

Effluent Quality Assessment

IRCUD/South County Demineralization Concentrate Discharge

Indian River County

NPDES #FL0037940

Sampled April 9, 2012

June 2012

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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IRCUD/South County Demineralization Concentrate Discharge, 1550 SW 9th Street, Vero Beach, Indian River County, Florida, 32962. NPDES #FL0037940. Effluent grab samples for biological and chemical analyses for this facility were collected on April 9, 2012.

Introduction

IRCUD /South County Demineralization Concentrate Discharge is a reverse osmosis facility which produces potable water. The facility is currently operating under Amended Consent Order (ACO) 08-1661. (See Appendix F for detailed facility information provided by William Hesser of FDEP Central District.)

Methods

Samples were collected from the EFF-01 NPDES sampling point for Outfall D-001 by Sherry Cook, William Hesser, and Phil Kane (FDEP Central 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_03, TA07_04, 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 the bioassay sample was salinity-adjusted from an apparent salinity of approximately 3.3 parts per thousand (ppth) to a salinity of approximately 7.1 ppth for the *Americamysis bahia* test. The salinity of the *Menidia beryllina* test was not adjusted. Forty Fathoms® marine mix artificial sea salts was used for the salinity adjustments. The salinity adjustments were performed in accordance with permit conditions when sample salinity is between 1 and 7 ppth (adjust sample to 7 ppth for *Americamysis bahia* and do not adjust sample for *Menidia beryllina*). The salt control used for the *Americamysis bahia* test was prepared by diluting 20 ppth salinity artificial seawater (ASW) with well water to a salinity of approximately 3.3 ppth then salting this solution with artificial sea salts to match the salinity of the appropriate test solution. The purpose of the salt controls was to confirm that there was no effect of adding artificial sea salts to the sample. There were no mortalities in the salt controls of the *Americamysis bahia* test.

An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts to meet the salinity requirements of the test species.

Results and Discussion

- **Toxicity Test Results**

  Tests were performed April 10 - 14, 2012.

Americamysis bahia 96-hour acute definitive bioassay –	LC_{50} >100%, 40%* mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute definitive bioassay –	LC_{50} > 100%, 10%* mortality in 100% sample at 96 hours

The bioassay sample was acutely toxic to the *Americamysis bahia* test organism. The chemistry results confirmed that the ion makeup of the sample was not in seawater proportions and that the apparent 3.3 ppth salinity of the sample was due to elevated levels of ground-water ions. The observed mortality in the *A. bahia* test is likely due to the seawater-ion imbalance of the sample. Previous research conducted by the FDEP Biology Section demonstrated that *A. bahia* is much more sensitive to

seawater-ion imbalances than is *M. beryllina* (Wolfe, *et al*. 1995. *Protocols for determining Major-Seawater-Ion Toxicity in Membrane-Technology Water-Treatment Concentrate*. Florida Department of Environmental Protection, Bureau of Laboratories. 96pp.) The calcium concentration was measured at 244 mg/L at 3.3 ‰ salinity. The calculated calcium concentration was 289 mg/L as tested (salinity of 7.1 ppth. This is approximately three times (3.4X) the nominal concentration for calcium in seawater of this salinity. The magnesium concentration was measured at 234 mg/L at 3.3‰ salinity. The calculated magnesium concentration was 374 mg/L as tested (salinity of 7.1 ppth). This is approximately one and one half times (1.4X) the nominal concentration for magnesium in seawater of this salinity. The elevated calcium and magnesium concentrations are two potential sources of toxicity in this sample, but other unidentified sources of toxicity cannot be ruled out without performing the major-seawater-ion imbalance toxicity testing protocols cited above.

*NOTE: In a 96-hour acute 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 3.0 AU (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). See Table 1 for AGP results and qualifiers.
- **Chemistry Results**
  Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected in the bioassay sample in the laboratory at a concentration of 0.996 mg N/L. The total ammonia concentration in the effluent grab sample collected and preserved for chemical analysis was 1.4 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was 0.15 mg/L. The effluent's unionized ammonia concentration exceeded the Class III freshwater criterion of ≤ 0.02 mg/L (62-302.530 (3) F.A.C.).

  Fluoride, total phosphorus, total nitrogen, total alpha particles, and radium 226 + 228 were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.) and/or permit conditions. Silver was detected between the laboratory method detection limit (MDL) and practical quantitation limit (PQL).

  See Table 2 for results of analytes detected in the effluent, corresponding limits, and qualifiers. 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-01 NPDES sampling point for this facility on April 9, 2012, was acutely toxic to the *Americamysis bahia* test species during the 96-hour acute definitive bioassays; but, was not toxic to the *Menidia beryllina* test organisms. The effluent's unionized ammonia concentration exceeded the Class III freshwater criterion of ≤ 0.02 mg/L (62-302.530 (3) F.A.C.). Additional effluent water quality samples collected on April 9, 2012, did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

Wolfe, *et al*. 1995. *Protocols for determining Major-Seawater-Ion Toxicity in Membrane-Technology Water-Treatment Concentrate*. Florida Department of Environmental Protection, Bureau of Laboratories. 96pp

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 IRCUD South County Demineralization Concentrate Discharge Facility on April 9, 2012.

IRCUD **NPDES # FL0037940**			
Location	**AGP (measured)**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent	3.0 AU*	64.5	95.9
* - sample salinity adjusted to 7ppt			

Table 2. Effluent limits, Class III Freshwater Criteria, chemical data, and qualifiers for samples collected from the IRCUD/ South County Demineralization Concentrate Facility on April 9, 2012.

IRCUD NPDES# FL0037940	Class III Criteria	Effluent Limits	Effluent	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	5	U
Arsenic	≤ 50	-	0.25	U
Cadmium	≤ 0.8 b	-	0.05	U
Calcium (mg/L)	-	-	244	
Chromium-III	≤ 268.2 b	-	0.3	U
Copper	≤ 30.5 b	-	0.5	U
Iron	≤ 1,000	-	30	U
Lead	≤ 18.6 b	-	0.2	U
Magnesium (mg/L)	-	-	234	
Nickel	≤ 168.5 b	-	0.25	U
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	-	0.027	I
Zinc	≤ 387.8 b	-	5	U
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.022	
Total Phosphorus	-	≤ 1.0 s	0.02	
Total Ammonia	-	-	1.4	
Un-ionized Ammonia	≤ 0.02 s	-	0.15	c
Nitrate and Nitrite	-	-	0.018	
Total Kjeldahl Nitrogen	-	-	1.9	
Organic Nitrogen	-	-	0.5	c
Total Nitrogen	-	≤ 3.0 s	1.918	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0 s	≥ 5.0 s	8.5	
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	8.2	
Conductivity (µmhos/cm)	≤ 1,275 s	≤ 6,500 s‡	5904	
Temperature (°C)	-	Report	25.2	
Salinity	-	-	3.28	£
Total Residual Chlorine (mg/L)	≤ 0.01 s	≤ 0.01s	≤ 0.03	£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.4	U
CBOD, 5 day (mg/L), N - inhibited	-	-	0.57	I
Fluoride (mg/L)	≤ 10.0 s	≤ 5.0 s	4.5	
Alpha, Total (pCi/L)	≤ 15 s	≤ 32.0 s‡	9.6	
Alpha-Counting Error (pCi/L)	-	-	6.8	
Radium 226 (pCi/L)	-	-	3.7	
Radium 226-Counting Error (pCi/L)	-	-	0.3	
Radium 228 (pCi/L)	-	-	1	U
Radium 228-Counting Error (pCi/L)	-	-	0.7	
Radium 226 + 228 (pCi/L)	≤ 5 s	≤ 5.7 s‡	3.7	c
Flow (MGD)	-	≤ 1.5	0.917	a†
Hardness (mg $CaCO_3$)	-	-	1572.88	c

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
b - Value is calculated based on hardness
s - Single sample
c - Value is calculated
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
£ - measurement taken in the FDEP laboratory
† - Measured from December 2010- November 2011
‡ - Limits from ACO 08-1661

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2012-04-09-41
FYI3 IRCUD-South Co. Demin Concentrate WTP Sampling

Requester: Michelle Fish
Field Report Prepared By: Amanda Ferree
Collected By: Cook, Hesser, Kane
Send Final Report To: ~~Gary Miller~~ Phil Kane
Sampling Agency: FDEP Central District

Customer: CEN-DIST
Project ID: FYI3
PMAS: 1143

Lab ID *	Location: IRCUD OSLO R/O 1550 SW 9th St. Vero Beach, FL 32962			☐ Comp ☒ Grab	Collection (comp begin or grab) Eastern Date ~~Time~~ Central		Composite end Eastern Date 4-9-2012 Time 0930 Central		Bottle Group(s)**
	Field ID: OSLO			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.49		Storet Station Number		A
	Matrix (include type e.g. Salt, Fresh, etc): Effluent	Temp (C): 25.21	pH: 8.22	Sample Depth ☐ m ☒ ft: surface	5904	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number: FL0037940		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: FACILITY PEOPLE ASSISTED.					
Lab ID *	Location: IRCUD OSLO R/O 1550 SW 9th St. Vero Beach, FL 32962			☐ Comp ☒ Grab	Collection (comp begin or grab) Eastern Date ~~Time~~ Central		Composite end Eastern Date 4/9/2012 Time 0930 Central		Bottle Group(s)**
	Field ID: OSLO			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.49		Storet Station Number		A
	Matrix (include type e.g. Salt, Fresh, etc): Effluent	Temp (C): 25.21	pH: 8.22	Sample Depth ☐ m ☒ ft: Surface	5904	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number: FL0037940		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: BIOASSAY FACILITY PEOPLE ASSISTED.					
Lab ID *	Location: IRCUD OSLO R/O 1550 SW 9th St. Vero Beach, FL 32962			☐ Comp ☒ Grab	Collection (comp begin or grab) Eastern Date ~~Time~~ Central		Composite end Eastern Date 4/9/2012 Time 1000Aprox Central		Bottle Group(s)**
	Field ID: OSLO			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		B
	Matrix (include type e.g. Salt, Fresh, etc): BLANK	Temp (C)	pH	Sample Depth ☐ m ☒ ft: Surface		☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number: FL0037940		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: BLANK FACILITY PEOPLE ASSISTED.					
Lab ID *	Location			☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Date Time Central		Composite 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: Bioassay Recd 10:51 4/10/12 in Tor by J.D.					

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
KANE	4-9-2012	FedEx	[illegible]	04/10/12 10:15				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: IRCUD - South County Demin Concentrate WTP

Address: 1550 9th Ave SW

City: Vero Beach County: Indian River

Contact/District: Phil Kane / Central

NPDES Permit #: FL 0037940

LIMS Job #: TLH-2012-04-10-38 LIMS Sample #: 1420910

Lims Data Entry: 4-18-12 MF Data Entry Verification: 4/19/12 JD

Sample Collection: Date: 4-9-12 Time: 0930

Hold Time Start: Date: 4-9-12 Time: 0930

Comments: A. bahia control prepared by diluting 20% ASW (4-9-12) with DI water to a salinity of ~7 ppth, a salt control was prepared by Diluting 20% ASW to ~3.3 ppth then salted to ~7.1 ppth with artificial Sea Salts

M. bahia control water was prepared by diluting 20 ppth ASW (4-9-12) with DI water to ~3.4 ppth to match the salinity of the effluent as received ~3.3 ppth,

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 MF Initial DO: ____ mg/L Final DO: ____ mg/L Duration: ____ minutes Rate: ~____ bubbles/min

Salinity adjusted (Test 1): ☑ yes ☐ no Initial Salinity: 3.3 Final Salinity: 7.1 (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:
Hans Wetter	HW
Andrew Pennington	AP
Jenna Smith	JD
Marshall Faircloth	MF
REVIEWER: Phil Kane for	

Diluent/Control Batch#:				7 ppth ASW	3.4 ppth ASW				
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):				<0.03	<0.03		0.05	AP	MF
Alkalinity (mg/L as $CaCO_3$):				186	186		420	HW	MF
Hardness (mg/L as $CaCO_3$):				—	—		—	—	—
Total Ammonia (mg/L as N):				<0.034	<0.034		0.996	MF	AP
Conductivity: ☐ µmhos ☑ mmhos				12.3	6.2		6.2	AP	MF
Salinity (ppth):				7.1	3.3		3.3	AP	MF

V 1.8 1/13/10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1420917 JD SOP#: TA 07 03 Test # 1 of 2

Test Species:
Batch #: 4-10-12 Age: 5days
- ☐ *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 #3.26.12)
☑ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☑ 96 hr ☐ ___hr

Test Started: Date 4-10-12 Time 1300

Test Ended: Date 4-14-12 Time 1000

Chamber Size 500 ml
Test Volume: 300 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
control	A	J1	5	5	5	5	5	5
	B	J2	5	5	5	5	5	5
	C	J3	5	5	5	5	5	5
	D	J4	5	5	5	5	5	5
10%	A	J5	5	5	5	5	5	5
	B	J6	5	5	5	5	5	5
	C	J7	5	5	5	5	5	5
	D	J8	5	5	5	5	5	5
20%	A	J9	5	5	5	5	5	5
	B	J10	5	5	5	5	5	5
	C	J11	5	5	5	5	5	5
	D	J12	5	5	5	5	5	5
40%	A	J13	5	5	5	5	5	5
	B	J14	5	5	5	5	5	5
	C	J15	5	5	5	5	5	4 1D
	D	J16	5	5	5	5	5	5
80%	A	J17	5	5	5	5	5	4 1D
	B	J18	5	4 1D	4	4	4	4
	C	J19	5	5	5	5	4 1D	3 1D
	D	J20	5	4 1D	4	4	4	4
100%	A	J21	5	5	5	5	4 1D	4
	B	J22	5	5	5	5	3 2D	2 1D
	C	J23	5	5	5	5	4 1D	3 1D
	D	J24	5	4 1D	4	4	4	3 1D
salt control	A	L1	5	5	5	5	5	5
	B	L2	5	5	5	5	5	5
	C	L3	5	5	5	5	5	5
	D	L4	5	5	5	5	5	5
Checked or Verified by:			AP	JD	JD	AP	JD	JD

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

Feeding and Artemia Batch #
- ☑ 0 hr 4-7-12 ☐ Prior to Test
- ☑ 24 hr 4-8-12
- ☑ 48 hr 4-9-12 ☐ Prior to Renewal
- ☑ 72 hr 4-10-12

Temperature Range (°C)
Incubator # 3
min. 24.0 max. 26.1 mean –
Incubator #___
min._____max._____mean_____
Waterbath #___
min._____max._____mean_____
Room B246
min. 24.6 max. 25.5 mean –

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

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

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 40% 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)

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 142090 SOP#: TA 07 04 Test # 2 of 2

Test Species:
Batch #: 4-10-12 Age: 13days
- ☐ 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 #3.26.12)
☑ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☑ 96 hr ☐ ___hr

Test Started: Date 4-10-12 Time 1300

Test Ended: Date 4-14-12 Time 1000

Chamber Size MF 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
control	A	B13	10	10	10	10	10	10
	B	B14	10	10	10	10	10	10
	~~A~~							
10%	A	B15	10	10	10	10	10	10
	B	B16	10	10	9D	9	9	9
20%	A	B17	10	10	10	10	10	10
	B	B18	10	9D	9	9	9	9
40%	A	B19	10	10	10	10	10	10
	B	B20	10	9D	9	9	9	9
80%	A	B21	10	10	10	10	10	10
	B	B22	10	10	10	10	10	10
100%	A	B23	10	8D	8	8	8	8
	B	B24	10	10	10	10	10	10
Checked or Verified by:			AP	JD	JD	AP	JD	JD

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

Feeding and Artemia Batch #
- ☒ 0 hr 4-7-12 ☒ Prior to Test
- ☐ 24 hr___
- ☒ 48 hr 4-9-12 ☒ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 3
min. 24.0 max. 26.1 mean –

Incubator #___
min.___max.___mean___

Waterbath #___
min.___max.___mean___

Room B246
min. 24.6 max. 25.5 mean –

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JD / AP
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: >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)

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Appendix B. (continued)

LIMS Sample # 142098 INF — FDEP Biology Laboratory - Bioassay Parameter Sheet — Test # 1 of 2

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity* (ppth)
Control	A	0 hr	7.9	25.3	7.6	12.3	7.1
	B	24 hr	8.2	25.9	7.4	12.3	7.3
	C	48 hr BR	8.0	25.0	6.4	12.5	7.3
	C	48 hr AR	7.9	24.7	6.7	12.3	7.3
	D	72 hr	8.3	24.5	5.7	12.3	7.2
	A	96 hr	8.1	25.2	6.5	13.2	7.6
10%	A	0 hr	8.0	25.6	7.5	12.5	7.2
	B	24 hr	8.2	25.9	6.9	12.5	7.3
	C	48 hr BR	8.1	25.1	6.2	12.6	~~7.3~~ 7.3
	C	48 hr AR	8.1	24.6	6.8	12.4	7.3
	D	72 hr	8.2	24.4	5.7	12.5	7.3
	A	96 hr	8.2	25.3	5.8	13.0	7.5
20%	A	0 hr	8.1	25.5	7.4	12.5	7.2
	B	24 hr	8.3	25.9	7.0	12.3	7.2
	C	48 hr BR	8.2	25.1	6.0	12.6	7.3
	C	48 hr AR	8.2	24.5	6.7	12.3	7.3
	D	72 hr	8.2	24.4	5.8	12.5	7.2
	A	96 hr	8.3	25.2	5.9	13.0	7.5
40%	A	0 hr	8.1	25.3	7.4	12.5	7.2
	B	24 hr	8.4	25.8	7.2	12.3	7.2
	C	48 hr BR	8.5	24.4	6.0	12.7	7.3
	C	48 hr AR	8.3	24.6	6.7	12.4	7.3
	D	72 hr	8.4	24.4	6.0	12.5	7.2
	A	96 hr	8.4	25.2	6.0	12.9	7.5
80%	A	0 hr	8.1	25.0	7.3	12.4	7.2
	B	24 hr	8.4	25.5	7.0	12.3	7.1
	C	48 hr BR	8.6	24.4	6.4	12.6	7.3
	C	48 hr AR	8.3	24.3	6.8	12.2	7.2
	D	72 hr	8.4	24.2	6.1	12.2	7.0
	A	96 hr	8.5	24.8	5.9	12.6	7.2
100%	A	0 hr	8.1	24.9	7.3	12.3	7.1
	B	24 hr	8.4	25.4	7.2	12.3	7.1
	C	48 hr BR	8.5	24.5	6.5	12.4	7.3
	C	48 hr AR	8.3	24.0	6.8	12.3	7.3
	D	72 hr	8.5	24.3	6.0	12.3	7.1
	A	96 hr	8.6	24.5	6.3	13.0	7.5
salt control	A	0 hr	8.3	24.8	7.3	12.3	7.1
	B	24 hr	8.4	25.4	7.3	12.6	7.3
	C	48 hr BR	8.4	~~25.0~~ 24.6	6.7	12.5	7.1
	C	48 hr AR	8.4	24.2	6.7	12.3	7.3
	D	72 hr	8.5	24.4	6.0	12.3	7.0
	A	96 hr	8.3	24.9	6.0	12.9	7.4
		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: HW/AP
24 hr: AP/JD
48 hr BR: JD
48 hr AR: JD
72 hr: JD
96 hr: JD

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1420910 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	24.9	7.7	6 6.2	3.4
	B	24 hr	8.1	24.8	7.1	6.7	3.7
Control	A	48 hr BR	8.2	25.3	7.3	6.8	3.8
	A	48 hr AR	8.1	24.9	7.4	6 6.3	3.5
	B	72 hr	7.9	25.7	6.3	6.7	3.7
	A	96 hr	8.2	25.2	6.8	6.9	3.8
	A	0 hr	8.1	25.3	7.6	6.2	3.4
	B	24 hr	8.2	24.7	7.2	6.8	3.8
10%	A	48 hr BR	8.4	25.9	7.1	6.6	3.7
	A	48 hr AR	8.2	25.0	7.4	6.1	3.4
	B	72 hr	8.1	25.7	6.2	6.4	3.6
	A	96 hr	8.3	25.4	6.9	6.7	3.6
	A	0 hr	8.1	25.4	7.5	6.3	3.4
	B	24 hr	8.3	24.6	7.1	6.6	3.7
20%	A	48 hr BR	8.4	25.9	7.1	7.0	3.9
	A	48 hr AR	8.3	25.1	7.4	6.2	3.4
	B	72 hr	8.3	25.6	6.2	6.5	3.6
	A	96 hr	8.4	25.5	7.0	6.8	3.7
	A	0 hr	8.1	25.7	7.5	6.3	3.4
	B	24 hr	8.4	24.8	7.1	6.8	3.7
40%	A	48 hr BR	8.5	25.7	7.2	6.9	3.8
	A	48 hr AR	8.3	25.3	7.7	6.2	3.4
	B	72 hr	8.4	25.7	6.5	6.4	3.5
	A	96 hr	8.5	25.5	7.1	6.7	3.6
	A	0 hr	8.2	25.9	7.4	6.1	3.3
	B	24 hr	8.4	24.8	7.0	6.8	3.7
80%	A	48 hr BR	8.6	25.5	7.2	6.6	3.7
	A	48 hr AR	8.3	25.3	7.5	5.9	3.3
	B	72 hr	8.4	25.4	6.6	6.1	3.4
	A	96 hr	8.6	25.7	7.1	6.4	3.5
	A	0 hr	8.1	25.9	7.4	6.2	3.3
	B	24 hr	8.4	24.7	7.2	7.3	4.0
100%	A	48 hr BR	8.7	25.8	7.3	7.2	4.0
	A	48 hr AR	8.3	25.5	7.6	6.3	3.5
	B	72 hr	8.5	25.9	6.7	6.5	3.6
	A	96 hr	8.7	25.5	7.1	6.7	3.7
		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: HW / AP
24 hr: AP / JD
48 hr BR: JD
48 hr AR: AP / JD
72 hr: JD
96 hr: JD

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Test ID: IRCUD South County Dates: April 10-14, 2012

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	ecs
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 4-25-12 M. Faircloth

V 1.1 9/21/10 MF/jd

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Appendix C. SRT Bench Sheets and Statistical Analysis

Florida Department of Environmental Protection
Bureau of Laboratories

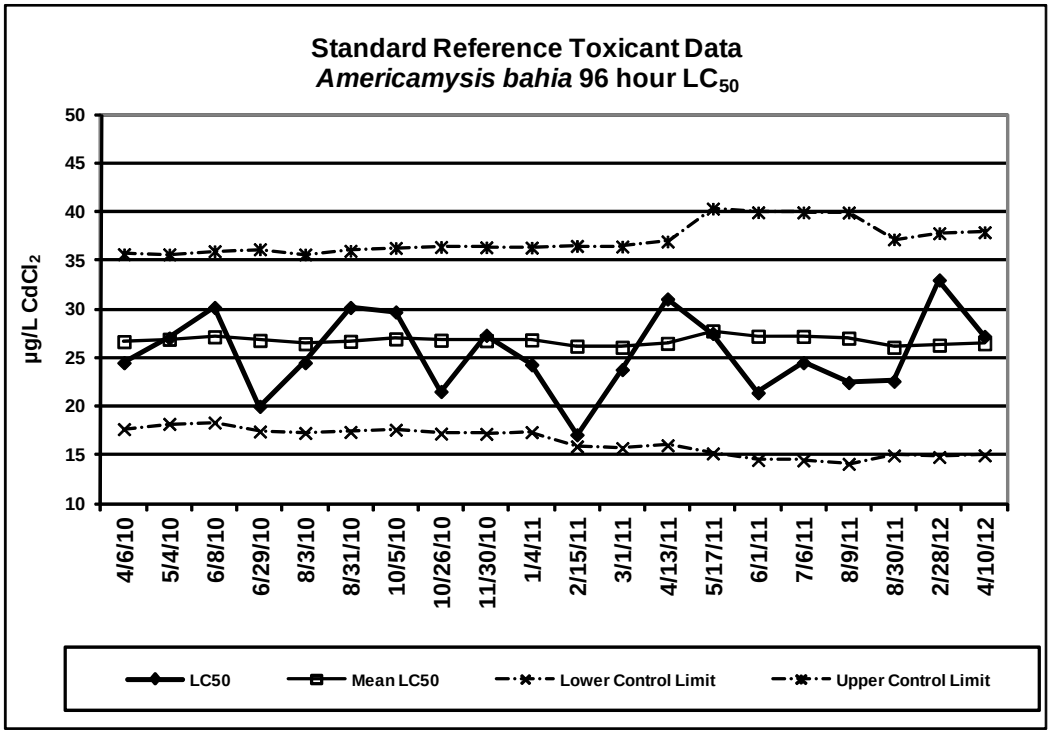
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
4/6/10	24.49	26.66	4.50	17.66	35.65
5/4/10	27.02	26.91	4.36	18.20	35.63
6/8/10	30.17	27.15	4.40	18.34	35.95
6/29/10	20.00	26.78	4.68	17.42	36.15
8/3/10	24.49	26.45	4.59	17.27	35.62
8/31/10	30.17	26.68	4.66	17.37	35.99
10/5/10	29.70	26.94	4.67	17.60	36.29
10/26/10	21.53	26.80	4.80	17.20	36.39
11/30/10	27.31	26.76	4.79	17.18	36.35
1/4/11	24.29	26.83	4.74	17.35	36.32
2/15/11	17.08	26.19	5.15	15.88	36.49
3/1/11	23.78	26.07	5.18	15.71	36.43
4/13/11	31.04	26.48	5.24	16.00	36.95
5/17/11	27.50	27.75	6.29	15.16	40.33
6/1/11	21.40	27.22	6.36	14.49	39.95
7/6/11	24.49	27.20	6.37	14.45	39.94
8/9/11	22.46	27.01	6.46	14.09	39.93
8/30/11	22.59	26.07	5.55	14.96	37.17
2/28/12	32.99	26.30	5.75	14.80	37.80
4/10/12	27.19	26.44	5.73	14.97	37.90

CV = 21.69

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

EPA reference 75th quartile CV = 26%



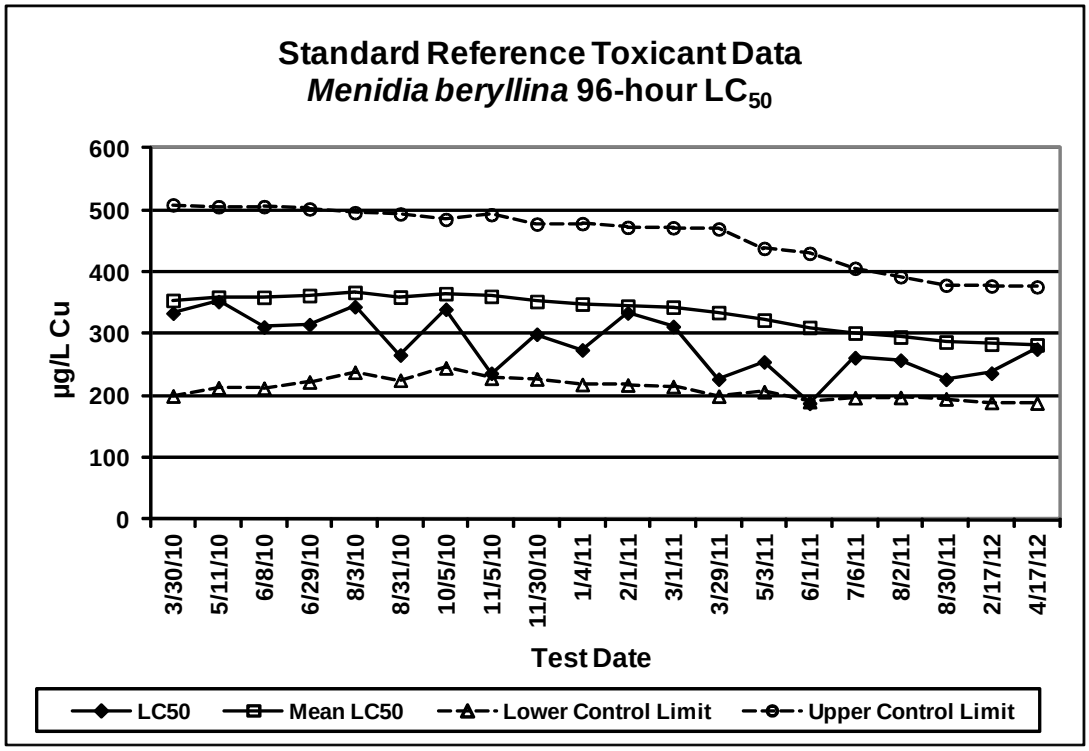
Appendix C. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories

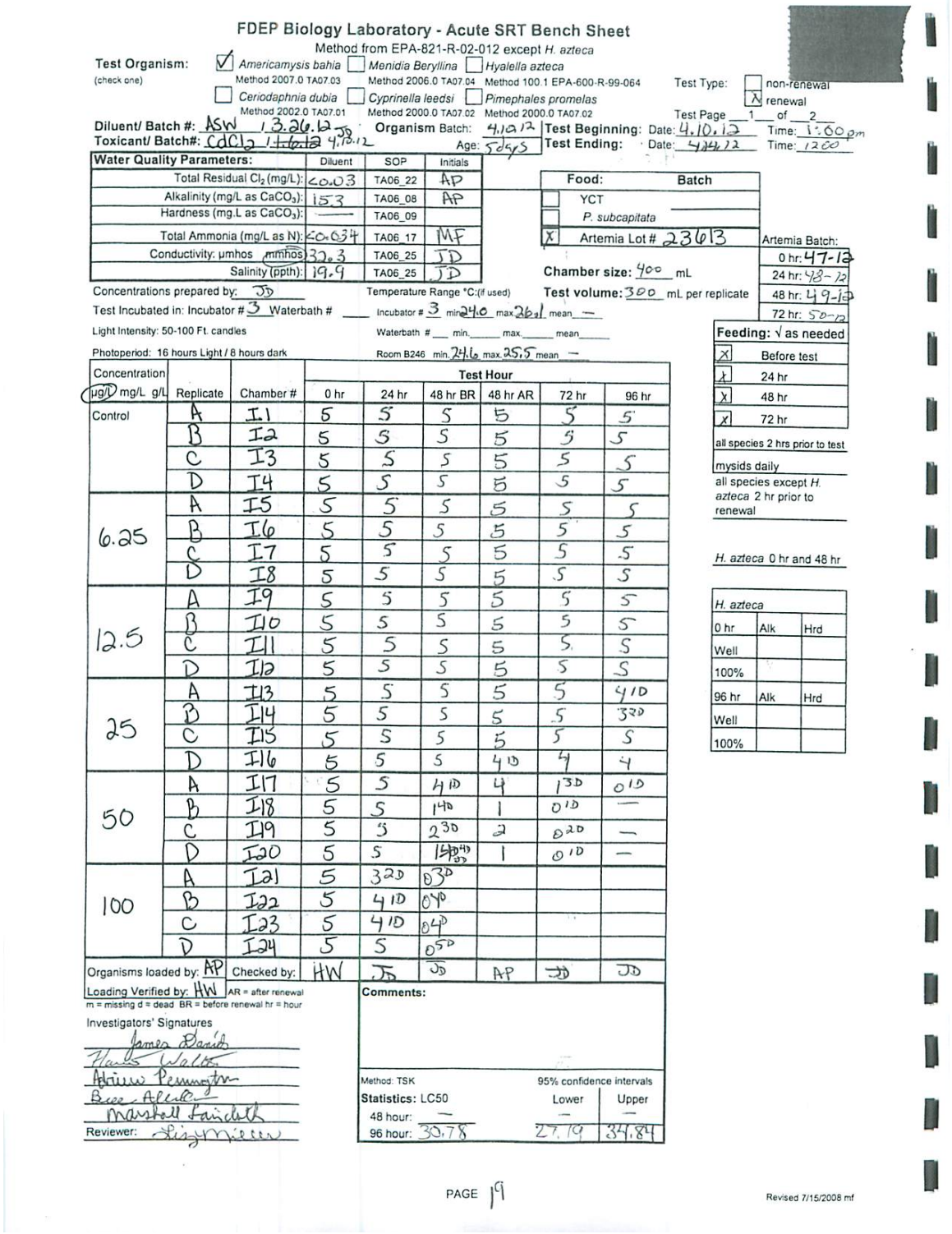
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$) as Cu

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
3/30/10	333.83	354.48	77.23	200.03	508.94
5/11/10	352.66	359.63	73.21	213.21	506.05
6/8/10	311.45	359.36	73.38	212.59	506.13
6/29/10	315.29	362.43	69.94	222.56	502.31
8/3/10	344.21	367.37	64.53	238.31	496.42
8/31/10	266.23	359.85	67.19	225.46	494.23
10/5/10	340.06	365.40	60.01	245.39	485.42
11/5/10	236.68	360.93	66.11	228.71	493.15
11/30/10	299.75	352.65	62.62	227.41	477.89
1/4/11	274.39	348.59	65.00	218.58	478.60
2/1/11	334.16	345.13	63.77	217.60	472.66
3/1/11	312.31	343.58	64.19	215.20	471.96
3/29/11	227.2	334.81	67.59	199.62	470.00
5/3/11	255.03	322.69	57.93	206.82	438.55
6/1/11	188.24	310.77	59.92	190.93	430.62
7/6/11	261.89	301.82	52.33	197.15	406.48
8/2/11	257.93	295.20	48.81	197.58	392.81
8/30/11	226.9	287.16	45.93	195.30	379.02
2/17/12	236.77	283.69	47.03	189.63	377.76
4/17/12	275.73	282.54	46.92	188.69	376.38

CV = 16.61
EPA reference 75th quartile CV = 21%



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 #: ASW 1.3.26.12 JD **Organism Batch:** 4.10.12 **Test Beginning:** Date: 4.10.12 Time: 1:00 pm
Toxicant/ Batch#: $CdCl_2$ ~~1.16.12~~ 4.10.12 **Age:** 5days **Test Ending:** Date: 4.14.12 Time: 1200

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AP
Alkalinity (mg/L as $CaCO_3$):	153	TA06_08	AP
Hardness (mg.L as $CaCO_3$):	—	TA06_09	
Total Ammonia (mg/L as N):	<0.634	TA06_17	MF
Conductivity: µmhos (mmhos)	32.3	TA06_25	JD
Salinity (ppth):	19.9	TA06_25	JD

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

Artemia Batch:
0 hr: 47-12
24 hr: 48-12
48 hr: 49-12
72 hr: 50-12

Concentrations prepared by: JD
Test Incubated in: Incubator # 3 Waterbath # ___
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:(if used)
Incubator # 3 min 24.0 max 26.1 mean —
Waterbath # ___ min. ___ max. ___ mean ___
Room B246 min. 24.6 max. 25.5 mean —

Chamber size: 400 mL
Test volume: 300 mL per replicate

Feeding: √ as needed

☒	Before test
☒	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 g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	I1	5	5	5	5	5	5
	B	I2	5	5	5	5	5	5
	C	I3	5	5	5	5	5	5
	D	I4	5	5	5	5	5	5
6.25	A	I5	5	5	5	5	5	5
	B	I6	5	5	5	5	5	5
	C	I7	5	5	5	5	5	5
	D	I8	5	5	5	5	5	5
12.5	A	I9	5	5	5	5	5	5
	B	I10	5	5	5	5	5	5
	C	I11	5	5	5	5	5	5
	D	I12	5	5	5	5	5	5
25	A	I13	5	5	5	5	5	4 1D
	B	I14	5	5	5	5	5	3 2D
	C	I15	5	5	5	5	5	5
	D	I16	5	5	5	4 1D	4	4
50	A	I17	5	5	4 1D	4	1 3D	0 1D
	B	I18	5	5	1 4D	1	0 1D	—
	C	I19	5	5	2 3D	2	0 2D	—
	D	I20	5	5	1 ~~4D~~ 3D	1	0 1D	—
100	A	I21	5	3 2D	0 3D			
	B	I22	5	4 1D	0 4D			
	C	I23	5	4 1D	0 4D			
	D	I24	5	5	0 5D			
Organisms loaded by: AP		Checked by:	HW	JD	JD	AP	JD	JD
Loading Verified by: HW			AR = after renewal					

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

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

Investigators' Signatures
James Davis
Hans Walter
Adrienne Pennington
Bree Allen
Marshall Faircloth

Reviewer: Lizy Nieves

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour:	—	—
96 hour: 30.78	27.19	34.84

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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: 4.10.12 Time: 1300
Test Ending: Date: 4.14.12 Time: 1200

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	8.1	24.8	6.8	32.3	19.9
	B	24 hr	8.1	24.1	7.0	34.0	21.1
	C	48 hr BR	8.0	24.0	6.4	34.5	21.3
	C	48 hr AR	8.1	24.0	6.5	32.2	19.3
	D	72 hr	7.9	24.0	5.5	33.1	20.4
	A	96 hr	7.9		6.4	34.0	21.3
6.25	A	0 hr	8.1	24.9	6.7	32.7	20.2
	B	24 hr	8.1	24.0	6.9	34.2	21.2
	C	48 hr BR	8.0	24.1	5.8	33.8	21.1
	C	48 hr AR	8.2	24.1	6.5	32.6	19.6
	D	72 hr	8.0	24.0 JD	5.4	32.8	20.4
	A	96 hr	8.0		6.7	33.5	21.2
12.5	A	0 hr	8.1	24.9	6.5	32.6	20.1
	B	24 hr	8.1	24.0	6.9	33.8	21.1
	C	48 hr BR	8.0	24.0	5.8	33.6	21.0
	C	48 hr AR	8.2	24.2	6.4	32.9	19.8
	D	72 hr	8.0	24.0	5.4	33.0	20.0
	A	96 hr	8.0		6.6	33.8	21.2
25	A	0 hr	8.1	25.0	6.6	32.7	20.2
	B	24 hr	8.1	24.0	6.9	34.4	21.4
	C	48 hr BR	8.0	24.0	5.8	34.2	21.3
	C	48 hr AR	8.1	24.1	6.3	33.0	20.0
	D	72 hr	8.0	24.0	5.5	32.8	20.4
	A	96 hr	8.0		6.6	34.3	21.7
50	A	0 hr	8.1	24.9	6.8	32.7	20.2
	B	24 hr	8.1	24.0	6.8	34.4	20.9
	AP A C	48 hr BR	8.0	24.0	6.0	34.4	21.4
	C	48 hr AR	8.1	24.0	6.3	33.5	20.4
	D	72 hr	8.0	24.0	5.5	33.3	20.5
	A	96 hr	8.0		6.5	34.6	21.9
100	A	0 hr	8.1	25.1	6.9	32.9	20.4
	B	24 hr	8.1	24.1	6.9	33.9	21.1
	AP A C	48 hr BR	8.1	24.0	6.5	33.9	21.1
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
James Planik
Mark Walters
Adrienne Pennington
Bruce Ascue
Marshall Faircloth
Reviewed By: Liz Miller

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

Measure/record salinity for marine tests

Comments:

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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 #: ASW 1.4.9.12

Toxicant/ Batch#: $CuCl_2$ 1.4.16.12

Organism Batch: 4.17.12 Age: 13days

Test Beginning: Date: 4.17.12 Time: 1:30 pm

Test Ending: Date: 4.21.12 Time: 11:30

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AP
Alkalinity (mg/L as $CaCO_3$):	186	TA06_08	AP
Hardness (mg.L as $CaCO_3$):	—	TA06_09	—
Total Ammonia (mg/L as N):	<0.034	TA06_17	MF
Conductivity: µmhos mmhos	31.8	TA06_25	JD
Salinity (ppth):	19.9	TA06_25	JD

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

0 hr: 54-12
24 hr:
48 hr: 56-12
72 hr:

Chamber size: 1000 mL

Test volume: 500 mL per replicate

Concentrations prepared by: JD

Temperature Range °C:(if used)

Test Incubated in: Incubator # 3 Waterbath # ___

Incubator # 3 min 24.3 max 26.4 mean —

Waterbath # ___ min. ___ max. ___ mean ___

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Room B246 min 24.7 max 25.2 mean —

Feeding: √ as needed

☒	Before test
☐	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 g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	D1	10	10	10	10	10	10
	B	D2	10	10	10	10	10	10
100	A	D3	10	10	10	10	10	10
	B	D4	10	10	10	10	10	10
200	A	D5	10	9 1D	9	9	9	9
	B	D6	10	9 1D	9	9	9	9
300	A	D7	10	7 3D	7	7	7	7
	B	D8	10	4 6D	4	4	3 1D	3
400	A	D9	10	0 10D				
	B	D10	10	0 10D				
500	A	D11	10	0 10D				
	B	D12	10	0 10D				
Organisms loaded by: AP		Checked by:	MF	AP	JD	JD	JD	AP

Loading Verified by: MF AR = after renewal

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

Comments:

Investigators' Signatures

Adrienne Pennington

James Daniel

Bruce Neale

Marshall Faircloth

Reviewer: Lisa Miller

Method: TSK

Statistics: LC50

	95% confidence intervals Lower	Upper
48 hour:	—	—
96 hour: 275.73	247.76	305.85

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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: 4,17,12 Time: 1:30pm
Test Ending: Date: 4/21/12 JD Time: 1130
hr = hour

Test Type: ☐ non-renewal ☒ renewal

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	8.1	24.9	6.8	31.8	19.9
	B	24 hr	8.0	24.1	5.8	31.2	19.7
	A	48 hr BR	8.0	24.1	6.3	32.6	20.3
	A	48 hr AR	8.1	24.7	6.7	31.6	~~31.6~~ 19.7 AP
	B	72 hr	7.6	24.0	5.6	31.6	19.7
	A	96 hr	8.0	24.7	6.9	33.3	20.7
100	A	0 hr	8.1	25.3	6.7	32.2	20.0
	B	24 hr	8.0	23.8	5.7	31.3	19.9
	A	48 hr BR	8.0	24.3	6.3	32.5	20.3
	A	48 hr AR	8.1	24.9	6.3	32.1	20.1
	B	72 hr	7.8	24.0	5.8	31.9	19.9
	A	96 hr	8.0	24.6	6.9	33.8	21.2
200	A	0 hr	8.1	25.6	7.0	32.4	20.2
	B	24 hr	8.0	23.5	5.8	31.4	19.9
	A	48 hr BR	8.0	24.1	6.4	32.4	20.2
	A	48 hr AR	8.1	24.9	6.4	32.3	20.2
	B	72 hr	7.9	24.0	5.8	31.9	19.9
	A	96 hr	8.0	24.5	7.0	33.9	21.3
300	A	0 hr	8.1	25.9	7.2	32.6	20.3
	B	24 hr	8.0	24.0	5.9	31.5	20.0
	A	48 hr BR	8.0	24.0	6.2	32.6	20.3
	A	48 hr AR	8.1	25.0	6.4	32.1	20.0
	B	72 hr	8.0	24.0	6.0	31.8	19.9
	A	96 hr	8.1	24.6	7.0	33.9	21.2
400	A	0 hr	8.1	25.9	7.2	32.2	20.0
	B	24 hr	8.0	23.4	6.0	31.2	19.8
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr		—			
500	A	0 hr	8.1	25.9	7.2	33.0	20.5
	B	24 hr	8.0	24.2	6.1	32.2	20.5
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr		—			

Investigators Signatures
James Davis
Adrienne Pennington
Kim M Spencer
Bruce Richard
Marshall Faircloth
Reviewed By: Lisa Miller

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

Measure/record salinity for marine tests

Comments:
control A, 48 hr AR: salinity = 19.7 AP

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Revised 07/15/2008 MF

Appendix C. (continued)

***Americamysis bahia* Acute Standard Reference Toxicant Test**
DATE: 4-10-12 TEST NUMBER: 1 DURATION: 96 h
TOXICANT : CdCl2
SPECIES: *Americamysis bahia*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	0
6.25	20	0
12.50	20	0
25.00	20	4
50.00	20	20
100.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 30.78
95% LOWER CONFIDENCE: 27.19
95% UPPER CONFIDENCE: 34.84

***Menidia beryllina* Acute Standard Reference Toxicant Test**
DATE: 4-17-12 DURATION: 96 h TOXICANT : CuCl2
SPECIES: *Menidia beryllina*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	0
100.00	20	0
200.00	20	2
300.00	20	10
400.00	20	20
500.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 275.73
95% LOWER CONFIDENCE: 247.76
95% UPPER CONFIDENCE: 306.85

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: 4/9/12

Ship to: FLDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 DAYS	MS120405	25	7.9	12
	150 ac	4 DAYS	MS120405	25	7.9	20
Menidia beryllina	250 ac	12 DAYS	SS120328	25	7.9	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	~~100 ac~~	~~8 DAYS~~	~~FM120401~~	~~25~~	~~7.8~~	~~80~~
	250	4-24HRS	FM120408-1630	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

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: 4/16/12

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina	250 ca	10 DAYS	SS120406	25	7.9	20
	150 ca	12 DAYS	SS120404	25	7.9	20
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	250	<24 HRS	FM120415-1610	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

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 IRCUD/ South County Demineralization Concentrate Discharge Outfall D-001, sampled on April 9, 2012.

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 9:30	OSLO	AGP/LN	Algal Growth Potential	3	AU	mg DryWt/L	3	3
4/9/2012 9:30	OSLO	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
4/9/2012 9:30	OSLO	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
4/9/2012 9:30	OSLO	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.57	I	mg/L	0.2	2
4/9/2012 9:30	OSLO	Toxicology	Bioassay-Acute-Def-SW-Mysid, LC50	100	L	LC50		
4/9/2012 9:30	OSLO	Toxicology	Bioassay-Acute-Def-SW-Fish, LC50	100	L	LC50		
4/9/2012 9:30	OSLO	Metals	Zinc	5	U	ug/L	5	20
4/9/2012 9:30	OSLO	Metals	Calcium	244		mg/L	0.75	3
4/9/2012 9:30	OSLO	Metals	Aluminum	5	U	ug/L	5	20
4/9/2012 9:30	OSLO	Metals	Silver	0.027	I	ug/L	0.025	0.1
4/9/2012 9:30	OSLO	Metals	Magnesium	234		mg/L	0.4	1.6
4/9/2012 9:30	OSLO	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/9/2012 9:30	OSLO	Metals	Chromium	0.3	U	ug/L	0.3	1.2
4/9/2012 9:30	OSLO	Metals	Arsenic	0.25	U	ug/L	0.25	1
4/9/2012 9:30	OSLO	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Metals	Nickel	0.25	U	ug/L	0.25	1
4/9/2012 9:30	OSLO	Metals	Lead	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Metals	Iron	30	U	ug/L	30	120
4/9/2012 9:30	OSLO	Metals	Copper	0.5	U	ug/L	0.5	1
4/9/2012 9:30	OSLO	Nutrients	Fluoride	4.5		mg F/L	0.035	0.1
4/9/2012 9:30	OSLO	Nutrients	Ammonia-N	1.4		mg N/L	0.1	0.2
4/9/2012 9:30	OSLO	Nutrients	Total-P	0.02		mg P/L	0.004	0.01
4/9/2012 9:30	OSLO	Nutrients	Kjeldahl Nitrogen	1.9		mg N/L	0.08	0.2
4/9/2012 9:30	OSLO	Nutrients	O-Phosphate-P	0.022		mg P/L	0.004	0.01
4/9/2012 9:30	OSLO	Nutrients	NO2NO3-N	0.018		mg N/L	0.005	0.01
4/9/2012 9:30	OSLO	Overflow	Radium 228-Counting Error	0.7		pCi/L		
4/9/2012 9:30	OSLO	Overflow	Radium 226-Counting Error	0.3		pCi/L		
4/9/2012 9:30	OSLO	Overflow	Alpha, Total	9.6		pCi/L		
4/9/2012 9:30	OSLO	Overflow	Radium 228	1	U	pCi/L		
4/9/2012 9:30	OSLO	Overflow	Alpha-Counting Error	6.8		pCi/L		
4/9/2012 9:30	OSLO	Overflow	Radium 226	3.7		pCi/L		
4/9/2012 9:30	OSLO	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.57

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 9:30	OSLO	Pesticides	Bromacil	0.19	UJ	ug/L	0.19	0.76
4/9/2012 9:30	OSLO	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
4/9/2012 9:30	OSLO	Pesticides	Malathion	0.14	U	ug/L	0.14	0.57
4/9/2012 9:30	OSLO	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
4/9/2012 9:30	OSLO	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
4/9/2012 9:30	OSLO	Pesticides	Parathion Ethyl	0.14	UJ	ug/L	0.14	0.57
4/9/2012 9:30	OSLO	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
4/9/2012 9:30	OSLO	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
4/9/2012 9:30	OSLO	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
4/9/2012 9:30	OSLO	Pesticides	Naled	0.76	U	ug/L	0.76	3
4/9/2012 9:30	OSLO	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
4/9/2012 9:30	OSLO	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.95
4/9/2012 9:30	OSLO	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.57
4/9/2012 9:30	OSLO	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Pyrene	0.2	UJ	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzidine	100	UJ	ug/L	100	400
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	60
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Diethyl phthalate	1	UJ	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	60
4/9/2012 9:30	OSLO	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Di-n-butyl phthalate	5	UJ	ug/L	5	20
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	UJ	ug/L	40	160
4/9/2012 9:30	OSLO	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Butyl benzyl phthalate	5	U	ug/L	5	20
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
4/9/2012 9:30	OSLO	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8
4/9/2012 9:30	OSLO	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	60
4/9/2012 9:30	OSLO	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.8
4/9/2012 9:30	OSLO	Field Parameter	pH	8.22				
4/9/2012 9:30	OSLO	Field Parameter	Specific Conductance	5904		umhos/cm		
4/9/2012 9:30	OSLO	Field Parameter	Salinity	3.28		PPTh		
4/9/2012 9:30	OSLO	Field Parameter	Temperature	25.21		C		
4/9/2012 9:30	OSLO	Field Parameter	Dissolved Oxygen	8.49		mg/L		
4/9/2012 10:00	EQPT BLANK	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
4/9/2012 10:00	EQPT BLANK	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
4/9/2012 10:00	EQPT BLANK	Metals	Nickel	1.19		ug/L	0.25	1
4/9/2012 10:00	EQPT BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
4/9/2012 10:00	EQPT BLANK	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
4/9/2012 10:00	EQPT BLANK	Metals	Zinc	5	U	ug/L	5	20
4/9/2012 10:00	EQPT BLANK	Metals	Copper	0.74	I	ug/L	0.5	1
4/9/2012 10:00	EQPT BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/9/2012 10:00	EQPT BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
4/9/2012 10:00	EQPT BLANK	Metals	Aluminum	5	U	ug/L	5	20
4/9/2012 10:00	EQPT BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
4/9/2012 10:00	EQPT BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
4/9/2012 10:00	EQPT BLANK	Metals	Iron	30	U	ug/L	30	120
4/9/2012 10:00	EQPT BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
4/9/2012 10:00	EQPT BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
4/9/2012 10:00	EQPT BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
4/9/2012 10:00	EQPT BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
4/9/2012 10:00	EQPT BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
4/9/2012 10:00	EQPT BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
4/9/2012 10:00	EQPT BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 10:00	EQPT BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
4/9/2012 10:00	EQPT BLANK	Overflow	Alpha, Total	0.6	U	pCi/L		
4/9/2012 10:00	EQPT BLANK	Overflow	Radium 226-Counting Error	0.1		pCi/L		
4/9/2012 10:00	EQPT BLANK	Overflow	Radium 226	0.2	U	pCi/L		
4/9/2012 10:00	EQPT BLANK	Overflow	Radium 228	1	U	pCi/L		
4/9/2012 10:00	EQPT BLANK	Overflow	Radium 228-Counting Error	0.6		pCi/L		
4/9/2012 10:00	EQPT BLANK	Overflow	Alpha-Counting Error	0.5		pCi/L		
4/9/2012 10:00	EQPT BLANK	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.78
4/9/2012 10:00	EQPT BLANK	Pesticides	Ethoprop	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Pesticides	Phorate	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Parathion Methyl	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.59
4/9/2012 10:00	EQPT BLANK	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.59
4/9/2012 10:00	EQPT BLANK	Pesticides	Fonofos	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Naled	0.78	U	ug/L	0.78	3.1
4/9/2012 10:00	EQPT BLANK	Pesticides	Alachlor	0.59	U	ug/L	0.59	2.3
4/9/2012 10:00	EQPT BLANK	Pesticides	Metolachlor	0.49	U	ug/L	0.49	2
4/9/2012 10:00	EQPT BLANK	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.59
4/9/2012 10:00	EQPT BLANK	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.98
4/9/2012 10:00	EQPT BLANK	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.78
4/9/2012 10:00	EQPT BLANK	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.78
4/9/2012 10:00	EQPT BLANK	Pesticides	Metribuzin	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Pesticides	Malathion	0.15	U	ug/L	0.15	0.59
4/9/2012 10:00	EQPT BLANK	Pesticides	Chlorpyrifos Methyl	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
4/9/2012 10:00	EQPT BLANK	Pesticides	Butylate	0.2	U	ug/L	0.2	0.78
4/9/2012 10:00	EQPT BLANK	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.78
4/9/2012 10:00	EQPT BLANK	Pesticides	Hexazinone	0.098	U	ug/L	0.098	0.39
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.94	U	ug/L	0.94	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.4	U	ug/L	9.4	38
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.5
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Diethyl phthalate	0.94	UJ	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Pyrene	0.19	UJ	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.5
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Phenol	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2-Nitrophenol	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.5
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2-Chlorophenol	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.4	U	ug/L	9.4	38
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Isophorone	0.94	U	ug/L	0.94	3.8
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.5
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.75
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Benzidine	94	U	ug/L	94	380
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	UJ	ug/L	4.7	19
4/9/2012 10:00	EQPT BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11

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

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: William Hesser	Contact Number: 407-897-4170
Facility Name (as it appears on permit): IRCUD/South County Demin Concentrate Discharge	Former Names:
NPDES Permit Number: 31-FL0037940 ACO 08-1661	Permit Expiration Date: October 22, 2012
Physical Address: 1550 SW 9th Street, Vero Beach, Indian River County, Florida	
District: Central District	County: Indian River
Function of Facility: Potable Water Production via Reverse Osmosis	
Facility Type: Reverse Osmosis	Permitted Capacity (MGD): 1.5 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 0.917 MGD (December, 2010 – November, 2011)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): NONE	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

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Appendix F. (continued)

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): An existing maximum daily flow of 1.5 MGD discharges to the South County Relief Canal (Class III Fresh waters), D-001.
Description of Permitted Outfall(s): The R/O concentrate is transmitted from the WTP to the point of discharge at the South Relief Canal via a 3,650 foot long force main. The 14-inch diameter pipe outfall line is approximately 15 feet in length, discharges at a depth of approximately 3.0 feet and the point of discharge is located approximately at latitude 27° 36' 6.11" N, longitude 80° 23' 53.28" W. The Outfall D-001 is downstream of a control structure (salinity barrier/dam) and approximately 10,000 feet upstream of the South Relief Canal's confluence with the Indian River.
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): The Demineralization Concentrate is chlorinated to treat Hydrogen Sulfide and aerated to remove the chlorine residual.

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 (Leave cell blank if not applicable)

Surface Water Discharges

1. During the period beginning with the date of permit issuance and lasting through the expiration date of this permit – unless the expiration date is extended in writing - the facility shall sample the discharges at D-001 as follows:

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	1.2	1.5	--	Daily	Meter*	FLW-01
Flow (MGD)	Report Calculate Calendar Month Average daily flow using Daily Maximum flow Values[i]	--	-	Monthly	Calculate[i]	FLW-01
pH (SU)	--	8.5	6.0	Monthly	Meter	EFF-01
Phosphorus, Total (as P) (MG/L)	Report[ii]	1.0	--	Monthly	Grab	EFF-01
Nitrogen, Total (MG/L)	Report[ii]	3.0	--	Monthly	Grab	EFF-01
Nitrogen Total (as N) (lbs/calendar month)	Report[iii] Calculated Mass Load Value for Calendar Month	--	--	-	Calculate[a]	EFF-01

Appendix F. (continued)

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Phosphorus, Total (as P) (lbs/calendar month)	Report[iii] Calculated Mass Load Value for Calendar Month	--	--	-	Calculate[a]	EFF-01
Nitrogen Total (as N) (lbs/calendar year)	-	4636	--	Monthly	Calculate[b]	EFF-01
Phosphorus, Total (as P) (lbs/calendar year)	-	291	--	Monthly	Calculate[b]	EFF-01
Hydrogen Sulfide un-ionized (MG/L)	Report	Report	--	Monthly	Grab	EFF-01
Oxygen, Dissolved (DO) (MG/L)	--	--	5.0	Monthly	Meter	EFF-01
Fluoride, Total (as F) (MG/L)	5.0	5.0	--	Monthly	Grab	EFF-01
Chlorine, Total Residual (MG/L)	0.010	0.010	--	Monthly	Grab	EFF-01
Temperature (F), Water (DEG.F)	Report	Report	--	Monthly	Meter*	EFF-01

These footnotes apply to Part I.A.1 and 2 above:

* For pH, D.O. and Temperature "Metered" means the test is done in the field.

** Shall not be increased more than 50% above back ground or to 1,275, whichever is greater.

(i) Total sum of daily maximum values in a calendar month divided by the number of days in that calendar month.

(ii) Total sum of all reported values in a calendar month divided by the number of sampling events in that calendar month.

(iii) Mass load shall be calculated for each calendar month as required below in footnote (a).

(a) Nitrogen and Phosphorus Mass Load Out shall be calculated by formula:
[Calendar Month Avg. daily flow as calculated in (i)] multiplied by [Avg. Concentration in that month as calculated in (ii)] multiplied by [number of days in that month] multiplied by [8.34]. These values shall be reported on Form C. See Part I.A.9.

(b) Report on Form C.

Daily Discharge - The "discharge of a pollutant" measured during a calendar day or any 24 hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutants discharged over the day. For pollutants expressed in other units of measurements; e.g., concentration, "daily discharge" is calculated as the average measurement of the pollutant over the day.

Average Monthly Discharge Limitation – The highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Maximum Daily Discharge Limitation – The highest allowable daily discharge.

2. ACO 08-1661 contains the following additional permit limits:

Effluent Limitations				Monitoring Requirements		
Parameter	**Units**	**Max/Min**	*Single Sample*	**Monitoring Frequency**	**Monitoring Location Site Number**	**Sample Type**
Alpha, Gross Particle Activity	**PCI/L**	**Maximum**	**32.0**	**Monthly**	**EFF-01**	**Grab**
Radium 226 + Radium 228, Total	**PCI/L**	**Maximum**	**5.7**	**Monthly**	**EFF-01**	**Grab**
Specific Conductance	**UMHO/CM**	**Maximum**	**6500**	**Monthly**	**EFF-01**	**Grab**
LC50 STATRE 96HOUR ACUTE Menidia beryllina(Routine)	**PERCENT**	**Minimum**	**100**	**Quarterly**	**EFF-01**	**4 grabs/24 hour***
LC50 STATRE 96HOUR ACUTE Mysidopsis bahia(Routine)	**PERCENT**	**Minimum**	**Report**	**Monthly**	**EFF-01**	**4 grabs/24 hour***

* Equally divided over a 24 hour period.

3. 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
FLW-01	Flow meter on discharge line
EFF-01	Sampling port on the discharge line
SWB-01	Ambient location upstream of the outfall D-001.

Appendix F. (continued)

PART I: Continued	
Receiving Waters: South County Relief Canal	**Classification (indicate whether fresh or marine):** Class III Fresh waters

Appendix F. (continued)

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

a. Effluent Limitation

(1) Whole effluent acute toxicity, using Menidia beryllina as the test organism, shall not exceed in any routine or in any additional follow-up test an LC50 of less than 100% effluent.

(2) Whole effluent acute toxicity, using Americamysis (Mysidopsis) bahia as the test organism shall be report only.

b. Monitoring Frequency:

(1) Americamysis (Mysidopsis) bahia routine toxicity testing shall be conducted monthly, the first starting within 30 days of the issuance of this Consent Order and lasting for the duration of this Consent Order.

(2) Menidia beryllina routine toxicity testing shall be conducted quarterly concurrent with a monthly Americamysis (Mysidopsis) bahia routine toxicity test. The first Menidia beryllina test shall start within 60 days of issuance of this Consent Order and lasting for the duration of this Consent Order.

c. Sampling Requirements:

(1) Routine tests shall be conducted on four separate grab samples collected at evenly-spaced (6-hr) intervals over a 24-hour period. The four grab samples shall be used in four bioassays for each species to be tested and shall represent one test. If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody. Sufficient sample at each sampling event shall be collected for chemical analysis of ionic imbalance ions including potassium, calcium, sodium, magnesium, chloride, bromide, and sulfate and for a Major Seawater Ion Imbalance Toxicity (MSIIT) Test. The chemical analysis is to be performed on each sample collected. The MSIIT is to be started immediately using the same effluent sample when an Americamysis (Mysidopsis) bahia bioassay has greater than 50 percent mortality in the 100% effluent dilution at or prior to 96 hours from test initiation. The MSIIT test is conducted following the protocols contained in "Technical Guidance Document for Conducting the Florida Department of Environmental Protection's Protocols for Determining Major-Seawater-Ion Imbalance Toxicity (MSIIT) in Membrane-Technology Water-Treatment Concentration", FDEP, Bureau of Laboratories, May 4, 2004. A copy of the protocol may be downloaded from the Department's Web Site. If multiple grab samples from the same sampling event have greater than 50% mortality in the 100% effluent, the MSIIT needs to be conducted on one of the grab samples, not all four.

(2) Upon successfully completing the Major Seawater Ionic Imbalance Toxicity test, and following discussion of the results with the Department as provided in 9.f.(6), the Respondent may request a reduction in test frequency for the Americamysis (Mysidopsis) bahia bioassays from monthly to quarterly. All reductions in test frequency must be approved by the Department prior to implementation.

d. Test Requirements:

(1) All routine tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 80%, 40%, 20%, and 10% effluent.

(2) The permittee shall conduct 96-hour acute static renewal toxicity tests using the mysid, Americamysis (Mysidopsis) bahia, and the inland silverside, Menidia beryllina.

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

(4) The control water and dilution water used shall be artificial seawater and diluted to the test salinity as described in EPA-821-R-02-012, Section 7.2.4. The test salinity shall be determined as follows:

(a) When the salinity of the effluent is between 1 and 7 parts per thousand (ppt), the following salinity adjustment shall be used. For the Americamysis bahia bioassays, the effluent and the control (0% effluent) shall be adjusted to a salinity of 7 ppt for the 100% effluent test using artificial sea salts. No salinity adjustment shall be done for the Menidia beryllina bioassay test. The salinity of the control/dilution water (0% effluent) shall match the test salinity of the effluent. A salinity adjustment control should be prepared and included with the Americamysis bahia bioassay. The salinity adjustment control is intended to identify toxicity resulting from adjusting the salinity of the effluent with artificial sea salts. To prepare the salinity adjustment control, dilute the control/dilution water to the salinity of the effluent and adjust the salinity of the salinity adjustment control to 7 ppt at the same time that the salinity of the effluent is adjusted to 7 ppt, using the same artificial sea salts.

(b) When the salinity of the effluent is greater than 7 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water (0% effluent) shall match the test salinity of the effluent.

Appendix F. (continued)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

ACO 08-1661 (Additional discharge limitations and conditions)

Facility Mixing Zone Details (if applicable):
N/A

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
March, 2011	**Fluoride (mg/L)**	**5.0**	**5.1**
August, 2011	**Specific Conductance Daily Maximum (UMHO/CM)**	**6,500**	**6,700**
September, 2011	**Specific Conductance Daily Maximum (UMHO/CM)**	**6,500**	**6,800**
October, 2011	**Specific Conductance Daily Maximum (UMHO/CM)**	**6,500**	**6,600**
October, 2011-December, 2011	**Total Nitrogen, Nutrient Loading (pounds)**	**4,636**	**5,607.8**

Describe previous FYI and WQBEL study:

None

Describe previous or current Enforcement Actions (including WLs):

ACO 08-1661

Appendix F. (continued)

Describe any violations or problems noted in previous inspection:

The following statements were included as part of the Compliance Evaluation Inspection (CEI) conducted on September 21, 2011 by William Hesser:

The Total Fluoride results reported on the D001 Discharge Monitoring Reports (DMRs) for September 2010 and March 2011 exceeded the permitted limit of 5.0 milligrams per liter (mg/L).

The Total Nitrogen cumulative nutrient loading rate results reported on the D001 DMRs for December 2010 and October 2011 exceeded the permitted limit of 4,636 pounds.

The Specific Conductance results reported on the D001 DMRs for August, September, and October 2011 exceeded the interim limit of 6,500 micromhos per centimeter.

Discuss whether DMR trends within previous five years are improving or declining:

N/A

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

PART II: Sampling Event Information

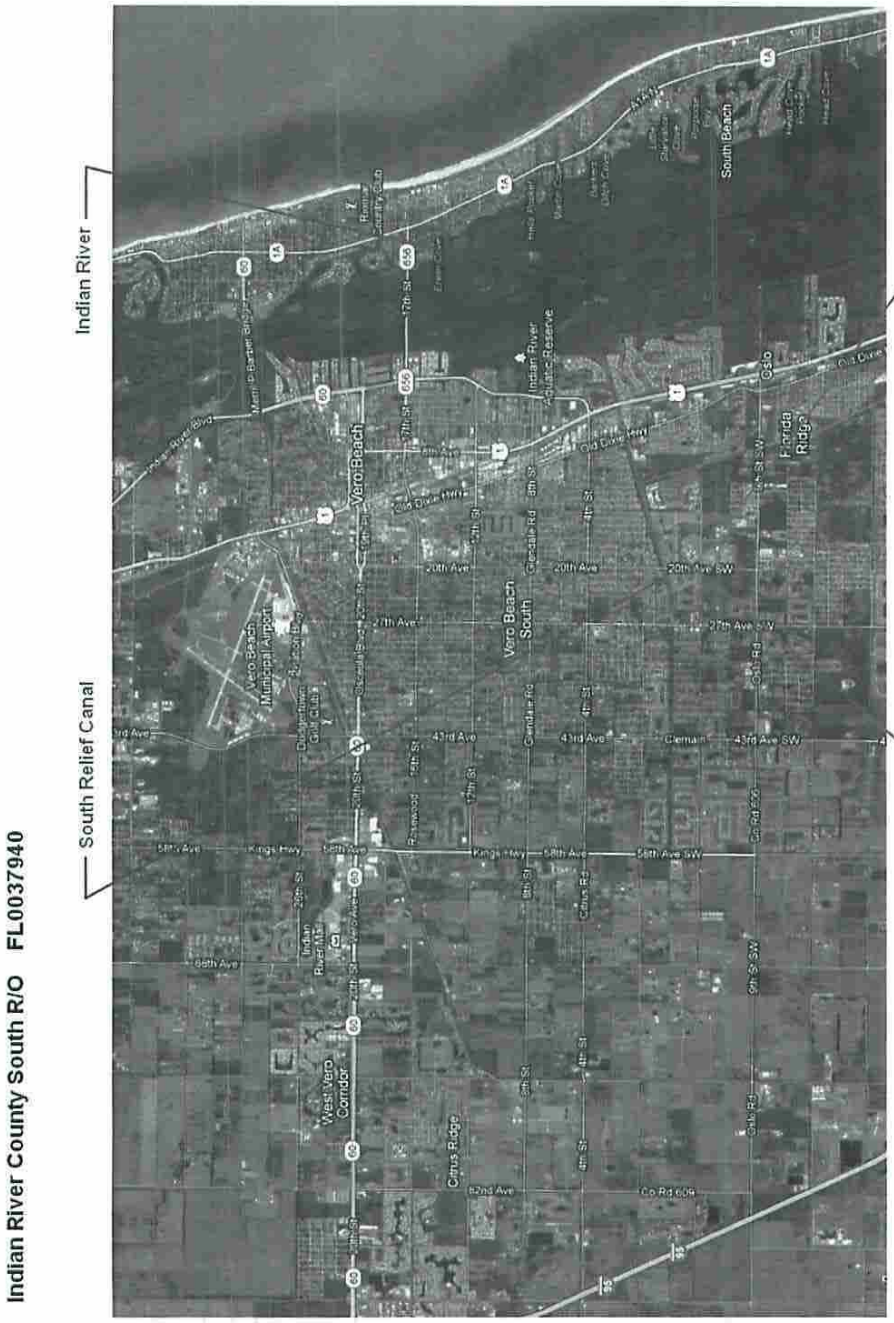
Date(s) sample collected:	**Sampler(s):**
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**

Flow During Sample Collection for each outfall(MGD):

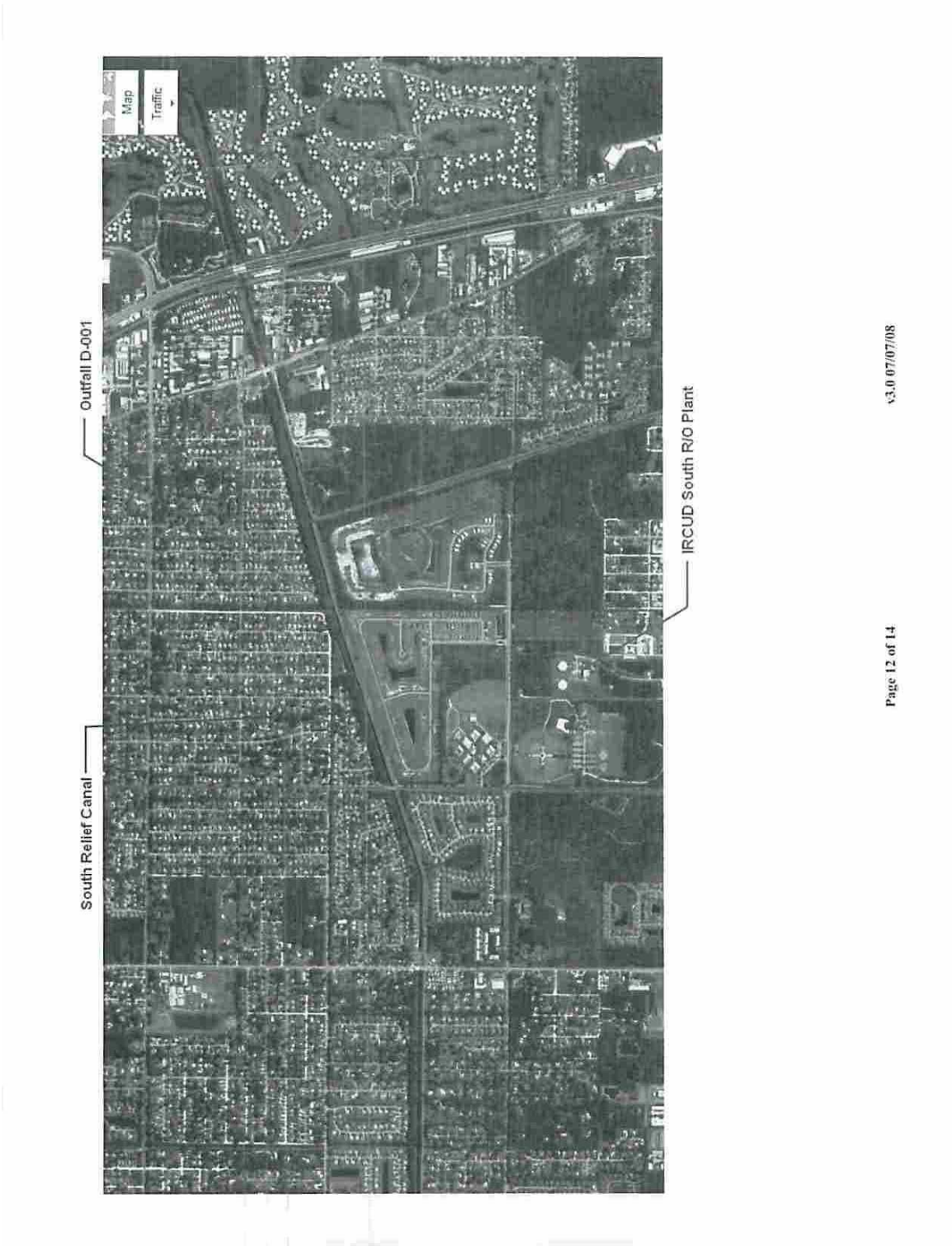
Appendix F. (continued)

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): **D-001 0.917 MGD (December, 2010 – November, 2011)**
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:

Appendix F. (continued)



Appendix F. (continued)



Appendix F. (continued)



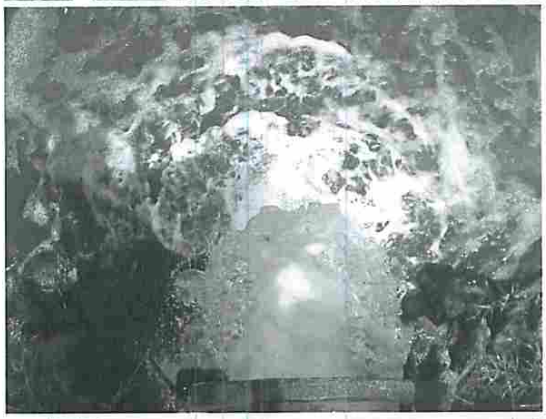
v3.0 07/07/08

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Appendix F. (continued)



Outfall D-001



Outfall D-001



South Relief Canal

Appendix G. EPA End Sheet

The Bioassay of IRCUD / South County Demineralization Concentrate Discharge sampled on April 9, 2012. NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 1 2 0 4 0 9	18 **B**	19 **S**	20 2

Remarks

66

The Priority Pollutants Analysis of IRCUD / South County Demineralization Concentrate Discharge sampled on April 9, 2012. NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 1 2 0 4 0 9	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of IRCUD / South County Demineralization Concentrate Discharge sampled on April 9, 2012. NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 1 2 0 4 0 9	18 **S**	19 **S**	20 2

Remarks

66