

Effluent Quality Assessment

East Putnam County Reverse Osmosis Water Treatment Plant

Putnam County

NPDES #FL0433365

Sampled October 18, 2010

December 2010
(Resubmitted with corrected tables March 2011)

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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East Putnam Reverse Osmosis (RO) Water Treatment Plant (WTP), 223 Putnam County Boulevard, East Palatka, Putnam County, Florida, 32131. NPDES #FL0433365. Effluent grab samples for bioassay, chemical and microbiological analyses for this facility were collected on October 18, 2010.

Introduction

East Putnam RO WTP is a water treatment plant which uses the reverse osmosis process to produce potable water from water containing a high concentration of dissolved solids. (See Appendix F for detailed facility information provided by Malton Prifti of FDEP Northeast District.)

Methods

Samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Bipin Adhyaru and Malton Prifti (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/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The 96-hour 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.

The bioassay sample was diluted to a maximum concentration of 60%, per permit requirements. Additional concentrations were run at 50%, 25%, 12.5%, and 6.25%.

The algal growth potential (AGP) sample was salinity-adjusted with artificial sea salts from an apparent salinity of approximately 1.88 parts per thousand (ppth) to a salinity of approximately 8.1 ppth to meet the minimal salinity requirements of the test species.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed October 19 - 23, 2010.

  Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 60%, 5%* mortality in 60% sample at 96 hours

  Cyprinella leedsi 96-hour acute definitive bioassay – LC_{50} > 60%, 10%* mortality in 60% sample at 96 hours

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

  *NOTE: The bioassay results suggest that the facility is in compliance with the facility's NPDES permit requirement for acute toxicity of the 96-hour LC_{50} exceeding 30% effluent concentration.

  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 3.0 AU (A - Value reported is the mean of two or more determinations, U - Material was analyzed for but not detected; the value reported is the minimum detection limit) mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al.

FDEP, with Ron Raschke USEPA Region 4 1987). The ratio (100.0:1) of total nitrogen to total phosphorus suggests that the effluent is phosphorus-limited (Maloney et al. 1978).

Due to the apparent salinity of the AGP sample, a freshwater AGP analysis was not performed.

See Table 1 for AGP results.

- **Chemistry Results**
  Total residual chlorine was not detected in the bioassay sample. Total ammonia (0.242 mg N/L) was detected in the bioassay sample in the bioassay laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.27 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.

  Aluminum, chloride, copper, lead, combined radium 226 + 228, fluoride, sodium and sulfate were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Nickel and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Fecal Coliform bacteria (86 colony forming units/100 mL) were also detected in the effluent.

  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 EFF-1 NPDES sampling point for Outfall D-001for this facility on October 18, 2010, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The salinity-adjusted effluent AGP result was less than the "problem" threshold for marine receiving waters. Effluent water quality samples collected on October 18, 2010, did not exceed water quality standards.

Literature Cited

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 p.

Table 1. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the East Putnam County Reverse Osmosis Water Treatment Plant on October 18, 2010.

East Putnam County RO WTP NPDES # FL0433365			
Location	**AGP (measured)**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent	3.0 AU*	118.0:1	100.0:1

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

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

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the East Putnam County Reverse Osmosis Water Treatment Plant on October 18, 2010.

East Putnam County RO WTP NPDES# FL0433365	Class III Criteria	Effluent Limits	Effluent	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	250	
Arsenic	≤ 50	-	0.25	U
Cadmium	≤ 0.76 b	-	0.03	U
Calcium (mg/L)	-	-	293	
Chromium-III	≤ 268.22 b	-	0.3	U
Copper	≤ 30.5 b	-	4.84	
Iron	≤ 1,000	≤ 1,000 s	30	U
Lead	≤ 18.58 b	-	1.37	
Magnesium (mg/L)	-	-	148	
Nickel	≤ 168.54 b	-	0.35	I
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	-	0.025	U
Zinc	≤ 387.83 b	-	8.3	I
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.015	
Total Phosphorus	-	Report	0.023	
Total Ammonia	-	≤ 0.02 s	0.27	
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02	c
Nitrate and Nitrite	-	-	1.5	
Total Kjeldahl Nitrogen	-	-	0.8	
Organic Nitrogen	-	-	0.53	c
Total Nitrogen	-	Report	2.3	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	7.9	
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.8	
Conductivity (µmhos/cm)	≤ 1,275	≤ 14,000 s	3924	
Temperature (°C)	-	Report	26.3	
Total Residual Chlorine (mg/L)	≤ 0.01	-	≤ 0.03	QU£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	Report	5	I
CBOD, 5 day (mg/L), N - inhibited	-	≤ 20.0 s	0.27	IJ
Chloride (mg/L)	-	-	880	
Color (pt-Co)	-	-	10	
Fluoride (mg/L)	≤ 10.0	-	1.2	
Sulfate (mg/L)	-	-	280	
Alpha, Total (pCi/L)	≤ 15	≤ 15 s	10.2	U
Alpha-Counting Error (pCi/L)	-	-	6.8	F
Radium 226 (pCi/L)	-	-	2.4	
Radium 226-Counting Error (pCi/L)	-	-	0.3	F
Radium 228 (pCi/L)	-	-	0.8	U
Radium 228-Counting Error (pCi/L)	-	-	0.5	F
Radium 226 + 228 (pCi/L)	≤ 5	≤ 13.3 s	2.4	c
Flow (MGD)	-	≤ 0.186 d	0.171	d*
Hardness (mg $CaCO_3$)	-	-	1341.09	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	-	86	

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
d - Average Daily Flow
s - Single sample
F - Analyte was detected in both sample and field blank
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
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 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.)
* - For period beginningin November 2009 and extending through July 2010
£ - Measured in Central Laboratories and entered into Tox sheets

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-10-18-30
FYI3 for E. Putnam County RO

Requester: Cari Butler
Field Report Prepared By: BISIN ADHIKARI
Customer: NE-DIST
Project ID: FYI3
PMAS: 1143
Collected By: Bipin Adhikari / Matthew Prith
Send Final Report To: Tom Kallemeyn
Sampling Agency: FDEP (NED) JAX

Lab ID *	Location: BLANK			☐ Comp ☒ Grab	Collection (begin) Eastern Date 10/18/10 Time 0845 Central	Collection (end) Eastern Date Time Central	Bottle Group(s)** B
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
Lab ID *	Location: Lwr Putnam RO Effluent			☐ Comp ☒ Grab	Collection (begin) Eastern Date 10/18/10 Time 1215 Central	Collection (end) Eastern Date Time Central	Bottle Group(s)** A
	Field ID			Tot Res Chlorine (mg/L): —	Diss Oxygen (mg/L): 7.87	Storet Station Number: —	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 26.26	pH: 7.81	Sample Depth ☐ m ☐ ft	2.07 ☒ Salinity (PPTh) 3924 ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time 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 ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time 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 ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: 4 bioassay Rec'd in Tox by J.D. 10:17 10.19.10			

Relinquished By	Date/Time	Shipping Method	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Bipin Adhikari	10/18/10	Fed Ex						10.19.10 / 9:25a

* Shaded Areas for Lab use only

** Please see reverse side for Bottle Group information

last revised October 1, 2003

Page 1 of 4

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: East Putnam County RO WTP

Address: 223 Putnam County Boulevard

City: ~~Putnam~~ East Palatka County: Putnam

Contact/District: Malton Pfifti / Northeast

NPDES Permit #: FL 0433365

LIMS Job #: TLH-2010-10-19-63

LIMS Sample #: 1305817

Lims Data Entry: 10-24-10 MF

Data Entry Verification: 10-29-10 ~~JD~~ by MF

Sample Collection: Date: 10-18-10 Time: 1215

Hold Time Start: Date: 10-18-10 Time: 1215

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:
James Daniels	JD
Marshall Faircloth	MF
Amelia Rankin	AR
Diane Power	DP
Bruce Ahr	BA

REVIEWER: Liz Nelson

Diluent/Control Batch#:	10.15.10		10.1.10							
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		MF
Lab Total Residual Cl_2 (mg/L):	~~0.04~~		0.04				<0.03	ASR	JD
Alkalinity (mg/L as $CaCO_3$):	86		74				442	DP	JD
Hardness (mg/L as $CaCO_3$):	86		93				1075	DP	JD
Total Ammonia (mg/L as N):	<0.017		<0.017				0.242	MF	JD
Conductivity: ☒ µmhos ☐ mmhos	179		331				3250	ASR	JD
Salinity (ppth):	—		—				JD ✓ 168 ppt	ASR	JD

V 1.8 1/13/10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1305817 | SOP#: TA 07 01 | Test # 1 of 2

Test Species:
Batch #: 10.18.10 Age: <24 hrs
- [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 # 10-15-10)
- [ ] ASW
- [x] 20% DMW
- [ ] MHW
- [ ] Well

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

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

Test Started: Date 10-19-10 Time 1330

Test Ended: Date 10.23.10 Time 1130

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
(Trl)	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	5	5	5	5
	D		5	5	5	5	5	5
6.25%	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	5	5	5	5
	D		5	5	5	5	5	5
12.5%	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	5	5	5	5
	D		5	5	5	5	5	5
25%	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	5	5	5	5
	D		5	5	5	5	5	5
50%	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	5	5	5	5
	D		5	5	5	5	5	5
60%	A		5	5	5	5	5	5
	B		5	5	5	5	5	5
	C		5	5	4/1	4	4	4
	D		5	5	5	5	5	5
Checked or Verified by:			JD	JD	JD	JD	BA	JD

Food
- [x] YCT Batch# 5119110
- [x] P. subcapitata Batch# 6.24.10
- [ ] 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 # 22 X 5
min. 23.1 max. 26.6 mean ___
MF 10.29.10
Incubator #___
min.____max.____mean____
Waterbath #___
min.____max.____mean____
Room B246
min. 24.9 max. 25.8 mean ___
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

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

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 5% LC50: > 60%
Calculated LC50 (Definitive) 95% CI_____ Method_____

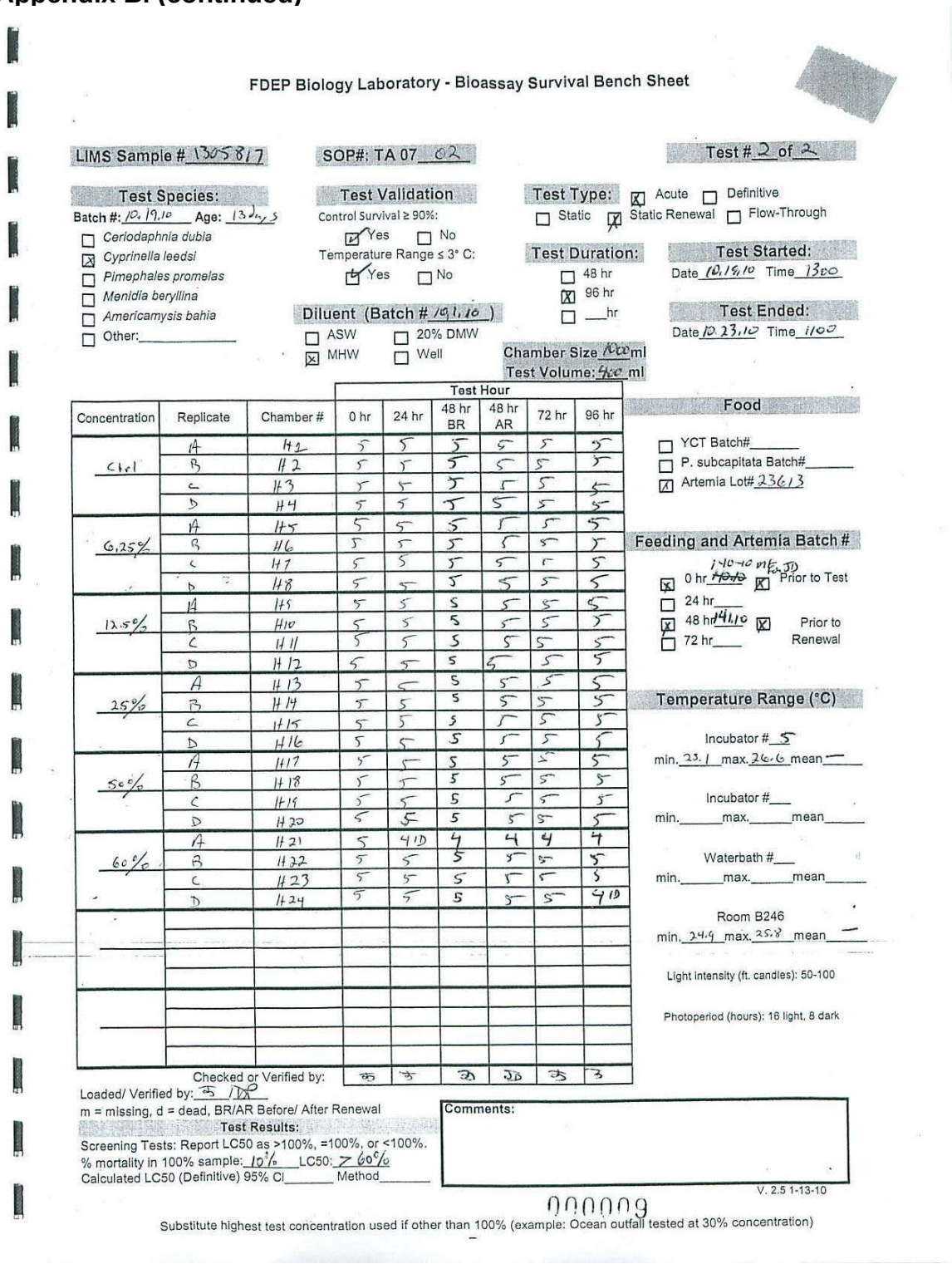
Comments: Sample diluted to 60% per permitted requirement. MF 10-29-10

V. 2.5 1-13-10

000018

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 # 1305817 SOP#: TA 07 02 Test # 2 of 2

Test Species: Batch #: 10.19.10 Age: 13 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 # 191.10)
☐ ASW ☐ 20% DMW ☒ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 10.19.10 Time 1300

Test Ended: Date 10.23.10 Time 1100

Chamber Size 1000 ml
Test Volume: 500 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	H1	5	5	5	5	5	5
	B	H2	5	5	5	5	5	5
	C	H3	5	5	5	5	5	5
	D	H4	5	5	5	5	5	5
6.25%	A	H5	5	5	5	5	5	5
	B	H6	5	5	5	5	5	5
	C	H7	5	5	5	5	5	5
	D	H8	5	5	5	5	5	5
12.5%	A	H9	5	5	5	5	5	5
	B	H10	5	5	5	5	5	5
	C	H11	5	5	5	5	5	5
	D	H12	5	5	5	5	5	5
25%	A	H13	5	5	5	5	5	5
	B	H14	5	5	5	5	5	5
	C	H15	5	5	5	5	5	5
	D	H16	5	5	5	5	5	5
50%	A	H17	5	5	5	5	5	5
	B	H18	5	5	5	5	5	5
	C	H19	5	5	5	5	5	5
	D	H20	5	5	5	5	5	5
60%	A	H21	5	4 ID	4	4	4	4
	B	H22	5	5	5	5	5	5
	C	H23	5	5	5	5	5	5
	D	H24	5	5	5	5	5	4 ID
Checked or Verified by:			JD	JD	JD	JD	JD	JD

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

Feeding and Artemia Batch #
- ☒ 0 hr 14040 mls JD ☒ Prior to Test
- ☐ 24 hr___
- ☒ 48 hr 14110 ☒ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 5
min. 23.1 max. 26.6 mean___
Incubator #___
min.___max.___mean___
Waterbath #___
min.___max.___mean___
Room B246
min. 24.9 max. 25.8 mean___
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JD 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: 10% LC50: > 60%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

000009

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

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1305817 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)
	M	0 hr	8.1	25.6	7.9	179	
		24 hr					
Ctrl	A	48 hr BR	8.2	24.2	8.0	191	
	M	48 hr AR	8.1	24.8	7.3	206	
		72 hr					
	A	96 hr	8.3	24.8	7.7	227	
	M	0 hr	8.1	25.5	7.8	432	
		24 hr					
6.25%	A	48 hr BR	8.3	24.1	8.0	444	
	M	48 hr AR	8.2	24.7	7.4	393	
		72 hr					
	A	96 hr	8.2	25.0	7.9	444	
	M	0 hr	8.2	25.3	8.0	678	
		24 hr					
12.5%	A	48 hr BR	8.4	24.1	8.0	697	
	M	48 hr AR	8.2	24.6	7.4	620	
		72 hr					
	A	96 hr	8.3	25.1	8.0	698	
	M	0 hr	8.2	25.3	7.7	1155	
		24 hr					
25%	A	48 hr BR	8.5	24.1	8.1	1179	
	M	48 hr AR	8.3	24.5	7.5	1044	
		72 hr					
	A	96 hr	8.4	25.1	8.0	1174	
	M	0 hr	8.1	25.2	7.9	2060	
		24 hr					
50%	A	48 hr BR	8.7	24.1	8.1	2060	
	M	48 hr AR	8.2	24.4	7.7	1817	
		72 hr					
	A	96 hr	8.5	25.3	8.2	1873	
	M	0 hr	8.1	25.0	7.7	2390	
		24 hr					
60%	A	48 hr BR	8.6	24.0	8.1	2440	
	M	48 hr AR	8.3	24.4	7.8	2090	
		72 hr					
	A	96 hr	8.6	25.7	8.2	2200	
		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: ATOK
24 hr:
48 hr BR: DP
48 hr AR: JD
72 hr:
96 hr:

Page 000010 V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1305817 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)
	A	0 hr	7.8	25.6	7.8	331	
	B	24 hr	7.9	24.3	7.6	346	
Ctl	C	48 hr BR	7.9	24.4	7.4	342	
	D	48 hr AR	8.0	24.6	7.7	334	
	D	72 hr	7.8	24.0	7.1	343	
	A	96 hr	7.6	25.3	7.3	350	
	A	0 hr	8.0	25.6	7.9	586	
	B	24 hr	8.1	24.2	7.7	600	
6.25%	C	48 hr BR	8.1	24.0	7.5	598	
	D	48 hr AR	8.2	24.6	7.7	555	
	D	72 hr	7.9	24.1	7.2	568	
	A	96 hr	7.8	24.9	7.1	551	
	A	0 hr	8.1	25.7	8.0	790	
	B	24 hr	8.2	24.1	7.6	821	
12.5%	C	48 hr BR	8.3	24.0	7.6	821	
	D	48 hr AR	8.2	24.7	7.7	755	
	D	72 hr	8.1	24.0	7.4	789	
	A	96 hr	7.9	24.8	7.3	758	
	A	0 hr	8.2	25.8	8.1	1260	
	B	24 hr	8.3	24.0	7.5	1245	
25%	C	48 hr BR	8.4	24.0	7.7	1274	
	D	48 hr AR	8.3	24.7	7.8	1166	
	D	72 hr	8.3	24.0	7.4	1188	
	A	96 hr	8.1	25.3	7.4	1208	
	A	0 hr	8.1	25.9	8.1	2130	
	B	24 hr	8.4	24.1	7.6	2110	
50%	C	48 hr BR	8.5	24.3	7.7	2090	
	D	48 hr AR	8.3	24.7	7.8	1929	
	D	72 hr	8.5	24.1	7.8	1963	
	A	96 hr	8.5	25.7	7.5	2000	
	A	0 hr	8.2	25.9	8.1	2420	
	B	24 hr	8.4	24.0	7.6	2430	
60%	C	48 hr BR	8.5	24.2	7.7	2420	
	D	48 hr AR	8.3	24.8	7.8	2210	
	D	72 hr	8.5	24.0	7.7	2240	
	A	96 hr	8.5	25.0	7.3	2220	
		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:
24 hr:
48 hr BR:
48 hr AR:
72 hr:
96 hr:

Page 000011

V. 2.3 1-13-10

Appendix B. (continued)

Test ID: East Putnam County RO Dates: 10-19-10 — 10-23-10

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	√
YSI DO Probe	5905	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	√
Traceable Thermometer	#1-SN101686412 #2-SN221295527 & #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	√ Ref #3 10/19/10 - 10/23/10
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 10/29/10 JG

V 1.1 9/21/10 MF/jd

000012

Appendix C. SRT Bench Sheets and Statistical Analysis

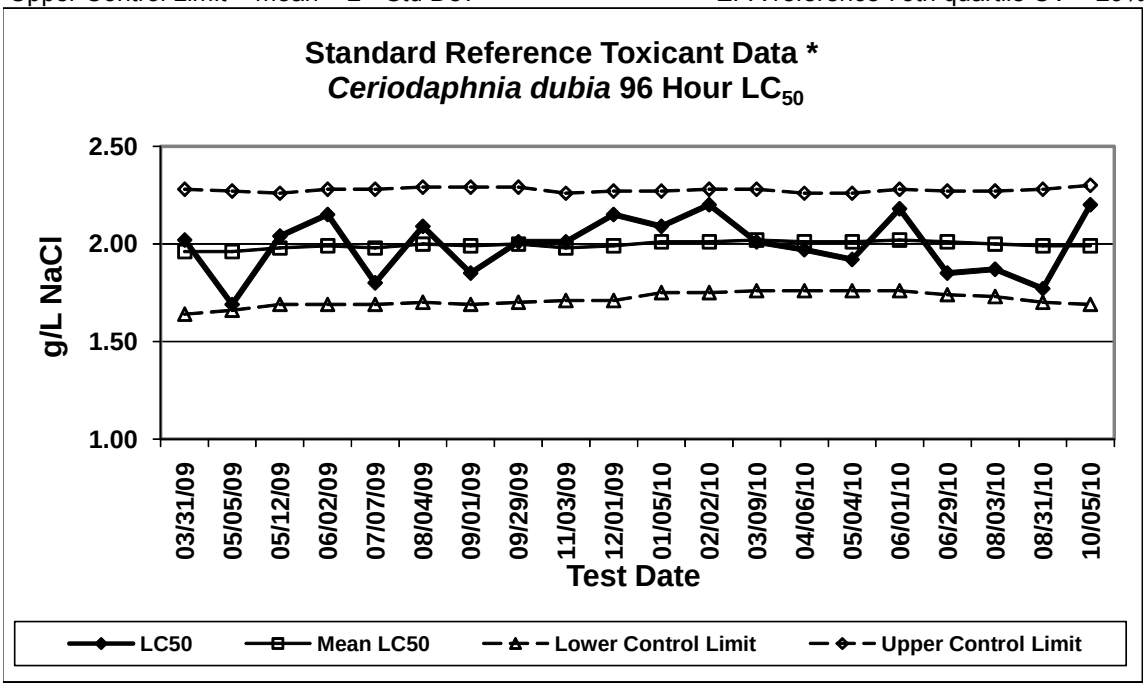
Florida Department of Environmental Protection
Bureau of Laboratories

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
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
10/05/10	2.20	1.99	0.15	1.69	2.30

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

CV = 7.57
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

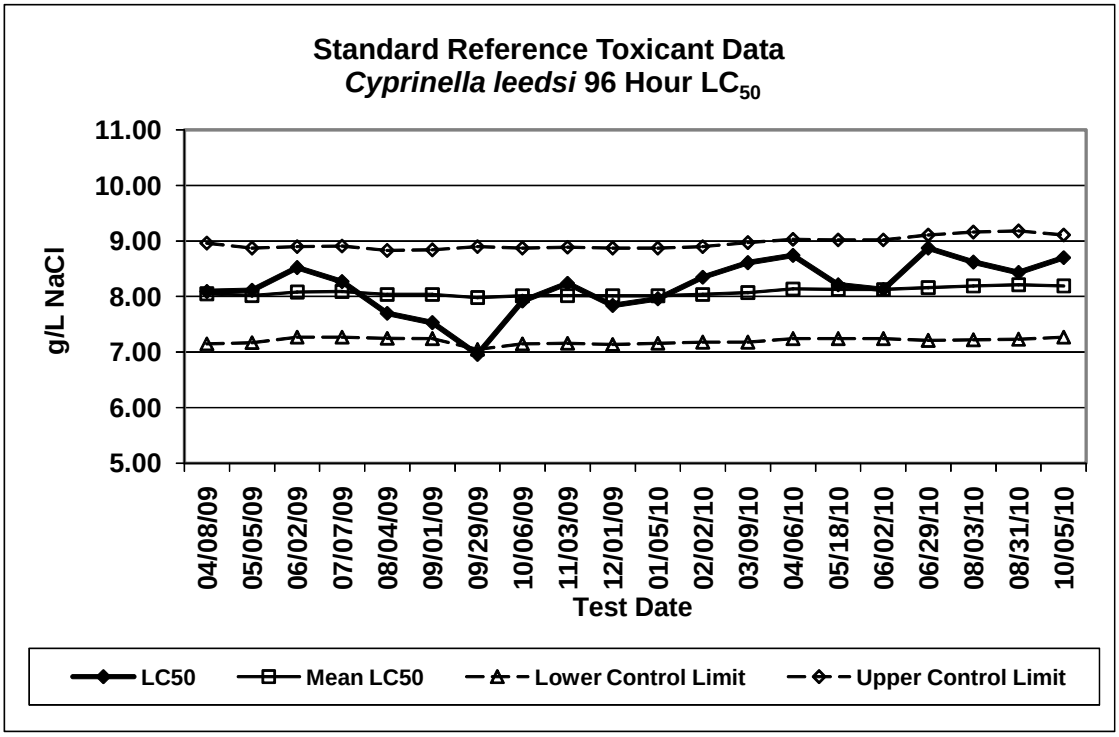
Florida Department of Environmental Protection
Bureau of Laboratories

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
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
10/05/10	8.70	8.19	0.46	7.27	9.11

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

CV = 5.63
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 110410 **Organism Batch:** 104.10 **Test Beginning:** Date: 10.5.10 Time: 1700

Toxicant/ Batch#: NaCl 110413 **Age:** 6-24 hr **Test Ending:** Date: 10-9-10 Time: 0845

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	BA/MF
Alkalinity (mg/L as $CaCO_3$):	40	TA06_08	DP
Hardness (mg.L as $CaCO_3$):	100	TA06_09	DP
Total Ammonia (mg/L as N):	<0.017	TA06_17	BA
Conductivity: (µmhos) mmhos	179	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☒ YCT	5.19.10
☒ *P. subcapitata*	6.24.10
☐ Artemia Lot #	Artemia Batch:

Chamber size: 30 mL

Test volume: 20 mL per replicate

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

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%		

Concentrations prepared by: BA

Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 25.1 max 26.5 mean ____

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min 24.9 max 25.3 mean 25.2

Concentration µg/L	mg/L	g/L	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	4 1D	4	4	4	4
			D	D	5	5	5	5	5	5
2.5			A	A	5	5	1 4D	1	1	1
			B	B	5	5	2 3D	2	2	0 2D
			C	C	5	5	0 5D	—	—	—
			D	D	5	5	2 3D	2	2	0 2D
3.0			A	A	5	5 (A)	0 (5D)	0	—	—
			B	B	5	4 (A)	0 (1D)	0	—	—
			C	C	5	4 1D	0 (4D)	0	—	—
			D	D	5	5	0 (5D)	0	—	—
4.0			A	A	5	2 3D	0 2D	0	—	—
			B	B	5	1 4D	0 1D	0	—	—
			C	C	5	0 5D	—	—	—	—
			D	D	5	0 5D	—	—	—	—
Organisms loaded by: BA			Checked by:		BA	BA	MF	MF/AR	MF	MF

Loading Verified by: AR AR = after renewal

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

Comments: (A) Transcription error BA 10.4.10

Investigators' Signatures

Bruce Neale

James Dowell

Marshall Faircloth

Ansley Barkin

Diane Power

Reviewer: Lisa Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour:	2.29	2.18	2.42
96 hour:	2.20	2.12	2.29

00 63

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: 10-5-10 Time: 1100
Test Ending: Date: 10-9-10 Time: 0845

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	8.0	24.0	7.6	0.179	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.0	8.0	0.232	
	m	48 hr AR	8.1	25.0	7.8	0.179	
	—	72 hr	—	—	—	—	
	A	96 hr	8.1	24.0	7.7	0.193	
1.5	M	0 hr	8.1	24.0	8.0	2.91	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.1	7.9	3.45	
	m	48 hr AR	8.1	25.0	7.8	2.~~80~~ 2488	
	—	72 hr	—	—	—	—	
	A	96 hr	8.1	23.9	7.9	3.20	
2.0	M	0 hr	8.1	24.0	7.9	3.92	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.0	8.0	4.53	
	m	48 hr AR	8.1	25.2	7.9	3.93	
	—	72 hr	—	—	—	—	
	A	96 hr	8.1	23.8	8.0	4.07	
2.5	M	0 hr	8.1	24.0	7.9	4.80	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.0	8.1	5.61	
	m	48 hr AR	8.1	24.8	8.0	4.81	
	—	72 hr	~~8.1 AM~~	—	—	—	
	A	96 hr	8.1	24.1	8.0	4.86	
3.0	M	0 hr	8.1	24.0	8.0	5.70	
	—	24 hr	—	—	—	~~6.69 AM~~	
	—	48 hr BR	8.1	24.1	8.0	6.69	
	—	48 hr AR	—	~~24 MF~~	—	—	
	—	72 hr	—	—	—	—	
	—	96 hr	—	—	—	—	
4.0	M	0 hr	8.1	24.0	7.9	7.45	
	—	24 hr	—	—	—	~~9.05 AM~~	
	—	48 hr BR	8.1	24.0	8.0	9.05	
	—	48 hr AR	—	—	—	—	
	—	72 hr	—	—	—	—	
	—	96 hr	—	—	—	—	

Investigators Signatures
Bree Alvillar
James Daugh
Marshall Faircloth
Brigid Howe
Amanda Perkins
Reviewed By: Steve Phillips

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

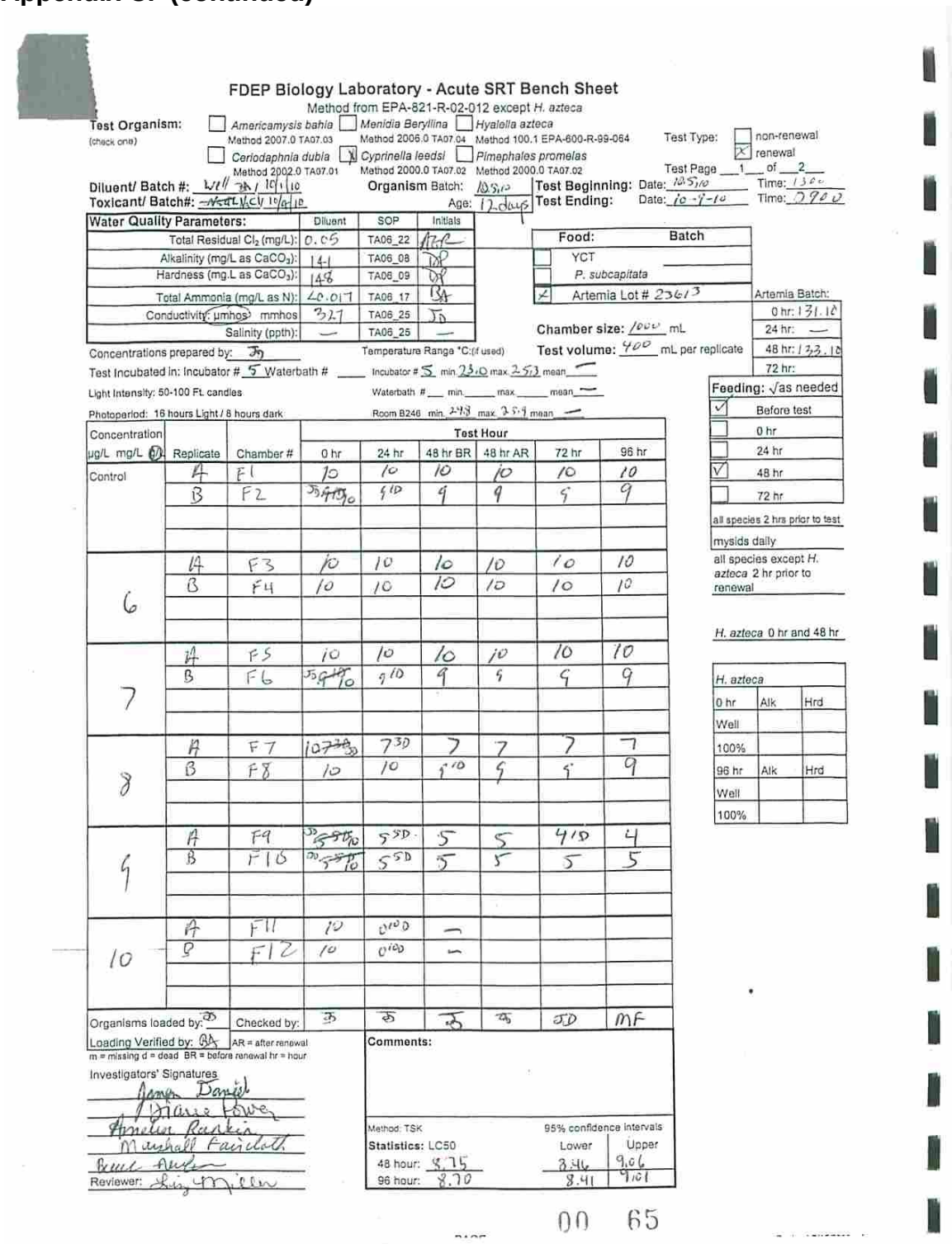
Measure/record salinity for marine tests Parameter

Comments: 24 hour ~~measurements~~ MF
4.0 Rep C NOT measured MF 10-9-10

PAGE 00 64

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 3A / 10/1/10

Toxicant/ Batch#: ~~NaCl~~ NaCl 19/9/10

Organism Batch: 10/5/10 Age: 12 days

Test Beginning: Date: 10/5/10 Time: 1300

Test Ending: Date: 10-9-10 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	0.05	TA06_22	
Alkalinity (mg/L as $CaCO_3$):	141	TA06_08	
Hardness (mg.L as $CaCO_3$):	148	TA06_09	
Total Ammonia (mg/L as N):	40.017	TA06_17	
Conductivity: µmhos mmhos	327	TA06_25	
Salinity (ppth):	—	TA06_25	—

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

Artemia Batch: 0 hr: 131.10 24 hr: — 48 hr: 133.10 72 hr:

Chamber size: 1000 mL

Test volume: 400 mL per replicate

Concentrations prepared by:

Temperature Range °C:(if used)

Test Incubated in: Incubator # 5 Waterbath # ___ Incubator # 5 min 23.0 max 25.3 mean —

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min 24.8 max 25.9 mean —

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	F1	10	10	10	10	10	10
	B	F2	~~10~~ 10	9D	9	9	9	9
6	A	F3	10	10	10	10	10	10
	B	F4	10	10	10	10	10	10
7	A	F5	10	10	10	10	10	10
	B	F6	~~10~~ 10	9D	9	9	9	9
8	A	F7	~~10~~ 10	7SD	7	7	7	7
	B	F8	10	10	9D	9	9	9
9	A	F9	~~10~~ 10	5SD	5	5	4D	4
	B	F10	~~10~~ 10	5SD	5	5	5	5
10	A	F11	10	0D	—			
	B	F12	10	0D	—			
Organisms loaded by:		Checked by:						

Loading Verified by: AR = after renewal

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

Comments:

Investigators' Signatures

James Daniel

Maria Power

Amelia Rankin

Marshall Faircloth

Reviewer: Liz Miller

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.75	8.46	9.06
96 hour: 8.70	8.41	9.01

00 65

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: 10.5.10 Time: 1320
Test Ending: Date: 10-9-10 Time: 0900

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	A	0 hr	7.8	24.7	8.13	0.327	
	B	24 hr	8.1	25.1	7.1	0.285	
	A	48 hr BR	8.3	24.4	7.6	0.298	
	A	48 hr AR	8.2	24.4	7.5	0.281	
	B	72 hr	8.2	25.2	7.3	0.294	
	A	96 hr	8.3	24.5	7.2	0.287	
6	A	0 hr	7.9	24.5	8.6	10.9	
	B	24 hr	8.0	25.0	7.2	10.93 DP	
	A	48 hr BR	8.2	24.4	7.5	11.5	
	A	48 hr AR	8.1	24.7	7.9	10.2	
	B	72 hr	8.1	25.2	7.2	11.2	
	A	96 hr	8.1	24.8	7.4	10.3	
7	A	0 hr	7.9	24.4	8.7	13.1	
	B	24 hr	8.0	24.9	7.1	13.1	
	A	48 hr BR	8.1	24.3	7.5	13.3	
	A	48 hr AR	8.0	24.5	7.8	13.2	
	B	72 hr	8.1	24.0	7.3	13.5	
	A	96 hr	8.1	24.9	7.2	13.6	
8	A	0 hr	8.0	24.2	8.7	14.7	
	B	24 hr	8.0	24.3	7.1	14.7	
	A	48 hr BR	8.2	24.4	7.7	15.1	
	A	48 hr AR	8.0	24.4	7.7	14.8	
	B	72 hr	8.1	24.6	7.1	15.0	
	A	96 hr	8.2	24.6	7.5	15.1	
9	A	0 hr	8.0	24.5	8.7	16.2	
	B	24 hr	8.0	24.2	7.0	16.3	
	A	48 hr BR	8.2	24.1	7.6	16.4	
	A	48 hr AR	8.0	24.5	7.8	16.1	
	B	72 hr	8.1	24.0	7.4	16.5	
	A	96 hr	8.1	24.5	7.2	16.5	
10	A	0 hr	7.9	24.5	8.9	18.3	
	B	24 hr	7.9	24.1	6.7	18.1	
	A in F	48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
James Dangl
Diane Tatum
Amelia Rogers
Marshall Faircloth
Bruce Neely
Reviewed By: Liz Millan

Measured by:
0 hr: JD
24 hr: DP/AR
48 hr BR: AR/DP
48 hr AR: AR/DP
72 hr: DP
96 hr: DP/MM

Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 10/5/10 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	2
2.50	20	19
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.20
95% LOWER CONFIDENCE: 2.12
95% UPPER CONFIDENCE: 2.29

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

DATE: 10/5/10 DURATION: 96 H TOXICANT : NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	1
6.00	20	0
7.00	20	1
8.00	20	4
9.00	20	11
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 8.70
95% LOWER CONFIDENCE: 8.41
95% UPPER CONFIDENCE: 9.01

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: 10/4/10

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	3 DAYS	MS101001	25	7.9	20
Menidia beryllina	150 ac	12 DAYS	SS100922	25	7.9	20
						Hardness mg/L
Cyprinella leedsi	150 ac	11 DAYS	CL100923	25	7.8	80
Pimephales promelas	150 ac	7 DAYS	FM100927	25	7.8	80
	250	<24 HRS	FM101004-0830	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: OC

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: 10/18/10

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	150	12 DAYS	CL101006	25	7.8	80
Pimephales promelas						
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

Appendix E. Chemical Analyses performed on the effluent from the East Putnam Reverse Osmosis Water Treatment Plant Outfall D-001, sampled on October 18, 2010.

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 8:45	BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
10/18/2010 8:45	BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/18/2010 8:45	BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/18/2010 8:45	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
10/18/2010 8:45	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
10/18/2010 8:45	BLANK	Metals	Copper	0.5	U	ug/L	0.5	1
10/18/2010 8:45	BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
10/18/2010 8:45	BLANK	Metals	Zinc	5	U	ug/L	5	20
10/18/2010 8:45	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
10/18/2010 8:45	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/18/2010 8:45	BLANK	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
10/18/2010 8:45	BLANK	Metals	Aluminum	60	U	ug/L	60	240
10/18/2010 8:45	BLANK	Metals	Iron	30	U	ug/L	30	120
10/18/2010 8:45	BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
10/18/2010 8:45	BLANK	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
10/18/2010 8:45	BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
10/18/2010 8:45	BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
10/18/2010 8:45	BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
10/18/2010 8:45	BLANK	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
10/18/2010 8:45	BLANK	Nutrients	Sulfide	0.05	U	mg S/L	0.05	0.2
10/18/2010 8:45	BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
10/18/2010 8:45	BLANK	Nutrients	Color (true)	5	U	PCU	5	5
10/18/2010 8:45	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
10/18/2010 8:45	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
10/18/2010 8:45	BLANK	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
10/18/2010 8:45	BLANK	Overflow	Radium 228-Counting Error	0.4		pCi/L		
10/18/2010 8:45	BLANK	Overflow	Radium 226-Counting Error	0.1		pCi/L		
10/18/2010 8:45	BLANK	Overflow	Radium 226	0.2	U	pCi/L		
10/18/2010 8:45	BLANK	Overflow	Radium 228	0.7	U	pCi/L		
10/18/2010 8:45	BLANK	Overflow	Alpha-Counting Error	0.7		pCi/L		
10/18/2010 8:45	BLANK	Overflow	Alpha, Total	0.9	U	pCi/L		

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 8:45	BLANK	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Alpha-BHC	0.0096	U	ug/L	0.0096	0.038
10/18/2010 8:45	BLANK	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
10/18/2010 8:45	BLANK	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Beta-BHC	0.0096	U	ug/L	0.0096	0.038
10/18/2010 8:45	BLANK	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
10/18/2010 8:45	BLANK	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Ethoprop	0.096	U	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
10/18/2010 8:45	BLANK	Pesticides	Naled	0.77	UJ	ug/L	0.77	3.1
10/18/2010 8:45	BLANK	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Delta-BHC	0.0096	U	ug/L	0.0096	0.038
10/18/2010 8:45	BLANK	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Chlorpyrifos Methyl	0.096	U	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Fonofos	0.096	U	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Hexazinone	0.096	U	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Metribuzin	0.096	U	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
10/18/2010 8:45	BLANK	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
10/18/2010 8:45	BLANK	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
10/18/2010 8:45	BLANK	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
10/18/2010 8:45	BLANK	Pesticides	Heptachlor	0.0096	U	ug/L	0.0096	0.038

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 8:45	BLANK	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
10/18/2010 8:45	BLANK	Pesticides	Parathion Methyl	0.096	UJ	ug/L	0.096	0.38
10/18/2010 8:45	BLANK	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
10/18/2010 8:45	BLANK	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Methoxychlor	0.048	UJ	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
10/18/2010 8:45	BLANK	Pesticides	Diazinon	0.048	UJ	ug/L	0.048	0.19
10/18/2010 8:45	BLANK	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
10/18/2010 8:45	BLANK	Pesticides	Aldrin	0.0096	U	ug/L	0.0096	0.038
10/18/2010 8:45	BLANK	Pesticides	Gamma-BHC	0.0096	U	ug/L	0.0096	0.038
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.4	U	ug/L	9.4	38
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	U	ug/L	9.4	38
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Diethyl phthalate	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.75

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
10/18/2010 8:45	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
10/18/2010 8:45	BLANK	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.5
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	U	ug/L	4.7	19
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
10/18/2010 8:45	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
10/18/2010 8:45	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.75
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
10/18/2010 8:45	BLANK	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
10/18/2010 12:15	East Putnam RO Effluent	AGP/LN	Algal Growth Potential	3	AU	mg DryWt/L	3	3
10/18/2010 12:15	East Putnam RO Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.27	IJ	mg/L	0.2	2
10/18/2010 12:15	East Putnam RO Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
10/18/2010 12:15	East Putnam RO Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Fecal Coliforms-Membrane Filter	86		#/100 mL		
10/18/2010 12:15	East Putnam RO Effluent	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	60	L	LC50		
10/18/2010 12:15	East Putnam RO Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	60	L	LC50		
10/18/2010 12:15	East Putnam RO Effluent	Metals	Lead	1.37		ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Metals	Calcium	293		mg/L	0.37	1.5
10/18/2010 12:15	East Putnam RO Effluent	Metals	Iron	30	U	ug/L	30	120
10/18/2010 12:15	East Putnam RO Effluent	Metals	Nickel	0.35	I	ug/L	0.25	1
10/18/2010 12:15	East Putnam RO Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/18/2010 12:15	East Putnam RO Effluent	Metals	Zinc	8.3	I	ug/L	5	20
10/18/2010 12:15	East Putnam RO Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
10/18/2010 12:15	East Putnam RO Effluent	Metals	Copper	4.84		ug/L	0.5	1
10/18/2010 12:15	East Putnam RO Effluent	Metals	Sodium	306		mg/L	2.5	10
10/18/2010 12:15	East Putnam RO Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/18/2010 12:15	East Putnam RO Effluent	Metals	Arsenic	0.25	U	ug/L	0.25	1
10/18/2010 12:15	East Putnam RO Effluent	Metals	Magnesium	148		mg/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Metals	Aluminum	250		ug/L	60	240
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Color (true)	10		PCU	5	5
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Ammonia-N	0.27		mg N/L	0.01	0.02
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Total-P	0.023		mg P/L	0.004	0.01
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Alkalinity	526		mg CaCO3/L	0.65	2.5
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Kjeldahl Nitrogen	0.8		mg N/L	0.08	0.2
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Sulfate	280		mg SO4/L	4	10
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Chloride	880		mg Cl/L	4	10
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Fluoride	1.2		mg F/L	0.035	0.1
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Organic Carbon	7.2		mg C/L	1	5
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	TSS	5	I	mg/L	4	16
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	NO2NO3-N	1.5		mg N/L	0.04	0.1
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	Sulfide	0.05	U	mg S/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Nutrients	O-Phosphate-P	0.015		mg P/L	0.004	0.01
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Radium 226-Counting Error	0.3		pCi/L		
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Radium 226	2.4		pCi/L		
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Alpha, Total	10.2	U	pCi/L		
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Radium 228	0.8	U	pCi/L		

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Radium 228-Counting Error	0.5		pCi/L		
10/18/2010 12:15	East Putnam RO Effluent	Overflow	Alpha-Counting Error	6.8		pCi/L		
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Parathion Methyl	0.1	UJ	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Methoxychlor	0.05	UJ	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Diazinon	0.05	UJ	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Metalaxyl	0.25	UJ	ug/L	0.25	1
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
10/18/2010 12:15	East Putnam RO Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	58
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	58
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Diethyl phthalate	0.96	U	ug/L	0.96	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Dimethyl phthalate	9.6	U	ug/L	9.6	38
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
10/18/2010 12:15	East Putnam RO Effluent	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.77
10/18/2010 12:15	East Putnam RO Effluent	Field Parameter	pH	7.81				
10/18/2010 12:15	East Putnam RO Effluent	Field Parameter	Temperature	26.26		C		

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
10/18/2010 12:15	East Putnam RO Effluent	Field Parameter	Specific Conductance	3924		umhos/cm		
10/18/2010 12:15	East Putnam RO Effluent	Field Parameter	Dissolved Oxygen	7.87		mg/L		

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

East Putnam County RO WTP – FL0433365 – October 2010

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Malton Prifti	**Contact Number:** 904-807-3338
Facility Name (as it appears on permit): East Putnam County RO WTP	**Current Name:** same
NPDES Permit Number: FL0433365	**Permit Expiration Date:** April 3, 2011
Physical Address: 223 Putnam County Boulevard	
District: Northeast	**County:** Putnam
Function of Facility: RO WTP	
Facility Type: Industrial Wastewater	**Permitted Capacity (MGD):** 0.126 MGD Monthly Average 0.186 MGD Daily Maximum

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

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

EFD-1 Flow to surface	
Month	AADF (MGD)
Nov-09*	0.171
Dec-09	0.160
Jan-10	0.170
Feb-10	0.175
Mar-10	0.176
Apr-10	0.167
May-10	.168
Jun-09	.172
Jul-09	.181

* November 2009 was the first month of discharge.

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): NA

Description of type of Discharge:

☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): **EFF-1** - Concentrate Sample Tap Near Outfall **CAL-1**- Calculated Values **SWB-1** - Background Sampling station – US-17 Bridge.
Description of Permitted Outfall(s): (excerpted from current permit) **Surface Water Discharge:** Monitoring Group D-001: Discharge of process wastewater. A 0.126 MGD monthly average permitted discharge to the St. Johns River (Class III fresh waters) at Discharge Location D-001, which is approximately 200 feet in length and discharges at a depth of approximately 15 feet. The point of discharge is located approximately at latitude 29° 38' 23" N, longitude 81° 35' 40" W. **REUSE:** NA

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

TREATMENT FACILITIES:

This facility supplies potable water to the East Putnam County Regional Water System. The water treatment plant will draw water from an aquifer with high total dissolved solids and will utilize reverse osmosis technology to achieve drinking water standards. The process will create mineral-concentrated reject water.

The permit is for the construction and operation of a 0.126 million gallon per day (MGD) monthly average (0.186 MGD daily maximum) permitted capacity concentrate treatment and disposal system. Treatment of the concentrate includes pH adjustment and degasification. The concentrate will travel several miles through an 8-inch pipe before final discharge via a single-port high rate diffuser into the St. Johns River, Class III fresh surface water.

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 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

The Facility had an AO which was issued to address issues with Radium 226&228, Chronic Toxicity, CBOD5, and Total Nitrogen. The Interim limits called for in the AO expired on April 4, 2009.

I. Effluent Limitations and Monitoring Requirements

A. Surface Water Discharges

1. During the period beginning upon placing the system into operation and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater from Outfall D-001. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.E.3:

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	**0.126**	**0.186**		**Continuous**	**Recorder**	**EFF-1**
Oxygen, Dissolved (DO) (MG/L)			**5.0**	**Weekly**	**Grab**	**EFF-1**
BOD, Carbonaceous 5 day, 20C (MG/L)		**20**		**Monthly**	**Grab**	**EFF-1**
Solids, Total Suspended (MG/L)		**Report**		**Monthly**	**Grab**	**EFF-1**
Nitrogen, Total (MG/L)		**Report**		**Monthly**	**Grab**	**EFF-1**
Nitrogen, Total (lb./day)		**2.0**		**Monthly**	**Calc**	**CAL-1**
Nitrogen, Ammonia, Total (as N) (MG/L)		**Report**		**Monthly**	**Grab**	**EFF-1**
Nitrogen, Ammonia, Total unionized (as N) (MG/L)		**0.02**		**Monthly**	**Grab**	**EFF-1**
Temperature (C), Water (DEG.C)		**Report**		**Monthly**	**Grab**	**EFF-1**
Phosphorus, Total (as P) (MG/L)		**Report**		**Monthly**	**Grab**	**EFF-1**
Alpha, Gross Particle Activity (PCI/L)		**15**		**Monthly**	**Grab**	**EFF-1**
Radium 226 + Radium 228, Total (PCI/L)		**13.3 See Cond. I.A.5**		**Monthly**	**Grab**	**EFF-1**

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Specific Conductance (UMHO/CM)		**14,000 See Cond. I.A.5**		**Monthly**	**Grab**	**EFF-1**
pH (SU)		**8.5**	**6.0**	**Monthly**	**Grab**	**EFF-1**
Hydrogen sulfide un-ionized (MG/L)		**Report**		**Monthly**	**Grab**	**EFF-1**
Iron, Total Recoverable (MG/L)		**1.0**		**Monthly**	**Grab**	**EFF-1**
Whole Effluent Toxicity	**See Permit Condition I.A.6**					**EFF-1**

2. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.1 and as described below:

Sample Point	Description of Monitoring Location
EFF-1	Concentrate Sample Tap near Outfall
CAL-1	Calculated value

3. There shall be no discharge of floating solids or visible foam in other than trace amounts.

4. The discharge shall not cause a visible sheen on the receiving water.

5. The effluent limitations specified in I.A.1. above for the parameters listed below have been calculated to ensure compliance with the applicable water quality criteria at the boundary of the mixing zone. The Permittee's discharge shall not cause an exceedance of the Chapter 62-302.530, F.A.C., Class III fresh water quality criteria outside the described mixing zones.

Parameter	Mixing Zone Size
Combined Radium 226+228	0.28 square meters (radius of 0.3 meters)
Specific Conductance	28 square meters (radius of 3 meters)

6. The toxicity testing requirements in the upcoming permit revision and new AO will be 96-hr acute definitive tests with freshwater species, using a single grab sample. Two additional definitive follow-up tests will be required if 96-hr LC50 < 30% effluent. Per FAC Rule 62-620.620(3)(c) for facilities with a high-rate diffuser, these acute test concentrations shall start with a maximum of 60% effluent and have 5 dilution concentrations.

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

PART I: Continued

Receiving Waters: St. Johns River	**Classification (indicate whether fresh or marine):** Class III Fresh water

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
The toxicity testing requirements in the upcoming permit revision and new AO will be 96-hr acute definitive tests with freshwater species, using a single grab sample. Two additional definitive follow-up tests will be required if 96-hr LC50 < 30% effluent. Per FAC Rule 62-620.620(3)(c) for facilities with a high-rate diffuser, these acute test concentrations shall start with a maximum of 60% effluent and have 5 dilution concentrations.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
The Facility had an AO which was issued to address issues with Radium 226&228, Chronic Toxicity, CBOD5, and Total Nitrogen. The Interim limits called for in the AO expired on April 4, 2009.

Facility Mixing Zone Details (if applicable): The facility has recently submitted documentation verifying its discharge point was constructed to achieve 100:1 high-rate dilution per FAC Rule 62-4.244(3)(b). Therefore, the facility has earned the mixing zone relief for toxicity in 62-4.244(3)(b)4, which will become part of the upcoming permit revision and AO. The effluent must now comply with the 96-hr LC50 ≥ 30% effluent. The original permit also gives mixing zones for 13.3 pCi/L Combined Radium 226+228 [0.28 square meters (radius of 0.3 meters)] and 14,000 umhos/cm Specific Conductance [28 square meters (radius of 3 meters)].

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:
For November 1, 2009- July 31, 2010 (from DMR's)

Date	Parameter and Units	Limit	Result
February 2010	Ph (SU)	Min. 6.0 Max. 8.5	Min. 5.75 Max 7.20
April 2010	NOEL STATRE 7DAY CHR MYSID BAHIA (PER- CENT)	Min. 25 Per	Max. 14 Mo. Avg. 10.3
June 2010	NITROGEN, AMMONIA, TOTAL UNIONIZED (AS N) (mg/L)	Daily Max. 0.0241	Daily Max. 0.02

Appendix F. (continued)

Describe previous FYI and WQBEL study: This is the first FY3 year of the facility.

Water Quality Based Effluent Limitation (WQBEL)

The Department used the Level I Water Quality Based Effluent Limit (WQBEL) determination process, as defined in Rule 62-650.300, in evaluating and determining the appropriate effluent limits and monitoring requirements for this permit. In addition, the Department reviewed the May 2005 "Mixing Zone Analysis" Report from Jones, Edmunds & Associates, Inc., as justification for the mixing zone and final effluent limits for Combined Radium 226 + 228. The mixing zone was authorized based on compliance with the criteria in FAC Rule 62-4.244(1)(c). Administrative Order 93 -NE (AO), as mentioned above, will be issued in conjunction with this permit. The AO will require the permittee, based on actual data from the effluent stream rather than data from the raw water, to verify that the mixing zone that has been granted is appropriately sized.

The antidegradation requirements of Chapter 62-302 FAC were adequately met. Providing adequate potable water to Florida's growing population is a critical concern. The lower quality of the water in the upper Floridan aquifer necessitates the use of reverse osmosis technology to produce water of sufficient quality for potable uses. This new potable water plant is needed to provide more reliable potable water services to the area and to supply the needs of the expected growth in the area. Alternative discharge options were considered, but were determined to be economically and technologically infeasible. Reuse of the concentrate was determined to be infeasible due to the high salt content of the concentrate stream.

Appendix F. (continued)

East Putnam County RO WTP – FL0433365 – October 2010

Describe previous or current Enforcement Actions (including WLs): No comments
Describe any violations or problems noted in previous inspection: No comments
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)

East Putnam County RO WTP – FL0433365 – October 2010

PART II: Sampling Event Information	
Date(s) sample collected: 10/18/2010	Sampler(s): Malton Prifti, Bipin Adhyaru, Jeremy Parrish
Temperature (Deg C): 26.26	pH (SU):7.81
Dissolved Oxygen (mg/L): 7.87	Conductivity (umhos/cm): 3924
Total Residual Chlorine (mg/L): NA	Total Residual Chlorine - after Disinfection (mg/L): NA
Method of Chlorination: NA	Method of De-chlorination: NA

Flow During Sample Collection for each outfall(MGD): .031MGD

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):

EFD-1 Flow to surface	
Month	AADF (MGD)
Nov-09*	0.171
Dec-09	0.160
Jan-10	0.170
Feb-10	0.175
Mar-10	0.176
Apr-10	0.167
May-10	.168
Jun-09	.172
Jul-09	.181

* November 2009 was the first month of discharge.

Describe Discharge during Sampling Event:
☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify

The facility Discharges when the RO is operating.

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Appendix G. EPA End Sheet

The Bioassay of East Putnam RO WTP effluent sampled on October 18, 2010. NPDES #FL0433365.

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 4 3 3 3 6 5 11	12 1 0 1 0 1 8	18 B	19 S	20 2

Remarks

66

The Priority Pollutants Analysis of East Putnam RO WTP effluent sampled on October 18, 2010. NPDES #FL0433365.

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 4 3 3 3 6 5 11	12 1 0 1 0 1 8	18 X	19 S	20 2

Remarks

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Biological Analyses of East Putnam RO WTP effluent sampled on October 18, 2010. NPDES #FL0433365.

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 4 3 3 3 6 5 11	12 1 0 1 0 1 8	18 S	19 S	20 2

Remarks

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