

Effluent Quality Assessment

South County Regional Advanced Wastewater Treatment Facility

Hillsborough County

NPDES #FL0028061

Sampled April 15, 17, and 19, 2013

August 2013

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration
Quality Manual No. 870346G
NELAC Certification No. E31780

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South County Regional Advanced Wastewater Treatment Facility (AWWTF), 520 Teco Road, Ruskin, Hillsborough County, Florida, 33570. NPDES #FL0028061.

Facility Overview

South County Regional AWWTF is an advanced domestic wastewater treatment facility which uses a Type 1 Kruger Biodenipho process. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent composite samples for toxicity testing were collected on April 15, 17, and 19, 2013. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on April 15, 2013. All samples were collected from the EFD-01 NPDES sampling point for Outfall D-003 by Ramandeep Kaur (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix C).

The 7-day chronic definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_05, TA07_09, and TA08_01 through TA08_09 (see Appendix C).

Results

Chemistry Results (See Table 1 and Appendix D)

- Total residual chlorine (0.06 and 0.05 mg/L) was detected in bioassay samples 1 and 3, respectively. Total ammonia was not detected in the bioassay samples in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.016 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.
- The effluent's carbonaceous biochemical oxygen demand (CBOD) (11 Q mg/L) exceeded the permitted limit. Bromodichloromethane, copper, fluoride, nickel, and zinc were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Atrazine and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential (See Table 2 and Appendix D)

- The effluent Algal Growth Potential (AGP) was 56.1 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen - limited. (Miller et al. 1978).
- An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts from an apparent salinity of approximately 0.41 parts per thousand (ppth) to a salinity of approximately 7.1 ppth to meet the salinity requirements of the marine test species.
- The salinity adjusted effluent algal growth potential (AGP) was 36.8 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).

Toxicity Test Results (See Appendices D- G)

- Tests were performed April 16 - 23, 2013.

Ceriodaphnia dubia 7-day chronic definitive bioassay – IC25: 5.96 %
NOEC: < 6.25 %

Pimephales promelas 7-day chronic definitive bioassay – IC25: > 100 %,
NOEC: 100 %

- The bioassay samples were chronically toxic to the *Ceriodaphnia dubia* test organisms. The cause of toxicity was attributed at least in part to the residual chlorine in the sample.
- Bioassay samples 1 and 3 were aerated for 30 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 11.3 and 10.4 mg/L to 8.5 and 8.1 mg/L, respectively.

Conclusion

The effluent samples collected from the EFD-01 NPDES sampling point for this facility on April 15, 17, and 19, 2013, were chronically toxic to the *Ceriodaphnia dubia* test organisms during the 7-day chronic definitive bioassays; but were not toxic to the *Pimephales promelas* test organisms. The effluent AGP (and corresponding salinity-adjusted AGP) results were greater than the "problem" thresholds for fresh and marine receiving waters, suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on April 15, 2013 exceeded applicable water quality standards or permit conditions for CBOD.

Literature Cited

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

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

Table 1. Effluent limits, Class III Criteria for predominantly marine waters, chemical and microbiological data, and qualifiers.

South County Regional AWWTF	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Atrazine	-	-	0.056	I
Bromodichloromethane	≤ 22.0 a	≤ 22.0 a	3.6	
Metals (µg/L unless otherwise noted)				
Arsenic	≤ 50	-	0.25	U
Cadmium	≤ 8.8	-	0.050	U
Copper	≤ 3.7	-	1.61	
Iron	≤ 300	-	30	U
Lead	≤ 8.5	-	0.20	U
Nickel	≤ 8.3	-	1.72	
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	37	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.42	
Total Phosphorus	-	≤ 2.0 p	0.65	
Total Ammonia	-	-	0.016	
Un-ionized Ammonia	-	-	< 0.02	c
Nitrate and Nitrite	-	-	0.92	
Total Kjeldahl Nitrogen	-	-	0.90	
Organic Nitrogen	-	-	0.884	c
Total Nitrogen	-	≤ 6.0 p	1.82	c
Total Organic Carbon	-	-	5.9	
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 5.0	7.30	
pH (SU)	6.5 - 8.5	6.5 - 8.5	8.29	
Temperature (°C)	-	-	25.81	
Salinity	-	-	0.52	
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	0.06	UQ£
Total Suspended Solids (mg/L)	-	≤ 10.0 p	2	I
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 p	11	Q
Fluoride (mg/L)	≤ 5.0	-	0.50	
Flow (MGD)	-	4.5 a	0.842	a*
Hardness (mg $CaCO_3$)	-	-	242.98	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	-	1	U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

c - Value is calculated

p - 24 hour flow proportioned composite

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

Q - Sample held beyond normal holding time

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

¥ - Fecal coliform analysis performed by Advanced Environmental Laboratory

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

£ - measurement taken in the FDEP laboratory

* - Measured from 03/2012 - 03/2013

Table 2. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata,* salt adjusted AGP for the saltwater species *Dunaliella tertiolecta,* and ratios of nitrogen to phosphorus.

South County Regional AWWTF						
Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent *	Marine	36.8			2.2	2.8
Effluent	Fresh	56.1	35.6 ± 7.1	69.2 ± 13.8	2.2	2.8

* - sample salinity adjusted to 7.1 ppth

Appendix A
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Pete Wenner & Ramandeep Kaur	**Contact Number:** 813-632-7600 x 474
Facility Name (as it appears on permit): South County Regional AWWTF	**Former Names:** N/A
NPDES Permit Number: FL0028061	**Permit Expiration Date:** January 14, 2014
Physical Address: 520 Teco Road, Ruskin, FL 33570	
District: SWD	**County:** Hillsborough
Function of Facility: Domestic Wastewter Treatment Facility	
Facility Type: Domestic Wastewter Treatment Facility	**Permitted Capacity (MGD):** 4.5 MGD annual average daily flow (AADF)
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

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

Monitoring Location Site Number	Description of Monitoring Location
FLW-05	Flow meter to outfall, Port Redwing Canal, D-003.
EFA-01	Sample point after disinfection.
EFB-01	After filtration and prior to disinfection.
EFD-01	Sample point after dechlorination and reaeration.
CAL-01	Calculated Total Nitrogen Loading for the discharges from South County, Falkenburg and Valrico.

Description of Permitted Outfall(s):

Surface Water Discharge: Outfalls D-001 & D-002 are no longer active permitted discharge locations.

Surface Water Discharge: An existing 4.5 MGD annual average daily flow (AADF) permitted discharge to Port Redwing Canal to Hillsborough Bay (Class III Marine Waters, WBID No. 1693) at Discharge Location (D-003). The outfall structure is approximately 20 feet in length and discharges at a depth of approximately 5 feet. D-003 is located approximately at latitude 27 ° 48' 25" N, longitude 82 ° 24' 03" W.

Intermittently discharging stormwater storage ponds for Part III Reclaimed Water:

Reclaimed water is stored in storm water storage lake system STM-01 at D-004, Bloomingdale Golf Course Storage Lake system which intermittently discharges to the Alafia River.

Reclaimed water is stored in storm water storage lake system STM-02 at D-005, Caloosa Golf Course Storage Lake system which intermittently discharges to Cypress Creek.

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

TREATMENT FACILITIES:

An existing 4.5 mgd annual average daily flow (AADF) Type I Kruger Biodenipho process advanced domestic wastewater treatment facility (currently operated as an extended aeration process) consisting of the following units: screening, grit removal with the associated odor control system, two oxidation ditches of approximately 3.96 million gallons total volume, four final settling tanks with a combined capacity of 1.2 million gallons and a combined effective surface area of approximately 11,300 square feet, four deep bed dual media filtration/denitrification filters with a combined effective surface area of 2,000 square feet, three chlorine contact tanks with a combined capacity of 0.17 million gallons, two reclaimed water storage tanks with a combined capacity of 12 million gallons located on-site and 30 million gallons storage pond located at the Tampa Electric Big Bend Station, a dechlorination/reaeration facility, two residuals gravity thickeners with a combined surface area of 600 square feet. A generator is maintained on-site for emergency backup.

Modifications: conversion of gas/solution feed chlorination systems to liquid sodium hypochlorite and conversion of gas/solution feed sulfur dioxide systems to liquid sodium bisulfite for dechlorination.

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)

			Reclaimed Water Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow (to D-003)	MGD	Maximum	4.5	Report	-	-	Continuous	Meter	FLW-05	See Cond.I.A.4
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	-	10.0	Weekly	24-hour FPC	EFA-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	-	10.0	Weekly	24-hour FPC	EFA-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	-	6.0	Weekly	24-hour FPC	EFD-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	-	2.0	Weekly	24-hour FPC	EFD-01	
Solids, Total Suspended	MG/L	Maximum	-	-	-	3.0	Weekly	Grab	EFB-01	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFD-01	See Cond.I.A.3
Coliform, Fecal, % less than detection	PERCENT	Minimum		75			Monthly	Calculation	EFA-01	See Cond.I.A.5
Coliform, Fecal	#/100ML	Maximum				25	Weekly	Grab	EFA-01	See Cond.I.A.5
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous	Meter	EFA-01	See Cond.I.A.3, 6
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	7 Days/Week	Grab	EFD-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	7 Days/Week	Grab	EFD-01	
Enterococci	#/100ML	Maximum	-	35	-	-	5/Month	Grab	EFD-01	See Cond.I.A.7
Whole Effluent Toxicity (Chronic)	Percent	Minimum	-	-	-	100	Every Three Months	24-hour FPC	EFD-01	See Cond.I.A.9
Dichlorobromomethane	UG/L	Maximum	22	Report	-	-	Monthly	Grab	EFD-01	
Nitrogen, Total (as N) South County	Tons/ Year	Maximum	Report (Ann.Total)	Report (Mo Total)	-	-	Monthly	Calculation	EFD-01	See Cond.I.A.10
Nitrogen, Total (as N) South County	Tons/ Year	Maximum	Report (5Yr Avg.)	Report (Rolling Average)	-	-	Monthly	Calculation	EFD-01	See Cond.I.A.10
Nitrogen, Total (as N) South County/Falkenburg/Valrico	Tons/ Year	Maximum	37.8 (Ann.Total)	Report (Mo Total)			Monthly	Calculation	CAL-01	See Cond.I.A.10
Nitrogen, Total (as N) South County/Falkenburg/Valrico	Tons/ Year	Maximum	28.35 (5Yr Avg.)	Report (Rolling Average)	-	-	Monthly	Calculation	CAL-01	See Cond.I.A.10

PART I: Continued	
Receiving Waters: Discharge to Port Redwing Canal to Hillsborough Bay (Class III Marine Waters, WBID No. 1693) at Discharge Location (D-003).	**Classification (indicate whether fresh or marine):** Class III Marine Waters, WBID No. 1693
Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.): See attached document entitled "South County Regional Tox Language"	
Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): N/A	
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:	
Please see attached document, "South County Regional Parameter Exceedances"	
Describe previous FYI and WQBEL study: See attached document, "South County Regional 2007 FYI3 Report	
Describe previous or current Enforcement Actions (including WLs): As a result of the Tampa Bay Reasonable Assurance process a Tampa Bay WQBEL was created which has assigned a total nitrogen load of **1.8 tons/year** to the South County Regional WWTF.	
Describe any violations or problems noted in previous inspection:	
Discuss whether DMR trends within previous five years are improving or declining:	
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):	

South County Regional AWWTF, Permit #: FL0028061; FYI3 PART II: Sampling Event Information	
Date(s) sample collected: 15 April 2013	**Sampler(s):** Ramandeep Kaur, Peter Wenner
Temperature (Deg C): 25.81	**pH (SU):** 8.29
Dissolved Oxygen (mg/L): 7.30	**Conductivity (umhos/cm):** Salinity: 0.52 PPTh
Total Residual Chlorine (mg/L): N/A	**Total Residual Chlorine - after Disinfection (mg/L):** N/A
Method of Chlorination: N/A	**Method of De-chlorination:** N/A
Flow During Sample Collection for each outfall(MGD): D-001: 1.49 MGD	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): D-001 (03/2012-03/2013): 0.842 MGD	
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:	

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-04-15-11
FYI South County Regional AWWTP Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: RAMANDEEP KAUR

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

Collected By: RAMANDEEP KAUR
Sampling Agency: FDEP - SWD
Send Final Report To: Joe Squiteri, RAMANDEEP KAUR, ADAM WOOD

Lab ID * 40693
Location: D-001
Field ID:
Matrix (include type e.g. Salt, Fresh, etc): FRESH (EFFLUENT)
Temp (C): 25.81
pH: 8.29
Latitude: ☐ dd ☐ dms
Longitude: ☐ dd ☐ dms

☐ Comp ☑ Grab
Collection (comp begin or grab) Eastern Central: Date 4/15/13 (PW) Time 1040
Composite end Eastern Central: Date Time
Tot Res Chlorine (mg/L):
Diss Oxygen (mg/L): 7.30
Storet Station Number:
Sample Depth ☑ m ☐ ft: 0.2
☑ Salinity (PPTh) ☐ Sp Conductance (umho/cm): 0.52
NPDES Number:
Bottle Group(s)**: A
Comments:

Lab ID * 40694
Location: D-001
Field ID:
Matrix (include type e.g. Salt, Fresh, etc): FRESH EFFLUEN
Temp (C):
pH:
Latitude: ☐ dd ☐ dms
Longitude: ☐ dd ☐ dms

☐ Comp ☐ Grab
Collection (comp begin or grab) Eastern Central: Date 4/14/13 Time 0600
Composite end Eastern Central: Date 4/15/13 Time 0600
Tot Res Chlorine (mg/L):
Diss Oxygen (mg/L):
Storet Station Number:
Sample Depth ☐ m ☐ ft:
☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):
NPDES Number:
Bottle Group(s)**: B
Comments:

Lab ID * 40697
Location: FIELD BLANK
Field ID:
Matrix (include type e.g. Salt, Fresh, etc): DI H_2O
Temp (C):
pH:
Latitude: ☐ dd ☐ dms
Longitude: ☐ dd ☐ dms

☐ Comp ☑ Grab
Collection (comp begin or grab) Eastern Central: Date 4/15/13 Time 1035
Composite end Eastern Central: Date Time
Tot Res Chlorine (mg/L):
Diss Oxygen (mg/L):
Storet Station Number:
Sample Depth ☐ m ☐ ft:
☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):
NPDES Number:
Bottle Group(s)**: C
Comments:

Lab ID *
Location:
Field ID:
Matrix (include type e.g. Salt, Fresh, etc):
Temp (C):
pH:
Latitude: ☐ dd ☐ dms
Longitude: ☐ dd ☐ dms

☐ Comp ☐ Grab
Collection (comp begin or grab) Eastern Central: Date Time
Composite end Eastern Central: Date Time
Tot Res Chlorine (mg/L):
Diss Oxygen (mg/L):
Storet Station Number:
Sample Depth ☐ m ☐ ft:
☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm):
NPDES Number:
Bottle Group(s)**:
Comments:

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	4/15/13:1600	FEDEX						4-16-13/9:05

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2 bioassays AP
4-16-13 10:33

Florida Department of Environmental Protection

Event ID *

Request Number: RQ-2013-04-15-11
FYI South County Regional AWWTP Sampling Inspection

Central Laboratory Sample Submittal Form

Requester: Michelle Fish

Field Report Prepared By: RAMANDEEP KAUR

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

Collected By: RAMANDEEP KAUR

Sampling Agency: FDEP - SWD

Send Final Report To: Joe Squiteri, Ramandeep Kaur, Adam Wood

Lab ID *	Location: D-001			☑ Comp ☐ Grab	Collection (comp begin or grab) (Eastern) Date 4/16/13 Time 0600 Central		Composite end (Eastern) Date 4/17/13 Time 0600 Central		Bottle Group(s)**: B
	Field ID: 40695			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (include type e.g. Salt, Fresh, etc): FRESH (EFFLUENT)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: 3rd day of Sampling - Chronic Toxicity Test					
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					
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					
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					

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
			[illegible]	4/18/13 0900	2 bio TSS 4.18.13 @ 10:00 B. Almeida			

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Event ID *

Central Laboratory Sample Submittal Form

Request Number: RQ-2013-04-15-11
FYI South County Regional AWWTP Sampling Inspection

Requester: Michelle Fish

Field Report Prepared By: Ramandeep Kaur

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

Collected By: Ramandeep Kaur.

Sampling Agency: FDEP - SWD

Send Final Report To: Joe Squiteri, Ramandeep Kaur, Adam Woods

40696

Lab ID *	Location	Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	D-001	☑ Comp ☐ Grab	Date 4-18-13 Time 0600	Date 4-19-13 Time 0600	B
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) FRESH EFFLUENT / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Comments: Last day samples for Chronic Toxicity Test.			

Lab ID *	Location	Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab	Date Time	Date Time	
	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 (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab	Date Time	Date Time	
	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 (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab	Date Time	Date Time	
	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			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
			M. Fairchild	4-20-13 0905				4/20/13 9:05

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

White Cooler 1 Jug. 5.3°C

Red Cooler 2 Jugs 4.3°C

Appendix C
Explanation of measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.floridadep.org/labs/sop/index.htm and/or http://www.floridadep.org/labs/qa/index.htm .

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of 62-302.530(6) and/or a violation of facility permit limits. Fecal coliform and enterococci results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20-60 colony forming units per plate. The B-qualifier does not affect data quality.

(5) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm$ 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(61), F.A.C.

(7) Chlorophyll *a* Content

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

(8) Definition of Qualifiers

A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate
Z - Colonies were too numerous to count (TNTC)

Appendix D
Chemical Analyses of Effluent

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 6:00	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	11	Q	mg/L	0.2	2
4/15/2013 6:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	6.25	K	NOEC		
4/15/2013 6:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100	L	IC25		
4/15/2013 6:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	5.96		IC25		
4/15/2013 6:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100		NOEC		
4/15/2013 6:00	Effluent	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
4/15/2013 6:00	Effluent	Metals	Arsenic	0.25	U	ug/L	0.25	1
4/15/2013 6:00	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/15/2013 6:00	Effluent	Metals	Chromium	0.30	U	ug/L	0.3	1.2
4/15/2013 6:00	Effluent	Metals	Lead	0.20	U	ug/L	0.2	0.8
4/15/2013 6:00	Effluent	Metals	Copper	1.61		ug/L	0.5	1
4/15/2013 6:00	Effluent	Metals	Magnesium	20.5		mg/L	0.04	0.16
4/15/2013 6:00	Effluent	Metals	Nickel	1.72		ug/L	0.25	1
4/15/2013 6:00	Effluent	Metals	Zinc	37		ug/L	5	20
4/15/2013 6:00	Effluent	Metals	Sodium	116		mg/L	0.5	2
4/15/2013 6:00	Effluent	Metals	Iron	30	U	ug/L	30	120
4/15/2013 6:00	Effluent	Metals	Calcium	63.5		mg/L	0.075	0.3
4/15/2013 6:00	Effluent	Nutrients	Total-P	0.65		mg P/L	0.005	0.05
4/15/2013 6:00	Effluent	Nutrients	NO2NO3-N	0.92		mg N/L	0.04	0.1
4/15/2013 6:00	Effluent	Nutrients	TSS	2	I	mg/L	2	10
4/15/2013 6:00	Effluent	Nutrients	Kjeldahl Nitrogen	0.90		mg N/L	0.08	0.2
4/15/2013 10:40	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	36.8		mg DryWt/L	0.3	0.9
4/15/2013 10:40	Effluent	AGP/LN	Algal Growth Potential	56.1		mg DryWt/L	0.3	0.9
4/15/2013 10:40	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.65	I	ug/L	0.55	1.7
4/15/2013 10:40	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
4/15/2013 10:40	Effluent	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	
4/15/2013 10:40	Effluent	Nutrients	Ammonia-N	0.016		mg N/L	0.002	0.005
4/15/2013 10:40	Effluent	Nutrients	Chloride	140		mg Cl/L	2	5
4/15/2013 10:40	Effluent	Nutrients	O-Phosphate-P	0.42		mg P/L	0.02	0.05
4/15/2013 10:40	Effluent	Nutrients	Color (true)	17		PCU	2.5	6
4/15/2013 10:40	Effluent	Nutrients	Fluoride	0.50		mg F/L	0.035	0.1

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:40	Effluent	Nutrients	Alkalinity	182		mg CaCO3/L	0.65	2.5
4/15/2013 10:40	Effluent	Nutrients	Sulfate	120		mg SO4/L	2	5
4/15/2013 10:40	Effluent	Nutrients	Organic Carbon	5.9		mg C/L	0.5	1
4/15/2013 10:40	Effluent	Pesticides	Bromacil	0.20	U	ug/L	0.2	0.8
4/15/2013 10:40	Effluent	Pesticides	Metolachlor	0.30	U	ug/L	0.3	1.2
4/15/2013 10:40	Effluent	Pesticides	Chlorpyrifos Methyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Ethion	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.6
4/15/2013 10:40	Effluent	Pesticides	Malathion	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Metalaxyl	0.20	U	ug/L	0.2	0.8
4/15/2013 10:40	Effluent	Pesticides	Metribuzin	0.10	U	ug/L	0.1	0.4
4/15/2013 10:40	Effluent	Pesticides	Naled	0.20	UJ	ug/L	0.2	0.8
4/15/2013 10:40	Effluent	Pesticides	Prometryn	0.10	U	ug/L	0.1	0.4
4/15/2013 10:40	Effluent	Pesticides	Ametryn	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Azinphos Methyl	0.10	U	ug/L	0.1	0.4
4/15/2013 10:40	Effluent	Pesticides	Phorate	0.025	U	ug/L	0.025	0.1
4/15/2013 10:40	Effluent	Pesticides	Fenamiphos	0.15	UJ	ug/L	0.15	0.6
4/15/2013 10:40	Effluent	Pesticides	Mevinphos	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Simazine	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.1
4/15/2013 10:40	Effluent	Pesticides	Diazinon	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Atrazine	0.056	I	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Parathion Methyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Parathion Ethyl	0.10	U	ug/L	0.1	0.4
4/15/2013 10:40	Effluent	Pesticides	Alachlor	0.30	U	ug/L	0.3	1.2
4/15/2013 10:40	Effluent	Pesticides	Fonofos	0.050	UJ	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Chlorpyrifos Ethyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:40	Effluent	Pesticides	Butylate	0.10	U	ug/L	0.1	0.4
4/15/2013 10:40	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bromodichloromethane	3.6		ug/L	0.2	0.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Benzidine	97	UJ	ug/L	97	390

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
4/15/2013 10:40	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bromodichloromethane	0.20	U	ug/L	0.2	0.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.8
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Dimethyl phthalate	0.97	U	ug/L	0.97	3.9
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
4/15/2013 10:40	Effluent	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
4/15/2013 10:40	Effluent	Field Parameter	Sample Depth	0.2		m		
4/15/2013 10:40	Effluent	Field Parameter	Salinity	0.52		PPTh		
4/15/2013 10:40	Effluent	Field Parameter	Temperature	25.81		C		
4/15/2013 10:40	Effluent	Field Parameter	Dissolved Oxygen	7.30		mg/L		
4/15/2013 10:40	Effluent	Field Parameter	pH	8.29				
4/15/2013 10:35	Blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
4/15/2013 10:35	Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
4/15/2013 10:35	Blank	Metals	Iron	30	U	ug/L	30	120
4/15/2013 10:35	Blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
4/15/2013 10:35	Blank	Metals	Copper	0.50	U	ug/L	0.5	1
4/15/2013 10:35	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
4/15/2013 10:35	Blank	Metals	Sodium	0.50	U	mg/L	0.5	2
4/15/2013 10:35	Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
4/15/2013 10:35	Blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Metals	Lead	0.20	U	ug/L	0.2	0.8
4/15/2013 10:35	Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
4/15/2013 10:35	Blank	Metals	Aluminum	5.0	U	ug/L	5	20
4/15/2013 10:35	Blank	Metals	Zinc	5.0	U	ug/L	5	20
4/15/2013 10:35	Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
4/15/2013 10:35	Blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
4/15/2013 10:35	Blank	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:35	Blank	Nutrients	Ammonia-N	0.002	U	mg N/L	0.002	0.005
4/15/2013 10:35	Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
4/15/2013 10:35	Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
4/15/2013 10:35	Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
4/15/2013 10:35	Blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
4/15/2013 10:35	Blank	Pesticides	Fenamiphos	0.15	UJ	ug/L	0.15	0.6
4/15/2013 10:35	Blank	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.6
4/15/2013 10:35	Blank	Pesticides	Parathion Methyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Ametryn	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Metribuzin	0.10	U	ug/L	0.1	0.4
4/15/2013 10:35	Blank	Pesticides	Metolachlor	0.30	U	ug/L	0.3	1.2
4/15/2013 10:35	Blank	Pesticides	Chlorpyrifos Ethyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Butylate	0.10	U	ug/L	0.1	0.4
4/15/2013 10:35	Blank	Pesticides	Bromacil	0.20	U	ug/L	0.2	0.8
4/15/2013 10:35	Blank	Pesticides	Parathion Ethyl	0.10	U	ug/L	0.1	0.4
4/15/2013 10:35	Blank	Pesticides	Naled	0.20	UJ	ug/L	0.2	0.8
4/15/2013 10:35	Blank	Pesticides	Mevinphos	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Prometryn	0.10	U	ug/L	0.1	0.4
4/15/2013 10:35	Blank	Pesticides	Diazinon	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Phorate	0.025	U	ug/L	0.025	0.1
4/15/2013 10:35	Blank	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.1
4/15/2013 10:35	Blank	Pesticides	Simazine	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
4/15/2013 10:35	Blank	Pesticides	Metalaxyl	0.20	U	ug/L	0.2	0.8
4/15/2013 10:35	Blank	Pesticides	Malathion	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Fonofos	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Chlorpyrifos Methyl	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Azinphos Methyl	0.10	U	ug/L	0.1	0.4
4/15/2013 10:35	Blank	Pesticides	Atrazine	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Pesticides	Alachlor	0.30	U	ug/L	0.3	1.2
4/15/2013 10:35	Blank	Pesticides	Ethion	0.050	U	ug/L	0.05	0.2
4/15/2013 10:35	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:35	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzidine	95	UJ	ug/L	95	380
4/15/2013 10:35	Blank	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
4/15/2013 10:35	Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
4/15/2013 10:35	Blank	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.6
4/15/2013 10:35	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
4/15/2013 10:35	Blank	Priority Organic Pollutants	Bromodichloromethane	0.20	U	ug/L	0.2	0.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
4/15/2013 10:35	Blank	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
4/15/2013 10:35	Blank	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.76
4/15/2013 10:35	Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
4/15/2013 10:35	Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11

Appendix E
Bioassay Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: South County Regional WWTP
Address: 502 TECO Rd, Ruskin
County: Hillsborough
NPDES Permit #: FL 0028061
Contact/District: Kaur Ramandeep / Southwest

LIMS entry: 5-1-13 MF verified: 5-1-13 BA

Diluent/ Batch: MHWCD / 4-8-13 Test Days Used: 0-2
MHWCD / 4-17-13 Test Days Used: 3-5

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: 4-16-B
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 4-3-13 1-18-13
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2013-04-16-43	1495637	4-15-13-0600	4-16-13 1033
Test Day 2	2	TLH-2013-04-18-88	1496828	4-17-13 CR 0950	4-18-13 1000
Test Day 4	3	TLH-2013-04-22-05	1497698	4-19-13 0600	4-20-13 0905

Batch #	4-813	4-17-13	NA	NA	NA			
Water Quality Parameters	MHWCD	MHWCD	Sample 1	Sample 2	Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	Not measured				—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	0.006	<0.03	0.05		CR/AP	MF
Alkalinity (mg/L as $CaCO_3$):	76	160	194	204	200		AP/CR	MF
Hardness (mg/L as $CaCO_3$):	87	90	223	253	243		AP/CR	MF
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017	<0.017		MF	CR
Conductivity: (µmhos) mmhos:	310	318	1054	996	1077		MF	CR
Salinity (ppth):								

Test Incubated in: Incubator #: 3

Loaded by: MF

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 25.2 max. 27.5
Room B246 min. 24.7 MF max. 25.5
Test min. 24.4 max. 25.5

Test Replicates	Loaded from culture vial
1	A20
2	A22
3	A24
4	A28
5	B1
6	B2
7	B3
8	B4
9	B17
10	B23

Results	
Control % CV:	19.9%
24.9% Dunnetts PMSD:	<6.25%
Reproduction NOEC:	<6.25%
Reproduction LOEC:	6.25%
Survival NOEC:	100%
Survival LOEC:	>100%
ICP_{20}:	4.77%
ICP_{25}:	5.96%

Investigators' signatures

	Initials
Marshall Fairbot	MF
Adrienne Pennington	AP
Brian Ayala	BA
Kim M Spencer	KMS
Jackie Savage	JS
Cassidy Mercado	CR

REVIEWER Liz Miller LM

Comments:

Test Page 1 of 6

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revised 02/15/13 MF

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: South County Regional WWTP

LIMS Sample #: 1495637 for lab sample #1

Start Date: 4-16-13 Time: 1145

End Date: 4-22-13 Time: 1320

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
Control	0*												10	
	1												10	
	2	0	0	0	0	5	4	0	0	0	3	12	10	1,2
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	5	4	3	0	0	2	4	5	0	27	10	2,7
	5	8 X	6	11	11	8	6	10	9	13	3	85	10	8,5
	6	8	12	13	13	12	15	15	7	15	10	120	10	12,0
	7													
	8													
	Total	20	23	28	27	25	25	27	20	33	16	244	10	24,4

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
6.25%	0*												10	
	1												10	
	2	0	0	4	3	3	4	0	0	0	4	15	10	1,5
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	2	2	0	5	0	0	4	3	5	0	21	10	2,1
	5	7	8	8	7	11	9	12	8	9	8	87	10	8,7
	6	6	8	10	5	9	0	8	1	6	4	57	10	5,7
	7													
	8													
	Total	15	18	22	17	23	13	24	12	20	16	180	10	18,0

Organisms loaded by: MF

Day	Counted/ verified by:	Concentrations prepared by:
0	BA	MF
1	MF	MF
2	MF	MF
3	MF	MF
4	MF	MF
5	AP	AP
6	MF	
7		
8		

Concentration	Mean neonates /female	% survival
Control	24	100
6.25%	18	100
12.50%	16.6	80
25%	18.3	100
50%	13.9	100
100%	14	100

Test acceptability	
Mean control reproduction 15/female	(yes) no
3rd brood in 60% of surviving females	(yes) no
Control survival ≥ 80%:	(yes) no

Comments:

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: South County Regional WWTP

LIMS Sample #: 1495637 for lab sample #1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	4	0	0	0	3	7	10	0.7
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	2	2	2	2	0	1	9	0	0	21	10	2.1
	5	11	x2	10	7	x3	10	9	10	7	5	74	8	7.4
	6	9		11	10		9	9	8	4	4	64	8	6.4
	7													
	8													
	Total	23	4	23	19	5	23	19	27	11	12	166	8	16.6

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	2	2	10	0.2
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	2	3	3	2	3	3	3	4	2	0	25	10	2.5
	5	7	8	6	5	6	10	8	9	7	0	7+2 TR	10	7.2
	6	7	5	10	14	4	9	6	12	11	6	84	10	8.4
	7													
	8													
	Total	16	16	19	21	13	22	17	25	20	14	183	10	18.3

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
50%	0*												10	
	1												10	
	2	6	0	0	0	0	3	0	0	0	4	6	10	0.6
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	0	1	2	0	0	0	2	2	0	11	10	1.1
	5	12	0	6	9	6	7	0	6	11	7	64	10	6.4
	6	0	0	6	8	8	13	0	9	11	3	58	10	5.8
	7													
	8													
	Total	16	0	13	19	14	22	0	17	24	14	139	10	13.9

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
100%	0*												10	
	1												10	
	2	0	0	0	0	0	2	0	0	0	3	5	10	0.5
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	5	0	4	9	0	4	0	2	5	33	10	3.3
	5	11	8	7	6	10	6	9	6	10	0	73	10	7.3
	6	9	0	10	0	0	5	0	0	0	5	29	10	2.9
	7													
	8													
	Total	24	13	17	10	19	13	13	6	12	13	140	10	14.0

Comments:

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: South County Regional WWTP SOP TA07_05

LIMS Sample #: 1495637 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.9	24.0	7.8	310					
	1	6.25%	M	7.9	24.6	8.0	351					
	1	12.5%	M	7.8	24.6	7.9	399					
	1	25%	M	7.8	24.6	7.9	491					
	1	50%	M	7.8	24.6	8.0	678					
	1	100%	M	7.9	24.6	8.2	1054					
	Measured by:			MF	MF	MF	MF					
	Recorded by:			MF	MF	MF	MF					
Day 1	sample:	Control	M	8.0	24.4	8.0	341	M	8.0	25.5	7.9	330
	1	6.25%	M	7.9	24.6	7.8	383	M	8.1	25.5	7.5	384
	1	12.5%	M	7.9	24.8	~~7.8~~ 8.0	424	M	8.1	25.3	7.6	435
	1	25%	M	7.9	24.4	7.8	513	M	8.0	25.1	7.7	532
	1	50%	M	7.9	24.4	7.7	688	M	8.0	25.1	7.6	722
	1	100%	M	7.9	24.2	8.1	1041	M	8.2	25.2	7.6	1099
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 2	sample:	Control	M	8.0	24.0	7.6	322	M*	8.1	8.0	24.7	342
	2	6.25%	M	8.0	24.4	7.5	360	M	8.1	8.1	25.2	371
	2	12.5%	M	8.0	24.5	7.5	406	M	8.1	8.0	25.2	430
	2	25%	M	8.0	24.5	7.5	487	M	8.1	8.0	25.2	550
	2	50%	M	8.0	24.7	7.6	649	M	8.1	7.9	25.4	740
	2	100%	M	7.9	25.3	8.2	996	M*	8.3	8.0	25.4	1086
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 3	sample:	Control	M	7.9	25.0	7.2	318	M	8.1	24.5	8.0	370
	2	6.25%	M	7.9	25.3	7.8	369	M	8.1	24.7	8.0	412
	2	12.5%	M	7.9	25.3	7.9	417	M	8.1	24.8	7.8	437
	2	25%	M	7.8	25.2	7.9	508	M	8.1	25.0	7.8	554
	2	50%	M	7.8	25.2	8.0	687	M	8.1	25.3	7.8	740
	2	100%	M	7.9	25.5	8.2	1058	M	8.1	25.0	7.7	1100
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF

Comments: * switched DO/Temp probes MF 4-18-13

Replicate M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: South County Regional WWTP SOP TA07_05

LIMS Sample #: 1495637 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day		Concentration	New Sample					Old Sample				
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M	7.9	24.8	7.9	310	M	8.0	24.8	7.9	358
	3	6.25%	M	7.9	25.2	7.9	364	M	8.0	24.7	8.1	406
	3	12.5%	M	8.0	25.2	8.0	414	M	8.1	24.7	8.0	455
	3	25%	M	8.1	25.4	7.9	513	M	8.2	25.0	8.1	562
	3	50%	M	8.2	25.1	8.1	707	M	8.3	25.1	8.3	760
	3	100%	M	8.2	24.8	8.2	1086	M	8.5	25.2	8.5	1172
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 5	sample:	Control	M	7.9	24.6	8.0	314	M	8.3	24.4	8.3	356
	3	6.25%	M	7.9	25.0	8.0	369	M	8.1	24.2	8.3	411
	3	12.5%	M	8.0	25.1	8.0	431	M	8.1	24.4	8.1	456
	3	25%	M	8.0	25.0	7.9	533	M	8.1	24.9	8.1	535
	3	50%	M	8.1	24.9	8.0	711	M	8.3	25.0	7.9	732
	3	100%	M	8.3	25.0	8.0	1077	M	8.4	24.4	7.9	1154
	Measured by:			AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:			CR	AP	CR	CR		CR	AP	CR	CR
Day 6	sample:	Control	M					M	7.9	24.5	7.7	374
	3	6.25%	M					M	8.0	24.8	7.7	401
	3	12.5%	M					M	8.0	25.0	7.7	458
	3	25%	M					M	8.3	24.6	7.8	598
	3	50%	M					M	8.3	24.4	7.8	839
	3	100%	M					M	8.5	24.3	7.9	1285
	Measured by:								CR	MF	CR	CR
	Recorded by:								CR	MF	CR	CR
Day 7	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											
Day 8	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											

Comments:

Test ID: South County Regional WWTP Dates: 4-16-2013 — 4.22.13

METER / DEVICE	ID	SOP	Parameter	Method	√ 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	#4 √
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	√
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	√
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	√
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	√
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

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

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

Entered By: MF

V 1.3 2/15/13 MF

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FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: South County Regional WWTP
Address: 502 Tecora Rd. Ruskin, FL
County: Hillsborough
NPDES Permit #: FL0028061
Contact/District: Kaur Ramandiep / South west

Test Species (circle one)
~~P. promelas~~ SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 4.16.13 Time: 1330
End Date: 4.23.13 Time: 0930

Diluent/ Batch:
MHW / 4.6.13 Test Days Used: 0 - 1
MHW / 4.13.13 Test Days Used: 2 - 6
ASW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____

Organism age : <24 ~~days~~ hrs
Feeding Prior to Test and Daily
Artemia Lot # : 08812
Chamber size : 1000 ml
Test volume : 500 ml

Organism Batch #: 4.16.13	
Artemia Batch #	Day 3 75-13
Day 0 75-13	Day 4 76-13
Day 1 73-13	Day 5 77-13
Day 2 74-13	Day 6 78-13

LIMS entry: 5-1-13 MF Entry verification: BA 5.1.13

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH2013-04-16-43	1495637	4-15-13 0600	4-16-13 1033
Test Day 2	2	TLH-3013-04-18-88	1496838	4-17-13 ~~0450~~ 0600 CR	4-18-13 1000
Test Day 4	3	TLH-3013-04-22-05	1497698	4-19-13 0600	4-20-13 0905

Water Quality Parameters	Batch # 4-613 MHW~~CD~~ ASW (circle one) MF	4.13.13 MHW~~CD~~ ASW (circle one) MF	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	not measured				—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	0.06	<0.03	0.05		CR/AP	MF
Alkalinity (mg/L as $CaCO_3$):	70	75	194	~~200~~ 204 CR	200		CR/AP	MF
Hardness (mg/L as $CaCO_3$):	88	97	223	253	243		CR/AP	MF
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017	<0.017		MF	AP
Conductivity: (umhos) mmhos:	296	787	1066	1079	1092		MF/CR	AP
Salinity (ppth):								

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 24.8 max 26.0
Water bath # ____ min _____ max _____
Room B246 min 24.4 max 25.5

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)

Statistics	
Growth NOEC:	100%
Growth LOEC:	>100%
Growth IC_{20}:	>100%
Growth IC_{25}:	>100%
Ctrl % CV:	11.3%
Dunnetts PMSD:	16.1%
Survival NOEC:	100%
Survival LOEC:	>100%

Investigators' signatures

	Initials:
Adrienne Pennington	AP
Bruce Alcala	BA
Marshall Faircloth	MF
Cassidy Rockett	CR
Jackie Savage	JS

REVIEWER Liz Miller

Comments:
* Sample 2 Alkalinity - 204 CR

PAGE 00008

revised 03/26/13 MF

Chronic Bioassay Survival Benchsheet

Facility: South County Regional WWTP

LIMS Sample Number: 1495637
(for Lab Sample # 1)

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

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

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	9 ID	9 ~~8~~	9	9	9	9
Sample 6.25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	9 ID	9	9	9	9
	D	10	10	10	10	10	10	10	10
Sample 12.5 %	A	10	10	10	10	10	10	10	9 ID
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	9 ID	9
	C	10	10	10	10	10	8 ID	7 ID	7
	D	10	10	10	10	10	10	10	10
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 ID	9	9	9
	C	10	10	10	9 ID	9	9	9	9
	D	10	10	10	10	9 ID	8 IM	8	7 ID
Sample 100 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	9 ID	9	9
	D	10	10 ~~10~~ AP	9 ID	9	9	9	9	9
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: AP	Checked by:		CR	BA	CR	JS	CR	BA	AP
Verified by: CR									

Comments:

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Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14 parameter pg. 1

Sample Source: South County Regional WWTP

LIMS Sample #: 1495637 (for Lab sample #1)

conc = concentration rep = replicate circle umhos or mmhos

Test Day ↓		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth
Day 0	sample:	Control	A	7.8	24.3	7.9	296							
	1	6.25%	A	7.8	24.5	7.9	350							
	1	12.5%	A	7.9	24.5	8.0	402							
	1	25%	A	8.1	24.6	8.0	502							
	1	50%	A	8.1	24.4	8.0	571							
	1	100%	A	8.2	24.4	8.0	1066							
	1		A											
	Measured by:			CR	AP	CR	CR							
	Recorded by:			AP	AP	AP	AP							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	8.0	25.4	7.2	305		B	7.8	24.2	7.6	287	
	1	6.25%	B	8.1	25.5	7.0	358		B	7.9	24.0	7.6	333	
	1	12.5%	B	8.0	25.2	6.9	404		B	8.0	24.0	7.7	383	
	1	25%	B	7.9	25.0	6.9	501		B	8.0	24.0	7.6	479	
	1	50%	B	8.0	25.2	6.9	575		B	8.1	24.0	7.8	620	
	1	100%	B	7.9	25.3	6.9	1077		B	8.3	24.0	8.2	1055	
	1		B						B					
	Measured by:			BA	BA	BA	BA			CR	AP	CR	CR	
	Recorded by:			BA	BA	BA	BA			CR	AP	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.5	25.9	7.0	299		C	7.3	24.2	6.9	298	
	2	6.25%	C	7.6	25.7	7.0	349		C	7.3	24.4	7.1	348	
	2	12.5%	C	7.7	25.6	7.0	395		C	7.4	24.4	7.3	393	
	2	25%	C	7.8	25.1	6.7	490		C	7.4	24.5	7.2	489	
	2	50%	C	7.8	25.7	6.0	6036		C	7.4	24.8	7.1	652	
	2	100%	C	8.2	25.7	6.2	1083		C	7.4	25.5	7.1	1079	
	2		C						C					
	Measured by:			CR	CR	CR	CR			BA	BA	BA	BA	
	Recorded by:			CR	CR	CR	CR			BA	BA	BA	BA	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.4	26.0	6.3	~~305~~ 308 CR		D	7.6	24.5	7.0	298	
	2	6.25%	D	7.6	25.3	6.4	354		D	7.6	24.4	7.2	347	
	2	12.5%	D	7.5	25.8	5.9	403		D	7.6	24.4	7.2	~~389~~ 389 AP	
	2	25%	D	7.6	24.8	6.1	501		D	7.6	24.4	7.2	484	
	2	50%	D	7.8	25.3	6.2	654		D	7.6	24.4	7.2	657	
	2	100%	D	8.1	25.4	5.9	1089		D	7.9	24.7	7.3	1052	
	2		D						D					
	Measured by:			CR	CR	CR	CR			AP	AP	AP	AP	
	Recorded by:			CR	CR	CR	CR			CR	CR	CR	CR	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14

parameter pg. 2

Sample Source: South County Regional WWTP

LIMS Sample #: 1495637 (for Lab sample #1)

conc = concentration rep = replicate

Test Day ↓			Before Renewal						After Renewal					
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 4	sample:	Control	A	7.0	26.0	7.2	319		A	7.7	24.6	7.3	390	
	3	6.25%	A	7.0	26.1	6.9	364		A	7.7	24.7	7.1	344	
	3	12.5%	A	7.1	25.8	6.8	410		A	7.8	24.6	7.4	393	
	3	25%	A	7.4	26.0	6.9	509		A	7.9	24.6	7.5	493	
	3	50%	A	7.7	25.9	6.7	689		A	8.0	24.6	7.2	684	
	3	100%	A	8.0	25.8	6.6	1076		A	8.2	24.6	7.3	1076	
	3		A						A					
	Measured by:			%	AP	%	%			%	AP	%	%	
	Recorded by:			%	AP	%	%			%	AP	%	%	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B	7.5	25.8	7.1	331		B	7.4	~~24.8~~ 24.7	7.3	393	
	3	6.25%	B	7.4	25.6	5.7	375		B	7.4	24.8	6.8	354	
	3	12.5%	B	7.4	25.2	5.8	432		B	7.5	24.7	7.1	403	
	3	25%	B	7.6	25.8	6.2	530		B	7.6	24.7	7.2	506	
	3	50%	B	7.7	25.7	6.1	719		B	7.9	24.6	7.2	700	
	3	100%	B	8.0	25.4	6.0	1117		B	8.1	25.2	7.5	1092	
	3		B						B					
	Measured by:			CR	CR	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	CR	CR	CR			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C	7.4	25.7	6.9	313		C	7.6	24.4	7.4	298	
	3	6.25%	C	7.4	25.7	6.4	363		C	7.7	24.5	7.4	347	
	3	12.5%	C	7.5	26.0	6.3	417		C	7.7	24.5	7.4	394	
	3	25%	C	7.8	25.9	6.9	520		C	8.0	24.5	7.5	493	
	3	50%	C	7.8	26.0	6.4	719		C	8.1	24.6	7.3	696	
	3	100%	C	8.1	25.3	6.2	1087		C	8.2	24.8	7.5	1070	
	3		C						C					
	Measured by:			CR	AP	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	AP	CR	CR			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control	D	7.4	25.7	7.1	307		D					
	3	6.25%	D	7.4	25.6	6.8	358		D					
	3	12.5%	D	7.6	25.6	6.9	411		D					
	3	25%	D	7.7	25.8	7.1	519		D					
	3	50%	D	7.9	25.6	6.7	709		D					
	3	100%	D	8.2	25.0	7.1	1122		D					
	3								D					
	Measured by:			CR	AP	CR	CR							
	Recorded by:			CR	AP	CR	CR							

Comments: Day 5 After renewal control temp = 24.8 AP

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

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Chronic Bioassay Weighing Benchsheet

Facility: South County Regional WWTP

LIMS Sample Number: 1495637 (for Lab Sample # 1)

P. promelas and *M. beryllina* Bench Sheet
SOP TA06_21

Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg	
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right					AV
Control	A	1	0.02367	0.02942	0.00575	10	0.575	
	B	2	0.02204	0.02666	0.00462	10	0.462	0.5
	C	3	0.02284	0.02853	0.00569	10	0.569	
	D	4	0.02274	0.02879	0.00605	10	0.605	
sample 6.25 %	A	5	0.02308	0.02727	0.00419	10	0.419	
	B	6	0.02319	0.02749	0.00430	10	0.430	0.44
	C	7	0.02256	0.02703	0.00447	10	0.447	
	D	8	0.02288	0.02788	0.00500	10	0.500	
sample 12.5 %	A	9	0.02370	0.02787	0.00417	10	0.417	
	B	10	0.02253	0.02720	0.00468	10	0.468	
	C	11	0.02149	0.02561	0.00412	10	0.412	0.43
	D	12	0.02311	0.02745	0.00434	10	0.434	
sample 25 %	A	13	0.02266	0.02782	0.00516	10	0.516	
	B	14	0.02253	0.02682	0.00429	10	0.429	
	C	15	0.02215	0.02514	0.00299	10	0.299	0.42
	D	16	0.02277	0.02727	0.00450	10	0.450	
sample 50 %	A	17	0.02211	0.02685	0.00474	10	0.474	
	B	18	0.02314	0.02701	0.00387	10	0.387	
	C	19	0.02151	0.02559	0.00408	10	0.408	0.4
	D	20	0.02300	0.02722	0.00422	10	0.422	
sample 100 %	A	21	0.02249	0.02771	0.00522	10	0.522	
	B	22	0.02255	0.02778	0.00523	10	0.523	
	C	23	0.02179	0.02646	0.00467	10	0.467	0.49
	D	24	0.02258	0.02733	0.00475	10	0.475	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		CR	CR		revised 7/16/08 mf		

Comments:

Balance: Ohaus 250D Ser# 1125481084
S-Weights: BIO-S-Weights-01

Note: Pan number (#) refers to actual Pan number.

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Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: South County Regional WWTP

LIMS Sample Number: 1495637
(for Lab Sample # 1)

***P. promelas and M. beryllina* Bench sheet**
SOPs TA07_09, TA07_14 and TA06_21

Drying Oven ID:	ER034000
Temperature °C:	100
Hours:	8

Tare weighed by: CR
Final weighed by: CR

Tare Weighing Date: 4.22.13 Final Weighing Date: 4.25.13

			Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.023608@0.023607	S-weights	0.00998	@	0.01
Tare Pan 1 after Pan 10 (g)	0.023608@0.023607	at tare	0.03003	@	0.03
Tare Pan 1 after Pan 15 (g)	0.023608@0.023607	S-weights	0.00999	@	0.01
Tare Pan 1 after Pan 20 (g)	0.023608@0.023607	at final	0.05003	@	0.05
Tare Pan 1 after Pan 25 (g)	0.023608@0.023607				
Tare Pan 1 after Pan 30 (g)	@				
Tare Pan 1 after Pan 35 (g)	@				
Tare Pan 1 after Pan 40 (g)	@				
Tare Pan 1 after Pan 45 (g)	@				
Tare Pan 1 after Pan 48 (g)	@				
Final Pan 1 after Pan 5 (g)	0.029423@0.029423				
Final Pan 1 after Pan 10 (g)	0.029423@0.029423				
Final Pan 1 after Pan 15 (g)	0.029419@0.029423				
Final Pan 1 after Pan 20 (g)	0.029419@0.029423				
Final Pan 1 after Pan 25 (g)	0.029423@0.029423				
Final Pan 1 after Pan 30 (g)	@				
Final Pan 1 after Pan 35 (g)	@				
Final Pan 1 after Pan 40 (g)	@				
Final Pan 1 after Pan 45 (g)	@				
Final Pan 1 after Pan 48 (g)	@				

Balance: Ohaus 250D Ser# 1125481084
S-Weights: BIO-S-Weights-01

Note: Pan numbers (5, 10, etc.) for Tare and Final refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 7/16/08 MF

Page 00013

Test ID: South County Regional WWTP Dates: April 16, 2013 — April 23, 2013

METER / DEVICE	ID	SOP	Parameter	Method	√ 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	✓4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

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

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

Entered By: CR 4.25.13

V 1.3 2/15/13 MF

0014

PAGE

Appendix F
Standard Reference Toxicant Data

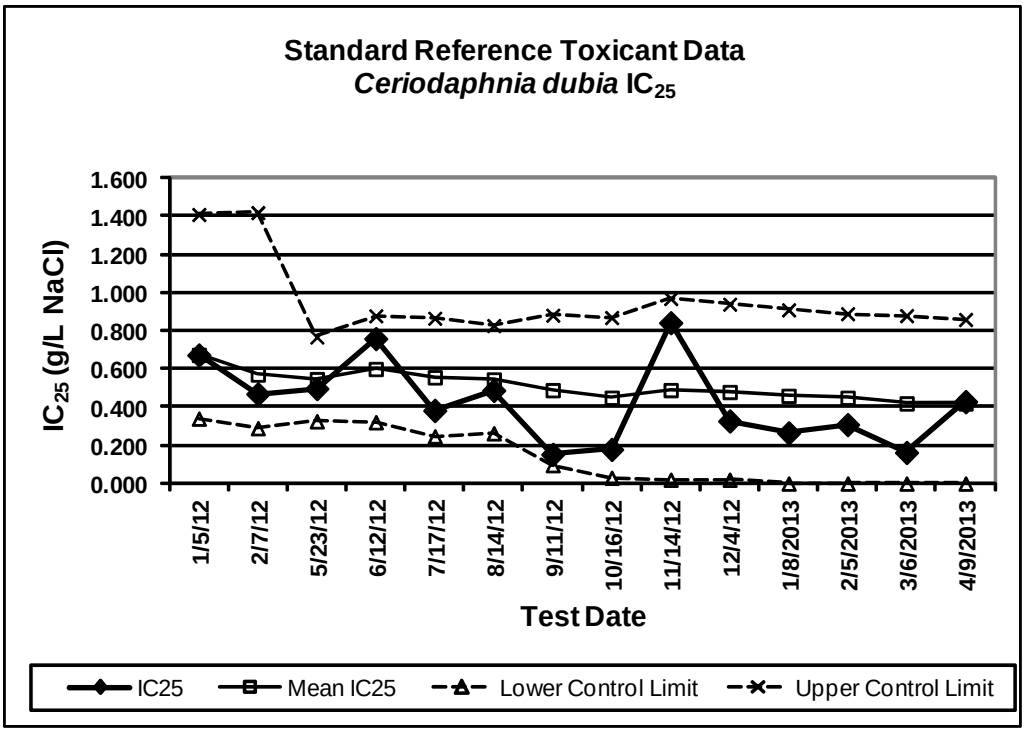
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
1/5/12	0.674	0.67	0.14	0.34	1.41
2/7/12	0.470	0.57	0.11	0.29	1.42
5/23/12	0.498	0.55	0.11	0.33	0.77
6/12/12	0.760	0.60	0.14	0.32	0.88
7/17/12	0.383	0.56	0.15	0.25	0.87
8/14/12	0.489	0.55	0.14	0.26	0.83
9/11/12	0.153	0.49	0.20	0.10	0.88
10/16/12	0.179	0.45	0.21	0.03	0.87
11/14/12	0.843	0.49	0.24	0.02	0.97
12/4/12	0.328	0.48	0.23	0.02	0.94
1/8/2013	0.266	0.46	0.23	0.00	0.91
2/5/2013	0.309	0.45	0.22	0.00	0.89
3/6/2013	0.163	0.42	0.23	0.00	0.88
4/9/2013	0.429	0.42	0.22	0.00	0.86

Means are of the last 10 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

EPA 75th Percentile %CV for Reproduction **45%**
Last 10 - Lab %CV Repr **51.1%**



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: ~~20% SDMHW~~ MF CD / 4-8-13 Test Days Used: 0 - 5

~~20% SDMHW~~ MF CD / _____ Test Days Used: _____

Toxicant/ Batch: NaCl / 4-9-13 (3.2 g/L)

SOP # : TA 07_05

EPA-821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*

Organism Batch #/ Age: 4-9-13 / <24 hr.

Feeding: Prior to Test and Daily

Food: ☑ YCT ☑ *P. subcapitata*

Food Batch: 4-3-13 1-18-13

Chamber size: 30 mL

Test Volume: 20 mL

Start Date: 4-9-13 Time: 1300

End Date: 4-15-13 Time: 1400

	Batch:	8 MF 4-8-13			
Water Quality Parameters	20% SDMHW	20% SDMHW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03			CR	AP
Alkalinity (mg/L as $CaCO_3$):	76			CR	AP
Hardness (mg/L as $CaCO_3$):	87			CR	AP
Total Ammonia (mg/L as N):	<0.017			MF	CR
Conductivity (µmhos-cm) mmhos-cm :	396			CR	AP

Results	
Control % CV:	45.5%
Dunnetts PMSD:	34%
Reproduction NOEC:	0.4 g/L
Reproduction LOEC:	0.8 g/L
Survival NOEC:	1.6 g/L
Survival LOEC:	3.2 g/L
IC_{P20}:	0.3840 g/L
IC_{P25}:	0.4292 g/L

Loaded by: MF

Day	Concentrations prepared by	Counted by
0	MF	AP
1	MF	MF
2	MF	MF
3	MF	BA
4	MF	BA
5	MF	MF
6	MF	BA
7		
8		

Test Replicate	Loaded from culture vial
1	A1
2	A2
3	A3
4	A4 MF 4-9
5	B13
6	C7
7	C6
8	A28
9	C10
10	B10

Comments:

Investigators' signatures

Marshall Faircloth

Adrienne Pennington

Cassidy Raichart

Bruce Henderson

Liz Mercer

REVIEWER

Test Incubated in: Incubator: # 23 MF

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 3 min. 25.2 max. 27.5 mean —

Room B246 — min. 23.8 max. 25.3 mean —

Test min. ~~7~~ A3 24.0 max. 25.6 mean —

00019

Ceriodaphnia dubia Survival and Reproduction

Start Date: 4-9-13 Time: 1300 Loaded by: MF
End Date: 4-15-~~13~~ MF 13 Time: 1400 Verified by: AP

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
* Control	0						X						10	
	1												~~10~~ 9	
	MF 3	0	0	0	0	6	|	0	0	0	5	11	9	1.1
	MF 4	4	3	6	2	9	|	4	3	1	0	32	9	3.2
	4						|					9	
	5	6	10	7	5	0	|	9	9	9	9	64	9	6.4
	6	7	7	4	0	7	|	4	8	4	9	50	9	5.0
	7						|						
	8						|						
	Total	17	20	17	7	22	0	17	20	14	23	157	9	15.7
0.12 ~~0.59~~ ppth	0												10	
	1												10	
	MF 3	0	0	0	0	0	0	0	0	~~0~~	4	4	10	0.4
	MF 4	3	4	1	3	6	3	0	4	3	0	27	10	2.7
	4												10	
	5	7	0	7	8	6	7	4	9	11	9	68	10	6.8
	6	13	7	2	0	7	0	10	11	8	10	68	10	6.8
	7													
	8													
	Total	23	11	~~9~~ 8 MF 10	11	19	10	14	24	22	23	168 MF 167	10	16.7
4 ~~0.89~~ ppth	0												10	
	1												10	
	MF 3	0	0	0	0	3	0	0	0	0	X	3	9	0.3
	MF 4	5	1	5	4	2	1	4	3	3	|	28	9	2.8
	4										|		9	
	5	4	10	7	6	4	5	5	7	5	|	53	9	5.3
	6	7	9	0	0	(6)A	5	8	6	7	|	42	9	4.2
	7										|			
	8										|			
	Total	16	20	12	10	9	11	17	16	15	0	126	9	12.6

Comments: (A 4th brood not counted * DAY 2 no reproduction IN ANY concentration ~~0.89~~ Zeros ~~were~~ inadvertently not recorded, DAY 3 & 4 recorded in DAY 2 & 3 spaces in all concentrations. MF 4-16-13

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
0.8 MF ~~1.3~~ ppth	0												10	
	1												10	
*	MF ~~3~~ 3	0	0	0	0	0	2	0	X	0	X4	6	8	0.6
	MF ~~3~~ 4	0	0	3	3	X	0	0		1		7	7	0.7
	4												7	
	5	3	0	0	6		2	8		6		25	7	2.5
	6	2	3	2	0		2	3		4		16	7	1.6
	7													
	8													
	Total	5	3	5	9	0	6	11	0	11	4	5 MF 4	7	5.4
1.6 MF ~~2.0~~ ppth	0												10	
	1												10	
	MF ~~3~~ 3	0	0	0	0	0	0	0	0	0	0	0	10	0
	MF ~~3~~ 4	1	1	3	2	3	1	0	2	1	1	15	10	1.5
	4													
	5	3	2	2	0	0	1	2	2	1	2	15	10	1.5
	6	0	0	5	0	3	0	2	3	3	3	MF 24 M	10	1.9
	7													
	8													
	Total	4	3	10	2	6	2	4	7	5	6	4 MF 9	10	4.9
3.2 MF ~~3.0~~ ppth	0												10	
	1	X	X	X	X	X	X	X	X	X			1	
	CR ~~3~~ 3	0	0	0	0	0	0	0	0	0	0 X	0	0	0
	3													
	4													
	5													
	6													
	7													
	8													
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments: * Day 2 no reproduction in any concentration or ~~MF~~ Reproduction inadvertantly not recorded. Day 3 & 4 recorded = Day 2 & 3 spaces in all concentrations for MF 4-15-13 Reproduction

00021

Test Page 3 of 6 PAGE 07/15/08 MF

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.	New Sample: Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	Control	M	7.8	24.8	7.6	396					
	0.2 mf 0.59 ppth	M	7.8	25.1	7.8	667					
	0.4 mf 0.89 ppth	M	7.9	25.2	7.8	1028					
	0.8 mf 1.3ppth	M	7.9	25.2	7.8	1725					
	1.6 mf 2.0 ppth	M	7.9	25.2	7.8	3140					
	2 mf 3.0 ppth	M	7.9	25.4	7.8	5830					
	Measured by:		CR	mf	CR	CR					
	Recorded by:		AP	mf	AP	AP					
Day 1	Control	M	8.2	24.5	7.6	298	A	8.2	24.4	7.7	345
	0.2 mf 0.59 ppth	M	8.2	25.0	7.6	654	A	8.2	24.4	7.6	741
	0.4 mf 0.89 ppth	M	8.2	25.1	7.7	1016	A	8.2	24.4	7.7	1088
	0.8 mf 1.3ppth	M	8.1	25.2	7.7	1729	A	8.2	24.5	7.8	1823
	1.6 mf 2.0 ppth	M	8.1	25.5	7.7	3090	A	8.2	24.8	7.8	3200
	2 mf 3.0 ppth	M	8.1	25.6	7.7	5870	A	8.1	24.8	7.9	6010
	Measured by:		mf	mf	mf	mf		mf	mf	mf	mf
	Recorded by:		mf	mf	mf	mf		mf	mf	mf	mf
Day 2	Control	M	8.2	24.1	7.5	309	A	8.1	24.1	7.7	348
	0.2 mf 0.59 ppth	M	8.1	24.1	7.6	700	A	8.0	24.4	7.8	746
	0.4 mf 0.89 ppth	M	8.1	24.1	7.5	1045	A	8.0	24.5	7.7	1144
	0.8 mf 1.3ppth	M	8.1	24.4	7.5	1756	A	8.0	24.6	7.6	1822
	1.6 mf 2.0 ppth	M	8.0	24.6	7.5	3210	A	8.0	24.7	7.8	3280
	2 mf 3.0 ppth	M	—	mf 24.9 recorded		—	J	8.0	24.9	7.6	6100
	Measured by:		mf	mf	mf	mf		mf	mf	mf	mf
	Recorded by:		mf	mf	mf	mf		mf	mf	mf	mf
Day 3	Control	M	7.4	24.9	6.9	322	A	7.6	24.0	7.1	396
	0.2 mf 0.59 ppth	M	7.5	24.7	7.1	725	A	7.6	24.0	7.2	834
	0.4 mf 0.89 ppth	M	7.5	24.5	7.2	1065	A	7.6	BA 24.0	7.2	1204
	0.8 mf 1.3ppth	M	7.6	24.3	7.3	1870	A	7.6	24.0	7.2	1944
	1.6 mf 2.0 ppth	M	7.6	24.2	7.1	3290	A	7.7	24.0	7.2	3520
	2 mf 3.0 ppth	M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA

Comments:

M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	7.5	24.9	7.1	322	A	7.5	24.0	7.4	337
	0.2 mf 0.59 ppth	M	7.5	25.1	7.5	720	A	7.5	24.0	7.4	751
	0.4 mf 0.89 ppth	M	7.4	25.0	6.8	1061	A	7.6	24.0	7.3	1106
	0.8 mf 1.3ppth	M	7.4	25.0	6.7	1853	A	7.6	24.0	7.3	1930
	1.6 mf 2.0 ppth	M	7.4	24.9	7.1	3270	A	7.5	24.0	7.2	3400
	2 mf 3.0 ppth	M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 5	Control	M	8.0	25.0	8.0	327	A	8.1	24.1	7.9	365
	0.2 mf 0.59 ppth	M	8.0	24.9	8.0	711	A	7.9	24.0	8.0	803
	0.4 mf 0.89 ppth	M	8.0	24.9	7.9	1047	A	7.9	24.2	7.9	1129
	0.8 mf 1.3ppth	M	7.9	25.0	7.9	1845	A	7.9	24.5	8.0	1938
	1.6 mf 2.0 ppth	M	7.9	25.1	7.9	3200	A	7.9	24.7	8.0	3420
	2 mf 3.0 ppth	M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 6	Control	M					A	7.3	25.2	7.0	333
	0.2 mf 0.59 ppth	M					A	7.4	24.9	7.0	744
	0.4 mf 0.89 ppth	M					A	7.4	24.7	6.8	1106
	0.8 mf 1.3ppth	M					A	7.4	24.6	6.8	1931
	1.6 mf 2.0 ppth	M					A	7.4	24.5	6.9	3340
	2 mf 3.0 ppth	M									
	Measured by:							BA	BA	BA	BA
	Recorded by:							BA	BA	BA	BA
Day 7	Control	M									
	0.2 mf 0.59 ppth	M									
	0.4 mf 0.89 ppth	M									
	0.8 mf 1.3ppth	M									
	1.6 mf 2.0 ppth	M									
	2 mf 3.0 ppth	M									
	Measured by:										
	Recorded by:										
Day 8	Control	M									
	0.2 mf 0.59 ppth	M									
	0.4 mf 0.89 ppth	M									
	0.8 mf 1.3ppth	M									
	1.6 mf 2.0 ppth	M									
	2 mf 3.0 ppth	M									
	Measured by:										
	Recorded by:										

MF removed

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 5 of 6

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07/15/08 MF

BIOASSAY INSTRUMENT ID Chronic SRT 4-9-13 — 4-15-13

METER / DEVICE	ID	SOP	Parameter	Method	used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5750 SN 05J1720	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	✓
Thermometer	BIOLAB #1 BIOLAB #2 BIOLAB #3 BIOLAB #4 BIOLAB #5	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	N/A
Traceable Thermometer	EC#1-SN101686412 EC #2-SN221295527 EC#3-SN240116020 EC#4-SN80361795 EC#5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	ec# 4 ✓
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	N/A
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

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

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

Entered By: M. Faircloth 4-18-13

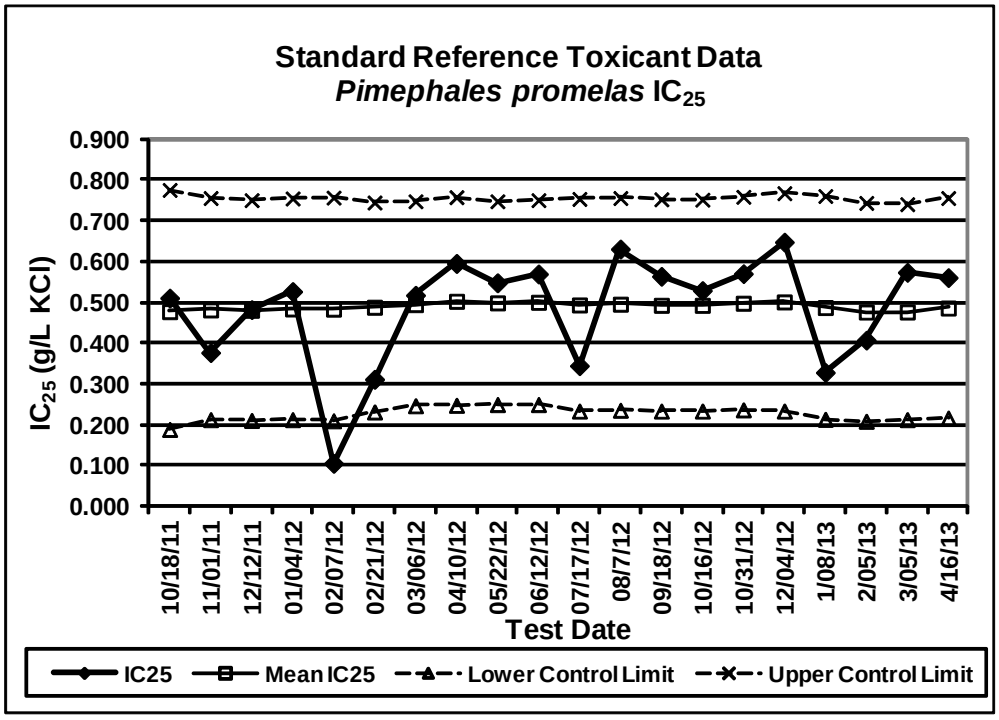
V 1.1 9/21/10 MF/jd

00094

Florida Department of Environmental Protection
Bureau of Laboratories
Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
10/18/11	0.511	0.478	0.14	0.189	0.776
11/01/11	0.377	0.482	0.14	0.213	0.756
12/12/11	0.483	0.481	0.14	0.211	0.751
01/04/12	0.527	0.484	0.14	0.213	0.755
02/07/12	0.106	0.484	0.14	0.210	0.757
02/21/12	0.312	0.489	0.13	0.232	0.745
03/06/12	0.518	0.495	0.13	0.247	0.748
04/10/12	0.596	0.503	0.13	0.248	0.758
05/22/12	0.548	0.499	0.12	0.250	0.748
06/12/12	0.570	0.501	0.12	0.250	0.751
07/17/12	0.345	0.494	0.13	0.234	0.754
08/7/12	0.631	0.496	0.13	0.236	0.756
09/18/12	0.564	0.493	0.13	0.234	0.753
10/16/12	0.529	0.493	0.13	0.234	0.752
10/31/12	0.571	0.498	0.13	0.237	0.759
12/04/12	0.648	0.501	0.13	0.234	0.768
1/08/13	0.329	0.488	0.14	0.214	0.761
2/05/13	0.408	0.477	0.13	0.209	0.744
3/05/13	0.574	0.477	0.13	0.213	0.741
4/16/13	0.561	0.486	0.13	0.217	0.756

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev EPA 75th %CV: 38%
Upper Confidence Limit = mean + 2 * Std Dev lab % CV:27.7%



FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

(*P. promelas*)	SOP#: TA07_09	EPA-821-R-02-013	Method 1000.0
M. beryllina	SOP#: TA07_14	EPA-821-R-02-014	Method 1006.0

Diluent/ Batch: MHW/4.6.13 Test Days Used: 0 - 1

Diluent/ Batch: MHW/4.8.13 Test Days Used: 2 - 6

Toxicant/ Batch # : 29/L KCl 4.16.13

Artemia Lot # : 08812

Start Date: 4.16.13 Time: 1400

End Date: 4.23.13 Time: 1030

Organism Batch #/ Age: 4.16.13 / <24 hrs

Artemia Batch # ~~0~~ AP	Day 2 74.13	Day 5 77.13	Chamber size : 1000 ml
Day 0 72.13	Day 3 75.13	Day 6 78.13	Test volume : 500 ml
Day1 73.13	Day 4 76.13		

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval

M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent MHW 4.6.13	Diluent 4.13.13 (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03	<0.03	HACH	AP/CR	BA
Alkalinity (mg/L as $CaCO_3$):	70	75	HACH	AP/CR	BA
Hardness (mg/L as $CaCO_3$):	88	87	HACH	AP/CR	BA
Total Ammonia (mg/L as N):	<0.017	<0.017	DENVER	MF	AP
Conductivity ~~µmhos-cm~~ mmhos-cm:	295	286	METTLER	CR	AP

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1 g/L
Growth IC_{20}:	0.5320
Growth IC_{25}:	0.5612
Ctrl % CV:	8.92%
Dunnetts PMSD:	13.5%
Survival NOEC:	0.5 g/L
Survival LOEC:	1 g/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 2 min. 24.8 max. 26.0

Water bath # ____ min. _____ max. _____

Room B246 min 24.4 max. 25.5

P. promelas PMSD Bounds for Growth: Lower 12 Upper 30

M. beryllina PMSD Bounds for Growth: Lower 11 Upper 28

Investigators' signatures

Adrienne Pennington

Bruce Alink

Cassidy Reichert

Jackson Parker

REVIEWER Liz Miller

Comments:

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revised 8/6/12 JD

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

Organism: (*P. promelas*) *M.beryllina* (circle one) D = dead M = missing

Concentration: µg/L (g/L) (circle one)

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	A1	10	10	10	10	10	10	10	10
	B	A2	10	10	10	10	10	10	10	10
	C	A3	10	10	10	9 ID	9	9	9	9
	D	A4	10	10	10	10	10	10	10	10
0.125	A	A5	10	10	9 ID	9	9	9	9	9
	B	A6	10	10	10	10	10	10	10	10
	C	A7	10	10	10	10	10	10	10	10
	D	A8	10	10	10	10	10	10	10	10
0.25	A	A9	10	10	10	10	10	10	10	10
	B	A10	10	10	10	10	10	10	10	10
	C	A11	10	10	10	10	10	10	10	10
	D	A12	10	10	10	10	10	10	10	10
0.5	A	A13	10	10	10	10	10	10	10	10
	B	A14	10	10	10	10	10	10	10	10
	C	A15	10	10	10	10	10	10	10	10
	D	A16	10	10	10	10	10	10	10	10
1.0	A	A17	10	3 7D	2 ID	1 ID	0 ID			
	B	A18	10	0 10D	–	–	–			
	C	A19	10	0 10D	–	–	–			
	D	A20	10	0 10D	–	–	–			
2.0	A	A21	10	0 10D	–					
	B	A22	10	0 10D	–					
	C	A23	10	0 10D	–					
	D	A24	10	0 10D						
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): CR		Checked by:		AP	BA	AP	AP	CR	CR	CR
Verified by (0 hr): AP										
Concentrations prepared by:				BA	CR	BA	CR	AP	CR	CR

Comments:

Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Start Date: 4-16-13 End Date: 4.23.13

Start Time: 1400 End Time: 1630

conc = concentration rep = replicate circle umhos or mmhos

Test Day	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 0	Control	A	8.2	24.5	7.8	295							
	0.125	A	8.1	24.7	7.8	544							
	0.25	A	8.1	24.8	7.9	781							
	0.5	A	8.1	25.3	7.9	1245							
	1.0	A	8.2	25.8	8.0	2160							
	2.0	A	8.2	25.0	7.8	3940							
		A											
	Measured by		CR	AP	CR	CR							
	Recorded by		AP	AP	AP	AP							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.9	24.1	6.9	297		B	7.8	24.3	7.6	286	
	0.125	B	8.0	24.3	6.9	542		B	7.8	24.1	7.6	528	
	0.25	B	8.0	24.3	6.8	773		B	7.8	24.1	7.7	757	
	0.5	B	8.0	24.2	6.8	1249		B	7.9	24.0	7.7	1215	
	1.0	B	8.0	24.7	6.9	2170		A/B AP	7.9	24.2	7.8	2110	
	2.0	B	8.0	24.7	6.7	4010		B					
		B						B					
	Measured by		BA	BA	BA	BA			CR	AP	CR	CR	
	Recorded by		BA	BA	BA	BA			CR	AP	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.7	24.5	7.2	311		C	7.6	24.2	7.2	289	
	0.125	C	7.7	24.7	7.2	535		C	7.6	24.1	6.5	532	
	0.25	C	7.7	24.7	7.2	765		C	7.6	24.2	6.7	742	
	0.5	C	7.8	24.6	7.2	1224		C	7.6	24.2	6.8	1178	
	1.0	A/C AP	7.8	24.4	7.3	2140		A/C AP	7.7	24.3	7.0	2240	
		C						C					
		C						C					
	Measured by		CR	CR	CR	CR			BA	BA	BA	BA	
	Recorded by		CR	CR	CR	CR			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.7	25.4	6.7	301		D	7.7	24.5	7.4	313	
	0.125	D	7.7	25.2	6.7	564		D	7.7	24.3	7.3	523	
	0.25	D	7.7	25.2	5.9	784		D	7.7	24.3	7.3	739	
	0.5	D	7.7	25.5	6.9	1253		D	7.7	24.3	7.1	1194	
	1.0	A/D AP	7.8	25.4	6.9	2330		A/D AP	7.8	24.5	7.3	2140	
		D						D					
		D						D					
	Measured by		CR	CR	CR	CR			AP	AP	AP	AP	
	Recorded by		CR	CR	CR	CR			CR	CR	CR	CR	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg 2

Start Date: 4-16-13 End Date: 4.23.13

Start Time: 1400 End Time: 1030

conc = concentration rep = replicate

Test Day	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4	Control	A	6.7	24.5	6.5	321		A	7.1	25.0	6.9	305	
	0.125	A	6.7	24.8	6.4	553		A	7.2 AP	24.8	7.0	534	
	0.25	A	6.9	25.0	6.6	777		A	7.3	24.9	7.3	767	
	0.5	A	7.0	24.7	6.9	1247		A	7.4	24.8	7.2	1241	
	1.0	A	7.1	24.3	7.3	2200		A					
		A						A					
		A						A					
	Measured by		gs	AP	gs	gs			gs	AP	gs	gs	
	Recorded by		gs	AP	gs	gs			gs	AP	gs	gs	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	7.4	25.1	6.5	314		B	7.5	24.7	7.3	301	
	0.125	B	7.4	24.2	6.3	555		B	7.5	24.5	7.3	533	
	0.25	B	7.4	24.3	6.1	790		B	7.6	24.4	7.1	768	
	0.5	B	7.4	25.0	6.3	1268		B	7.6	24.4	7.3	1233	
		B						B					
		B						B					
		B						B					
	Measured by		CR	CR	CR	CR			CR	CR	CR	CR	
	Recorded by		CR	CR	CR	CR			CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.4	25.3	6.9	319		C	7.8	24.0	7.9	339	
	0.125	C	7.5	25.0	6.9	544		C	7.8	24.1	7.8	511	
	0.25	C	7.5	24.6	7.0	782		C	7.8	24.1	7.6	754	
	0.5	C	7.6	24.4	7.1	1265		C	7.8	24.4	7.6	1220	
		C						C					
		C						C					
		C						C					
	Measured by		CR	AP	CR	CR			CR	CR	CR	CR	
	Recorded by		CR	AP	CR	CR			CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.4	24.5	7.3	297		D					
	0.125	D	7.5	24.6	7.4	527		D					
	0.25	D	7.6	24.8	7.2	780		D					
	0.5	D	7.6	24.3	7.3	1253		D					
		D						D					
		D						D					
		D						D					
	Measured by		CR	AP	CR	CR							
	Recorded by		CR	AP	CR	CR							

Day 4 After renewal, 0.125 pH = 7.2 AP

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

Concentration: µg/L (g/L) (circle one)

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	Avg.
Control	A	54	0.02148	0.02571	0.00423	10	0.423	
	B	55	0.02101	0.02604	0.00503	10	0.503	0.482
	C	56	0.02049	0.02527	0.00478	10	0.478	
	D	57	0.02118	0.02640	0.00522	10	0.522	
0.125	A	58	0.02129	0.02597	0.00468	10	0.468	
	B	59	0.02192	0.02669	0.00477	10	0.477	
	C	60	0.02187	0.02607	0.0042	10	AP ~~0.0~~ 0.42	0.439
	D	61	0.02233	0.02624	0.00391	10	0.391	
0.25	A	62	0.02221	0.02623	0.00402	10	0.402	
	B	63	0.02148	0.02543	0.00395	10	0.395	
	C	64	0.02213	0.02608	0.00395	10	0.395	0.389
	D	65	0.02239	0.02601	0.00362	10	0.362	
0.5	A	66	0.02247	0.02711	0.00464	10	0.464	
	B	67	0.02249	0.02620	0.00371	10	0.371	
	C	68	0.02211	0.02628	0.00417	10	0.417	0.435
	D	69	0.02180	0.02666	0.00486	10	0.486	
	A	~~70~~ AP				10		
	B	~~71~~ AP				10		
	C	~~72~~ AP				10		
	D	~~73~~ AP				10		
	A	~~7~~ AP				10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	CR	CR				

Comments:

Note: Pan number (#) refers to actual Pan number.

PAGE 00026 revised 8/24/06 MF/SP

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 4.22.13 Weighed by: CR

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02149	@ ~~0.02148~~ 0.02148 AP
after Pan 10	0.02148	@ 0.02148
after Pan 15	0.02148	@ 0.02148
after Pan 20	0.02148	@ 0.02148
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.00998	@ 0.01
	0.03002	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 4.25.13 Weighed by: CR

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02570	@ 0.02571
after Pan 10	0.02569	@ 0.02571
after Pan 15	0.02569	@ 0.02571
after Pan 20	0.02570	@ 0.02571
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.00999	@ 0.01
	0.05003	@ 0.05

Drying Oven ID: ER034000

Temperature °C: 100

Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

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revised 7/16/08 MF

Test ID: P. promelas Chronic SRT Dates: 4-16-13 to 4-23-13

METER / DEVICE	ID	SOP	Parameter	Method	√ 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	✓ #4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

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

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

Entered By: AP 4-25-13

V 1.2 2/20/11 MF/jd

86000 00028

Appendix G
Organism Receipt

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 4/15/13

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~~					
Pimephales promelas	550	< 24 HRS	FM130414-1535	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

EPA End Sheet

The Bioassay of South County Regional AWWTF effluent sampled on April 15, 17, and 19, 2013. NPDES #FL0028061.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 8 0 6 1 11	12 1 3 0 4 1 5	18 **B**	19 **S**	20 1

Remarks

66

The Priority Pollutants Analysis of South County Regional AWWTF effluent sampled on April 15, 2013. NPDES #FL0028061.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 8 0 6 1 11	12 1 3 0 4 1 5	18 **X**	19 **S**	20 1

Remarks

66

Biological Analyses of South County Regional AWWTF effluent sampled on April 15, 2013. NPDES #FL0028061.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 8 0 6 1 11	12 1 3 0 4 1 5	18 **S**	19 **S**	20 1

Remarks

66