

Biological Assessment of

City of Jasper Wastewater Treatment Facility

Hamilton County

NPDES # FL0027880

Sampled June 14, 2010

and June 17, 2010

January 2011

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

NELAC Certification No. E31780

CONTENTS

Facility Overview

Methods

Results and Discussion

Conclusion

Literature Cited

Tables

Table 1	Effluent limits, Class III Freshwater Criteria and chemical, microbiological and toxicological data.
Table 2	Effluent limits, Class III Freshwater Criteria and metals data.
Table 3	Measured and predicted algal growth potential (AGP)
Table 4	Periphyton composition - Qualitative
Table 5	Macroinvertebrate Hester-Dendy samples – Quantitative
Table 6	Macrophyte Florida Wetland Condition Index

Appendices

Appendix A	Map of facility
Appendix B	Facility summary
Appendix C	Explanation of measurements
Appendix D	Chain of Custody
Appendix E	Physical/Chemical field sheets
Appendix F	Florida Wetland Condition Index field sheets
Appendix G	Chemical analyses of effluent and receiving water.
Appendix H	Toxicological results
Appendix I	Standard Reference Toxicant Data
Appendix J-1	Qualitative periphyton – wet algal taxa list and number of algal units counted
Appendix J-2	Qualitative periphyton – diatom taxa list and number of diatom valves counted
Appendix K-1	Hester-Dendy macroinvertebrate samples: taxa list and average number of individuals per m2
Appendix K-2	Hester-Dendy macroinvertebrate samples: taxa list and total number of individuals counted

EPA End Sheet

Facility Overview

The Jasper Wastewater Treatment Facility is a Municipal Domestic Wastewater Treatment plant. The effluent is discharged into Baisden Swamp, a Class III Fresh Water (see map Appendix A). The design flow of the wastewater system is 1.2 million gallons per day (MGD). The plant discharges into the northeastern boundary of the 250-acre receiving wetland after treatment using a Bardenpho system. The annual average flow for June 2009 to May 2010 was 0.721 MGD and the flow measured during this survey was 0.620 MGD (Northeast District sampling staff).

See the Facility Summary (Appendix 2) for a description of the facility, summary of permit limits, and consent order (CO) and discharge monitoring report (DMR) information.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between Background Site F (a control wetland located approximately 600 m southeast of the point of discharge and adjacent to Baisden Swamp) and several Test Sites located in Baisden Swamp. Proposed Site F, located approximately 1.3 km southeast of the current background site, in Bell Creek, was suggested by the facility as a new Control Site due to safety concerns. Floating Hester-Dendy samplers were deployed to determine the biological viability of the site as an alternative background location; no water chemistry samples were taken. A Florida Wetland Condition Index for forested floodplain wetlands based on macrophyte species assemblage was performed at Background Site F and Test Site C. Effluent samples for all analyses were taken as grab samples from monitoring location EFD-1, after dechlorination.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/bars/sas/sop/index.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/labs/bars/sas/qa/index.htm). The wetland evaluation was performed according to The Florida Wetland Condition Index (Reiss et al. 2005). Explanations of specific methods and measurements can be found in Appendix C.

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.

The following were involved in this investigation: Eesa Ali, Jann Gruentzel, Jake Mast, Jeremy Parrish, Chuck Plank, Sharon Piltz, and Malton Prifti (FDEP Northeast District Office, Jacksonville) and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Cari Butler and Nancy Ross).

Results and Discussion

Organic Constituents (See Table 1 and Appendix G)

- No organic constituents were detected in the effluent.
- Diethyl phthalate, a plasticizer, was detected in the field blank between the laboratory method detection limit and the laboratory practical quantitation limit.

Metals (See Table 2 and Appendix G)

- All metals detected in the effluent samples were present at levels that complied with effluent permit limits and Class III Fresh Water Quality Criteria (62-302.530 F. A. C.).
- Copper (20.3 µg/L), iron (1440 µg/L), and lead (0.95 µg/L) were detected at Background Site F at levels that exceeded Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).
- No metals were detected in the field blank.

Toxicity Whole Effluent Test (See Table 1 and Appendices H and I)

- Tests were performed June 15 through June 19, 2009.
- The effluent samples were not toxic to the water flea, *Ceriodaphnia dubia*, or the fish, *Cyprinella leedsi*, during the 96 hour acute screen bioassays, and complied with effluent permit limits and Class III Freshwater Quality Criteria (Rule 62-302.500(1)(a)4, F.A.C and Rule 62-4.244(3)(a), F.A.C).

Physical and Chemical Parameters (See Table 1 and Appendices D, G and E)

- Dissolved oxygen (mg/L), pH (Standard Units), and specific conductance (µmhos/cm) of the effluent complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.
- The dissolved oxygen (DO) results at Background Site F (0.9 mg/L), Proposed Site F (1.1), Test Site C (2.1 mg/L), and Test Site E (4.4 mg/L), were below the minimum Class III Fresh Water Criterion (62-302.530(30) F.A.C.).
- The pH (Standard Units) for all Background and Test Sites complied with Class III criteria.
- Specific conductance (µmhos/cm) of the Background and Test Sites complied with Class III Fresh Water Quality Criterion (62-302.530 (22) F.A.C.).
- Chlorophyll *a* levels were detected at similar levels at Test Site A (3.9 µg/L), Background Site F (5.8 µg/L), and Test Site C (7 µg/L). The levels detected in the effluent and Test Site E (1.6 µg/L for both) was between the laboratory method detection limit (MDL) and the laboratory practical quantitation limit (PQL).
- Total suspended solids (4 mg/L) of the effluent complied with permit limits.

Microbiology (See Table 1 and Appendix G)

- Fecal coliforms were undetected in the effluent and were detected at the Test Sites at levels which complied with Class III Fresh Water Quality Criterion (62-302.530(6) F.A.C.).

Nutrients (See Table 1 and Appendix G)

- Effluent nutrient levels complied with permit limits and the Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).
- Nitrate and Nitrite in the Test Site A (0.9mg/L) and effluent (0.92 mg/L) samples was higher than in the remaining site samples, in which it was undetected or close to the detection limit.
- Total Nitrogen was similar for the effluent and all Background and Test Sites.
- No nutrients were detected in the field blank.

Algal Growth Potential (See Table 3 and Appendix G)

- The AGP value for the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata*, was 50.7 mg dry weight/L, which is 10 times greater than the “problem” threshold value (Raschke and Schultz, 1987).
- The AGP value at Test Site A, located closest to the effluent discharge, (49.0 mg dry weight/L) was similar to the effluent.
- Test Sites C and E are farthest from the effluent and have lower AGP values (12.3 and 15.1 mg dry weight/L, respectively). However, the results are still above the “problem” threshold.
- The analytical chemistry suggests that the effluent is phosphorus-limited, Test Site A is co-limited by both nitrogen and phosphorus, and Background Site F and Test Sites C and E are nitrogen limited.

Bioassessment

Periphyton (See Table 4 and Appendices J-1 and J-2)

- Periphyton communities at both Background Site F and Test Site C consisted mostly of diatoms. The dominant diatom taxon at both sites was *Diadesmis confervaceae*, which belongs to a genus often found in oligotrophic waters (Kociolek and Spaulding, 2003).

Macroinvertebrates (See Tables 5 and Appendices K-1 and K-2)

- The Shannon-Weaver Diversity scores calculated from Hester Dendy sampler data were similar at Test Site A (2.60) and Background Site F (2.51). Test Site C (1.93) showed a 23% reduction in Shannon-Weaver Diversity score compared to Background Site F, which is within Class III Freshwater Criterion (62-302.530 (10) F.A.C). The difference in Shannon-Weaver Diversity scores between Test Site C the Proposed F (2.77) is a 30% reduction in diversity, which would constitute an exceedance of Class III criterion if it was accepted as the new Control Site. Greater than 75% of the community composition and the dominant macroinvertebrate taxa in each of the four site samples were dipterans, an order with taxa generally considered to be tolerant to pollution and disturbance. There were no plecoptera or trichoptera present at any of the sites. Test Site A and Background Site F had small percentages of ephemeropterans, and there were none present at Test Site C. Test Site C had half the number of taxa than the other sites and the sample consisted of only dipterans, oligochaetes, and isopods. The percentage of gastropods at Test Site A (11.3), was higher than at Background Site F (0.5), and there were none present at Test Site C or Proposed Site F. The percentage of odonates at Background Site F (11.6) was almost twice what was found at the other sites, as was the percentage of oligochaetes for Test Site C (11.9). Background Site F and Proposed Site F samples had similar number of taxa and community composition.

Macrophytes (See Table 6 and Appendix F)

- The Florida Wetland Condition Index (FWCI) is used to examine the biological integrity of a system but the method has not been validated beyond the original study. Metric values and FWCI scores for Background Site F and Test Site C have been compared with the mean values and scores for the study sites. For comparative purposes, the study sites have been divided into groups based on Landscape Development Intensity (LDI), sites with low LDI (LDI <2) and sites with high LDI (LDI ≥2). The FWCI scores for Background site F (27.53) and Test Site C (26.76) were closest to the mean score for the study sites with high LDI scores (21.54). The proportion of native perennials was the same at both sites and was closest to the mean value for sites with higher LDIs. The proportion of exotics at both sites was closest to the mean value for the high LDI group. Test Site C had a proportion of sensitive species most similar to sites with higher levels of human disturbance, but the proportion of tolerant species was more in line with lower disturbance sites. The sites had the same number of taxa; however, there were 25 unique species between the two sites. Overall, the sites had similar scores that placed both in the lower range of the FWCI and had similar metric results as the study sites with high LDIs.

Conclusion

The effluent samples were not toxic to the water flea, *Ceriodaphnia dubia*, or the fish, *Cyprinella leedsi*, during the 96-hour acute screen bioassays. The AGP values for the effluent sample, Background Site F, and all Test Sites were greater than the “problem” threshold value (Raschke and Schultz, 1987). The AGP values and nutrient levels for the effluent and Test Site A were similar, which suggests the effluent is influencing the water chemistry at Test Site A. A landfill adjacent to Baisden Swamp and remnants of a railway track running through it are potentially contributing leachate and/or runoff into the system, as evident in the disparity in the amount of metals detected in the effluent and Test Site A compared to the downstream sites. Copper, iron, and lead were detected at Background Site F at levels that exceeded Class III Criteria, but they were undetected or between the laboratory detection limit and laboratory practical quantitation limit in the effluent. Most metals detected at Test Site C and Test Site E show a decreasing gradient away from Background Site F, which is closest to the railroad track and landfill. The dissolved oxygen at Background Site F, Test Site C, and Test Site E was below the minimum Class III criteria. Almost all nutrients were higher at Background Site F, Test Site C, and Test Site E than in the effluent or Test Site A. The biological communities were dominated by tolerant individuals at all sites. Overall, a conclusion about the effluent’s effect on the biological condition in the system is indeterminate due to the multiple stressors in the system, such as potential influence from a landfill and railroad tracks, conductivity, dissolved

oxygen, and metals. Proposed Site F had a similar macroinvertebrate community to Background Site F. However, further investigation needs to be conducted and water chemistry evaluated to determine whether Proposed Site F, which is adjacent to a railroad track and in a stream, is an appropriate alternative control site.

Literature Cited

Brown, Mark T., and Benjamin M. Vivas. "Landscape Development Intensity Index." Environmental Monitoring and Assessment. 101. (2005): 289-309.

Fore, L.S., Frydenborg, R., Miller, D., Frick, T., Whiting, D., Espy, J., and Wolfe, L. 2007. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams (Stream Condition Index and Biorecon). Florida Department of Environmental Protection. 110pp.

Karr, J.R. & E.W. Chu. 1998. Restoring life in running waters: Better biological monitoring. Island Press. Covelo, California. 200 p.

Kociolek, J. P., and S. A. Spaulding. "Symmetrical Naviculoid Diatoms." *Freshwater Algae of North America: Ecology and Classification*. Amsterdam: Academic, 2003.

Magurran, A. E. 1988. Ecological diversity and its measurement. Princeton University Press, Princeton, New Jersey.

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

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U. S. EPA, Office of Water Regulations and Standards, Washington D.C., EPA 440-4-89-001.

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

Reiss, KC, and M.T. Brown. 2005. The Florida Wetland Condition Index (FWCI): Preliminary Development of Biological Indicators for Forested Strand and Floodplain Wetlands. Final Report to the Florida Department of Environmental Protection, under contract #WM-683.

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

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

Jasper WWTF	Class III Criteria	Effluent Limits	Effluent Grab	Test Site A	Background Site F	Proposed Site F	Test Site C	Test Site E	Blank
Organic Constituents (µg/L)									
Diethyl phthalate	-	-	0.98 U	-	-	-	-	-	2.7 I
Nutrients (mg/L)									
Ortho-phosphate	-	-	0.041	0.051	0.61	-	0.49	0.44	0.004 U
Total Phosphorus	-	? 2.0 p	0.063	0.075	0.8	-	0.63	0.5	0.004 U
Total Ammonia	-	? 3.2 s	0.029	0.045	0.15	-	0.14	0.061	0.01 U
Un-ionized Ammonia	? 0.02 s	? 0.02 s	? 0.02 c	? 0.02 c	? 0.02 c	-	? 0.02 c	? 0.02 c	-
Nitrate and Nitrite	-	-	0.920	0.900	0.004 U	-	0.004 U	0.099	0.004 U
Total Kjeldahl Nitrogen	-	-	0.52 J	0.51	1.6	-	1.1	1.2	0.08 U
Organic Nitrogen	-	-	0.491 c	0.465 c	1.45 c	-	0.96 c	1.139 c	-
Total Nitrogen	-	? 6.0 p	1.44 c	1.41 c	1.6 c	-	1.1 c	1.299 c	-
General Physical and Chemical Parameters									
Dissolved Oxygen (mg/L)	? 5.0	? 4.0	7.1	6.5	0.9	1.1	2.1	4.4	-
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.2	7.3	6.3	6.3	6.8	7.0	-
Conductivity (µmhos/cm)	? 1,275	-	566	568	80	79	416	184	-
Temperature (°C)	-	Report	28.7	28.6	24.6	25.5	27.0	25.6	-
Alkalinity (mg CaCO3/L)	-	-	112.0	-	-	-	-	-	0.7 U
Organic Carbon (mg C/L)	-	-	4.4 I	-	-	-	-	-	1.0 U
Sample Depth (m)	-	-	1.6	0.25	0.4	0.25	0.3	0.6	-
Total Residual Chlorine (mg/L)	? 0.01	? 0.01	-	-	-	-	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	1.6 I	3.9	5.8	-	7	1.6 I	-
Phaeophytin (µg/L)	-	-	0.4 U	0.4 U	1.4	-	2.1	0.61 I	-
Total Suspended Solids (mg/L)	-	? 10.0 p	4 U	-	-	-	-	-	-
Color (PCU)	-	-	5 U	-	-	-	-	-	5 U
CBOD, 5 day (mg/L), N - inhibited	-	-	0.75 I	-	-	-	-	-	-
BOD, 5 day (mg/L), N - uninhibited	-	? 10.0 p	-	-	-	-	-	-	-
Chloride (mg/L)	-	-	38	-	-	-	-	-	0.2 U
Fluoride (mg/L)	? 10.0	-	0.22	-	-	-	-	-	0.035 U
Sulfate (mg/L)	-	-	100	-	-	-	-	-	0.2 U
Flow (MGD)	-	-	0.62	-	-	-	-	-	-
Hardness (mg $CaCO_3$)	-	-	215.00 c	220.72 c	35.64 c	-	160.39 c	65.35 c	-
Toxicity (96 hour acute screen, % mortality)									
Bioassay - Water flea *(Ceriodaphnia dubia)*	? 50	? 50	0	-	-	-	-	-	-
Bioassay - Fish *(Cyprinella leedsi)*	? 50	? 50	0	-	-	-	-	-	-
Microbiology (Number of colony forming units/100ml)									
Fecal Coliforms ¥	? 400 s #	? 400 s #	1 U	350	69 B	-	134 B	360	-

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
p - 16-hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
U - Material analyzed for but not detected; value reported is the method detection limit
¥ - Fecal coliform analysis performed by Flowers Chemical Laboratories Inc.
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

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

Jasper WWTF	Effluent Class III Criteria	Effluent Limits	Effluent	Test Site A Class III Criteria	Test Site A	Background Site F Class III Criteria	Background Site F	Test Site C Class III Criteria	Test Site C	Test Site E Class III Criteria	Test Site E
Metals (µg/L unless otherwise noted)											
Aluminum	-	-	100 I	-	120 I	-	660	-	180 I	-	170 I
Arsenic	? 50	-	0.38 I	? 50	0.32 I	? 50	1.1	? 50	0.53 I	? 50	0.68 I
Cadmium	? 0.48 b	-	0.03 U	? 0.49 b	0.03 U	? 0.1 b	0.03 U	? 0.38 b	0.03 U	? 0.20 b	0.03 U
Calcium (mg/L)	-	-	51.8	-	53.1	-	10.1	-	39	-	15.7
Chromium-III	? 161.31 b	-	0.3 U	? 164.82 b	0.3 U	? 37.0 b	1.1 I	? 126.89 b	0.39 I	? 60.83 b	0.48 I
Copper	? 17.94 b	-	0.6 I	? 18.35 b	0.66 I	? 3.9 b	20.3	? 13.97 b	0.5 U	? 6.49 b	0.5 U
Iron	? 1,000	-	30 U	? 1,000	30 U	? 1,000	1440	? 1,000	580	? 1,000	360
Lead	? 8.43 b	-	0.2 U	? 8.72 b	0.2 U	? 0.90 b	0.95	? 5.81 b	0.26 I	? 1.85 b	0.2 U
Magnesium (mg/L)	-	-	20.8	-	21.4	-	2.53	-	15.3	-	6.35
Nickel	? 99.68 b	-	0.73 I	? 101.92 b	0.7 I	? 21.8 b	0.92 I	? 77.79 b	0.61 I	? 36.40 b	0.7 I
Selenium	? 5.0	-	0.2 U	? 5.0	0.2 U	? 5.0	0.2 U	? 5.0	0.2 U	? 5.0	0.23 I
Silver	? 0.07	-	0.025 U	? 0.07	0.025 U	? 0.07	0.025 U	? 0.07	0.025 U	? 0.07	0.025 U
Sodium (mg/L)	-	-	26.3	-	27.1	-	3.6	-	20.1	-	10.5
Zinc	? 229.19 b	-	17 I	? 234.34 b	28	? 50.0 b	15 I	? 178.80 b	5.4 I	? 83.56 b	5 U

See Table 1 for calculated hardness.

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

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

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

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

Jasper WWTF						
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	50.7		17.6 ± 3.5		27.1 ± 5.4	23.1	22.9
Test Site A	49.0	35.9 ± 7.2	21.9 ± 4.4	53.6 ± 10.7	32.3 ± 6.5	18.5	18.8
Background Site F	7.1	5.9 ± 1.2		61.0 ± 12.2		0.3	2.0
Test Site C	12.3	5.5 ± 1.1		42.0 ± 8.4		0.3	1.8
Test Site E	15.1	6.1 ± 1.2		49.4 ± 9.9		0.4	2.6

Table 4 Periphyton Composition - Qualitative.

Jasper WWTF	Background Site F	Test Site C
Number of Wet Taxa	17	21
Number of Wet Algal Units Identified	302	300
Percent Dominant Wet Taxon	72.2	71.7
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	43	35
Number of Diatom Algal Units Identified	501	500
Percent Dominant Diatom Taxon	37.1	27.0
Dominant Diatom Taxon Name	*Diadesmis confervaceae*	*Diadesmis confervaceae*
Percentage Composition for Wet Algae		
Blue-green algae	18.2	22.7
Green algae	8.9	4.0
Diatoms	72.2	71.7
Cryptophytes	0.0	0.3
Euglenophytes	0.7	1.0
Pyrrophytes	0.0	0.3

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Jasper WWTF	Test Site A	Background Site F	Proposed Site F	Test Site C
Summary Statistics				
Shannon-Weaver Diversity	2.60	2.51	2.77	1.93
Number of Taxa	24	22	22	10
Number of EPT Taxa	1	1	0	0
Percent Dominant Taxon	53.5	36.1	38.4	53.9
Dominant Taxon Name	*Chironomus* sp. (Diptera)	*Kiefferulus* sp. (Diptera)	*Dicrotendipes simpsoni* (Diptera)	*Kiefferulus* sp. (Diptera)
Total Number of Individuals (counted)	609	595	410	362
Total Number of Individuals (#/m^2)	1,611	1,575	1,086	958
Community Composition: Percent of total				
Amphipoda	0.0	0.0	0.3	0.0
Coleoptera	0.0	0.5	0.3	0.0
Decapoda	0.0	0.2	0.0	0.0
Diptera	75.6	83.3	85.1	87.9
Ephemeroptera	7.6	1.2	0.0	0.0
Gastropoda	11.3	0.5	0.0	0.0
Isopoda	0.0	0.0	0.7	0.3
Odonata	2.5	11.6	6.6	0.0
Oligochaeta	3.1	2.5	6.8	11.9
Plecoptera	0.0	0.0	0.0	0.0
Trichoptera	0.0	0.0	0.0	0.0
Other	0.0	0.1	0.2	0.0
Functional Feeding Groups: Percent of total				
Browser-Grazers	0.0	0.0	0.4	0.1
Burrowing Deposit Feeders	3.1	2.5	6.8	11.9
Predators	4.2	14.3	7.6	2.7
Scavengers	0.0	0.3	0.4	0.1
Scrapers	15.1	1.1	0.0	0.0
Shredders	4.5	0.0	1.7	0.0
Surface Deposit Feeders	65.8	61.5	59.4	79.8
Suspension Feeders	1.6	19.4	20.8	5.4
Unknown	5.8	0.7	2.7	0.0

Table 6. Macrophyte Florida Wetland Condition Index

Jasper WWTF	Low LDI*	High LDI*	Test Site C	Background Site F
Total taxa			44	44
Percent tolerant	11	19	11.4	15.9
Percent sensitive	15	5	4.5	9.1
Percent native perennial	95	86	88.6	88.6
Percent exotic	3	10	9.1	6.8
FQAI score #	4.75	4.1	4.45	4.23
FWCI score	38.33	21.54	26.76	27.53

Low = LDI < 2.0

High = LDI ? 2.0

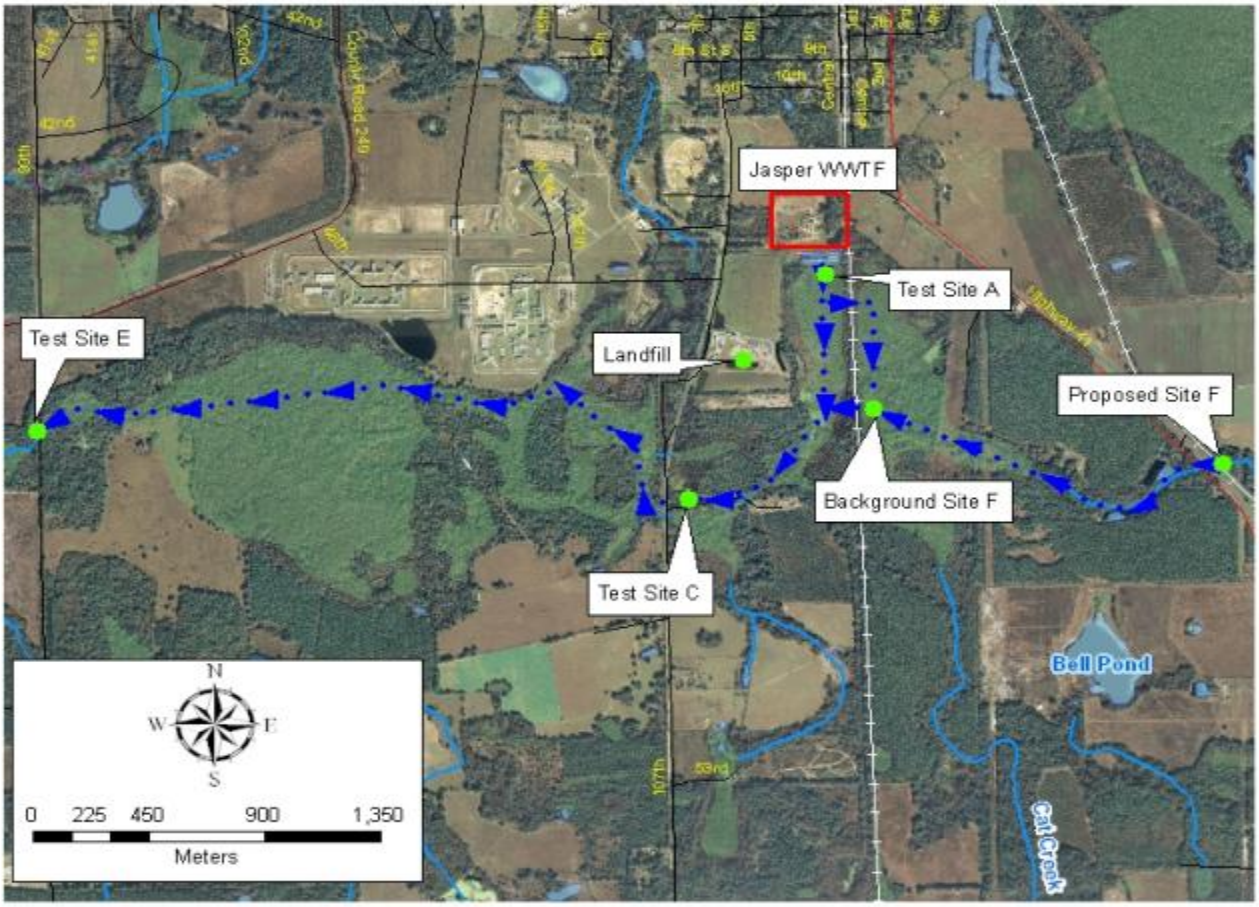
* - Values represent the mean for study sites in each LDI group

- Floristic Quality Assessment Index (FQAI) score

Appendix A

Map of Facility





Appendix B

Facility Summary

CITY OF JASPER – FL0027880 – May-2010

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Edward Jamro	**Contact Number:** 904-807-3264
Facility Name (as it appears on permit): **Jasper Wastewater Treatment Facility**	**Current Name:** same
NPDES Permit Number: FL0027880	**Permit Expiration Date:** March 7, 2011
Physical Address: Southwest 107th Avenue Jasper, FL 32052	
District: Northeast	**County:** Hamilton
Function of Facility: A 1.2 million gallons per day (MGD) annual average daily flow (AADF) permitted capacity Bardenpho domestic wastewater treatment system.	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 1.2 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **Outfall D-001 – March-09 to March-10 – Reported highest Monthly average flow = 1.027 MGD – April -09 Annual average flow = 0.762 MGD** **Note – there is no flow monitoring required in the wetland at WIM-01, -02, -03 and WEP -01.**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): **There is no reuse outfall at this facility.**	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify** **D-001**	

CITY OF JASPER – FL0027880 – May-2010

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

INF-1 - Influent, prior to biological treatment.

EFA-1 – Sample point immediately after disinfection and prior to dechlorination.

EFD-1- Sample point at the final treatment and prior discharge to the wetland. (This is D-001).

WIM-01 (Site A) - Sample point at the wetland internal monitoring point A, immediately downstream of the point of discharge to the wetland
WIM-02 (Site C) - Sample point at the wetland internal monitoring point BF2, in the approximate geographic middle of the wetland
WIM-03 (Site F) - Sample point at the wetland internal monitoring point F, background site.
WEP-01 (Site E) - Sample point at the wetland internal monitoring point E, in the vicinity of the point of discharge from the wetland the Tiger Creek.

Description of Permitted Outfall(s): (excerpted from current permit)

Surface Water Discharge:
An existing 1.2 MGD annual average daily flow (AADF) permitted discharge to Baisden Swamp –Receiving Wetland (Class III fresh waters) D-001. Baisden Swamp is approximately 250-acre existing wetland. Advanced wastewater treatment (AWT) with high level disinfection reclaimed water flows by gravity through 400 feet of 18-inch diameter PVC pipe to the distribution main constructed along the northeastern wetland boundary. The point of discharge, D-001, is located approximately at latitude 30 ° 30' 20" N, longitude 82 ° 56' 30"

Land Application:

NOT APPLICABLE

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

WASTEWATER TREATMENT:

A 1.2 million gallons per day (MGD) annual average daily flow (AADF) permitted capacity Bardenpho wastewater treatment system consisting of:

- Three (3) influent manual bar screens;
- Two (2) parallel operating trains consisting of first anoxic basins (197,498 gallons each), nitrification basins (592,495 gallons each), second anoxic basins (148,124 gallons each), reaeration basins (44,886 gallons each);
- Two (2) clarifiers (1547.5 square feet each) ,
- One (1) traveling bridge effluent sand filter (16,328 gallons),
- One (1) chlorine contact chamber (42,531 gallons),
- One (1) dechlorination basin (4,765 gallons),
- One (1) post-aeration chamber (13,225 gallons),
- Two (2) digesters, (78,375 gallons each);
- One (1) sludge holding tank.

The domestic wastewater residuals are stabilized to meet Class B requirements and land applied.

PART 1 – Continued: List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under.

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to Baisden Swamp. Such discharge shall be limited and monitored by the permittee as specified below:

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Maximum	1.20	Report	-	-	Continuous	Recording flow meters and totalizers	EFA-1	See Cond.I.A4
Flow Percent Capacity, (TMADF/Permitted Capacity) x 100	PERCENT	Maximum	-	Report (Mo.Tot)	-	-	Monthly	Calculated	CAL-1	
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFD-1	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFD-1	
pH	S.U.	Range	-	-	-	6.0 to 8.5	Continuous	Meter	EFD-1	See Cond.I.A3
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous	Meter	EFA-1	See Cond.I.A3
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Daily 7days/Week	Grab	EFD-1	
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.5.				Weekly	Grab	EFD-1	

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Dissolved Oxygen, (DO)	**MG/L**	Maximum	-	-	-	**4.0**	**Daily 7days/Week**	**Meter**	**EFD-1**	**See Cond.I.A8**
Nitrogen, Total (as N)	**MG/L**	Maximum	**3.0**	**3.75**	**4.5**	**6.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Ammonia, Total as N	**MG/L**	Maximum	**1.6**	**2.0**	**2.4**	**3.2**	**Weekly**	**Grab**	**EFD-1**	**See Cond.I.A10 ,11**
Water Temperature	**Deg. C**	Maximum	-	-	-	**Report**	**Weekly**	**Instrument**	**EFD-1**	**See Cond.I.A10 ,11**
Unionized Ammonia, Total as N	**MG/L**	Maximum	-	-	-	**0.02**	**Weekly**	**Calculation**	**CAL-1**	**See Cond.I.A10 ,11**
Phosphorus, Total (as P)	**MG/L**	Maximum	**1.0**	**1.25**	**1.5**	**2.0**	**Weekly**	**16-hour flow proportioned composite**	**EFD-1**	
Acute Whole Effluent Toxicity	**See Permit Condition I.A.9**								**EFD-1**	

SPECIAL CONDITIONS REFERENCED ABOVE: **I.A.**

3. **Hourly measurement of pH and total residual chlorine for disinfection during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 2]***

4. **Recording flow meters and totalizers shall be utilized to measure flow and calibrated at least annually. *[62-601.200(17) and .500(6)]***

5. **The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of effluent sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of effluent each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample**

shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. *[62-600.440(4)(c)]*

6. A minimum of 1.0 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b)]*

7. The Florida water quality criteria and standards shall not be violated as a result of the discharge. *[62-620.320(9)] & [62-302.530]*

8. The average of DO level shall not be less than 4.0 mg/L in normal daily and seasonal fluctuations. *[62-611.500(2)]*

9. The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-001.

   a. Effluent limitation

      (1) Mortality less than or equal to 20% in the 100% effluent test concentration in any routine test shall constitute compliance with these permit conditions and Rule 62-302.200(1) and Rule 62-302.500(1)(a)4, F.A.C. Mortality of greater than 20% in the 100% effluent concentration in any test shall constitute unacceptable toxicity. The permittee shall conduct additional follow-up tests as described in 9.c. below for any routine test for which unacceptable toxicity has been observed.

      (2) Whole effluent acute toxicity shall not exceed, in any routine test, mortality of greater than 50% in the 100% effluent test concentration, or a calculated LC50 less than 100% effluent in any additional test [Rule 62-302.200(1), Rule 62-302.500(1)(a)4 and Rule 62-4.244(3)(a), F.A.C.]

   b. Monitoring frequency

      (1) Routine toxicity tests shall be conducted once every six months, the first starting within 60 days of permit issuance, and lasting for the duration of this permit unless a reduction in the frequency of monitoring is granted in writing by the Department.

      (2) Upon completion of six consecutive, valid routine tests that demonstrate compliance with the effluent limitation specified in 9.a. (1) and (2) above the permittee may submit a written request to the Department for a reduction in monitoring. The Department shall review this request within 45 days of receipt and approve or deny the request in writing. Materials submitted to the Department for review should include a summary of the data and the complete bioassay reports for all tests being considered. In no case shall the frequency of monitoring be reduced to less than annually. Requested reductions in monitoring frequency shall only become effective upon Department approval.

      (3) If a test within the sequence of the six is deemed invalid, but is replaced by a repeat valid test initiated within seven days of the invalidation, then the invalid test will not be counted against the requirement for six consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency. If two or more invalidations occur, then this provision does not apply.

c. Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and one test concentration of 100% final effluent.

(2) Additional Follow-up Tests, if required:

(a) If a routine test does not meet the acute toxicity limitation in 9.a.(1) and (2) above, then the permittee shall conduct three additional tests on each species that failed the test.

(b) The additional tests shall be conducted using a control and a minimum of five dilutions: 100%, 75%, 50%, 25%, and 12.5% effluent. The dilution series may be modified in the second and third test to more accurately bracket the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-012.

(c) The first test shall be initiated within two weeks of the end of the failed routine test. The remaining additional tests shall be conducted weekly thereafter until a total of three valid additional tests are completed.

(d) Results for each additional test shall include the determination of LC50 values with 95% confidence limits.

(3) The permittee shall conduct 96-hour acute static-renewal toxicity tests using the daphnid, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*, concurrently.

(4) All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct acute toxicity testing in accordance with the revised method.

(5) The control water and dilution water used will be moderately hard water as described in EPA-821-R-02-012, Table 7.

d. Sampling Requirements

(1) Routine and additional tests shall be conducted on a single composite sample collected over a 16-hour period.

(2) If the duration of the discharge is less than 24 hours per day, then the duration of discharge shall be documented on the chain of custody.

e. **Quality Assurance Requirements**

(1) A standard reference toxicant (SRT) quality assurance (QA) acute toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or no more than 30 days before the date of each routine or additional test conducted. The SRT-QA data shall be included in the bioassay reports for each companion routine or additional test required.

(2) If the mortality in the control exceeds 10% for either species in any test, then the test for that species (including the control) shall be invalidated and the test repeated.

(3) If during any test, 100% mortality occurs prior to the end of the test and control mortality is less than 10% at that time, then that test (including the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.

(4) Routine and additional tests shall be evaluated for acceptability based on the concentration-response relationship, as required by EPA-821-R-02-012, Section 12.2.6.2. and included in the bioassay reports.

f. **Reporting Requirements**

(1) Results from <u>all</u> required toxicity tests shall be entered on the Discharge Monitoring Report (DMR) as follows:

(a) Routine Test Results: If the LC50 is greater than or equal to 100% effluent for the test species, then " > 100%" should be entered on the DMR for that test species. If greater than 50% mortality occurs for the test species, then " < 100%" should be entered.

(b) Additional Follow-up Test Results: Report the calculated LC50 value for that test species and the 95% confidence limits.

(2) A bioassay laboratory report for the routine test shall be prepared according to EPA-821-R-02-012, Section 12, Report Preparation and Test Review and mailed to the Department at the address below within 30 days of the completion of the test.

(3) For additional tests, a *single* bioassay laboratory report shall be prepared according to EPA-821-R-02-012, Section 12, and mailed within 45 days of completion of the third valid additional test. If any additional tests, or two consecutive routine tests, do not meet either the 20% or 50% effluent limitation specified in 9.a. (1) and (2) above, then the permittee shall contact the Department within 30 days of the laboratory report submittal to discuss the corrective actions necessary to remedy the observed acute toxicity.

(4) All bioassay laboratory reports shall be mailed to:

Florida Department of Environmental Protection
Northeast District - Domestic Wastewater Section
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256-7590

10. The pH and temperature of the effluent shall be taken at the time of total ammonia sample collection. The un-ionized ammonia fraction shall be calculated based on the total ammonia, pH, and temperature.

11. The Department may develop a Total Maximum Daily Load (TMDL) for the receiving water body during the life of the permit. Once a TMDL for this receiving water body has been established and adopted by rule, the Department shall revise this permit to incorporate the final findings of the TMDL, pursuant to Rule 62-620.325, FAC. *[62-303 FAC]*

	PART I: Continued										
	Note – "Outfalls" WIM-01, WIM-02, WIM-03 and WEP-01 are wetland "outfalls" and will not be sampled.										

CITY OF JASPER – FL0027880 – May-2010

PART I: Continued	
Receiving Waters: **Baisden Swamp**	**Classification (indicate whether fresh or marine):** **Class III Fresh water**
Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.): **See Item 9 on pages 6-8 of this document.**	
Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): **A draft CO, #09-3596, was sent to Larry Cail, City of Jasper Manager on April 28, 2010.** **It has not yet been executed. It contains an Interim Limit for Total-P at WEP-01 in the wetland.**	
Facility Mixing Zone Details (if applicable): **There are none.**	
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year: **@D-001** For January 1, 2009 to March 31, 2010 (None in PCS)	

Date	Parameter and Units	Limit	Result
NA	NA	NA	NA

Describe previous FYI and WQBEL study:

Fifth Year Inspection Report:

A fifth-year survey was conducted on June 7, 2004, composed of four parts: a toxics sampling inspection (XSI), a compliance biomonitoring inspection (CBI), a water quality inspection (WQI), and impact bioassessment inspection (IBI). The results of each of the four components is summarized below:

- **Toxics Sampling Inspection (XSI): Aluminum and zinc were detected in the effluent at levels that complied with Class III Surface Water Quality Criteria. Iron and lead were also detected but at levels between the method detection limits and the practical quantitative limits.**

- **Compliance Biomonitoring Inspection (CBI): The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi*, or to the water flea, *Ceriodaphnia dubia*, during the 48-hour acute bioassays, complying with Class III Surface Water Quality Criteria and facility permit limits. (*While the 48-hour acute screening toxicity tests do not reflect the permit required conditions, the Department uses it to provide reasonable assurance that the facility does not adversely affect waters of the State.*)**

- **Water Quality Inspection (WQI): Levels of coliforms detected in the effluent and at the Test Site did not exceed Class III Water Quality Criteria or facility permit limits. However, both fecal (2600 counts/100 mL) and total (4500 counts/100 mL) coliforms detected at the Control Site exceeded Class III Water Quality Criteria (62-302.530(6) and (7) F.A.C.). Effluent concentrations of total nitrogen (0.91 mg/L), total phosphorus (1.2 mg/L), and total ammonia (0.042 mg/L) complied with facility permit limits. Nutrient concentrations at the Test Site ranked at or above the 70th percentile of typical values for Florida streams compared to Control Site concentrations, which ranked at or above the 60th percentile.**

- **Impact Bioassessment Inspection (IBI): Periphyton chlorophyll-a concentration was 10 mg/m^2 at the Control Site and 71 mg/m^2 at the Test Site. Stream Condition Index (SCI)samples placed both the Control and Test Sites in the "Good" range. Although overall SCI scores at the Control and Test Sites were in the "Good" category, the Hester-Dendy samplers showed signs of stress in benthic macroinvertebrate assemblages in Tiger Creek. Macroinvertebrate assemblages from Hester-Dendy samplers showed a 63% reduction in Shannon-Weaver diversity scores at the Test Site (1.14) compared to the Control Site (3.11). This reduction is an exceedance of the Class III Surface Water Biological Integrity Criterion (62-302.530(11) F.A.C.).**

Water Quality Base Effluent Limitations (WQBEL)

To comply with the requirements of 40 CFR 122.44(d) and 62-611 FAC, the permit application and other available application information were evaluated to determine if the discharge could cause an excursion above the 62-611 FAC receiving wetlands standards. Also, Baisden Swamp water quality data was from the five monitoring stations was organized and analyzed to determine if the Baisden Swamp was meeting the receiving wetland water quality standards in the vicinity of the discharge. It was determined that the discharge from this facility should not cause or contribute to an excursion in the receiving wetland water quality standards. The existing treatment limits should be adequate to protect the designated use of the water body based on the review of the ambient water quality data. The following are findings from a review of the 5 monitoring stations in the Baisden Swamp from January 1999 to December 2003.

- ***The total nitrogen results at all of the stations were less than the effluent single sample limit of 3.0 mg/L. The high nitrogen level recorded was 2.52 mg/L at Station A on January 2003.***

- ***The permitted effluent single sample maximum for total phosphorous is 2.0 mg/L. None of the results from the stations exceed this value; the highest value was recorded at Station F, 0.925 mg/L on April 25, 1996.***

- ***The permitted effluent single sample maximum for CBOD5 is 10.0 mg/L. A value of 11.0 mg/L was recorded at Station C on July 25, 1995. Also, during that sample period, the CBOD5 value at Station F was 6.5 mg/L, 3.5 mg/L at Station E, and 2.9 mg/L at Station D. Since that July 1995 sample period 90% of the CBOD5 values through April 1999 have been less than or equal to 2.0 mg/L.***

- ***No TSS values at any of the monitoring stations have been 10.0 mg/L – the effluent permitted single sample maximum. The highest value recorded was 9.3 mg/L at Station C on October 31, 1996.***

- ***Dissolved oxygen measurements were taken at the top, middle and bottom depths.***

TOP – The average DO value from 75 measurements was 5.4 mg/L
MIDDLE – The average DO value from 71 measurements was 5.38 mg/L
BOTTOM – The average DO value from 71 measurements was 5.35 mg/L

All of the values at all of the depths were above the effluent limit of a minimum of 4.0 mg/L.

- **TN and TP in Station F (Back Ground) were higher than TN and TP in Station E. WWTF effluent is better or equivalent to the background water quality.**

CITY OF JASPER – FL0027880 – May-2010

Describe previous or current Enforcement Actions (including WLs): **CO #05-0036 was closed in Nov-09. No Warning letters regarding CEI's or effluent data.**
Describe any violations or problems noted in previous inspection: **No comments regarding D-001.**
Discuss whether DMR trends within previous five years are improving or declining: **Effluent BOD steady at 2 mg/l; Fecal Coliform remained low (<1 most times);** **ammonia-N has been less than 10% of permit max.,** **Total-N was high in 09/09 & 10/09 but has dropped to "normal" levels about 50% of permitted limit.,** **high pH (8.5 in May-09) –unknown cause.,** **Total-P mostly less than 50% of permit limit except in Dec-09 when it was 75% of the limit.,** **TSS normally less than 2 mg/l.**
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): **There are no definitive trends that are obvious. Effluent has met D-001 limits 100% of time – per PCS.**

PART II: Sampling Event Information	
Date(s) sample collected: 6/14/2010 (planned)	Sampler(s): Eesa Ali, Sharon Piltz, Max Schwartz, Ed Jamro
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (umhos/cm):
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination: Gaseous Chlorine	Method of De-chlorination: Gaseous Sulfur Dioxide
Flow During Sample Collection for each outfall(MGD): (D-001 only)	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): The current annual average flow is 0.762 MGD. The monthly average flows in the past year have ranged from a low of 0.502 MGD in Nov-09 to a high of 1.027 MGD in April-09.	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here: Describe appearance of final effluent on day of sampling ---_____	

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. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedence of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedences of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedence of 62-302.530(6) and/or a violation of 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 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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 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 constitute an exceedence of 62-302.530(61) F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass . High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

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

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

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

(8) Benthic Macroinvertebrate Assemblages

Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. 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.

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 exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

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

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 (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

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

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 constitute exceedences of 62-302.530(10) F.A.C.

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et. al. 2007). This Index was revised in 2007 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. As human disturbance increases, it is expected that taxa richness, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon, and percent contribution of very tolerant taxa will increase.

Scores are broken into three categories (1, 2, and 3). Sites in Category 1 are described as having higher diversity than Category 2 sites, particularly for Ephemeroptera and Trichoptera. A Category 1 site may have several more clinger and sensitive taxa, a higher proportion of Tanytarsini, and a lower percent of a dominant taxon than a site in Category 2. The site will also have a very small percentage of very tolerant individuals, if any.

Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative to sites in Category 1. Very tolerant taxa represent a small percentage of individuals but are noticeably increased as compared to sites in Category 1.

Sites in Category 3 are described as having a notable loss in taxonomic diversity, and Ephemeroptera, Trichoptera, long-lived, clinger and sensitive taxa are uncommon or rare. Filter feeders are reduced by at least 50%. The site is dominated by a tolerant taxon, and very tolerant individuals represent a large proportion of the individuals collected.

SCI 2007 categories are from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), December 3, 2008. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score in Category 3, if it is shown to be related to a facility's effluent, may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or a violation of 62-302.530(61).

(9) Macrophyte Florida Wetland Condition Index

The Florida Wetland Condition Index (FWCI) was developed to provide a quantitative measure of the biological integrity of a wetland system (Reiss and Brown 2005). The method has not been validated beyond the original study.

The Florida Wetland Condition Index (FWCI) for forested floodplain wetlands uses five macrophyte based metrics including proportion tolerant indicator species, proportion sensitive indicator species, Floristic Quality Assessment Index (FQAI) score, proportion exotic species, and proportion native perennial species, as biological indicators for defining biological integrity for wetland vegetation. The score is based on a 0-50 scale, with 50 being the best and representing high biological integrity and zero being the lowest score, reflecting a lack of biological integrity or no similarity to the reference wetland condition. The scores correlate with the Landscape Development Intensity Index (LDI), a quantitative land use based index of potential human disturbance ranging from 1 (low impact) to 10 (high impact) (Brown and Vivas 2005). Wetland study sites were sought in various landscape settings that included natural, agricultural, and urban land uses. Metrics were selected for inclusion in the FWCI based on the correlation of each metric with a quantitative gradient LDI; based on a metrics visually distinguishable correlation with LDI in a scatter plot; and based on a statistical difference of metric values between low (<2) and high (≥2) LDI groups (Mann-Whitney U-test).

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: ~~Shannon Litz, Jeremy Parrish,~~ ET/JP/CP/JG, Chuck Plank, Jim Gruentzel
Sampling Agency: DEP

Field Report Prepared By: Essa Ali
Send Final Report To: Tom Kallemeyn

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WEP-01 E	☐ Comp ☑ Grab Date 6/14 Time 850 Eastern Central	Date N/A Time Eastern Central	B/C
	Field ID: Chem 1 Bio	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): 4.44	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): FRESH	Temp (C): 25.54	pH: 7.03	Sample Depth ☒ m 0.09 ☐ ft 0.06
	Latitude: N 30 29 53.9	Longitude: W 82 58 50.4	Salinity (PPTh): 1.81 ☑ Sp Conductance (umho/cm)	NPDES Number: FL0037880
			Comments: clear/calm secchi - 0.12 L Flow - 0.1 K	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WEP-01 E	☑ Comp ☐ Grab Date 5/17 Time ~~6:49~~ Eastern Central	Date 6/14 Time 850 Eastern Central	C
	Field ID: HD 113	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc): FRESH	Temp (C):	pH:	Sample Depth ☐ m N/A ☐ ft
	Latitude:	Longitude:	Salinity (PPTh): N/A ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037880
			Comments:	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WEP-01 E	☑ Comp ☐ Grab Date 5/17 Time 6 Eastern Central	Date 6/14 Time 850 Eastern Central	C
	Field ID: HD 213	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m N/A ☐ ft
	Latitude:	Longitude:	Salinity (PPTh): N/A ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037880
			Comments:	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WEP-01 E	☑ Comp ☐ Grab Date 5/17 Time Eastern Central	Date 6/14 Time 850 Eastern Central	C
	Field ID: HD 313	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m N/A ☐ ft
	Latitude:	Longitude:	Salinity (PPTh): N/A ☐ Sp Conductance (umho/cm)	NPDES Number: FL0037880
			Comments:	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J. Gruentzel	6/14/10 1515	Self		6/14/10 1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 4

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: Eesa Ali/Melton Priffi/Jake Mast
Sampling Agency: DEP

Field Report Prepared By: Eesa Ali
Send Final Report To: Tom Kallemeyn

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Proposed F Field ID: HD 1/3	☑ Comp ☐ Grab; Date 5/17 Time; Eastern Central	Date 6/14 Time 0900 Eastern Central	C
	Matrix (include type e.g. Salt, Fresh, etc): Fresh; Temp (C): 25.5; pH: 6.28	Tot Res Chlorine (mg/L): —; Diss Oxygen (mg/L): 1.08; Storet Station Number: —		
	Latitude o ' " ; Longitude o ' "	Sample Depth ☑ m ☐ ft: 0.25; 0.04; 79; ☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm); NPDES Number: FL0027880 Comments: Secchi - 0.4 FLOW - 0.1L		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Proposed F Field ID: HD 2/3	☑ Comp ☐ Grab; Date 5/17 Time; Eastern Central	Date 6/14 Time; Eastern Central	C
	Matrix (include type e.g. Salt, Fresh, etc); Temp (C); pH	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number		
	Latitude o ' " ; Longitude o ' "	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number: FL0027880 Comments: —		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Proposed F Field ID: HD 3/3	☑ Comp ☐ Grab; Date 5/17 Time; Eastern Central	Date 6/14 Time; Eastern Central	C
	Matrix (include type e.g. Salt, Fresh, etc); Temp (C); pH	Tot Res Chlorine (mg/L); Diss Oxygen (mg/L); Storet Station Number		
	Latitude o ' " ; Longitude o ' "	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number: FL0027880 Comments: —		

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Proposed F Field ID: METER READINGS	☐ Comp ☑ Grab; Date 6/14 Time; Eastern Central	Date Time; Eastern Central	N/A
	Matrix (include type e.g. Salt, Fresh, etc): Fresh; Temp (C): 25.5; pH: 6.28	Tot Res Chlorine (mg/L): —; Diss Oxygen (mg/L): 1.08; Storet Station Number: —		
	Latitude N o ' " ; Longitude W o ' "	Sample Depth ☒ m ☐ ft: 0.25; 0.04; 79; ☒ Salinity (PPTh) ☑ Sp Conductance (umho/cm); NPDES Number: FL0027880 Comments: Secchi - 0.4 FLOW - 0.1 L		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J Greenfield	6/14/10 1515	Self	RKU	6/14/10/1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: Staron Piltz / Jamie Greventzel / ET / JG / JP / CP / Jeremy Parrish / Jamie Greventzel
Sampling Agency: DEP
Field Report Prepared By: Tessa Ali
Send Final Report To: Tom Kallemeyn

Lab ID *	Location	Collection (begin) Eastern	Collection (end) Eastern	Bottle Group(s)**
	WIM-02 C	☐ Comp ☑ Grab Date 6/14 Time 0915 Central	Date Time Central	B/C
	Field ID # Chem / Bio	Tot Res Chlorine (mg/L) N/A	Diss Oxygen (mg/L) 2.11	Storet Station Number N/A
	Matrix (include type e.g. Salt, Fresh, etc) Fresh	Temp (C) 27.02	pH 6.83	Sample Depth ☑ m ☐ ft 0.3
		Salinity (PPTh) 0.20 ☑ Sp Conductance (umho/cm) 416	NPDES Number FL0027880	
	Latitude o ' " N30 29 42.7	Longitude o ' " W082 57 17.4	Comments clr/calm secchi - 0.4 Flow - 0.1K	

Lab ID *	Location	Collection (begin) Eastern	Collection (end) Eastern	Bottle Group(s)**
	WIM-02 C	☑ Comp ☐ Grab Date 5/17 Time 0915 Central	Date 6/14 Time 0915 Central	C
	Field ID HD 113	Tot Res Chlorine (mg/L) N/A	Diss Oxygen (mg/L) N/A	Storet Station Number N/A
	Matrix (include type e.g. Salt, Fresh, etc) —	Temp (C) —	pH —	Sample Depth ☐ m ☐ ft —
		Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FL0027880	
	Latitude o ' " —	Longitude o ' " —	Comments	

Lab ID *	Location	Collection (begin) Eastern	Collection (end) Eastern	Bottle Group(s)**
	WIM-02 C	☑ Comp ☐ Grab Date 5/17 Time 0915 Central	Date 6/14 Time 0915 Central	C
	Field ID HD 213	Tot Res Chlorine (mg/L) N/A	Diss Oxygen (mg/L) N/A	Storet Station Number N/A
	Matrix (include type e.g. Salt, Fresh, etc) —	Temp (C) —	pH —	Sample Depth ☐ m ☐ ft N/A
		Salinity (PPTh) N/A ☐ Sp Conductance (umho/cm)	NPDES Number FL0027880	
	Latitude o ' " —	Longitude o ' " —	Comments —	

Lab ID *	Location	Collection (begin) Eastern	Collection (end) Eastern	Bottle Group(s)**
	WIM-02 C	☑ Comp ☐ Grab Date 5/17 Time 0915 Central	Date 6/14 Time 0915 Central	C
	Field ID ~~HD~~ HD 313	Tot Res Chlorine (mg/L) N/A	Diss Oxygen (mg/L) N/A	Storet Station Number N/A
	Matrix (include type e.g. Salt, Fresh, etc) —	Temp (C) —	pH —	Sample Depth ☐ m ☐ ft N/A
		Salinity (PPTh) N/A ☐ Sp Conductance (umho/cm)	NPDES Number FL0027880	
	Latitude o ' " —	Longitude o ' " —	Comments —	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J. Greventzel	6/14/10 1515	Self	RKW	6/14/10 1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Requester: Cari Butler
Field Report Prepared By: Esa Ali
Collected By: Esa Ali/Mathew Pritt/Jake Mast
Send Final Report To: Tom Kallemeyn
Sampling Agency: DEP

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	WIM-01 A	☐ Comp ☑ Grab	Date 6/14 Time 0920	Date 6/14 Time ~~0920~~	B/C
	Field ID: Chem 1510	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 6.54	Storet Station Number:	
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C): 28.6	pH: 7.31	Sample Depth ☑ m 0.25 ☐ ft	0.27 ppth ☑ Salinity (PPTh) 568 ☑ Sp Conductance (umho/cm)
	Latitude: N 30 30 13.5	Longitude: W 82 56 55.0	Comments: Secchi - 0.5L FLOW - 0.1 0920		NPDES Number: FL0027880

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	WIM-01 A	☑ Comp ☐ Grab	Date 5/17 Time	Date 6/14 Time 0920	C
	Field ID: HO 1/3	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A	
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude:	Longitude:	Comments:		NPDES Number: FL0027880

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	WIM-01 A	☑ Comp ☐ Grab	Date 5/17 Time	Date 6/14 Time 0920	C
	Field ID: HO 2/3	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude:	Longitude:	Comments:		NPDES Number: FL0027880

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	WIM-01 A	☑ Comp ☐ Grab	Date 5/17 Time	Date 6/14 Time 0920	C
	Field ID: HO 3/3	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:	
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude:	Longitude:	Comments:		NPDES Number: FL0027880

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J. Greentree	6/14/10 1515	Self	FKL	6/14/10 1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Requester: Cari Butler
Field Report Prepared By: Esa Ali
Collected By: Esa Ali/Melton Priftis/Wake Nast
Send Final Report To: Tom Kallemeyn
Sampling Agency: DEP

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Lab ID *	Location	Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh)	Sp Conductance (umho/cm)	NPDES Number	Comments	Bottle Group(s)**
	EFD-1 JASPER WWTP	N/A	Salt, Fresh, etc	28.7	7.21	N 30 30 20.56	W 82 56 58.06	Grab			Central	6/14	0940	Central		7.09		1.6 m / ft	0.27 / 566		FL0037880	1.6L Secchi FLOW - 3.0 fps	A
	EFD-1 Tox	—	—	—	—	—	—	Grab			Central	6/14	0940	Central	—	—	—	—	—	—	FL0037880	—	A
	BLANK	—	—	—	—	—	—	Grab			Central	6/14	0948	Central	—	—	—	—	—	—	FL0037880	—	D
	~~Repeat~~ (~)										Central			Central									

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J. Prentzel	6/14/10 1515	Self	[illegible]	6/14/10 1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: ~~Tessa Ali/Madison Pitt~~ Shawn Pilz/Chuck Plank/Jean Gruentzel
Sampling Agency: DEP

Field Report Prepared By: Tessa Ali
Send Final Report To: Tom Kallemeyn

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WIM-03 F	☐ Comp ☑ Grab Date 6/14 Time 1030 Eastern Central	Date Time Eastern Central	B/C
	Field ID: Chem 15.0	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): 0.93	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 24.55	pH: 6.26	Sample Depth ☐ m ☐ ft: 0.4 / 0.04 / 80 ☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm)
	Latitude: N 30 ° 29 ' 55.0 "	Longitude: W 82 ° 56 ' 49.0 "	Comments: clr/calm secchi 0.4 Flow - 0.1K	NPDES Number: FL0027880

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WIM-03 F	☑ Comp ☐ Grab Date 5/17 Time Eastern Central	Date 6/14 Time 1030 Eastern Central	C
	Field ID: HD 1/3	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): N/A	pH: N/A	Sample Depth ☐ m ☐ ft: N/A / N/A ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude: —	Longitude: —	Comments:	NPDES Number: FL0027880

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WIM-03 F	☑ Comp ☐ Grab Date 5/17 Time Eastern Central	Date 6/14 Time 1030 Eastern Central	C
	Field ID: HD 2/3	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc): —	Temp (C): —	pH: —	Sample Depth ☐ m ☐ ft: N/A / N/A ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude: —	Longitude: —	Comments: —	NPDES Number: FL0027880

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	WIM-03 F	☑ Comp ☐ Grab Date 5/17 Time Eastern Central	Date 6/14 Time 1030 Eastern Central	C
	Field ID: HD 3/3	Tot Res Chlorine (mg/L): N/A	Diss Oxygen (mg/L): N/A	Storet Station Number: N/A
	Matrix (include type e.g. Salt, Fresh, etc): —	Temp (C): —	pH: —	Sample Depth ☐ m ☐ ft: N/A / N/A ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)
	Latitude: —	Longitude: —	Comments:	NPDES Number: FL0027880

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J Gruentzel	6/14/10 1515	Self		6/14/10 1520				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Check Box That Applies To Your Location

☐ **Flowers Chemical Laboratories, Inc.**
481 Newburyport Ave.
Altamonte Springs, FL 32701
Bus: 407-339-5984
Fax: 407-260-6110

☐ **Flowers Chemical Labs-South**
West Park Industrial Plaza
571 N.W. Mercantile Pl., Ste. 111
Port St. Lucie, FL 34986
Bus: 772-343-8006
Fax: 772-343-8089

☐ **Flowers Chemical Labs-North**
812 S.W. Harvey Greene Dr.
Madison, FL 32340
Bus: 850-973-6878
Fax: 850-973-6878

☐ **Flowers Chemical Labs-Keys**
3980 Overseas Highway, Ste. 103
Marathon, FL 33050
Bus: 305-743-8598
Fax: 305-743-8598

FLOWERS CHEMICAL LABORATORIES INCORPORATED

DOWNLOAD REPORTS, INVOICES AND CHAINS OF CUSTODY www.flowerslabs.com

Client: DEP - NED	Project Name: JASPER 5th year	P.O. #: RQ 2010-06-14-28
Address: 7825 BAYMEADOWS WAY 32256	Client Contact: 904 807 3230	FAX:
Phone: 904 807 3230	FCL Project Manager:	E-MAIL: eesa alic dep.state.fl.us
Sampled By (PRINT): EESA ALI	Requested Due Date 10 Day Standard OR	Rush Charges May Apply
Sampler Signature:	Date Sampled: 6/14/10	Pick-Up Fee $ / Vehicle Surcharge $ / Sampling Fee $

GW - ground water DW - drinking water WW - wastewater
SW - surface water S - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: FU	COMMENTS	Total # Containers
1	WCP-01 'E'	~~6/14/10~~ 6/14/10	850	SW						X	X		
2	WIM-01 'A'	6/20	920	SW									
3	EFD-1		940	WW									
4	WIM-02 'C'		915	SW									
5	WIM-03 'F'		1030	SW									
6													
7													
8													
9													
10													

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
EESA ALI	6/14/10	1315		6/14/10	1350						

FINANCE CHARGES APPLIED TO PAST DUE INVOICES

• **WHITE** - Lab Copy - To Be Scanned • **YELLOW** - Client Copy

Rev 04-08

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-06-14-28
Jasper WWTF FYI5

Customer: NE-DIST
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: E. Ali / Chuck Plank
Sampling Agency: DEP - NE

Field Report Prepared By: E. Ali
Send Final Report To: Tom Kallemeyn

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Location: Jasper WWTP Site C "WIM-02"	☐ Comp ☑ Grab	Date 6/17/10 Time 1200 Eastern Central		C
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	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)**
	Location	☐ Comp ☐ Grab	Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	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)**
	Location	☐ Comp ☐ Grab	Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	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)**
	Location	☐ Comp ☐ Grab	Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " / Longitude o ' "	Comments			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
E. Ali	6/22/10	hand	Tahmoores Ebrahimnejad	06-22-10 13:35				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E

Physical/Chemical field sheets

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____	STORET STATION NUMBER:	DATE (M/D/Y): 4/5/10	TIME 1230	RECEIVING BODY OF WATER: TIGER CREEK
REMARKS:	COUNTY: Hamilton	LOCATION: ⊙ = end of wetland to Tiger Creek	FIELD ID/NAME:	

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)
80		7	5	5	2	1	

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

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

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

LIST & MAP DOMINANT VEGETATION ON BACK

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

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 1.3 (m above present water level) + 1 (present depth in m) = 2.3 (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

m wide		
m/s	m/s	m/s
0.2		
m deep	m deep	m deep

TYPICAL VELOCITIES

7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

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

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐ _____

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

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE ☐ SLIGHT ☐ MODERATE ☐ SEVERE ☐ SILT SMOTHERING: NONE ☐ SLIGHT ☐ MODERATE ☐ SEVERE ☐ OTHER: _____

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

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH		14.68	6.57	5.40	87	69.5		0.4
BOTTOM								

SYSTEM TYPE: STREAM: ~~1ST-2ND ORDER~~ ☑ 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: wetland cypress ~~occasio~~ being harvested.

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

SAMPLING TEAM: SP EASM JMP

SIGNATURE: [signature]

DATE: 4/5/10

to parkway alligator weed oak maple palmetto 2/m3 cypress

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		4/5/10	1200	Tiger Creek

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Hamilton	A 100 to wetland	

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL/ Municipal	OTHER (SPECIFY)
80	X	7	5	5	2	1	

some wet lands very harvested

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: 0

LIST & MAP DOMINANT VEGETATION ON BACK

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

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 0 + 0.3 = 0.3
(m above present water level) (present depth in m) (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

m wide		
m/s	m/s	m/s
0.1		
m deep	m deep	m deep

TYPICAL VELOCITIES
7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

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

SEDIMENT/SUBSTRATE

not exposed

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐ _____

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

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: ~~NONE~~ SLIGHT SEVERE MODERATE SILT SMOTHERING: NONE SLIGHT SEVERE MODERATE OTHER: _____

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

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):	%		SECCHI (M):
TOP								
~~MID-DEPTH~~	0.3	22.48	6.41	9.18	475	106.00		0.36
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:
* Nearby Landfill.

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

SAMPLING TEAM: EA/SP/MP/SM

SIGNATURE:

DATE: 4/5/10

Two pumpkin ash, w. Myrtle, sweetgum, cattails, Red maple

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		4/5/10	1215	Tiger Creek

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Hamilton	C wetland interval	

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)
80		7	5	5	2	1	

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: [illegible]

LIST & MAP DOMINANT VEGETATION ON BACK

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

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 0 (m above present water level) + 1 (present depth in m) = 1 (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

m wide		
m/s	m/s	m/s
0.1		
m deep	m deep	m deep

TYPICAL VELOCITIES

7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

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

SEDIMENT/SUBSTRATE

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

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

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE MODERATE SLIGHT SEVERE SILT SMOTHERING: NONE MODERATE SLIGHT SEVERE OTHER: _____

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

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH	1	18.96	6.17	4.58	82	49.7		0.4
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: glare

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

SAMPLING TEAM: SP/EA/MP/SM

SIGNATURE: [signature]

DATE: 4/5/10

maple, hydrocotyle, duckweed, pine, cypress, waxmyrtle

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y): 4/5/10	TIME: 1130	RECEIVING BODY OF WATER: Tiger Creek
REMARKS: Background	COUNTY: Hamilton	LOCATION: F Background	FIELD ID/NAME:	

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)
80		7	5	5	2	1	

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

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

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: | LIST & MAP DOMINANT VEGETATION ON BACK

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

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 0 (m above present water level) + 2 (present depth in m) = 2 (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

m wide		
m/s	m/s	m/s
	0.1	
m deep	m deep	m deep

TYPICAL VELOCITIES
7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

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

SEDIMENT/SUBSTRATE

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

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

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

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

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):	20		SECCHI (M):
TOP								
MID-DEPTH	0.4	18.72	5.14	5.24	64	58.3		0.4
BOTTOM	+1							

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:

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

SAMPLING TEAM: SP CA SM MP | SIGNATURE: | DATE: 4/5/10

red maple, Oak.

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		6-14-10	1030	TIGER CREEK

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Hamilton	WIM-03 F	

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)
80		7	5	5	2	1	

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

LIST & MAP DOMINANT VEGETATION ON BACK

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

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 0.3 (m above present water level) + 0.6 (present depth in m) = 0.9 (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

8 m wide

1 m/s	4 m/s	4 m/s
.4 m deep	1 m deep	.4 m deep

TYPICAL VELOCITIES

7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

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

SEDIMENT/SUBSTRATE

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

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

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT SEVERE MODERATE SILT SMOTHERING: NONE SLIGHT SEVERE MODERATE OTHER: _____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)		7		SAND			
LEAF PACKS OF MATS		1		MUD/MUCK/SILT			
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
ROOTS		2		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								
MID-DEPTH	0.4	24.55	6.26	0.93	80			0.4
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: ☐ ~~METALLICS~~

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

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

WEATHER CONDITIONS/NOTES:

55°F

3-5 knot wind

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

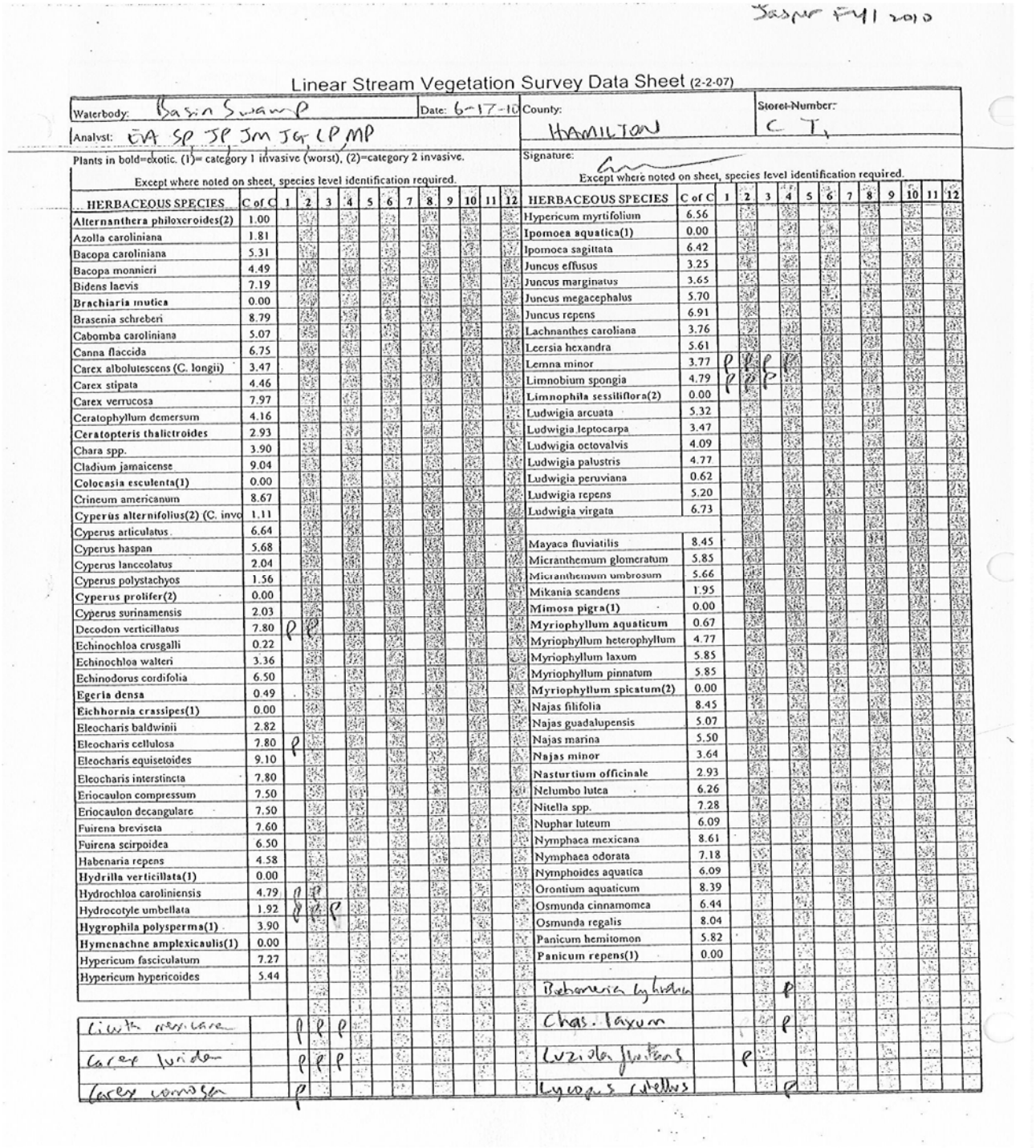
SAMPLING TEAM: EA, SP, JG, MP, CP, JP

SIGNATURE:

DATE: 6-14-10

Appendix F

Vegetation field sheets



Jasper FY1 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Stored Number: C T,

Analyst: EA SP JP JM JG LP MP | Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00												
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07												
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinеum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80	P	P										
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80	P											
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79	P	P										
Hydrocotyle umbellata	1.92	P	P	P									
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44												
Liatris mariana			P	P	P								
Carex lurida			P	P	P								
Carex comosa			P										

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25												
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77	P	P	P	P								
Limnobium spongia	4.79	P	P	P									
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												
Rhexia lutea					P								
Chas. laxum					P								
Luzula glutinosa		P											
Lycopus rubellus					P								

JASPER FYI 2010

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Storet Number: Site C, T,

Analyst: EA, SP, JP, CP, JG, JM, MP | Signature: Eric Q.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum ~~densiflorum~~ sp.	5.32	P											
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35	P	P										
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50	P											
P. nekoega brachcata				P									

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33												
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98			P	P								
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingersis	0.59												
Typha latifolia	1.60	P											
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37	P	P	P	P								
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
smilax				P									
Vitis rotundi.				P	P								
Wood. apetala					P								
Taxaxnum officinale					P								

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65												
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27	P											
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20		P										
Gordonia lasianthus	9.03		P										
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Liquidambar styr.			P										

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44												
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82		P	P									
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21				P								
Salix carolina	2.95												
Sapium sebiferum(1)	0.00												
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												
Quercus sinuata				P									

Jasper FMI 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp Date: 6-17-10 County: HAMILTON Stored Number: Site C, T2

Analyst: EA, CL, JP, MPS, P, JG, JM

Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00	P	P			P							
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07												
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80												
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79				P	P	P						
Hydrocotyle umbellata	1.92				P	P	P						
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44												

C. Mexicana				P	P	P	P						
Carex lurida				P	P	P	P						
Habenaria repens			P			P							

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25				P								
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77	P	P	P	P	P							
Limnobium spongia	4.79	P	P	P	P	P							
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												

JASPER [illegible] 2010

Waterbody: BASIN SWAMP | Date: 6-17-10 | County: HAMILTON | Stored Number: Site C T2

Analyst: EA, SPMP, CP, JP, JG, JM | Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum ~~densiflorum~~ sp.	5.32					P							
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35												
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50			P									

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33												
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98												
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingensis	0.59												
Typha latifolia	1.60			P									
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37	P	P	P	P								
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Wood. virginicus					P								

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65					P							
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27												
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20												
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44												
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82												
Nyssa sylvatica var. biflora	9.04		P										
Pinus elliottii	4.21												
Salix carolina	2.95												
Sapium sebiferum(1)	0.00					P							
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

JSNR FTI 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Storet Number: C T3

Analyst: EA, SP, JP, MP, CP, JM, JG | Signature: Eva Cox

Plants in bold=exotic. (1)=category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00				P								
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07												
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinecum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80	P											
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79												
Hydrocotyle umbellata	1.92	P			P								
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44												
C Mexicana			P										
Carex Lurida			P		P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25												
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77	P			P	P							
Limnobium spongia	4.79	P											
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												
Panicum verrucosum			P		P								

JASPER 7-11-2010

Waterbody:	Date:	County:	Stand Number:
Basin Swamp	6-17-10	HAMILTON	Site C T3

Analyst: EA, SP, CP, MP, JP, JG, JM

Signature:

Except where noted on sheet, species level identification required

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum densiflorum	5.32												
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03		P										
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35				P								
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50	P											
Ri. invadata			P										

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33	P											
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98				P								
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingersis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37	P			P	P							
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Sabal palmetto			P										
Vitis rotundifolia					P								
Woodwardia areolata			P	P	P	P							

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65				P								
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27												
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20												
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Ligustrum sp.			P										

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44												
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82	P	P	P	P								
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21												
Salix carolina	2.95												
Sapium sebiferum(1)	0.00												
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												
Quercus sinuata				P									

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Stored Number: Site C Ty

Analyst: GA SP JSP MP CP JS JM

Signature: Eam LQ.

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00	P	P			P							
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07												
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinеum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03		P										
Decodon verticillatus	7.80	P											
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79		P										
Hydrocotyle ~~umbellata~~ sp.	1.92	P	P		P	P							
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44												
Carex lucida			P	P	P								
Cic. mexicana			P	P	P								
Rhyn. cylindrica					P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25												
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77	P	P			P	P						
Limnobium spongia	4.79	P	P										
Limnophila sessiliflora(2)	0.00	P	P										
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00				P	P							
Carex vamosae					P								

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Stored Number: site C TH

Analyst: EA SP JP CP MP JM JG | Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum densiflorum	5.32												
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa ima	5.29		P										
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35		P										
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50	P											

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33		P										
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98												
Thalia geniculata	7.12												
Triadenum virginicum ps	8.16		P										
Typha domingensis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37	P			P	P							
Zizania aquatica	6.69												
Zizaniopsis milacca	6.21												
vits				P	P								
Wood arcolata				P	P								
Chasm. laxum				P	P								

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65				P								
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27												
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20			P									
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Liquidambar styr.					P								

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44												
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82		P										
Nyssa sylvatica var. biflora	9.04	P											
Pinus elliottii	4.21												
Salix carolina	2.95												
Sapium sebiferum(1)	0.00			P									
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

Jasper Fyi 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | ~~Stored Number~~: Site F, T1

Analyst: EA, SP, JP, CP, MP, JG, JM | Signature: Evan Lilly

Plants in bold=exotic. (1)=category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00												
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07					P							
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex ~~stipata~~ lupulina	4.46	P	P		P								
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinecum americanum	8.67												
Cyperus alternifolius(2) (C. inv	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80												
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79												
Hydrocotyle umbellata	1.92	P			P								
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44												
Boehmeria cylindrica			P	P	P								
Campis radicans					P								
Chasmanthium laxum			P	P	P	P							

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25	P			P								
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77					P							
Limnobium spongia	4.79												
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04					P							
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												
Panicum scabriculum				P	P								

Waterbody: Basin Swamp | Date: 6/17/10 | County: HAMILTON | ~~Stored Number~~: S, te F, T

Analyst: EA, SP, JP, CP, JG, MP, JM | Signature: Een LQ

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum ~~densiflorum~~ sp	5.32	P	P	P									
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35												
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50												
Rhexia mariana			P										
Toxicodendron radicans		P	P	P	P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33				P								
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98												
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingersis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37												
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Smilax				P									
Wood. areolata			P	P	P	P							

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65	P	P	P									
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27	P	P	P									
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20												
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44				P								
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82												
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21												
Salix carolina	2.95												
Sapium sebiferum(1)	0.00	P	P	P									
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

Jasper FWI 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | ~~Stored Number:~~ Site F, T2

Analyst: EA, SP, JP, CP, MP, JG, JM | Signature: Eva A O.

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00												
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07				P								
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex ~~verrucosa~~ lupulina	~~2.97~~	P	P										
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80												
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79												
Hydrocotyle umbellata	1.92	P											
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44				P								
Ampelopsis arborea		P	P	P	P								
Boehmeria cylindrica		P											
Sabal palmetto			P										

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25												
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77					P							
Limnobium spongia	4.79												
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85					P							
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00	P	P	P	P								
P. scabriculum		P	P	P	P								
Hypoxis curtissi		P											
Justicia ovata		P	P										
Tox. radicans		P	P	P	P								

Waterbody: Basin Swamp | Date: 6-17-10 | County: HAMILTON | Stored Number: Site E, T 2

Analyst: EA, SP, JP, CP, JG, MP, JM | Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum densiflorum	5.32												
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35												
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50												
Rhexia mariana		P	P										
Smilax		P		P	P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33	P	P										
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98												
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingersis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37												
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Woodwardia areolata				P	P	P							
Vitis sp.				P									

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65				P								
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27	P											
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20		P										
Gordonia lasianthus	9.03												
Ilex cassine	7.66		P										
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Liquidambar styr		P	P										

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44	P	P										
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82												
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21		P	P	P								
Salix carolina	2.95												
Sapium sebiferum(1)	0.00												
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

Jasper Fyl 290

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp Date: 6-17-10 County: HAMILTON Stored Number: S7e F, T3

Analyst: GA, SP, JT, CP, JG, MP, JM

Signature: Eq. CO.

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00												
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07												
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46	P				P							
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinеum americanum	8.67												
Cyperus alternifolius(2) (C. invo	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80												
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis baldwinii	2.82												
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa carolinicnsis	4.79												
Hydrocotyle umbellata	1.92	P											
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44		P										
Hypoxis curtissi						P							
Chaemanthium laxum				P			P						
Eupatorium capil					P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25		P										
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77					P							
Limnobium spongia	4.79												
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85												
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												
Panicum scabris.			P	P	P	P							
Tilia americana			P										
Tox. radicans				P									
Commelina							P						

Waterbody: Basin Swamp | Date: 6/17/10 | County: HAMILTON | Stored Number: Site F, T3

Analyst: EA, SP, JP, CP, MP, JG, JM | Signature: Eva Quarterman

Except where noted on sheet, species level identification required

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum densiflorum	5.32												
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35												
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50												
Mikania scandens					P								
Polygonum sp			P		P								

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33	P	P	P									
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98												
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingensis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37												
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Quercus sinuata					P								
Quercus virginiana			P	P	P								
Rhexia mariana			P										
Woodw. areolata		P	P	P	P	P							

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65		P										
Baccharis glomeruliflora	6.12		P										
Cephalanthus occidentalis	7.27												
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20												
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea ~~virginica~~ glabra	2.09		P										
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Liquidambar styr			P		P	P							

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44		P			P							
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82												
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21				P								
Salix carolina	2.95												
Sapium sebiferum(1)	0.00	P	P	P	P								
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

Jasper FY1 2010

Linear Stream Vegetation Survey Data Sheet (2-2-07)

Waterbody: Basin Swamp Date: 6-17-10 County: HAMILTON Stored Number: Site F, T4

Analysts: EA, SP, JP, CP, MP, JG, JM Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Alternanthera philoxeroides(2)	1.00												
Azolla caroliniana	1.81												
Bacopa caroliniana	5.31												
Bacopa monnieri	4.49												
Bidens laevis	7.19												
Brachiaria mutica	0.00												
Brasenia schreberi	8.79												
Cabomba caroliniana	5.07					P							
Canna flaccida	6.75												
Carex albolutescens (C. longii)	3.47												
Carex stipata	4.46												
Carex verrucosa	7.97												
Ceratophyllum demersum	4.16												
Ceratopteris thalictroides	2.93												
Chara spp.	3.90												
Cladium jamaicense	9.04												
Colocasia esculenta(1)	0.00												
Crinum americanum	8.67												
Cyperus alternifolius(2) (C. inv	1.11												
Cyperus articulatus	6.64												
Cyperus haspan	5.68												
Cyperus lanceolatus	2.04												
Cyperus polystachyos	1.56												
Cyperus prolifer(2)	0.00												
Cyperus surinamensis	2.03												
Decodon verticillatus	7.80												
Echinochloa crusgalli	0.22												
Echinochloa walteri	3.36												
Echinodorus cordifolia	6.50												
Egeria densa	0.49												
Eichhornia crassipes(1)	0.00												
Eleocharis ~~baldwinii~~ vivipara	2.82					P							
Eleocharis cellulosa	7.80												
Eleocharis equisetoides	9.10												
Eleocharis interstincta	7.80												
Eriocaulon compressum	7.50												
Eriocaulon decangulare	7.50												
Fuirena breviseta	7.60												
Fuirena scirpoidea	6.50												
Habenaria repens	4.58												
Hydrilla verticillata(1)	0.00												
Hydrochloa caroliniensis	4.79												
Hydrocotyle umbellata	1.92			P		P							
Hygrophila polysperma(1)	3.90												
Hymenachne amplexicaulis(1)	0.00												
Hypericum fasciculatum	7.27												
Hypericum hypericoides	5.44			P	P								
Ampelopsis arborea				P		P							
Boehmeria cylin				P									

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Hypericum myrtifolium	6.56												
Ipomoea aquatica(1)	0.00												
Ipomoea sagittata	6.42												
Juncus effusus	3.25				P								
Juncus marginatus	3.65												
Juncus megacephalus	5.70												
Juncus repens	6.91												
Lachnanthes caroliana	3.76												
Leersia hexandra	5.61												
Lemna minor	3.77					P							
Limnobium spongia	4.79												
Limnophila sessiliflora(2)	0.00												
Ludwigia arcuata	5.32												
Ludwigia leptocarpa	3.47												
Ludwigia octovalvis	4.09												
Ludwigia palustris	4.77												
Ludwigia peruviana	0.62												
Ludwigia repens	5.20												
Ludwigia virgata	6.73												
Mayaca fluviatilis	8.45												
Micranthemum glomeratum	5.85					P							
Micranthemum umbrosum	5.66												
Mikania scandens	1.95												
Mimosa pigra(1)	0.00												
Myriophyllum aquaticum	0.67												
Myriophyllum heterophyllum	4.77												
Myriophyllum laxum	5.85												
Myriophyllum pinnatum	5.85												
Myriophyllum spicatum(2)	0.00												
Najas filifolia	8.45												
Najas guadalupensis	5.07												
Najas marina	5.50												
Najas minor	3.64												
Nasturtium officinale	2.93												
Nelumbo lutea	6.26												
Nitella spp.	7.28												
Nuphar luteum	6.09												
Nymphaea mexicana	8.61												
Nymphaea odorata	7.18												
Nymphoides aquatica	6.09												
Orontium aquaticum	8.39												
Osmunda cinnamomea	6.44												
Osmunda regalis	8.04												
Panicum hemitomon	5.82												
Panicum repens(1)	0.00												
P. scabriusculum				P	P								
Polygonum sp.					P P								

Waterbody: Basin Swamp | Date: 6/17/10 | County: Hamilton | Stored Number: Site F, TY

Analyst: GA, SP, JP, CP, JG, MP JM | Signature: Eric L Q.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Paspalidium geminatum	6.36												
Paspalum distichum	5.54												
Paspalum repens	6.69												
Peltandra virginica	7.31												
Pennisetum purpureum(1)	2.79												
Phragmites australis	4.39												
Pistia stratioides(1)	0.00												
Pluchea odorata	4.96												
Pluchea rosea	5.45												
Polygonum densiflorum	5.32												
Polygonum hydropiperoides	4.02												
Polygonum punctatum	4.02												
Pontederia cordata	5.38												
Potamogeton diversifolius	7.15												
Potamogeton illinoensis	6.64												
Potamogeton pusillus	7.80												
Potemogeton pectinatus	7.80												
Proserpinaca pectinata	5.50												
Rhynchospora microcarpa	5.29												
Rhynchospora microcephala	6.50												
Rhynochospora tracyi	9.03												
Ricca fluitans	4.64												
Ricciocarpus natans	4.55												
Ruppia maritima	7.24												
Sabatia grandiflora	7.09												
Sacciolepis striata	5.35												
Sagittaria kurziana	9.75												
Sagittaria lancifolia	4.96												
Sagittaria latifolia	6.50												

HERBACEOUS SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Sagittaria graminea	5.53												
Salvinia minima	2.03												
Saururus cernuus	7.33	P											
Scirpus americanus	6.50												
Scirpus californicus	6.01												
Scirpus cubensis	3.77												
Scirpus validus	5.55												
Solanum tampicense(1)	0.00												
Sparganium americanum	6.50												
Spartina alterniflora	7.94												
Spartina bakeri	5.98	P											
Thalia geniculata	7.12												
Triadenum virginicum	8.16												
Typha domingensis	0.59												
Typha latifolia	1.60												
Utrichularia floridana	6.34												
Utrichularia foliosa	6.44												
Utrichularia inflata	5.85												
Utrichularia purpurea	6.50												
Utricularia cornuta	7.46												
Utricularia radiata	6.01												
Vallisneria americana	7.28												
Wedelia trilobata(2)	0.00												
Wolffiella spp.	4.37												
Zizania aquatica	6.69												
Zizaniopsis milacea	6.21												
Fuirena pumila			P										
Woodwardia areolata 2				P									
Fontinalis sp				P	P								

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Acer rubrum	4.65												
Baccharis glomeruliflora	6.12												
Cephalanthus occidentalis	7.27												
Clethra alnifolia	5.63												
Cliftonia monophylla	5.63												
Cyrilla racemiflora	5.20												
Gordonia lasianthus	9.03												
Ilex cassine	7.66												
Itea virginica	7.09												
Lyonia ferruginea	8.39												
Lyonia ligustrina	8.67												
Ilex glabra					P								
Liquidambar styr.					P	P							

WOODY SPECIES	C of C	1	2	3	4	5	6	7	8	9	10	11	12
Leucothoe racemosa	7.33												
Lyonia lucida	7.06												
Magnolia virginiana	9.44			P	P								
Melaleuca quinquenervia(1)	0.00												
Myrica cerifera	3.82												
Nyssa sylvatica var. biflora	9.04												
Pinus elliottii	4.21												
Salix carolina	2.95												
Sapium sebiferum(1)	0.00					P							
Schinus terebinthifolius(1)	0.00												
Taxodium ascendens	7.21												
Taxodium distichum	7.21												

Appendix G

Chemical analysis of effluent and receiving water

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Field Parameter	Dissolved Oxygen	4.44		mg/L		
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Field Parameter	pH	7.03				
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Field Parameter	Sample Depth	0.06		m		
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Field Parameter	Specific Conductance	184		umhos/cm		
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Field Parameter	Temperature	25.59		C		
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Nutrients	Ammonia-N	0.061		mg N/L	0.01	0.02
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Nutrients	Kjeldahl Nitrogen	1.2		mg N/L	0.08	0.2
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Nutrients	NO2NO3-N	0.099		mg N/L	0.004	0.01
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Nutrients	O-Phosphate-P	0.44		mg P/L	0.008	0.02
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Nutrients	Total-P	0.5		mg P/L	0.005	0.05
6/14/2010 8:50	Test Site E	CHEM 1 BIO	Overflow	Fecal Coliforms-Membrane Filter	360		#/100 mL		
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	AGP/LN	Algal Growth Potential	15.1		mg DryWt/L	0.3	0.9
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6	I	ug/L	0.55	1.7
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.61	I	ug/L	0.4	1.2
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Aluminum	170	I	ug/L	60	240
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Arsenic	0.68	I	ug/L	0.25	1
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Calcium	15.7		mg/L	0.075	0.3
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Chromium	0.48	I	ug/L	0.3	1.2
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Copper	0.5	U	ug/L	0.5	1
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Iron	360		ug/L	30	120
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Lead	0.2	U	ug/L	0.2	0.8
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Magnesium	6.35		mg/L	0.04	0.16
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Nickel	0.7	I	ug/L	0.25	1
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Selenium	0.23	I	ug/L	0.2	0.8
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Sodium	10.5		mg/L	0.5	2
6/14/2010 8:50	Test Site E	CHEM 1 BIO (WEP-01 E)	Metals	Zinc	5	U	ug/L	5	20
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Field Parameter	Dissolved Oxygen	2.11		mg/L		
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Field Parameter	pH	6.83				
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Field Parameter	Sample Depth	0.3		m		
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Field Parameter	Specific Conductance	416		umhos/cm		
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Field Parameter	Temperature	27.02		C		
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Nutrients	Ammonia-N	0.14		mg N/L	0.01	0.02
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Nutrients	Kjeldahl Nitrogen	1.1		mg N/L	0.08	0.2
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Nutrients	O-Phosphate-P	0.49		mg P/L	0.008	0.02
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Nutrients	Total-P	0.63		mg P/L	0.005	0.05
6/14/2010 9:15	Test Site C	CHEM 1 BIO	Overflow	Fecal Coliforms-Membrane Filter	134	B	#/100 mL		
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	AGP/LN	Algal Growth Potential	12.3		mg DryWt/L	0.3	0.9

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	7		ug/L	0.55	1.7
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Chlorophyll/Grain Size/BOD	Phaeophytin-a	2.1		ug/L	0.4	1.2
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Aluminum	180	I	ug/L	60	240
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Arsenic	0.53	I	ug/L	0.25	1
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Calcium	39		mg/L	0.075	0.3
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Chromium	0.39	I	ug/L	0.3	1.2
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Copper	0.5	U	ug/L	0.5	1
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Iron	580		ug/L	30	120
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Lead	0.26	I	ug/L	0.2	0.8
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Magnesium	15.3		mg/L	0.04	0.16
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Nickel	0.61	I	ug/L	0.25	1
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Sodium	20.1		mg/L	0.5	2
6/14/2010 9:15	Test Site C	CHEM 1 BIO (WIM-02 C)	Metals	Zinc	5.4	I	ug/L	5	20
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Field Parameter	Dissolved Oxygen	6.54		mg/L		
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Field Parameter	pH	7.31				
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Field Parameter	Sample Depth	0.25		m		
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Field Parameter	Specific Conductance	568		umhos/cm		
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Field Parameter	Temperature	28.6		C		
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Nutrients	Ammonia-N	0.045		mg N/L	0.01	0.02
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Nutrients	Kjeldahl Nitrogen	0.51		mg N/L	0.08	0.2
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Nutrients	NO2NO3-N	0.9		mg N/L	0.02	0.05
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Nutrients	O-Phosphate-P	0.051		mg P/L	0.004	0.01
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Nutrients	Total-P	0.075		mg P/L	0.005	0.05
6/14/2010 9:20	Test Site A	CHEM 1 BIO	Overflow	Fecal Coliforms-Membrane Filter	350		#/100 mL		
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	AGP/LN	Algal Growth Potential	49		mg DryWt/L	0.3	0.9
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	3.9		ug/L	0.55	1.7
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Aluminum	120	I	ug/L	60	240
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Arsenic	0.32	I	ug/L	0.25	1
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Calcium	53.1		mg/L	0.075	0.3
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Chromium	0.3	U	ug/L	0.3	1.2
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Copper	0.66	I	ug/L	0.5	1
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Iron	30	U	ug/L	30	120
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Lead	0.2	U	ug/L	0.2	0.8
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Magnesium	21.4		mg/L	0.04	0.16
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Nickel	0.7	I	ug/L	0.25	1
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Sodium	27.1		mg/L	0.5	2
6/14/2010 9:20	Test Site A	CHEM 1 BIO (WIM-01 A)	Metals	Zinc	28		ug/L	5	20

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	AGP/LN	Algal Growth Potential	50.7		mg DryWt/L	0.3	0.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.75	I	mg/L	0.2	2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6	I	ug/L	0.55	1.7
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Field Parameter	Dissolved Oxygen	7.09		mg/L		
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Field Parameter	pH	7.21				
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Field Parameter	Sample Depth	1.6		m		
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Field Parameter	Specific Conductance	566		umhos/cm		
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Field Parameter	Temperature	28.7		C		
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Aluminum	100	I	ug/L	60	240
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Arsenic	0.38	I	ug/L	0.25	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Calcium	51.8		mg/L	0.075	0.3
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Chromium	0.3	U	ug/L	0.3	1.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Copper	0.6	I	ug/L	0.5	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Iron	30	U	ug/L	30	120
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Lead	0.2	U	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Magnesium	20.8		mg/L	0.04	0.16
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Nickel	0.73	I	ug/L	0.25	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Sodium	26.3		mg/L	0.5	2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Metals	Zinc	17	I	ug/L	5	20
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Alkalinity	112		mg CaCO3/L	0.65	2.5
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Ammonia-N	0.029		mg N/L	0.01	0.02
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Chloride	38		mg Cl/L	0.4	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Color (true)	5	U	PCU	5	5
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Fluoride	0.22		mg F/L	0.035	0.1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Kjeldahl Nitrogen	0.52	J	mg N/L	0.08	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	NO2NO3-N	0.92		mg N/L	0.02	0.05
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	O-Phosphate-P	0.041		mg P/L	0.004	0.01
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Organic Carbon	4.4	I	mg C/L	1	5
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Sulfate	100		mg SO4/L	0.4	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	Total-P	0.063		mg P/L	0.005	0.05
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Nutrients	TSS	4	U	mg/L	4	16
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Overflow	Fecal Coliforms-Membrane Filter	1	U	#/100 mL		
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Diazinon	0.05	UJ	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Metalaxyl	0.25	UJ	ug/L	0.25	1
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,4-Dichlorophenol	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,4-Dimethylphenol	9.8	U	ug/L	9.8	39
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	59
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2-Chloronaphthalene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2-Chlorophenol	0.98	U	ug/L	0.98	3.9

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	2-Nitrophenol	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	7.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Acenaphthene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Acenaphthylene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Anthracene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzidine	98	U	ug/L	98	390
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzo(a)anthracene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzo(a)pyrene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzo(b)fluoranthene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Benzo(k)fluoranthene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	59
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	20
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Chrysene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Diethyl phthalate	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Dimethyl phthalate	9.8	U	ug/L	9.8	39
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	20
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Di-n-octyl phthalate	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Fluoranthene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Fluorene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Hexachlorobenzene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Isophorone	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Naphthalene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	7.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	7.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	7.8
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Phenanthrene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Phenol	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 JASPER WWTP	Priority Organic Pollutants	Pyrene	0.98	U	ug/L	0.98	3.9
6/14/2010 9:40	Effluent	EFD-1 TOX	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:40	Effluent	EFD-1 TOX	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
6/14/2010 9:45	Blank	BLANK	Metals	Aluminum	60	U	ug/L	60	240
6/14/2010 9:45	Blank	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
6/14/2010 9:45	Blank	BLANK	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 9:45	Blank	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
6/14/2010 9:45	Blank	BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
6/14/2010 9:45	Blank	BLANK	Metals	Copper	0.5	U	ug/L	0.5	1
6/14/2010 9:45	Blank	BLANK	Metals	Iron	30	U	ug/L	30	120
6/14/2010 9:45	Blank	BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
6/14/2010 9:45	Blank	BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
6/14/2010 9:45	Blank	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
6/14/2010 9:45	Blank	BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/14/2010 9:45	Blank	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 9:45	Blank	BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
6/14/2010 9:45	Blank	BLANK	Metals	Zinc	5	U	ug/L	5	20
6/14/2010 9:45	Blank	BLANK	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
6/14/2010 9:45	Blank	BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
6/14/2010 9:45	Blank	BLANK	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
6/14/2010 9:45	Blank	BLANK	Nutrients	Color (true)	5	U	PCU	5	5
6/14/2010 9:45	Blank	BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
6/14/2010 9:45	Blank	BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
6/14/2010 9:45	Blank	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
6/14/2010 9:45	Blank	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
6/14/2010 9:45	Blank	BLANK	Nutrients	Organic Carbon	1	U	mg C/L	1	5
6/14/2010 9:45	Blank	BLANK	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
6/14/2010 9:45	Blank	BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
6/14/2010 9:45	Blank	BLANK	Pesticides	Alachlor	0.58	U	ug/L	0.58	2.3
6/14/2010 9:45	Blank	BLANK	Pesticides	Aldrin	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Alpha-BHC	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Beta-BHC	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Bromacil	0.19	UJ	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Chlorpyrifos Methyl	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
6/14/2010 9:45	Blank	BLANK	Pesticides	Delta-BHC	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Diazinon	0.048	UJ	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:45	Blank	BLANK	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Ethoprop	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Fonofos	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	Gamma-BHC	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Heptachlor	0.0097	U	ug/L	0.0097	0.039
6/14/2010 9:45	Blank	BLANK	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
6/14/2010 9:45	Blank	BLANK	Pesticides	Hexazinone	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
6/14/2010 9:45	Blank	BLANK	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
6/14/2010 9:45	Blank	BLANK	Pesticides	Methoxychlor	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Metolachlor	0.48	UJ	ug/L	0.48	1.9
6/14/2010 9:45	Blank	BLANK	Pesticides	Metribuzin	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
6/14/2010 9:45	Blank	BLANK	Pesticides	Naled	0.77	UJ	ug/L	0.77	3.1
6/14/2010 9:45	Blank	BLANK	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
6/14/2010 9:45	Blank	BLANK	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
6/14/2010 9:45	Blank	BLANK	Pesticides	Parathion Methyl	0.097	U	ug/L	0.097	0.39
6/14/2010 9:45	Blank	BLANK	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
6/14/2010 9:45	Blank	BLANK	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
6/14/2010 9:45	Blank	BLANK	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	58
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Acenaphthene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Acenaphthylene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Anthracene	0.96	U	ug/L	0.96	3.8

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	58
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Chrysene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Diethyl phthalate	2.7	I	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.6	U	ug/L	9.6	38
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Fluoranthene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Fluorene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Naphthalene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Phenanthrene	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
6/14/2010 9:45	Blank	BLANK	Priority Organic Pollutants	Pyrene	0.96	U	ug/L	0.96	3.8
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Field Parameter	Dissolved Oxygen	0.93		mg/L		
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Field Parameter	pH	6.26				
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Field Parameter	Sample Depth	0.4		m		
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Field Parameter	Specific Conductance	80		umhos/cm		
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Field Parameter	Temperature	24.55		C		
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Nutrients	Ammonia-N	0.15		mg N/L	0.01	0.02
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Nutrients	Kjeldahl Nitrogen	1.6		mg N/L	0.08	0.2
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Nutrients	O-Phosphate-P	0.61		mg P/L	0.02	0.05
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Nutrients	Total-P	0.8		mg P/L	0.005	0.05
6/14/2010 10:30	Background Site F	CHEM 1 BIO	Overflow	Fecal Coliforms-Membrane Filter	69	B	#/100 mL		

Date Sampled	UDL	Field Sample ID	SCH Group	Component	Value	Qualifier	Units Word Result	MDL	PQL
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	AGP/LN	Algal Growth Potential	7.05		mg DryWt/L	0.3	0.9
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	5.8		ug/L	0.55	1.7
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.4		ug/L	0.4	1.2
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Aluminum	660		ug/L	60	240
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Arsenic	1.1		ug/L	0.25	1
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Calcium	10.1		mg/L	0.075	0.3
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Chromium	1.1	I	ug/L	0.3	1.2
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Copper	20.3		ug/L	0.5	1
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Iron	1440		ug/L	30	120
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Lead	0.95		ug/L	0.2	0.8
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Magnesium	2.53		mg/L	0.04	0.16
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Nickel	0.92	I	ug/L	0.25	1
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Sodium	3.6		mg/L	0.5	2
6/14/2010 10:30	Background Site F	CHEM 1 BIO (WIM-03 F)	Metals	Zinc	15	I	ug/L	5	20

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: JASPER WWTF

Address: Southwest 107th Avenue, 32052

City: Jasper **County:** Hamilton

Contact/District: Ed. Jarrell / NE

NPDES Permit #: FL0027880

LIMS Job # TLH-090 06 14.19 **LIMS Sample #:** 1278167

Lims Data Entry: 7/13/10 MF Data Entry Verification: 7.13.10 JS

Sample Collection: Date: 6.14.10 Time: 9:40

Hold Time Start: Date: 6 14 10 Time: 9:40

Comments:

Initial sample handling:

Instructions: Check yes or no. If yes is checked, complete blanks

PH adjustment: ☐ yes ☑ no Initial pH: ____ NaOH ____ N HCl ____ N ____ Drops mL Final pH: ____

Aeration: ☐ yes ☑ no Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~____bubbles/min

Salinity adjusted (Test 1): ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine

Salinity adjusted (Test 2): ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine

Dechlorination: ☐ yes ☑ no ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

Temperature: Shipped ≤ 6°C ☑ Yes ☐ No — IF Hand Delivered: Cooling ☐ Yes ☐ No (received ____°C collected ____°C)

Holding Time: ≤ 36 Hours ☑ Yes ☐ No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures:	Initials:
Marshall Faircloth	MF
James Daniels	JS
Ecole Alexander	BA

REVIEWER: Liz Miller

Diluent/Control Batch#:	6.7.10	6.15.10							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	Not Measured		BA
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					<0.03	JS	MF
Alkalinity (mg/L as $CaCO_3$):	81	159					147	BA	JS
Hardness (mg/L as $CaCO_3$):	84	136					213	BA	JS
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.017	BA	JS
Conductivity: ☒ µmhos ☐ mmhos	176	290					568	JD	BA
Salinity (ppth):	—	—					—	—	—

V 1.8 1/13/10

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1278167 **SOP#: TA 07** 01 **Test #** 1 of 2

Test Species:
Batch #: 18-10 Age: < 24hr
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

Test Validation
Control Survival ≥ 90%: [x] Yes [ ] No
Temperature Range ≤ 3° C: [x] Yes [ ] No

Diluent (Batch # 6-7-10 **)**
[ ] ASW [x] 20% DMW
[ ] MHW [ ] Well

Test Type: [x] Acute [x] Definitive
[ ] Static [x] Static Renewal [ ] Flow-Through

Test Duration:
[ ] 48 hr
[x] 96 hr
[ ] ___hr

Test Started: MF
Date 06-15-10 Time 1245

Test Ended:
Date 6/19/10 Time 1325

Chamber Size 30 ml
Test Volume: 20 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A 1	5	5	5	5	5	5
	B	B 1	5	5	5	5	5	5
	C	C 1	5	5	5	5	5	5
	D	D 1	5	5	5	5	5	5
6.25%	A	A 2	5	5	5	5	5	5
	B	B 2	5	5	5	5	5	5
	C	C 2	5	5	5	5	5	5
	D	D 2	5	5	5	5	5	5
12.5%	A	A 3	5	5	5	5	5	4/0
	B	B 3	5	5	5	5	5	5
	C	C 3	5	5	5	5	5	5
	D	D 3	5	5	5	5	5	5
25%	A	A 4	5	5	5	5	5	5
	B	B 4	5	5	5	5	5	5
	C	C 4	5	5	5	5	5	5
	D	D 5	5	5	5	5	5	5
50%	A	A 5	5	5	5	5	5	5
	B	B 5	5	5	5	5	5	5
	C	C 5	5	5	5	5	5	5
	D	D 5	5	5	5	5	5	5
100%	A	A 6	5	5	5	5	5	5
	B	B 6	5	5	5	5	5	5
	C	C 6	5	5	5	5	5	5
	D	D 6	5	5	5	5	5	5
Checked or Verified by:			JD	JS	BA	BA	AB	JS

Food
- [x] YCT Batch# 5-19-10
- [x] P. subcapitata Batch# 12-23-09
- [ ] Artemia Lot#_____

Feeding and Artemia Batch #
- [x] 0 hr____ [x] Prior to Test
- [ ] 24 hr____
- [x] 48 hr____ [x] Prior to Renewal
- [ ] 72 hr____

Temperature Range (°C)
Incubator # 2
min. 24.5 max. 26.8 mean 25.7

Incubator #___
min.____max.____mean____

Waterbath #___
min.____max.____mean____

Room B246
min. 24.9 max. 25.6 mean 25.3

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: MF / BR
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

Pg 68

Substitute highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration)

Page

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 127867 | SOP#: TA 07 D2 | Test # 2 of 2

Test Species:
Batch #: 6/15/10 Age: 8 days
- ☐ *Ceriodaphnia dubia*
- ☒ *Cyprinella leedsi*
- ☐ *Pimephales promelas*
- ☐ *Menidia beryllina*
- ☐ *Americamysis bahia*
- ☐ Other:_____

Test Validation
Control Survival ≥ 90%: ☑ Yes ☐ No
Temperature Range ≤ 3° C: ☑ Yes ☐ No

Diluent (Batch # 6/15/10)
☐ ASW ☐ 20% DMW ☐ MHW ☒ Well

Test Type: ☑ Acute ☒ Definitive ☐ Static ☒ Static Renewal ☐ Flow-Through

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 6/15/10 Time 1300

Test Ended: Date 6/19/10 Time 1325

Chamber Size 300 ml
Test Volume: 250 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	F1	10	10	10	10	10	10
	B	F2	10	10	10	10	10	10
		~~F3~~						
6.25%	A	F3	10	10	10	10	10	10
	B	F4	10	10	10	10	10	10
12.5%	A	F5	10	10	10	10	10	10
	B	F6	10	10	10	10	10	8 2°
25%	A	F7	10	10	10	10	10	10
	B	F8	10	10	10	10	10	10
50%	A	F9	10	10	10	10	9 10	9
	B	F10	10	10	10	10	10	10
100%	A	F11	10	10	10	10	10	10
	B	F12	10	10	10	10	10	10
Checked or Verified by:			JS	JS	JS	JS	JS	JS

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☒ Artemia Lot# 23613

Feeding and Artemia Batch #
- ☒ 0 hr 96-10 ☒ Prior to Test
- ☐ 24 hr___
- ☒ 48 hr 98-10 ☒ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 2
min. 24.5 max. 26.8 mean 25.7

Incubator #___
min.___ max.___ mean___

Waterbath #___
min.___ max.___ mean___

Room B246
min. 24.9 max. 25.6 mean 25.3

Light Intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JS / mf
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

P3 6 9

Substitute highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 127816J Test # 1 of 2

Test Species:
☑ Ceriodaphnia dubia ☐ Pimephales promelas ☐ Americamysis bahia
☐ Cyprinella leedsi ☐ Menidia beryllina ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L)
☐ Yes ☑ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
Control	m	0 hr	8.1	24.2	7.9	176	
	M	24 hr	–	~~24.0~~ BA (A)	–	~~177~~ BA (A)	
	M	48 hr BR	8.0	24.0	7.1	177 (A)	
	A	48 hr AR	7.9	24.1	6.7 strong MF for BA	196	
		72 hr					
	A	96 hr	8.0	24.4	7.8	214	
6.25%	m	0 hr	8.1	24.4	7.8	204	
		24 hr	–	–	–	–	
	M	48 hr BR	8.1	24.0	7.1	205 (B)	
	A	48 hr AR	8.0	24.0	6.8	256	
		72 hr					
	A	96 hr	8.1	24.3	7.8	226	
12.5%	m	0 hr	8.1	24.4	7.9	231	
		24 hr	–	–	–	–	
	M	48 hr BR	8.1	24.0	7.1	228 (B)	
	A	48 hr AR	8.2	24.0	7.0	279	
		72 hr					
	A	96 hr	8.1	24.2	8.0	243	
25%	m	0 hr	7.9	24.5	7.9	281	
		24 hr	–	–	–	–	
	M	48 hr BR	8.0	24.0	7.1	283 (B)	
	A	48 hr AR	8.2	24.0	7.1	334	
		72 hr					
	A	96 hr	8.2	24.2	8.1	301	
50%	m	0 hr	7.7	24.6	7.7	379	
		24 hr	–	–	–	–	
	M	48 hr BR	7.7	24.0	7.2	377 (A)	
	A	48 hr AR	8.2	24.0	7.3	430	
		72 hr					
	A	96 hr	8.2	24.1	8.2	396	
100%	m	0 hr	7.4	25.1	7.3	570	
		24 hr	– MF for BA	–	–	–	
	M	48 hr BR	7.4	24.0	7.2	566 (B)	
	A	48 hr AR	8.3	24.0	7.2	639	
		72 hr		~~24.1~~ MF for JD wrong space			
	A	96 hr	8.3	24.1	8.3	581	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

BA (A) marked out 7-13-10

Comments: (A) 48 hr BR & AR Samples BA C. 17.10 (B)

Measured By:
0 hr: MF
24 hr: –
48 hr BR: BA
48 hr AR: BA
72 hr: –
96 hr: JD

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 127817 Test # 2 of 2

Test Species:

☐ *Ceriodaphnia dubia* ☐ *Pimephales promelas* ☐ *Americamysis bahia*
☑ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L) ☐ Yes ☑ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
Control	A	0 hr	7.8	25.3	7.6	290	
	B	24 hr	8.1	24.0	7.3	277	
	A	48 hr BR	8.2	24.4	7.1	291	
	A	48 hr AR	8.0	24.8	7.5	284	
	B	72 hr	8.2	24.4	7.3	285	
	A	96 hr	8.2	24.7	7.8	298	
6.25%	A	0 hr	8.0	25.5	7.7	293	
	B	24 hr	8.2	24.1	7.2	295	
	A	48 hr BR	8.3	24.5	7.2	301	
	A	48 hr AR	8.1	24.6	7.7	299	
	B	72 hr	8.2	24.8	7.5	305	
	A	96 hr	8.3	24.7	7.9	317	
12.5%	A	0 hr	7.9	25.5	7.7	314	
	B	24 hr	8.2	24.0	7.4	319	
	A	48 hr BR	8.3	24.4	7.5	335	
	A	48 hr AR	8.1	24.6	7.7	318	
	B	72 hr	8.1	24.8	7.6	324	
	A	96 hr	8.3	24.6	8.0	329	
25%	A	0 hr	7.9	25.5	7.6	350	
	B	24 hr	8.2	24.1	7.6	353	
	A	48 hr BR	8.3	24.4	7.4	367	
	A	48 hr AR	8.1	24.5	6.8	352	
	B	72 hr	8.1	24.9	7.8	356	
	A	96 hr	8.3	24.5	8.0	368	
50%	A	0 hr	7.8	25.4	7.8	420	
	B	24 hr	8.2	24.1	7.5	427	
	A	48 hr BR	8.2	24.4	7.5	437	
	A	48 hr AR	8.0	24.4	7.7	425	
	B	72 hr	8.1	24.8	7.4	434	
	A	96 hr	8.3	24.7	8.1	443	
100%	A	0 hr	7.4	25.6	7.8	568	
	B	24 hr	8.0	24.0	7.6	578	
	A	48 hr BR	8.2	24.5	7.4	603	
	A	48 hr AR	7.5	24.2	7.5	573	
	B	72 hr	8.0	24.1	7.5	585	
	A	96 hr	8.2	24.6	8.0	599	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: JS
24 hr: JS
48 hr BR: JS
48 hr AR: JS
72 hr: JS
96 hr: JS

Bioassay Instrument ID

Test ID: Jasper WWTF 127867 Dates: 6/15/10 – 6/19/10

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓ ✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

entered by: BA 6-15-10

V 1.1 6/12/08 MF

Appendix I

Standard Reference Toxicant Data

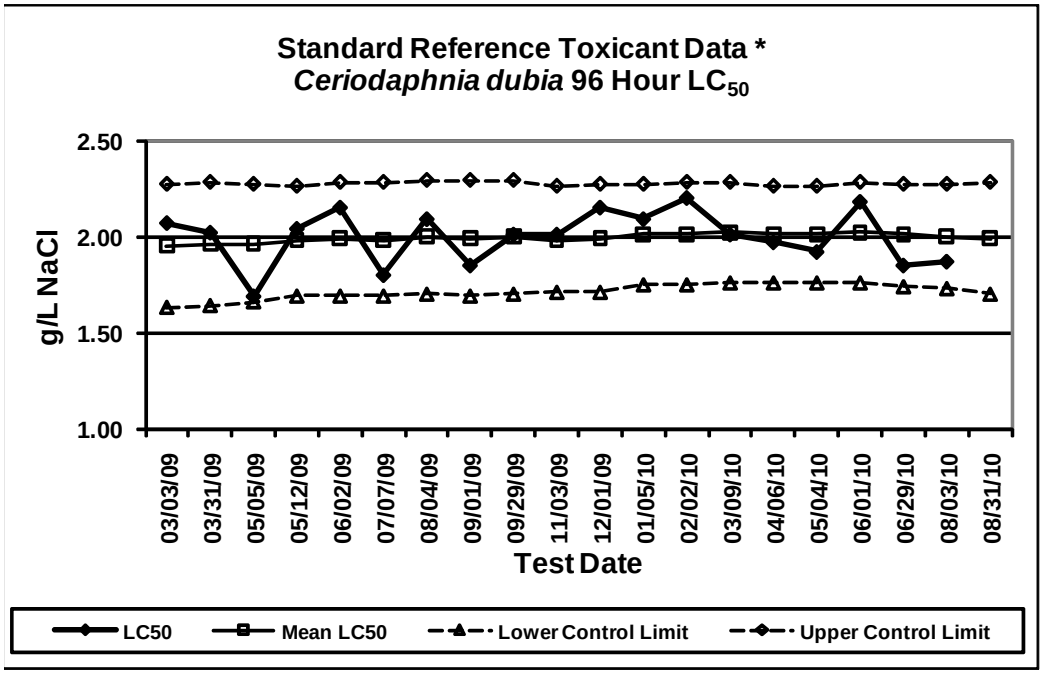
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
03/03/09	2.07	1.95	0.16	1.63	2.27
03/31/09	2.02	1.96	0.16	1.64	2.28
05/05/09	1.69	1.96	0.15	1.66	2.27
05/12/09	2.04	1.98	0.14	1.69	2.26
06/02/09	2.15	1.99	0.15	1.69	2.28
07/07/09	1.80	1.98	0.15	1.69	2.28
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27
01/05/10	2.09	2.01	0.13	1.75	2.27
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28
04/06/10	1.97	2.01	0.12	1.76	2.26
05/04/10	1.92	2.01	0.12	1.76	2.26
06/01/10	2.18	2.02	0.13	1.76	2.28
06/29/10	1.85	2.01	0.13	1.74	2.27
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28

Lower Control Limit = mean - 2 * Std Dev
Upper Control Limit = mean + 2 * Std Dev

CV = 7.26
EPA reference 75th quartile CV = 29%



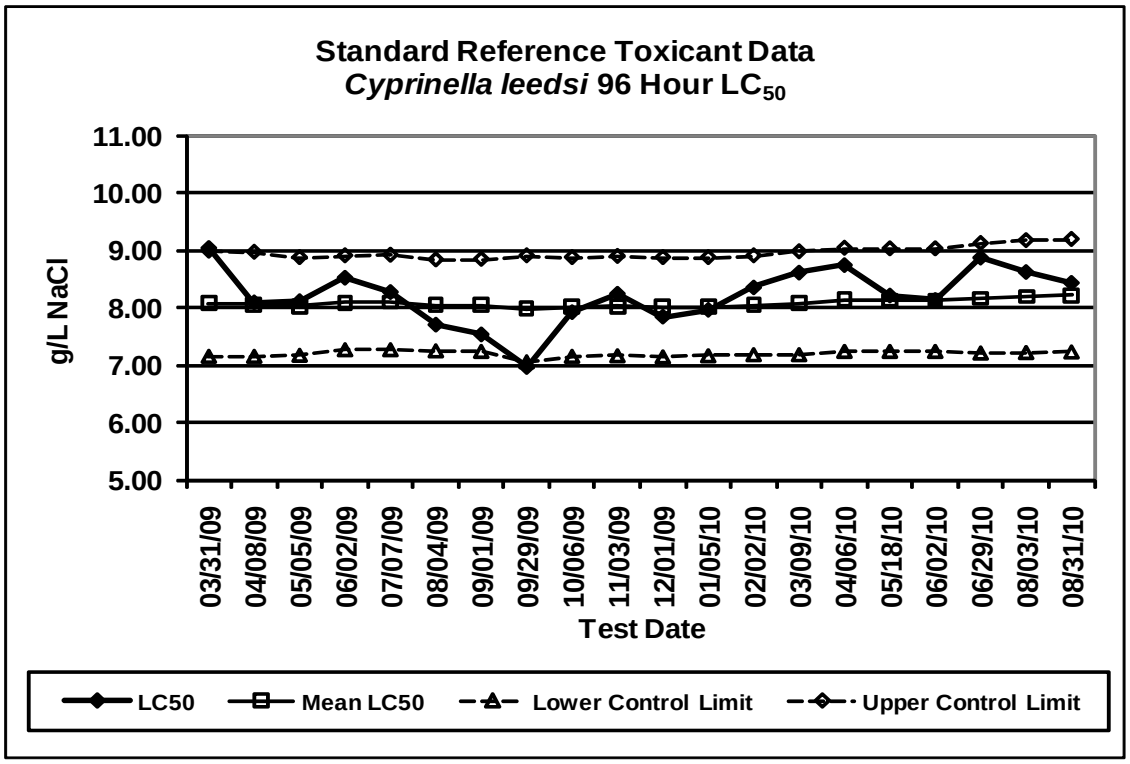
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
03/31/09	9.04	8.07	0.46	7.15	8.98
04/08/09	8.09	8.05	0.45	7.15	8.96
05/05/09	8.11	8.02	0.43	7.17	8.87
06/02/09	8.52	8.08	0.41	7.27	8.90
07/07/09	8.27	8.09	0.41	7.27	8.91
08/04/09	7.70	8.04	0.40	7.25	8.83
09/01/09	7.53	8.04	0.40	7.24	8.84
09/29/09	6.96	7.98	0.46	7.05	8.90
10/06/09	7.92	8.01	0.43	7.15	8.87
11/03/09	8.24	8.02	0.43	7.16	8.89
12/01/09	7.84	8.01	0.43	7.14	8.87
01/05/10	7.96	8.01	0.43	7.16	8.87
02/02/10	8.35	8.04	0.43	7.18	8.90
03/09/10	8.61	8.07	0.45	7.18	8.97
04/06/10	8.74	8.14	0.45	7.24	9.03
05/18/10	8.21	8.13	0.45	7.24	9.02
06/02/10	8.13	8.13	0.45	7.24	9.02
06/29/10	8.87	8.16	0.47	7.21	9.11
08/03/10	8.62	8.19	0.48	7.22	9.16
08/31/10	8.43	8.21	0.49	7.23	9.18

Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 5.93
EPA reference 75th quartile CV = 19%



FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: DMW / S.24.10 **Organism Batch:** 16.10 **Test Beginning:** Date: 6.1.10 Time: 11:35

Toxicant/ Batch#: NaCl 16.1.10 Age: <24 hr **Test Ending:** Date: 6.5.10 Time: 12:30

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KMS
Alkalinity (mg/L as $CaCO_3$):	91	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	84	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos (mmhos):	0.177	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	10.30.09
☑ *P. subcapitata*	12.23.09
☐ Artemia Lot #	

Artemia Batch:

0 hr:	
24 hr:	
48 hr:	
72 hr:	

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: BA

Temperature Range °C:(if used)

Test Incubated in: Incubator # ___ Waterbath # ___ Incubator # 2 min 24.3 max 26.4 mean 25.4

Light Intensity: 50-100 Ft. candles

Waterbath # ___ min ___ max ___ mean ___

Photoperiod: 16 hours Light / 8 hours dark

Room B246 min 25.0 max 25.8 mean 25.4

Feeding: √as needed

- ☑ Before test
- ☐ 0 hr
- ☐ 24 hr
- ☑ 48 hr
- ☐ 72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	5	5	5	5
	B	B	5	5	4 1D	4	4	4
	C	C	5	5	5	5	5	4 1D
	D	D	5	5	5	5	5	5
2.5	A	A	5	5	0 5D	-	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	3 2D	1 2D	1	1	0 1D
	D	D	5	4 1D	0 4D	—	—	—
3.0	A	A	5	1 4D	0 1D	—	—	—
	B	B	5	2 3D	0 2D	—	—	—
	C	C	5	3 2D	0 3D	—	—	—
	D	D	5	1 4D	0 1D	—	—	—
4.0	A	A	5	0 5D	—	—	—	—
	B	B	5	0 5D	—	—	—	—
	C	C	5	0 5D	—	—	—	—
	D	D	5	0 5D	—	—	—	—
Organisms loaded by: BA		Checked by: BA	BA	BA	BA	BA	BA	BA

Loading Verified by: SD AR = after renewal

m = missing d = dead BR = before renewal hr = hour

Comments:

Investigators' Signatures

Bree Alexander

Marshall Faircloth

James Daniels

Kim M Spencer

Reviewer: Liz Miller

Method: TSK

Statistics: LC50

	95% confidence intervals Lower	Upper
48 hour: 2.23	2.16	2.30
96 hour: 2.18	2.11	2.26

00 17

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☒ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 6.1.10 Time: 11:35
Test Ending: Date: 6.5.10 Time: 12:30

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.2	6.8	0.177	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.0	7.6	0.180	–
	M	48 hr AR	8.0	24.0	7.2	0.179	–
	–	72 hr	–	–	–	–	–
	A	96 hr	7.9	24.5	7.2	0.190	–
1.5	M	0 hr	8.0	24.0	6.7	2.93	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.0	7.6	3.54	–
	M	48 hr AR	8.0	24.0	7.4	2.94	–
	–	72 hr	–	–	–	–	–
		96 hr	7.9	24.1	7.0	3.21	–
2.0	M	0 hr	8.0	24.0	6.7	3.78	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.0	7.7	4.49	–
	M	48 hr AR	8.1	24.0	7.5	3.89	–
	–	72 hr	–	–	–	–	–
	A	96 hr	8.0	24.0	7.0	4.25	–
2.5	M	0 hr	8.1	24.0	6.8	4.70	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.1	24.0	7.8	5.50	–
	M	48 hr AR	8.0	24.0	7.4	4.61	–
	–	72 hr	–	–	–	–	–
	A	96 hr	8.0	24.1	7.1	4.90	–
3.0	M	0 hr	8.1	24.0	6.9	5.41	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.1	24.0	7.8	6.50	–
	M	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	A	96 hr	–	–	–	–	–
4.0	M	0 hr	8.1	24.0	6.8	7.22	–
	A	24 hr	7.9	24.0	7.5	7.57	–
	–	48 hr BR	–	–	–	–	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures
Bruce Alexander
Marshall Faircloth
James Daniel
Kevin M. Spencer

Reviewed By: Shiy Miller

Measured by:
0 hr: BA
24 hr: BA
48 hr BR: BA
48 hr AR: BA
72 hr: –
96 hr: BA

Measure/record salinity for marine tests

Comments:

Revised 07/15/2008 MF

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☒ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☒ renewal

Test Page 1 of 2

Diluent/ Batch #: Well / 6.1.10
Toxicant/ Batch#: NaCl / 6.1.10

Organism Batch: 6.2.10 (6.2.10 BA)
Age: 7 days

Test Beginning: Date: 6.2.10 Time: 1320
Test Ending: Date: 6.6.10 Time: 1200

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	200.3	TA06_22	JD
Alkalinity (mg/L as $CaCO_3$):	156	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	150	TA06_09	BA
Total Ammonia (mg/L as N):	—	TA06_17	—
Conductivity: (mmhos) mmhos	297	TA06_25	KMS
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 23613	

Artemia Batch:
0 hr: 86-10
24 hr:
48 hr: 88.10
72 hr:

Chamber size: 1000 mL
Test volume: 400 mL per replicate

Concentrations prepared by: JD
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 24.3 max. 26.4 mean 25.4
Light Intensity: 50-100 Ft candles
Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark
Room B246 min. 25.0 max. 26.0 mean 25.5

Feeding: √as needed

☒	Before test
☐	0 hr
☐	24 hr ~~BA~~
☒	48 hr ~~BA~~ 10
☐	72 hr

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	H 1	10	10	10	10	10	10
	B	H 2	10	10	10	10	10	9 D
6	A	H 3	10	10	10	10	9 D	7 D
	B	H 4	10	10	10	10	7 3D	6 D
7	A	H 5	10	10	9 D	9	8 D	8
	B	H 6	10	10	10	10	9 D	9
8	A	H 7	10	8 2D	8	8	8	7 D
	B	H 8	10	7 3D	7	7	5 2D	5
9	A	H 9	10	2 8D	2	2	2	2
	B	H 10	10	1 9D	0 D	—	—	—
10	A	H 11	10	0 10D	—	—	—	—
	B	H 12	10	0 10D	—	—	—	—
Organisms loaded by: JD		Checked by:	JD	JD	JD	JD	BA	JD

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Loading Verified by: MM AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Comments:

Investigators' Signatures
James Daniels
Kristi M Spencer
Bree Abernathy
Marshall Faircloth

Reviewer: Liz Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.26	8.00	8.52
96 hour: 8.13	7.72	8.56

PAGE 00 19

FDEP Biology Laboratory - Acute SRT Bench Sheet

0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☒ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 6.2.10 Time: 1320
Test Ending: Date: 6.6.10 Time: 1200

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (6)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (X) µmhos (✓) mmhos	Salinity (ppth)
Control	A	0 hr	7.6	25.6	7.5	.297	—
	B	24 hr	8.3	25.0	7.5	0.245	–
	A	48 hr BR	8.1	25.0	7.8	0.306	-
	A	48 hr AR	7.9	25.8	7.9	0.318	-
	B	72 hr	7.9	24.5	6.5	0.294	-
	A	96 hr	8.3	24.9	8.1	0.318	-
6	A	0 hr	7.8	25.6	7.5	11.0	—
	B	24 hr	8.1	24.7	7.2	11.1	-
	A	48 hr BR	8.2	25.2	7.4	11.1	-
	A	48 hr AR	8.0	25.9	7.4	11.2	-
	B	72 hr	8.0	24.8	6.1	11.3	-
	A	96 hr	8.1	24.9	8.0	11.4	-
7	A	0 hr	7.8	25.6	7.5	13.2	—
	B	24 hr	8.1	24.5	7.2	13.3	-
	A	48 hr BR	8.2	24.1	7.3	13.4	-
	A	48 hr AR	8.0	25.9	7.6	13.4	-
	B	72 hr	7.9	24.6	6.5	13.3	-
	A	96 hr	8.1	24.7	8.0	13.5	-
8	A	0 hr	7.8	25.6	7.5	15.0	—
	B	24 hr	8.1	24.8	7.1	15.0	-
	A	48 hr BR	8.2	24.9	7.4	15.3	-
	A	48 hr AR	8.0	25.6	7.5	15.1	-
	B	72 hr	8.0	24.5	6.6	15.2	-
	A	96 hr	8.1	24.6	7.9	15.7	-
9	A	0 hr	7.8	25.6	7.6	16.8	—
	B	24 hr	8.0	24.6	7.0	16.5	-
	A	48 hr BR	8.2	24.3	7.4	16.7	-
	A	48 hr AR	8.0	25.9	7.6	16.4	-
	A	72 hr	8.1	24.5	6.4	16.6	-
	A	96 hr	8.1	24.6	8.0	16.9	-
10	A	0 hr	7.8	25.7	7.6	18.6	—
	B	24 hr	8.0	25.1	6.7	18.3	-
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
James Daniels
Erin Spencer
Brian Adams
Marshall Faircloth

Reviewed By: Liz Miller

Measured by:
0 hr: MMT
24 hr: JD
48 hr BR: JD
48 hr AR: JD
72 hr: BA
96 hr: JD

Measure/record salinity for marine tests

Comments:

PAGE 00 20

Revised 07/15/2008 MF

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 6/1/10

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150	4 DAYS	MS100528	25	80	20
Menidia beryllina	150	11 DAYS	SS100521	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	150	7 DAYS	CL100525	25	7.8	80
Pimephales promelas	150	9 DAYS	CL-FM100523	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: _____

Shipped Via: FedEx

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 6/14/10

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness (mg/L)
Cyprinella leedsi	300	7 DAYS	CL100607	25	7.8	80
Pimephales promelas						
Ceriodaphnia dubia						
YCT						
P. subcapitata						

Packed by:

Shipped Via: FedEx

Notes:

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix J-1

Wet ID taxa list and number of algal units counted to a target of 300 natural units for qualitative natural periphyton collections made from Jasper WWTF on 6/14/2010 and 6/17/2010.

	Background Site F	Test Site C
Bacillariophyta		
Bacillariophyta	218	215
Chlorophycota		
Actinotaenium perminutum	-	1
Ankistrodesmus falcatus	-	1
Apatococcus lobatus	12	-
Characium ambiguum	1	-
Chlamydomonas sp.	3	2
Chlorella sp.	6	3
Chlorococcum humicola	-	3
Closterium littorale littorale	1	-
Cosmarium bireme barbadense	2	-
Pediastrum obtusum	1	-
Scenedesmus bijuga	-	2
Stigeoclonium sp.	1	-
Cryptophycophyta		
Cryptomonas sp.	-	1
Cyanophycota		
Anabaena sp.	-	1
Aphanocapsa sp.	1	2
Cyanobium parvum	2	-
Jaaginema gracile	1	-
Jaaginema sp.	5	31
Merismopedia warmingiana	-	2
Oscillatoria limosa	-	1
Oscillatoria princeps	-	3
Planktolyngbya limnetica	2	-
Planktolyngbya sp.	-	4
Planktothrix sp.	-	3
Pseudanabaena sp.	-	8
Schizothrix calcicola	33	-
Synechocystis sp.	11	13
Euglenophycota		
Euglena polymorpha	-	1
Phacus horridus	1	1
Trachelomonas sp.	1	1
Pyrrophycophyta		
Glenodinium sp.	-	1

Appendix J-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected from Japer WWTF on 6/14/2010 and 6/17/2010.

	Background Site F	Test Site C
Bacillariophyta		
Bacillariophyceae		
Achnanthes fluviatilis	6	-
Achnanthidium exiguum	-	4
Adlafia minuscula	4	-
Amphora sp.	-	3
Chamaepinnularia	-	1
Cocconeis placentula	-	4
Cocconeis sp.	-	1
Craticula sp.	1	-
Diadesmis confervacea	186	135
Encyonema sp.	1	-
Encyonema minutum	1	-
Encyonema neomesianum	4	-
Encyonema silesiacum	13	-
Eunotia sp.	44	2
Eunotia bilunaris	1	-
Eunotia formica	9	-
Eunotia incisa	11	-
Eunotia soleirolii	22	-
Frustulia rhomboides	6	-
Geissleria acceptata	38	21
Gomphonema sp.	4	2
Gomphonema gracile	2	1
Gomphonema parvulum	3	10
Gomphonema parvulum	3	-
Hippodonta capitata	1	2
Kobayasiella sp.	1	-
Lemnicola hungarica	1	9
Mayamaea atomus	1	-
Navicula sp.	3	-
Navicula germainii	1	-
Navicula kotschyi	-	1
Navicula minima	4	-
Navicula rostellata	1	-
Navicula seminulum hustedtii	25	-
Naviculaceae	-	8
Nitzschia sp.	4	16
Nitzschia frustulum	-	1
Nitzschia intermedia	1	2
Nitzschia nana	-	4
Nitzschia palea	8	34
Nitzschia palea debilis	8	9

Appendix J-2 (continued)

	Background Site F	Test Site C
Nupela neotropica	9	28
Nupela sp.	1	78
Nupela vitiosa	28	55
Pinnularia sp.	9	4
Placoneis elginensis	1	-
Placoneis gastrum	2	-
Planothidium frequentissimum	1	-
Planothidium rostratum	-	4
Psammothidium sacculum	-	2
Rossithidium pusillium	-	1
Sellaphora pupula	-	2
Sellaphora seminulum	-	27
Stauroneis sp.	1	1
Fragilariophyceae		
Fragilaria capucina	1	-
Meridion circulare	-	1
Staurosirella pinnata	2	-
Synedra acus	-	1
Coscinodiscophyceae		
Aulacoseira sp.	-	25
Aulacoseira crenulata	10	-
Aulacoseira herzogii	21	-
Cyclotella meneghiniana	-	1

Appendix K-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Jasper WWTF on 6/14/2010. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Test Site A	Background Site F	Proposed Site F	Test Site C
Annelida				
Hirudinea				
Desserobdella phalera	-	3	-	-
Placobdella sp.	-	-	3	-
Oligochaeta				
Dero digitata complex	26	40	45	114
Dero flabelliger	24	-	-	-
Haemonais waldvogeli	-	-	30	-
Arthropoda				
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	3	-
Decapoda				
Cambaridae	-	3	-	-
Isopoda				
Caecidotea sp.	-	-	8	3
Insecta				
Coleoptera				
Dineutus sp.	-	8	-	-
Scirtes sp.	-	-	3	-
Diptera				
Ablabesmyia mallochi	-	11	8	-
Apedilum sp.	3	-	-	-
Chironomus sp.	862	72	69	184
Cladopelma sp.	-	-	-	3
Cladotanytarsus sp.	3	-	-	-
Cricotopus santa fe Epler	93	-	-	-
Cryptochironomus sp.	6	-	-	-
Dicrotendipes modestus	3	-	5	-
Dicrotendipes neomodestus	3	-	-	-
Dicrotendipes simpsoni	-	528	416	104
Glyptotendipes sp.	73	-	29	-
Goeldichironomus carus	4	-	-	-
Goeldichironomus holoprasinus	72	-	-	-
Guttipelopia guttipennis	-	-	3	11
Kiefferulus sp.	17	568	300	517
Labrundinia becki	-	5	3	-
Labrundinia sp. C Epler	-	3	-	-
Larsia sp.	6	-	-	-

Appendix K-1 (continued)

	Test Site A	Background Site F	Proposed Site F	Test Site C
Microtendipes sp.	3	-	-	-
Nilothauma sp.	-	-	3	-
Palpomyia/bezzia grp.	32	5	-	-
Parachironomus sp.	-	-	-	3
Polypedilum tritum	-	-	3	-
Procladius sp.	-	21	-	5
Procladius (holotanypus)	-	11	-	-
Stempellinella fimbriata	-	5	-	-
Tanypus carinatus	-	-	-	16
Tanytarsus sp. A Epler	-	-	3	-
Tanytarsus sp. G Epler	37	-	-	-
Tanytarsus sp. L Epler	-	75	27	-
Tanytarsus sp. P Epler	3	-	-	-
Tanytarsus sp. T Epler	-	3	-	-
Tanytarsus sp. Y Epler	-	-	29	-
Tribelos sp.	-	5	-	-
Tribelos jucundum	-	-	27	-
Ephemeroptera				
Caenis sp.	122	19	-	-
Odonata				
Enallagma sp.	-	11	8	-
Erythemis sp.	8	-	-	-
Ischnura posita	32	-	-	-
Pachydiplax longipennis	-	172	64	-
Mollusca				
Gastropoda				
Ancylidae	3	3	-	-
Micromenetus sp.	175	-	-	-
Physa sp.	5	5	-	-

Appendix K-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Jasper WWTF facility for 28 days and collected on 6/14/2010.

	Test Site A	Background Site F	Proposed Site F	Test Site C
Annelida				
Hirudinea				
Desserobdella phalera	-	1	-	-
Placobdella sp.	-	-	1	-
Oligochaeta				
Dero sp.	-	-	2	10
Dero digitata complex	9	3	1	4
Dero flabelliger	8	-	-	-
Haemonais waldvogeli	-	-	2	-
Naididae	2	12	23	29
Arthropoda				
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	1	-
Decapoda				
Cambaridae	-	1	-	-
Isopoda				
Caecidotea sp.	-	-	3	1
Insecta				
Coleoptera				
Dineutus sp.	-	3	-	-
Scirtes sp.	-	-	1	-
Diptera				
Ablabesmyia mallochi	-	4	3	-
Apedilum sp.	1	-	-	-
Chironomidae	26	2	1	2
Chironomus sp.	307	27	26	69
Cladopelma sp.	-	-	-	1
Cladotanytarsus sp.	1	-	-	-
Cricotopus santa fe Epler	33	-	-	-
Cryptochironomus sp.	2	-	-	-
Dicrotendipes sp.	-	4	2	5
Dicrotendipes modestus	1	-	2	-
Dicrotendipes neomodestus	1	-	-	-
Dicrotendipes simpsoni	-	195	155	34
Glyptotendipes sp.	26	-	11	-
Goeldichironomus sp.	7	-	-	-
Goeldichironomus carus	1	-	-	-
Goeldichironomus holoprasinus	19	-	-	-
Guttipelopia sp.	-	-	-	2
Guttipelopia guttipennis	-	-	1	2

Appendix K-2 (continued)

	Test Site A	Background Site F	Proposed Site F	Test Site C
Kiefferulus sp.	6	214	113	194
Labrundinia becki	-	2	1	-
Labrundinia sp. C Epler	-	1	-	-
Larsia sp.	2	-	-	-
Microtendipes sp.	1	-	-	-
Nilothauma sp.	-	-	1	-
Palpomyia/bezzia grp.	12	2	-	-
Parachironomus sp.	-	-	-	1
Polypedilum tritum	-	-	1	-
Procladius sp.	-	8	-	2
Procladius (holotanypus) sp.	-	4	-	-
Stempellinella fimbriata	-	2	-	-
Tanypus carinatus	-	-	-	6
Tanytarsus sp. A Epler	-	-	1	-
Tanytarsus sp. G Epler	13	-	-	-
Tanytarsus sp. L Epler	-	28	10	-
Tanytarsus sp. P Epler	1	-	-	-
Tanytarsus sp. T Epler	-	1	-	-
Tanytarsus sp. Y Epler	-	-	11	-
Tribelos sp.	-	2	1	-
Tribelos jucundum	-	-	9	-
Ephemeroptera				
Caenis sp.	46	7	-	-
Odonata				
Coenagrionidae	4	3	2	-
Enallagma sp.	-	1	1	-
Erythemis sp.	1	-	-	-
Ischnura sp.	4	-	-	-
Ischnura posita	4	-	-	-
Libellulidae	2	60	21	-
Pachydiplax longipennis	-	5	3	-
Mollusca				
Gastropoda				
Ancylidae	1	1	-	-
Micromenetus sp.	46	-	-	-
Physa sp.	2	2	-	-
Planorbidae	20	-	-	-

EPA Endsheet

The Bioassay of the Jasper Wastewater Treatment Facility effluent sampled on June 14, 2010, NPDES #FL0027880

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 2 7 8 8 0 11	12 1 0 0 6 1 4	# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Jasper Wastewater Treatment Facility effluent sampled on June 14, 2010, NPDES #FL0027880

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 2 7 8 8 0 11	12 1 0 0 6 1 4	# X	# S	# 1

Remarks

#

Biological Analyses of theJasper Wastewater Treatment Facility effluent sampled on June 14, 2010 and June 17, 2010 NPDES #FL0027880

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 2 7 8 8 0 11	12 1 0 0 6 1 4	# I	# S	# 1

Remarks

#