, Total	1.8	pCi/L		
4/21/2008 13:15	OUT FALL 002	Overflow	Radium 228	0.8	pCi/L		
4/21/2008 13:15	OUT FALL 002	Overflow	Alpha-Counting Error	1.2	pCi/L		
4/21/2008 13:15	OUT FALL 002	Overflow	Radium 228-Counting Error	0.6	pCi/L		
4/21/2008 13:15	OUT FALL 002	Pesticides	Ethion	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Ethoprop	0.097 U	ug/L	0.097	0.39
4/21/2008 13:15	OUT FALL 002	Pesticides	Phorate	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Diazinon	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Bromacil	0.19 U	ug/L	0.19	0.76
4/21/2008 13:15	OUT FALL 002	Pesticides	Fenamiphos	0.19 U	ug/L	0.19	0.76
4/21/2008 13:15	OUT FALL 002	Pesticides	Hexazinone	0.097 U	ug/L	0.097	0.39
4/21/2008 13:15	OUT FALL 002	Pesticides	Metalaxyl	0.24 U	ug/L	0.24	0.96
4/21/2008 13:15	OUT FALL 002	Pesticides	Ametryn	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Azinphos Methyl	0.19 U	ug/L	0.19	0.76
4/21/2008 13:15	OUT FALL 002	Pesticides	Metribuzin	0.097 U	ug/L	0.097	0.39
4/21/2008 13:15	OUT FALL 002	Pesticides	Simazine	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Malathion	0.15 U	ug/L	0.15	0.6
4/21/2008 13:15	OUT FALL 002	Pesticides	Metolachlor	0.49 U	ug/L	0.49	2
4/21/2008 13:15	OUT FALL 002	Pesticides	Mevinphos	0.19 U	ug/L	0.19	0.76
4/21/2008 13:15	OUT FALL 002	Pesticides	Parathion Methyl	0.097 U	ug/L	0.097	0.39
4/21/2008 13:15	OUT FALL 002	Pesticides	Norflurazon	0.15 U	ug/L	0.15	0.6
4/21/2008 13:15	OUT FALL 002	Pesticides	Prometryn	0.15 U	ug/L	0.15	0.6
4/21/2008 13:15	OUT FALL 002	Pesticides	Atrazine	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Chlorpyrifos Ethyl	0.049 U	ug/L	0.049	0.2
4/21/2008 13:15	OUT FALL 002	Pesticides	Chlorpyrifos Methyl	0.097 U	ug/L	0.097	0.39

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 13:15	OUT FALL 002	Pesticides	Fonofos	0.097 U	ug/L	0.097	0.39
4/21/2008 13:15	OUT FALL 002	Pesticides	Alachlor	0.58 U	ug/L	0.58	2.3
4/21/2008 13:15	OUT FALL 002	Pesticides	Butylate	0.19 U	ug/L	0.19	0.76
4/21/2008 13:15	OUT FALL 002	Pesticides	Naled	0.78 U	ug/L	0.78	3.1
4/21/2008 13:15	OUT FALL 002	Pesticides	Parathion Ethyl	0.15 U	ug/L	0.15	0.6
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16 U	ug/L	16	65
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Hexachlorobutadiene	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Hexachloroethane	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Pyrene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4,4'-DDD	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4,4'-DDT	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzo(a)anthracene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzo(k)fluoranthene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Chrysene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Di-n-octyl phthalate	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2 U	ug/L	2.2	8.7
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Naphthalene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	beta-BHC	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Acenaphthylene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzo(b)fluoranthene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Dieldrin	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Dimethyl phthalate	11 U	ug/L	11	43
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Endosulfan I	4.3 U	ug/L	4.3	17
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Endrin	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Fluoranthene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Fluorene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2 U	ug/L	2.2	8.7
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Pentachlorophenol	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,4-Dichlorophenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,4-Dimethylphenol	11 U	ug/L	11	43
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2-Chloronaphthalene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	3,3'-Dichlorobenzidine	43 UJ	ug/L	43	170
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2 U	ug/L	2.2	8.7

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Aldrin	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Endosulfan sulfate	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Endrin aldehyde	4.3 UJ	ug/L	4.3	17
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Hexachlorobenzene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Phenanthrene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	alpha-BHC	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	delta-BHC	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Acenaphthene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Anthracene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzidine	110 U	ug/L	110	430
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Butyl benzyl phthalate	5.4 U	ug/L	5.4	22
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Heptachlor	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Heptachlor epoxide	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Isophorone	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Nitrobenzene	2.2 U	ug/L	2.2	8.7
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2-Nitrophenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4-Nitrophenol	16 U	ug/L	16	65
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Diethyl phthalate	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Endosulfan II	4.3 U	ug/L	4.3	17
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3 U	ug/L	3.3	13
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Phenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,4-Dinitrophenol	16 U	ug/L	16	65
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2-Chlorophenol	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	4,4'-DDE	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Di-n-butyl phthalate	5.4 U	ug/L	5.4	22
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	gamma-BHC	1.6 U	ug/L	1.6	6.5
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzo(a)pyrene	1.1 U	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Priority Organic Pollutants	Benzo(g,h,i)perylene	1.1 UJ	ug/L	1.1	4.3
4/21/2008 13:15	OUT FALL 002	Nutrients	Total Residual Chlorine		mg/L		
4/21/2008 13:15	OUT FALL 002	Nutrients	Temperature	23.05	C		
4/21/2008 13:15	OUT FALL 002	Nutrients	Sample Depth		m		
4/21/2008 13:15	OUT FALL 002	Nutrients	Specific Conductance	1033	umhos/cm		
4/21/2008 13:15	OUT FALL 002	Nutrients	pH	6.65			
4/21/2008 13:15	OUT FALL 002	Nutrients	Salinity		PPT		
4/21/2008 13:15	OUT FALL 002	Nutrients	Dissolved Oxygen		mg/L		
4/21/2008 16:15	CONTROL SITE	AGP/LN	Algal Growth Potential	11.7 A	mg DryWt/L	0.3	0.9
4/21/2008 16:15	CONTROL SITE	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.70 I	ug/L	0.55	1.7

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 16:15	CONTROL SITE	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.68 I	ug/L	0.24	0.71
4/21/2008 16:15	CONTROL SITE	Metals	Sodium	14.6	mg/L	0.5	2
4/21/2008 16:15	CONTROL SITE	Metals	Calcium	18.9	mg/L	0.075	0.3
4/21/2008 16:15	CONTROL SITE	Metals	Selenium	0.50 U	ug/L	0.5	2
4/21/2008 16:15	CONTROL SITE	Metals	Chromium	1.0 U	ug/L	1	4
4/21/2008 16:15	CONTROL SITE	Metals	Iron	360	ug/L	30	120
4/21/2008 16:15	CONTROL SITE	Metals	Aluminum	94 I	ug/L	60	240
4/21/2008 16:15	CONTROL SITE	Metals	Nickel	0.43 I	ug/L	0.25	1
4/21/2008 16:15	CONTROL SITE	Metals	Arsenic	0.52 I	ug/L	0.5	2
4/21/2008 16:15	CONTROL SITE	Metals	Copper	1.2 I	ug/L	0.5	2
4/21/2008 16:15	CONTROL SITE	Metals	Silver	0.025 U	ug/L	0.025	0.1
4/21/2008 16:15	CONTROL SITE	Metals	Magnesium	6	mg/L	0.04	0.16
4/21/2008 16:15	CONTROL SITE	Metals	Lead	0.20 U	ug/L	0.2	0.8
4/21/2008 16:15	CONTROL SITE	Metals	Cadmium	0.11	ug/L	0.02	0.08
4/21/2008 16:15	CONTROL SITE	Metals	Zinc	5.0 U	ug/L	5	20
4/21/2008 16:15	CONTROL SITE	Nutrients	Total-P	0.44	mg P/L	0.02	0.06
4/21/2008 16:15	CONTROL SITE	Nutrients	NO2NO3-N	0.12	mg N/L	0.004	0.01
4/21/2008 16:15	CONTROL SITE	Nutrients	Ammonia-N	0.017 I	mg N/L	0.01	0.02
4/21/2008 16:15	CONTROL SITE	Nutrients	Sulfate	11	mg SO4/L	0.2	0.5
4/21/2008 16:15	CONTROL SITE	Nutrients	Turbidity	1.6	NTU	0.1	0.1
4/21/2008 16:15	CONTROL SITE	Nutrients	Kjeldahl Nitrogen	0.31	mg N/L	0.08	0.2
4/21/2008 16:15	CONTROL SITE	Nutrients	O-Phosphate-P	0.37	mg P/L	0.016	0.04
4/21/2008 16:15	CONTROL SITE	Nutrients	Fluoride	0.29	mg F/L	0.05	0.1
4/21/2008 16:15	CONTROL SITE	Nutrients	Total Residual Chlorine		mg/L		
4/21/2008 16:15	CONTROL SITE	Nutrients	Specific Conductance	217	umhos/cm		
4/21/2008 16:15	CONTROL SITE	Nutrients	Salinity		PPT		
4/21/2008 16:15	CONTROL SITE	Nutrients	Sample Depth	0.2	m		
4/21/2008 16:15	CONTROL SITE	Nutrients	Dissolved Oxygen		mg/L		
4/21/2008 16:15	CONTROL SITE	Nutrients	Temperature	19.73	C		
4/21/2008 16:15	CONTROL SITE	Nutrients	pH	7.4			
4/21/2008 10:15	TEST SITE	AGP/LN	Algal Growth Potential	125	mg DryWt/L	0.3	0.9
4/21/2008 10:15	TEST SITE	Chlorophyll/Grain Size/BOD	Phaeophytin-a	20	ug/L	0.24	0.71
4/21/2008 10:15	TEST SITE	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	44	ug/L	0.55	1.7
4/21/2008 10:15	TEST SITE	Metals	Magnesium	19.5 A	mg/L	0.04	0.16
4/21/2008 10:15	TEST SITE	Metals	Zinc	5.0 U	ug/L	5	20
4/21/2008 10:15	TEST SITE	Metals	Sodium	60.7 A	mg/L	0.5	2
4/21/2008 10:15	TEST SITE	Metals	Nickel	6.24 A	ug/L	0.25	1
4/21/2008 10:15	TEST SITE	Metals	Cadmium	0.15 A	ug/L	0.02	0.08
4/21/2008 10:15	TEST SITE	Metals	Iron	680 A	ug/L	30	120
4/21/2008 10:15	TEST SITE	Metals	Arsenic	2.9 A	ug/L	0.5	2
4/21/2008 10:15	TEST SITE	Metals	Lead	0.78 I	ug/L	0.2	0.8

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 10:15	TEST SITE	Metals	Aluminum	540 A	ug/L	60	240
4/21/2008 10:15	TEST SITE	Metals	Selenium	0.51 I	ug/L	0.5	2
4/21/2008 10:15	TEST SITE	Metals	Copper	0.63 I	ug/L	0.5	2
4/21/2008 10:15	TEST SITE	Metals	Silver	0.025 U	ug/L	0.025	0.1
4/21/2008 10:15	TEST SITE	Metals	Chromium	2.3 I	ug/L	1	4
4/21/2008 10:15	TEST SITE	Metals	Calcium	70.0 A	mg/L	0.075	0.3
4/21/2008 10:15	TEST SITE	Nutrients	Total-P	10	mg P/L	0.4	1.2
4/21/2008 10:15	TEST SITE	Nutrients	NO2NO3-N	0.99	mg N/L	0.04	0.1
4/21/2008 10:15	TEST SITE	Nutrients	O-Phosphate-P	9.6	mg P/L	0.32	0.8
4/21/2008 10:15	TEST SITE	Nutrients	Fluoride	3.4	mg F/L	0.05	0.1
4/21/2008 10:15	TEST SITE	Nutrients	Ammonia-N	0.54	mg N/L	0.01	0.02
4/21/2008 10:15	TEST SITE	Nutrients	Turbidity	11	NTU	0.1	0.1
4/21/2008 10:15	TEST SITE	Nutrients	Kjeldahl Nitrogen	2	mg N/L	0.08	0.2
4/21/2008 10:15	TEST SITE	Nutrients	Sulfate	280	mg SO4/L	2	5
4/21/2008 10:15	TEST SITE	Nutrients	pH	6.39			
4/21/2008 10:15	TEST SITE	Nutrients	Specific Conductance	744	umhos/cm		
4/21/2008 10:15	TEST SITE	Nutrients	Dissolved Oxygen		mg/L		
4/21/2008 10:15	TEST SITE	Nutrients	Total Residual Chlorine		mg/L		
4/21/2008 10:15	TEST SITE	Nutrients	Salinity		PPTth		
4/21/2008 10:15	TEST SITE	Nutrients	Sample Depth	0.2	m		
4/21/2008 10:15	TEST SITE	Nutrients	Temperature	20.54	C		
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Lead	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Nickel	0.25 U	ug/L	0.25	1
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Copper	0.63 I	ug/L	0.5	2
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Aluminum	60 U	ug/L	60	240
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Chromium	1.0 U	ug/L	1	4
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Silver	0.025 U	ug/L	0.025	0.1
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Selenium	0.50 U	ug/L	0.5	2
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Arsenic	0.50 U	ug/L	0.5	2
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Zinc	5.0 U	ug/L	5	20
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Calcium	0.075 U	mg/L	0.075	0.3
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Sodium	0.50 U	mg/L	0.5	2
4/21/2008 11:35	EQUIPMENT BLANK	Metals	Iron	30 U	ug/L	30	120
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Fluoride	0.050 U	mg F/L	0.05	0.1
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	1
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Ammonia-N	0.010 UY	mg N/L	0.01	0.02
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Kjeldahl Nitrogen	0.080 UY	mg N/L	0.08	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	O-Phosphate-P		mg P/L		

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Total-P	0.020 UY	mg P/L	0.02	0.06
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	NO2NO3-N	0.004 UY	mg N/L	0.004	0.01
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Radium 226-Counting Error	0.1	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Alpha, Total	0.7 U	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Radium 228-Counting Error	0.6	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Radium 226	0.1	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Radium 228	0.9	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Oil and Grease	1.7 U	mg/L	1.7	5
4/21/2008 11:35	EQUIPMENT BLANK	Overflow	Alpha-Counting Error	0.4	pCi/L		
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Fenamiphos	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Parathion Methyl	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Metolachlor	0.49 U	ug/L	0.49	2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Hexazinone	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Atrazine	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Azinphos Methyl	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Butylate	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Chlorpyrifos Ethyl	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Ethoprop	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Fonofos	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Mevinphos	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Diazinon	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Alachlor	0.59 U	ug/L	0.59	2.4
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Naled	0.78 U	ug/L	0.78	3.1
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Bromacil	0.20 U	ug/L	0.2	0.8
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Chlorpyrifos Methyl	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Phorate	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Simazine	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Norflurazon	0.15 U	ug/L	0.15	0.6
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Metribuzin	0.098 U	ug/L	0.098	0.39
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Ethion	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Ametryn	0.049 U	ug/L	0.049	0.2
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Malathion	0.15 U	ug/L	0.15	0.6
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Parathion Ethyl	0.15 U	ug/L	0.15	0.6
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Prometryn	0.15 U	ug/L	0.15	0.6
4/21/2008 11:35	EQUIPMENT BLANK	Pesticides	Metalaxyl	0.25 U	ug/L	0.25	1
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	ug/L	15	58
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Endosulfan I	3.9 U	ug/L	3.9	16
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Heptachlor	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.8

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Naphthalene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	gamma-BHC	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 UJ	ug/L	39	160
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	58
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Endrin aldehyde	3.9 UJ	ug/L	3.9	16
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Fluoranthene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Phenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Pyrene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	beta-BHC	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2-Chlorophenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzidine	97 U	ug/L	97	390
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.9 U	ug/L	4.9	19
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Dieldrin	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Fluorene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.7 U	ug/L	9.7	39
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Acenaphthylene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Endosulfan II	3.9 U	ug/L	3.9	16
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Aldrin	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.7 U	ug/L	9.7	39
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	alpha-BHC	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2-Nitrophenol	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4,4'-DDD	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Anthracene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97 UJ	ug/L	0.97	3.9

Date_Sampled	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15 U	ug/L	15	58
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Chrysene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	delta-BHC	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Diethyl phthalate	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Endrin	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4,4'-DDE	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	4,4'-DDT	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Acenaphthene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.9 U	ug/L	4.9	19
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Endosulfan sulfate	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Heptachlor epoxide	1.5 U	ug/L	1.5	5.8
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Isophorone	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Priority Organic Pollutants	Phenanthrene	0.97 U	ug/L	0.97	3.9
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Salinity		PPT		
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Sample Depth		m		
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Dissolved Oxygen		mg/L		
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	pH				
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Temperature		C		
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Total Residual Chlorine		mg/L		
4/21/2008 11:35	EQUIPMENT BLANK	Nutrients	Specific Conductance		umhos/cm		

Appendix F

Additional physical, chemical, toxicological and microbiological results

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Mosaic Fertilizer L.L.C. Bartow Chemical Complex
 Address: 3200 Highway 60 West
 City: Bartow County: Polk
 Contact/District: Jacki Clempson / BMR Tap 24
 NPDES Permit #: FL 0001589
 LIMS Job #: TLH-2008-4-22-19-0 LIMS Sample #: 10916193
 LIMS Data Entry: 4-30-08 MF Data Entry Verification: DD 4,2008

Sample Collection: Date: 4/21/08 Time: 12:15
 Hold Time Start: Date: 4/21/08 Time: 12:15

Comments:
 Test 1 LC50 = > 100% mortality = 0% MF
 Test 2 LC50 = > 100% mortality = 0% MF

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: Screen
 Control survival $\geq 90\%$: Yes No
 Temperature Range $\leq 3^{\circ}\text{C}$: Yes No
 Test 1 validation: Test 1: SOP TA 07_01
 Control survival $\geq 90\%$: Yes No
 Temperature Range $\leq 3^{\circ}\text{C}$: Yes No
 Test 2 validation: Test 2: SOP TA 07_02
 Control survival $\geq 90\%$: Yes No
 Temperature Range $\leq 3^{\circ}\text{C}$: Yes No

Initial sample handling:
 PH adjustment: yes Yes Initial pH: ___ NaOH N HCl N ___ Drops mL Final pH: ___
 Aeration: yes Yes Initial DO: ___ mg/L Final DO: ___ mg/L Duration: ___ minutes Rate: ___ bubbles/min
 Salinity adjusted (Test 1): yes Yes Initial Salinity: ___ mg/L Salts: Hypersaline brine
 Salinity adjusted (Test 2): yes Yes Initial Salinity: ___ mg/L Salts: Hypersaline brine
 Dechlorination: yes Yes ___ mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ___

Sample Validation:
 Temperature: Shipped $\leq 5^{\circ}\text{C}$ Yes No Hand Delivered: Cooling (received $^{\circ}\text{C}$ < collected $^{\circ}\text{C}$) Yes No 4.35-08
 Holding Time: ≤ 36 Hours Yes No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Light Intensity: 50 - 100 ft. candles
 Photoperiod: 16 light 8 dark
 Temperature Range $^{\circ}\text{C}$:
 Incubator # 2 min 26.1 max 26.7 mean 26.6
 Incubator # ___ min ___ max ___ mean ___
 Room B246 min 24.3 max 35.3 mean 33.2

Water Quality Parameters		20% DIMW	Moderately Hard Water (ASW) #	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	Not Measured	2003	HACH	DD	MF
Lab Total Residual Cl_2 (mg/L):	2.03	2.03	2.03				119	HACH	DD	BA
Alkalinity (mg/L as CaCO_3):	83	143	143				243	HACH	BA	DD
Hardness (mg/L as CaCO_3):	83	143	143				0434	DENVER	MF	DD
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017				<1	YSI (Mettler)	DD	MF
Salinity (ppt):	<1	<1	<1							

Investigators' Signatures:
M. Washall-Franco
Kevin Branch
Robert C. White
 REVIEWER

V.1.4.9/205

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 1096198

Test #: 1 of 2

TEST SOP #: TA07_01

Test Species: *Ceriodaphnia dubia* *Cyprinella leedsii* *Pimephales promelas*
Ameletus balticus *Menidia beryllina* Other:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
100%						
Replicate	M	f	A			
pH (S.U.)	7.2		8.2			
Temperature °C	24.1		24.3			
Dissolved Oxygen mg/L	6.4		7.1			
Conductivity μ mhos	688		712			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Ctrl						
Replicate	M	A				
pH (S.U.)	8.7	8.1				
Temperature °C	24.0	24.2				
Dissolved Oxygen mg/L	7.5	7.1				
Conductivity μ mhos	179	186				
(initials) Measured by:	BA	BA				
(initials) Recorded by:	BA	BA				

Comments: * Recorded 48 hours to 24 hour spans. mt for BA 4-25-06

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity μ mhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity μ mhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

000039

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 1096198

Test #: 2 of 2

TEST SOP #: TA07_02

Test Species: *Ceriodaphnia dubia* (*Cyprinella* leeds) *Pimephales promelas*
Americanysis bahia *Menidia beryllina* Other: _____

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.8	8.2	8.3			
Temperature °C	24.4	24.1	24.4			
Dissolved Oxygen mg/L	7.6	6.7	6.7			
Conductivity (µmhos/mmhos)	276	298	290			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.2	7.8	8.0			
Temperature °C	25.1	24.0	24.9			
Dissolved Oxygen mg/L	6.3	6.1	6.6			
Conductivity (µmhos/mmhos)	687	703	700			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity (µmhos/mmhos)						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity (µmhos/mmhos)						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Mosaic Fertilizer, L.L.C. - Bartow Chemical Complex
 Address: 3200 Highway 60 West
 City: Bartow County: Polk
 Contact/District: Jacki Chapman / BWA Tampa
 NPDES Permit #: FL 0001589
 LIMS Job #: TAH-2008-4-22-14-e2 LIMS Sample #: 1096199
 LIMS Data Entry: 4-30-08 ml Data Entry Verification: JD 4/30/08

Sample Collection: Date: 4/21/08 Time: 13:15
 Hold Time Start: Date: 4/21/08 Time: 13:15

Comments:
 Test 1 LC50 = > 100% mortality = 0% MF
 Test 2 LC50 = > 100% mortality = 0% MF 5/3/08

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.
Test Type: Screen
 Static / Static Renewal / Flow-through
Test Duration: 48 96 Hours.
Test 1 validation: Test 1: SOP TA 07_ 01
 Control survival ≥50%: Yes No
 Temperature Range ≤3°C: Yes No
Test 2 validation: Test 2: SOP TA 07_ 02
 Control survival ≥50%: Yes No
 Temperature Range ≤3°C: Yes No

Initial sample handling:
 PH adjustment: yes No Initial pH: _____ NaOH N HCl N _____ Drops mL Final pH: _____
 Aeration: yes No Initial DO: _____ mg/L Final DO: _____ mg/L Duration: _____ minutes Ratio: _____ bubbles/min
 Salinity adjusted (Test 1): yes No Initial Salinity: _____ Final Salinity: _____ Salts: Hypersaline brine
 Salinity adjusted (Test 2): yes No Initial Salinity: _____ Final Salinity: _____ Salts: Hypersaline brine
 Dechlorination: yes No _____ mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: _____
Sample Validation:
 Temperature: Shipped ≤5°C No Hand Delivered: Cooling (received °C < collected °C) No
 Holding Time: ≤36 Hours No (Composite-and of collection; grab-when collected; 4 in 24 - time last sample collected)

Light Intensity: 50 - 100 ft. candles
 Photoperiod: 10 light 8 dark
 Temperature Range °C:
 Incubator # 2 min. 26.7 max. 26.7 mean 26.6
 Incubator # _____ min. _____ max. _____ mean _____
 Room B246 min. 21.8 max. 25.3 mean 23.3

Water Quality Parameters		20% DMW	Moderately Hard Water/ (Well Water)	Salt Water ASW Test 1	Salt Water ASW Test 2	Other:	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl ₂ (mg/L):		N/A	N/A	N/A	N/A		<u>not measured</u>			<u>MF</u>
Lab Total Residual Cl ₂ (mg/L):		<u><0.03</u>	<u><0.03</u>				<u>4003</u>	HACH	<u>JD</u>	<u>BA</u>
Alkalinity (mg/L as CaCO ₃):		<u>38</u>	<u>37-178</u>				<u>57</u>	HACH	<u>BA</u>	<u>JD</u>
Hardness (mg/L as CaCO ₃):		<u>38</u>	<u>141</u>				<u>247</u>	HACH	<u>BA</u>	<u>JD</u>
Total Ammonia (mg/L as N):		<u><0.017</u>	<u><0.017</u>				<u>0.169</u>	DENVER	<u>MF</u>	<u>JD</u>
Salinity (ppt):		<u><1</u>	<u><0.01</u>				<u><1</u>	YSI/Mettler	<u>JD</u>	<u>MF</u>

Investigators' Signatures
Marshele Faincloth
Jacki Chapman
Paula Alt
Christina C. White
 REVIEWER

V 1.4 B1205

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 1096199

Test #: 1 of 2

TEST SOP #: TA07_01

Test Species: *Ceriodaphnia dubia* *Cyprinella leedsii* *Pimephales promelas*

Americamysis bahia *Menidia beryllina* Other:

CT1 = control

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	8.1		7.9			
Temperature °C	24.0		24.1			
Dissolved Oxygen mg/L	7.5		7.3			
Conductivity μ mhos	176		190			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	7.3		8.1			
Temperature °C	24.0		24.2			
Dissolved Oxygen mg/L	6.1		7.2			
Conductivity μ mhos	682		685			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity μ mhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity μ mhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

000044

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 1096199

Test #: 2 of 2

TEST SOP #: TA07_02

Test Species: *Ceriodaphnia dubia* ~~*Cyprinella leedsii*~~ ~~*Pimephales promelas*~~
Americamysis bahia *Menidia beryllina* Other:

CTH = Control

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
CTH						
Replicate	A	B	C			
pH (S.U.)	7.9	8.2	8.3			
Temperature °C	24.1	24.2	24.4			
Dissolved Oxygen mg/L	7.6	6.6	6.6			
Conductivity (µmhos)	279	290	287			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
100%						
Replicate	A	B	C			
pH (S.U.)	6.9	7.3	7.6			
Temperature °C	24.8	24.7	24.8			
Dissolved Oxygen mg/L	6.8	6.2	6.7			
Conductivity (µmhos)	1020	1032	1036			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Appendix G

Standard Reference Toxicant data

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
10/31/06	2.26	2.25	0.29	1.66	2.83
11/28/06	1.96	2.18	0.17	1.85	2.51
01/16/07	2.22	2.19	0.17	1.85	2.52
02/13/07	2.39	2.21	0.17	1.87	2.54
03/13/07	1.92	2.18	0.18	1.82	2.55
04/03/07	2.37	2.20	0.18	1.83	2.57
05/08/07	1.78	2.18	0.21	1.77	2.59
05/29/07	1.69	2.07	0.23	1.70	2.60
06/06/07	2.28	2.16	0.22	1.71	2.60
07/03/07	1.99	2.14	0.22	1.70	2.58
07/31/07	1.94	2.14	0.22	1.71	2.58
09/04/07	1.95	2.13	0.22	1.70	2.57
10/02/07	2.04	2.11	0.21	1.68	2.53
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55

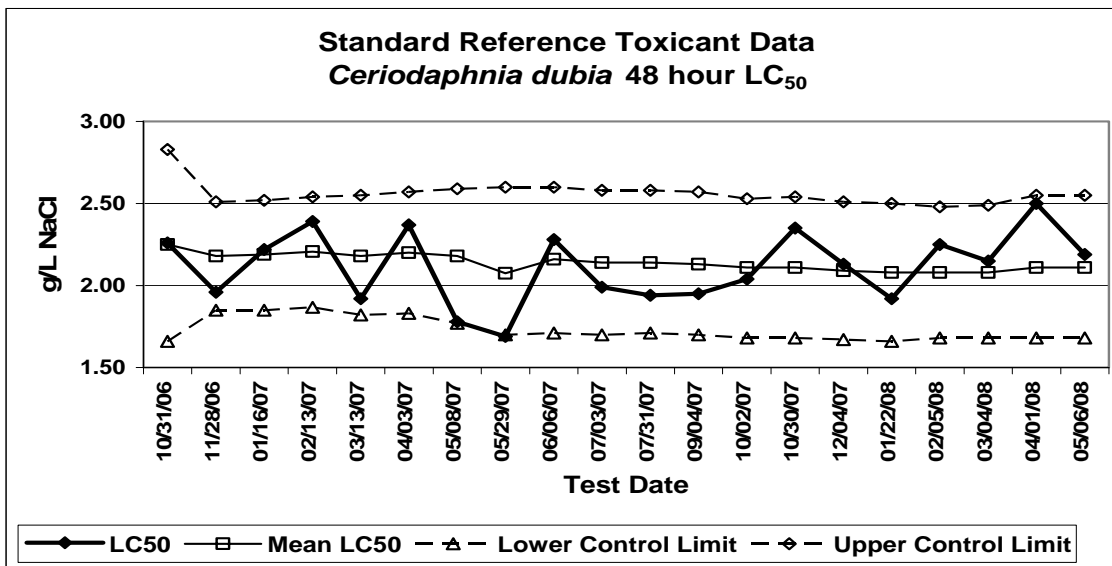
Means are of the last 20 SRT tests.

Lower Control Limit = mean - 2 * Std Dev

CV = 10.30

Upper Control Limit = mean + 2 * Std Dev

EPA reference 75th quartile CV = 29%



Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Cyprinella leedsii (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
10/31/06	8.12	8.01	0.49	7.03	8.98
11/28/06	8.04	8.04	0.46	7.11	8.97
01/16/07	8.47	8.04	0.23	7.11	8.98
02/14/07	8.92	8.39	0.40	7.12	9.10
03/14/07	7.75	8.26	0.45	7.16	9.09
04/03/07	8.50	8.30	0.41	7.19	9.12
05/08/07	9.07	8.22	0.52	7.18	9.25
05/30/07	8.85	8.47	0.47	7.23	9.32
07/03/07	8.67	8.33	0.50	7.34	9.32
07/10/07	8.52	8.36	0.49	7.38	9.34
08/01/07	7.7	8.31	0.51	7.29	9.34
09/05/07	9.06	8.34	0.54	7.26	9.42
10/02/07	8.55	8.43	0.47	7.45	9.35
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41

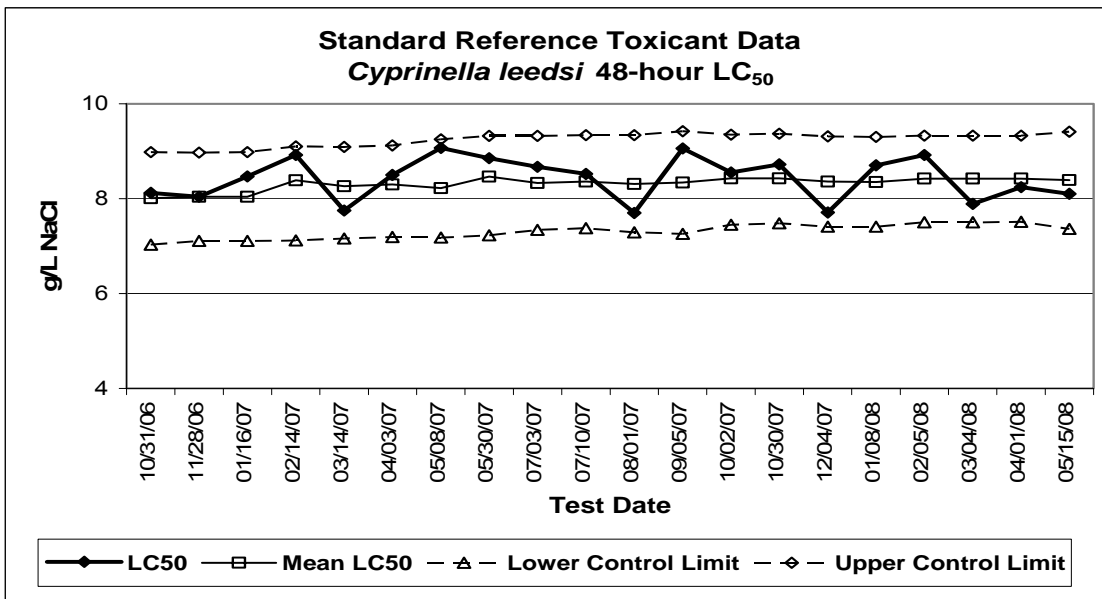
Means are of the last 20 SRT tests.

Lower Confidence Limit = mean - 2 * Std Dev

CV = 6.12

Upper Confidence Limit = mean + 2 * Std Dev

EPA reference 75th quartile CV = 19%



FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0
Menidia beryllina Method 2006.0
Paridaphnia dubia Method 2002.0
Cyprinella leedsi Method 2000.0
Hyalella azteca Method 100.1 EPA-600-R-99-064
Pimephales promelas Other: _____ Method 2000.0

Method from EPA-821-R-02-012
 Test Type: 48 hour non-renewal
 96 hour renewal
 Test Page 1 of 2

Diluent/ Batch #: DMW 4.1.08
 Toxicant/ Batch#: Nnc1 133109 3D
 4.1.08

Test Beginning: Date: 4.1.08 Time: 13:15
 Test Ending: Date: 4.5.08 Time: 11:30

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl ₂ (mg/L):	LAB	Hach	JD
Alkalinity (mg/L as CaCO ₃):	90	Hach	BA
Hardness (mg/L as CaCO ₃):	81	Hach	BA
Total Ammonia (mg/L as N):	0.017	Denver	AE
Salinity (ppt):	<1	Mettler	BA

Organism Batch # Age: 12-071 < 24hrs
 Feeding: (Prior to test / Prior to renewal) Daily
 Food: (YC) (P.subcapitata) Artemia: Lot # -
 Food Batch: 7-26-07 1-31-08 0hr - 24hr - 48hr - 72hr -
 Chamber size: 30 mL
 Test volume: 20 mL per replicate

Conc. µg/L mg/L	Rep.	Chamber #	Number Live			pH (SU)			Temperature (°C)			D.O. (mg/L)			Uncorrected Conductivity µmhos/cm (nmhos/cm)			
			0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	
			48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	
Control	A	A	5	5	5	7.9		8.0	24.0		24.0	7.8		7.0	0.172		0.183	
	B	B	5	5	5													
	C	C	5	5	5													
	D	D	5	5	5													
1.5	A	A	5	5	5	8.0		7.9	24.0		24.0	7.8		7.1	2.911		3.07	
	B	B	5	5	5													
	C	C	5	5	5													
	D	D	5	5	5													
2.0	A	A	5	5	5	8.1		7.4	24.0		24.0	7.5		7.0	3.86		4.02	
	B	B	5	5	5													
	C	C	5	5	5													
	D	D	5	5	5													
2.5	A	A	5	5	2 ^{SD}	8.1		7.4	24.1		24.0	7.7		6.9	4.71		4.93	
	B	B	5	5	3 ^{2D}													
	C	C	5	5	3 ^{2D}													
	D	D	5	4 ^{1D}	3 ^{1D}													
3.0	A	A	5	3 ^{2D}	0 ^{3D}	8.1		7.4	24.1		24.0	7.6		6.8	5.51		5.7	
	B	B	5	4 ^{1D}	0 ^{4D}													
	C	C	5	3 ^{2D}	0 ^{3D}													
	D	D	5	4 ^{1D}	0 ^{4D}													
4.0	A	A	5	0 ^{5D}	-	8.1	8.0	-	24.2	24.0	-	7.7	7.7	-	7.25	7.19	-	
	B	B	5	0 ^{5D}	-													
	C	C	5	0 ^{5D}	-													
	D	D	5	0 ^{5D}	-													
	A																	
	B																	
	C																	
	D																	
Loaded / measured by:			CA	BA	CA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
Recorded by:			BA	BA	CA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

Investigators' Signatures
Bruce A. Fisher
James Daniel
Marshall Faircloth

Shelita C. Wolfe
 REVIEWER

Concentrations prepared by: BA
 Loading verified by: JD
 Light Intensity: 50-100 Ft. candles
 Photoperiod: 16 hours Light / 8 hours dark
 Temperature Range °C:
 Incubator # 2 min 26.1 max 26.6 mean 26.4
 Incubator # min max mean
 Room B246 min 24.6 max 25.5 mean 25.0
 000053

Comments:

 Statistics:
 48/ 96 hour LC₅₀: 2.5 Method: Spearman-Kärber
 95% Confidence Interval: lower 2.39 upper 2.62

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0
Menidia beryllina Method 2000.0
Hyalella azteca Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0
Cyprinella loedsi Method 2000.0
Pimephales promelas Other: _____ Method 2000.0

Method from EPA-821-R-02-012
 Test Type: 48 hour non-renewal
 96 hour renewal
 Test Page 2 of 2

Diluent/ Batch #: DMW 1 4.1.08
 Toxicant/ Batch #: Nci 1 4.1.08

Test Beginning: Date: 4.1.08 Time: 13:15
 Test Ending: Date: 4.5.08 Time: 11:30

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl ₂ (mg/L):	22.5	Hach	JD
Alkalinity (mg/L as CaCO ₃):	90	Hach	BA
Hardness (mg/L as CaCO ₃):	81	Hach	BA
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppt):	<1	Mettler	BA

Organism Batch # Age: 12-07 / 224 hrs

Feeding: Prior to test / Prior to renewal / Daily

Food: YCT P.subcapitata Artemia: Lot # _____

Food Batch: 7-26-07 1-31-08 0hr - 24hr - 48hr - 72hr -

Chamber size: 30 mL

Test volume: 20 mL per replicate

Conc. (µg/L)	Rep.	Chamber #	Number Live			pH (SU)			Temperature (°C)			D.O. (mg/L)			Uncorrected Conductivity µmhos/cm (mmhos/cm)		
			0hr	24hr	48hr	0hr	24hr	48hr	0hr	24hr	48hr	0hr	24hr	48hr	0hr	24hr	48hr
			48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr
Control	A	A	5	5	5	8.1		8.1	24.2		24.2	8.0		7.6	0.175		0.189
	B	B	5	5	5						24.2					0.194	
	C	C	5	5	5						20					20	
	D	D	5	5	5												
1.5	A	A	5	5	5	8.1		8.0	24.6		24.1	7.9		7.6	2.86		3.04
	B	B	5	5	5												
	C	C	5	5	4 ^{1D}												
	D	D	5	5	5												
2.0	A	A	5	5	5	8.1		8.1	24.7		24.1	7.7		7.6	3.78		3.99
	B	B	5	5	5												
	C	C	5	5	4 ^{1D}												
	D	D	5	5	5												
2.5	A	A	2	2	2	8.1		8.1	24.8		24.1	7.1		7.6	4.57		4.86
	B	B	3	1 ^{1D}	0 ^{1D}												
	C	C	3	2 ^{1D}	0 ^{2D}												
	D	D	3	2 ^{1D}	0 ^{2D}												
3.0	A	A	-	-	-												
	B	B	-	-	-												
	C	C	-	-	-												
	D	D	-	-	-												
4.0	A	A	-	-	-												
	B	B	-	-	-												
	C	C	-	-	-												
	D	D	-	-	-												
Loaded / measured by:			BA	BA	JD	BA		JD	BA		JD	BA		JD	BA		JD
Recorded by:			BA	BA	JD	BA		JD	BA		JD	BA		JD	BA		JD

Investigators' Signatures

Dave [Signature]
[Signature]
Marshall [Signature]

Concentrations prepared by: BA

Loading verified by: JD

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:

Incubator # 2 min 20.1 max 20.6 mean 20.4

Incubator # ___ min ___ max ___ mean ___

Room B246 min 24.6 max 25.5 mean 25.0

[Signature]
 REVIEWER

Comments:

Statistics:

48 / 96 hour LC₅₀: 2.26 Method: Spearman-Kärper
 95% Confidence Interval: lower 2.19 upper 2.32

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0
Menidia beryllina Method 2006.0
Ceriodaphnia dubia Method 2002.0
Cyprinella leedsi Method 2000.0
Hyalella azteca Method 100.1 EPA-600-R-99-064
Pimephales promelas Method 2000.0
 Other: _____

Method from EPA-821-R-02-012
 Test Type: 48 hour non-renewal
 6 hour renewal
 Test Page 1 of 2

Diluent/ Batch #: Well H₂O 3,3108
 Toxicant/ Batch#: Niel 13,3108

Test Beginning: Date: 4/1/08 Time: 15:00
 Test Ending: Date: 4/5/08 Time: 12:00

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl ₂ (mg/L):	2003	Hach	JD
Alkalinity (mg/L as CaCO ₃):	149	Hach	BA
Hardness (mg/L as CaCO ₃):	133	Hach	BA
Total Ammonia (mg/L as N):	0.017	Denver	MF
Salinity (ppt):	< 1	Mettler	JD

Organism Batch # Age: 4,108/1134g
 Feeding: (Prior to test / Prior to renewal) / Daily
 Food: YCT *P. subcapitata* Artemia: Lot # 651-536-90
 Food Batch: _____ 0hr 51.0 24hr _____ 48hr 59.0 72hr _____
 Chamber size: 1000 mL
 Test volume: 500 mL per replicate

Conc. µg/L mg/L	Rep.	Chamber #	Number Live			pH (SU)			Temperature (°C)			D.O. (mg/L)			Uncorrected Conductivity µmhos/cm (µmhos/cm)			
			0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	
			48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	
Control	A	B1	10	10	10	8.0		8.2	24.0		24.7	7.7		7.2	0.273		0.272	
	B	B2	10	10	10			8.2			24.3			7.1			0.279	
	C																	
	D																	
6	A	B3	10	10	10	8.0		8.1	24.0		24.7	7.6		6.9	11.6		11.5	
	B	B4	10	10	10			8.1			24.4			7.0			11.5	
	C																	
	D																	
7	A	B5	10	10	10	8.0		8.1	24.0		24.7	7.6		6.8	13.5		12.3	
	B	B6	10	10	10			8.0			24.6			6.5			13.2	
	C																	
	D																	
8	A	B7	10	7	7	8.0		8.1	24.0		24.9	7.6		6.6	15.5		15.2	
	B	B8	10	6	6			8.0			24.4			6.4			15.0	
	C																	
	D																	
9	A	B9	10	3	3	8.0		8.1	24.0		24.6	7.6		6.6	16.8		16.7	
	B	B10	10	1	1			8.0			24.1			6.5			16.4	
	C																	
	D																	
10	A	B11	10	0	0	7.9			24.0			7.6			18.7			
	B	B12	10	0	0			8.0			24.5			6.4			18.3	
	C																	
	D																	
Loaded / measured by:			BA	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD
Recorded by:			JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD

Investigators' Signatures
James Daniel
Marshall Parrott
Janette C. White
 REVIEWER

Concentrations prepared by: JD
 Loading verified by: MF
 Light Intensity: 50-100 FT candles
 Photoperiod: 16 hours Light / 8 hours dark
 Temperature Range °C:
 Incubator # 2 min 26.1 max 26.6 mean 26.4
 Incubator # _____ min _____ max _____ mean _____
 Room B246 min 24.6 max 25.5 mean 25.0
55

Comments:
 Statistics:
 95% Confidence Interval: lower 7.15 upper 8.55
 Method: Spearman-Kärber
 95% 96 hour LC₅₀: 8, 24
000055

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0
Menidia beryllina Method 2008.0
Ceriodaphnia dubia Method 2002.0
Cyprinella leedsii Method 2000.0
Hyalella azteca Method 100.1 EPA-600-R-99-064
Pimephales promelas Method 2000.0
 Other: _____

Method from EPA-821-R-02-012
 Test Type: 48 hour non-renewal
 68 hour renewal
 Test Page 2 of 2

Diluent/ Batch #: Well H₂O 133108
 Toxicant/ Batch#: None 133108

Test Beginning: Date: 9/10/08 Time: 1500
 Test Ending: Date: 9/27 Time: 1300

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl ₂ (mg/L):	<u>0.03</u>	Hach	<u>JD</u>
Alkalinity (mg/L as CaCO ₃):	<u>149</u>	Hach	<u>BA</u>
Hardness (mg/L as CaCO ₃):	<u>133</u>	Hach	<u>BA</u>
Total Ammonia (mg/L as N):	<u>0.017</u>	Denver	<u>MF</u>
Salinity (ppt):	<u>0</u>	Mettler	<u>JD</u>

Organism Batch #/ Age: 4108 / 13 days

Feeding: (Prior to test / Prior to renewal) Daily

Food: YCT *P. subcapitata* Artemia: Lot # 651-536-90

Food Batch: _____ 0hr 57 24hr - 48hr 51 72hr -

Chamber size: 100 mL

Test volume: 500 mL per replicate

Conc.	Rep.	Chamber #	Number Live			pH (SU)			Temperature (°C)			D.O. (mg/L)			Uncorrected Conductivity	
			0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	0 hr	24 hr	48 hr	µmhos/cm	mmhos/cm
Control	A	B1	10	10	10	8.1		8.0	24.0		24.5	7.6		6.8	0.277	0.293
	B	B2	10	10	10		8.0			25.0			6.1		0.285	
	C															
	D															
6	A	B3	10	10	10	8.0		8.0	24.0		24.6	7.6		6.4	11.3	11.4
	B	B4	10	10	10		7.9				24.7		5.9		11.6	
	C															
	D															
7	A	B5	10	10	10	8.0		8.0	24.0		24.8	7.4		6.3	11.3/6	13.3
	B	B6	9	9	9		7.9				24.8		5.9		13.2	
	C															
	D															
8	A	B7	7	7	7	8.0		7.9	24.0		24.9	7.3		6.2	14.8	15.0
	B	B8	6	6	6		7.9				24.6		5.9		15.1	
	C															
	D															
9	A	B9	3	3	3	8.0		8.0	24.0		24.9	7.3		6.0	16.4	16.6
	B	B10	1	1	1		7.9				24.6		5.8		16.7	
	C															
	D															
10	A	B11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	B12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C															
	D															
Loaded / measured by:			JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD
Recorded by:			JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD	JD

Investigators/Signatures:
James Truitt
Paul Axel
Marshall Faircloth

Patricia C. Wolfe
 REVIEWER

Concentrations prepared by: JD
 Loading verified by: MF
 Light Intensity: 50-100 Ft. candles
 Photoperiod: 16 hours Light / 8 hours dark
 Temperature Range °C:
 Incubator # 2 min 26.1 max 26.6 mean 26.7
 Incubator # _____ min _____ max _____ mean _____
 Room B246 min 24.6 max 25.5 mean 25.0

Comments:

 Statistics:
 48 / (68) hour LC₅₀: 8.24 Method: Spearman-Kärber
 95% Confidence Interval: lower 7.95 upper 8.55

000056

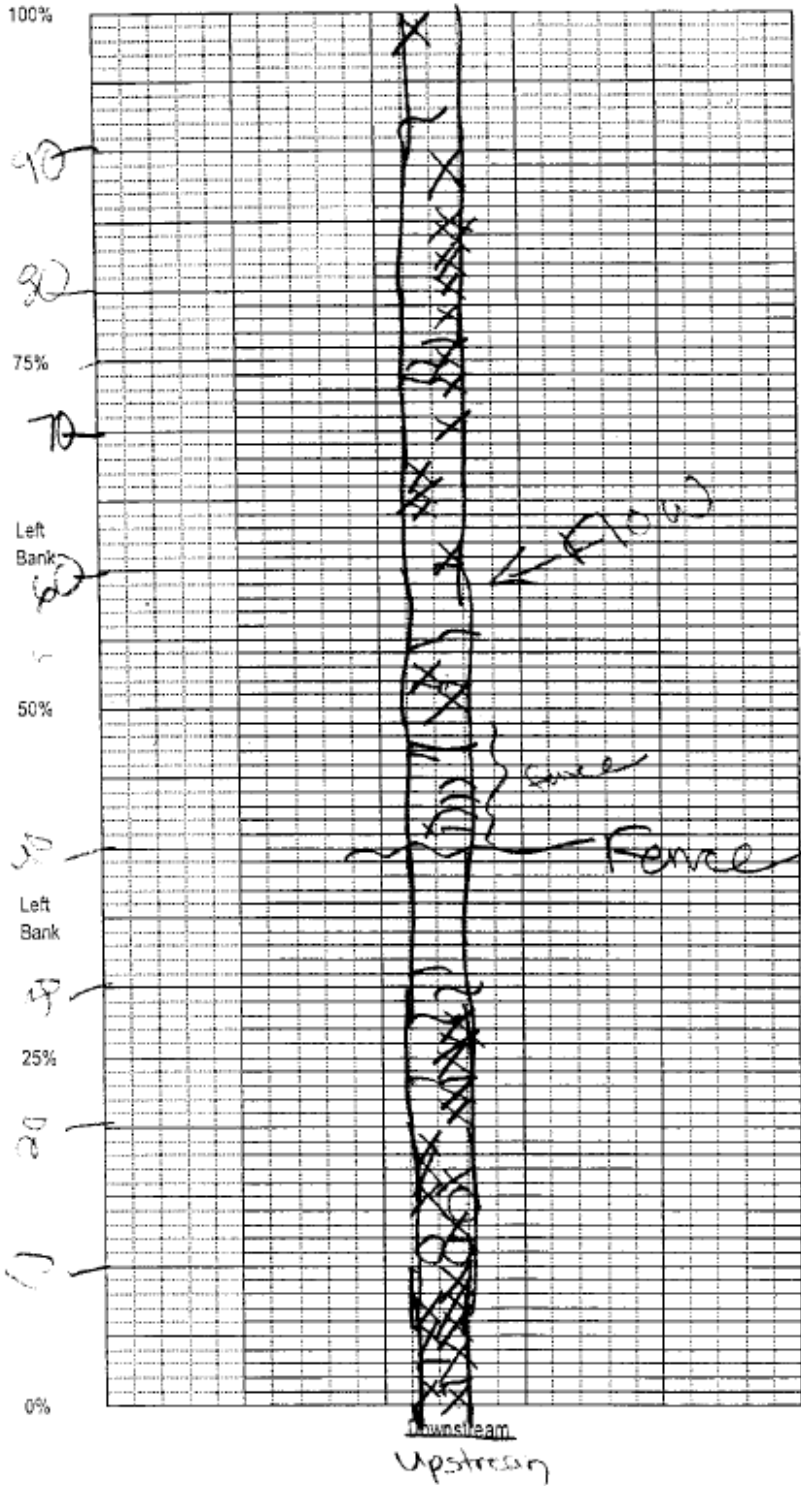
Appendix H

Habitat Assessment Field Sheets

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)
 PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STOREY STATION NUMBER: _____	DATE (M/D/Y): 3/6/08	TIME: 2:00pm	RECEIVING BODY OF WATER: Alafia River		
REMARKS: ~15 miles from Outfall	COUNTY: Hillsborough	LOCATION: Little Fishhawk Creek @ Fishhawk Blvd	FIELD ID/NAME: Control for Mosaic Bartow U-001				
RIPARIAN ZONE/STREAM FEATURES							
PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):							
FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
				<input checked="" type="checkbox"/>			
LOCAL WATERSHED EROSION (check box): None <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Heavy <input type="checkbox"/>							
LOCAL WATERSHED NPS POLLUTION (check box): No evidence <input type="checkbox"/> Slight <input type="checkbox"/> Moderate potential <input checked="" type="checkbox"/> Obvious sources <input type="checkbox"/>							
WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: 720		LIST & MAP DOMINANT VEGETATION ON BACK		TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSVERSE			
ARTIFICIALLY CHANNELIZED <input checked="" type="checkbox"/> no recent, severe some recovery mostly recovered				0.5 m/s 0.5 m/s 0.5 m/s			
ARTIFICIALLY MPOUNDED <input type="checkbox"/> yes more sinuous				0.6 m deep 0.4 m deep 0.2 m deep			
HIGH WATER MARK: 1.5 + 0.4 = 1.9 (m above present water level) (present depth in m) (m above bed)							
CANOPY COVER %: OPEN: <input type="checkbox"/> LIGHTLY SHADED (11-45%): <input checked="" type="checkbox"/> MODERATELY SHADED (46-80%): <input checked="" type="checkbox"/> HEAVILY SHADED: <input type="checkbox"/>							
SEDIMENT/SUBSTRATE							
SEWAGE ODORS: NORMAL: <input checked="" type="checkbox"/> SEWAGE: <input type="checkbox"/> PETROLEUM: <input type="checkbox"/> CHEMICAL: <input type="checkbox"/> ANAEROBIC: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
SEDIMENT OILS: ABSENT: <input checked="" type="checkbox"/> SLIGHT: <input type="checkbox"/> MODERATE: <input type="checkbox"/> PROFUSE: <input type="checkbox"/>							
SEDIMENT DEPOSITION: SLUDGE: <input type="checkbox"/> SAND SMOTHERING: NONE MODERATE SEVERE SILT SMOTHERING: NONE MODERATE OTHER: _____							
SUBSTRATE TYPE							
	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	13	111		SAND	57	111	
LEAF PACKS OF MATS	=			MUD/MUCK/SILT			
AQUATIC VEGETATION	=			OTHER:			
ROCK OR SHELL RUBBLE	1	111		OTHER:			
UNDERCUT BANKS/ROOTS	30	111		DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			
WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MGL):	COND. (UMH/CM) OR SALINITY (PPT):	SECCHI (M):	
TOP							
MID-DEPTH	0.4	19.70	7.38	9.65	240		
BOTTOM							
SYSTEM TYPE: STREAM 1 st -2 nd ORDER 5 th -6 th ORDER LAKE: <input type="checkbox"/> WETLAND: <input type="checkbox"/> ESTUARY: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
WATER ODORS (CHECK BOX): NORMAL: <input checked="" type="checkbox"/> SEWAGE: <input type="checkbox"/> PETROLEUM: <input type="checkbox"/> CHEMICAL: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
WATER SURFACE OILS (CHECK BOX): NONE: <input checked="" type="checkbox"/> SHEEN: <input type="checkbox"/> GLOBS: <input type="checkbox"/> SLICK: <input type="checkbox"/>							
CLARITY (CHECK BOX): CLEAR: <input checked="" type="checkbox"/> SLIGHTLY TURBID: <input type="checkbox"/> TURBID: <input type="checkbox"/> OPAQUE: <input type="checkbox"/>							
COLOR (CHECK BOX): TANNIC: <input checked="" type="checkbox"/> GREEN (ALGAE): <input type="checkbox"/> CLEAR: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
WEATHER CONDITIONS/NOTES: 70's - raining & cloudy				ABUNDANCE:			
				PERIPHYTON <input type="checkbox"/> ABSENT <input checked="" type="checkbox"/> COMMON <input checked="" type="checkbox"/> ABUNDANT <input type="checkbox"/>			
				FISH <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>			
				AQUATIC MACROPHYTES <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				IRON/SULFUR BACTERIA <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
SAMPLING TEAM: Jackie Thompson / Josh Pove				SIGNATURE: Jackie Thompson		DATE: 3/6/08	

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
 Length of grid represents 100 m of stream (not linear meters).
 (Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags
- Roots/undercut banks
- Leaf Packs (or mats)
- Macrophytes
- ~~ROCKETS~~
- _____
- _____

Velocity:
 Note where velocity measures were taken.

Habitat Smothering
 Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
 Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
 Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

$$\frac{1m}{2s}$$

N27°51'11.8"
 W82°13'27.7"

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____	STORED STATION NUMBER: _____	DATE: <u>3/6/08</u>	RECEIVING BODY OF WATER: <u>Alafia River</u>
SUBMITTING AGENCY NAME: _____	COUNTY: <u>Hillsborough</u>	LOCATION: <u>Little Fishhawk Creek @ Fishhawk Blvd</u>	FIELD ID NAME: <u>Control for Mosaic Below D-001</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>10</u>	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	<u>Two</u> productive habitats present. Less than desirable habitat, frequently disturbed or removed <u>10</u> 9 8 7 6	One or less productive habitat. Lack of habitat is obvious; substrates unstable or smothered 5 4 3 2 1
Substrate Availability <u>20</u>	Greater than 30% productive habitat present at site <u>20</u> 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>18</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec <u>20</u> 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>20</u> Primary Score <u>68</u>	Less than 20% of habitats affected by sand or silt accumulation <u>20</u> 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>20</u>	No artificial channelization or dredging. Stream with normal, sinuous pattern <u>20</u> 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
Bank Stability Right Bank <u>5</u> Left Bank <u>3</u>	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, <u>high erosion potential during floods</u> <u>5</u> 4 <u>unstable</u>	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> Secondary Score <u>70</u>	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

138 TOTAL SCORE

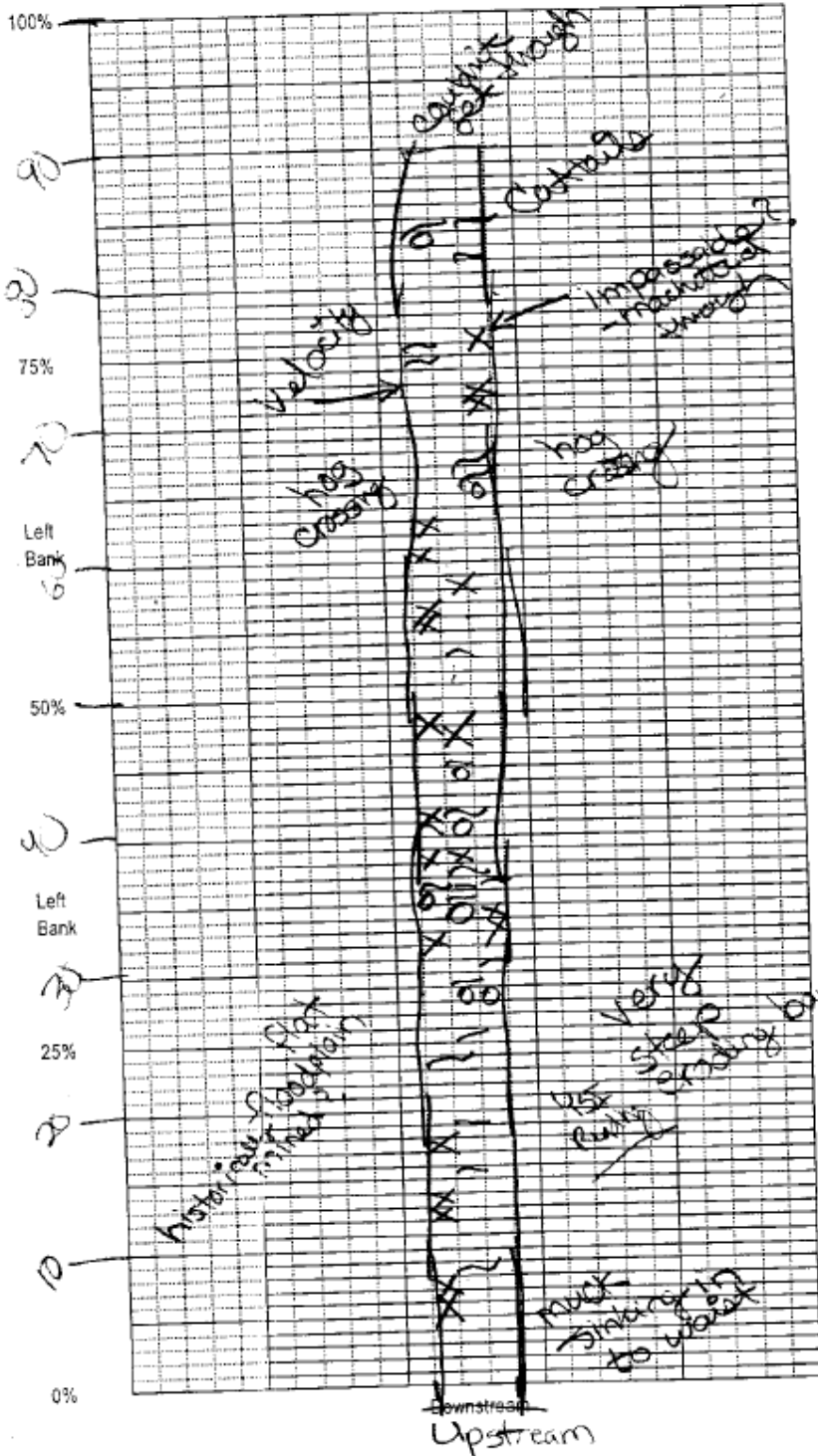
ANALYSIS DATE: <u>3/6/08</u>	ANALYST: <u>Jacqui Champion</u>	SIGNATURE: <u>Jacqui Champion</u>
------------------------------	---------------------------------	-----------------------------------

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)
 PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (M/D/Y): 3/6/08	TIME: 11:30	RECEIVING BODY OF WATER: Albia River		
REMARKS:	COUNTY: Polk	LOCATION: Skanned Saplings - Bartow Downstream 001	FIELD ID/NAME: Test Site - Albia River 001				
RIPARIAN ZONE/STREAM FEATURES							
PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): <i>Previously mined, reforested</i>							
FOREST/NATURAL <input checked="" type="checkbox"/>	SILVICULTURE <input type="checkbox"/>	FIELD/PASTURE <input type="checkbox"/>	AGRICULTURAL <input type="checkbox"/>	RESIDENTIAL <input type="checkbox"/>	COMMERCIAL <input type="checkbox"/>	INDUSTRIAL <input checked="" type="checkbox"/>	OTHER (SPECIFY) <i>Previously Mined</i>
LOCAL WATERSHED EROSION (check box): None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Heavy <input type="checkbox"/>							
LOCAL WATERSHED NPS POLLUTION (check box): No evidence <input type="checkbox"/> Slight <input type="checkbox"/> Moderate potential <input checked="" type="checkbox"/> Obvious sources <input type="checkbox"/>							
WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: 20		LIST & MAP DOMINANT VEGETATION ON BANK		TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT			
ARTIFICIALLY CHANNELIZED <input checked="" type="checkbox"/> no recent, severe some recovery mostly recovered				3 m wide			
ARTIFICIALLY IMPOUNDED <input type="checkbox"/> yes more sinuous				0.5 m/s 0.33 m/s			
HIGH WATER MARK: 1.0 + 0.2 = 1.2 (m above present water level) (present depth in m) (m above bed)				0.1 m deep 0.2 m deep 0.4 m deep			
CANOPY COVER %: OPEN: <input checked="" type="checkbox"/> LIGHTLY SHADED (11-45%): <input checked="" type="checkbox"/> MODERATELY SHADED (46-80%): <input type="checkbox"/> HEAVILY SHADED: <input type="checkbox"/>							
SEDIMENT/SUBSTRATE							
SEDIMENT ODORS: NORMAL: <input type="checkbox"/> SEWAGE: <input type="checkbox"/> PETROLEUM: <input type="checkbox"/> CHEMICAL: <input type="checkbox"/> ANAEROBIC: <input checked="" type="checkbox"/> OTHER: <input type="checkbox"/>							
SEDIMENT OILS: ABSENT: <input checked="" type="checkbox"/> SLIGHT: <input type="checkbox"/> MODERATE: <input type="checkbox"/> PROFUSE: <input type="checkbox"/>							
SEDIMENT DEPOSITION: SLUDGE: <input type="checkbox"/> SAND SMOTHERING: NONE SLIGHT MODERATE SEVERE SILT SMOTHERING: NONE SLIGHT MODERATE SEVERE OTHER: _____							
SUBSTRATE TYPE							
	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	10	11/1	3/1/08	SAND	6	11/1	
LEAF PACKS OF MATS	3	11/1	3/1/08	MUD/MUCK/SILT	75	11/1	
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	6	11/1	3/1/08	DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			
WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MGL):	COND. (UMHO/CM) OR SALINITY (PPT):	SECCHI (M):	
TOP							
MID-DEPTH	0.2	21.40	6.64	5.78	518	6	
BOTTOM							
SYSTEM TYPE: STREAM: 1 st -2 nd ORDER 3 rd -4 th ORDER 5 th -6 th ORDER 7 th ORDER OR GREATER LAKE: <input type="checkbox"/> WETLAND: <input type="checkbox"/> ESTUARY: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
WATER ODORS (CHECK BOX): NORMAL: <input checked="" type="checkbox"/> SEWAGE: <input type="checkbox"/> PETROLEUM: <input type="checkbox"/> CHEMICAL: <input type="checkbox"/> OTHER: <input type="checkbox"/>							
WATER SURFACE OILS (CHECK BOX): NONE: <input checked="" type="checkbox"/> SHEEN: <input type="checkbox"/> GLOSS: <input type="checkbox"/> SLICK: <input type="checkbox"/>							
CLARITY (CHECK BOX): CLEAR: <input checked="" type="checkbox"/> SLIGHTLY TURBID: <input type="checkbox"/> TURBID: <input type="checkbox"/> OPAQUE: <input type="checkbox"/>							
COLOR (CHECK BOX): TANNIC: <input type="checkbox"/> GREEN (ALGAE): <input type="checkbox"/> CLEAR: <input checked="" type="checkbox"/> OTHER: <input type="checkbox"/>							
WEATHER CONDITIONS/NOTES: <i>High 70's sunny</i>				ABUNDANCE: ABSENT RARE COMMON ABUNDANT			
				PERPHYTON <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				FISH <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>			
				AQUATIC MACROPHYTES <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				IRON/SULFUR BACTERIA <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
SAMPLING TEAM: Joceli Champion / Scott Rose				SIGNATURE: <i>Joceli Champion</i>		DATE: 3/6/08	

*Outfall
Moby
cond. 4/10/09*

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
 Length of grid represents 100 m of stream (not linear meters).
 (Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- Snags ~30
- Roots/undercut banks ~20
- Leaf Packs (or mats) ~10
- Macrophytes
- _____
- _____
- _____

Velocity:
 Note where velocity measures were taken.

Habitat Smothering:
 Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
 Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
 Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

$$\frac{1m}{2s} \quad \frac{1m}{3s}$$

$$\begin{array}{r} 90 \\ \times 3 \\ \hline 270m \end{array}$$

N 27° 52' 55.5"
 W 81° 57' 42.7"

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:		STORET STATION NUMBER:	DATE (mm/dd/yy): 3/6/08	RECEIVING BODY OF WATER: Alafia River
REMARKS:	COUNTY: Polk	LOCATION: Skinned Sapling Creek Downstream 002		FIELD ID/NAME: Test Site Mosaic Point 0-002

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 15	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 12	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 17	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 0.5, 0.33 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 6 ----- Primary Score 50	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 the habitats with sand or silt, pools <u>shallow, frequent sediment movement</u> 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 20	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-out banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 10 Left Bank 3	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60% -80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 4	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 5 Left Bank 10 ----- Secondary Score 62	Over 50% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

112 TOTAL SCORE

ANALYSIS DATE: 3/6/08	ANALYST: Jackie Champion	SIGNATURE: [Signature]
-----------------------	--------------------------	------------------------

Appendix H-1

Wet algal taxa list and number counted for qualitative natural periphyton collections made from Mosaic Fertilizer, LLC – Bartow Chemical Plant on 4/21/2008.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	170	243
Chlorophycota		
Chlorophyceae		
Chlorococcales		
<i>Actinastrum hantzschii</i>	-	3
<i>Ankistrodesmus falcatus</i>	-	8
<i>Chlorella</i> sp.	1	1
<i>Scenedesmus bijuga</i>	-	1
<i>Scenedesmus quadricauda</i>	-	7
<i>Selenastrum</i> sp.	-	4
Volvocales		
<i>Carteria</i> sp.	-	1
<i>Carteria cordiformis</i>	-	14
<i>Chlamydomonas</i> sp.	-	4
Zygnematales		
<i>Staurastrum</i> sp.	1	-
Cryptophycophyta		
Cryptophyceae		
Cryptomonadales		
<i>Cryptomonas</i> sp.	-	1
Cyanophycota		
Cyanophyceae		
Chroococcales		
<i>Aphanocapsa</i> sp.	-	1
<i>Merismopedia warmingiana</i>	-	4
Oscillatoriales		
<i>Jaaginema</i> sp.	101	-
<i>Planktolyngbya</i> sp.	19	1
<i>Planktothrix</i> sp.	3	-
<i>Planktothrix isothrix</i>	-	2
<i>Pseudanabaena</i> sp.	-	1
<i>Schizothrix calcicola</i>	5	-
Euglenophycota		
Euglenophyceae		
Euglenales		
<i>Trachelomonas</i> sp.	-	3
Pyrrophytophyta		
Dinophyceae		
Peridinales		
<i>Glenodinium</i> sp.	-	4

Appendix H-2

Diatom taxa list and number of valves counted for qualitative natural periphyton collections made from Mosaic Fertilizer, LLC – Bartow Chemical Plant discharge on 4/21/2008.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes		
Achnanthesaceae		
<i>Achnanthes</i> sp.	14	16
<i>Achnanthes clevei</i>	10	-
<i>Achnanthes exigua</i>	24	53
<i>Achnanthes hungarica</i>	-	4
<i>Achnanthes lanceolata</i>	13	-
<i>Achnanthes lanceolata apiculata</i>	13	-
<i>Achnanthes rupestoides</i>	29	-
<i>Planothidium</i> sp.	1	-
<i>Planothidium delicatulum</i>	6	1
Achnanthesidiaceae		
<i>Achnanthesidium minutissimum</i>	1	-
Undetermined Achnanthesidiaceae	2	4
Cocconeidaceae		
<i>Cocconeis fluviatilis</i>	51	6
<i>Cocconeis neodiminuta</i>	2	-
<i>Cocconeis placentula</i>	10	-
Bacillariales		
Bacillariaceae		
<i>Bacillaria paxillifer</i>	-	2
<i>Nitzschia</i> sp.	24	35
<i>Nitzschia acicularis</i>	1	-
<i>Nitzschia amphibia</i>	-	5
<i>Nitzschia clausii</i>	-	1
<i>Nitzschia frustulum</i>	-	1
<i>Nitzschia liebethuthii</i>	-	1
<i>Nitzschia linearis</i>	1	-
<i>Nitzschia lorenziana</i>	-	1
<i>Nitzschia nana</i>	-	7
<i>Nitzschia palea</i>	-	21
<i>Nitzschia subacicularis</i>	-	1
Cymbellales		
Cymbellaceae		
<i>Cymbella</i> sp.	-	6
<i>Encyonema minutum</i>	-	1
<i>Encyonopsis cesatii</i>	1	-
Undetermined Cymbellaceae	4	-
Gomphonemataceae		
<i>Gomphonema</i> sp.	22	5
<i>Gomphonema gracile</i>	-	1
<i>Gomphonema parvulum</i>	-	2

Appendix H-2 (continued)

	Control Site	Test Site
Eunotiales		
Eunotiaceae		
<i>Eunotia</i> sp.	40	23
<i>Eunotia bilunaris</i>	-	1
<i>Eunotia camelus</i>	-	2
<i>Eunotia formica</i>	1	3
<i>Eunotia incisa</i>	1	1
Naviculales		
Amphipleuraceae		
<i>Frustulia</i> sp.	-	1
<i>Frustulia vulgaris</i>	1	-
Diadesmidaceae		
<i>Diadesmis confervacea</i>	1	43
<i>Diadesmis contenta</i>	5	-
<i>Luticola mutica</i>	1	1
Diploneidaceae		
<i>Diploneis pseudovalis</i>	5	-
Naviculaceae		
<i>Geissleria decussis</i>	1	-
<i>Hippodonta</i> sp.	6	2
<i>Hippodonta capitata</i>	8	-
<i>Hippodonta hungarica</i>	2	1
<i>Navicula</i> sp.	40	13
<i>Navicula constans</i>	6	1
<i>Navicula cryptocephala</i>	9	-
<i>Navicula elginensis</i>	3	-
<i>Navicula exigua</i>	1	-
<i>Navicula germainii</i>	5	-
<i>Navicula longicephala</i>	1	-
<i>Navicula minima</i>	2	1
<i>Navicula pseudoscutiformis</i>	1	-
<i>Navicula radiosa</i>	13	-
<i>Navicula schroeteri</i>	4	-
<i>Navicula seminulum</i>	4	1
<i>Navicula symmetrica</i>	3	-
<i>Sellaphora pupula</i>	5	-
Undetermined Naviculaceae	24	24
Pinnulariaceae		
<i>Caloneis bacillum</i>	-	1
<i>Pinnularia</i> sp.	5	8
Pleurosigmataceae		
<i>Gyrosigma</i> sp.	1	-
Stauroneidaceae		
<i>Craticula</i> sp.	-	1
<i>Stauroneis</i> sp.	2	-
<i>Stauroneis phoenicenteron</i>	1	-
<i>Stauroneis smithii</i>	-	1
Rhopalodiales		
Rhopalodiaceae		
<i>Rhopalodia</i> sp.	1	2

Appendix H-2 (continued)

	Control Site	Test Site
Surirellales		
Surirellaceae		
<i>Surirella</i> sp.	1	1
Thalassiophysales		
Catenulaceae		
<i>Amphora</i> sp.	3	-
Coscinodiscophyceae		
Aulacoseirales		
Aulacoseiraceae		
<i>Aulacoseira</i> sp.	10	5
Biddulphiales		
Biddulphiaceae		
<i>Terpsinoe musica</i>	27	-
Melosirales		
Melosiraceae		
<i>Melosira</i> sp.	18	-
Thalassiosirales		
Stephanodiscaceae		
<i>Cyclostephanos invisitatus</i>	-	27
<i>Cyclotella</i> sp.	-	43
<i>Cyclotella atomus</i>	-	60
<i>Cyclotella meneghiniana</i>	4	41
<i>Cyclotella pseudostelligera</i>	8	-
Fragilariophyceae		
Fragilariales		
Fragilariaceae		
<i>Fragilaria capucina</i>	1	-
<i>Opephora</i> sp.	-	1
<i>Staurosira elliptica</i>	-	13
<i>Staurosirella pinnata</i>	1	-
<i>Synedra acus radians</i>	-	1
<i>Synedra parasitica</i>	1	3
Undetermined Fragilariaceae	4	-

Appendix I-1

Wet algal taxa list and density (number/mL) for phytoplankton collected from Mosaic Fertilizer, LLC – Bartow Chemical Plant on 4/21/2008.

	Control Site #counted	Test Site # counted
Bacillariophyta		
Bacillariophyta	37	20
Chlorophycota		
Chlorophyceae		
Chlorococcales		
<i>Actinastrum</i> sp.	-	3
<i>Ankistrodesmus</i> sp.	1	-
<i>Ankistrodesmus falcatus</i>	-	15
<i>Chlorella</i> sp.	9	14
<i>Chlorococcum</i> sp.	-	3
<i>Coelastrum microporum</i>	-	1
<i>Crucigenia rectangularis</i>	-	1
<i>Crucigenia tetrapedia</i>	1	1
<i>Nannochloris</i> sp.	5	-
<i>Oocystis</i> sp.	-	1
<i>Pediastrum duplex</i>	-	2
<i>Scenedesmus</i> sp.	-	5
<i>Scenedesmus arcuatus</i>	-	10
<i>Scenedesmus bicaudatus</i>	-	4
<i>Scenedesmus bijuga</i>	-	1
<i>Scenedesmus dimorphus</i>	-	1
<i>Scenedesmus quadricauda</i>	1	7
<i>Schroederia setigera</i>	-	1
<i>Selenastrum</i> sp.	6	9
Undetermined Chlorophyceae	4	-
Klebsormidiales		
<i>Elakatothrix viridis</i>	-	1
Volvocales		
<i>Chlamydomonas</i> sp.	1	99
<i>Eudorina elegans</i>	-	1
Chrysophyta		
Chrysophyceae		
Ochromonadales		
<i>Synura</i> sp.	-	10
Cryptophycophyta		
Cryptophyceae		
Cryptomonadales		
<i>Cryptomonas</i> sp.	-	6
Cyanophycota		
Cyanophyceae		
Chroococcales		
<i>Aphanocapsa</i> sp.	-	20
<i>Cyanobium plancticum</i>	1	-

Appendix I-1 (continued)

	Control Site #counted	Test Site # counted
<i>Merismopedia warmingiana</i>	-	5
<i>Rhabdogloea</i> sp.	-	33
<i>Synechocystis</i> sp.	7	-
Nostocales		
<i>Cylindrospermopsis raciborskii</i>	-	1
Oscillatoriales		
<i>Geitlerinema</i> sp.	2	-
<i>Jaaginema</i> sp.	28	-
<i>Planktolyngbya</i> sp.	7	-
<i>Planktothrix</i> sp.	1	5
<i>Romeria</i> sp.	-	1
Euglenophycota		
Euglenophyceae		
Euglenales		
<i>Euglena</i> sp.	-	1
<i>Lepocinclis</i> sp.	1	1
<i>Trachelomonas</i> sp.	5	1
Prasinophyta		
Prasinophyceae		
Pyramimonadales		
<i>Nephroselmis</i> sp.	-	4
Pyrrophytophyta		
Dinophyceae		
Peridinales		
<i>Glenodinium</i> sp.	-	11
<i>Peridinium</i> sp.	-	2

Appendix I-2

Diatom taxa list and number counted for phytoplankton collected from Mosaic Fertilizer, LLC – Bartow Chemical Plant on 4/21/2008.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes		
Achnanthesaceae		
<i>Achnanthes</i> sp.	32	27
<i>Achnanthes clevei</i>	4	-
<i>Achnanthes exigua</i>	31	35
<i>Achnanthes hungarica</i>	-	3
<i>Achnanthes lanceolata</i>	24	3
<i>Achnanthes lanceolata apiculata</i>	15	-
<i>Achnanthes rupestoides</i>	12	-
<i>Planothidium</i> sp.	10	1
<i>Planothidium delicatulum</i>	14	-
Achnanthesidiaceae		
<i>Achnanthesidium minutissimum</i>	2	1
Undetermined Achnanthesidiaceae	2	-
Cocconeidaceae		
<i>Cocconeis</i> sp.	1	-
<i>Cocconeis fluviatilis</i>	12	1
<i>Cocconeis placentula</i>	1	-
Bacillariales		
Bacillariaceae		
<i>Bacillaria paxillifer</i>	1	-
<i>Nitzschia</i> sp.	17	35
<i>Nitzschia amphibia</i>	-	3
<i>Nitzschia clausii</i>	2	-
<i>Nitzschia linearis</i>	-	1
<i>Nitzschia nana</i>	-	2
<i>Nitzschia palea</i>	7	8
<i>Nitzschia reversa</i>	1	-
<i>Tryblionella</i> sp.	1	-
Cymbellales		
Gomphonemataceae		
<i>Gomphonema</i> sp.	5	-
Eunotiales		
Eunotiaceae		
<i>Eunotia</i> sp.	2	3
<i>Eunotia incisa</i>	1	-
Naviculales		
Amphipleuraceae		
<i>Frustulia</i> sp.	-	1
<i>Frustulia saxonica</i>	1	-

Appendix I-2 (continued)

	Control Site	Test Site
Diadesmidaceae		
<i>Diadesmis confervacea</i>	2	17
<i>Diadesmis contenta</i>	18	-
<i>Luticola</i> sp.	-	2
<i>Diploneis</i> sp.	4	-
<i>Diploneis pseudovalis</i>	10	-
Naviculaceae		
<i>Fallacia pygmaea</i>	1	-
<i>Geissleria</i> sp.	6	-
<i>Hippodonta capitata</i>	24	-
<i>Hippodonta hungarica</i>	2	1
<i>Hippodonta</i> sp.	21	-
<i>Navicula cocconeiformis</i>	4	-
<i>Navicula constans</i>	10	-
<i>Navicula cryptocephala</i>	1	2
<i>Navicula elginensis</i>	3	-
<i>Navicula germainii</i>	4	-
<i>Navicula minima</i>	6	7
<i>Navicula porifera</i>	4	-
<i>Navicula seminulum</i>	2	11
<i>Navicula</i> sp.	113	17
Undetermined Naviculaceae	1	-
Neidiaceae		
<i>Neidium</i> sp.	2	-
Pinnulariaceae		
<i>Pinnularia</i> sp.	12	12
Sellaphoraceae		
<i>Sellaphora</i> sp.	1	-
<i>Sellaphora pupula</i>	3	2
Stauroneidaceae		
<i>Craticula</i> sp.	9	1
<i>Stauroneis phoenicenteron</i>	1	-
Surirellales		
Surirellaceae		
<i>Surirella</i> sp.	-	1
Thalassiophysales		
Catenulaceae		
<i>Amphora</i> sp.	4	-
Coscinodiscophyceae		
Aulacoseirales		
Aulacoseiraceae		
<i>Aulacoseira</i> sp.	2	-
Thalassiosirales		
Stephanodiscaceae		
<i>Cyclostephanos invisitatus</i>	1	31
<i>Cyclotella</i> sp.	1	73
<i>Cyclotella atomus</i>	1	63

Appendix I-2 (continued)

	Control Site	Test Site
<i>Cyclotella meneghiniana</i>	7	103
<i>Cyclotella pseudostelligera</i>	15	1
Fragilariophyceae		
Fragilariales		
Fragilariaceae		
<i>Fragilaria capucina</i>	1	-
<i>Staurosira elliptica</i>	1	17
<i>Staurosirella pinnata</i>	-	6
Undetermined Fragilariaceae	6	10

Appendix J-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m² rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Mosaic Fertilizer, LLC – Bartow Chemical Plant and collected on 4/21/2008. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Haplotaenidae		
<i>Dero digitata</i> complex	-	12
<i>Limnodrilus hoffmeisteri</i>	8	-
<i>Slavina appendiculata</i>	3	-
<i>Stephensoniana trivandranana</i>	-	6
Arthropoda		
Crustacea		
Isopoda		
<i>Caecidotea</i> sp.	3	344
<i>Hyalella azteca</i>	37	-
<i>Lirceus</i> sp.	5	-
Insecta		
Coleoptera		
<i>Dineutus</i> sp.	-	13
<i>Dubiraphia vittata</i>	5	11
<i>Microcylloepus pusillus</i>	21	5
<i>Prionocyphon</i> sp.	-	5
<i>Stenelmis</i> sp.	5	-
Diptera		
<i>Ablabesmyia mallochi</i>	81	-
<i>Ablabesmyia rhamphe</i> grp.	-	80
<i>Chironomus</i> sp.	-	8
<i>Cladotanytarsus cf. daviesi</i>	12	-
<i>Corynoneura</i> sp.	9	-
<i>Cricotopus bicinctus</i>	-	19
<i>Dicrotendipes modestus</i>	-	11
<i>Glyptotendipes</i> sp.	-	11
<i>Hemerodromia</i> sp.	13	3
<i>Labrundinia pilosella</i>	-	50
<i>Larsia decolorata</i>	-	8
<i>Nanocladius</i> sp.	-	80
<i>Parachironomus carinatus</i>	-	118
<i>Paratanytarsus</i> sp.	-	8
<i>Pentaneura inconspicua</i>	6	662
<i>Polypedilum beckae</i>	-	264
<i>Polypedilum fallax</i>	64	-
<i>Polypedilum flavum</i>	120	495
<i>Polypedilum illinoense</i> grp.	-	140
<i>Polypedilum scalaenum</i> grp.	35	-
<i>Rheocricotopus robacki</i>	3	-

Appendix J-1 (continued)

	Control Site	Test Site
<i>Rheotanytarsus exiguus</i> grp.	29	854
<i>Rheotanytarsus pellucidus</i>	-	38
<i>Stenochironomus</i> sp.	-	8
<i>Stictochironomus</i> sp.	3	-
<i>Tanytarsus</i> sp. A Epler	12	-
<i>Tanytarsus</i> sp. C Epler	23	-
<i>Tanytarsus</i> sp. L Epler	3	-
<i>Tanytarsus</i> sp. U Epler	3	-
<i>Thienemanniella</i> sp.	6	-
<i>Thienemanniella xena</i>	-	22
<i>Tribelos fuscicornis</i>	3	80
Ephemeroptera		
<i>Acerpenna pygmaea</i>	11	-
<i>Caenis</i> sp.	-	8
<i>Maccaffertium exiguum</i>	39	-
<i>Stenacron</i> sp.	6	-
Megaloptera		
<i>Corydalus cornutus</i>	-	5
Odonata		
<i>Argia</i> sp.	5	-
<i>Argia fumipennis</i>	-	7
<i>Argia sedula</i>	-	7
<i>Enallagma coecum</i>	-	13
<i>Macromia</i> sp.	-	3
Trichoptera		
<i>Cernotina</i> sp.	21	-
<i>Cheumatopsyche</i> sp.	16	8,999
<i>Cyrnellus fraternus</i>	-	62
Mollusca		
Bivalvia		
Undetermined Sphaeriidae	3	3
Gastropoda		
<i>Laevapex</i> sp.	-	47
<i>Physa</i> sp.	-	26
<i>Notogillia wetherbyi</i>	-	9
<i>Pyrgophorus platyrachis</i>	-	12

Appendix J-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Mosaic Fertilizer, LLC – Bartow Chemical Plant for 28 days and collected on 4/21/2008.

	Control Site	Test Site
Annelida		
Oligochaeta		
<i>Dero digitata</i> complex	-	2
<i>Limnodrilus hoffmeisteri</i>	1	-
<i>Slavina appendiculata</i>	-	4
<i>Stephensoniana trivandrana</i>	1	-
Undetermined Naididae	-	1
Undetermined Tubificidae	2	-
Arthropoda		
Crustacea		
Amphipoda		
<i>Hyalella azteca</i>	1	130
Isopoda		
<i>Caecidotea</i> sp.	14	-
<i>Lirceus</i> sp.	2	-
Insecta		
Coleoptera		
<i>Dineutus</i> sp.	-	5
<i>Dubiraphia vittata</i>	2	4
<i>Microcyloepus pusillus</i>	8	2
<i>Prionocyphon</i> sp.	-	2
<i>Stenelmis</i> sp.	2	-
Diptera		
<i>Ablabesmyia mallochi</i>	28	-
<i>Ablabesmyia rhamphe</i> grp.	-	29
<i>Chironomus</i> sp.	13	42
<i>Cladotanytarsus cf. daviesi</i>	-	3
<i>Corynoneura</i> sp.	4	-
<i>Cricotopus bicinctus</i>	3	-
<i>Dicrotendipes modestus</i>	-	7
<i>Glyptotendipes</i> sp.	-	4
<i>Hemerodromia</i> sp.	-	4
<i>Labrundinia pilosella</i>	5	1
<i>Larsia decolorata</i>	-	18
<i>Nanocladius</i> sp.	-	3
<i>Parachironomus carinatus</i>	-	29
<i>Parachironomus</i> sp.	-	8
<i>Paratanytarsus</i> sp.	-	35
<i>Pentaneura inconspicua</i>	-	3
<i>Polypedilum beckae</i>	2	241
<i>Polypedilum fallax</i>	1	-
<i>Polypedilum flavum</i>	-	96
<i>Polypedilum illinoense</i> grp.	22	-

Appendix J-2 (continued)

	Control Site	Test Site
<i>Polypedilum scalaenum</i> grp.	41	180
<i>Polypedilum</i> sp.	-	51
<i>Rheocricotopus robacki</i>	12	-
<i>Rheotanytarsus exiguus</i> grp.	1	-
<i>Rheotanytarsus pellucidus</i>	10	311
<i>Stenochironomus</i> sp.	-	14
<i>Stictochironomus</i> sp.	-	3
<i>Tanytarsus</i> sp. A Epler	1	-
<i>Tanytarsus</i> sp. C Epler	4	-
<i>Tanytarsus</i> sp. L Epler	8	-
<i>Tanytarsus</i> sp. U Epler	1	-
<i>Thienemanniella</i> sp.	1	-
<i>Thienemanniella xena</i>	2	4
<i>Tribelos fuscicornis</i>	-	4
Undetermined Chironomidae	1	29
Ephemeroptera		
<i>Acerpenna pygmaea</i>	4	-
<i>Caenis</i> sp.	-	3
<i>Maccaffertium exiguum</i>	3	-
<i>Maccaffertium</i> sp.	7	-
<i>Stenacron</i> sp.	5	-
Undetermined Heptageniidae	2	-
Megaloptera		
<i>Corydalus cornutus</i>	-	2
Odonata		
<i>Argia fumipennis</i>	2	3
<i>Argia sedula</i>	-	1
<i>Argia</i> sp.	-	1
<i>Enallagma coecum</i>	-	4
<i>Enallagma</i> sp.	-	1
<i>Macromia</i> sp.	-	1
Trichoptera		
<i>Cernotina</i> sp.	8	-
<i>Cheumatopsyche</i> sp.	6	2,763
<i>Cyrnellus fraternus</i>	-	23
Undetermined Hydropsychidae	-	576
Undetermined Trichoptera	-	63
Mollusca		
Bivalvia		
Undetermined Sphaeriidae	1	1
Gastropoda		
<i>Laevapex</i> sp.	-	9
<i>Notogillia wetherbyi</i>	-	7
<i>Physa</i> sp.	-	9
<i>Pyrgophorus platyrachis</i>	-	3
Undetermined Ancyliidae	-	3
Undetermined Gastropoda	-	4

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Mosaic Fertilizer, LLC – Bartow Chemical Plant on 4/21/2008. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site Rep 1	Control Site Rep 2	Test Site Rep 1	Test Site Rep 2
Annelida				
Oligochaeta				
Haplotaxida				
<i>Aulodrilus pigueti</i>	-	-	1	-
<i>Bratislavia unidentata</i>	-	-	1	4
<i>Dero digitata</i> complex	-	-	7	3
<i>Nais communis</i> complex	-	-	2	3
<i>Slavina appendiculata</i>	-	-	-	2
Undetermined Tubificidae	-	-	-	2
Lumbriculida				
<i>Eclipidrilus palustris</i>	-	1	-	-
Undetermined Lumbriculidae	1	-	-	-
Arthropoda				
Arachnida				
Acariformes				
<i>Limnesia</i> sp.	1	-	-	-
Crustacea				
Amphipoda				
<i>Hyalella azteca</i>	1	3	9	11
Decapoda				
Undetermined Cambaridae	1	2	-	-
Isopoda				
<i>Caecidotea</i> sp.	14	15	-	-
Insecta				
Coleoptera				
<i>Dubiraphia vittata</i>	2	6	2	1
<i>Microcylloepus pusillus</i>	-	-	-	1
<i>Ora/scirtes</i> sp.	29	47	-	-
<i>Stenelmis</i> sp.	-	-	3	-
Undetermined Hydrophilidae	-	-	-	2
Undetermined Scirtidae	-	1	-	-
Diptera				
<i>Ablabesmyia mallochi</i>	-	1	-	-
<i>Corynoneura</i> sp.	-	-	-	1
<i>Cricotopus bicinctus</i>	-	-	2	-
<i>Hemerodromia</i> sp.	-	2	-	-
<i>Labrundinia pilosella</i>	-	-	2	-
<i>Nanocladius</i> sp.	-	-	1	1
<i>Parachironomus carinatus</i>	-	-	1	-
<i>Parachironomus frequens</i>	-	-	-	1
<i>Parachironomus</i> sp.	-	-	-	2
<i>Paracladopelma nereis</i>	2	-	-	-
<i>Pentaneura inconspicua</i>	1	-	3	1

Appendix K-1 (continued)

	Control Site Rep 1	Control Site Rep 2	Test Site Rep 1	Test Site Rep 2
<i>Polypedilum flavum</i>	5	5	3	2
<i>Polypedilum illinoense</i> grp.	-	-	7	12
<i>Rheotanytarsus exiguus</i> grp.	11	7	26	39
<i>Simulium</i> sp.	22	22	-	-
<i>Stenochironomus</i> sp.	1	-	1	-
<i>Tanytarsus</i> sp. C Epler	1	-	-	-
<i>Xenochironomus xenolabis</i>	-	1	-	-
Ephemeroptera				
<i>Baetis intercalaris</i>	2	1	-	-
<i>Caenis</i> sp.	1	1	-	-
<i>Pseudocloeon</i> sp.	-	1	-	-
Undetermined Heptageniidae	4	3	-	-
Lepidoptera				
<i>Parapoynx</i> sp.	1	-	-	-
Odonata				
<i>Argia</i> sp.	5	3	-	2
<i>Enallagma coecum</i>	-	-	3	-
Undetermined Libellulidae	1	-	-	-
Trichoptera				
<i>Cheumatopsyche</i> sp.	23	19	66	54
<i>Chimarra</i> sp.	1	-	-	-
<i>Neotrichia</i> sp.	4	2	-	-
<i>Orthotrichia</i> sp.	-	-	-	1
<i>Triaenodes</i> sp.	1	2	-	-
Mollusca				
Bivalvia				
<i>Corbicula fluminea</i>	9	3	-	-
Undetermined Sphaeriidae	1	-	7	7
Gastropoda				
Undetermined Ancyliidae	-	1	1	-
Undetermined Hydrobiidae	-	-	2	-

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Mosaic Fertilizer, LLC – Bartow Chemical Plant on 4/21/2008.

	Control Site Rep 1	Control Site Rep 2	Test Site Rep 1	Test Site Rep 2
Annelida				
Oligochaeta				
<i>Aulodrilus pigueti</i>	-	-	1	-
<i>Bratislavia unidentata</i>	-	-	1	4
<i>Dero digitata</i> complex	-	-	7	3
<i>Nais communis</i> complex	-	-	2	3
<i>Slavina appendiculata</i>	-	-	-	2
Undetermined Tubificidae	-	-	-	2
Lumbriculida				
<i>Eclipidrilus palustris</i>	-	1	-	-
Undetermined Lumbriculidae	1	-	-	-
Arthropoda				
Arachnida				
Acariformes				
<i>Limnesia</i> sp.	1	-	-	-
Crustacea				
Amphipoda				
<i>Hyalella azteca</i>	1	3	9	11
Decapoda				
Undetermined Cambaridae	1	2	-	-
Isopoda				
<i>Caecidotea</i> sp.	14	15	-	-
Insecta				
Coleoptera				
<i>Dubiraphia vittata</i>	2	6	2	1
<i>Microcylloepus pusillus</i>	-	-	-	1
<i>Ora/scirtes</i> sp.	29	47	-	-
<i>Stenelmis</i> sp.	-	-	2	-
Undetermined Hydrophilidae	-	-	1	2
Undetermined Scirtidae	-	1	-	-
Diptera				
<i>Ablabesmyia mallochi</i>	-	1	-	-
<i>Corynoneura</i> sp.	-	3	3	3
<i>Cricotopus bicinctus</i>	-	-	-	1
<i>Hemerodromia</i> sp.	-	-	2	-
<i>Labrundinia pilosella</i>	-	2	-	-
<i>Nanocladius</i> sp.	-	-	2	-
<i>Parachironomus</i> sp.	-	-	1	1
<i>Parachironomus carinatus</i>	-	-	1	-
<i>Parachironomus frequens</i>	-	-	-	1
<i>Paracladopelma nereis</i>	-	-	-	2
<i>Pentaneura inconspicua</i>	2	-	-	-

Appendix K-2 (continued)

	Control Site Rep 1	Control Site Rep 2	Test Site Rep 1	Test Site Rep 2
<i>Polypedilum flavum</i>	1	-	3	1
<i>Polypedilum illinoense</i> grp.	5	4	3	2
<i>Rheotanytarsus exiguus</i> grp.	-	-	7	11
<i>Simulium</i> sp.	11	5	23	37
<i>Stenochironomus</i> sp.	22	22	-	-
<i>Tanytarsus</i> sp. C Epler	1	-	1	-
<i>Xenochironomus xenolabis</i>	-	1	-	-
Undetermined Chironomidae	1	-	-	-
Ephemeroptera				
<i>Baetis intercalaris</i>	2	1	-	-
<i>Caenis</i> sp.	1	1	-	-
<i>Pseudocloeon</i> sp.	1	1	-	-
Undetermined Baetidae	-	1	-	-
Undetermined Heptageniidae	3	2	-	-
Lepidoptera				
<i>Parapoynx</i> sp.	1	-	-	-
Odonata				
<i>Argia</i> sp.	3	3	-	1
<i>Enallagma coecum</i>	2	-	2	1
Undetermined Coenagrionidae	-	-	1	-
Undetermined Libellulidae	1	-	-	-
Trichoptera				
<i>Cheumatopsyche</i> sp.	21	19	62	42
<i>Chimarra</i> sp.	1	-	-	-
<i>Neotrichia</i> sp.	-	-	2	12
<i>Orthotrichia</i> sp.	4	2	-	-
<i>Triaenodes</i> sp.	-	-	-	1
Undetermined Trichoptera	1	2	-	-
Undetermined Hydropsychidae	2	-	2	-
Mollusca				
Bivalvia				
Undetermined Bivalvia	1	2	-	3
<i>Corbicula fluminea</i>	8	1	-	-
Undetermined Sphaeriidae(mollusc)	1	-	7	4
Gastropoda				
Undetermined Ancyliidae	-	1	1	-
Undetermined Hydrobiidae	-	-	2	-

