

Biological Assessment of

Orlando – Iron Bridge Regional Water Reclamation Facility

Seminole County

NPDES #FL0037966

Sampled March 13, 2006

September 2006

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection
Fifth Year Inspection Summary

Discharger:	Orlando – Iron Bridge Regional Water Reclamation Facility
Physical Address:	601 Iron Bridge Circle, Oviedo, Florida 32765
County:	Seminole
NPDES Number:	FL00037966
Permit Expiration:	April 22, 2008

Toxics Sampling Inspection **(XSI)**

Date Sampled: March 13, 2006

Results: The effluent metals copper, iron, and zinc were detected at levels that complied with Class III Surface Water Quality Criteria. The metals aluminum, lead, and nickel were found in the effluent at levels above the method detection limit (MDL) and below the practical quantitation limit (PQL). The organic pollutants atrazine (0.7 mg/L) and chloroform (39 mg/L) were present in the effluent sample at levels below toxic concentrations (USEPA-ECOTOX Database 2006). Dichlorobromomethane (1.4 mg/L) was detected in the effluent sample below the permit limit (22 mg/L) and bromodichloromethane (5.6 mg/L) was detected below the EPA Maximum Contaminant Level of 100 mg/L.. Oil and grease were detected in the effluent (11 mg/L) at a level above the Class III Surface Water Quality Criterion ($\leq$ 5.0 mg/L, 62-302.530 (50a), F.A.C.).

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: March 13-17, 2006

Results: The effluent samples were not chronically toxic to the fish, *Pimephales promelas*; however, there was an observed effect to the water flea, *Ceriodaphnia dubia,* during 7-day chronic screening toxicity bioassays. This constitutes an exceedance of 62-302.530 (62), F.A.C., and the facility's permit limit. The concentrations of atrazine and chloroform in the effluent sample, although not above toxic levels, in combination with bromodichloromethane and dichlorobromomethane may have contributed to the observed toxicity.

Water Quality Inspection **(WQI)**

Date Sampled: March 13, 2006

Results: Fecal coliforms in the effluent sample (6 counts/100 ml) complied with Class III Surface Water Quality Criteria and facility permit limits. The effluent total nitrogen concentration was 2.4 mg/L. Effluent total phosphorus (0.71 mg/L), ortho-phosphate (0.56 mg/L), and total ammonia concentrations (0.13 mg/L) appeared to contribute to elevated levels of these nutrients in the Test Site sample. Ortho-phosphate and total phosphorus were an order of magnitude higher in the Test Site samples (0.38 and 0.57 mg/L, respectively) compared to the Control Site samples (0.04 mg/L and 0.064 mg/L, respectively). Test Site levels of these nutrients ranked in the 80th percentile of typical values for Florida streams compared to the 30th percentile for Control Site levels. Total Kjeldahl nitrogen, organic nitrogen, and total nitrogen were over twice as high in the Test Site sample compared to the Control Site sample. The effluent AGP value was 74.9 mg dry wt/L. The AGP values in the Control (11.1 mg dry wt/L) and Test Site samples (55.6 mg dry wt/L) exceeded the 5 mg dry wt/L "problem" threshold.

Impact Bioassessment Inspection **(IBI)**

Date Sampled: March 13, 2006

Results: The Control Site SCI score of 31 placed it in the “Poor” category and the Test Site SCI score of 7 placed it in the “Very Poor” category. The most noticeable differences between the two sites were a decrease in total taxa, an increase in the dominant taxon and a loss of Tanytarsini taxa in the Test Site sample compared to the Control Site sample.

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 Orlando-Iron Bridge Regional Water Reclamation Facility is located in Seminole County, Florida (Appendix A). This facility is a 5-stage Bardenpho advanced wastewater treatment facility consisting of a pretreatment system, anaerobic basins, anoxic basins, oxidation ditch, secondary anoxic basins, reaeration basins, secondary clarifiers, tertiary filters, chemical feed facilities, disinfection, dechlorination, and post aeration. The facility is permitted to discharge 28.0 MGD annual average daily flow (AADF) to the Little Econlockhatchee River (Class III fresh waters) via a concrete-lined channel (outfall D-001) after chlorination, dechlorination and post aeration. Outfall D001 is located in a discharge canal approximately 204 meters in length and discharges 0.8 meters above the surface of the Econlockhatchee River (see Facility Summary in Appendix B). The average daily discharge for March 2005 through March 2006 was 8.2 MGD, and the flow was 10.1 MGD on March 13, 2006, the day of sampling (D. Smicherko, Pers. Comm.). Effluent that is not discharged through D-001 flows to the 1640 acre wetland treatment system. The wetlands treatment system discharges through two outfalls, D00-2 and D00-3 (also referred to as R00-1 and R00-2 in the Facility Summary), and into a wetland prior to entering the St. Johns River. Residuals are thickened and dewatered, stabilized with the addition of lime, and then land-applied. Flow from the wetland was 16.9 MGD during the previous year.

Surface Water Quality Criteria and facility permit limits are listed in Table 1. According to the facility's monthly discharge monitoring reports, the plant exceeded the residual chlorine limit (0.01 mg/L) in August 2005 (0.26 mg/L), the total phosphorus limit (1.88 mg/L) in September and November 2005 (2.55 and 2.45 mg/L, respectively), the total suspended solids limit (30 mg/L) in September and November 2005 (37.0 and 48.8 mg/L, respectively) and the pH maximum limit (8.5 S.U.) in March 2006 (8.7 S.U., 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 the Little Econlockhatchee River approximately 100 meters upstream of the discharge channel) and a Test Site (located in the Little Econlockhatchee River approximately 100 meters downstream of the discharge). 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: Phil Kane, David Smicherko and Steve Kent (FDEP Central District), 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 (Wayne Magley, Shannan Bogdanov, and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix E. Effluent metals complied with Class III Surface Water Quality Criteria (62-302.530, F.A.C.) and facility permit limits. The effluent metals copper, iron, and zinc were detected at levels that complied with Class III Surface Water Quality Criteria. Effluent zinc (39 µg/L) and copper (2.47 µg/L) appear to have caused an elevation in the Test Site sample (32 µg/L) compared to the Control Site sample where it was undetected (Table 1). The metals aluminum, lead, and nickel were found in the effluent at levels above the method detection limit (MDL) and below the practical quantitation limit (PQL). The organic pollutants atrazine (0.7 µg/L) and chloroform (39 µg/L) were present in the effluent sample at levels below toxic concentrations (USEPA-ECOTOX Database 2006). Dichlorobromomethane (1.4 µg/L) was detected in the effluent sample below the permit limit (22 µg/L) and bromodichloromethane (5.6 µg/L) was detected below the EPA Maximum Contaminant Level of 100 µg/L.
- Effluent conductivity, pH, and dissolved oxygen complied with Class III Surface Water Quality Criteria (62-302, F.A.C.) and facility permit limits. Dissolved oxygen, pH and conductivity at the Control and Test Sites complied with Class III Surface Water Quality Criteria (Table 1, 62-302.530 F.A.C.). Temperature and conductivity were elevated at the Test Site (17.1°C and 333 µmhos/cm) compared to the Control Site (14.4°C and 202 µmhos/cm), these increases appear to be a result of the addition of the effluent (24.9 °C and 610 µmhos/cm).
- Oil and grease were detected in the effluent (11 mg/L) at a level above the Class III Surface Water Quality Criterion (≤ 5.0 mg/L, 62-302.530 (50a), F.A.C.).
- The effluent sample was not chronically toxic to the fish, *Pimephales promelas*; however, there was an observed effect to the water flea, *Ceriodaphnia dubia*, during 7-day chronic screening toxicity bioassays (See Table 1 for percent mortality,

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

Orlando-Iron Bridge WWTP	Class III Stds	Effluent Limits	Effluent	Control Site	Test Site
Organic Constituents (µg/L)					
Atrazine	-	-	0.7	-	-
Bromodichloromethane	-	-	5.6	-	-
Chloroform	-	-	39	-	-
Dichlorobromomethane	-	≤ 22 a	1.4	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	17 I	84	36
Arsenic	≤ 50	-	0.5 U	0.69 I	0.5 U
Beryllium	≤ 0.13 b	Report	0.03 U	0.03 U	0.03 U
Cadmium	≤ 1.45 b	-	0.05 U	0.089 I	0.05 U
Calcium (mg/L)	-	-	41	26.1	38
Chromium-III	≤ 111.51 b	-	2 U	2 U	2 U
Copper	≤ 12.21 b	-	2.47	1.43	2.27
Iron	≤ 1000	-	56	263	106
Lead	≤ 4.75 b	Report	0.27 I	0.32	0.35
Magnesium (mg/L)	-	-	8.4	2.6	7.3
Nickel	≤ 68.07 b	-	1.8 I	1.3 I	1.5 I
Selenium	≤ 5	-	0.5 U	0.5 U	0.5 U
Silver	≤ 0.07 a	0.07 a	0.076 U	0.025 U	0.076 U
Zinc	≤ 156.41 b	-	39	3 U	32
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.56	0.04	0.38
Total Phosphorus	-	≤ 1.88	0.71 A	0.064	0.57
Ammonia	-	-	0.13	0.035	0.07
Unionized Ammonia	≤ 0.02	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate+Nitrite	-	-	1.2 A	0.078 A	0.71
Total Kjeldahl Nitrogen	-	≤ 4.28	1.2 A	0.43	1
Organic Nitrogen	-	-	1.07 c	0.4 c	0.93 c
Total Nitrogen	-	≤ 6.16	2.4 c	0.51 c	1.71 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	120	114
Conductivity (µmhos/cm)	< 1,275	-	610	202	333
Dissolved Oxygen (mg/L)	≥ 5.0	6.1-7.0 d	7.44	8	8.4
Temperature (C)	-	Report	24.9	14.4	17.1
pH (S.U.)	6.0 - 8.5	6.0-8.5	7.34	7.1	7.2
BOD, 5 day (mg/L)	-	-	1.5 I	0.2 U	1.3 I
CBOD, 5 day - Inhib (mg/L)	-	≤ 8.56	0.62 AI	0.2 U	1.3 I
Flow (MGD)	-	28	17.9	-	-
Hardness (mg/L)	-	Report	137 c	-	-
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	-	-	-
TSS (mg/L)	-	≤ 34.4	4 U	4 U	4 U
Turbidity (NTU)	≤ 30.06 t	-	1	1.6	1.2
Color (PCU)	-	-	20	-	-
Oil and Grease (mg/L)	≤ 5.0	-	11	-	-
Chlorophyll a (µg/L)	-	-	0.85 U	0.85 U	0.85 U
Phaeophytin (µg/L)	-	-	-	1.5 U	1.5 U
Microbiology (# counts/100ml)					
Fecal Coliforms-Membrane Filter	≤ 800 s	≤ 800 s	6 *	-	-
Total Coliforms-Membrane Filter	≤ 2400 s	-	-	-	-
Toxicology Bioassays (7-Day chronic screening toxicity test, NOEC)					
Ceriodaphnia dubia	-	100%	< 100% K	-	-
Pimephales promeles	-	100%	> 100%	-	-

Value exceeds the Class III Water Quality Criteria

* Analysis conducted at the FDEP Central District Lab

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.

K - Actual value known to be less than value given

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

a - Annual average

b - Value is calculated based on hardness

c - Value is calculated

d - Daily average

s - Single sample

t - Shall not exceed 29 NTUs above background

NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit

Appendix F for bioassay bench sheets, and Appendix G for supporting standard reference toxicant data). This constitutes an exceedance of 62-302 (62), F.A.C. and the facility's permit limits. Although the concentrations of atrazine and chloroform in the effluent sample were below the known toxic levels for *Ceriodaphnia dubia* (LC50 for atrazine is 300 µg/L and 290 µg/L for chloroform), in combination with bromodichloromethane and dichlorobromomethane, they likely contributed to the observed toxicity.

- Fecal coliforms in the effluent sample (6 counts/100 ml) complied with Class III Surface Water Quality Criteria and facility permit limits (See Table 1 for results and Appendix F for the lab report).

- The effluent total nitrogen concentration was 2.4 mg/L (Table 1). Effluent total phosphorus (0.71 mg/L), ortho-phosphate (0.56 mg/L), and total ammonia concentrations (0.13 mg/L) appeared to contribute to elevated levels of these nutrients in the Test Site sample (Table 1). Ortho-phosphate and total phosphorus were an order of magnitude higher in the Test Site sample (0.38 and 0.57 mg/L, respectively) than in the Control Site sample (0.04 mg/L and 0.064 mg/L, respectively). Test Site levels of these nutrients ranked in the 80th percentile of typical values for Florida streams compared to the 30th percentile for Control Site levels (Appendix H). Total Kjeldahl nitrogen, organic nitrogen, and total nitrogen were over twice as high in the Test Site sample compared to the Control Site sample (Table 1).

- 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 wt/L represent a "problem" threshold for fresh receiving waters, implying

Table 2. Measured and predicted algal growth potential (AGP) for total nitrogen, and total phosphorus (TP) limitation of the freshwater species Pseudokirchneriella subcapitata.

Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent Samples	74.9	2.4	3.4
Control Site	11.1 A	2.82	7.94
Test Site	55.6	2.05	3

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

nutrient enrichment. The effluent AGP value was 74.9 mg dry wt/L. The AGP values in the Control (11.1 mg dry wt/L) and Test Site samples (55.6 mg dry wt/L) were above the "problem" threshold (Table 2) suggesting that the Orlando Iron Bridge WRF is contributing additional nutrient enrichment to the Little Econlockhatchee River. There was no evidence of growth inhibition in AGP data (Table 2).

- Chlorophyll-*a* was not detected in water samples from the Control and Test Sites (Table 1). We note that nutrients in the water column may or may not fuel algal production immediately, depending upon the sum of environmental conditions that limit algal growth at the site (e.g. pH, shading, turbidity). Thus it is not necessarily contradictory for ambient nutrient levels to be high and for no chlorophyll to be detected in water samples. Algal community composition samples were not collected as part of this study.
- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Table 3 and in Appendix J. The Control Site SCI score of 31 placed it in the "Poor" category and the Test Site SCI score of 7 placed it in the "Very Poor" category. The most noticeable differences between the two sites were fewer total taxa (Test Site = 20, Control Site = 30), an increase in the dominant taxon (22.9% at the Control Site vs. 49.5% at the Test Site) and a loss of Tanytarsini taxa at the Test Site (0%) compared to the Control Site (6.7%). Habitat assessment scores were 120 at the Control Site and 114 at the Test Site, with substrate diversity, substrate availability, and habitat smothering scoring lower at the Test Site (Table 1, data sheets in Appendix I).
- Low water levels at the time of deployment prohibited the use of quantitative Hester-Dendy samplers in this study (P. Kane, Pers. Comm.).

Summary

Both DMR and FDEP data from this inspection suggest that high levels of nutrients in the effluent, especially ortho-phosphate and total phosphorus, are contributing to elevated levels in the Little Econlockhatchee River. Elevated nutrients in the receiving waters are reflected in AGP values above the "problem" threshold at both the Control and Test Sites with a five-fold increase at the Test Site compared to the Control Site.

Oil and grease measured in the effluent exceeded the Class III Surface Water Quality Criterion (62-302.530 (50a) F.A.C.). Several organic priority pollutants, although not above toxic levels, were detected in the effluent sample and may have contributed to the toxicity to *Ceriodaphnia dubia* in the 7-day chronic screening bioassays, an exceedance of the facility's permit and Class III Surface Water Quality Criterion (62-302.530 (62), F.A.C.). Additional monitoring for nutrients, organic priority pollutants, and toxicity is warranted based on these results.

Literature Cited

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Table 3. Macroinvertebrate Dipnet Samples - Qualitative

Iron Bridge WWTP	Control Site	Test Site
Stream Condition Index (value)	31	7
Stream Condition Index (word)	Poor	Very Poor
Stream Condition Index Metrics		
Number of Total Taxa	30	20
Number of Ephemeroptera Taxa	0	0
Number of Trichoptera Taxa	1	0
Number of Clinger Taxa	2	1
Number of Long-lived Taxa	2.0	1.0
Number of Sensitive Taxa	0.0	0.0
Percent of Dominant Taxon	22.9	49.5
Percent Suspension Feeders and Filterers	6.19	0.92
Percent of Tanytarsini individuals	6.7	0
Percent of Very Tolerant individuals	49.52	63.3
Total Number of Individuals	105	109
Community Composition: Percent of total		
Dominant Taxon (name)	*Pyrgophorus platyrachis*	*Polypedilum illinoense grp.*
Dominant Taxon (group)	Gastropoda	Diptera
Amphipoda	4.8	9.2
Bivalvia	1.9	0.0
Coleoptera	8.6	6.4
Decapoda	1.9	1.8
Diptera	36.9	61.5
Ephemeroptera	0.0	0.0
Gastropoda	35.2	12.8
Heteroptera	0.0	1.8
Lepidoptera	2.9	0.0
Odonata	4.0	2.8
Plecoptera	0.0	0.0
Trichoptera	1.9	0.0
Turbellaria	0.0	1.8
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0.0	0.0
Predators	11.4	7.8
Surface Deposit Feeders	23.3	38.1
Suspension Feeders and Filterers	6.2	0.9
Scrapers	38.6	13.8
Shredders	18.6	34.9
Unknown	0.0	1.8

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Table 4a. Stream Condition Index Metrics - Peninsula Bioregion

Iron Bridge WWTP-Control Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	30	5.6	5.6
Number of Ephemeroptera Taxa	0	0.0	0.0
Number of Trichoptera Taxa	1	1.4	1.4
Number of Clinger Taxa	2	2.5	2.5
Number of Long-lived Taxa	2	5.0	5.0
Number of Sensitive Taxa	0	0.0	0.0
Percent Contribution of Dominant Taxon	22.9	7.1	7.1
Percent Suspension Feeders and Filterers	6.9	1.5	1.5
Percent of Tanytarsini individuals	3.8	4.8	4.8
Percent of Very Tolerant individuals	49.5	0.4	0.4
Total Score			**31**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	**19-45**
		Very Poor	0-18

Table 4b. Stream Condition Index Metrics - Peninsula Bioregion

Iron Bridge WWTP-Test Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	20	1.6	1.6
Number of Ephemeroptera Taxa	0	0.0	0.0
Number of Trichoptera Taxa	0	0.0	0.0
Number of Clinger Taxa	1	1.3	1.3
Number of Long-lived Taxa	1	2.5	2.5
Number of Sensitive Taxa	0	0.0	0.0
Percent Contribution of Dominant Taxon	49.5	1.0	1.0
Percent Suspension Feeders and Filterers	0.9	0.0	0.0
Percent of Tanytarsini individuals	0	0.0	0.0
Percent of Very Tolerant individuals	63.3	-0.2	0.0
Total Score			**7**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	**0-18**

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 microbiological results
- Appendix G. Standard Reference Toxicant test data
- Appendix H. Typical values for selected parameters in Florida waters
- Appendix I. Habitat Assessment field sheets
- Appendix J1. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix J2. Dipnet samples: Taxa list and number of macroinvertebrates counted

Appendix A

Map of Facility

Orlando Iron Bridge Regional Water Reclamation Facility



Appendix B

Facility Summary and DMR data

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

Facility Name (as it appears on permit): Orlando/Iron Bridge Regional WRF		**Former Names:**
Physical Address: 601 Iron Bridge Circle Oviedo FL 32765	**NPDES Permit No.:** **Expiration Date:** April 22, 2008	**Prepared By:** David Smicherko
County: Seminole	**District:** Central District	**Facility Type:** Municipal
Function of Facility: Domestic wastewater treatment plant		
Sampling Location (actual permit designation of permitted sampling point): The EFD-1 monitoring location is designated in the permit as after the post aeration chamber.		
Description of permitted outfall: D001 The concrete lined discharge channel is approximately 670 ft in length and discharges into the Little Econolockhatchee River at approximately 2.5 feet in depth.		
Description of treatment process (if multiple discharge points, include a map or diagram of facility): The facility is a 5-stage Bardenpho system advanced wastewater treatment (AWT) facility consisting of a pretreatment system, anaerobic basins, anoxic basins, oxidation ditch, secondary anoxic basins, reaeration basins, secondary clarifiers, tertiary filters, chemical feed facilities, disinfection, dechlorination and post aeration. Effluent, which is not discharged through D001, flows to the 1640 ± acre wetland treatment system. The wetlands treatment system discharges through two outfalls D002 and D003 to the St. Johns River (Class III fresh water). Residuals are thickened and dewatered followed by lime stabilization. Stabilized residuals are then land applied.		
Receiving Waters: Little Econolockhatchee River.	**Classification (indicate whether fresh or marine):** Class III fresh water.	
Temperature (C):	**Design Flow: D001-** 28 million gallons per day (mgd) annual average daily flow (aadf). **R001- Wetlands-** 35.0 mgd aadf. **R002- public access reuse-** 20.3 mgd aadf. **Flow through plant-** 40 mgd aadf.	
pH (SU):	**Mean Flow:** This data is taken from the January 2005 Discharge Monitoring Report (DMR). **D001-** 7.6 mgd aadf, **R001-** 17.9 mgd aadf. **R002-** not constructed. **Flow through plant-** 29.4 mgd aadf.	
Conductivity (umhos/cm):	**Flow During Survey:**	
Method of Chlorination: Chlorine	**Method of Dechlorination:** Sulfur Dioxide	
Dissolved Oxygen (mg/L):	**Total Residual Chlorine (mg/L) (after disinfection):**	
Discharge is: Continuous X Intermittent Seasonal Rainfall Dependent Other		
Toxicity Test Requirements (routine and/or additional test language test species, salinity adjustment, etc.): See Additional Comments.		
Administrative or Consent Orders: The facility is not currently under consent order.		
Facility Mixing Zone Details: No mixing zone permitted.		

List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: The DMR for August 2005 reported a residual chlorine after dechlorination exceedence of 0.26 mg/L, the permit limit is 0.01 mg/L. There was a total phosphorus exceedence reported on the September 2005 DMR of 2.55 mg/L, the permit limit is 1.88 mg/L.
Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: There have been no enforcements actions taken since the last FYI in August 2000. The results of FYI inspections in August 1992, February 1996 and August 2000 included in Attachments 1, 2 and 3.
Discuss MOR trends to prior data; is trend improving or declining:
List Effluent Limits (include additional sheets as necessary): Please see Attachment 4.

Parameter and Units	Limit	Describe special permit conditions and permit modifications:

Additional Information:

Permit Toxicity Language

The permittee shall continue the series of tests described below in accordance with the current testing schedule to evaluate whole effluent toxicity of the discharge from Outfall D-001. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002, or the most current edition. The control and dilution water will be moderately hard water as described in EPA/600/4-91/002, Table 3. A standard reference toxicant quality assurance chronic toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the bioassay report or if monthly QA/QC reference toxicant tests are conducted by the testing laboratory or the biological supplier's laboratory, these results must be submitted. Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

i. a. The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test. These tests shall be conducted using a control (0% effluent) and one test concentration of 100% effluent. A no observed effect concentration (NOEC) less than 100% effluent will constitute a violation of this permit and Rule 62-302.530(62), F.A.C. All test results shall be statistically analyzed according to the Appendix in EPA/600/4/91/002, or the most current edition.

For each set of tests conducted, a *24-hour* composite sample of final effluent shall be collected and used per the sampling schedule discussed in EPA/600/4-91/002, Section 8. Two additional composite samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

If control mortality exceeds 20% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 20% for either species. If, in any separate test, 100% mortality occurs prior to the end of the test, and control mortality is less than 20% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable toxicity. Additionally, test must meet the acceptability criteria for each species as defined in EPA/600/4-91/002 Section 13.11 and Section 11.11, respectively.

ii. a. The toxicity tests specified above shall be conducted once every six months for the duration of the permit, unless otherwise notified by the Department. These tests are referred to as "routine" tests.

b. Results from "routine" tests shall be reported according to EPA/600/4-91/002, Section 10, Report Preparation (or the most current edition), and shall be submitted to:

Florida Department of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803

Additionally, all results shall be recorded and submitted on the Discharge Monitoring Report (DMR) in the following manner:

For the chronic test results, if the NOEC of a test species is less than 100% effluent, "≤100%" should be entered on the DMR for that species. If the NOEC of a test species is greater than or equal to 100% effluent, "≥100%" should be entered.

iii. a. An NOEC of less than 100% effluent in any "routine" sample or any additional follow-up definitive test will be a violation of these permit conditions and Rule 62-302.530(62) and Rule 62-4.244(3)(a), F. A. C.

b. If unacceptable toxicity (an NOEC of less than 100% effluent) is found in a "routine" test, the permittee shall conduct three additional tests on each species indicating unacceptable toxicity.

c. 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 and a control (0% 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 (not to exceed 100% effluent) and two dilutions below the target toxicity and a control (0% effluent) are run.

d. For each additional test, the sample collection requirements and the test acceptability criteria specified in Section 9.i. 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.

e. Results from additional tests, required due to chronic toxicity violations in the "routine" tests, shall be submitted in a single report prepared according to EPA/600/4-91/002, Section 10, or the most current edition and submitted within 45 days of completion of the additional, valid test. Upon the completion of the additional tests, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the observed chronic toxicity.

Attachment 1.

Department of Environmental Regulation
Results of Fifth Year Inspections

Discharger: Iron Bridge Water Pollution Control Facility
County: Seminole
NPDES Number: FL0037966
State Permit Expiration Date: 15 November 1995

Toxics Sampling Inspection (XSI)	
Date Sampled:	25 August 1992
Results:	No organic priority pollutants were detected in the effluent sample. The following metals were detected above quantitation limits: aluminum (247 µg/L), calcium (37 mg/L), iron (42 µg/L), magnesium (6.8 mg/L), and zinc (29 µg/L). None of these values represents a violation of Class III standards.

Compliance Biomonitoring Inspection (CBI)	
Date Sampled:	25 August 1992
Results:	Not toxic to *Ceriodaphnia dubia* or *Notropis leedsi*.

Impact Bioassessment Inspection (IBI)	
Date Sampled:	25 August 1992
Results:	Neither benthic macroinvertebrate nor phytoplankton communities demonstrated symptoms of stress that could be associated with the discharge. Algal growth potential was somewhat elevated below the outfall, although background AGP was relatively high for an unenriched system.

Water Quality Inspection (WQI)	
Date Sampled:	25 August 1992
Results:	Nutrient levels in the receiving waters above and below the outfall were nearly identical, and did not indicate enrichment problems. Effluent nutrients were generally lower than those found at the study sites. Dissolved oxygen was less than the Class III Standard of 5 mg/L at both receiving water stations.

These fifth year inspections provide the necessary information to evaluate the facility's impact on its receiving waters and to provide the basis for specific condition recommendations for permit renewal.

Attachment 2.

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger: Iron Bridge Road WPCF
County: Seminole
NPDES Number: FL0037966
State Permit Expiration Date: 15 November 1995

Toxics Sampling Inspection (XSI)	
Date Sampled:	26 February 1996
Results:	Organic compounds and metals in the effluent were present at levels which complied with Class III water quality standards.

Compliance Biomonitoring Inspection (CBI)	
Date Sampled:	26 February 1996
Results:	The Iron Bridge Road WPCF effluent was not acutely toxic to the fish, *Cyprinella leedsi*, or to the invertebrate, *Ceriodaphnia dubia*.

Impact Bioassessment Inspection (IBI)	
Date Sampled:	26 February 1996
Results:	Despite the potential pollution sources, macroinvertebrate communities, based upon results of the Stream Condition Index, were rated as good to excellent throughout the Econ basin. Apparently, the habitat, flow, and light penetration characteristics of the system were such that the observed nutrient enrichment (elevated nitrate-nitrite and AGP) did not translate into negative influences on the invertebrate community. The preservation or enhancement of the existing riparian zone would be a sound management strategy in maintaining the system's health. The biota inhabiting the Little Econ River immediately downstream of the WPCF appeared to be affected by the discharge. This may potentially be due to some previous or variable attribute of the Iron Bridge Road WPCF effluent, since effluent quality was good during this study. Phytoplankton throughout the Econ Basin was sparse, with very low chlorophyll *a* levels. No negative changes appeared to be associated with the WPCF discharge. Again, the flow and light penetration characteristics in the Econ system appeared to postpone the effects of nutrient enrichment. It is possible that Lake Harney, a lentic system located downstream, may be affected by the nutrient loading from the Econ basin, as well as from other sources upstream in the St. Johns River.

Water Quality Inspection (WQI)	
Date Sampled:	26 February 1996
Results:	While nutrient enrichment was observed at several stations in the Econ basin, the Iron Bridge Road WPCF appeared to cause only slight increases in existing nutrient concentrations. Nitrate-nitrite values at Econ stations 4 through 7 were higher than the values found in 80% of other Florida streams. Nitrate-nitrite at Econ 9, prior to entering the St. Johns River and Lake Harney, remained higher than the values found in 70% of other Florida streams. Algal growth potential (AGP) exceeded the 5 mg dry wt/L "problem threshold" (Raschke and Schultz 1987) throughout the Econ basin, ranging from 5.7 mg dry wt/L at Econ 8 to 30.3 mg dry wt/L at Econ 6. The stations with the highest AGP's (exceeding 19 mg dry wt/L), including Econ 4, 5, 6, 7, and 9, were also those with abnormally elevated nitrate-nitrite values.

Attachment 3.

Introduction

City of Orlando Iron Bridge WPCF, 601 Iron Bridge Circle, Orlando, Seminole County, Florida, NPDES #FL0037966, tests performed on 2 to 4 August 2000.

This wastewater treatment plant has an annual average daily flow of 40 MGD. Treatment of the effluent in Phase I includes a rotating biological contactor system with flow equalization, mechanical influent screening, grit removal, primary clarification, nitrification and denitrificatior by rotating biological contactor, final clarification, and automatic backwash filters. Phase II and III include grit removal, two 5-stage nutrient removal process treatment units, chemical feed facilities, secondary clarification, tertiary filtration, chlorination, dechlorination, and post aeration. Residuals are anaerobically digested, thickened, and then dewatered. Effluent is continuously discharged into the Class III fresh waters of the Little Econlackhatchee River, which flows into the St. Johns River. The Little Econlackhatchee River is an Outstanding Florida Water (facility summary provided by Kathleen H. Gerard, FDEP, Jacksonville).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

Results and Discusslon

The FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The sample indicated no toxicity to the test species *C. dubia* or *C. leedsi* by 48 hours (Table 1).

Total residual chlorine in the sample was 0.05 mg/L. Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample, and several metals and a pesticide were identified (Table 2). This facility discharges into an Outstanding Florida Water (OFW). With few exceptions, no degradation of the water quality is permitted in OFW's according to Florida Statute 62-302.700.

Conclusion

The sample of effluent collected from this facility on August 1, 2000, did not show toxicity at 48 hours.

Attachment 4.

Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample
Flow, to the Little Econ River	mgd	Maximum	28.0	-	-	-
BOD, Carbonaceous 5 day, 20C	mg/L	Maximum	4.28	4.28	6.42	8.56
Solids, Total Suspended	mg/L	Maximum	17.2	17.2	25.8	34.4
Coliform, Fecal	#/100ML	Maximum	200	200	90th percentile 400	800
pH	SU	Range	-	-	-	6.0-8.5
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	0.5
Total Residual Chlorine (For Dechlorination)	mg/L	Maximum	-	-	-	0.01
Nitrogen, Total (as N)	mg/L	Maximum	3.08	3.08	4.62	6.16
Phosphorus, Total (as P)	mg/L	Maximum	0.94	0.94	1.41	1.88
Nitrogen, Total Kjeldahl (as N)	mg/L	Maximum	2.14	2.14	3.21	4.28
Beryllium, Total Recoverable (as Be)	ug/L	Maximum				Report
Lead, Total Recoverable (as Pb)*	ug/L	Maximum				Report
Silver, Total Recoverable (as Ag)	ug/L	Maximum	0.07	-	-	
Dichlorobromomethane	ug/L	Maximum	22	-	-	-
Hardness, Total (as CaCO3)	mg/L	Maximum	-	-	-	Report
Oxygen, Dissolved (DO)	mg/L	Minimum	-	-	-	6.1-7.0
Temperature, Water	Deg C	Maximum	-	-	-	Report
Oxygen Demand, Ultimate (UOD)	Lbs./Day	Maximum	-	3,718	-	-

Discharge Monitoring Report data for Orlando-Iron Bridge from March 2005 - March 2006.

Facility ID	Monitoring Date	Parameter Description	Concentration	Limit	Units
FL0037966	8/31/2005	CHLORINE, TOTAL RESIDUAL	0.26	0.01	MG/L
FL0037966	9/30/2005	PHOSPHORUS, TOTAL (AS P)	2.550	1.88	MG/L
FL0037966	9/30/2005	SOLIDS, TOTAL SUSPENDED	37.0	30	MG/L
FL0037966	11/30/2005	PHOSPHORUS, TOTAL (AS P)	2.450	1.88	MG/L
FL0037966	11/30/2005	SOLIDS, TOTAL SUSPENDED	48.8	30	MG/L
FL0037966	3/31/2006	PH	8.7	8.5	S.U.

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 D. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, 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, *Pimephales promeles* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits. Standard reference toxicant 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 (0.45μm), 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(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(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 ± 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(62) F.A.C..

(7) Algal Phytoplankton

Methods: Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100).

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(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) 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(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..

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(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(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(11) 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(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..

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 (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups 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..

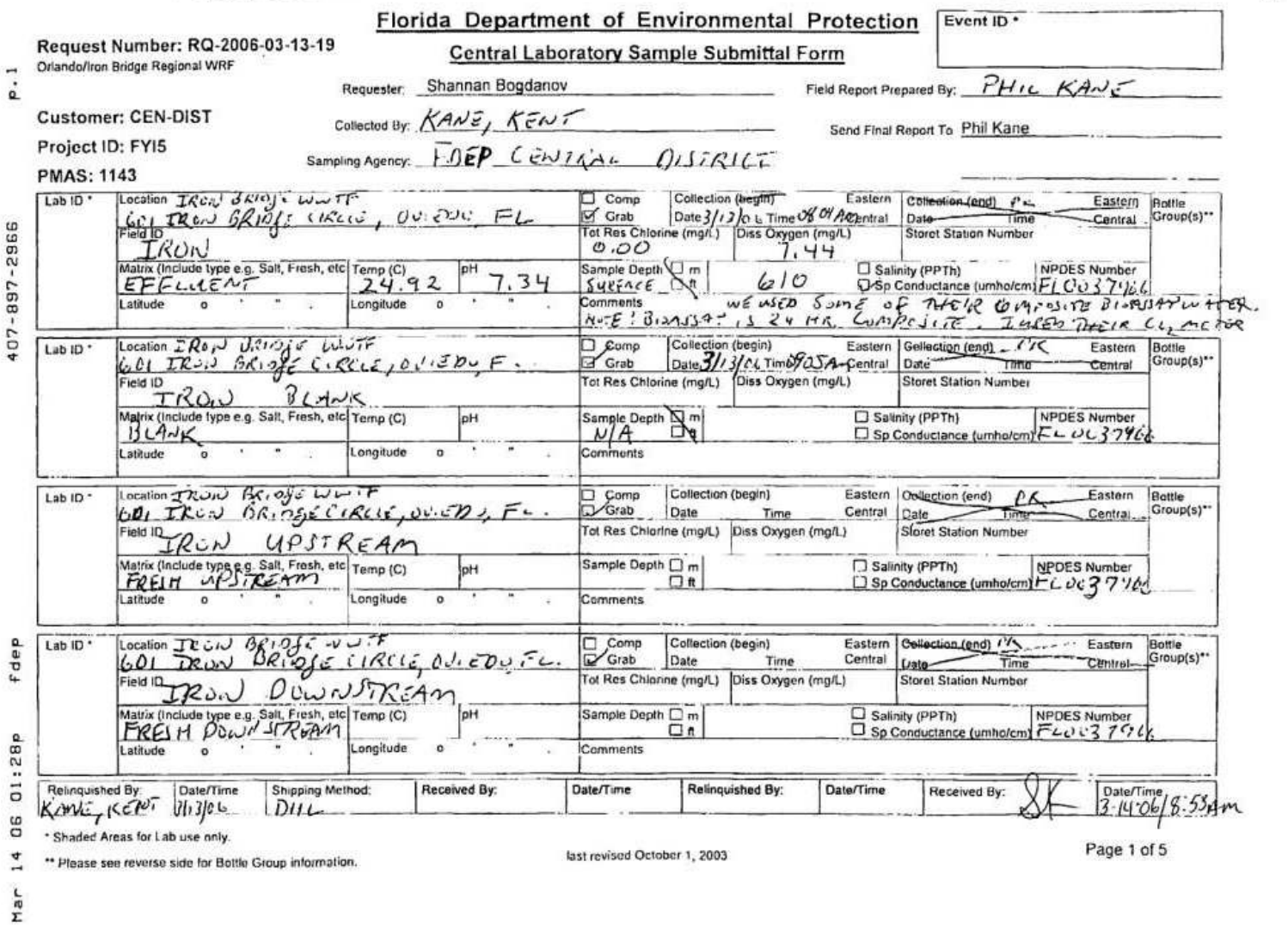
The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida. This Index was revised in 2004 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned depending on which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists in 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 four ordinal groups: Good, Fair, Poor, and Very Poor. 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 of "Poor" or "Very Poor" 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.

Appendix D

Chain of Custody form



Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-03-13-19
Orlando/Iron Bridge Regional WRF

Requester: Shannan Bogdanov
Field Report Prepared By: PHIL KANE
Customer: CEN-DIST
Collected By: KANE, KENT
Send Final Report To Phil Kane
Project ID: FYI5
Sampling Agency: FDEP CENTRAL DISTRICT
PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL	Grab	Date 3/13/06 Time 08 04 AM Central	Date Time Central	
Field ID: IRON	Tot Res Chlorine (mg/L): 0.00	Diss Oxygen (mg/L): 7.44	Storet Station Number:		
Matrix (Include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C): 24.92	pH: 7.34	Sample Depth: SURFACE m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 610	NPDES Number: FL0037966
Latitude o ' "	Longitude o ' "	Comments: WE USED SOME OF THEIR COMPOSITE BIOASSAY WATER. NOTE: BIOASSAY IS 24 HR. COMPOSITE. I USED THEIR CL2 FACTOR			

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, F.	Grab	Date 3/13/06 Time 0925A Central	Date Time Central	
Field ID: IRON BLANK	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:		
Matrix (Include type e.g. Salt, Fresh, etc): BLANK	Temp (C):	pH:	Sample Depth: N/A m / ft	Salinity (PPTh) / Sp Conductance (umho/cm):	NPDES Number: FL0037966
Latitude o ' "	Longitude o ' "	Comments:			

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL.	Grab	Date Time Central	Date Time Central	
Field ID: IRON UPSTREAM	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:		
Matrix (Include type e.g. Salt, Fresh, etc): FRESH UPSTREAM	Temp (C):	pH:	Sample Depth: m / ft	Salinity (PPTh) / Sp Conductance (umho/cm):	NPDES Number: FL0037966
Latitude o ' "	Longitude o ' "	Comments:			

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL.	Grab	Date Time Central	Date Time Central	
Field ID: IRON DOWNSTREAM	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:		
Matrix (Include type e.g. Salt, Fresh, etc): FRESH DOWNSTREAM	Temp (C):	pH:	Sample Depth: m / ft	Salinity (PPTh) / Sp Conductance (umho/cm):	NPDES Number: FL0037966
Latitude o ' "	Longitude o ' "	Comments:			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE, KENT	3/13/06	DILL					SK	3-14-06/8:55AM

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 5

P.1 407-897-2966 Mar 14 06 01:28p fdep

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID: [redacted]

Request Number: RQ-2006-03-13-19
Orlando/Iron Bridge Regional WRF

Requester: Shannan Bogdanov

Field Report Prepared By: PHIL KANE

Customer: CEN-DIST

Collected By: KANE, [redacted] SMICHERKO

Send Final Report To: Phil Kane

Project ID: FYI5

Sampling Agency: FDEP CENTRAL DISTRICT

PMAS: 1143

3/15/06

Lab ID *	Location: IRON BRIDGE WWTF 601 IRON BRIDGE CIRCLE, OVIEDO, FL			☐ Comp ☑ Grab	Collection (begin) Date [redacted] Time	Eastern Central	~~Collection (end)~~ PK Date ~~Time~~	Eastern Central	Bottle Group(s)**
	Field ID: IRON			Tot Res Chlorine (mg/L): 0.00	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C)	pH: 6.73	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number: FL0037966	
	Latitude o ' "	Longitude o ' "		Comments: NOTE! BIOASSAY IS 24 HR. COMPOSITE THEIR Cl_2 + pH METER RENEWAL					
Lab ID *	Location: [redacted]			☐ Comp [redacted]	Collection (begin) Da[redacted]me	Eastern Central	~~Collection (end)~~ PK Date ~~Time~~	Eastern Central	Bottle Group(s)**
	Field ID: [redacted]			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc): [redacted]	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037966	
	Latitude o ' "	Longitude o ' "		Comments					
Lab ID *	Location: [redacted]			☐ Comp [redacted]b	Collection (begin) Date Time	Eastern Central	~~Collection (end)~~ PK Date ~~Time~~	Eastern Central	Bottle Group(s)**
	Field ID: [redacted]			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc): [redacted]	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037966	
	Latitude o ' "	Longitude o ' "		Comments					
Lab ID *	Location: [redacted]			☐ Comp [redacted]rab	Collection (begin) Date Time	Eastern Central	~~Collection (end)~~ PK Date ~~Time~~	Eastern Central	Bottle Group(s)**
	Field ID: [redacted]			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc): [redacted]	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037966	
	Latitude o ' "	Longitude o ' "		Comments					

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE, [redacted] SMICHERKO	3/15/06	DHL	TOM. E	3/16/06 9:30				

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

1 BSY 3-16-06 1043 SP

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID:

Request Number: RQ-2006-03-13-19
Orlando/Iron Bridge Regional WRF

Requester: Shannan Bogdanov

Field Report Prepared By: PHIL KANE

Customer: CEN-DIST

Collected By: KANE, KENT

Send Final Report To Phil Kane

Project ID: FYI5

Sampling Agency: FDEP CENTRAL DISTRICT

PMAS: 1143

3/17/06

Lab ID*	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL	☐ Comp ☑ Grab	Date 3/13/06 Time	PK	
	Field ID: IRON	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): EFFLUENT	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm) NPDES Number: FL0037966
	Latitude o ' "	Longitude o ' "	Comments: NOTE! BIOASSAY IS 24 HR. COMPOSITE SEE BOTTOM NOTE		

Lab ID*	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL	☐ Comp ☑ Grab	Date 3/13/06 Time	PK	
	Field ID: IRON BLANK	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): BLANK	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number: FL0037966
	Latitude o ' "	Longitude o ' "	Comments		

Lab ID*	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL	☐ Comp ☑ Grab	Date Time	PK	
	Field ID: IRON UPSTREAM	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): FRESH UPSTREAM	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number: FL0037966
	Latitude o ' "	Longitude o ' "	Comments		

Lab ID*	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	601 IRON BRIDGE CIRCLE, OVIEDO, FL	☐ Comp ☑ Grab	Date Time	PK	
	Field ID: IRON DOWNSTREAM	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): FRESH DOWNSTREAM	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number: FL0037966
	Latitude o ' "	Longitude o ' "	Comments		

PK

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE, KENT	3/13/06	DHL	M Fauchette	3/18/06				
SMITH	1015	KO						

MONDAY SAMPLE AT 0700 AM

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

NOTE: WEDNESDAY SAMPLE AT 0700 AM

FRIDAY SAMPLE AT 0700 AM

Appendix E

Chemical analysis of effluent and receiving water

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Effluent	Algal Growth Potential	74.9	mg DryWt/L		0.3	0.9
3/13/2006	Iron Bridge Effluent	Biochemical Oxygen Demand-5 Day	1.5	mg/L	I		
3/13/2006	Iron Bridge Effluent	Biochemical Oxygen Demand-5 Day,N-Inhib	0.62	mg/L	AI		
3/13/2006	Iron Bridge Effluent	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/13/2006	Iron Bridge Effluent	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
3/13/2006	Iron Bridge Effluent	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100	NOEC	K		
3/13/2006	Iron Bridge Effluent	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100	NOEC			
3/13/2006	Iron Bridge Effluent	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2,4-Dimethylphenol	48	ug/L	U	48	190
3/13/2006	Iron Bridge Effluent	2,4-Dinitrophenol	14	ug/L	U	14	57
3/13/2006	Iron Bridge Effluent	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
3/13/2006	Iron Bridge Effluent	4,4'-DDD	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	4,4'-DDE	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	4,4'-DDT	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Effluent	4-Nitrophenol	14	ug/L	U	14	57
3/13/2006	Iron Bridge Effluent	Acenaphthene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Acenaphthylene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Aldrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	alpha-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Anthracene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Benzidine	95	ug/L	U	95	380
3/13/2006	Iron Bridge Effluent	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Benzo(a)pyrene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Benzo(b)fluoranthene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Benzo(g,h,i)perylene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Benzo(k)fluoranthene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	beta-BHC	1.4	ug/L	U	1.4	5.7

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Effluent	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
3/13/2006	Iron Bridge Effluent	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
3/13/2006	Iron Bridge Effluent	Chrysene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	delta-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Dibenzo(a,h)anthracene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Dieldrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Dimethyl phthalate	48	ug/L	U	48	190
3/13/2006	Iron Bridge Effluent	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
3/13/2006	Iron Bridge Effluent	Di-n-octyl phthalate	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Endosulfan I	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Effluent	Endosulfan II	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Effluent	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Endrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Endrin aldehyde	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Effluent	Fluoranthene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Fluorene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	gamma-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Heptachlor	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Effluent	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	Hexachloroethane	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	Indeno(1,2,3-cd)pyrene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Effluent	Isophorone	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Naphthalene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Nitrobenzene	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Effluent	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Effluent	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Effluent	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	11
3/13/2006	Iron Bridge Effluent	Pentachlorophenol	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Effluent	Phenanthrene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Phenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Pyrene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Effluent	Alachlor	0.57	ug/L	U	0.57	2.3
3/13/2006	Iron Bridge Effluent	Ametryn	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Atrazine	0.7	ug/L		0.048	0.19
3/13/2006	Iron Bridge Effluent	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Effluent	Bromacil	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Effluent	Butylate	0.19	ug/L	U	0.19	0.76

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Effluent	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Diazinon	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Ethion	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Ethoprop	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Fenamiphos	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Effluent	Fonofos	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Hexazinone	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Malathion	0.14	ug/L	UJ	0.14	0.56
3/13/2006	Iron Bridge Effluent	Metalaxyl	0.24	ug/L	U	0.24	0.96
3/13/2006	Iron Bridge Effluent	Metolachlor	0.48	ug/L	U	0.48	1.9
3/13/2006	Iron Bridge Effluent	Metribuzin	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Mevinphos	0.19	ug/L	UJ	0.19	0.76
3/13/2006	Iron Bridge Effluent	Naled	0.76	ug/L	U	0.76	3
3/13/2006	Iron Bridge Effluent	Norflurazon	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Effluent	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Effluent	Parathion Methyl	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Effluent	Phorate	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Prometryn	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Effluent	Simazine	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Effluent	Aluminum	17	ug/L	I	5	20
3/13/2006	Iron Bridge Effluent	Arsenic	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Effluent	Beryllium	0.03	ug/L	U	0.03	0.12
3/13/2006	Iron Bridge Effluent	Cadmium	0.05	ug/L	U	0.05	0.2
3/13/2006	Iron Bridge Effluent	Calcium	41	mg/L		0.05	0.2
3/13/2006	Iron Bridge Effluent	Chromium	2	ug/L	U	2	8
3/13/2006	Iron Bridge Effluent	Copper	2.47	ug/L		0.25	1
3/13/2006	Iron Bridge Effluent	Iron	56	ug/L		10	40
3/13/2006	Iron Bridge Effluent	Lead	0.27	ug/L	I	0.075	0.3
3/13/2006	Iron Bridge Effluent	Magnesium	8.4	mg/L		0.01	0.04
3/13/2006	Iron Bridge Effluent	Nickel	1.8	ug/L	I	1	4
3/13/2006	Iron Bridge Effluent	Selenium	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Effluent	Silver	0.076	ug/L	U	0.076	0.3
3/13/2006	Iron Bridge Effluent	Zinc	39	ug/L		3	12
3/13/2006	Iron Bridge Effluent	Alkalinity	105	mg CaCO3/L		0.65	2.5
3/13/2006	Iron Bridge Effluent	Ammonia-N	0.13	mg N/L		0.02	0.04
3/13/2006	Iron Bridge Effluent	Color	20	PCU		5	5
3/13/2006	Iron Bridge Effluent	Kjeldahl Nitrogen	1.2	mg N/L	A	0.16	0.4
3/13/2006	Iron Bridge Effluent	NO2NO3-N	1.2	mg N/L	A	0.04	0.1
3/13/2006	Iron Bridge Effluent	O-Phosphate-P	0.56	mg P/L		0.08	0.2
3/13/2006	Iron Bridge Effluent	Organic Carbon	7.7	mg C/L		1	5
3/13/2006	Iron Bridge Effluent	Total-P	0.71	mg P/L	A	0.02	0.06
3/13/2006	Iron Bridge Effluent	TSS	4	mg/L	U	4	16
3/13/2006	Iron Bridge Effluent	Turbidity	1	NTU		0.05	0.05

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Effluent	Oil and Grease	11	mg/L			
3/13/2006	Iron Bridge Effluent	Bromodichloromethane	5.6	ug/L		0.2	1
3/13/2006	Iron Bridge Effluent	Bromoform	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Effluent	Chloroform	39	ug/L		0.2	1
3/13/2006	Iron Bridge Effluent	Dibromochloromethane	1.4	ug/L		0.2	1
3/13/2006	Iron Bridge Blank	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2,4-Dimethylphenol	48	ug/L	U	48	190
3/13/2006	Iron Bridge Blank	2,4-Dinitrophenol	14	ug/L	U	14	57
3/13/2006	Iron Bridge Blank	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
3/13/2006	Iron Bridge Blank	4,4'-DDD	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	4,4'-DDE	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	4,4'-DDT	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Blank	4-Nitrophenol	14	ug/L	U	14	57
3/13/2006	Iron Bridge Blank	Acenaphthene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Acenaphthylene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Aldrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	alpha-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Anthracene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Benzidine	95	ug/L	U	95	380
3/13/2006	Iron Bridge Blank	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Benzo(a)pyrene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Benzo(b)fluoranthene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Benzo(g,h,i)perylene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Benzo(k)fluoranthene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	beta-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
3/13/2006	Iron Bridge Blank	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Blank	Chrysene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	delta-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Dibenzo(a,h)anthracene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Dieldrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Dimethyl phthalate	48	ug/L	U	48	190
3/13/2006	Iron Bridge Blank	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
3/13/2006	Iron Bridge Blank	Di-n-octyl phthalate	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Endosulfan I	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Blank	Endosulfan II	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Blank	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Endrin	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Endrin aldehyde	3.8	ug/L	U	3.8	15
3/13/2006	Iron Bridge Blank	Fluoranthene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Fluorene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	gamma-BHC	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Heptachlor	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
3/13/2006	Iron Bridge Blank	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	Hexachloroethane	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	Indeno(1,2,3-cd)pyrene	0.95	ug/L	UJ	0.95	3.8
3/13/2006	Iron Bridge Blank	Isophorone	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Naphthalene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Nitrobenzene	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Blank	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Blank	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
3/13/2006	Iron Bridge Blank	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	11
3/13/2006	Iron Bridge Blank	Pentachlorophenol	2.9	ug/L	U	2.9	11
3/13/2006	Iron Bridge Blank	Phenanthrene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Phenol	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Pyrene	0.95	ug/L	U	0.95	3.8
3/13/2006	Iron Bridge Blank	Alachlor	0.57	ug/L	U	0.57	2.3
3/13/2006	Iron Bridge Blank	Ametryn	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Atrazine	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Blank	Bromacil	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Blank	Butylate	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Blank	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Blank	Diazinon	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Ethion	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Ethoprop	0.095	ug/L	U	0.095	0.38

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Blank	Fenamiphos	0.19	ug/L	U	0.19	0.76
3/13/2006	Iron Bridge Blank	Fonofos	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Blank	Hexazinone	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Blank	Malathion	0.14	ug/L	UJ	0.14	0.56
3/13/2006	Iron Bridge Blank	Metalaxyl	0.24	ug/L	U	0.24	0.96
3/13/2006	Iron Bridge Blank	Metolachlor	0.48	ug/L	U	0.48	1.9
3/13/2006	Iron Bridge Blank	Metribuzin	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Blank	Mevinphos	0.19	ug/L	UJ	0.19	0.76
3/13/2006	Iron Bridge Blank	Naled	0.76	ug/L	U	0.76	3
3/13/2006	Iron Bridge Blank	Norflurazon	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Blank	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Blank	Parathion Methyl	0.095	ug/L	U	0.095	0.38
3/13/2006	Iron Bridge Blank	Phorate	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Prometryn	0.14	ug/L	U	0.14	0.56
3/13/2006	Iron Bridge Blank	Simazine	0.048	ug/L	U	0.048	0.19
3/13/2006	Iron Bridge Blank	Aluminum	5	ug/L	U	5	20
3/13/2006	Iron Bridge Blank	Arsenic	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Blank	Beryllium	0.03	ug/L	U	0.03	0.12
3/13/2006	Iron Bridge Blank	Cadmium	0.05	ug/L	U	0.05	0.2
3/13/2006	Iron Bridge Blank	Calcium	0.05	mg/L	U	0.05	0.2
3/13/2006	Iron Bridge Blank	Chromium	2	ug/L	U	2	8
3/13/2006	Iron Bridge Blank	Copper	0.25	ug/L	U	0.25	1
3/13/2006	Iron Bridge Blank	Iron	10	ug/L	U	10	40
3/13/2006	Iron Bridge Blank	Lead	0.075	ug/L	U	0.075	0.3
3/13/2006	Iron Bridge Blank	Magnesium	0.01	mg/L	U	0.01	0.04
3/13/2006	Iron Bridge Blank	Nickel	1	ug/L	U	1	4
3/13/2006	Iron Bridge Blank	Selenium	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Blank	Silver	0.025	ug/L	U	0.025	0.1
3/13/2006	Iron Bridge Blank	Zinc	3	ug/L	U	3	12
3/13/2006	Iron Bridge Blank	Ammonia-N	0.01	mg N/L	U	0.01	0.02
3/13/2006	Iron Bridge Blank	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
3/13/2006	Iron Bridge Blank	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
3/13/2006	Iron Bridge Blank	O-Phosphate-P	0.009	mg P/L	I	0.004	0.01
3/13/2006	Iron Bridge Blank	Total-P	0.02	mg P/L	U	0.02	0.06
3/13/2006	Iron Bridge Blank	Oil and Grease	1.7	mg/L	U		
3/13/2006	Iron Bridge Blank	Bromodichloromethane	0.2	ug/L	U	0.2	1
3/13/2006	Iron Bridge Blank	Bromoform	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Blank	Chloroform	0.2	ug/L	U	0.2	1
3/13/2006	Iron Bridge Blank	Dibromochloromethane	0.2	ug/L	U	0.2	1
3/13/2006	Iron Bridge Test Site	Algal Growth Potential	55.6	mg DryWt/L		0.3	0.9
3/13/2006	Iron Bridge Test Site	Biochemical Oxygen Demand-5 Day	1.3	mg/L	I		
3/13/2006	Iron Bridge Test Site	Biochemical Oxygen Demand-5 Day,N-Inhib	0.83	mg/L	I		
3/13/2006	Iron Bridge Test Site	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/13/2006	Iron Bridge Test Site	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Test Site	Macroinvert-FW-Qual-Dipnetx20-# Taxa	20	# Taxa			
3/13/2006	Iron Bridge Test Site	Aluminum	36	ug/L		5	20
3/13/2006	Iron Bridge Test Site	Arsenic	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Test Site	Beryllium	0.03	ug/L	U	0.03	0.12
3/13/2006	Iron Bridge Test Site	Cadmium	0.05	ug/L	U	0.05	0.2
3/13/2006	Iron Bridge Test Site	Calcium	38	mg/L		0.05	0.2
3/13/2006	Iron Bridge Test Site	Chromium	2	ug/L	U	2	8
3/13/2006	Iron Bridge Test Site	Copper	2.27	ug/L		0.25	1
3/13/2006	Iron Bridge Test Site	Iron	106	ug/L		10	40
3/13/2006	Iron Bridge Test Site	Lead	0.35	ug/L		0.075	0.3
3/13/2006	Iron Bridge Test Site	Magnesium	7.3	mg/L		0.01	0.04
3/13/2006	Iron Bridge Test Site	Nickel	1.5	ug/L	I	1	4
3/13/2006	Iron Bridge Test Site	Selenium	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Test Site	Silver	0.076	ug/L	U	0.076	0.3
3/13/2006	Iron Bridge Test Site	Zinc	32	ug/L		3	12
3/13/2006	Iron Bridge Test Site	Ammonia-N	0.07	mg N/L		0.01	0.02
3/13/2006	Iron Bridge Test Site	Kjeldahl Nitrogen	1	mg N/L		0.08	0.2
3/13/2006	Iron Bridge Test Site	NO2NO3-N	0.71	mg N/L		0.004	0.01
3/13/2006	Iron Bridge Test Site	O-Phosphate-P	0.38	mg P/L		0.04	0.1
3/13/2006	Iron Bridge Test Site	Total-P	0.57	mg P/L		0.02	0.06
3/13/2006	Iron Bridge Test Site	TSS	4	mg/L	U	4	16
3/13/2006	Iron Bridge Test Site	Turbidity	1.2	NTU		0.05	0.05
3/13/2006	Iron Bridge Control Site	Algal Growth Potential	11.1	mg DryWt/L	A	0.3	0.9
3/13/2006	Iron Bridge Control Site	Biochemical Oxygen Demand-5 Day	0.65	mg/L	I		
3/13/2006	Iron Bridge Control Site	Biochemical Oxygen Demand-5 Day,N-Inhib	0.2	mg/L	U		
3/13/2006	Iron Bridge Control Site	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/13/2006	Iron Bridge Control Site	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
3/13/2006	Iron Bridge Control Site	Macroinvert-FW-Qual-Dipnetx20-# Taxa	32	# Taxa			
3/13/2006	Iron Bridge Control Site	Aluminum	84	ug/L		5	20
3/13/2006	Iron Bridge Control Site	Arsenic	0.69	ug/L	I	0.5	2
3/13/2006	Iron Bridge Control Site	Beryllium	0.03	ug/L	U	0.03	0.12
3/13/2006	Iron Bridge Control Site	Cadmium	0.089	ug/L	I	0.05	0.2
3/13/2006	Iron Bridge Control Site	Calcium	26.1	mg/L		0.05	0.2
3/13/2006	Iron Bridge Control Site	Chromium	2	ug/L	U	2	8
3/13/2006	Iron Bridge Control Site	Copper	1.43	ug/L		0.25	1
3/13/2006	Iron Bridge Control Site	Iron	263	ug/L		10	40
3/13/2006	Iron Bridge Control Site	Lead	0.32	ug/L		0.075	0.3
3/13/2006	Iron Bridge Control Site	Magnesium	2.6	mg/L		0.01	0.04
3/13/2006	Iron Bridge Control Site	Nickel	1.3	ug/L	I	1	4
3/13/2006	Iron Bridge Control Site	Selenium	0.5	ug/L	U	0.5	2
3/13/2006	Iron Bridge Control Site	Silver	0.025	ug/L	U	0.025	0.1
3/13/2006	Iron Bridge Control Site	Zinc	3	ug/L	U	3	12
3/13/2006	Iron Bridge Control Site	Ammonia-N	0.035	mg N/L		0.01	0.02
3/13/2006	Iron Bridge Control Site	Kjeldahl Nitrogen	0.43	mg N/L		0.08	0.2

DATE SAMPLED	FIELD ID	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/13/2006	Iron Bridge Control Site	NO2NO3-N	0.078	mg N/L	A	0.004	0.01
3/13/2006	Iron Bridge Control Site	O-Phosphate-P	0.04	mg P/L		0.004	0.01
3/13/2006	Iron Bridge Control Site	Total-P	0.064	mg P/L		0.02	0.06
3/13/2006	Iron Bridge Control Site	TSS	4	mg/L	U	4	16
3/13/2006	Iron Bridge Control Site	Turbidity	1.6	NTU		0.05	0.05

Appendix F

Additional physical, chemical, toxicological and microbiological results

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

CENTRAL DISTRICT

3319 Maguire Boulevard Suite 232

Orlando, FL 32803-3767

Phone 407-894-7555

NELAC Certification no. E33863

LABORATORY ANALYSIS REPORT

Report Date:	March 27, 2006
Subject:	Iron Bridge WWTF
Document no.	CD-06-03-01
To:	Dr Phil Kane FDEP Central District 3319 Maguire Boulevard Suite 232 Orlando, FL. 32803-3767
From:	Donald P. Smith
Sample Site	Iron Bridge WWTF
Sample Date:	March 13, 2006
Collected by:	Kane, Kent

Fecal Coliform Analytical Method: SM9222d

Laboratory no:	22048fc	Field ID:	Iron Effluent
Sample Time:	03/13/06 08:53	Analysis Start:	03/13/06 14:15
Sample Hold Time:	5hr 22min	Batch no:	tc03-27
Analysis Result:	6 Units: Colonies/100ml	Results Code:	

Note:

Codes

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside of the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practcal quantitation limit.
J - Estimated value.
L - Actual value is known to be greater than the value given.
Q - Sample held beyond normal holding time.
U - Material was analyzed for but not detected. The value reported is the minimum detection limit.
Z - Colonies were too numerous to count (TNTC).

record dps page 1 of 1
check slk

Chronic Screening Bioassay Benchsheet

Sample Identification, Test Conditions and Physical Chemistry

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
Ceriodaphnia dubia Bench Sheet

Sample Source: Orlando/Iron Bridge
Address: 6001 Iron Bridge Circle
County: Seminole
NPDES Permit #FL 0037960
Contact/District Phil Kane/Central District
Start Date 3-14-06 Time 1355 End Date: 3-21-06 Time 1330
LIMS entry: ML 3-31-06 verified: SP 3-31-06
Incubator # 2 Temperature Range: 23.4-26.0
Room B246 Temperature Range: 25.1-25.2

SOP#: TA07_05
Light Intensity : 50 - 100 ft. candles (yes) no
Photoperiod : 16 light 8 dark (yes) no
Chamber size : 30 ml Organism Batch #: 12-06
Sample volume : 20 ml Organism age : <24 hours

Feeding: Daily YCT Batch#: 5-05 0.1 ml
P. subcapitata Batch #: 1-06 0.1 ml

Organism: *Ceriodaphnia dubia*

Water Quality Parameters

	Field Chlorine mg/L			Lab Chlorine mg/L			Alkalinity mg/L as $CaCO_3$			Hardness mg/L as $CaCO_3$		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	0.00	0.00	not measured	<0.03	<0.03	<0.03	134	116	136	130	137	126.5
Diluent/Control:				<0.03	<0.03	<0.03	83	78 83	83	97	92 97	97
Method:	Facility meter		—	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	Kane	Kane	—	EW	EW/KF	SP	SP/EP	SA/BA	MF	SA/KF	SA/BA	MF
Verified by:	SP	SP	SP	SP	SP	MF	SP/EP	SP	SP	SP/EP	SP	SP

	Conductivity (circle one) µmhos-cm (conv.)		mmhos-cm	Ammonia mg/L			Salinity ‰		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	580	646	621	<0.017	<0.017	<0.017	NA	NA	NA
Diluent/Control:	195	212	173	<0.017	<0.017	<0.017	NA	NA	NA
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	SP	BA	JB	MF	MF	MF	–	–	–
Verified by:	MF	SP	SP	SP	SP	SP	–	–	–

reproduction
LOEC = 100%
PMSD = 14.23%

conv. = conversion based on conductivity and temperature

Sample Received	LAB ID #	LIMS SAMPLE #	LIMS JOB #
Test Day 0	Sample: 1	906678	TLH -2006-03-14-04
Test Day 2	Sample: 2	907192	TLH -2006-03-16-04
Test Day 4	Sample: 3	SP ~~908333~~ 908334	TLH-2006-03-21-03

Lab Sample #	Collection Date/Time	Received Date/Time
1	3-13-06 0804	3-14-06 10:52
2	3-15-06 0700	3-16-06 10:43
3	3-17-06 0700	3-18-06 10:40

Diluent / Control Batch #:	Days Used
DMW 7-06	0,1,2,3,4,5,6

Investigators' signatures
Bill Hinton
Tyrad Pickard
Erin Ley
Maybelle Faircloth
Jana David
Pete Anna

reviewer Nicole Wellendorf

Comments:
Sample #1 was aerated for approximately 30 minutes at ~100 bubbles per minute to decrease DO concentration from 9.8 mg/L to 7.9 mg/L.
(A) transcription error 0.234 mg/L correct value SP
Sample #3 was aerated for 10 minutes at approximately 100 bubbles per minute to decrease DO concentration from 11.3 mg/L to 8.5 mg/L

revised 6/14/04 JF

000027

Test Page 1

Facility: Orlando Iron Bridge

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
Ceriodaphnia dubia Bench Sheets - Reproduction
SOP TA07_05

Begin Test:
Date: 3-14-06 Time: 1355
End Test:
Date: 3-20-06 Time: 1730

LIMS Sample # 906078 for lab sample #1.

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	total # young	# original organisms	young per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	3	3	0	5	5	4	6	6	40	10	4.0
	4	0	0	6	0	5	0	6	0	0	10	27	10	2.7
	5	4	8	0	7	8	11	0	4	9	0	51	10	5.1
	6	12	12	13	10	11	13	11	11	7	12	112	10	11.2
	7													
	8													
	Total	20	24	22	20	24	29	22	19	22	28	230	10	23.0
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	3	4	3	0	3	3	3	5	5	32	10	3.2
	4	6	0	0	0	2	0	0	0	0	8	16	10	1.6
	5	5	5	5	7	5	7	7	7	8	0	56	10	5.6
	6	8	12	9	10	0	11	8	13	11	11	93	10	9.3
	7													
	8													
	Total	22	20	18	20	7	21	18	23	24	24	197	10	19.7

*Day 0 = equals test initiation day. X = Dead (original organism)

organisms loaded by: BA	
Day	****Counted by:**
0	MF
1	BA
2	~~BA~~
3	MF
4	MF
5	MF
6	MF
7	
8	

**Initials-signatures on Chemistry page.

Comments: test terminated at Day 6.

T-test Value	1.7443	
T-Table Value	1.734	df = 18

reproduction	
LOEC =	100%
NOEC =	NA

Test acceptability
Mean control reproduction 15/female (yes) no
~~Third Brood ≥8 in 60% of surviving females: yes no~~ MF 3.14.06 NA
Temperature range ≤3°: (yes) no
Control survival ≥80%: (yes) no

revised 7/14/04 JF

000028

Test Page 2

Ceriodaphnia dubia Chronic Bioassay Parameters

SOP TA07_05

Sample Source: Orlando/Iron Bridge
LIMS Sample #: 906678 (for lab sample 1)
Start Date: 3-14-06 End Date: 3-20-06
Time: 1355 Time: 1330

Comment:

Test Day		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)
Day 0	sample:	Control	A	8.2	24.7	7.8	~~454~~ (A)					
	1	100%	A	8.1	24.4	7.8	580					
	Measured by:			SP	SP	SP	SP					
	Recorded by:			SP	SP	SP	SP					
Day 1	sample:	Control	B	8.1	24.4	5.8	1822	B	8.0	24.4	7.1	181
	1	100%	B	7.9	24.8	9.0	6001	B	8.3	24.1	7.0	634
	Measured by:			BA	SP	BA	BA		SP	SP	SP	SP
	Recorded by:			BA	SP	BA	BA		SP	SP	SP	SP
Day 2	sample:	Control	C	8.2	24.0	7.9	212	C	8.3	24.7	7.4	226
	2	100%	C	8.5	24.0	7.4	640	C	7.7	24.6	7.4	595
	Measured by:			BA	BA	BA	BA		JD	SP	JD	JD
	Recorded by:			BA	BA	BA	BA		JD	SP	JD	JD
Day 3	sample:	Control	D	8.1	24.9	~~7.5~~ 7.6	~~58~~ 175	D	8.2	25.5	7.2	195
	2	100%	D	7.7	25.4	8.3	~~58~~ 617	D	8.3	25.1	7.2	653
	Measured by:			SP	SP	SP	SP		MF	MF	MF	MF
	Recorded by:			SP	SP	SP	SP		MF	MF	MF	MF
Day 4	sample:	Control	E	8.2	24.0	7.5	173	E	8.1	24.0	7.3	184
	3	100%	E	8.1	24.3	7.8	631	E	8.3	24.0	7.4	632
	Measured by:			JD	JD	JD	JD		JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD		JD	JD	JD	JD
Day 5	sample:	Control	F	8.2	24.0	8.0	204	F	8.1	24.0	7.7	329
	3	100%	F	8.0	24.1	8.1	595	F	8.4	24.1	8.1	651
	Measured by:			JD	JD	JD	JD		JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD		JD	JD	JD	JD
Day 6	sample:	Control	G	8.2	24.2	7.5	179	G	8.2	24.2	7.7	197
	3	100%	G	8.1	24.0	7.8	~~513~~ (B)	G	8.4	24.3	7.6	681
	Measured by:			SP	SP	SP	SP		MF	MF	MF	MF
	Recorded by:			SP	SP	SP	SP		MF	MF	MF	MF
Day 7	sample:	Control	H					H				
	3	100%	H					H				
	Measured by:											
	Recorded by:											
Day 8	sample:	Control						I				
	3	100%						I				
	Measured by:											
	Recorded by:											

(A) transcription error 195 µmhos SP

(B) transcription error 7.6 mg/L SP
(C) transcription error 620 µmhos SP

Test Rep. = Replicate Circle µmhos-cm or mmhos-cm

revised 6/24/04 mf

000029

[redacted]

Chronic Screening Bioassay Benchsheet

Sample Identification, Test Conditions and Physical Chemistry

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas and *M. beryllina* Bench Sheet

Sample Source: Orlando/Iron Bridge Regional WRF
Address: 661 Iron Bridge Circle
County: Seminole
NPDES Permit #FL 0037966
Contact/District Phil Kane/Central District
Start Date 3-14-06 Time 1315 End Date: 3-21-06 Time 1130
LIMS entry: MK 3/14/06 verified: SP 3-31-06
Incubator # 2 Temperature Range: 23.4 - 26.0
Room B246 Temperature Range: 25.1 - 25.2
Feeding: 2 X Daily Artemia Lot#: GSL-S36-90

P. promelas SOP#: TA07_09 *M. beryllina* SOP#: TA07_14
Light Intensity : 50 - 100 ft. candles (yes) no
Photoperiod : 16 light 8 dark (yes) no
Chamber size : 1 L Organism Batch #: S-06
Sample volume : 500 ml Organism age : < 48 (hours) days
Organism: (*P. promelas*) *M.beryllina* (circle one)

Water Quality Parameters

	Field Chlorine mg/L			Lab Chlorine mg/L			Alkalinity mg/L as $CaCO_3$			Hardness mg/L as $CaCO_3$		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	0.00	0.00	not measured	<0.03	<0.03	<0.03	134	116	136	130	137	126 S
Diluent/Control:	[redacted]			<0.03	<0.03	<0.03	69	68 70	70	93	92	92
Method:	Facility meter		-	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	Kane	Kane	-	EW	EW/MF	SP	SP/SA	SK/BA	MF	SP/SA	SA/BA	MF
Verified by:	SP	SP	SP	SP	SP	MF	SP/CJ	SP	SP	SP/CJ	SP	SP

	Conductivity (circle one) µmhos-cm		mmhos-cm	Ammonia mg/L			Salinity ‰		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	580	610	613	<0.017 (A)	[redacted]	<0.017	—	—	—
Diluent/Control:	307	327	321	<0.017	[redacted] (A) <0.017	<0.017	—	—	—
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	BP	BA	MF	MF	MF	MF	-	-	-
Verified by:	SP/CJ	SP	SP	SP	SP	SP	-	-	-

conv. = conversion based on conductivity and temperature

MF Plotted Survival 3/31/06 MF 3-31-06

Statistics (weight / weight)

Control %cv:	5.5 5.7
Dunnetts PMSD:	7.11
Survival NOEC:	100
Survival LOEC:	—
Growth NOEC:	100
Growth LOEC:	—

Sample Received	LAB ID #	LIMS SAMPLE #	LIMS JOB #
Test Day 0	Sample: 1	906678	TLH - 2006-03-14-64
Test Day 2	Sample: 2	907782	TLH - 2006-03-16-54
Test Day 4	Sample: 3	908334	TLH-2006-03-20-03

Lab Sample #	Collection Date/Time	Received Date/Time
1	3-13-06 0804	3-14-06 1052
2	3-15-06 0700	3-16-06 1043
3	3-17-06 0700	3-18-06 1041

Diluent / Control Batch #:	Days Used
MHW 4-06	2,3,4,5
MHW 5-06	0,1
MHW 6-06	6

Investigators' signatures
Frank Pickard
Cari Lee
Marshall Faircloth
Bruce Dolenbee
James Dodd
Scott Anderson

reviewer Nicki Wellendorf

Comments:
#1 Sample was aerated for approximately 20 minutes at 100 bubbles per minute to decrease DO concentration from 9.8 mg/L to 7.9 mg/L
(A) transcription error 0.224 mg/L sample correct value SP control <0.017
Sample #3 was aerated for 10 minutes at approximately 100 bubbles per minute to decrease DO concentration from 11.3 mg/L to 8.5 mg/L.

revised 6/14/04 JF

000047

[redacted]

Chronic Screening Test Survival Benchsheet

Facility: Orlando/Iron Bridge

LIMS Sample Number: 906078
(for Lab Sample # 1)

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
***P. promelas* SOP TA07_09 *M. beryllina* SOP TA07_14**

Organism: (*P. promelas*) *M.beryllina* (circle one)

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	9 10	9
	D	10	10	10	10	10	10	10	10
100 %	A	10	10	10	10	10	9 10	9	9
sample	B	10	10	10	10	10	10	10	10
concentration	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Control	A	10							
	B	10							
	C	10							
	D	10							
%	A	10							
sample	B	10							
concentration	C	10							
	D	10							
Loaded by: MF	Checked by: [redacted]		JD	JD	BA	JD	JD	JD	JD
Verified by: BA									

Survival	%CV	PMSD
Control	5.9%	5.68

Survival	Table	Calculated	dF
T-test	1.94300	0.0000	6

Comments: The No Observed Effect Concentration for Survival is 100% sample. MF 3-31-06

revised 6/24/04 MF

[redacted]

Biology Laboratory Chronic Screening Bioassay Benchsheet
Parameters
P. promelas SOP TA-07_09 *M. beryllina* SOP TA-07_14

Sample Source: Orlando / Iron Bridge
LIMS Sample #: 906078 (for Lab sample #1)
Start Date: 3-14-06 End Date: 3-21-06
Time: 1315 Time: 1130

Test Day		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth
Day 0	sample:	Control	A	8.1	24.8	7.8	307	<1	[redacted]					
	1	100%	A	8.1	24.9	7.9	586	<1						
	Measured by:		[redacted]	SP	SP	SP	SP	SP						
	Recorded by:			SP	SP	SP	SP	SP						
Day 1	sample:	Control	B	8.1	24.9	7.4	328	<1	B	7.9	25.2	6.8	341	<1
	1	100%	B	7.9	24.9	8.7	611	<1	B	8.1	25.10	6.3	647	<1
	Measured by:			SP	SP	SP	SP	SP		SP	SP	SP	SP	SP
	Recorded by:			EW	SP	EW	SP	SP		SP	SP	SP	SP	SP
Day 2	sample:	Control	C	8.1	24.0	7.3	327	<1	C	7.8	24.0	6.7	354	<1
	2	100%	C	7.8	24.2	7.6	610	<1	C	8.1	24.3	6.4	618	4
	Measured by:			BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
	Recorded by:			BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
Day 3	sample:	Control	D	8.0	24.6	5.4	326	<1	D	7.4	24.9	5.8	332	<1
	2	100%	D	7.7	24.8	6.7	616	<1	D	7.7	24.5	5.9	627	<1
	Measured by:			BA	BA	BA	BA	BA		SP	SP/BA	SP	SP	SP
	Recorded by:			BA	BA	BA	BA	BA		SP	BA	SP	SP	SP
Day 4	sample:	Control	A	7.9	24.0	7.2	321	<1	A	7.5	24.0	5.3	330	<1
	3	100%	A	8.0	24.3	7.3	615	<1	A	7.7	24.3	5.5	617	<1
	Measured by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
Day 5	sample:	Control	B	8.0	24.0	7.7	348	<1	B	7.7	24.1	6.5	332	<1
	3	100%	B	7.9	24.2	8.0	619	<1	B	7.9	24.8	6.4	616	<1
	Measured by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
Day 6	sample:	Control	C	8.0	24.0	6.9	328	<1	C	7.7	24.6	6.4	327	<1
	3	100%	C	8.1	24.1	7.0	626	<1	C	8.0	24.4	6.7	622	<1
	Measured by:			BA	BA	BA	BA	BA		BA	JD	BA	BA	BA
	Recorded by:			BA	BA	BA	BA	BA		BA	JD	BA	BA	BA
Day 7	sample:	Control	[redacted]						D	7.8	24.5	7.9	341	<1
	3	100%							D	8.0	24.4	7.9	621	<1
	Measured by:									JD	JD	JD	JD	JD
	Recorded by:									JD	JD	JD	JD	JD

Test Rep. = Replicate — Record Salinity < 1 if freshwater — Circle µmhos-cm or mmhos-cm

Comments:

revised 6/24/04 mf

000049

Page 000050 not used

Orlando-Iron Bridge Regional Water Reclamation Facility

Statistics for C. dubia reproduction and P. promelas growth

***Ceriodaphnia dubia* Chronic Screening Bioassay**
Test Start Date: March 14, 2006
Test End Date: March 20, 2006
DUNNETTS Procedure for Reproduction

Summary Statistics and ANOVA
Transformation = None

Concentration.	Replicates	Mean Reproduction	Standard. Deviation	%Coefficient of Variation
Control	10	23.0000	3.3333	14.5
100%*	10	19.7000	4.9677	25.2

* the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -3.272806
This difference corresponds to -14.23 percent of control
PMSD = 14.23%

Between concentrations
sum of squares = 54.450000 with 1 degrees of freedom.
Error mean square = 17.894444 with 18 degrees of freedom.
Bartlett's test p-value for equality of variances = .242

***Pimephales promelas* Chronic Screening Bioassay**
Test Start Date: March 14, 2006
Test End Date: March 20, 2006
DUNNETTS Procedure for growth

Summary Statistics and ANOVA
Transformation = None

Concentration.	Replicates	Mean Weight	Standard. Deviation	%Coefficient of Variation
Control	4	0.3915	0.0224	5.7
100%	4	0.3655	0.0179	4.9

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -.027822
This difference corresponds to -7.11 percent of control
PMSD = 7.11%

Between concentrations
sum of squares = .001352 with 1 degrees of freedom.
Error mean square = .000411 with 6 degrees of freedom.
Bartlett's test p-value for equality of variances = .708

T-test Statistics for Orlando - Iron Bridge Water Reclamation Facility

Sample: Orlando - Iron Bridge WRF Dates tested: 3/14/2006 - 3/20/2006
Species: *Ceriodaphnia dubia* Test Type: chronic screen
Reproduction

Replicate	Teatment A Control	Treatment B 100%
1	20.000	22.000
2	24.000	20.000
3	22.000	18.000
4	20.000	20.000
5	24.000	7.000
6	29.000	21.000
7	22.000	18.000
8	19.000	23.000
9	22.000	24.000
10	28.000	24.000
Average	23.00000	19.70000
	t-value=	**1.73347**
	df=	18

10 Replicates per Concentration	
	p=0.05
df	Table t-value
1	6.31400
2	2.92000
3	2.35300
4	2.13200
5	2.01500
6	1.94300
7	1.89500
8	1.86000
9	1.83300
10	1.81200
18	**1.734**

Sample: Orlando-Iron Bridge WRF Date tested: 3/14/2006 - 3/21-2006
Species: *Pimephales promelas* Test Type: chronic screen
Growth

Replicate	Teatment A Control	Treatment B 100%
1	0.390	0.361
2	0.402	0.391
3	0.413	0.349
4	0.361	0.361
Average	0.39150	0.36550
	t-value=	**1.81297**
	df=	6

4 Replicates per Concentration	
	p=0.05
df	Table t-value
1	6.31400
2	2.92000
3	2.35300
4	2.13200
5	2.01500
6	**1.94300**
7	1.89500
8	1.86000
9	1.83300
10	1.81200
18	1.734

T-test Statistics for Orlando - Iron Bridge Water Reclamation Facility

Survival

Sample: Orlando - Iron Bridge WRF Dates tested: 3/14/2006 - 3/20/2006

Species: *Ceriodaphnia dubia* Test Type: chronic screen

Replicate	Treatment A Control	Treatment B 100%	10 Replicates per Concentration	
1	1.00	1.00		p=0.05
2	1.00	1.00	df	Table t-value
3	1.00	1.00	1	6.31400
4	1.00	1.00	2	2.92000
5	1.00	1.00	3	2.35300
6	1.00	1.00	4	2.13200
7	1.00	1.00	5	2.01500
8	1.00	1.00	6	**1.94300**
9	1.00	1.00	7	1.89500
10	1.00	1.00	8	1.86000
			9	1.83300
Average	1.00	1.00	10	1.81200
			18	1.734
	t-value=	**0.00000**		
	df=	18		

Sample: Orlando - Iron Bridge WRF Date tested: 3/14/2006 - 3/21/2006

Species: *Pimephales promelas* Test Type: chronic screen

Replicate	Treatment A Control	Treatment B 100%	4 Replicates per Concentration	
1	1.00	0.90		p=0.05
2	1.00	1.00	df	Table t-value
3	0.90	1.00	1	6.31400
4	1.00	1.00	2	2.92000
			3	2.35300
Average	0.975	0.975	4	2.13200
			5	2.01500
	t-value=	**0.00000**	6	**1.94300**
	df=	6	7	1.89500
			8	1.86000
			9	1.83300
			10	1.81200
			18	1.734

Chronic Screening Test Weighing Benchsheet

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas and *M. beryllina* Bench Sheet
SOP TA06_21

Facility: Orlando / Union Bridge

LIMS Sample Number: 906678
(for Lab Sample # 1)

Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Control	A	184	0.02499	0.02889	0.00390	10	0.390
	B	185	0.02501	0.02903	0.00402	10	0.402
	C	187	0.02596	0.03009	0.00413	10	0.413
	D	196	0.02549	0.02910	0.00361	10	0.361
100 % sample	A	197	0.0241	0.02772	0.00361	10	0.361
	B	198	0.02547	0.02938	0.00391	10	0.391
	C	199	0.02450	0.02799	0.00349	10	0.349
	D	200	0.02551	0.02912	0.00361	10	0.361
Control	A					10	
	B					10	
	C					10	
	D					10	
% sample	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		MF	MF			

Growth	%CV	PMSD
Control	5.7	7.11

Growth	Table	Calculated	dF
T-test	1.94300	1.81297	6

Drying	
Temperature °C:	105°C
Hours:	8 hours

Tare Weighing Date: 3-20-06 Final Weighing Date: 3-22-06

			Measured Value		S-weight Value
Tare Pan 1 after Pan 5	0.02498 @ 0.02499	S-weights	0.01999	@	0.02000
Tare Pan 1 after Pan 8	0.02498 @ 0.02499	at tare	0.02997	@	0.03000
Final Pan 1 after Pan 5 Reversed 3/21/06	0.02859 @ 0.02890	S-weights	0.02000	@	0.02000
Final Pan 1 after Pan 8	0.02889 @ 0.02889	at final	0.02997	@	0.03000

MF 3-22-06

Comments: The No Observed Effect Concentration for growth is 100% sample MF 3-31-06

revised 6/21/04 MF

000051

Appendix G

Standard Reference Toxicant data

Ceriodaphnia dubia NaCl Standard Reference Toxicant Test

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Bioassay
Ceriodaphnia dubia Bench Sheet - Chemistry

Sodium Chloride is the Toxicant
20% DMW is the Diluent
TEST START: 3-14-06 1630
TEST END: 3-20-06 1315

Incubator # 2
temperature Range - 23.4-26.0°C
Room B246 25.1-25.2°C

		New Sample				Old Sample	
	Conc.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm)	pH (su)	DO (mg/L)
Day 0	Control	8.0	24.4	7.7	170		
Day:	0.59 ‰	8.0			1294		
Measured	0.89 ‰	8.0			1838		
by: SP	1.3 ‰	8.0			2620		
Recorded	2.0 ‰	8.0			3780		
by: SP	3.0 ‰	8.1	25.0	7.5	5430		
Day 1	Control	8.0	24.6	7.4	174	8.0	7.3
Day:	0.59 ‰	8.1			1301	8.0	7.1
Measured	0.89 ‰	8.1			1849	8.0	7.2
by: MF	1.3 ‰	8.1			2640	8.0	7.1
Recorded	2.0 ‰	8.1			3780	8.0	7.1
by: MF	3.0 ‰	8.1	25.0	7.2	5480	7.9	7.0
Day 2	Control	8.0	24.5	6.0	1922	8.0	5.1
Day:	0.59 ‰	8.1			1284	8.0	5.2
Measured	0.89 ‰	8.1			1818	8.0	5.2
by: BA	1.3 ‰	8.1			2560	8.1	5.3
Recorded	2.0 ‰	8.1	24.7	6.3	3750	8.1	5.2
by: BA	3.0 ‰	8.1	24.8	6.2	5440	8.1	5.2
Day 3	Control	8.1	24.5 (B)	6.0 (B)	178	8.0	7.6
Day:	0.59 ‰	8.1			1300	8.0	7.4
Measured	0.89 ‰	8.1			1823	8.0	7.5
by: SP	1.3 ‰	8.1	(B)		2570	8.0	7.5
Recorded	2.0 ‰	8.1	24.7 (B)	6.3 (B)	3820	8.0	7.3
by: SP	3.0 ‰	—	24.8	[illegible] BA	—	8.0	7.4

(A) (Bruce [redacted] and wrote it in the wrong boxes) MF crossed out with wide tip ruler then renewed (Am) Tip pen.

(B) Day 3 New Sample
Control 25.2°C 7.5 mg/L DO
2.0‰ 25.5°C 7.5 mg/L DO

		New Sample				Old Sample	
	Conc.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm)	pH (su)	DO (mg/L)
Day 4	Control	8.2	24.4	7.7	169	8.1	7.4
Day:	0.59 ‰	8.1			1267	8.1	7.3
Measured	0.89 ‰	8.1			1805	8.1	7.4
by: SP	1.3 ‰	8.1			2580	8.1	7.3
Recorded	2.0 ‰	8.0	24.7	7.5	3790	8.1	7.3
by: SP	3.0 ‰	—	—	—	—	—	—
Day 5	Control	8.0	24.0	7.7	217	8.1	7.3
Day:	0.59 ‰	8.0			1241	8.1	7.5
Measured	0.89 ‰	8.0			1790	8.1	7.3
by: JD	1.3 ‰	8.0			2540	8.1	7.5
Recorded	2.0 ‰	8.1	24.0	7.6	3760	8.1	7.5
by: JD	3.0 ‰	—	—	—	—	—	—
Day 6	Control	8.1	24.5	7.6	1906	8.1	7.6
Day:	0.59 ‰	8.1			1278	8.1	7.6
Measured	0.89 ‰	8.0			1820	8.1	7.6
by: SP	1.3 ‰	8.1			2600	8.1	7.5
Recorded	2.0 ‰	8.1	24.7	7.7	3580	8.1	7.4
by: SP	3.0 ‰	—	—	—	—	—	—
Day 7	Control						
Day:	0.59 ‰						
Measured	0.89 ‰						
by:	1.3 ‰						
Recorded	2.0 ‰						
by:	3.0 ‰						
Day 8	Control						
Day:	0.59 ‰						
Measured	0.89 ‰						
by:	1.3 ‰						
Recorded	2.0 ‰						
by:	3.0 ‰						

Remarks: Record 2.0 ‰ data when all organisms in 3.0 ‰ are dead.

Test Terminated at Day 6.
Control requirements of
1) 80% survival (minimum)
2) 60% of surviving females producing 3rd brood
3) average of 15 neonates
were met. MF 3-31-06

Water Quality Parameters

	Chlorine	Alkalinity	Hardness	Ammonia
20 % DMW	<0.017	83	97	<0.01
NaCl	<0.017	88	—	<0.017
Measured by:	MF	SA by MF	SA by MF	MF
Verified by:	MF	MF	MF	MF

(A) MF ammonia recorded in Chlorine space MF: Chlorine ISS <0.03 for Both Measured by EW, MF 3/31/06

Investigators' signatures
Sarah Pinchak
Marshall Faircloth
Angel Audisio
Erin Tuja
Jason Pinto
Amy Cruse
Nicole Wellendorf
reviewer

Chlorine blank: <0.03
Ammonia meter slope: -57.48
Ammonia blank: <0.017

NaCl batch #: 2-06
YCT batch #: 5-05
Algae batch #: 1-06
Diluent batch #: 7-06 Days Used: 6
Diluent batch #: — Days Used: —

form updated 11/03/03 JA

Page 21 of 30

[redacted]

Ceriodaphnia dubia NaCl Standard Reference Toxicity Test
Sodium chloride is the toxicant.
20% DMW is the diluent.

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Bioassay
Ceriodaphnia dubia Bench Sheets - Reproduction

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	# young	# adults	young adults
Control	0	[redacted]											10	
	1	[redacted]											10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	3	4	0	5	3	5	5	6	35	10	3.5
	4 (B)	~~03~~	~~02~~	30	50	~~04~~	~~05~~	06	~~00~~	~~30~~	50	14	10	1.4
	5	7	9	6	7	8	7	9	5	7	9	74	10	7.4
	6	11	12	12	13	8	17	12	12	11	15	123	10	12.3
	7													
	8													
	Total	21	27	21	24	20	34	29	22	23	30	246	10	24.6
0.59 ppt	0	[redacted]											10	
	1	[redacted]											10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	3	5	0	0	6	6	3	5	28	10	2.8
	4	2	3	0	0	2	6	0	1	0	0	14	10	1.4
	5	5	7	4	9	8	9	10	8	7	8	75	10	7.5
wrong conc. used Day 5	6 (D)	~~00~~	~~00~~	12	10	11	14	10	13	12	13	111	10	11.1
	7													
	8													
	Total	13	20	19	24	21	29	26	28	22	26	228	10	22.8
0.89 ppt	0	[redacted]											10	
	1	[redacted]											10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3 (A)	0	~~30~~	~~53~~	~~05~~	40	~~64~~	5	3	4	7	35	10	3.5
	4	5	2	0	0	2	0	0	0	0	0	9	10	0.9
	5	8	0	6	6	6	0	7	6	6	4	49	10	4.9
	6	7	8	11	10	14	0	12	11	10	9	92	10	9.2
	7													
	8													
	Total	20	10	20	21	~~28~~	4	24	20	20	20	185	10	18.5
1.3 ppt	0	[redacted]											10	
	1	[redacted]											10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	3	0	0	0	5	0	1	2	11	10	1.1
	4 (C)	2	2	0	0	~~23~~	~~05~~	0	3	0	0	15	10	1.5
	5	4	7	7	6	8	6	7	5	4	7	61	10	6.1
	6	10	10	14	7	17	10	12	6	8	11	88	10	8.8
	7													
	8													
	Total	16	19	24	13	11	21	24	14	13	20	175	10	17.5
2.0 ppt	0	[redacted]											10	
	1	[redacted]											10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	2	0	X0	0	0	1	0	0	3	~~10~~ 9	0.3
	4	0	1	0	0	1	1	0	0	0	0	2	9(10)	0.2
	5	2	1	5	4	1	2	4	0	4	1	23	9(10)	2.3
	6	7	3	6	0	1	0	9	0	5	0	30	9(10)	3.0
	7													
	8													
	Total	9	5	13	4	1	3	13	1	9	1	58	9(10)	5.8
3.0 ppt	0	[redacted]											10	
	1	[redacted]						X					9	
	2	X	X	X	X	X	X	X	1	0	0	0	2	0
	3	1	1	1	1	1	1	1	1	X	X	0	0	0
	4	1	14	1	1	1	1	1	1	1	1	0	1	0
	5	1	1	1	1	1	1	1	1	1	1	0	1	0
	6	1	1	1	1	1	1	1	1	1	1	0	1	0
	7	1	1	1	1	1	1	1	1	1	1	0	1	
	8	1	1	1	1	1	1	1	1	1	1	0	1	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Begin Test:
Date: 3-14-06 Time: 1030
End Test:
Date: 3-20-06 Time: 1315
Loading verified by: BA

Day	Counted by:
1	BA/SP
2	SP
3	SP
4	SP
5	MF
6	MF
7	—
8	—

Loaded by: MF

Remarks:
Organism batch 12-06
Vials used
A7, A11, A15, A18, A26
B2, B15, B21, B27 MF 3/17/06

(A) replicates 2-6 corrected 2-17-06 SP transcription error
(B) wrote in wrong day's values Corrected SP
(C) replicates 5 & 6 transcription error SP
(D) wrote 0.89 Day 5 Rep 1 + Rep 2 on 0.59 Day 6 again MF 3/18/06
DAY 6 0.59 Rep 1 = 6 Rep 2 = 10

Control % M = 18.2%
LOEC = 0.89 g/L
NOEC = 0.59 g/L
PMSD = 20.49%
IC p20 = 0.7891 g/L
95% CI (0.5130 - 0.2326)
IC p25 = 0.8677 g/L
95% CI (0.6893 - 1.3928)

Investigators' Signatures
3-17-06 Rep 5 & 6 NOT Included MF

[redacted]
Marshall Faircloth
[redacted]
[redacted]
[redacted]
[redacted]
reviewer

Page 22 of 30

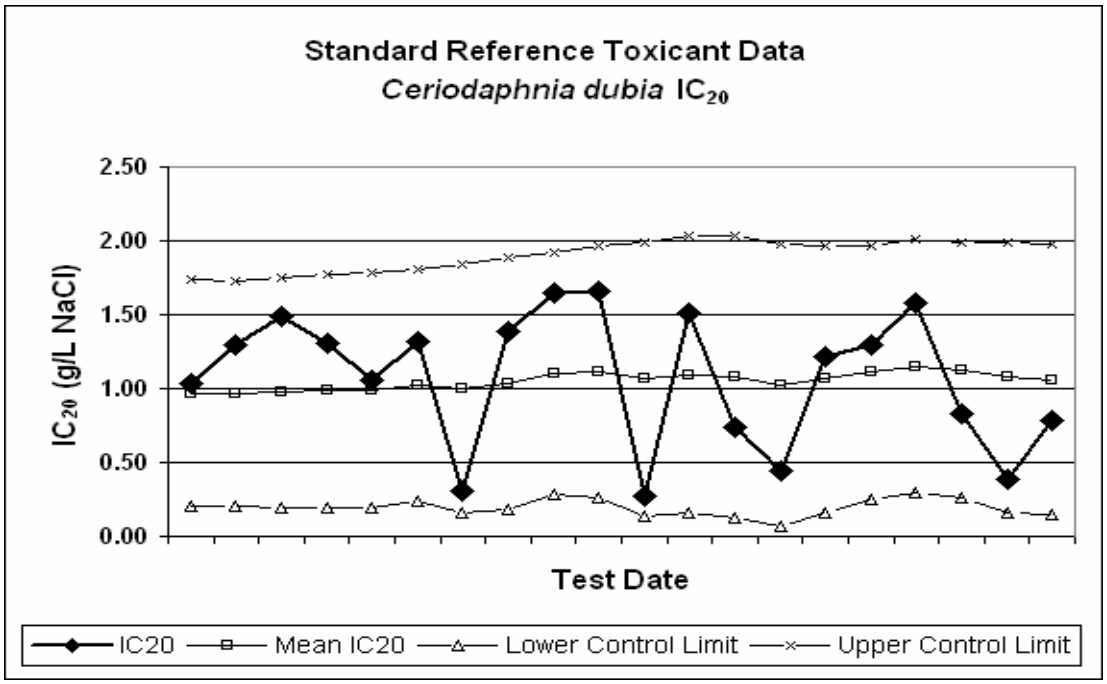
form updated 11/03/03 JA

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
10/29/02	1.03	0.97	0.39	0.20	1.74
01/07/03	1.30	0.97	0.38	0.20	1.73
02/11/03	1.48	0.97	0.39	0.19	1.75
03/04/03	1.31	0.98	0.40	0.19	1.78
04/22/03	1.05	0.99	0.40	0.20	1.78
09/09/03	1.32	1.02	0.39	0.24	1.81
10/14/03	0.31	1.00	0.42	0.16	1.84
11/18/03	1.39	1.03	0.42	0.19	1.88
01/20/04	1.65	1.10	0.41	0.28	1.92
05/04/04	1.66	1.12	0.43	0.26	1.97
05/18/04	0.27	1.06	0.46	0.14	1.99
06/01/04	1.51	1.10	0.47	0.15	2.04
06/22/04	0.73	1.08	0.48	0.13	2.03
08/24/04	0.45	1.02	0.48	0.06	1.98
10/18/04	1.22	1.07	0.45	0.16	1.97
11/16/04	1.29	1.11	0.43	0.25	1.96
08/09/05	1.58	1.15	0.43	0.30	2.01
12/13/05	0.83	1.13	0.43	0.26	1.99
02/07/06	0.39	1.08	0.46	0.16	1.99
03/14/06	0.79	1.06	0.46	0.15	1.98

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



FDEP Bureau of Laboratories

Chronic Standard Reference Toxicant Bioassay Inhibition Concentration Calculation

Test Species: *Ceriodaphnia dubia* Test Duration: 6 days

Toxicant: NaCl Concentration: g/L

Test Start Date: 3/14/06 Test Ending Date: 3/20/06

DATA FILE: cdrep306.icp

Concentration. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	10	24.600	4.477	24.600
0.59	10	22.800	4.826	22.800
0.89	10	18.100	6.154	18.100
1.3	10	17.500	4.743	17.500
2.0	10	5.800	4.894	5.800
3.0	10	0.000	0.000	0.000

The Linear Interpolation Estimate: 0.7891 Entered P Value: 20

Number of Resamplings: 80 80 Resamples Generated

The Bootstrap Estimates Mean: 0.8222 Standard Deviation: 0.1669

Original Confidence Limits: Lower: 0.5130 Upper: 1.2326

Resampling time in Seconds: 0.00 Random_Seed: 977453110

ICP_{20} 0.7891

FDEP Biology Section—Chronic SRT Bench Sheet

Survival

Test Type: Screening (Definitive)
Temperature range: room 25.1 - 25.2
incubator 2 23.9 - 26.0
Test Number: 1
D=Dead M=Missing

Test Beginning: Date 3-14-06 Time 1150
Test Ending: Date 3-21-06 Time 1030
Organism Batch#: 5-06 Diluent Batch #: 4.00 Evian
Organism age: < 48 hrs

Comments:

Test organism: P. promelas

Toxicant batch -- 2-06 KCl

(g/L) Concentration		Replicate/ Chamber #	Day 0	1	2	3	4	5	6	7	8
CTRL	A	B1	10	10	10	10	10	10	10	10	
	B	B2	10	10	10	10	10	10	9 D	9	
	C	B3	10	10	10	10	10	10	10	10	
	D	B4	10	10	10	10	10	10	10	10	
0.125	A	B5	10	10	10	10	10	10	10	10	
	B	B6	10	10	10	10	10	10	10	10	
	C	B7	10	10	10	10	10	10	10	10	
	D	B8	10	10	10	10	10	10	10	10	
0.250	A	B9	10	10	10	10	10	10	10	10	
	B	B10	10	10	10	9 1D	9	9	9	9	
	C	B11	10	9 1D	9	9	9	9	9	9	
	D	B12	10	10	10	10	10	10	10	10	
0.500	A	B13	10	10	10	10	10	10	10	10	
	B	B14	10	10	10	10	10	10	9	10	
	C	B15	10	10	10	10	9 1D	9	9 1D	8	
	D	B16	10	10	10	9 1D	9	9	9	9	
1.00	A	B17	10	4 6D	~~3 7D~~	2	2	2	1 1D	1	
	B	B18	10	5 5D	0 5D	-	-	-	-	-	
	C	B19	10	8 2D	3 5D	3	3	3	3	3	
	D	B20	10	7 3D	0 7D	-	-	-	-	-	
2.00	A	B21	10	3 7D	0 3D	-	-	-	-	-	
	B	B22	10	2 8D	0 2D	-	-	-	-	-	
	C	B23	10	0 10D	-	-	-	-	-	-	
	D	B24	10	1 9D	0 1D	-	-	-	-	-	
Loaded by: MF Renewed by:			BA	MF/BA	BA	BA	JD	JD	JD	JD	
Concentrations Prepared by:			SP	MF/BA	BA	BA	JD	JD	JD	JD	

Investigators' signatures

Sarah Pickland
Marshall Farnsworth
Bill Reconder
Jane Dash
Steve Custer
Kyle Nelson

reviewer (sign above)

(A) Added Salinity MF 3-15-06

Water Quality Parameters

Verified by: BA

	Diluent	Sample	Method	Measured by
Field total residual Cl_2:	NA	NA	NA	NA
Lab total residual Cl_2:	<0.03	<0.03	Hach	EW + NW by MF
Alkalinity (mg/L as $CaCO_3$):	67	76	Hach	SA
Hardness (mg/L as $CaCO_3$):	92.5	—	Hach	SA
Ammonia (mg/L as N):	<0.017	<0.017	Denver	MF

Ammonia blank: <0.017 TRC blank: <0.03 Salinity: <1 Control <1 Sample 2 Conductivity and Temperature

revised 08/14/02

Survival
Control CV = 5.9%
NOEC = 0.50 g/L
LOEC = 1.00 g/L
PMSD = 11.11 %

000132

Weight Data for SRT, larval survival and growth test.

Test Date(s): 3-14-06 - 3-21-06
Tare weighing Date: 3-20-06
Final weighing Date: 3-22-06

Drying Temperature (°C): 105°C
Drying Time (h): 8 hours

Dunnetts
Control CV = 6.5%
PMSD = 17.95%
NOEC = 0.500 g/L
ICp20 wt = 0.6065
95% CI (0.5618 - 0.6343)
ICp25 wt = 0.6343
95% CI (0.5932 - 0.6477)

		A (grams)	B (grams)	B-A	C	(B-A)/C
		Wgt.of Tare	Dry Wgt.	Total Dry Wgt.	Number of	Mean Dry Wgt.
Concentration	Rep #	—	tare and larve	of larve	larve	of Larve	Comments
Control Pan# 96	A	0.02522	0.02810	0.00288	10	0.288	
97	B	0.02555	0.02811	0.00256	10	0.256	
98	C	0.02451	0.02745	0.00294	10	0.294	
99	D	0.02427	0.02722	0.00295	10	0.295	
Concentration 100	A	0.02495	0.02716	0.00221	10	0.221	
0.125 g/L 101	B	0.02496	0.02794	0.00298	10	0.298	
102	C	0.02439	0.02732	0.00293	10	0.293	
150	D	0.02494	0.02775	0.00281	10	0.281	
Concentration 77	A	0.02614	0.02892	0.00278	10	0.278	
0.250 g/L 103	B	0.02424	0.02762	0.00338	10	0.338	
104	C	0.02438	0.02718	0.00280	10	0.280	
105	D	0.02525	0.02767	0.00242	10	0.242	
Concentration 81	A	0.02474	0.02731	0.00257	10	0.257	
0.500 g/L 82	B	0.02506	0.02825	0.00319	10	0.319	
164	C	0.02567	0.02860	0.00293	10	0.293	
165	D	0.02492	0.02760	0.00268	10	0.268	
Concentration 86	A	0.02452	0.02474	0.00022	10	0.022	
	—	—		—	—	—	
1.0 g/L 167	C	0.02540	0.02624	0.00084	10	0.084	
		—					
Concentration							
Concentration							
Weighed by		MF	MF				

Weigh Boats prepared by: DN by MF

S weights at Tare

1 0.01999 @ 0.02000

2 0.02997 @ 0.03000

at tare
Pan 96 start 0.02522 after 100 - 0.02523
157 - 0.02524
161 - 0.02525
167 - 0.02522

S weights at Final

1 0.02000 @ 0.02000

2 0.02997 @ 0.03000

at final
Pan 96 start 0.02810 after 100 - 0.02810
157 - 0.02812
161 - 0.02810
167 - 0.02810

revised 5/21/98

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas							Organism Batch # 5-06			
Test Number: 1	Date: 3-14-06			Hour of test: 0				Dilution H20 Batch # 5-06			
	Before Renewal			Time: 1130			After Renewal			Time:	
Concentrations (g/L)	Rep	pH	Temp.C	D.O.	Cond.(m)	Rep	pH	Temp.C	D.O.	Cond.	
CTRL	A	8.1	24.9	7.8	0.303						
0.125	A	8.0	25.0	7.9	0.530						
0.250	A	8.0	25.0	7.9	0.763						
0.500	A	8.0	24.9	7.8	1.21						
1.00	A	8.1	24.9	7.7	2.08						
2.00	A	8.1	24.8	7.8	3.79						
^ Measured by:		[illegible]	[illegible]	[illegible]	[illegible]						
^ Recorded by:		[illegible]	[illegible]	[illegible]	[illegible]						

m = millimhos/cm

revised 8/14/02

^ See first test page for investigator signatures

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. Promelas					Organism Batch # 5-06				
Test Number: 1	Date: 3-15-06			Hour of test: 24		Dilution H20 Batch # 5-06				
	Before Renewal			Time: 1020		After Renewal			Time: 1100	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.(m)	Rep	pH	Temp.C	D.O.	Cond. (m)
Control	B	8.0	25.1	6.9	0.354	B	8.0	24.7	7.2	0.320
0.125	B	7.9	25.2	7.0	0.576	B	8.0	24.7	7.4	0.546
0.250	B	7.9	24.8	7.2	0.816	B	8.0	24.5	7.4	0.778
0.500	B	7.9	24.9	6.9	1.277	B	8.0	24.5	7.5	1.226
1.0	B	7.9	24.7	6.7	2.17	B	8.0	24.4	7.4	2.11
2.0	B	7.8	24.6	6.5	3.84	B	7.9	24.5	7.3	3.83
^ Measured by:		mf	mf	mf	mf		mf	mf	mf	mf
^ Recorded by:		mf	mf	mf	mf		mf	mf	mf	mf

m = millimhos-cm

revised 8/14/02

^ See first test page for investigator signatures

00015

Page of

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P promelas				Organism Batch # 5-06					
Test Number: 1	Date: 3-16-06		Hour of test: 48		Dilution H20 Batch # ~~5-06~~ 4-06					
	Before Renewal		Time: 10 20			After Renewal		Time: 11 15		
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond(µ)	Rep	pH	Temp.C	D.O.	Cond(µ)
Control	C	7.8	25.1	5.9	327	C	8.0	24.0	6.4	333
0.125	C	7.8	~~25.9~~ 25.9 BA	6.3	567	C	7.9	24.1	7.1	556
0.250	C	7.8	25.5	6.6	789	C	8.0	24.1	6.9	794
0.500	C	7.8	24.5	6.5	1262	C	8.0	24.5	6.9	1261
1.0	C	7.8	25.8	5.8	2170	C	8.0	24.5	6.6	2100
2.0	(A) ED	7.9 ~~7.8~~ BA	24.5	6.4	3910	—	—	—	—	—
^ Measured by:		BA	BA	BA	BA	BA	BA	BA	BA	BA
^ Recorded by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

revised 8/14/02

(A) Rep 2.0 "C" data, parameters taken on "D"

^ See first test page for investigator signatures

mS = millisiemens

uS = microsiemens

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas				Organism Batch # 5-06					
Test Number: 1	Date: 3-17-06		Hour of test: 72		Dilution H20 Batch # 5-4-06					
	Before Renewal		Time: ≈10:00			After Renewal		Time: 1658		
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.(µ)	Rep	pH	Temp.C	D.O.	Cond(µ)
Control	D	7.9	25.8	6.4	330	D	8.0	24.4	5.2	322
0.125	D	7.8	25.0	6.4	558	D	8.0	25.1	5.8	553
0.250	D	7.7	24.8	5.8	796	D	8.0	25.0	5.3	783
0.500	D	7.7	24.8	5.6	1139	D	8.0	25.0	6.0	1206
1.0	D BA C	7.7	24.7	5.8	2090	C	8.0	25.0	6.0	2070
2.0	—	—	—	—	—	—	—	—	—	—
^ Measured by:		BA	BA	BA	BA	BA	BA	BA	BA	BA
^ Recorded by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

m: millimhos/cm

µ: micromhos/cm

revised 8/14/02

^ See first test page for investigator signatures

000137

Page of

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P promelas						Organism Batch # 5-06				
Test Number: 1	Date: 3-18-06			Hour of test: 96			Dilution H20 Batch # ~~5-06~~ 4Oc				
	Before Renewal			Time: 0945			After Renewal			Time: 1000	
Concentrations 9/L	Rep	pH	Temp.C	D.O.	Cond(µ)	Rep	pH	Temp.C	D.O.	Cond(µ)
Control	A	7.6	24.4	6.4	330	A	7.9	24.1	7.3	318
0.125	A	7.6	25.9	6.1	560	A	7.9	24.5	7.5	554
0.250	A	7.5	25.5	5.7	787	A	8.0	24.8	7.5	787
0.500	A	7.5	25.3	5.7	1230	A	7.9	24.9	7.6	1232
1.0	A	7.6	24.5	6.2	2060	A	7.9	24.9	7.5	2070
2.0	—	—	—	—	—	—	—	—	—	—
^ Measured by:		JD	JD	JD	JD		JD	JD	JD	JD
^ Recorded by:		JD	JD	JD	JD		JD	JD	JD	JD

m = mill.

mc = microcentrifuge

revised 8/14/02

^ See first test page for investigator signatures

Page of 000138

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas					Organism Batch # 5-06				
Test Number: 1	Date: 3-19-06			Hour of test: 120		Dilution H20 Batch # ~~56-00~~ 466				
	Before Renewal			Time: 0930		After Renewal			Time: 0945	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond(µ)	Rep	pH	Temp.C	D.O.	Cond(µ)
Control	B	7.7	24.9	6.9	320	B	8.0	24.1	7.5	321
0.125	B	7.9	25.4	6.8	560	B	8.1	24.9	7.4	544
0.250	B	7.8	25.0	6.9	770	B	8.0	24.9	7.6	769
0.500	B	7.8	24.8	7.0	1229	B	8.0	24.9	7.5	1219
1.0	C	7.8	25.8	7.1	2120	C	8.0	25.0	7.5	2070
2.0	-	-	-	-	-	-	-	-	-	-
^ Measured by:		JD	JD	JD	JD		JD	JD	JD	JD
^ Recorded by:		JD	JD	JD	JD		JD	JD	JD	JD

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^ See first test page for investigator signatures

000139

Page of

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas						Organism Batch # 5-06				
Test Number: 1	Date: 3-20-06		Hour of test: 144				Dilution H20 Batch # 6-00				
	Before Renewal		Time: 1215				After Renewal		Time: 1230		
Concentrations g/L	Rep	pH	~~Temp.C~~ DO.	~~D.O.~~ Temp	Cond(µ)	Rep	pH	Temp.C	D.O.	Cond(µ)
Control	C	7.6	6.0	24.6	329	C	8.0	24.0	7.4	333
0.125	C	7.6	6.9	24.5	565	C	8.0	24.0	7.2	569
0.250	C	7.6	7.0	24.5	801	C	8.1	24.1	7.1	761
0.500	C	7.7	6.9	24.9	1285	C	8.0	24.1	7.1	1238
1.0	C	7.7	6.9	24.7	2140	C	8.0	24.1	7.0	2110
2.0	C	-	-	-	-	-	-	-	-	-
^ Measured by:		SP	SP	SP	SP	BA	BA	BA	BA	BA
^ Recorded by:		SP	SP	SP	SP	BA	BA	BA	BA	BA

revised 8/14/02

^ See first test page for investigator signatures

[redacted]

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P promelas					Organism Batch # 5-06				
Test Number: 1	Date: 3/21/06			Hour of test: 168		Dilution H20 Batch # L-06				
	Before Renewal			Time: 1030		After Renewal			Time:	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond. m	Rep	pH	Temp.C	D.O.	Cond.
Control	D	7.9	25.2	7.4	0.356					
0.125	D	7.9	24.9	7.7	0.584					
0.250	D	7.9	24.7	7.2	0.798					
0.500	D	7.8	24.7	7.1	1.31					
1.0	A	7.9	25.0	7.1	2.15					
2.0										
^ Measured by:		JD	JD	JD	JD					
^ Recorded by:		JD	JD	JD	JD					

M: M. Himstedt

revised 8/14/02

^ See first test page for investigator signatures

000141

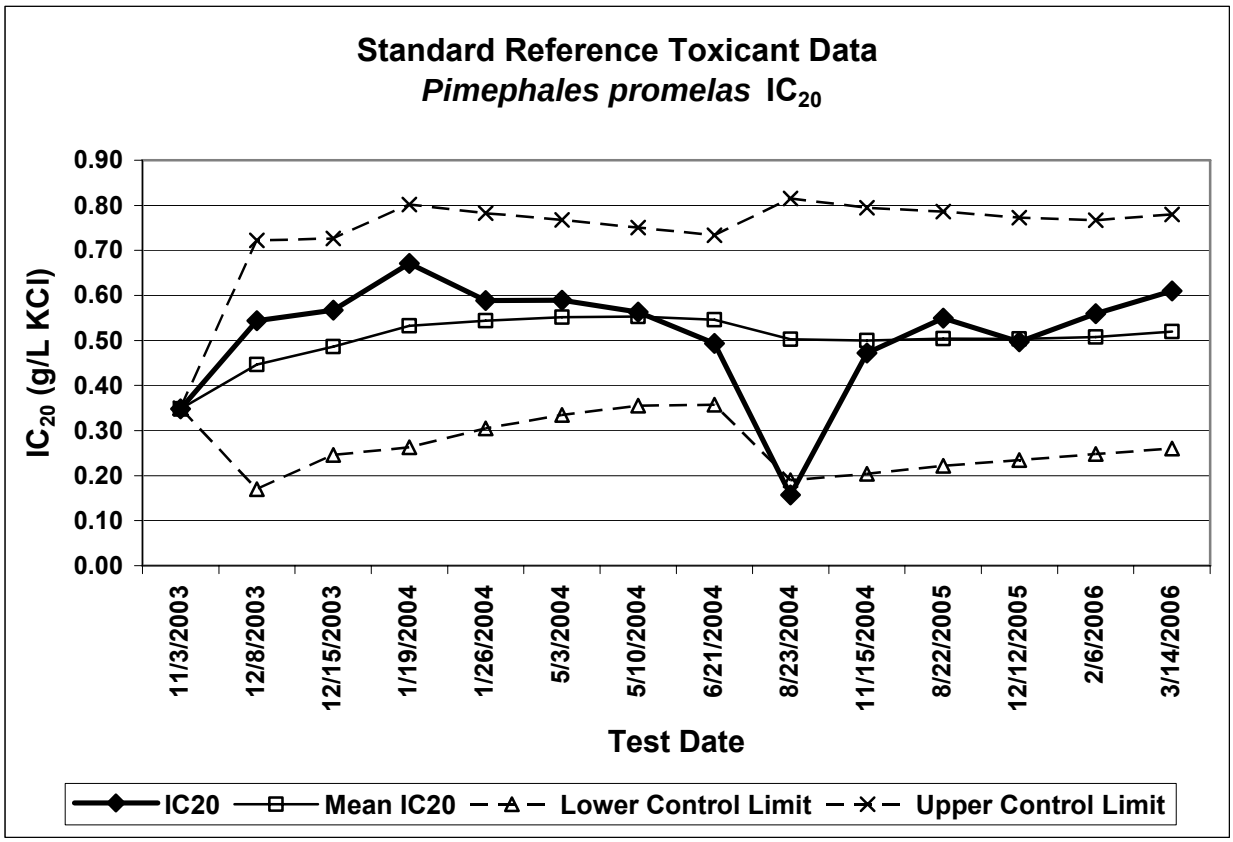
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Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
11/3/2003	0.35	0.35	0.35	0.35	0.35
12/8/2003	0.54	0.45	0.14	0.17	0.72
12/15/2003	0.57	0.49	0.12	0.25	0.73
1/19/2004	0.67	0.53	0.13	0.26	0.80
1/26/2004	0.59	0.54	0.12	0.31	0.78
5/3/2004	0.59	0.55	0.11	0.33	0.77
5/10/2004	0.56	0.55	0.10	0.36	0.75
6/21/2004	0.49	0.55	0.09	0.36	0.73
8/23/2004	0.16	0.50	0.16	0.19	0.82
11/15/2004	0.47	0.50	0.15	0.20	0.80
8/22/2005	0.55	0.50	0.14	0.22	0.79
12/12/2005	0.50	0.50	0.13	0.23	0.77
2/6/2006	0.56	0.51	0.13	0.25	0.77
03/14/06	0.61	0.52	0.13	0.26	0.78

Means are from all SRT tests, up to 20 tests..
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



FDEP Bureau of Laboratories

Chronic Standard Reference Toxicant Bioassay Inhibition Concentration Calculation

Test Species: *Pimephales promelas* Test Duration: 7 days

Toxicant: KCl Concentration: g/L

Test Start Date: 3/14/06 Test Ending Date: 3/21/06

DATA FILE: ppwt306.icp

Conc. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	4	0.283	0.018	0.283
0.125	4	0.273	0.036	0.281
0.250	4	0.285	0.040	0.281
0.500	4	0.285	0.027	0.281
1.000	4	0.027	0.040	0.027
2.000	4	0.000	0.000	0.000

The Linear Interpolation Estimate: 0.6065 Entered P Value: 20

Number of Resamplings: 80 80 Resamples Generated

The Bootstrap Estimates Mean: 0.5974 Standard Deviation: 0.0164

Original Confidence Limits: Lower: 0.5618 Upper: 0.6228

Expanded Confidence Limits: Lower: 0.5351 Upper: 0.6326

Resampling time in Seconds: 0.05 Random_Seed: 42363676

ICP_{20} 0.6065

11842 Research Circle
Alachua, FL 32615
T: (386) 462-7889
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www.hydrosphere.net

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Quantity	Description
450	P. promelas, FM#978, Hatched 3/13/06

Appendix H

Typical Values for Selected Parameters in Florida Waters

Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	**ND**
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**ND**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**ND**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	**28**	31	37	53	**30**
Total Kjeldahl Nitrogen	0.30	**0.39**	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.43**
Total Ammonia	0.02	**0.02**	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.035**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	**0.07**	0.10	0.14	0.20	0.32	0.64	1.05	**0.078 A**
Total Phosphorus	0.02	0.03	0.05	**0.06**	0.10	0.13	0.18	0.25	0.39	0.74	1.51	**0.064**
Orthophosphate	0.01	0.01	0.03	**0.04**	0.05	0.08	0.11	0.17	0.27	0.59	1.37	**0.04**
Turbidity (NTU)	0.60	0.90	1.20	**1.45**	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**1.6**

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

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	**ND**
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**ND**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**ND**
Dipnet Taxa Richness	9	12	17	**20**	22	24.5	26	28	31	37	53	**20**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	**1.00**	1.11	1.26	1.49	1.93	2.80	**1**
Total Ammonia	0.02	0.02	0.04	0.05	**0.06**	0.08	0.11	0.14	0.20	0.34	0.60	**0.07**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	**0.07**	0.10	0.14	0.20	0.32	0.64	1.05	**0.71**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	**0.39**	0.74	1.51	**0.57**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	**0.27**	0.59	1.37	**0.38**
Turbidity (NTU)	0.60	0.90	**1.20**	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**1.2**

Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data.

Appendix I

Habitat Assessment Field Sheets

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: FDEP SUBMITTING AGENCY NAME: CENTRAL	STORET STATION NUMBER:	DATE (M/D/Y): 2/16/06	TIME	RECEIVING BODY OF WATER: ECON
REMARKS:	COUNTY: SEMINOLE	LOCATION: IRON BRIDGE OUTFALL		FIELD ID/NAME: DOWNSTREAM

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)
50 %				25%		25%	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☑ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☑

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: >18 M

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☑ no ☐ recent, ☐ severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK 3 (m above present water level) + 2 (present depth in m) = 5M (m above bed)

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT 20 m wide

0 m/s | 0.12 m/s | 0.12 m/s

2 m deep | 2 m deep | 2 m deep

CANOPY COVER %: OPEN: ☐ LIGHTLY SHADED (11-45%): ☑ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☑ EFFLUENT PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: (NONE) SLIGHT MODERATE SEVERE SILT SMOTHERING: (NONE) SLIGHT MODERATE SEVERE OTHER: ____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	10			SAND	60		
LEAF PACKS OF MATS	2			MUD/MUCK/SILT	21		
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	7			DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP		17.1	7.2	8.4	333			TO BOTTOM
MID-DEPTH								
BOTTOM								

SYSTEM TYPE: (STREAM): 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐ ____

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☑ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐ ____

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☑ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐ ____

WEATHER CONDITIONS/NOTES: SUNNY

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☑ PK	☐	☐	☑
FISH	☐	☐	☐	☑
AQUATIC MACROPHYTES	☑	☐	☐	☐
IRON/SULFUR BACTERIA	☑	☐	☐	☐

SAMPLING TEAM: KANE KENT

SIGNATURE: Steven L. Kent

DATE: 2/16/06

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: FOZP SUBMITTING AGENCY NAME: CENTRAL	STORET STATION NUMBER:	DATE (MM/DD/YY): 2/16/06	RECEIVING BODY OF WATER: ELON
REMARKS:	COUNTY: SEMINOLE	LOCATION: IRON BRIDGE OUTFALL	FIELD ID/NAME: DOWNSTREAM

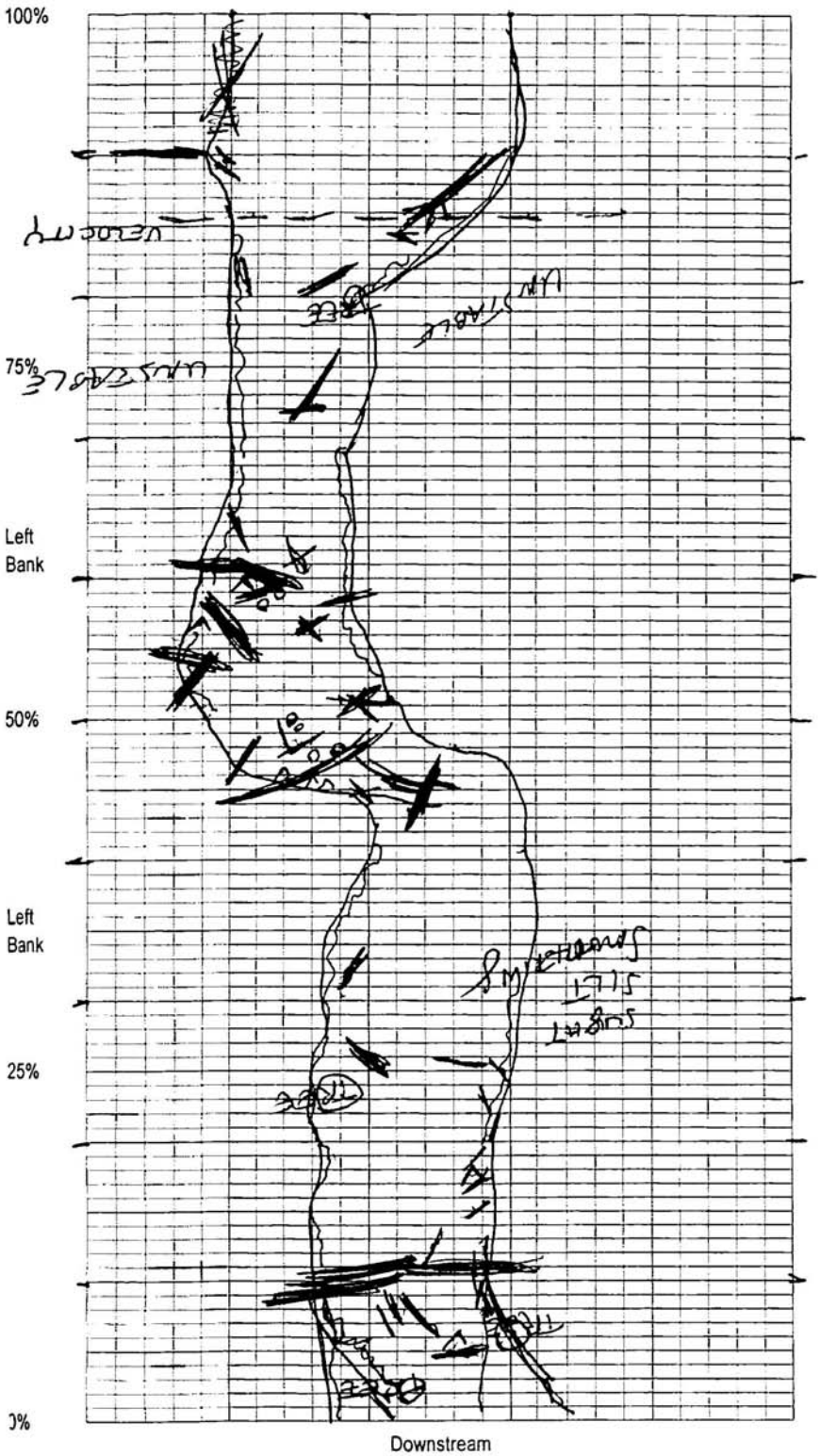
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 15	Four or more productive habitats present [snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. 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 11	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 13	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 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 14 Primary Score 53	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 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 19	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 4 Left Bank 4	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 9 Left Bank 9	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 8 Left Bank 8 Secondary Score 61	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

114 TOTAL SCORE

ANALYSIS DATE: 2/16/06	ANALYST: S. Kurt / P KANE	SIGNATURE: Steven J. Kurt

DOWNSTREAM IRON BRIDGE OUTFALL

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.

- [x] Snags 10%
- [x] Roots/undercut banks 7
- [x] Leaf Packs (or mats) 2
- [x] Macrophytes 0
- [ ] _____
- [ ] _____
- [ ] _____

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:

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: FDEP SUBMITTING AGENCY NAME: CENTRAL		STORET STATION NUMBER:	DATE (M/D/Y): 2/16/06	TIME	RECEIVING BODY OF WATER: ELON
REMARKS:	COUNTY: SEMINOLE	LOCATION: IRON BRIDGE OUTFALL			FIELD ID/NAME: UPSTREAM

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)
75%						25%	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☑ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☑ Slight ☐ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: >18M

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☑ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 3M + 2 = 5M
(m above present water level) + (present depth in m) = (m above bed)

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC)/TRANSECT: 12 m wide

0.08 m/s	0.12 m/s	0.12 m/s
2 m deep	2 m deep	2 m deep

CANOPY COVER %: OPEN: ☐ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☑ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☑ PK PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: (NONE) SLIGHT MODERATE SEVERE SILT SMOTHERING: (NONE) SLIGHT MODERATE SEVERE OTHER: ____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	10			SAND	60		
LEAF PACKS OF MATS	2			MUD/MUCK/SILT	18		
AQUATIC VEGETATION	1			OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	9			DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	~~COND. (UMHO/CM)~~ OR SALINITY (PPT):			SECCHI (M):
TOP	0.3	14.4	7.1	8.0	202			TO BOTTOM
MID-DEPTH								
BOTTOM								

SYSTEM TYPE: (STREAM) 1ST-2ND ORDER 5TH – 6TH ORDER 3RD-4TH ORDER 7TH ORDER OR GREATER LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐ ____

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐ ____

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☑ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐ ____

WEATHER CONDITIONS/NOTES: SUNNY

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☐	☑
FISH	☐	☐	☐	☑
AQUATIC MACROPHYTES	☐ SK	☑	☐	☐
IRON/SULFUR BACTERIA	☐	☐	☐	☐

SAMPLING TEAM: KANE, KENT

SIGNATURE: Steven P. Kent

DATE: 2/16/06

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: FDEP SUBMITTING AGENCY NAME: CENTRAL	STORET STATION NUMBER:	DATE (MM/DD/YY): 2/16/06	RECEIVING BODY OF WATER: ECON
REMARKS:	COUNTY: SEMINOLE	LOCATION: IRON BRIDGE OUTFALL	FIELD ID/NAME: UPSTREAM

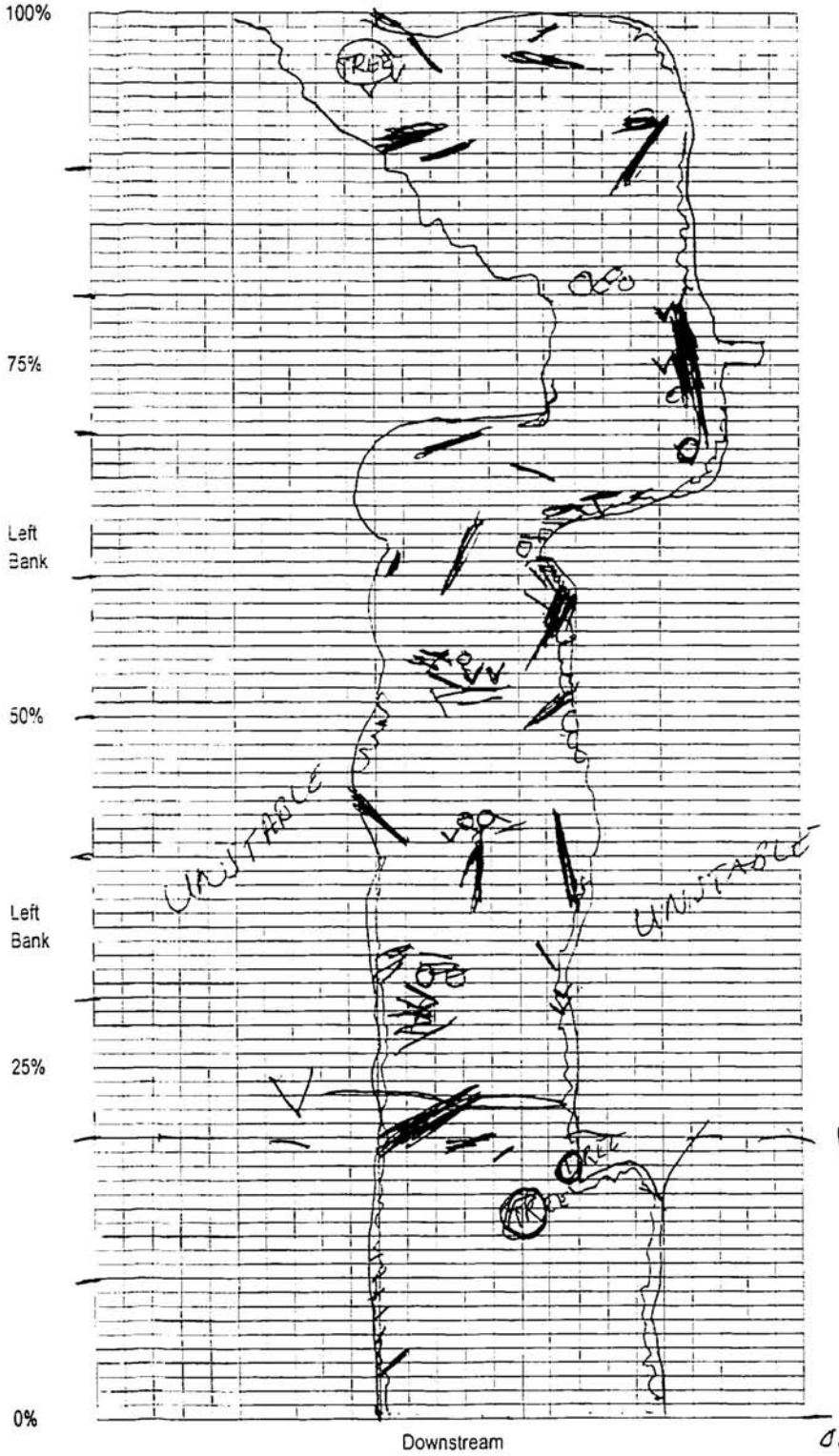
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 17	Four or more productive habitats present [snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 (17) 16	Three productive habitats present. Adequate habitat. 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 13	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 13	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 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 16 Primary Score 59	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 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 19	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 (19) 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 4 Left Bank 4	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 9 Left Bank 9	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 8 Left Bank 8 Secondary Score 61	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

120 TOTAL SCORE

ANALYSIS DATE: 2/16/06	ANALYST: S. KENT / P. KANE	SIGNATURE: Steven J. Kent

IRON BRIDGE OUTFALL UPSTREAM

Strea mRiver Habitat Sketch Sheet, Form FD 9000-4 (December 11, 2001)
.ength 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 10%
- [x] Roots/undercut banks 90%
- [ ] Leaf Packs (or mats) 2%
- [x] Macrophytes 10%
- [ ] _____
- [ ] _____
- [ ] _____

Velocity: V
Note where velocity measures were taken.

Habitat Smothering: SLIGHT
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:

10X20
200
80
100
50
300
730

65
730

Appendix J-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of Orlando-Iron Bridge WRF (March 13, 2006). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Hirudinea		
Placobdella sp.	-	1
Arthropoda		
Arachnida		
Acariformes		
Arrenurus sp.	1	1
Crustacea		
Amphipoda		
Hyalella azteca	5	10
Decapoda		
Palaemonetes sp.	2	2
Insecta		
Coleoptera		
Dubiraphia vittata	4	-
Hydrochus sp.	-	1
Pelonomus sp.	1	-
Stenelmis sp.	4	6
Diptera		
Ablabesmyia mallochi	-	1
Atrichopogon sp.	3	-
Cricotopus bicinctus	1	1
Dicrotendipes modestus	3	2
Labrundinia becki	1	-
Polypedilum fallax	1	1
Polypedilum flavum	7	7
Polypedilum illinoense grp.	12	54
Pseudochironomus richardsoni	3	-
Rheotanytarsus exiguus grp.	2	-
Stenochironomus sp.	3	1
Tanytarsus sp.	2	-
Heteroptera		
Gerridae	-	1
Mesoveliidae	-	1
Lepidoptera		
Synclita sp.	3	-
Odonata		
Argia sp.	3	3
Enallagma sp.	1	-
Libellulidae	1	-
Nasiaeschna pentacantha	1	-
Trichoptera		
Oecetis persimilis	2	-
Mollusca		
Bivalvia		
Corbicula fluminea	1	-
Sphaeriidae(mollusca)	1	-
Gastropoda		

	Control Site	Test Site
Ancylidae	2	4
Haitia sp.	1	-
Micromenetus sp.	8	-
Micromenetus dilatatus avus	-	2
Amnicola sp.	2	-
Pyrgophorus platyrachis	24	8
Platyhelminthes		
Turbellaria		
Planariidae	-	2

Appendix J-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of Orlando-Iron Bridge WRF (March 13, 2006).

	Control Site	Test Site
Annelida		
Hirudinea		
Placobdella sp.	-	1
Arthropoda		
Arachnida		
Acariformes		
Arrenurus sp.	1	1
Crustacea		
Amphipoda		
Hyalella azteca	5	10
Decapoda		
Palaemonetes sp.	2	2
Insecta		
Coleoptera		
Dubiraphia vittata	4	-
Hydrochus sp.	-	1
Pelonomus sp.	1	-
Stenelmis sp.	4	6
Diptera		
Ablabesmyia mallochi	-	1
Atrichopogon sp.	1	-
Ceratopogonidae	2	-
Chironomidae	3	2
Cricotopus bicinctus	1	1
Dicrotendipes sp.	-	1
Dicrotendipes modestus	3	1
Labrundinia becki	1	-
Polypedilum fallax	1	1
Polypedilum flavum	6	7
Polypedilum illinoense grp.	10	52
Pseudochironomus sp.	2	-
Pseudochironomus richardsoni	1	-
Rheotanytarsus exiguus grp.	2	-
Stenochironomus sp.	3	1
Tanytarsus sp.	2	-
Heteroptera		
Gerridae	-	1
Mesoveliidae	-	1
Lepidoptera		
Synclita sp.	3	-
Odonata		
Argia sp.	3	3
Enallagma sp.	1	-
Libellulidae sp.	1	-
Nasiaeschna pentacantha	1	-
Trichoptera		
Oecetis persimilis	2	-
Mollusca		
Bivalvia		
Corbicula fluminea	1	-
Sphaeriidae(mollusca)	1	-

		Control Site	Test Site
Gastropoda			
	Amnicola sp.	2	-
	Ancylidae	2	4
	Haitia sp.	1	-
	Micromenetus sp.	8	-
	Micromenetus dilatatus avus	-	2
	Pyrgophorus platyrachis	24	8
Platyhelminthes			
Turbellaria			
	Planariidae	-	2

The Bioassay of the Orlando-Iron Bridge WTF effluent sampled on March 13, 2006, NPDES #FL0037966.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 6 6 11	12 0 6 0 3 1 3	18 **B**	19 **S**	20 2

Remarks

66

The Priority Pollutants Analysis for Bioassay of the Orlando-Iron Bridge WTF effluent sampled on March 13, 2006, NPDES #FL0037966.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 6 6 11	12 0 6 0 3 1 3	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of the Orlando-Iron Bridge WTF effluent sampled on March 13, 2006, NPDES #FL0037966.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 6 6 11	12 0 6 0 3 1 3	18 **S**	19 **S**	20 2

Remarks

66