

Effluent Quality Assessment

Hastings Wastewater Treatment Facility

St. Johns County

NPDES #FL0042315

Sampled February 22, 2010

May 2010
(Resubmitted March 2011 with corrected tables)

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

CONTENTS

Introduction

Methods

Results and Discussion

Literature Cited

Tables

Table 1	Measured and predicted algal growth potential (AGP)
Table 2	Effluent limits, Class III Freshwater Criteria and chemical and microbiological data

Appendices

Appendix A	Chain of Custody
Appendix B	Bioassay Bench Sheets
Appendix C	SRT Bench Sheets and Statistical Analyses
Appendix D	Organism Receipt
Appendix E	Chemical Analyses of Effluent
Appendix F	Facility Summary, Effluent Limits, and Permit Violations Recorded on Discharge Monitoring Report
Appendix G	EPA End Sheet

Hastings Wastewater Treatment Facility, 816 North Main Street, Hastings, St. Johns County, Florida 32145. NPDES #FL0042315. Effluent grab samples for bioassay and chemical analyses for this facility were collected on February 22, 2010. Effluent composite samples for fecal coliform analysis for this facility were also collected on February 22, 2010.

Introduction

Hastings Wastewater Treatment Facility (WWTF) uses an advanced secondary treatment activated sludge process to treat domestic wastewater (See Appendix F for detailed facility information provided by Samuel Schllesinger of FDEP Northeast District.)

Methods

Samples were collected from the EFA-1 NPDES sampling point for Outfall D-001 by Eesa Ali and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute screening and dechlorinated acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

An aliquot of sample was dechlorinated by the addition of 1.0 ml of 0.025N sodium thiosulfate per liter of sample, bringing the TRC to 0.07 mg/L from 0.93 mg/L.

Results and Discussion

Toxicity Test Results

Tests were performed February 23-27, 2010.

Ceriodaphnia dubia 96-hour acute screening bioassay – LC_{50} > 100%, 30%* mortality in 100% sample at 96 hours

Cyprinella leedsi 96-hour acute screening bioassay – LC_{50} > 100%, 100%* mortality in 100% sample at 24 hours

The bioassay samples were acutely toxic to the *Ceriodaphnia dubia* test organisms.

Ceriodaphnia dubia 96-hour dechlorinated acute definitive bioassay – LC_{50} > 100%, 5%* mortality in 100% sample at 96 hours

Cyprinella leedsi 96-hour dechlorinated acute definitive bioassay – LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

The dechlorinated bioassay samples were not acutely toxic to the test organisms.

*NOTE: In a 96-hour acute screening or definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).

See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

Algal Growth Potential
The effluent Algal Growth Potential (AGP) was 105 mg dry wt/L A (A - Value reported is the mean of two or more determinations) of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) found that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen -limited. The predicted AGP based on inorganic nitrogen concentrations was 58.1 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

See Table 1 for AGP results.

Chemistry Results
Total residual chlorine (TRC) was detected in the effluent in the field (0.90 mg/L) and in the bioassay sample (0.93 mg/L) in the laboratory. The TRC in the effluent was attributed to the blower used for dechlorination being turned off during the sampling event in order to facilitate flow measurements. When the blower was on, TRC was not detected in the effluent (Appendix A – see comment on the submittal form). Total ammonia was not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.029 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Nickel and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Arsenic and iron were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Total residual chlorine (TRC) (0.93 mg/L; limit ≤0.01 mg/L, 62-302.500 (18), F.AC. and permit # FL0042315) exceeded the Class III criteria for fresh water and the permit limitation.

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed. See Appendix B for bioassay lab equipment.

Conclusion
The effluent sample collected from the EFA-1 NPDES sampling point for Outfall D-001 for this facility on February 22, 2010, was acutely toxic to both test species during the 96-hour acute screening bioassays with effluent containing 0.93 mg/L residual chlorine, but was not acutely toxic to either test species during the 96-hour acute definitive bioassays with dechlorinated effluent. The effluent AGP result was greater than the "problem” threshold for fresh receiving waters suggesting nutrient enrichment may be an issue. The effluent TRC (0.93 mg/L; limit ≤0.01 mg/L, 62-302.500 (18), F.AC. and permit # FL0042315) exceeded both the Class III criteria for fresh water and the permit limitation; however, this was likely a temporary excursion caused by equipment being turned off to facilitate flow measurements. Additional effluent water quality samples collected on February 22, 2010, did not exceed applicable water quality standards or permit conditions.

Literature Cited
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.

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.

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Hastings WWTF on February 22, 2010.

Hastings Watewater Treatment Facility **NPDES # FL0042315**					
Location	**AGP (measured)**	**Predicted AGP (TSIN) ± 20%**	**Predicted AGP (TN) ± 20%**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent	105.0 A	58.1 ± 11.6	84.0 ± 16.8	1.7	2.2

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

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the Hastings WWTF on February 22, 2010.

Hastings Wastewater Treatment Facility NPDES # FL0042315	Class III Criteria	Effluent Limits	Final Effluent	
Organic Constituents (µg/L)				
Atrazine	-	-	0.22	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	60	U
Arsenic	≤ 50	-	0.76	I
Cadmium	≤ 0.4 b	-	0.03	U
Calcium (mg/L)	-	-	40.7	
Chromium-III	≤ 116.2 b	-	0.3	U
Copper	≤ 12.7 b	-	0.5	U
Iron	≤ 1,000	-	34	I
Lead	≤ 5.1 b	-	0.2	U
Magnesium (mg/L)	-	-	10.3	
Nickel	≤ 71.0 b	-	1.16	
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	-	0.025	U
Sodium (mg/L)	-	-	58.6	
Zinc	≤ 163.2 b	-	26	
Nutrients (mg/L)				
Ortho-phosphate	-	Report	0.88	
Total Phosphorus	-	Report	0.99	
Total Ammonia	-	-	0.029	
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 s	≤ 0.02	c
Nitrate and Nitrite	-	Report	1.5	
Total Kjeldahl Nitrogen	-	Report	0.71	
Organic Nitrogen	-	Report	0.681	c
Total Nitrogen	-	≤ 9.0 s	2.21	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	6.3	
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	7.0	
Conductivity (µmhos/cm)	≤ 1,275	-	564	
Temperature (°C)	-	Report	17.6	
Salinity	-	-	≤ 0.32	c
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	0.93	Q£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	≤ 60.0 s	4	U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s	0.54	I
Flow (MGD)	-	0.12 a	0.085	a
Hardness (mg $CaCO_3$)	-	-	144.04	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	Report	20	U

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

b - Value is calculated based on hardness

c - Value is calculated

s - Single sample

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

Q - Sample held beyond normal holding time

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

¥ - Fecal coliform analysis performed by Advanced Environmental - Jacksonville lab

- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

£ - measurement taken in the FDEP laboratory

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-02-22-11
Hastings WWTF

Requester: Jennifer Paris
Field Report Prepared By: EA

Customer: NE-DIST
Collected By: EA / SP
Send Final Report To: Tom Kallemeyn

Project ID: FYI3
Sampling Agency: DEP

PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Hastings WWTP Final Eff	Grab	Date 2-22-10 Time 1500 Eastern Central	Date Time Eastern Central	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
		0.90 *	6.29		
	Matrix (Include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	
	Temp (C) 17.57 / pH 6.99	0.1 m / ft	0.27 / 584		
	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)**
	Hastings WWTP final Eff	Comp	Date 2-22-10 Time 900 Eastern Central	Date 2-22-10 Time 1700 Eastern Central	A
	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	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "	Comments CBOD, TSS, nutrients (NH3, TP), except ortho.		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Blank	Grab	Date 2-22-10 Time 1310 Eastern Central	Date Time Eastern Central	B
	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	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)**
	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	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
EA	2/22/10	Fedex	Tohmoures Ebrahimi	02/24/10				

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group Information.

last revised October 1, 2003

* Marshall, we had them turn their blower (used for aeration) off to sample the grab measurements. Samples are chlorinated but with blower on Cl is not detected - e.

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Hastings WWTF

Address: 816 North Main Street

City: Hastings **County:** St. Johns 32145

Contact/District: Ezra Ali /Northeast

NPDES Permit #: FL 0042315

LIMS Job #: TLH-2010-02-23-48 **LIMS Sample #:** 1251350

Lims Data Entry: 3-10-10 MF Data Entry Verification: 3 16-10 DA

Sample Collection: Date: 2-22-10 Time: 1500

Hold Time Start: Date: 2-22-10 Time: 1500

Comments: An aliquot of sample was dechlorinated (TRC = 0.93 mg/L) by the addition of 1.0 mL of 0.025N Sodium thiosulfate per liter of sample. MF 2/23/10
* see comment on Sample Summary form @ Transcription error. 0.9 mg/L Cl_2, NOT 0.09 mg/L Cl_2
Measured BA 5-3-10

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 1.4 mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: 0.07
1.4 MF 2/23/10

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)

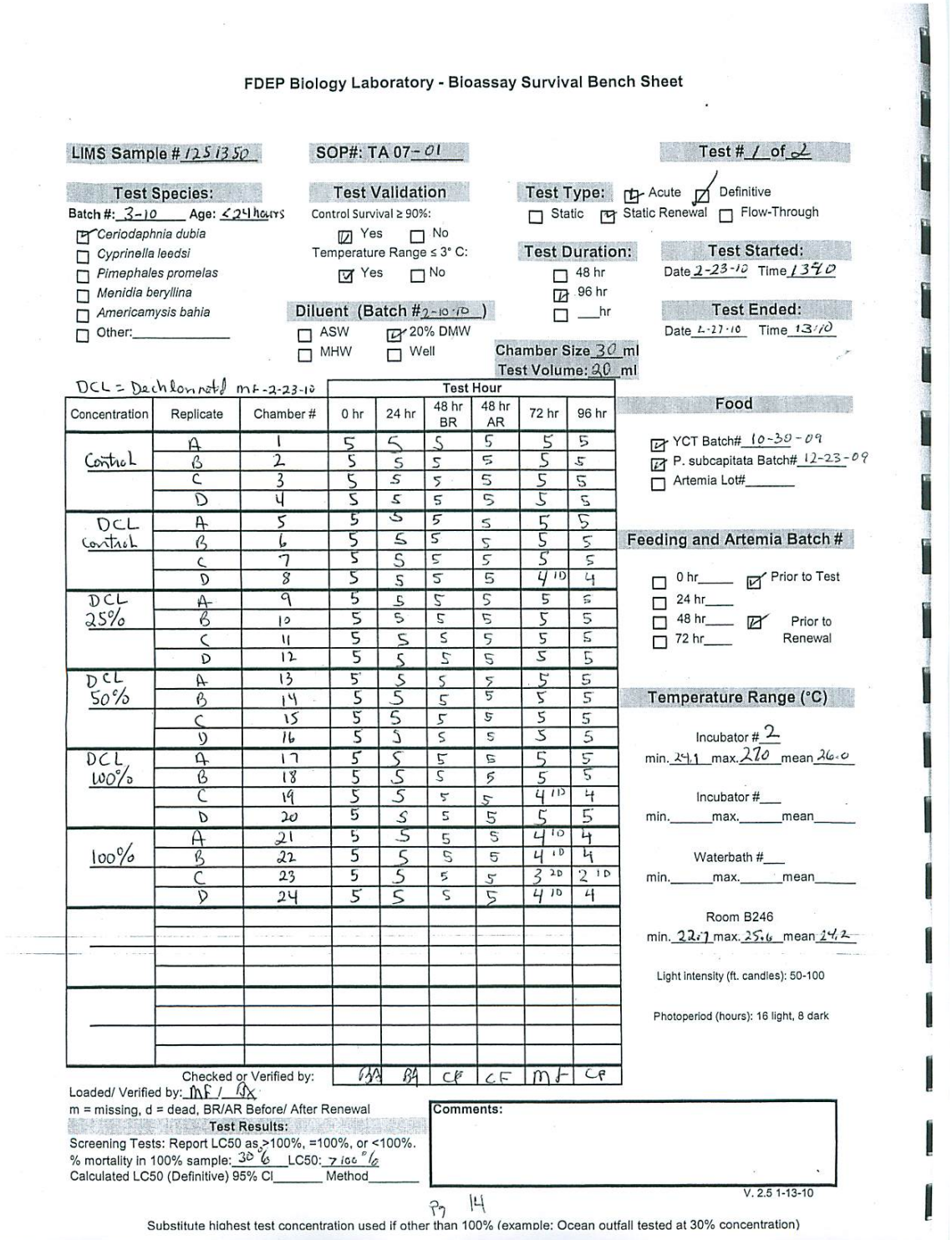
Holding Time: ≤ 36 Hours ☑ Yes ☐ No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures:	Initials:
Marshall Faircloth	MF
Chelsea French	CF
James Daniels	JD
Brian Nordeen	BN
REVIEWER: Chris Miller	CM

Diluent/Control Batch#:	2-10-10	2-22-10							
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 0.90 (A)	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	~~0.09~~ *	EA/SP	PA
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					0.93	CF/MF	MF/JD
Alkalinity (mg/L as $CaCO_3$):	38	156					105	BA	MF
Hardness (mg/L as $CaCO_3$):	84	149					150	BA	MF
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.017	MF	JD
Conductivity: ☑ µmhos ☐ mmhos	186	232					600	MF/BA	BA/MF
Salinity (pptl):	—	—					—	—	—

V 1.8 1/13/10

Appendix B. (continued)



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 125135D SOP#: TA 07-01 Test # 1 of 2

Test Species:
Batch #: 3-10 Age: <24 hours
- [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 #2-10-10)
[ ] ASW [x] 20% DMW
[ ] MHW [ ] Well

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

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

Test Started: Date 2-23-10 Time 1340

Test Ended: Date 2-27-10 Time 1310

Chamber Size 30 ml
Test Volume: 20 ml

DCL = Dechlorinated MF-2-23-10

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	1	5	5	5	5	5	5
	B	2	5	5	5	5	5	5
	C	3	5	5	5	5	5	5
	D	4	5	5	5	5	5	5
DCL Control	A	5	5	5	5	5	5	5
	B	6	5	5	5	5	5	5
	C	7	5	5	5	5	5	5
	D	8	5	5	5	5	4 1D	4
DCL 25%	A	9	5	5	5	5	5	5
	B	10	5	5	5	5	5	5
	C	11	5	5	5	5	5	5
	D	12	5	5	5	5	5	5
DCL 50%	A	13	5	5	5	5	5	5
	B	14	5	5	5	5	5	5
	C	15	5	5	5	5	5	5
	D	16	5	5	5	5	5	5
DCL 100%	A	17	5	5	5	5	5	5
	B	18	5	5	5	5	5	5
	C	19	5	5	5	5	4 1D	4
	D	20	5	5	5	5	5	5
100%	A	21	5	5	5	5	4 1D	4
	B	22	5	5	5	5	4 1D	4
	C	23	5	5	5	5	3 2D	2 1D
	D	24	5	5	5	5	4 1D	4
Checked or Verified by:			BA	BA	CF	CF	MF	CF

Food
- [x] YCT Batch# 10-30-09
- [x] P. subcapitata Batch# 12-23-09
- [ ] Artemia Lot#_____

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

Temperature Range (°C)
Incubator # 2
min. 24.1 max. 27.0 mean 26.0
Incubator #___
min.____max.____mean____
Waterbath #___
min.____max.____mean____
Room B246
min. 22.7 max. 25.6 mean 24.2

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

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

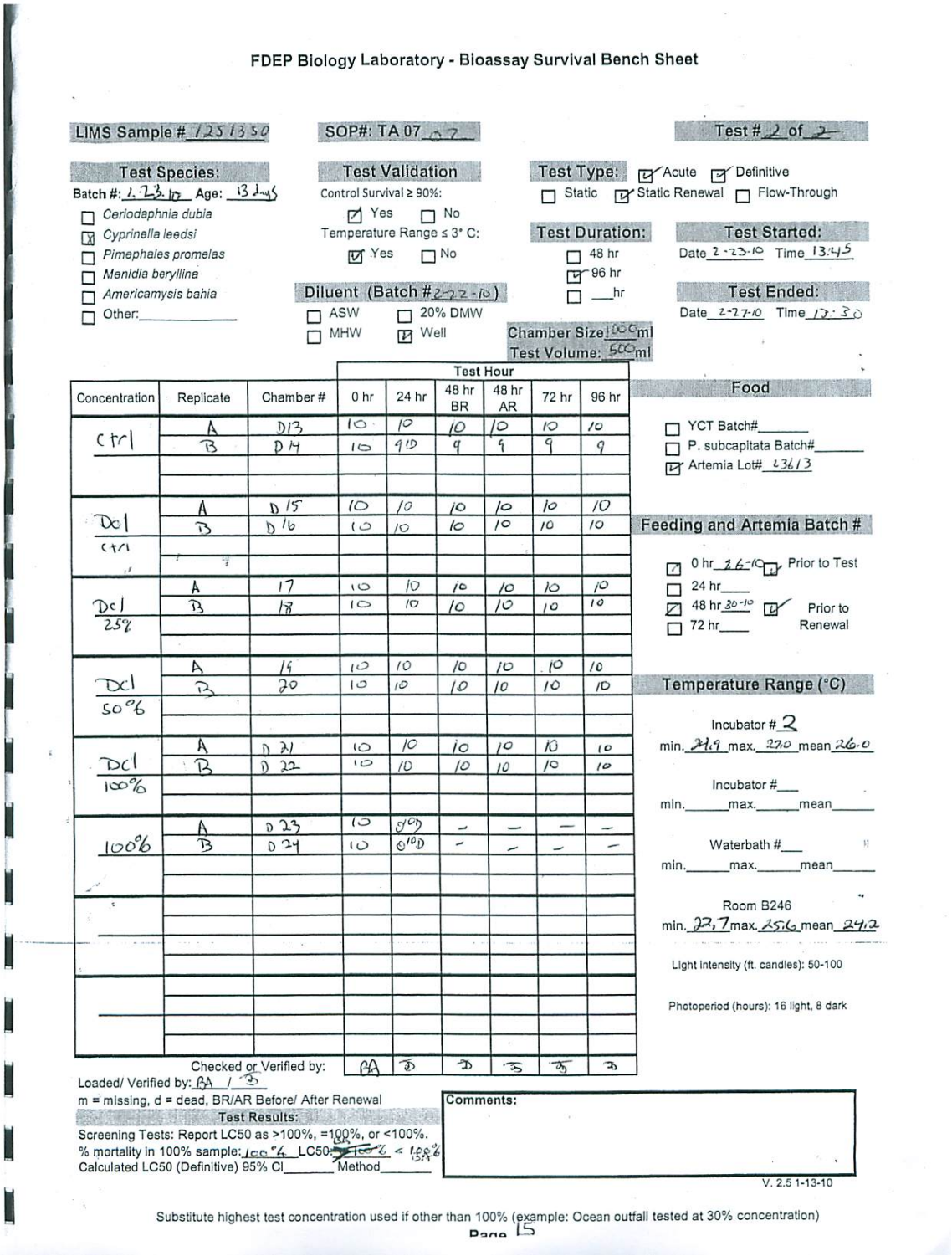
Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 30 % LC50: >100 %
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

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

Appendix B. (continued)



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1251350 SOP#: TA 07 07 Test # 2 of 2

Test Species:
Batch #: 1.23.10 Age: 13 hrs
- ☐ 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 # 2-22-10)
☐ ASW ☐ 20% DMW ☐ MHW ☑ Well

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

Test Duration: ☐ 48 hr ☑ 96 hr ☐ ___hr

Test Started: Date 2-23-10 Time 13:45

Test Ended: Date 2-27-10 Time 12:30

Chamber Size 1000ml
Test Volume: 500ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
ctrl	A	D13	10	10	10	10	10	10
	B	D14	10	9D	9	9	9	9
Dcl ctrl	A	D15	10	10	10	10	10	10
	B	D16	10	10	10	10	10	10
Dcl 25%	A	17	10	10	10	10	10	10
	B	18	10	10	10	10	10	10
Dcl 50%	A	19	10	10	10	10	10	10
	B	20	10	10	10	10	10	10
Dcl 100%	A	D21	10	10	10	10	10	10
	B	D22	10	10	10	10	10	10
100%	A	D23	10	9D	-	-	-	-
	B	D24	10	10D	-	-	-	-
Checked or Verified by:			BA	JD	JD	JD	JD	JD

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☑ Artemia Lot# 13613

Feeding and Artemia Batch #
- ☑ 0 hr 26-10 ☑ Prior to Test
- ☐ 24 hr___
- ☒ 48 hr 30-10 ☑ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 2
min. 21.9 max. 27.0 mean 26.0
Incubator #___
min._____max._____mean_____
Waterbath #___
min._____max._____mean_____
Room B246
min. 22.7 max. 25.6 mean 24.2
Light Intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

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

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 100 % LC50: >100% < 100% (BA 15%)
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

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

Page 15

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 125135 50 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)
Ctrl	A	0 hr	8.0	24.6	8.1	186	—
		24 hr	—	—	—	—	—
	A	48 hr BR	7.6	24.1	7.5	202	—
	M	48 hr AR	7.7	24.0	7.9	183	—
		72 hr	—	24.1	—	—	—
	A	96 hr	7.6	24.0	8.0	233	—
DCL control	A	0 hr	8.1	24.7	8.0	205	—
		24 hr	—	—	—	—	—
	A	48 hr BR	7.8	24.2	7.5	221	—
	M	48 hr AR	7.8	24.0	7.9	187	—
		72 hr	—	24.0	—	—	—
	A	96 hr	7.7	24.1	8.1	215	—
DCL 25%	A	0 hr	8.1	25.2	8.0	305	—
		24 hr	—	—	—	—	—
	A	48 hr BR	7.8	24.2	7.5	329	—
	M	48 hr AR	7.8	24.0	7.9	289	—
		72 hr	—	24.0	—	—	—
	A	96 hr	7.7	24.1	8.0	320	—
DCL 50%	A	0 hr	8.0	25.5	8.0	420	—
		24 hr	—	—	—	—	—
	A	48 hr BR	7.9	24.2	7.6	449	—
	M	48 hr AR	7.7	24.0	7.9	~~429~~ 397	—
		72 hr	—	—	—	—	—
	A	96 hr	7.7	24.2	8.1	422	—
DCL 100%	A	0 hr	7.6	25.7	7.7	612	—
		24 hr	—	—	—	—	—
	A	48 hr BR	7.9	24.5	7.6	652	—
	M	48 hr AR	7.6	24.0	7.8	599	—
		72 hr	—	—	—	—	—
	A	96 hr	7.8	24.1	8.1	614	—
100%	A	0 hr	7.6	25.7	7.6	600	—
		24 hr	—	—	—	—	—
	A	48 hr BR	8.0	25.5	7.6	683	—
	M	48 hr AR	7.5	24.0	7.8	599	—
		72 hr	—	—	—	—	—
	A	96 hr	7.9	24.0	8.1	678	—
		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: DCL = Dechlorinated MF 2-23-10 (A) transcription error (typ)

Measured By:
0 hr: MF
24 hr: —
48 hr BR: CF
48 hr AR: CF
72 hr: —
96 hr: CF

Page 16 V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 125135⁰ 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)
Ctrl	A	0 hr	7.6	24.1	7.2	282	—
	B	24 hr	8.0	24.3	7.0	300	—
	A & MA	48 hr BR	8.2	25.6	7.0	294	—
	A & MF	48 hr AR	7.7	24.5	7.2	280	—
	B	72 hr	7.9	24.9	7.1	298	—
	A	96 hr	7.8	25.4	7.1	305	—
dechlor ctrl	A	0 hr	7.7	24.0	7.2	291	—
	B	24 hr	8.1	24.0	6.9	292	—
	A & MA	48 hr BR	8.2	25.7	7.1	305	—
	A & MF	48 hr AR	7.9	24.5	7.1	286	—
	B	72 hr	7.9	25.7	7.1	300	—
	A	96 hr	7.9	25.9	7.1	378	—
dechlor 25%	A	0 hr	7.7	24.0	7.3	359	—
	B	24 hr	8.0	25.3	6.9	367	—
	A & MA	48 hr BR	8.2	25.7	7.2	375	—
	A & MF	48 hr AR	7.9	24.5	7.0	358	—
	B	72 hr	7.9	25.3	7.1	371	—
	A	96 hr	7.8	25.8	7.0	465	—
dechlor 50%	A	0 hr	7.7	24.0	7.3	439	—
	B	24 hr	8.0	25.0	6.9	445	—
	A & MF	48 hr BR	8.2	25.5	7.2	453	—
	A & MF	48 hr AR	8.0	24.4	6.9	439	—
	B	72 hr	7.8	25.9	6.5	457	—
	A	96 hr	7.8	25.9	6.8	626	—
dechlor 100%	A	0 hr	7.7	24.7	6.7	606	—
	B	24 hr	7.8	25.4	6.8	612	—
	A & MF	48 hr BR	8.0	25.7	7.2	629	—
	A & MF	48 hr AR	7.8	25.0	7.0	596	—
	B	72 hr	7.7	25.3	6.2	620	—
	A	96 hr	7.9	25.9	7.0	358	—
100% D	A	0 hr	7.5	25.1	6.7	604	—
	B	24 hr	7.7	24.0	6.7	609	—
		48 hr BR	—	—	—	—	—
		48 hr AR	—	—	—	—	—
		72 hr	—	—	—	—	—
		96 hr	—	—	—	—	—
		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: BA
24 hr: ~~B~~
48 hr BR: ~~B~~
48 hr AR: CF
72 hr: CF
96 hr: CF

Page 17 V. 2.3 1-13-10

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Mysids WS 24 Sample #: 125135D Dates: 2-23-10 BP 2-23-10 — 2-27-10

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	SM 2510 B	✓
			Salinity	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)

BP 3-1-10

V 1.1 6/12/08 MF

PAGE 18

Appendix C. SRT Bench Sheets and Statistical Analysis

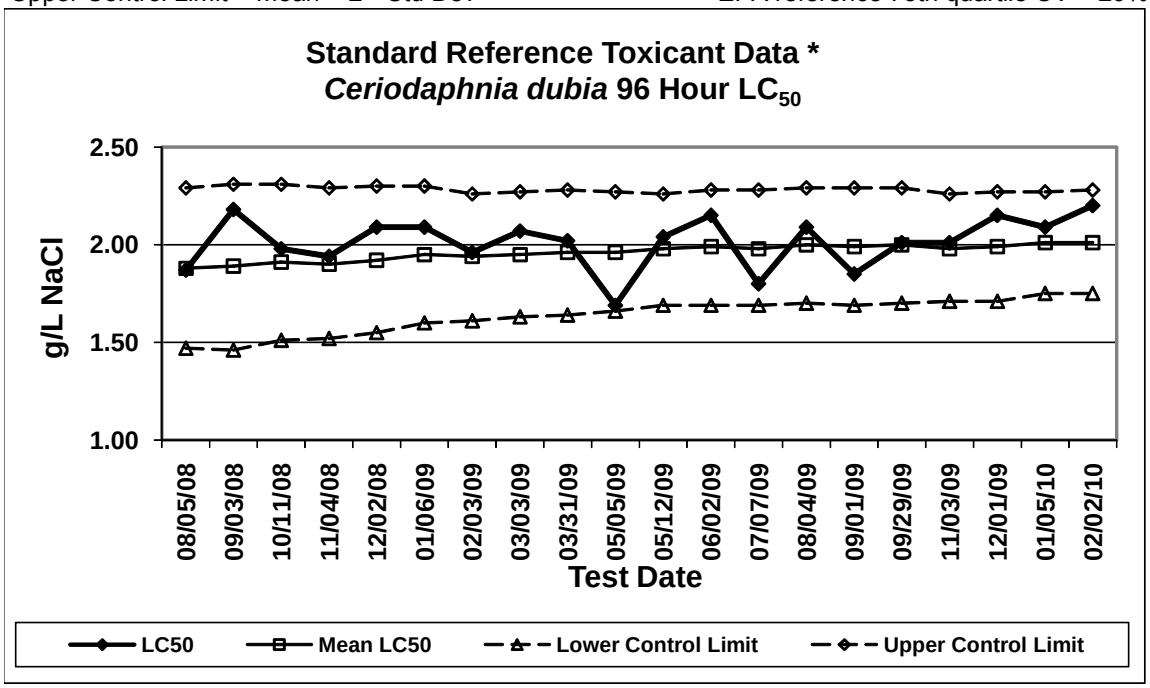
Florida Department of Environmental Protection
Bureau of Laboratories

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
08/05/08	1.87	1.88	0.20	1.47	2.29
09/03/08	2.18	1.89	0.21	1.46	2.31
10/11/08	1.98	1.91	0.20	1.51	2.31
11/04/08	1.94	1.90	0.19	1.52	2.29
12/02/08	2.09	1.92	0.19	1.55	2.30
01/06/09	2.09	1.95	0.17	1.60	2.30
02/03/09	1.96	1.94	0.16	1.61	2.26
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

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

CV = 6.58
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

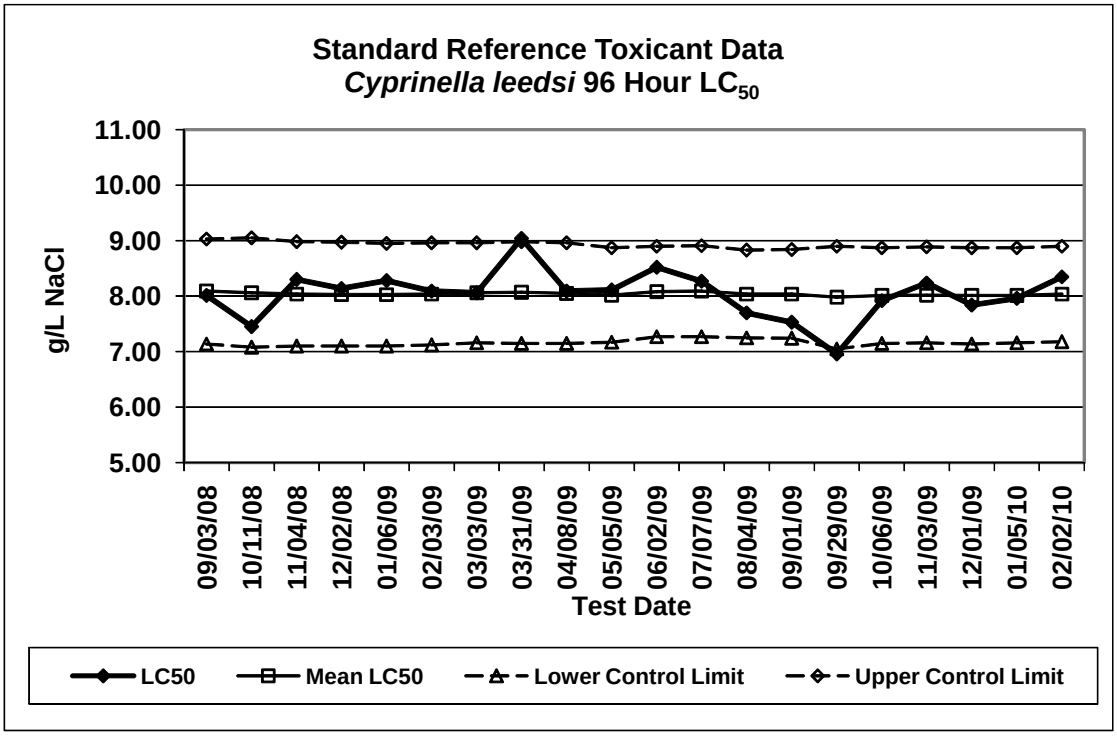
Florida Department of Environmental Protection
Bureau of Laboratories

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
09/03/08	8.01	8.09	0.47	7.14	9.03
10/11/08	7.45	8.06	0.49	7.08	9.05
11/04/08	8.30	8.04	0.47	7.10	8.98
12/02/08	8.14	8.03	0.47	7.10	8.97
01/06/09	8.28	8.03	0.46	7.10	8.95
02/03/09	8.09	8.04	0.46	7.12	8.96
03/03/09	8.06	8.06	0.45	7.16	8.96
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

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

CV = 5.35
EPA reference 75th quartile CV = 19%



Appendix C. (continued)

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 / 1-29-10 **Organism Batch:** 2 - 10 **Test Beginning:** Date: 2-2-10 Time: 1315

Toxicant/ Batch#: NaCl 12-1-10 Age: <24hr **Test Ending:** Date: 2-6-10 Time: 15:00

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	SD
Alkalinity (mg/L as $CaCO_3$):	99	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	101	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	BA
Conductivity: µmhos (mmhos)	0.185	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) 50 Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 26.0 max 28.6 mean 26.8

Light Intensity: 50-100 Ft. candles Waterbath # ___ min ___ max ___ mean ___

Photoperiod: 16 hours Light / 8 hours dark Room B248 min 23.0 max 25.6 mean 24.3

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	5	5	5	4 1D
	C	C	5	5	5	5	5	4 1D
	D	D	5	5	4 1D	4	4	4
2.5	A	A	5	5	3 2D	3	0 3D	—
	B	B	5	5	1 4D	1	1	1
	C	C	5	5	3 2D	3	3	1 2D
	D	D	5	4 1D	0 4D	—	—	—
3.0	A	A	5	5	0 5D	—	—	—
	B	B	5	2 3D	0 2D	—	—	—
	C	C	5	2 3D	0 2D	—	—	—
	D	D	5	3 2D	0 3D	—	—	—
4.0	A	A	5	2 3D	0 2D	—	—	—
	B	B	5	1 4D	0 1D	—	—	—
	C	C	5	0 5D	—	—	—	—
	D	D	5	1 4D	0 1D	—	—	—
Organisms loaded by: BA	Checked by:		BA	BA	BA	25	25	BA

Loading Verified by: 3 AR = after renewal

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

Comments:

Investigators' Signatures

Bruce Alvarez

Jomar Daniel

Chelsea French

Maribell Fainlett

Reviewer: Loretta Wolfe

Method: TSK

Statistics: LC50

	95% confidence Intervals Lower	Upper
48 hour: 2.37	2.25	2.49
96 hour: 2.20	2.09	2.31

PAGE 15

Revised 7/15/2008 mf

Appendix C. (continued)

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: 2-2-10 Time: 13:15
Test Ending: Date: 2-6-10 Time: 15:00

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	24.0	8.1	0.185	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.8	24.0	7.5	0.228	–
	M	48 hr AR	7.8	24.0	7.5	0.185	–
	~~E~~ BA	72 hr	–	~~24.0~~ DA	–	~~0.198~~ BA	–
	C	96 hr	7.8	24.0	7.4	0.198	–
1.5	M	0 hr	7.9	24.0	7.8	2.95	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.9	24.0	7.3	3.33	–
	M	48 hr AR	7.9	24.0	7.6	2.98	–
	~~E~~ BA	72 hr	–	–	–	~~3.03~~ BA	–
	C	96 hr	7.8	24.0	7.3	3.03	–
2.0	M	0 hr	7.9	24.0	7.6	3.87	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.9	24.0	7.3	4.16	–
	M	48 hr AR	8.0	24.0	7.6	3.85	–
	~~E~~ BA	72 hr	–	–	–	–	–
	C	96 hr	7.8	24.0	7.3	4.00	–
2.5	M	0 hr	7.9	24.0	7.6	4.79	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	7.9	24.0	7.3	5.56	–
	M	48 hr AR	8.0	24.0	7.6	4.71	–
	~~E~~ BA	72 hr	–	–	–	–	–
	C	96 hr	7.9	24.0	7.3	4.85	–
3.0	M	0 hr	7.9	24.0	7.8	5.65	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.0	7.4	6.84	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–
4.0	M	0 hr	7.9	24.0	7.8	7.28	–
	–	24 hr	–	–	–	–	–
	A	48 hr BR	8.0	24.0	7.5	8.80	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures
Bruce Allcorn
James Daniel
Chelsea Frenel
Marshall Faircloth

Reviewed By: Metta Wolfe

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

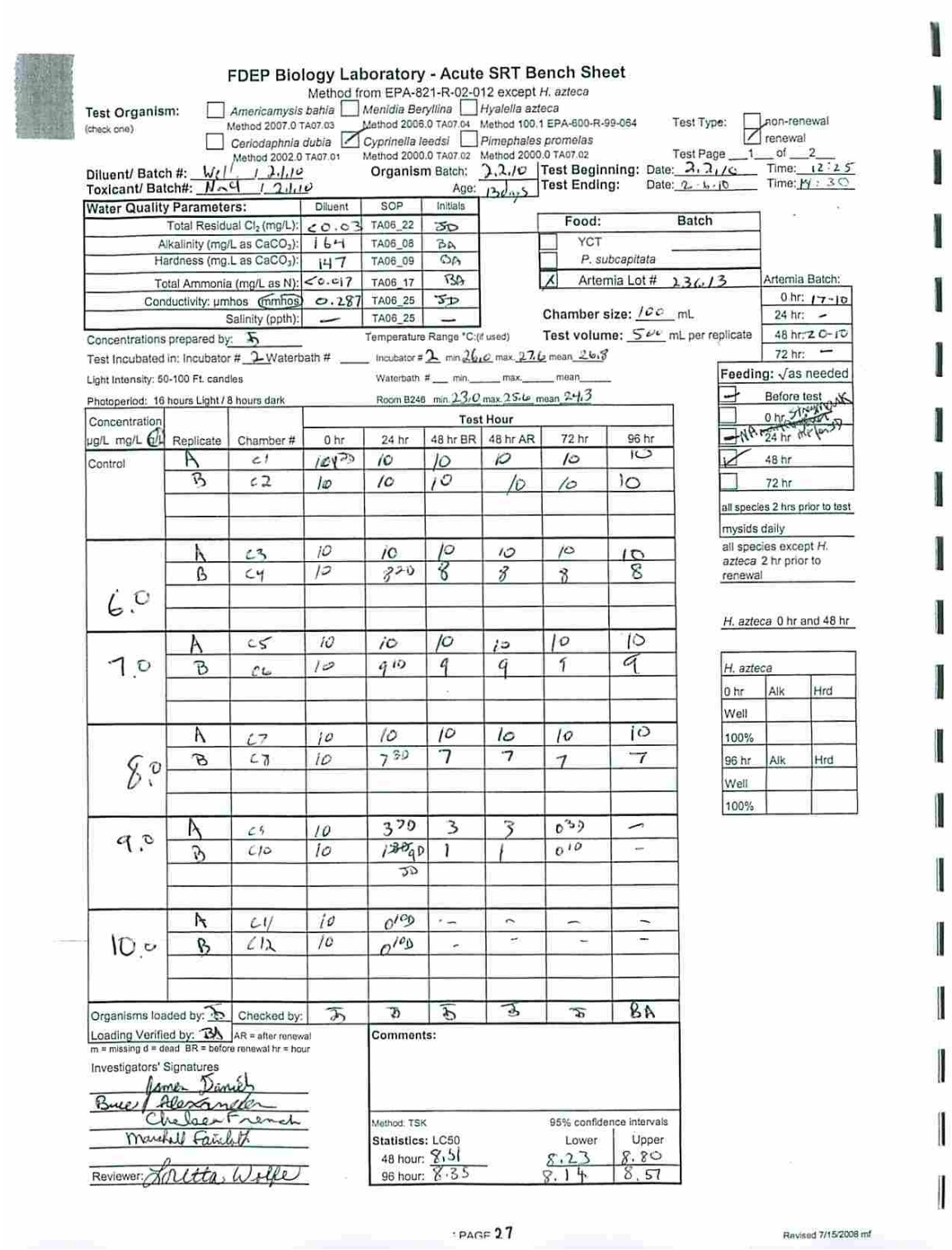
Measure/record salinity for marine tests

Comments:

PAGE 26

Revised 07/15/2008 MF

Appendix C. (continued)



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 1.21.10
Toxicant/ Batch#: NaCl 1.21.10
Organism Batch: 2.2.10 Age: 13d 0.5
Test Beginning: Date: 2.21.10 Time: 12:25
Test Ending: Date: 2.26.10 Time: 14:30

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	JD
Alkalinity (mg/L as $CaCO_3$):	164	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	147	TA06_09	BA
Total Ammonia (mg/L as N):	<0.617	TA06_17	BA
Conductivity: µmhos (mmhos)	0.287	TA06_25	JD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 2306.13	Artemia Batch:

Artemia Batch:
0 hr: 17-10
24 hr: -
48 hr: 0-10
72 hr: —

Chamber size: 100 mL
Test volume: 500 mL per replicate

Concentrations prepared by: JD
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 26.6 max. 27.6 mean. 26.8
Light Intensity: 50-100 Ft. candles
Waterbath # ___ min. ____ max. ____ mean. ____
Photoperiod: 16 hours Light / 8 hours dark
Room B246 min. 23.0 max. 25.6 mean. 24.3

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

Concentration µg/L mg/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	C1	10 JD	10	10	10	10	10
	B	C2	10	10	10	10	10	10
6.0	A	C3	10	10	10	10	10	10
	B	C4	10	8 JD	8	8	8	8
7.0	A	C5	10	10	10	10	10	10
	B	C6	10	9 JD	9	9	9	9
8.0	A	C7	10	10	10	10	10	10
	B	C8	10	7 JD	7	7	7	7
9.0	A	C9	10	3 JD	3	3	0 JD	—
	B	C10	10	1 ~~JD~~ JD	1	1	0 JD	—
10.0	A	C11	10	0 JD	-	-	-	-
	B	C12	10	0 JD	-	-	-	-
Organisms loaded by: JD		Checked by:	JD	JD	JD	JD	JD	BA

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

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

Investigators' Signatures
James Daniels
Bruce Alexander
Chelsea French
Marshall Faircloth

Reviewer: Loretta Wolfe

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.51	8.23	8.80
96 hour: 8.35	8.14	8.57

PAGE 27

Revised 7/15/2008 mf

Appendix C. (continued)

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: 2.2.10 Time: 1225

Test Ending: Date: 2-6-10 Time: 14:30

Test Type: ☐ non-renewal ☑ renewal

hr = hour

AR = after renewal BR = before renewal

Concentration µg/L mg/L (g/L)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	A	0 hr	7.7	24.0	7.8	0.287	-
	B	24 hr	7.9	25.3	7.5	0.301	-
	A	48 hr BR	7.8	25.9	7.1	0.319	-
	A	48 hr AR	7.8	24.0	7.9	0.537	-
	B	72 hr	7.9	24.5	7.5	0.319	-
	A	96 hr	8.0	25.3	6.5	0.310	-
6.0	A	0 hr	7.7	24.1	7.5	11.6	-
	B	24 hr	7.9	25.1	7.2	11.6	-
	A	48 hr BR	8.0	25.9	7.1	11.5	-
	A	48 hr AR	7.9	24.0	7.9	10.7	-
	B	72 hr	8.0	24.7	7.1	11.6	-
	A	96 hr	8.0	24.2	6.7	11.7	-
7.0	A	0 hr	7.8	24.1	7.6	13.4	-
	B	24 hr	8.0	25.6	7.2	13.4	-
	A	48 hr BR	8.0	25.6	7.1	13.5	-
	A	48 hr AR	7.9	24.0	7.8	13.1	-
	B	72 hr	8.0	24.6	6.7	13.5	-
	A	96 hr	8.0	24.3	6.4	13.5	-
8.0	A	0 hr	7.8	24.1	7.7	15.4	-
	B	24 hr	8.0	24.7	7.2	15.4	-
	A	48 hr BR	8.0	25.9	7.0	15.4	-
	A	48 hr AR	7.9	24.1	7.7	~~13.0~~ CF 15.4	- (A)
	B	72 hr	8.0	24.2	6.5	15.2	-
	A	96 hr	8.0	24.7	6.4	15.3	-
9.0	A	0 hr	7.8	24.1	7.7	17.0	-
	B	24 hr	8.0	25.2	7.1	17.1	-
	A	48 hr BR	8.0	25.7	7.0	17.0	-
	B	48 hr AR	8.0	24.2	6.6	17.0	-
	A	72 hr	8.0	24.1	6.5	17.1	-
	-	96 hr	-	-	-	-	-
10.0	A	0 hr	7.8	24.1	7.7	18.7	-
	B	24 hr	8.0	25.0	7.0	18.5	-
	-	48 hr BR	-	-	-	-	-
	-	48 hr AR	-	-	-	-	-
	-	72 hr	-	-	-	-	-
	-	96 hr	-	-	-	-	-

Investigators Signatures

James Daniels

Burt Alexander

Chelsea Francis

Marshall Faircloth

Reviewed By: Loretta Wolfe

Measured by:

0 hr: JD

24 hr: JD

48 hr BR: CF

48 hr AR: CF

72 hr: JD

96 hr: BA

Measure/record salinity for marine tests

Comments: (A) transcription error. CF

PAGE 28

Revised 07/15/2008 MF

Appendix C. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 2-2-10 DURATION: 96 h TOXICANT: NaCl
SPECIES: ***Ceriodaphnia dubia***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	0
2.00	20	3
2.50	20	18
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.20
95% LOWER CONFIDENCE: 2.09
95% UPPER CONFIDENCE: 2.31

***Cyprinella leedsi* Acute Standard Reference Toxicant Test**

DATE: 2-2-10 DURATION: 96 h TOXICANT: NaCl
SPECIES: ***Cyprinella leedsi***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	2
7.00	20	1
8.00	20	3
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: 7.50%

SPEARMAN-KARBER ESTIMATES: LC50: 8.35
95% LOWER CONFIDENCE: 8.14
95% UPPER CONFIDENCE: 8.57

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 2/1/2010

Ship to: FDEP

P.O. No:_____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150	4 DAYS	MG100127	25	8.0	20
Menidia beryllina	150	12 DAYS	SS100119	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	150	12 DAYS	CL100119	25	7.8	80
Pimephales promelas						
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: CW

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 D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 2/22/10

Ship to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	100	6 DAYS	MS100216	25	8.0	20
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	150	12 DAYS	CL100210	25	7.8	80
Pimephales promelas	350	<24HRS	FM1000-21-1430	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PMO

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 E. Chemical Analyses performed on the effluent from the Hastings WWTF Plant Outfall D-001, sampled on February 22, 2010.

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 13:10	BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
2/22/2010 13:10	BLANK	Metals	Copper	0.5	U	ug/L	0.5	0.5
2/22/2010 13:10	BLANK	Metals	Iron	30	U	ug/L	30	120
2/22/2010 13:10	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
2/22/2010 13:10	BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
2/22/2010 13:10	BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
2/22/2010 13:10	BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
2/22/2010 13:10	BLANK	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/22/2010 13:10	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/22/2010 13:10	BLANK	Metals	Aluminum	60	U	ug/L	60	240
2/22/2010 13:10	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
2/22/2010 13:10	BLANK	Metals	Zinc	5	U	ug/L	5	20
2/22/2010 13:10	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
2/22/2010 13:10	BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
2/22/2010 13:10	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
2/22/2010 13:10	BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
2/22/2010 13:10	BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
2/22/2010 13:10	BLANK	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Naled	0.79	UJ	ug/L	0.79	3.2
2/22/2010 13:10	BLANK	Pesticides	Phorate	0.049	UJ	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
2/22/2010 13:10	BLANK	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
2/22/2010 13:10	BLANK	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Pesticides	Fenamiphos	0.2	UJ	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 13:10	BLANK	Pesticides	Metribuzin	0.099	U	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
2/22/2010 13:10	BLANK	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Mevinphos	0.2	UJ	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
2/22/2010 13:10	BLANK	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Delta-BHC	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Heptachlor	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Chlorpyrifos Methyl	0.099	U	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Parathion Methyl	0.099	U	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/22/2010 13:10	BLANK	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Aldrin	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
2/22/2010 13:10	BLANK	Pesticides	Ethoprop	0.099	UJ	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Toxaphene	0.74	U	ug/L	0.74	3
2/22/2010 13:10	BLANK	Pesticides	Methoxychlor	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Endrin	0.049	U	ug/L	0.049	0.2
2/22/2010 13:10	BLANK	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
2/22/2010 13:10	BLANK	Pesticides	Alpha-BHC	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Fonofos	0.099	U	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Beta-BHC	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Metolachlor	0.49	U	ug/L	0.49	2
2/22/2010 13:10	BLANK	Pesticides	Hexazinone	0.099	U	ug/L	0.099	0.4
2/22/2010 13:10	BLANK	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
2/22/2010 13:10	BLANK	Pesticides	Gamma-BHC	0.0099	U	ug/L	0.0099	0.04
2/22/2010 13:10	BLANK	Pesticides	Alachlor	0.59	U	ug/L	0.59	2.4
2/22/2010 13:10	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 13:10	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	160
2/22/2010 13:10	BLANK	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.2
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	UJ	ug/L	5.1	20
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	UJ	ug/L	3.1	12
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 13:10	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.2
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.2
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.2
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
2/22/2010 13:10	BLANK	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	AGP/LN	Algal Growth Potential	105	A	mg DryWt/L	0.3	0.9
2/22/2010 15:00	FINAL EFF	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
2/22/2010 15:00	FINAL EFF	Chlorophyll/Grain Size/BOD	BOD-5 Day,N-Inhib	0.54	I	mg/L	0.2	2
2/22/2010 15:00	FINAL EFF	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
2/22/2010 15:00	FINAL EFF	Toxicology	Bsy-AS-FW-Fish, LC50	100	K	LC50		
2/22/2010 15:00	FINAL EFF	Toxicology	Bsy-AS-FW-C.dubia, LC50	100	L	LC50		
2/22/2010 15:00	FINAL EFF	Toxicology	Bsy-AD-FW-Fish, LC50-dechlor	100	L	LC50		
2/22/2010 15:00	FINAL EFF	Toxicology	Bsy-AD-FW-C.dubia,LC50-dechlr	100	L	LC50		
2/22/2010 15:00	FINAL EFF	Metals	Zinc	26		ug/L	5	20
2/22/2010 15:00	FINAL EFF	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/22/2010 15:00	FINAL EFF	Metals	Nickel	1.16		ug/L	0.25	1
2/22/2010 15:00	FINAL EFF	Metals	Magnesium	10.3		mg/L	0.04	0.16
2/22/2010 15:00	FINAL EFF	Metals	Calcium	40.7		mg/L	0.075	0.3
2/22/2010 15:00	FINAL EFF	Metals	Copper	0.5	U	ug/L	0.5	0.5
2/22/2010 15:00	FINAL EFF	Metals	Sodium	58.6		mg/L	0.5	2
2/22/2010 15:00	FINAL EFF	Metals	Aluminum	60	U	ug/L	60	240
2/22/2010 15:00	FINAL EFF	Metals	Arsenic	0.76	I	ug/L	0.25	1
2/22/2010 15:00	FINAL EFF	Metals	Chromium	0.3	U	ug/L	0.3	1.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 15:00	FINAL EFF	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/22/2010 15:00	FINAL EFF	Metals	Iron	34	I	ug/L	30	120
2/22/2010 15:00	FINAL EFF	Nutrients	O-Phosphate-P	0.88		mg P/L	0.04	0.1
2/22/2010 15:00	FINAL EFF	Nutrients	TSS	4	U	mg/L	4	16
2/22/2010 15:00	FINAL EFF	Nutrients	Kjeldahl Nitrogen	0.71		mg N/L	0.08	0.2
2/22/2010 15:00	FINAL EFF	Nutrients	NO2NO3-N	1.5		mg N/L	0.04	0.1
2/22/2010 15:00	FINAL EFF	Nutrients	Ammonia-N	0.029		mg N/L	0.01	0.02
2/22/2010 15:00	FINAL EFF	Nutrients	Total-P	0.99		mg P/L	0.025	0.25
2/22/2010 15:00	FINAL EFF	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Fenamiphos	0.2	UJ	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
2/22/2010 15:00	FINAL EFF	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
2/22/2010 15:00	FINAL EFF	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
2/22/2010 15:00	FINAL EFF	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Atrazine	0.22		ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 15:00	FINAL EFF	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/22/2010 15:00	FINAL EFF	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
2/22/2010 15:00	FINAL EFF	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
2/22/2010 15:00	FINAL EFF	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
2/22/2010 15:00	FINAL EFF	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
2/22/2010 15:00	FINAL EFF	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
2/22/2010 15:00	FINAL EFF	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
2/22/2010 15:00	FINAL EFF	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
2/22/2010 15:00	FINAL EFF	Pesticides	Phorate	0.05	UJ	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
2/22/2010 15:00	FINAL EFF	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
2/22/2010 15:00	FINAL EFF	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
2/22/2010 15:00	FINAL EFF	Pesticides	Mevinphos	0.2	UJ	ug/L	0.2	0.8
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	160
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	62
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	21
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	UJ	ug/L	5.1	21
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.2
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.2
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	UJ	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.2
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	62
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.2
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remark	Units	MDL	PQL
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	62
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
2/22/2010 15:00	FINAL EFF	Field Parameter	Temperature	17.57		C		
2/22/2010 15:00	FINAL EFF	Field Parameter	Sample Depth	0.1		m		
2/22/2010 15:00	FINAL EFF	Field Parameter	Specific Conductance	564		umhos/cm		
2/22/2010 15:00	FINAL EFF	Field Parameter	pH	6.99				
2/22/2010 15:00	FINAL EFF	Field Parameter	Dissolved Oxygen	6.29		mg/L		
2/22/2010 9:20	HASTINGS	Overflow	Fecal Coliforms-Membrane Filter	20	U	#/100 mL		

Appendix F. Facility Summary, Effluent Limits, and Permit Violations Recorded on Discharge Monitoring Report

Hastings WWTP – FL0042315 – January-2010

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Samuel Schllesinger	**Contact Number:** 904-807-3333
Facility Name (as it appears on permit): Hastings Wastewater Treatment Facility	**Current Name:** same
NPDES Permit Number: FL0042315	**Permit Expiration Date:** July 10, 2011
Physical Address: 816 North Main Street Hastings, FL 32145	
District: Northeast	**County:** St. Johns
Function of Facility: Facility treats domestic wastewater.	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 0.120

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):

Outfall D-001	
Month	AADF
Dec--08	88,000
Jan--09	87,000
Feb	86,000
March	83,000
April	83,000
May	88,000
June	90,000
July	87,000
Aug	83,000
Sept	82,000
Oct	82,000
Nov	83,000

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): **N/A**
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):
EFA-1 – Sample point immediately after chlorine disinfection EFD-2 - Sample point immediately after dechlorination CAL-1 - Calculated value INF-1 - Influent prior to either biological treatment or dilution
Description of Permitted Outfall(s): (excerpted from current permit) **Surface Water Discharge:** An existing 0.120 MGD annual average daily flow (AADF) permitted discharge to an unnamed man-made canal (D001), connecting to a wetland bordered on the east by Deep Creek (a tributary of the St. Johns River) and to the west by Cracker Branch (a tributary of Deep Creek) to Cracker Branch (Class III fresh waters) at Discharge Location (D-001) which is approximately 4 feet in length and discharges at a depth of approximately 1 foot. The point of discharge is located approximately at latitude 29 ° 43' 43" N, longitude 81 ° 30' 26" W. **Land Application:** N/A

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

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

An existing 0.120 million gallon per day (MGD) annual average daily flow (AADF) permitted advanced secondary treatment activated sludge domestic wastewater treatment facility with the following units:

- One (1) influent headworks consisting of:
  - One (1) static influent screen with a screen thickness of 0.10-inch.
  - One (1) 86,000 gallon equalization tank with one (1) 7.5 Horse Power floating aerator.
  - Two (2) submersible pumps lift the wastewater into one (1) splitter box.
- One (1) biological treatment units (BTUs) with alternate anoxic and aerobic tank consisting of four (4) sequential stages:
  - One (1) pre-anoxic stage (20,737) gallons.
  - One (1) nitrification stage (131,000) gallons.
  - One (1) post-anoxic stage (50,037) gallons.
  - One (1) final first (1^{st}) and Second (2^{nd}) re-aeration tank.
- Two (2) EIMCO secondary clarifiers consisting of:
  - One (1) six (6)-inch mixed liquor inlets terminating in a five (5) foot diameter center feed well.
  - One (1) six (6)-inch center shaft rotating at 0.10 rpm driving bottom rake arms that moves settled sludge to a center hopper for removal. The two (2) rake arms with squeegees rake the tank bottom twice per revolution.
  - One (1) model W2IP drive unit with a three-quarter (3/4) horsepower motor with torque switches as follows
    - Motor Cut Out 12,750 ft-lb torque
    - Alarm Actuation 6,000 ft-lb torque
    - Motor Cut Out 15,000 ft-lb torque
  - One (1) skimmer
  - One (1) scum box has flushing system
  - One (1) scum baffle and one (1) weir.
- One (1) automatic backwash US Filter Kruger Products Discfilter model HSF1704-IF
- One (1) dual chlorine contact chamber (6,250) gallons
- One (1) dechlorination chamber (180) gallons
- Two (2) aerobic digesters (15,400) gallons and (18,000) gallons.

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

PART I: 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 an unnamed man-made canal (D001), connecting to a wetland bordered on the east by Deep Creek (a tributary of the St. Johns River) and to the west by Cracker Branch (a tributary of Deep Creek) to Cracker Branch. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.B.8:

		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	0.12	Report	-	-	Continuous	Recording flow meters and totalizer	EFD-2	
Percent Capacity, (TMADF/Permitted Capacity) x 100	PERCENT	Maximum	-	Report	-	-	Monthly	Calculated	CAL-1	
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Every Two Weeks	8-hour flow proportioned composite	EFD-2	
CBOD, % Removal, 5-day	PERCENT	Minimum	-	90	-	-	Every Two Weeks	Calculated	EFD-2	
Solids, Total Suspended	MG/L	Maximum	20.0	30.0	45.0	60.0	Every Two Weeks	8-hour flow proportioned composite	EFD-2	
Solids, Suspended, % Removal	PERCENT	Minimum	-	90	-	-	Every Two Weeks	Calculated	EFD-2	
Coliform, Fecal (General)	#/100ML	See Permit Condition I.A.5	Every Two Weeks	Grab	EFD-2					
pH	SU	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFD-2	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-1	
Chlorine, Total Residual (for dechlorination)	MG/L	Maximum	-	-	-	0.01	Every Two Weeks	Grab	EFD-2	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	5 Days/Week	Grab	EFD-2	
Nitrogen, Total	MG/L	Maximum	4.5	5.63	6.75	9.0	Every Two Weeks	8-hour flow proportioned composite	EFD-2	

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

PART I: 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 an unnamed man-made canal (D001), connecting to a wetland bordered on the east by Deep Creek (a tributary of the St. Johns River) and to the west by Cracker Branch (a tributary of Deep Creek) to Cracker Branch. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.B.8:

			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
Nitrogen, Ammonia, Total (as N)	MG/L	Maximum	-	2.0	-	-	Every Two Weeks	Grab	EFD-2	
Temperature, Water	C Degree	Maximum	-	-	-	Report	Every Two Weeks	Meter	EFD-2	
Ammonia, Unionized	MG/L	Maximum	-	-	-	0.02	Every Two Weeks	Calculated	EFD-2	See Note 2. Below
Nitrite plus Nitrate, Total (as N)	MG/L	Maximum	-	-	-	Report	Every Two Weeks	8-hour flow proportioned composite	EFD-2	
Nitrogen, Kjeldahl, Total (as N)	MG/L	Maximum	-	-	-	Report	Every Two Weeks	8-hour flow proportioned composite	EFD-2	
Nitrogen, Organic, Total (as N)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-2	
Phosphorus, Total (as P)	MG/L	Maximum	-	-	-	Report	Quarterly	8-hour flow proportioned composite	EFD-2	
Phosphate, Ortho (as P)	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	EFD-2	See Note 3. Below
Whole Effluent Toxicity	See Permit Condition I.A.6	See Note 1. Below								

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

NOTES:

Nutrient Monitoring

1. Based upon Best Professional Judgment toxicity testing is not required for this discharge. The Department reserves the right to require regular monitoring of whole effluent toxicity testing for the purpose of maintaining data on the impact of the discharge on the surface water quality. *[62-611 FAC]*
2. 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 in accordance with the latest DEP SOP sampling requirements. *[62-160 FAC]*
3. Grab sample and filtered immediately in accordance with the latest DEP SOP sampling requirements. *[62-160 FAC]*

Hastings WWTP – FL0042315 – January-2010

	PART I: 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 treatment facility shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.B.8:**

			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**
BOD, Carbonaceous 5 day, 20C	**MG/L**	**Maximum**	-	**Report**	-	-	**Every Two Weeks**	**8-hour flow proportioned composite**	**INF-1**	**See Note 1 Below**
Solids, Total Suspended	**MG/L**	**Maximum**	-	**Report**	-	-	**Every Two Weeks**	**8-hour flow proportioned composite**	**INF-1**	**See Note 1 Below**

NOTES:

1. - Influent samples shall be collected so that they do not contain digester supernatant or return activated sludge, or any other plant process recycled waters. ***[62-601.500(4)]***

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

PART I: Continued	
Receiving Waters: **An unnamed man-made canal (D001), connecting to a wetland bordered on the east by Deep Creek (a tributary of the St. Johns River) and to the west by Cracker Branch (a tributary of Deep Creek) to Cracker Branch (Class III fresh waters) at Discharge Location (D-001) which is approximately 4 feet in length and discharges at a depth of approximately 1 foot.**	**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 Note 1 on page 7.**	
Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): **N/A – old CO closed April 27, 2009**	
Facility Mixing Zone Details (if applicable): NA	
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year: **For December 1, 2008 to November 30, 2009 (from PCS)**	

Date	Parameter and Units	Limit	Result
NA	NA	NA	NA

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

Describe previous FYI and WQBEL study:
Last Biological Assessment sampling was done by FDEP in October 1999, DEP conducted a FYI and in April 2004, DEP conducted bioassay sampling and the screening results were not toxic.

Water Quality Based Effluent Limitation (WQBEL) – Permit Fact Sheet dated – 7/11/2006.

Based upon a review of the DEP sample events (the Fifth Year Inspection and the Bioassay sampling), water quality data for receiving stream, the facility' s sampling reports, and considerations of the type of discharge, additional monitoring requirements are not proposed. The current permit effluent limits are proposed to be retained.

The existing method of disposal is a direct discharge to surface waters. The treated effluent flows to an unnamed man-made canal, connecting to a wetland bordered on the east by Deep Creek and on the west by Cracker Branch. Adjacent to this is an old unlined landfill site that impacts ground and surface waters. The facility has a WQBEL established for this facility and the current limits are deemed adequate. There is no evidence to show that discharge has significantly impacted the surface water body.

The community needs time to secure funds to hire a consultant to plan, design, and manage the WWTF system. The Department will monitor the facility's progress under the Consent Order.

Due to size of the facility (0.120 MGD AADF permitted capacity), location of discharge, and the passing bioassay test results (screening tests by DEP) whole effluent toxicity testing is not proposed. However, the Department reserves the right to require regular monitoring of whole effluent toxicity testing for the purpose of maintaining data on the impact of the discharge on the surface water quality.

In Conclusion:

The permittee has provided reasonable assurance that the discharge will not adversely affect the designated use of the receiving water. Fifth year inspection results, as well as other available data, have been evaluated in accordance with the Department's reasonable assurance procedure to ensure that no limits other than those included in this permit are needed to maintain Florida water quality standards.

Appendix F. (continued)

Hastings WWTP – FL0042315 – January-2010

Describe previous or current Enforcement Actions (including WLs):
Facility exceeded limit for Total Nitrogen please see table below for date range and data. Formal enforcement action was taken. Facility also failed to monitor pathogen reduction requirements for land application for years 2003, and 2004.

Date	Parameter	Monthly Average Exceedances	Daily Maximum Exceedances
August 2004	Total Nitrogen (mg/L)	7.9 mg/L	
July 2004	Total Nitrogen (mg/L)	6.35 mg/L	
May 2004	Total Nitrogen (mg/L)	11.5 mg/L	12 mg/L
April 2004	Total Nitrogen (mg/L)	9.2 mg/L	9.8 mg/L
March 2004	Total Nitrogen (mg/L)	11.25 mg/L	17.0 mg/L
February 2004	Total Nitrogen (mg/L)	10.65 mg/L	20.0 mg/L
December 2003	Total Nitrogen (mg/L)	15.5 mg/L	16.0 mg/L
November 2003	Total Nitrogen (mg/L)	13.5 mg/L.	18.0 mg/L
October 2003	Total Nitrogen (mg/L)	7.57 mg/L	9.1 mg/L
September 2003	Total Nitrogen (mg/L)	6.0 mg/L	
August 2003	Total Nitrogen (mg/L)	7.65 mg/L	11.0 mg/L
July 2003	Total Nitrogen (mg/L)	7.65 mg/L	11.0 mg/L
June 2003	Total Nitrogen (mg/L)	5.8 mg/L	
April 2003	Total Nitrogen (mg/L)	7.17 mg/L	10.5 mg/L
March 2003	Total Nitrogen (mg/L)	6.35 mg/L	9.5 mg/L
February 2003	Total Nitrogen (mg/L)	10.4 mg/L	10.6 mg/L
January 2003	Total Nitrogen (mg/L)	16.98 mg/L	16.98 mg/L

Old Consent Order number 05-0393 addressed the issues above.

Describe any violations or problems noted in previous inspection:

Last inspection on March 25, 2009 noted the following:

1. Operator must take flow readings when grab samples taken in order to determine if flow proportioned compositing is needed.
2. Influent samples must be taken so that no recycle streams are in the sample
3. pH calibrations did not always bracket the sample pH

Discuss whether DMR trends within previous five years are improving or declining:
No comments

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

No comments

Appendix F. (continued)

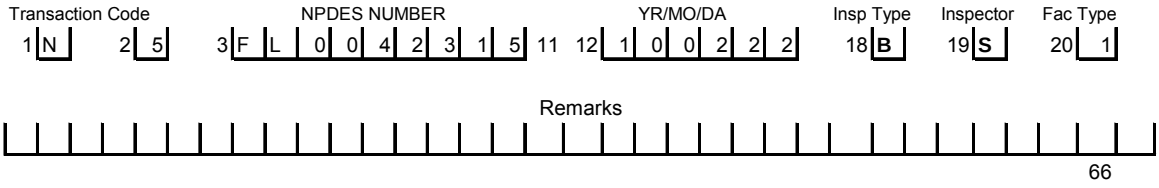
Hastings WWTP – FL0042315 – January-2010

PART II: Sampling Event Information	
Date(s) sample collected: 2/22/2010 (planned)	**Sampler(s):**
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: Sodium Hypochlorite liquid	**Method of De-chlorination:** Sodium Bisulfite
Flow During Sample Collection for each outfall(MGD):	
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):	
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 ---	

Appendix G. EPA End Sheet

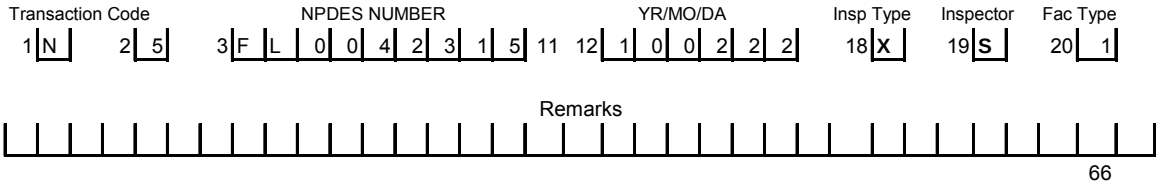
The Bioassay of Hastings WWTF Plant effluent sampled on February 22, 2010. NPDES #FL0042315.

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



The Priority Pollutants Analysis of Hastings WWTF Plant effluent sampled on February 22, 2010. NPDES #FL0042315.

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



Biological Analyses of Hastings WWTF Plant effluent sampled on February 22, 2010. NPDES #FL0042315.

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

