

Effluent Quality Assessment

Tampa Electric Company – Polk Power Station

Polk County

NPDES #FL0043869

Sampled July 22, 24 and 26, 2013

October 2013

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

2013 FDEP Bureau of Labs Quality Manual
NELAC Certification No. E31780

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Tampa Electric Company – Polk Power Station, 9995 State Road 37 South, Mulberry, Polk County, Florida, 33860. NPDES #FL0043869.

Facility Overview

Tampa Electric Company – Polk Power Station is an electric power generating plant. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent grab samples (four (4) samples collected at six (6) hour intervals) for toxicity testing were collected on July 22, 24, and 26, 2013. Each set of four toxicity samples were composited in the bioassay laboratory prior to use in the toxicity tests. Samples were processed in this manner in order to mimic the methods used by the facility. Effluent grab samples for biological and chemical analyses for this facility were collected on July 22, 2013. All samples were collected from the EFF-01 NPDES sampling point for Outfall D-001 by Ramandeep Kaur and Gitta Schmitt (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix C).

The 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 and total ammonia were not detected in the bioassay samples in the bioassay laboratory. The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 0.092 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. Total ammonia was also detected in the field blank.
- Fecal coliforms (1300 B CFU/mL) exceeded the single sample limit of 400 CFU (62-302.530(6), F.A.C). Arsenic, carbonaceous biochemical oxygen demand (CBOD), nickel, selenium, and total alpha particles were detected in the effluent at levels that comply with Class III Fresh Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Chromium, copper, and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential (See Table 2a and 2b and Appendix D)

- The effluent Algal Growth Potential (AGP) was 1.08 A 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 co-limited by both nitrogen and phosphorus (Miller et al. 1978).

Toxicity Test Results (See Appendices D- G)

- Tests were performed July 23 - 30, 2013.

Ceriodaphnia dubia chronic definitive bioassay – IC_{25} > 100%
NOEC – 100%

Pimephales promelas chronic definitive bioassay – IC_{25} > 100%
NOEC – 50%

The bioassay samples were not chronically toxic to the *Ceriodaphnia dubia* test organisms. The *Pimephales promelas* test showed an effect for biomass with a No Observed Effect Concentration (NOEC) of 50% sample. However, the water quality standard (62-302.530 (61) and 62-4.241(1)(b), F.A.C.) and the facilities permitted limit of IC25 not less than 100% sample were not exceeded.

Conclusion

The effluent samples collected from the EFF-01 NPDES sampling point for this facility on July 22, 24, and 26, 2013, were not chronically toxic to the *Ceriodaphnia dubia* test organisms during the chronic definitive bioassays. The *Pimephales promelas* test showed an effect for biomass with a No Observed Effect Concentration (NOEC) of 50% sample. However, the water quality standard and the permitted limit of IC25 not less than 100% sample were not exceeded. The effluent AGP result was less than the "problem" threshold for freshwaters. Fecal coliforms exceeded the single sample limit of 400 CFU (62-302.530(6), F.A.C.) Additional effluent water quality samples collected on July 22, 2013, did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

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

Tampa Electric Company Polk Power Station NPDES #FL0043869	Class III Criteria	Effluent Limits	D-001 Chemistry	
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	270	
Arsenic	≤ 50	≤ 50	4.06	
Cadmium	≤ 0.675 b	≤ 0.675 b	0.050	U
Calcium (mg/L)	-	-	71.9	
Chromium-III	≤ 236.73 b	-	0.41	I
Copper	≤ 26.77 b	≤ 26.77 b	0.92	I
Iron	≤ 1,000	≤ 1,000	30	U
Lead	≤ 15.30 b	≤ 15.30 b	0.20	U
Magnesium (mg/L)	-	-	39.8	
Nickel	≤ 148.14 b	≤ 148.14 b	18.4	
Selenium	≤ 5.0	≤ 5.0	3.03	
Silver	≤ 0.07	≤ 0.07	0.025	U
Sodium	-	-	96	
Zinc	≤ 340.82 b	≤ 340.82 b	5.0	U
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.004	U
Total Phosphorus	-	Report	0.09	
Total Ammonia	-	0.58 s	0.092	
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 s	< 0.02	c
Nitrate and Nitrite	-	Report	0.031	
Total Kjeldahl Nitrogen	-	Report	1.4	
Organic Nitrogen	-	-	1.308	c
Total Nitrogen	-	-	1.431	c
Total Organic Carbon	-	-	12	

Table 1. Continued

General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0 s	≥ 5.0 s	7.71	
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	7.86	
Specific Conductance (µmhos/cm)	≤ 1,275	≤ 1,275 s	1,012	
Temperature (°C)	-	Report	28.54	
Salinity	-	-	0.46	c
Total Residual Chlorine (mg/L)	≤ 0.01 s	≤ 0.01 s	<0.03	QU£
Chlorophyll *a* (µg/L) - Corrected	-	-	21	
Phaeophytin (µg/L)	-	-	15	
Total Suspended Solids (mg/L)	-	100 s	6	I
Turbidity (NTU)	< 29 t	-	3	
Color (true, PCU)	-	-	15	A
Alkalinity (mg CaCO3/L)	-	-	103	
CBOD, 5 day (mg/L), N - inhibited	-	6.0 a	3.6	
Oils and Greases (mg/L)	≤ 5.0 s	≤ 5.0 s	0.72	U
Chloride (mg/L)	-	-	110	
Fluoride (mg/L)	≤ 10.0 s	-	2.9	
Sulfate (mg/L)	-	Report	260	
Alpha, Total (pCi/L)	≤ 15 s	≤ 15 s	5.7	
Alpha-Counting Error (pCi/L)	-	-	1.7	
Flow (MGD)	-	8 a	3.1	a
Hardness (mg $CaCO_3$)	-	Report	343.43	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	-	1300	B

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
b - Value is calculated based on hardness
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
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, Tampa
- 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

Table 2. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata.*

Tampa Electric Polk Power Station														
Location	AGP (measured)		Predicted AGP (TSIN) ± 20%			Predicted AGP (OP) ± 20% *	Predicted AGP (TN) ± 20%			Predicted AGP (TP) ± 20%			Inorganic N:P ratio *	Total N:P ratio
D-001	1.08	A	4.7	±	0.9		54.4	±	10.9	38.7	±	7.7		15.9

* - Ortho-phosphate was not detected in the analytical chemistry sample, so predictions could not be made and the inorganic N:P ratio could not be calculated.

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

Appendix A
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Ramandeep Kaur	Contact Number: (813)-632-7600 ext. 474
Facility Name (as it appears on permit): Tampa Electric company-Polk Power Station	Former Names:
NPDES Permit Number: FL0043869 (Major) (Rev. B)	Permit Expiration Date: March 30, 2014
Physical Address: 9995 State Road 37 South, Mulberry, FL 33860	
District: SWD	County: Polk
Function of Facility: Electric Generating Plant	
Facility Type: Industrial Wastewater	Permitted Capacity (MGD): 8.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 3.1 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): NA	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

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

Sample Point	Description of Monitoring Location
FLW-1	Flow measured with bubbler water level sensor. Sensors connected to a data logger in central laboratory for integrated daily average flow calculations.
EFF-1	The nearest accessible point after final treatment, but prior to mixing with the receiving water (unnamed reclaimed lake).
SWA-1	Temperature monitoring sensor at the old mine cut, located upstream from the unnamed reclaimed lake.

Description of Permitted Outfall(s):

Surface Water Discharge:

An *expanded 8* MGD daily *maximum design* flow of cooling reservoir blowdown through Outfall D-00 I to an unnamed reclaimed lake, which is a Class III fresh water, thence to an unnamed ditch, thence to Little Payne Creek (WBIDs 1757 A and 1757B). The Outfall D-001 point of discharge is located approximately at latitude 27° 43' 40" N, longitude 81° 58' 20" W.

An existing discharge of stormwater associated with industrial activity through Outfall D-002 to an unnamed old mine cut to an unnamed reclaimed lake, which is a Class III fresh water, thence to Little Payne Creek. The Outfall D-002 point of discharge is located approximately at latitude 27° 44' 00" N, longitude 81° 59' I 0" W.

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

WASTEWATER TREATMENT:
The facility uses a recirculating cooling pond for heat dissipation with makeup from ground water and continuous discharge to Little Payne Creek via the unnamed reclaimed lake. The cooling reservoir, which has a capacity of approximately 3.5 billion gallons, receives treated effluent from an on-site Industrial Wastewater Treatment (IWT) system, precipitation, groundwater seepage, low-volume wastewater (reject water from the Reverse Osmosis Unit, boiler blowdown, and laboratory wastes), washdown from the materials storage areas, groundwater from the Floridan aquifer (make-up), stormwater run-off from the diversion box, *treated reclaimed water, non-contact storm water from the reclaimed water pretreatment system and from other site areas,* and recirculated cooling water.

The IWT system treats the slag pile leachate and treated water from the oily water separator. The IWT includes the following basins and units: oiVwater separator, dissolved air flotation tank, equalization basin, slag runoff retention basins, and sand filter. All oil-bearing equipment is segregated using curbed areas with drains directing wash water, stormwater runoff, *contact stormwater from the RTI facility containment area,* minor leaks, and spills to the oiVwater separator. Low volume wastes (boiler blowdown, laboratory wastes, and RO concentrate) are directed to the diversion box. Sand filter backwash water from the IWT system treatment is filtered and directed to the diversion box.
Effluent from the cooling pond is mixed and aerated in a sulfuric acid mixing sump, then monitored in a pH monitoring sump prior to discharge via Outfall D-00 1 to the unnamed reclaimed lake.
Effluent condensate stream from the RTI facility receives treatment via neutralization prior to discharge to the cooling reservoir. The metal cleaning wastes associated with the combustion turbine and compressor washing will be routed to the equalization basin for subsequent filtration treatment. Spent chemicals and metal cleaning wastes not associated with the wash operations will be disposed off site by a licensed contractor.
Stormwater runoff associated with industrial activity is collected around the plant, receives treatment via detention pond, and is discharged through Outfall D-002 into an old mine cut to the unnamed reclaimed lake. Stormwater within containment areas may be diverted to the oil-water separator thence discharged through I-004. Slag leachate collected from the slag pile is sent to either of the two double lined slag leachate ponds, then filtered prior to discharge via outfall I-004.

REUSE:

The facility receives reclaimed water from the City o(Lakeland's Glendale Water Reclamation Wetland Treatment System. A water treatment system will be installed at Polk Power Station for further treating the wetland treatment system effluent. Treatment includes coagulation. flocculation. and clarification through a DensaDeg® reactor/clarifier followed by granular media cluster filtration and reverse osmosis. The reclaimed water is primarily used as supplemental make-up water (or the cooling water systems and secondarily other plant water uses. During limited periods of startup. shutdown. testing. or maintenance of the on-site water treatment system. wetland treatment system effluent may be directly discharged into the onsite cooling reservoir.

The wastewaters generated by the reclaimed water treatment system will be injected into two existing deep wells also know as underground injection control (UJC) program wells. The use of these wells is authorized under a separate permit (UIC Permit No. 0281232).

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Little Payne Creek	Class III Fresh water body

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

Date	Parameter and Units	Limit	Result
1. 5/31/12	Total Suspended Solids (outfall 004)	30 mg/L (Mo. Average)	47 mg/L
2. 1/31/13	IC25 7 Day CHR Ceriodaphnia (outfall 001)	100	84.81
3. 2//28/13	IC25 7 Day CHR Ceriodaphnia (outfall 001)	100	68.06
4. 3/5/13	IC25 7 Day CHR Ceriodaphnia (outfall 001)	100	33.16

Describe previous FYI and WQBEL study:
2005 FYI report submitted as separate email attachment.

Describe previous or current Enforcement Actions (including WLs):

The facility previously had a Consent Order (OGC File No. 07-0097A) related to the exceedances for Selenium and Temperature of the discharge. They have since resolved these violations by providing plans of study which were approved by the Department. This was concluded on May 8, 2012 with the issuance of a closure notification.

Describe any violations or problems noted in previous inspection:
In the last compliance inspection of December 15, 2011, the following deficiencies were noted:
(i) failure to meet a sampling requirement (i.e., a waste stream characterization of the facility's cooling water pond is required at least every five years) of the power plant siting permit, and
(ii) failure of an effluent limitations (i.e., Total Suspended Solids) at an internal outfall (D-004).

A response submitted by the facility on March 9, 2012 (dated 2/22/12) indicates the actions to be taken:

(i) Perform sampling once the station has resumed normal operation from their maintenance outage and all processes have reached equilibrium.
(ii) Submit to the Department a minor permit modification request to eliminate sampling and reporting of TSS at the internal outfall.

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):

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

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	**Monthly Average**	**Daily Maximum**	**Other**	**Monitoring Frequency**	**Sample Type**	**Sample Point**
Flow (MGD)[1]	Report	*8.0*	--	Continuous	Recorder or Calculation	FLW-1
Temperature, Water (DEG.F)	92.0[2] 88.7[3]	Report (See Condition I.A.8)	--	Continuous	Recorder	EFF-1
Temperature, Water, Ambient (DEG.F)	Report (See Condition I.A.8)	--	--	Continuous	Recorder	SWA-1
(ΔT)Temp. Diff. between Outfall and Ambient Monitoring Location (DEG.F)	--	Report (See Condition I.A.8)	4.7 Daily Average	Continuous	Calculated	EFF-1 SWA-1
pH (SU)[4]	--	8.5	6.0 Daily Minimum	Continuous	Recorder	EFF-1
Length of Longest pH Excursion (MINUTES)	--	--	60 Maximum Individual Excursion (See Condition I.A.19) 446 Monthly Total (See Condition I.A.19)	Continuous	Recorder	EFF-1

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	**Monthly Average**	**Daily Maximum**	**Other**	**Monitoring Frequency**	**Sample Type**	**Sample Point**
pH (SU)[4]	--	Report (See Condition I.A.6)	--	Per Occurrence	Grab	EFF-1
Phosphorus, Total (as P) (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
Temperature, Water (DEG.C)	Report (See Condition I.A.6)	Report (See Condition I.A.6)	--	Monthly	Grab	EFF-1
Nitrogen, Ammonia, Total (as N) (MG/L)	0.58	0.58	--	Monthly	Grab	EFF-1
Ammonia, Unionized (as NH3) (MG/L)	0.02 (See Condition I.A.6)	0.02 (See Condition I.A.6)	--	Monthly	Calculated	EFF-1
Nitrogen, Nitrate (as N) (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
Nitrogen, Nitrite (as N) (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
Nitrogen, Kjeldahl, Total (as N) (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
Nitrogen, Total (MG/L)	2.93[5] (See Condition I.E.15)	2.93[5] (See Condition I.E.15)	--	Monthly	Grab	EFF-1
Oxygen, Dissolved (DO) (MG/L)	--	--	5.0 Daily Minimum (See Condition I.A.5)	2 days/week	Grab	EFF-1

Oil and Grease (MG/L)	5.0	5.0	--	Monthly	Grab	EFF-1
Sulfate, Total (MG/L)	Report	Report	--	Monthly	Grab	EFF-1
Solids, Total Suspended (MG/L)	30.0	100.0	--	Monthly	Grab	EFF-1
Chlorine, Total Residual (MG/L)	0.01	0.01	--	Monthly	Grab	EFF-1
Antimony, Total Recoverable (MG/L)	Report	4.30	--	Semiannually	Grab	EFF-1
Arsenic, Total Recoverable (UG/L)	Report	50	--	Semiannually	Grab	EFF-1
Beryllium, Total Recoverable (UG/L)	Report	Report	0.13 Annual[6] Average	Semiannually	Grab	EFF-1

	Discharge Limitations			Monitoring Requirements		
Parameters (units)	**Monthly Average**	**Daily Maximum**	**Other**	**Monitoring Frequency**	**Sample Type**	**Sample Point**
Cadmium, Total Recoverable (UG/L)	See Condition I.A.3.	See Condition I.A.3.	--	Semiannually	Grab	EFF-1
Copper, Total Recoverable (UG/L)	Report	See Condition I.A.3.	--	Semiannually	Grab	EFF-1
Zinc, Total Recoverable (UG/L)	Report	See Condition I.A.3.	--	Semiannually	Grab	EFF-1
Lead, Total Recoverable (UG/L)	Report	See Condition I.A.3.	--	Semiannually	Grab	EFF-1
Nickel, Total Recoverable (UG/L)	Report	See Condition I.A.3.	--	Semiannually	Grab	EFF-1
Selenium, Total Recoverable (UG/L)	5.0[7]	5.0[7]	--	Monthly	Grab	EFF-1
Silver, Total Recoverable (UG/L)	Report	0.07	--	Semiannually	Grab	EFF-1
Thallium, Total Recoverable (UG/L)	Report	6.3	--	Semiannually	Grab	EFF-1
Iron, Total Recoverable (MG/L)	Report	1.0	--	Semiannually	Grab	EFF-1
Specific Conductance (UMHO/CM)	Report	1275	--	Semiannually	Grab	EFF-1
Alpha, Gross Particle Activity (PCI/L)	15.0	15.0	--	Monthly	Grab	EFF-1
BOD, Carbonaceous 5 day, 20C (MG/L)	6.0	8.5	6.0 Annual Average[6]	Monthly	Grab	EFF-1
Hardness, Total (as CaCO3) (MG/L)	Report	Report	--	Semiannually	Grab	EFF-1
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	See Condition I.A.4			Quarterly	24-hr Composite	EFF-1
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	See Condition I.A.4			Quarterly	24-hr Composite	EFF-1



Cooling Reservoir



Aeration before D-001 Discharge



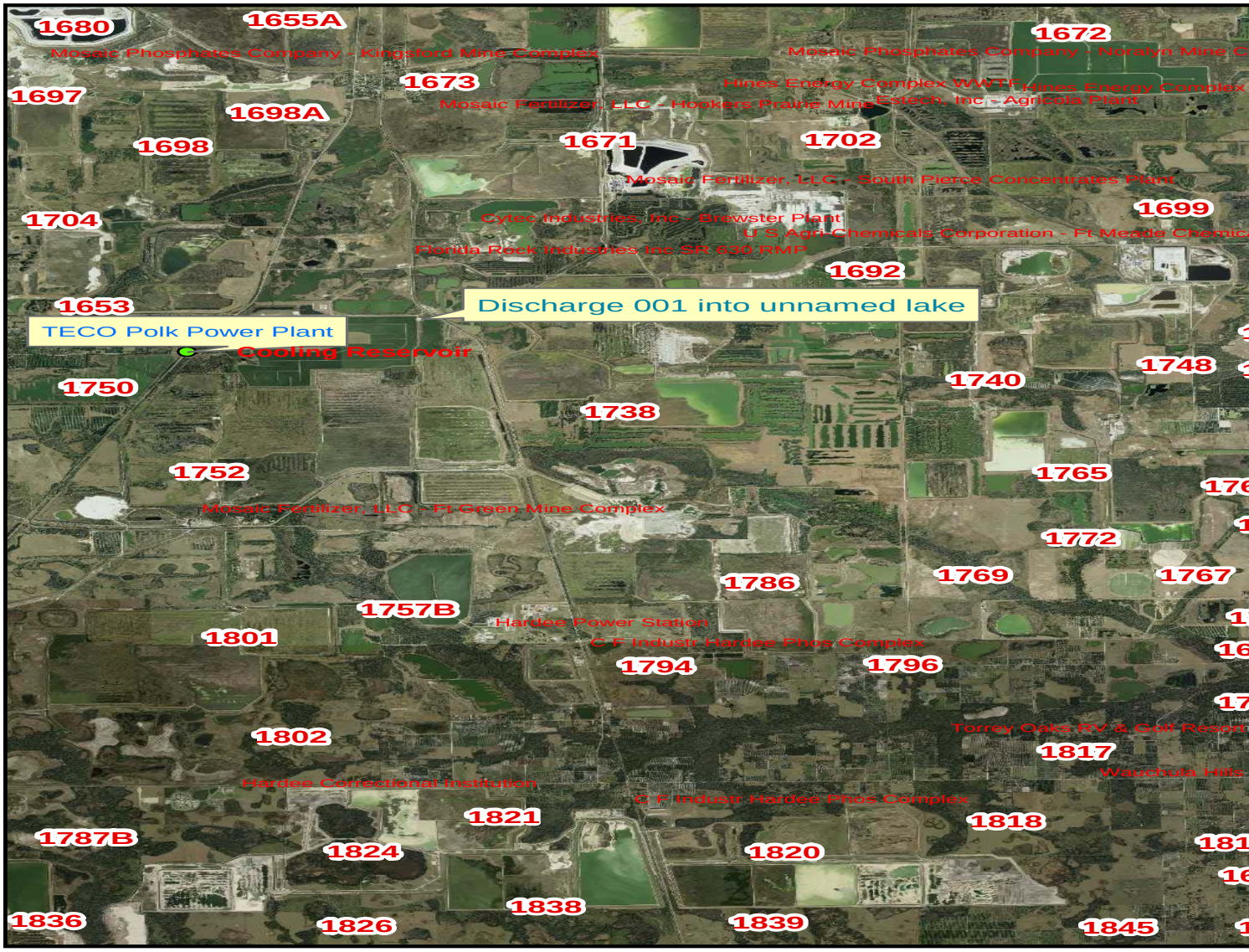
Compliance sampling point for D-001



D-001 discharge into unnmaed reclaimed lake



Stormwater Discharge (D-002)


1680
1655A
Mosaic Phosphates Company - Kingsford Mine Complex
1672
Mosaic Phosphates Company - Noralyn Mine C
1697
1673
Hines Energy Complex WWTF
Hines Energy Complex
Mosaic Fertilizer, LLC - Hookers Prairie Mine
Estech, Inc. - Agricola Plant
1698A
1698
1671
1702
Mosaic Fertilizer, LLC - South Pierce Concentrates Plant
1704
1699
Cytec Industries, Inc - Brewster Plant
U S Agri-Chemicals Corporation - Ft Meade Chemic
Florida Rock Industries Inc SR 630 PMP
1692
1653
Discharge 001 into unnamed lake
TECO Polk Power Plant
Cooling Reservoir
1748
1740
1750
1738
1752
1765
Mosaic Fertilizer, LLC - Ft Green Mine Complex
1772
1786
1769
1767
1757B
Hardee Power Station
1801
C F Industr Hardee Phos Complex
1794
1796
Torrey Oaks RV & Golf Resort
1802
1817
Wauchula Hills
Hardee Correctional Institution
C F Industr Hardee Phos Complex
1821
1818
1787B
1824
1820
1838
1836
1826
1839
1845
0
1
2
4 Miles

Tampa Electric Polk Power Station, Permit #: FL0043869; FYI3 PART II: Sampling Event Information	
Date(s) sample collected: July 22, 2013	**Sampler(s):** Ramandeep Kaur, Gitta Schmitt
Temperature (Deg C): 28.54	**pH (SU):** 7.86
Dissolved Oxygen (mg/L): 7.71	**Conductivity (umhos/cm):** Salinity: 0.49 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: 1.33 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): 3.1 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:	





Compliance sampling point for D-001

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-07-22-31
FYI3 Tampa Electric Polk Power Station Sampling

Requester: Jennifer G. Weger
Field Report Prepared By:

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

Collected By: RAMANDEEP KAUR, GITTA SCHMITT
Send Final Report To: Ilia Balcom & Ramandeep Kaur.
Sampling Agency: FDEP - SWD

Lab ID *	Location / Field ID / Matrix / Lat / Long	Collection (comp begin or grab) Eastern / Composite end Eastern	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L) / Storet Station Number	Sample Depth / Salinity (PPTh) / Sp Conductance (umho/cm) / NPDES Number	Bottle Group(s)**
40856	Location: D-001 Field ID: Fresh (Effluent) Matrix: Fresh Temp (C): 28.54 pH: 7.86 Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☑ Grab Date 7-22-13 Time 1045 Central	7.71	0.49 m / 1012 ☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	A
	Comments: YSI Readings from Compliance Pt.				
40857	Location: D-001 Field ID: Fresh Effluent Matrix: Temp (C): pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☑ Comp ☐ Grab Date 7-22-13 Time 1600 Central Composite end Eastern Date 7-22-13 Time 1030 Central			B
	Comments: 4 grab samples collected at 6-hours intervals for toxicity. These samples need to be composited in Lab				
40860	Location: FIELD BLANK Field ID: Matrix: DI WATER Temp (C): pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☐ Grab Date ~~7-21-13~~ (7-22) Time 1400 Central			C
	Comments: Samples collected on 7/22/13 per G. Schmitt (FKW)				
	Location: Field ID: Matrix: Temp (C): pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☐ Grab Collection (comp begin or grab) Eastern Date Time Central Composite end Eastern Date Time Central	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L) / Storet Station Number	Sample Depth ☐ m ☐ ft / ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) / NPDES Number	Bottle Group(s)**
	Comments:				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Ramandeep Kaur	7-22-13/1600	FEDEX						7-23-13/9:15

4 bioassays @ 10:05 AP 7-23-13

* Shaded Areas for Lab use only.
** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-07-22-31

Requester: Jennifer G. Weger

Field Report Prepared By:

Customer: SW-DIST

Collected By: Ramandeep Kaur, Citta Schmitt

Send Final Report To Ilia Balcom + Ramandeep Kaur

Project ID:

PMAS:

Sampling Agency: FDEP - SWD

Lab ID *	Location D-001		☑ Comp ☐ Grab	Collection (begin) Eastern Date 7-23-13 Time 1600 Central	Collection (end) Eastern Date 7-24-13 Time 1000 Central		Bottle Group(s)** B
	Field ID Fresh Effluent	40858	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc) Fresh	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments 4 grab samples have been collected. These need to be composited in lab for toxicity tests.			
Lab ID *	Location		☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time Central		Bottle Group(s)**
	Field ID		Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			
Lab ID *	Location		☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time Central		Bottle Group(s)**
	Field ID		Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			
Lab ID *	Location		☐ Comp ☐ Grab	Collection (begin) Eastern Date Time Central	Collection (end) Eastern Date Time Central		Bottle Group(s)**
	Field ID		Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .		Comments			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
								7-25-13/9:20a

4 bioassays @ 10:05 7-25-13 AP

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-07-22-31

Customer: SW-DIST

Project ID:

PMAS:

Requester: Jennifer A. Weger

Collected By: Ramandeep Kaur, Gitta Schmitt

Sampling Agency: FDEP - SWD

Field Report Prepared By:

Send Final Report To: Ilia Balcom & Ramandeep Kaur

Lab ID * 40859

Location: D-001

Field ID: Fresh Effluent

Matrix (Include type e.g. Salt, Fresh, etc): Fresh

Temp (C) | pH

Latitude o ' " Longitude o ' "

☒ Comp ☐ Grab

Collection (begin) Eastern Date 7-25-13 Time 1600 Central

Collection (end) (Eastern) Date 7-26-13 Time 1000 Central

Bottle Group(s)**: B

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) | Storet Station Number

Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number

Comments: 4 grab samples collected. These need to be composited in lab for toxicity test. Lab(Facility)(CC attached for date+time info for Sampling

---

Lab ID *

Location

Field ID

Matrix (Include type e.g. Salt, Fresh, etc): Temp (C) | pH

Latitude o ' " Longitude o ' "

☐ Comp ☐ Grab

Collection (begin) Eastern Date Time Central

Collection (end) Eastern Date Time Central

Bottle Group(s)**

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) | Storet Station Number

Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number

Comments

Lab ID *

Location

Field ID

Matrix (Include type e.g. Salt, Fresh, etc): Temp (C) | pH

Latitude o ' " Longitude o ' "

☐ Comp ☐ Grab

Collection (begin) Eastern Date Time Central

Collection (end) Eastern Date Time Central

Bottle Group(s)**

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) | Storet Station Number

Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number

Comments

Lab ID *

Location

Field ID

Matrix (Include type e.g. Salt, Fresh, etc): Temp (C) | pH

Latitude o ' " Longitude o ' "

☐ Comp ☐ Grab

Collection (begin) Eastern Date Time Central

Collection (end) Eastern Date Time Central

Bottle Group(s)**

Tot Res Chlorine (mg/L) | Diss Oxygen (mg/L) | Storet Station Number

Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number

Comments

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Ramandeep Kaur	7-26-13/1430	FEDEX	B Alexander	7.27.13/10.40				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2005

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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	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 10:45	D-001	AGP/LN	Algal Growth Potential	1.08	A	mg DryWt/L	0.3	0.9
7/22/2013 10:45	D-001	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	21		ug/L	0.76	2.3
7/22/2013 10:45	D-001	Chlorophyll/Grain Size/BOD	Phaeophytin-a	15		ug/L	0.55	1.6
7/22/2013 10:45	D-001	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3.6		mg/L	0.2	2
7/22/2013 10:45	D-001	Overflow	Fecal Coliforms-Membrane Filter	1,300	B	cfu/100 mL	10	
7/22/2013 10:30	D-001	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	50		NOEC		
7/22/2013 10:30	D-001	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100	L	IC25		
7/22/2013 10:30	D-001	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100	L	IC25		
7/22/2013 10:30	D-001	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100		NOEC		
7/22/2013 10:45	D-001	Metals	Arsenic	4.06		ug/L	0.25	1
7/22/2013 10:45	D-001	Metals	Potassium	3		mg/L	0.3	1.2
7/22/2013 10:45	D-001	Metals	Selenium	3.03		ug/L	0.2	0.8
7/22/2013 10:45	D-001	Metals	Hardness	343		mg/L	0.4	1.6
7/22/2013 10:45	D-001	Metals	Nickel	18.4		ug/L	0.25	1
7/22/2013 10:45	D-001	Metals	Iron	30	U	ug/L	30	120
7/22/2013 10:45	D-001	Metals	Aluminum	270		ug/L	60	240
7/22/2013 10:45	D-001	Metals	Thallium	0.10	U	ug/L	0.1	0.4
7/22/2013 10:45	D-001	Metals	Sodium	96		mg/L	0.5	2
7/22/2013 10:45	D-001	Metals	Magnesium	39.8		mg/L	0.04	0.16
7/22/2013 10:45	D-001	Metals	Silver	0.025	U	ug/L	0.025	0.1
7/22/2013 10:45	D-001	Metals	Chromium	0.41	I	ug/L	0.3	1.2
7/22/2013 10:45	D-001	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
7/22/2013 10:45	D-001	Metals	Lead	0.20	U	ug/L	0.2	0.8
7/22/2013 10:45	D-001	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
7/22/2013 10:45	D-001	Metals	Zinc	5.0	U	ug/L	5	20
7/22/2013 10:45	D-001	Metals	Copper	0.92	I	ug/L	0.5	1
7/22/2013 10:45	D-001	Metals	Antimony	1.4		ug/L	0.25	1
7/22/2013 10:45	D-001	Metals	Calcium	71.9		mg/L	0.075	0.3
7/22/2013 10:45	D-001	Nutrients	Chloride	110		mg Cl/L	2	5
7/22/2013 10:45	D-001	Nutrients	Nitrite-N	0.014		mg N/L	0.002	0.005
7/22/2013 10:45	D-001	Nutrients	Nitrate-N	0.017		mg N/L	0.004	0.01
7/22/2013 10:45	D-001	Nutrients	Ammonia-N	0.092		mg N/L	0.002	0.005
7/22/2013 10:45	D-001	Nutrients	NO2NO3-N	0.031		mg N/L	0.004	0.01
7/22/2013 10:45	D-001	Nutrients	Turbidity	3		NTU	0.1	0.1

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 10:45	D-001	Nutrients	Alkalinity	103		mg CaCO3/L	0.65	2.5
7/22/2013 10:45	D-001	Nutrients	Color (true)	15	A	PCU	2.5	6
7/22/2013 10:45	D-001	Nutrients	Fluoride	2.9		mg F/L	0.035	0.1
7/22/2013 10:45	D-001	Nutrients	Organic Carbon	12		mg C/L	0.5	1
7/22/2013 10:45	D-001	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
7/22/2013 10:45	D-001	Nutrients	Total-P	0.09		mg P/L	0.005	0.05
7/22/2013 10:45	D-001	Nutrients	Kjeldahl Nitrogen	1.4		mg N/L	0.08	0.2
7/22/2013 10:45	D-001	Nutrients	TSS	6	I	mg/L	2	10
7/22/2013 10:45	D-001	Nutrients	Sulfate	260		mg SO4/L	2	5
7/22/2013 10:45	D-001	Overflow	Oil and Grease	0.72	U	mg/L	0.72	2.6
7/22/2013 10:45	D-001	Overflow	Alpha-Counting Error	1.7		pCi/L		
7/22/2013 10:45	D-001	Overflow	Alpha, Total	5.7		pCi/L		
7/22/2013 10:45	D-001	Pesticides	Atrazine	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Naled	0.039	U	ug/L	0.039	0.16
7/22/2013 10:45	D-001	Pesticides	Norflurazon	0.029	U	ug/L	0.029	0.12
7/22/2013 10:45	D-001	Pesticides	Phorate	0.0049	U	ug/L	0.0049	0.019
7/22/2013 10:45	D-001	Pesticides	Ethoprop	0.0049	U	ug/L	0.0049	0.019
7/22/2013 10:45	D-001	Pesticides	Alachlor	0.058	U	ug/L	0.058	0.23
7/22/2013 10:45	D-001	Pesticides	Malathion	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Chlorpyrifos Methyl	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Fonofos	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Prometryn	0.019	U	ug/L	0.019	0.078
7/22/2013 10:45	D-001	Pesticides	Bromacil	0.039	U	ug/L	0.039	0.16
7/22/2013 10:45	D-001	Pesticides	Hexazinone	0.029	U	ug/L	0.029	0.12
7/22/2013 10:45	D-001	Pesticides	Metalaxyl	0.039	U	ug/L	0.039	0.16
7/22/2013 10:45	D-001	Pesticides	Mevinphos	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Parathion Methyl	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Metolachlor	0.058	U	ug/L	0.058	0.23
7/22/2013 10:45	D-001	Pesticides	Metribuzin	0.019	U	ug/L	0.019	0.078
7/22/2013 10:45	D-001	Pesticides	Azinphos Methyl	0.019	U	ug/L	0.019	0.078
7/22/2013 10:45	D-001	Pesticides	Ethion	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Ametryn	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Butylate	0.019	U	ug/L	0.019	0.078
7/22/2013 10:45	D-001	Pesticides	Chlorpyrifos Ethyl	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Diazinon	0.0097	U	ug/L	0.0097	0.039
7/22/2013 10:45	D-001	Pesticides	Fenamiphos	0.029	U	ug/L	0.029	0.12
7/22/2013 10:45	D-001	Pesticides	Parathion Ethyl	0.019	U	ug/L	0.019	0.078
7/22/2013 10:45	D-001	Pesticides	Simazine	0.0097	U	ug/L	0.0097	0.039

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
7/22/2013 10:45	D-001	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Di-n-butyl phthalate	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Diethyl phthalate	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
7/22/2013 10:45	D-001	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
7/22/2013 10:45	D-001	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	UJ	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.7
7/22/2013 10:45	D-001	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,4-Dinitrophenol	14	UJ	ug/L	14	58
7/22/2013 10:45	D-001	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Butyl benzyl phthalate	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
7/22/2013 10:45	D-001	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.77

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
7/22/2013 10:45	D-001	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.77
7/22/2013 10:45	D-001	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
7/22/2013 10:45	D-001	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Dimethyl phthalate	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
7/22/2013 10:45	D-001	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/22/2013 10:45	D-001	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
7/22/2013 10:45	D-001	Field Parameter	Dissolved Oxygen	7.71		mg/L		
7/22/2013 10:45	D-001	Field Parameter	pH	7.86				
7/22/2013 10:45	D-001	Field Parameter	Specific Conductance	1,012		umhos/cm		
7/22/2013 10:45	D-001	Field Parameter	Temperature	28.54		C		
7/22/2013 14:00	Field Blank	Metals	Aluminum	60	U	ug/L	60	240
7/22/2013 14:00	Field Blank	Metals	Selenium	0.20	U	ug/L	0.2	0.8
7/22/2013 14:00	Field Blank	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
7/22/2013 14:00	Field Blank	Metals	Lead	0.20	U	ug/L	0.2	0.8
7/22/2013 14:00	Field Blank	Metals	Zinc	5.0	U	ug/L	5	20
7/22/2013 14:00	Field Blank	Metals	Iron	30	U	ug/L	30	120
7/22/2013 14:00	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
7/22/2013 14:00	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
7/22/2013 14:00	Field Blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
7/22/2013 14:00	Field Blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
7/22/2013 14:00	Field Blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
7/22/2013 14:00	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
7/22/2013 14:00	Field Blank	Metals	Hardness	0.40	U	mg/L	0.4	1.6
7/22/2013 14:00	Field Blank	Metals	Potassium	0.30	U	mg/L	0.3	1.2
7/22/2013 14:00	Field Blank	Metals	Sodium	0.50	U	mg/L	0.5	2
7/22/2013 14:00	Field Blank	Metals	Thallium	0.10	U	ug/L	0.1	0.4
7/22/2013 14:00	Field Blank	Metals	Antimony	0.25	U	ug/L	0.25	1
7/22/2013 14:00	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
7/22/2013 14:00	Field Blank	Metals	Copper	0.50	U	ug/L	0.5	1

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 14:00	Field Blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
7/22/2013 14:00	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
7/22/2013 14:00	Field Blank	Nutrients	Turbidity	0.10	U	NTU	0.1	0.1
7/22/2013 14:00	Field Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
7/22/2013 14:00	Field Blank	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
7/22/2013 14:00	Field Blank	Nutrients	Nitrate-N	0.004	U	mg N/L	0.004	0.01
7/22/2013 14:00	Field Blank	Nutrients	Nitrite-N	0.002	U	mg N/L	0.002	0.005
7/22/2013 14:00	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
7/22/2013 14:00	Field Blank	Nutrients	Ammonia-N	0.008		mg N/L	0.002	0.005
7/22/2013 14:00	Field Blank	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1
7/22/2013 14:00	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
7/22/2013 14:00	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
7/22/2013 14:00	Field Blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
7/22/2013 14:00	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
7/22/2013 14:00	Field Blank	Overflow	Alpha, Total	0.5	U	pCi/L		
7/22/2013 14:00	Field Blank	Overflow	Oil and Grease	0.86	U	mg/L	0.86	3.1
7/22/2013 14:00	Field Blank	Overflow	Alpha-Counting Error	0.4		pCi/L		
7/22/2013 14:00	Field Blank	Pesticides	Ethoprop	0.0052	U	ug/L	0.0052	0.021
7/22/2013 14:00	Field Blank	Pesticides	Naled	0.042	U	ug/L	0.042	0.17
7/22/2013 14:00	Field Blank	Pesticides	Parathion Ethyl	0.021	U	ug/L	0.021	0.083
7/22/2013 14:00	Field Blank	Pesticides	Parathion Methyl	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Prometryn	0.021	U	ug/L	0.021	0.083
7/22/2013 14:00	Field Blank	Pesticides	Azinphos Methyl	0.021	U	ug/L	0.021	0.083
7/22/2013 14:00	Field Blank	Pesticides	Chlorpyrifos Methyl	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Metalaxyl	0.042	U	ug/L	0.042	0.17
7/22/2013 14:00	Field Blank	Pesticides	Alachlor	0.063	U	ug/L	0.063	0.25
7/22/2013 14:00	Field Blank	Pesticides	Atrazine	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Fenamiphos	0.031	U	ug/L	0.031	0.13
7/22/2013 14:00	Field Blank	Pesticides	Metolachlor	0.063	U	ug/L	0.063	0.25
7/22/2013 14:00	Field Blank	Pesticides	Mevinphos	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Norflurazon	0.031	U	ug/L	0.031	0.13
7/22/2013 14:00	Field Blank	Pesticides	Ametryn	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Butylate	0.021	U	ug/L	0.021	0.083
7/22/2013 14:00	Field Blank	Pesticides	Metribuzin	0.021	U	ug/L	0.021	0.083
7/22/2013 14:00	Field Blank	Pesticides	Bromacil	0.042	U	ug/L	0.042	0.17
7/22/2013 14:00	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Ethion	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Diazinon	0.010	U	ug/L	0.01	0.042

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 14:00	Field Blank	Pesticides	Phorate	0.0052	U	ug/L	0.0052	0.021
7/22/2013 14:00	Field Blank	Pesticides	Fonofos	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Simazine	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Malathion	0.010	U	ug/L	0.01	0.042
7/22/2013 14:00	Field Blank	Pesticides	Hexazinone	0.031	U	ug/L	0.031	0.13
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Fluoranthene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Phenanthrene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Isophorone	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Pyrene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0	U	ug/L	2	7.8
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0	U	ug/L	2	7.8
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Phenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98	UJ	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	59

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Acenaphthene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzidine	98	U	ug/L	98	390
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Chrysene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Fluorene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Naphthalene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.0	U	ug/L	2	7.8
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.8	U	ug/L	9.8	39
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Anthracene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.20	U	ug/L	0.2	0.78
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0	U	ug/L	2	7.8
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0	U	ug/L	2	7.8
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.98	U	ug/L	0.98	3.9
7/22/2013 14:00	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.98	U	ug/L	0.98	3.9

Appendix E
Bioassay Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet
Ceriodaphnia dubia

Facility: Tampa Electric Polk Power Station
Address: 9995 State Rd. 37 South, Mulberry, FL 33860
County: Polk
NPDES Permit #: FL 0043869
Contact/District: Ramandeep Kaur

LIMS entry: 8-1-13 MF verified: 8.7.13 BA

Diluent/ Batch: MHWCD / 7-20-13 Test Days Used: 0-5
MHWCD / _____ Test Days Used: _____

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0
Organism: *Ceriodaphnia dubia*
Organism Batch #: 7.23.13
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 4.3.13 4.22.13
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-2013-07-23-41	1520332	7-22-13 1030	7-23-13 1005
Test Day 2	2	TLH-2013-07-25-29	1520939	7-24-13 1000	7-25-13 1005
Test Day 4	3	TLH-2013-07-29-16	1521826	7-26-13 1000	7-27-13 1040

Water Quality Parameters	Batch # 7-20-13 MHWCD	MHWCD	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	<0.03	<0.03		AP/BA	CR
Alkalinity (mg/L as $CaCO_3$):	69		114	95	97		AP/CR	CR/AP
Hardness (mg/L as $CaCO_3$):	76		~~312~~ 313 AP	313	308		AP/CR	CR/AP
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017	<0.017		BA/MF	CR
Conductivity (µmhos) mmhos:	314		1085	1083	1062		BA	CR
Salinity (ppth):								

Test Incubated in: Incubator #: 5

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 # 5 min. 24.8 max. 26.0
Room B246 min. 24.8 max. 25.3
Test min. 24.0 max. 25.2

Loaded by: BA

Test Replicates	Loaded from culture vial
1	A1
2	A3
3	A 20
4	A 28
5	A 29
6	B1
7	~~B~~ B8 B A
8	B2 8
9	A6
10	A 21

Results	
Control % CV:	22.9%
Dunnetts PMSD:	23.2%
Reproduction NOEC:	100%
Reproduction LOEC:	>100%
Survival NOEC:	100%
Survival LOEC:	>100%
ICP_{20}:	>100%
ICP_{25}:	>100%

Investigators' signatures

	Initials
Cassidy Reichert	CR
Adrianne Pennington	AP
Brian Ayala	BA
Marshall Faircloth	MF

REVIEWER Liz Miller

Comments:

Test Page 1 of 6 PAGE 00055 revised 02/15/13 MF

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Tampa Electric Polk

LIMS Sample #: 1520333 for lab sample #1

Start Date: 7.23.13 Time: 1300

End Date: 7.29.13 Time: 1400

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	0	0	0	0	0	0	0	10	0
	3	0	0	0	4	0	2	3	0	0	0	9	10	0.9
	4	4	0	3	8	7	0	0	7	3	0	32	10	3.2
	5	9	10	3	0	0	9	9	0	9	9	58	10	5.8
	6	15	14	6	13	10	12	15	10	11	14	120	10	12.0
	7													
	8													
	Total	28	24	12	25	17	23	27	17	23	23	219	10	21.9

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	0	0	0	0	0	0	0	0	0	10	0
	3	2	0	0	4	2	3	3	0	0	0	14	10	1.4
	4	0	4	0	0	0	0	0	3	0	3	10	10	1.0
	5	7	0	8	11	8	7	9	10	7	10	77	10	7.7
	6	12	6	12	10	10	15	13	11	10	7	106	10	10.6
	7													
	8													
	Total	21	10	20	25	20	25	25	24	17	20	207	10	20.7

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

Concentration	Mean neonates /female	% survival
Control	21.9	100%
6.25%	20.7	100%
12.50%	20.4	100%
25%	22.2	100%
50%	19.2	100%
100%	20.1	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: Tampa Electric, Polk

LIMS Sample #: 1520332 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	0	0	0	0	0	0	10	0
	3	0	1	3	2	2	2	2	0	0	0	13	10	1.3
	4	0	0	0	0	0	0	0	3	4		7	10	0.7
	5	10	11	11	0	9	8	8	10	4		78	10	7.8
	6	13	10	11	12	0	13	11	13	13	11	106	10	10.6
	7													
	8													
	Total	23	18	25	25	3	23	21	21	26	19	204	10	20.4

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	0	0	10	0
	3	2	3	1	0	4	2	1	1	0	0	13	10	1.3
	4	0	0	0	7	0	0	0	0	4	1	12	10	1.2
	5	9	9	13	1	8	9	9	6	10	6	80	10	8.0
	6	15	13	13	7	14	13	12	12	10	8	117	10	11.7
	7													
	8													
	Total	26	26	26	35	26	24	22	19	24	15	222	10	22.2

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	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	3	3	2	1	1	0	0	0	14	10	1.4
	4	0	2	0	0	7	7	5	0	0	3	24	10	2.4
	5	8	M	6	10	0	0	0	10	10	10	65	10	6.5
	6	9	0	14	12	10	3	11	8	11	11	89	10	8.9
	7													
	8													
	Total	21	13	23	25	19	11	17	18	21	24	192	10	19.2

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	0	0	0	0	0	0	10	0
	3	2	3	4	3	2	2	2	1	3	0	22	10	2.2
	4	8	8	10	7	7	2	8	0	0	0	50	10	5.0
	5	0	0	0	0	0	0	0	9	10	7	26	10	2.6
	6	8	11	13	12	10	8	12	9	10	10	103	10	10.3
	7													
	8													
	Total	18	22	27	22	19	12	22	19	23	17	201	10	20.1

Comments:

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Tampa Electric Polk SOP TA07_05

LIMS Sample #: 1520332 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	7.6	24.4	7.5	3## 14 BA					
	1	6.25%	M	7.6	24.5	7.6	366					
	1	12.5%	M	7.5	24.7	7.6	418					
	1	25%	M	7.5	24.8	7.7	517					
	1	50%	M	7.5	24.7	7.8	707					
	1	100%	M	7.5	24.6	7.9	1085					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample:	Control	M	7.3	24.8	7.5	305	M	7.6	24.0	7.7	333
	1	6.25%	M	7.3	24.9	7.5	360	M	7.6	24.0	7.8	394
	1	12.5%	M	7.3	24.9	7.5	412	M	7.6	24.0	8.0	426
	1	25%	M	7.3	24.8	7.6	511	M	7.6	24.0	8.0	578
	1	50%	M	7.3	24.7	7.8	704	M	7.6	24.0	7.9	731
	1	100%	M	7.3	24.5	7.7	1078	M	7.6	24.0	8.0	1106
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample:	Control	M	7.4	24.7	7.5	305	M	7.6	24.1	7.5	341
	2	6.25%	M	7.5	24.7	7.0	370	M	7.6	24.0	7.5	400
	2	12.5%	M	7.4	24.6	7.3	418	M	7.6	24.0	7.4	452
	2	25%	M	7.4	24.6	7.5	518	M	7.6	24.0	7.3	554
	2	50%	M	7.4	24.5	7.3	708	M	7.6	24.0	7.3	756
	2	100%	M	7.4	24.3	7.3	1083	M	7.6	24.0	7.5	1125
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 3	sample:	Control	M	8.1	24.7	7.6	329	M	8.2	24.1	7.6	345
	2	6.25%	M	8.1	24.9	7.6	364	M	8.1	24.0	7.7	409
	2	12.5%	M	8.1	25.0	7.6	417	M	8.1	24.0	7.8	435
	2	25%	M	8.1	25.0	7.7	520	M	8.0	24.0	7.8	551
	2	50%	M	8.1	25.1	7.7	714	M	7.9	24.0	7.9	735
	2	100%	M	8.0	25.2	7.7	1093	M	7.9	24.0	7.9	1118
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA

Comments:

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Tampa Electric Polk SOP TA07_05

LIMS Sample #: 1520332 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	8.0	24.7	7.6	317	M	8.1	24.0	7.8	343
	3	6.25%	M	8.0	24.9	7.6	364	M	8.0	24.0	7.8	408
	3	12.5%	M	8.0	24.9	7.6	413	M	8.0	24.0	7.8	468
	3	25%	M	7.9	24.8	7.5	512	M	8.0	24.0	7.6	575
	3	50%	M	7.9	24.6	7.5	694	M	7.9	24.0	7.5	775
	3	100%	M	7.8	24.6	7.7	1062	M	7.9	24.0	7.5	1146
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 5	sample:	Control	M	7.8	24.8	7.6	321	M	7.9	24.0	7.8	336
	3	6.25%	M	7.7	24.7	7.6	366	M	7.9	24.0	7.7	388
	3	12.5%	M	7.7	25.1	7.6	418	M	7.9	24.0	7.7	440
	3	25%	M	7.7	24.9	7.6	517	M	7.8	24.0	7.7	564
	3	50%	M	7.7	24.9	7.6	705	M	7.8	24.0	7.7	769
	3	100%	M	7.7	25.0	7.7	1073	M	7.8	24.0	7.8	1184
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 6	sample:	Control	M					M	8.0	24.5	7.8	336
	3	6.25%	M					M	8.0	24.2	7.9	394
	3	12.5%	M					M	8.0	24.2	7.9	448
	3	25%	M					M	8.0	24.2	7.9	550
	3	50%	M					M	8.0	24.5	7.9	744
	3	100%	M					M	8.1	24.8	8.0	1127
	Measured by:								AP	AP	AP	AP
	Recorded by:								AP	AP	AP	AP
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: Tampa Electric Polk Dates: 7.23.13 - 7.29.13

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: CR 7.30.13

V 1.3 2/15/13 MF

PAGE

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Tampa Electric Polk Power Station
Address: 9995 State Rd. 37 South, Mulberry, FL 33860
County: Polk
NPDES Permit #: FL 0043869
Contact/District: Ramandeep Kaur

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: 7.23.13 Time: 1415
End Date: 7.30.13 Time: 0900

Diluent/ Batch:
MHW / 7.11.13 Test Days Used: 0-2
MHW / 7.20.13 Test Days Used: 3-6
ASW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____

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

Organism Batch #: 7.23.13	
Artemia Batch #	
Day 0 135.13	Day 3 138.13
Day 1 136.13	Day 4 139.13
Day 2 137.13	Day 5 140.13
	Day 6 141.13

LIMS entry: MF 8-7-13 Entry verification: 8.7.13 BA

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2013-07-23-41	1520332	7-22-13 1030	7-23-13 1005
Test Day 2	2	TLH-2013-07-25-29	1520939	7-24-13 1000	7-25-13 1005
Test Day 4	3	TLH-2013-07-29-16	1521826	7-26-13 1000	7-27-13 1040

Water Quality Parameters	Batch #	7.11.13 MHW/ASW (circle one)	7.20.13 MHW/ASW (circle one)	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	<0.03	<0.03	<0.03		AP/BA	CR
Alkalinity (mg/L as $CaCO_3$):		72	70	114	AP 73 95	97		AP/CR	CR/AP
Hardness (mg/L as $CaCO_3$):		83	81	313 AP	AP 306 313	308		AP/CR	CR/AP
Total Ammonia (mg/L as N):		CR 0.07 0.15	<0.017	<0.017	<0.017	<0.017		~~CR~~ BA/MF	CR
Conductivity (µmhos) mmhos:		293	292	1068	1040	1046		CR/AP	AP/CR
Salinity (ppth):									

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 24.2 max 25.5
Water bath # ____ min. _____ max. _____
Room B246 min 24.8 max 25.2

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:	50 %
Growth LOEC:	100 % 6.25*
Growth IC_{20}:	59 %
Growth IC_{25}:	>100 %
Ctrl % CV:	3,98 %
Dunnetts PMSD:	16.1 %
Survival NOEC:	100 %
Survival LOEC:	>100 %

Investigators' signatures

	Initials:
Cassidy Borchart	CR
Adrienne Pennington	AP
Bree Abraham	BA
Marshall Faircloth	MF

REVIEWER Liz Miller LM

Comments: * 6.25% LOEC - interrupted dose response, MF-8-5-13

revised 03/26/13 MF

Chronic Bioassay Survival Benchsheet

Facility: Tampa Electric Polk

LIMS Sample Number: 152032
(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	10	10	10	10	10	10
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	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 12.5 %	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	10	10	10	10	10	10
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	9 ID	9	9	9	9	9
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	9 ID	9
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	9 ID	8 ID	8	8
	D	10	10	10	10	9 ID	9	9	9
Sample 100 %	A	10	10	10	10	10	10	9 ID	9
	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 %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: AP	Checked by:		CR	CR	AP	CR	AP	CR	AP
Verified by: CR									

Comments:

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Tampa Electric Polk

LIMS Sample #: 1520332 (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	24.8	8.4	325							
	1	6.25%	A	7.8	24.9	8.5	359							
	1	12.5%	A	7.8	25.0	8.4	406							
	1	25%	A	7.9	24.9	8.4	508							
	1	50%	A	7.9	24.9	8.5	708							
	1	100%	A	7.9	25.0	8.5	1068							
	1		A											
	Measured by:			AP	AP	AP	AP							
	Recorded by:			AP	AP	AP	AP							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.8	24.0	8.3	298		B	7.9	24.4	8.2	311	
	1	6.25%	B	7.8	24.3	8.3	358		B	7.9	24.4	8.2	354	
	1	12.5%	B	7.8	24.0	8.3	398		B	7.9	24.4	8.2	404	
	1	25%	B	7.8	24.2	8.3	499		B	7.9 CR	24.4	8.1	497	
	1	50%	B	7.9	24.0	8.3	690		B	8.0	24.4	8.2	692	
	1	100%	B	7.9	24.0	8.2	1048		B	8.0	24.4	8.1	1052	
	1		B						B					
	Measured by:			CR	AP	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	CR	CR	CR			CR	AP	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.9	25.6	7.9	325		C	7.7	24.6	7.7	309	
	2	6.25%	C	7.8	25.3	7.9	357		C	7.7	24.5	7.7	345	
	2	12.5%	C	7.8	25.4	7.4	407		C	7.7	24.4	7.6	398	
	2	25%	C	7.8	25.1	7.4	506		C	7.7	24.4	7.6	496	
	2	50%	C	7.8	25.2	7.5	706		C	7.7	24.3	7.7	702	
	2	100%	C	7.9	25.6	7.4	1082		C	7.7	24.3	7.7	1040	
	2		C						C					
	Measured by:			CR	AP	CR	CR			AP	CR	AP	AP	
	Recorded by:			CR	CR	CR	CR			AP	AP	AP	AP	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	8.1	24.3	7.8	302		D	8.0	24.7	8.2	305	
	2	6.25%	D	8.0	24.3	7.5	356		D	8.0	24.6	8.2	344	
	2	12.5%	D	8.0	24.1	7.4	409		D	7.9	24.6	8.1	395	
	2	25%	D	7.9	24.4	7.4	511		D	7.9	24.6	8.1	495	
	2	50%	D	7.9	24.6	7.2	731		D	7.9	24.6	7.9	694	
	2	100%	D	7.8	24.4	6.7	1073		D	7.9	24.8	7.6	1055	
	2		D						D					
	Measured by:			AP	CR	AP	AP			CR	CR	CR	CR	
	Recorded by:			AP	AP	AP	AP			CR	AP	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: Tampa Electric Polk

LIMS Sample #: 1520332 (for Lab sample #1)

conc = concentration rep = replicate

Test Day ↓		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/mmhos)	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/mmhos)	Salinity ppth
Day 4	sample:	Control	A	7.7	25.5	7.0	314		A	7.8	24.7	8.0	308	
	3	6.25%	A	7.7	25.5	7.2	365		A	7.8	24.7	8.0	339	
	3	12.5%	A	7.6	25.9	7.3	425		A	7.8	24.7	8.0	391	
	3	25%	A	7.7	26.0	7.4	531		A	7.8	24.7	8.0	493	
	3	50%	A	7.7	25.7	7.4	737		A	7.9	24.7	8.1	681	
	3	100%	A	7.7	25.3	6.9	1106		A	7.9	25.2	8.4	1046	
	3		A						A					
	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 5	sample:	Control	B	7.7	24.3	6.8	312		B	7.6	24.8	8.0	300	
	3	6.25%	B	7.7	24.7	7.3	351		B	7.6	24.7	7.8	335	
	3	12.5%	B	7.7	25.3	7.4	401		B	7.7	24.8	7.8	382	
	3	25%	B	7.7	24.2	7.4	498		B	7.7	24.8	7.8	469	
	3	50%	B	7.7	24.6	7.3	687		B	7.7	24.8	7.7	658	
	3	100%	B	7.7	24.8	7.2	1042		B	7.7	25.2	7.6	1022	
	3		B						B					
	Measured by:			AP	AP	AP	AP			AP	AP	AP	AP	
	Recorded by:			AP	AP	AP	AP			AP	AP	AP	AP	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C	7.7	25.7	7.0	332		C	8.0	24.7	7.4	295	
	3	6.25%	C	7.7	25.0	6.7	343		C	8.0	24.6	7.4	338	
	3	12.5%	C	7.7	25.6	7.2	395		C	8.0	24.5	7.4	389	
	3	25%	C	7.7	25.2	6.8	490		C	7.9	24.5	7.4	482	
	3	50%	C	7.7	25.3	6.5	687		C	7.9	24.6	7.4	670	
	3	100%	C	7.8	25.4	6.9	1052		C	8.0	24.7	7.2	1033	
	3		C						C					
	Measured by:			CR	CR	CR	CR			AP	CR	AP	AP	
	Recorded by:			CR	CR	CR	CR			AP	AP	AP	AP	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control	D	7.8	24.4	8.0	298		D					
	3	6.25%	D	7.8	24.4	7.4	352		D					
	3	12.5%	D	7.7	24.4	7.3	403		D					
	3	25%	D	7.7	24.4	7.3	502		D					
	3	50%	D	7.7	24.3	7.2	692		D					
	3	100%	D	7.8	24.8	7.2	1073		D					
	3								D					
	Measured by:			CR	CR	CR	CR							
	Recorded by:			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

Page 7

Chronic Bioassay Weighing Benchsheet

Facility: Tampa Electric Polk

LIMS Sample Number: 1520332
(for Lab Sample # 1)

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

			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 # Fish	Mean wt. mg	Avg.
Control	A	25	0.02558	0.03159	0.00601	10	0.601	
	B	26	0.02577	0.03198	0.00621	10	0.621	
	C	27	0.02605	0.03257	0.00652	10	0.652	0.618
	D	28	0.02550	0.03149	0.00599	10	0.599	
sample 6.25%	A	29	0.02646	0.03162	0.00516	10	0.516	
	B	30	0.02581	0.03135	0.00554	10	0.554	
	C	31	0.02501	0.02997	0.00496	10	0.496	0.50
	D	32	0.02761	0.03232	0.00471	10	0.471	
sample 12.5%	A	33	0.02605	0.03125	0.0052	10	0.52	
	B	34	0.02618	0.03056	0.00438	10	0.438	
	C	35	0.02585	0.03032	0.00447	10	0.447	0.46
	D	36	0.02590	0.03031	0.00441 AP	10	0.441	
sample 25%	A	37	0.02611	0.03131	0.0052	10	0.52	
	B	38	0.02605	0.03046	0.00441	10	0.441	
	C	39	0.02519	0.02995	0.00476	10	0.476	0.495
	D	40	0.02578	0.03120	0.00542	10	0.542	
sample 50%	A	41	0.02646	0.03311	0.00664	10	0.664	
	B	42	0.02624	0.03206	0.00582	10	0.582	
	C	43	0.02696	0.03116	0.0042	10	0.42	0.54
	D	44	0.02609	0.03103	0.00494	10	0.494	
sample 100%	A	45	0.02610	0.03126	0.00516	10	0.516	
	B	46	0.02671	0.03142	0.00471	10	0.471	
	C	AP48 47	0.02672	0.03197	0.00525	10	0.525	~~0.460~~ 0.47: sm
	D	48	0.02671	0.03060	0.00389	10	0.389	
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.

Page 6.8

Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Tampa Electric. Polk

LIMS Sample Number: 1520332
(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: 7.29.13 Final Weighing Date: 7.31.13

			Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02558	@0.02558	S-weights	@	
Tare Pan 1 after Pan 10 (g)	0.02557	@0.02558	at tare	@	
Tare Pan 1 after Pan 15 (g)	0.02557	@0.02558	S-weights	@	
Tare Pan 1 after Pan 20 (g)	0.02557	@0.02558	at final	@	
Tare Pan 1 after Pan 25 (g)	0.02556	@0.02558			
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)	0.03159	@0.03159			
Final Pan 1 after Pan 10 (g)	0.03158	@0.03159			
Final Pan 1 after Pan 15 (g)	0.03158	@0.03159			
Final Pan 1 after Pan 20 (g)	0.03159	@0.03159			
Final Pan 1 after Pan 25 (g)	0.03159	@0.03159			
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

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Test ID: Tampa Electric Polk Dates: 7.23.13 - 7.30.13

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: CR 7.30.13

V 1.3 2/15/13 MF

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Appendix F
Standard Reference Toxicant Data

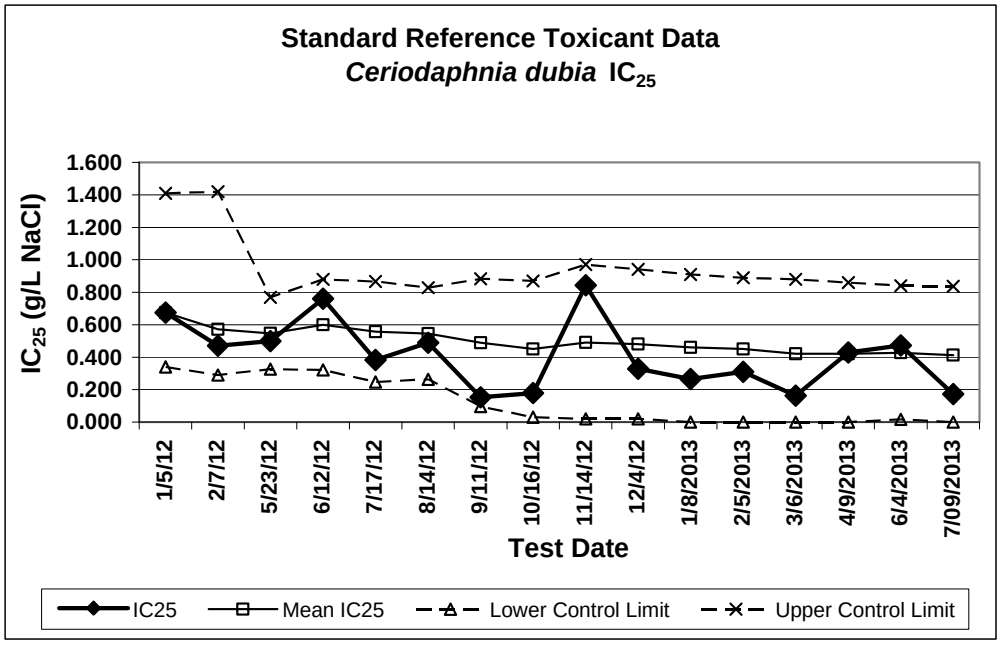
Florida Department of Environmental Protection
Bureau of Laboratories

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	0.674	0.140	0.340	1.410
2/7/12	0.470	0.572	0.110	0.290	1.420
5/23/12	0.498	0.547	0.110	0.326	0.768
6/12/12	0.760	0.600	0.139	0.322	0.879
7/17/12	0.383	0.557	0.155	0.247	0.867
8/14/12	0.489	0.546	0.141	0.263	0.828
9/11/12	0.153	0.489	0.197	0.096	0.883
10/16/12	0.179	0.450	0.210	0.030	0.870
11/14/12	0.843	0.490	0.240	0.020	0.970
12/4/12	0.328	0.480	0.230	0.020	0.940
1/8/2013	0.266	0.460	0.230	0.000	0.910
2/5/2013	0.309	0.450	0.220	0.000	0.890
3/6/2013	0.163	0.420	0.230	0.000	0.880
4/9/2013	0.429	0.420	0.220	0.000	0.860
6/4/2013	0.472	0.428	0.210	0.016	0.839
7/09/2013	0.173	0.412	0.210	0.000	0.836

Means are of the last 16 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

EPA 75th Percentile %CV for Reproduction **45%**
Last 16 - Lab %CV Reproc **51.6%**



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: MHWCD / 6.27.13 Test Days Used: 0 - 3
MHWCD / 7.10.13 Test Days Used: 4 - 6
Toxicant/ Batch: NaCl / 7.9.13

SOP # : TA 07_05
EPA-821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 7.9.13 / <24 hr.
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 4.3.13 4.22.13
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 7.9.13 Time: 1100
End Date: 7.15.13 Time: 1300

Water Quality Parameters	MHWCD 6.27.13	MHWCD 7.10.13	Method	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	HACH	CR/AP	AP/CR
Alkalinity (mg/L as $CaCO_3$):	70	69	HACH	CR/AP	AP/CR
Hardness (mg/L as $CaCO_3$):	85	76	HACH	CR/AP	AP/CR
Total Ammonia (mg/L as N):	<0.017	<0.017	DENVER	BA	CR
Conductivity µmhos-cm mmhos-cm :	354	306	YSI / Mettler	AP/CR	CR/

Results	mf 7/19/13
Control % CV:	23.9%
Dunnetts PMSD:	15.1%
Reproduction NOEC:	< 0.375 g/L
Reproduction LOEC:	0.375 g/L
Survival NOEC:	1.5 g/L
Survival LOEC:	3 g/L
IC_{20}:	0.439 g/L
IC_{25}:	0.173 g/L

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

Test Replicate	Loaded from culture vial
1	A25
2	B11
3	B25
4	A8
5	C20
6	C38
7	A18
8	A27
9	B3
10	B22

Comments:

Investigators' signatures	Initials
Adrienne Pennuto	AP
Cassidy Reinbeck	CR
Brie Alley	BA
Marshall Sandbeck	MF

REVIEWER Liz Miller

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min 24.6 max 26.1
Test – min 23.5 max 25.2
Room B246 min 24.7 max 25.3

Ceriodaphnia dubia Survival and Reproduction

Start Date: 7.9.13 Time: 1100 Loaded by: AP
End Date: 7.15.13 Time: 1300 Verified by: CR

Conc. (g/L)	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	0	0	0	0	0	0	0	10	0
	3	0	4	0	0	0	0	0	0	3	2	9	10	0.9
	4	4	0	4	4	3	4	4	4	0	0	27	10	2.7
	5	0	9	X6	7	7	8	8	8	5	6	64	9	6.4
	6	7	11	|	7	8	6	7	8	8	10	72	9	7.2
	7			|										
	8			|										
	Total	11	24	10	18	18	18	19	20	16	18	172	9	17.2
0.375	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	2	1	3	0	0	0	0	4	3	15	10	1.5
	4	0	5	4	0	0	0	0	1	0	0	10	10	1
	5	4	0	0	0	0	2	0	0	0	1	7	10	0.7
	6	4	1	5	3	6	5	7	4	4	8	47	10	4.7
	7													
	8													
	Total	10	8	10	6	6	7	7	5	8	12	79	10	7.9
0.75	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	2	1	3	3	0	0	0	2	2	13	10	1.3
	4	2	5	0	0	0	0	0	1	0	0	8	10	0.8
	5	0	0	1	0	0	0	0	1	X0	0	2	9	0.2
	6	0	2	3	2	3	3	4	5	|	X6	28	8	2.8
	7									|	|			
	8									|	|			
	Total	2	9	5	5	6	3	4	~~6~~ 7	2	8	~~50~~ 51	8	~~5.0~~ 5.1 AP

Comments:

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Conc. (g/L)	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per Female
1.5	0												10	
	1	X		X									8	
	2	|	0	|	0	0	0	0	0	0	0	0	8	0
	3	|	2	|	0	0	0	0	0	0	0	2	8	0.2
	4	|	1	|	0	0	0	0	1	0	0	2	8	0.2
	5	|	0	|	0	0	0	1	0	1	0	2	8	0.2
	6	|	1	|	0	2	3	0	0	0	0	6	8	0.6
	7	|		|										
	8	|		|										
	Total	|	4	|	0	2	3	1	1	1	0	12	8	1.2
3	0												10	
	1	X	X	X	X	X	X	X	X	X	X		0	
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	Total													
4	0												10	
	1	X	X	X	X	X	X	X	X	X	X		0	
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	Total													

Comments:

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc. (g/L)		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	8.0	24.3	8.3	354						
	0.375	M	8.0	24.7	8.3	1051						
	0.75	M	8.0	24.7	8.2	1809						
	1.5	M	8.0	24.6	8.2	3170						
	3	M	8.0	24.6	8.2	5910						
	4	M	8.0	24.7	8.2	7690						
	Measured by:		AP	AP	AP	AP						
	Recorded by:		AP	AP	AP	AP						
Day 1	Control	M	7.9	24.7	7.9	303	A	8.0	24.1	8.0	360	
	0.375	M	7.9	25.0	7.9	1036	A	8.0	24.8	8.1	1085	
	0.75	M	7.9	24.9	7.9	1749	A	8.0	25.0	8.2	1841	
	1.5	M	7.9	24.9	7.9	3160	A	8.0	25.0	8.1	3280	
	3	M	8.0	24.8	7.9	5840	A	8.0	24.7	8.1	6120	
	4	M					A	8.0	24.6	8.1	8040	
	Measured by:		AP	AP	AP	AP		AP	AP	AP	AP	
	Recorded by:		AP	AP	AP	AP		AP	AP	AP	AP	
Day 2	Control	M	8.0	24.9	8.0	312	A	8.0	23.5	8.0	384	
	0.375	M	8.0	25.0	8.0	1061	A	8.0	24.0	8.1	1153	
	0.75	M	8.0	25.0	8.0	1810	A	8.0	24.5	8.1	1857	
	1.5	M	8.0	25.0	8.0	3190	B	8.0	24.9	8.1	3250	
		M										
		M										
	Measured by:		CR	CR	CR	CR		CR	CR	CR	CR	
	Recorded by:		CR	AP	CR	CR		CR	AP	CR	CR	
Day 3	Control	M	8.0	25.0	8.0	303	A	8.0	24.3	8.0	AP ~~443~~ 347	
	0.375	M	8.0	25.0	8.0	977	A	8.0	24.7	8.1	1076	
	0.75	M	8.0	25.0	8.1	1699	A	8.0	25.0	8.1	1821	
	1.5	M	8.0	25.0	8.1	3030	B	8.0	25.1	8.0	3160	
		M										
		M										
	Measured by:		AP	AP	AP	AP		AP	AP	AP	AP	
	Recorded by:		AP	AP	AP	AP		AP	AP	AP	AP	

Comments:

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

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc. (g/L)	Replicate	New Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Replicate	Old Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	7.9	24.3	8.1	306	A	8.0	24.5	7.9	362
	0.375	M	7.9	24.8	8.2	1006	A	8.0	24.5	8.1	1165
	0.75	M	8.0	24.8	8.1	1710	A	8.0	24.5	8.2	2060
	1.5	M	8.0	24.8	8.1	3010	B	8.0	25.5	8.2	3240
		M									
		M									
	Measured by:		CR	CR	CR	CR		CR	CR	CR	CR
	Recorded by:		CR	CR	CR	CR		CR	CR	CR	CR
Day 5	Control	M	8.0	25.0	8.1	303	A	8.0	24.8	340 8.0 AP	349
	0.375	M	8.0	25.0	8.2	1021	A	8.0	25.2	8.1	1073
	0.75	M	8.0	25.0	8.2	1725	A	8.0	25.2	8.1	1815
	1.5	M	8.0	25.0	8.2	3030	B	8.0	24.9	8.0	3330
		M									
		M									
	Measured by:		AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:		AP	AP	AP	AP		AP	AP	AP	AP
Day 6	Control	M	7.9	25.2	8.1	343	A	7.9	24.5	8.0	352
	0.375	M	7.9	25.1	8.1	979	A	7.9	24.7	8.0	1100
	0.75	M	8.0	25.0	8.1	1651	A	7.9	24.9	8.0	1852
	1.5	M	8.0	24.9	8.1	2930	B	8.0	25.3	8.0	3080
		M									
		M									
	Measured by:		AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:		AP	AP	AP	AP		AP	AP	AP	AP
Day 7	Control	M									
		M									
		M									
		M									
		M									
		M									
		M									
	Measured by:										
	Recorded by:										
Day 8	Control	M									
		M									
		M									
		M									
		M									
		M									
	Measured by:										
	Recorded by:										

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

Test ID: C. dubia Chronic SRT Dates: 7.9.13 – 7.15.13

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	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 7.16.13

V 1.3 2/15/13 MF

90000

PAGE

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	7/9/2013 11:00	Test ID:	cdsrtjul13	Sample ID:	C. dubia chron srt July 2013
End Date:	7/15/2013 13:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	CD-Ceriodaphnia dubia
Comments:	C. dubia chronic SRT for July 2013				

Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	11.000	24.000	10.000	18.000	18.000	18.000	19.000	20.000	16.000	18.000
0.375	10.000	8.000	10.000	6.000	6.000	7.000	7.000	5.000	8.000	12.000
0.75	2.000	9.000	5.000	5.000	6.000	3.000	4.000	7.000	2.000	8.000
1.5	0.000	4.000	0.000	0.000	2.000	3.000	1.000	1.000	1.000	0.000
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	17.200	1.0000	17.200	10.000	24.000	23.862	10	17.200	1.0000
0.375	7.900	0.4593	7.900	5.000	12.000	27.636	10	7.900	0.4593
0.75	5.100	0.2965	5.100	2.000	9.000	47.538	10	5.100	0.2965
1.5	1.200	0.0698	1.200	0.000	4.000	116.534	10	1.200	0.0698
3	0.000	0.0000	0.000	0.000	0.000	0.000	10	0.000	0.0000
4	0.000	0.0000	0.000	0.000	0.000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.969557	0.919	-0.27228	1.548534
Bartlett's Test indicates equal variances (p = 0.02)	9.95502	11.34487		

Linear Interpolation (200 Resamples)

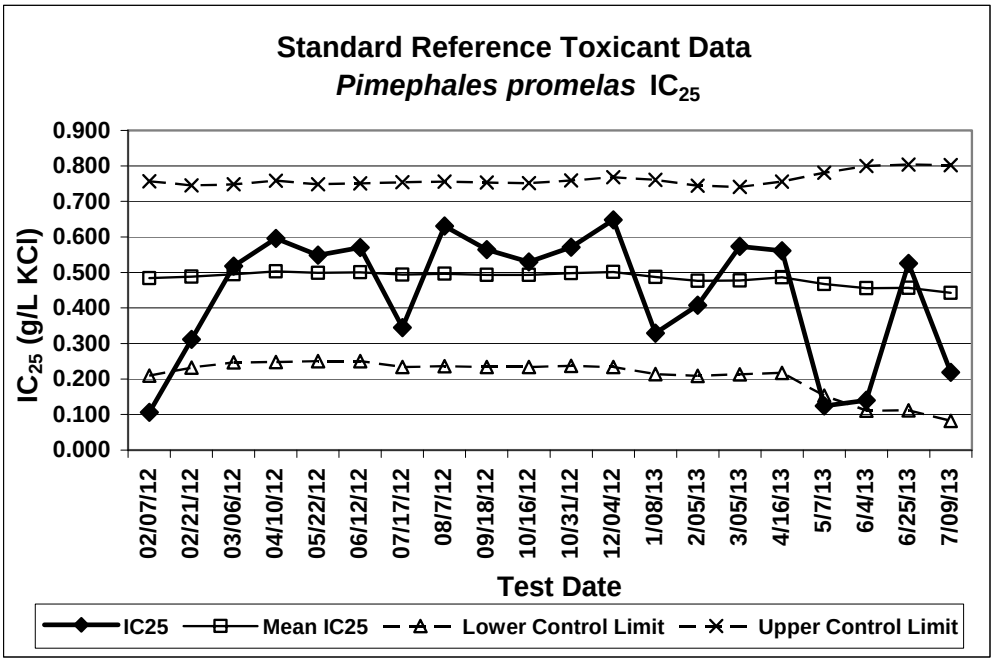
Point	gm/L	SD	95% CL		Skew
IC05*	0.0347	0.0038	0.0298	0.0445	1.1593
IC10*	0.0694	0.0076	0.0596	0.0889	1.1593
IC15*	0.1040	0.0115	0.0894	0.1334	1.1593
IC20*	0.1387	0.0153	0.1192	0.1779	1.1593
IC25*	0.1734	0.0191	0.1490	0.2223	1.1593
IC40*	0.2774	0.0315	0.2384	0.3557	1.4352
IC50*	0.3468	0.0502	0.2980	0.4901	1.7016

* indicates IC estimate less than the lowest concentration

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
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
5/7/13	0.124	0.467	0.16	0.153	0.781
6/4/13	0.140	0.456	0.17	0.111	0.800
6/25/13	0.525	0.457	0.17	0.112	0.804
7/09/13	0.219	0.442	0.18	0.082	0.802

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:40.7%



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/E7.6.13 Test Days Used: 0-3

Diluent/ Batch: MHW/7.11.13 Test Days Used: 4-6

Toxicant/ Batch # : 2g/L KCl/7.9.13

Artemia Lot # : 08812

Start Date: 7.9.13 Time: 1445

End Date: 7.16.13 Time: 1000

Organism Batch #/ Age: 7.9.13/ 24 hrs.

Artemia Batch #	Day 2 130.13	Day 5 133.13
Day 0 128.13	Day 3 131.13	Day 6 134.13
Day1 129.13	Day 4 132.13	

Chamber size : 1000 ml

Test volume : 500 ml

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 7.6.13	Diluent 7.11.13 (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03	<0.03	HACH	AP	CR
Alkalinity (mg/L as $CaCO_3$):	67	72	HACH	AP	CR
Hardness (mg/L as $CaCO_3$):	77	83	HACH	AP	CR
Total Ammonia (mg/L as N):	<0.017	<0.017	DENVER	BA	CR
Conductivity (µmhos-cm) mmhos-cm:	297	301	METTLER	CR	AP

Statistics mf 7/19/13	
Growth NOEC:	0.125 g/L
Growth LOEC:	0.1259/L
Growth IC_{20}:	0.1469/L
Growth IC_{25}:	0.219 g/L
Ctrl % CV:	14.7%
Dunnetts PMSD:	17.7%
Survival NOEC:	0.5g/L
Survival LOEC:	1g/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 2 min. 24.2 max. 25.4

Water bath # ____ min. _____ max. _____

Room B246 min: 24.7 max: 25.3

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

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

Investigators' signatures

Cassidy Reichert

Adrienne Pennington

Bruce Alridge

Marshall Faircloth

REVIEWER Lyz Mercer

Comments:

PAGE 00008

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	D1	10	10	10	10	10	10	10	10
	B	D2	10	10	10	10	10	10	10	10
	C	D3	10	10	10	10	10	10	10	10
	D	AP ED4	10	10	10	10	10	10	10	10
0.125	A	D5	10	10	10	10	10	10	CR 10	10
	B	D6	10	10	10	10	10	10	8 3D	8
	C	D7	10	10	10	10	10	10	9 1D	9
	D	D8	10	10	10	9 1D	9	9	9	9
0.25	A	D9	10	10	10	10	10	10	10	10
	B	D10	10	10	10	10	10	10	10	9 1D
	C	D11	10	9 1D	9	9	9	9	9	9
	D	D12	10	10	10	10	10	10	10	9 1D
0.5	A	D13	10	10	10	10	10	10	10	10
	B	D14	10	10	10	10	10	10	10	10
	C	D15	10	10	10	9 1D	9	9	9	8 1D
	D	D16	10	10	10	10	10	10	10	10
1.0	A	D17	10	4 6D	3 1D	3	3	3	0 3D	—
	B	D18	10	2 3D	2	2	2	2	1 1D	1
	C	D19	10	5 5D	5	5	4 1D	3 1D	2 1D	2
	D	D20	10	4 6D	4	3 1D	2 1D	2	2	2
2.0	A	D21	10	0 10D	—					
	B	D22	10	1 9D	0 1D					
	C	D23	10	0 10D	—					
	D	D24	10	0 10D	—					
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): AP		Checked by:		CR	AP	CR	CR	AP	CR	CR
Verified by (0 hr): CR										
Concentrations prepared by:				CR	CR	AP	AP	CR	AP	CR

Comments:

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revised 7/16/08 MF

Chronic SRT Parameters Benchsheet

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

Start Date: 7.9.13 End Date: 1445

Start Time: 7.16.13 End Time: 1000

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	7.9	24.7	8.5	297							
	0.125	A	7.9	24.7	8.6	543							
	0.25	A	8.0	24.7	8.6	790							
	0.5	A	8.0	24.6	8.5	1270							
	1.0	A	8.1	24.6	8.5	2210							
	2.0	A	8.1	24.7	8.5	4060							
		A											
	Measured by		CR	CR	CR	CR							
	Recorded by		CR	AP	CR	CR							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.8	25.4	7.8	296		B	7.9	24.6	7.8	294	
	0.125	B	7.8	25.5	7.9	541		B	7.8	24.5	7.8	522	
	0.25	B	7.9	25.5	7.9	787		B	7.9	24.4	7.8	764	
	0.5	B	7.9	25.8	7.9	1267		B	7.9	24.4	7.8	1229	
	1.0	B	7.9	25.4	7.8	2170		B	7.9	24.4	7.8	2140	
	2.0	B	8.0	25.1	7.8	3990		B	8.0	24.5	7.8	3940	
		B						B					
	Measured by		CR	CR	CR	CR			AP	AP	AP	AP	
	Recorded by		CR	CR	CR	CR			AP	AP	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.6	24.5	7.5	293		C	7.7	24.5	7.7	293	
	0.125	C	7.6	24.6	7.5	534		C	7.7	24.4	7.7	533	
	0.25	C	7.6	25.3	7.6	789		C	7.8	24.4	7.7	769	
	0.5	C	7.7	25.4	7.7	1265		C	7.8	24.4	7.6	1238	
	1.0	C	7.7	24.7	7.5	2180		C	7.9	24.4	7.7	2190	
	2.0	B & CR	7.8	24.7	7.6	3990		C					
		C						C					
	Measured by		AP	AP	AP	AP			CR	AP	CR	CR	
	Recorded by		AP	CR	AP	AP			CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.6	23.9	7.9	290		D	7.8	24.5	7.7	304	
	0.125	D	7.6	24.1	7.9	521		D	7.8	24.6	7.7	515	
	0.25	D	7.7	24.4	7.7	757		D	7.8	24.6	7.6	755	
	0.5	D	7.7	24.0	7.6	1215		D	7.8	24.5	7.6	1209	
	1.0	D	7.8	23.9	7.6	2160		D	7.8	24.6	7.6	2120	
		D						D					
		D						D					
	Measured by		CR	CR	CR	CR			AP	CR	AP	AP	
	Recorded by		CR	CR	CR	CR			AP	CR	AP	AP	

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: 7.9.13 End Date: 1445

Start Time: 7.16.13 End Time: 1000

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	7.7	24.8	7.7	304		A	7.9	24.7	7.9	301	
	0.125	A	7.7	24.9	7.7	542		A	7.9	24.7	7.9	517	
	0.25	A	7.7	25.1	7.7	798		A	7.9	24.6	7.9	756	
	0.5	A	7.8	24.7	7.6	1256		A	8.0	24.6	7.8	1202	
	1.0	A	7.8	24.7	7.7	2220		A	8.0	24.7	7.9	2100	
		A						A					
		A						A					
	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 5	Control	B	7.8	24.9	7.8	348		B	8.0	24.8	8.1	298	
	0.125	B	7.8	24.7	7.7	532		B	8.0	24.7	8.0	526	
	0.25	B	7.8	25.3	7.8	784		B	8.0	24.8	7.9	757	
	0.5	B	7.8	25.0	7.7	1240		B	8.0	24.8	7.9	1215	
	1.0	B	7.9	24.8	7.7	AP 2180		B	8.0	24.7	7.9	2120	
		B						B					
		B						B					
	Measured by		AP	AP	AP	AP			AP	AP	AP	AP	
	Recorded by		AP	AP	AP	AP			AP	AP	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.6	25.4	6.9	302		C	7.8	24.6	7.6	301	
	0.125	C	7.6	25.3	6.8	535		C	7.8	24.6	7.6	529	
	0.25	C	7.6	25.0	7.1	773		C	7.8	24.6	7.7	767	
	0.5	C	7.6	24.9	6.8	1234		C	7.9	24.6	7.4	1213	
	1.0	C	7.7	25.0	7.5	2440		C	7.9	24.7	8.0	2130	
		C						C					
		C						C					
	Measured by		AP	CR	CR	CR			CR	CR	CR	CR	
	Recorded by		AP	AP	CR	CR			CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.7	24.8	7.2	314		D					
	0.125	D	7.7	25.1	7.1	546		D					
	0.25	D	7.7	24.9	7.3	785		D					
	0.5	D	7.8	24.9	7.5	1236		D					
	1.0	D	7.8	24.5	7.6	2160		D					
		D						D					
		D						D					
	Measured by		CR	CR	CR	CR							
	Recorded by		CR	CR	CR	CR							

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

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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	1	0.025607	0.03141	0.00574	10	0.574	
	B	2	0.026014	0.03115	0.00501	10	0.501	
	C	3	0.025601	0.03188	0.00627	10	0.627	0.538
	D	4	0.026042	0.03090	0.00448	10	0.448	
0.125	A	5	0.024600	0.02911	0.00451	10	0.451	
	B	6	0.026888	0.03101	0.00413	10	0.413	
	C	7	0.026466	0.03041	0.00395	10	0.395	0.435
	D	8	0.026008	0.03090	0.00482	10	0.482	
0.25	A	9	0.026650	0.03147	0.00497	10	0.497	
	B	10	0.025950	0.02951	0.00356	10	0.356	
	C	11	0.025570	0.02947	0.00390	10	0.390	0.393
	D	12	0.024500	0.02777	0.00327	10	0.327	
0.5	A	13	0.025570	0.02860	0.00303	10	CR ~~0.150~~ 0.303	
	B	14	0.024930	0.02853	0.00360	10	0.360	
	C	15	0.025500	0.02794	0.00244	10	0.244	0.299
	D	16	0.026014	0.02904	0.00290	10	0.290	
1.0	A					10		
	B	17	0.026008	0.026360	0.000038	10	0.038	
	C	18	0.027500	0.028150	0.000665	10	0.065	0.045
	D	19	0.027000	0.027430	0.00043	10	0.043	
	A					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.

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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: 7.15.13 Weighed by: CR

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.03568	@ 0.03567
after Pan 10	0.03567	@ 0.03567
after Pan 15	0.03568	@ 0.03567
after Pan 20	0.03567	@ 0.03567
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	0.0999	@ 0.01
	0.03003	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 7.17.13 Weighed by: CR

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.03142	@ 0.03141
after Pan 10	0.03141	@ 0.03141
after Pan 15	0.03143	@ 0.03141
after Pan 20	0.03143	@ 0.03141
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	0.0999	@ 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. pramelas chronic SRT Dates: 7.9.13 – 7.16.13

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: CR 7.16.13

V 1.3 2/15/13 MF

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Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	7/9/2013 14:45	Test ID:	ppsrtjul13	Sample ID:	P. prom chronic srt july 2013
End Date:	7/16/2013 10:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	Pimephales promelas chronic SRT July 2013				

Conc-gm/L	1	2	3	4
D-Control	0.5740	0.5010	0.6270	0.4480
0.125	0.4510	0.4130	0.3950	0.4820
0.25	0.4970	0.3560	0.3900	0.3270
0.5	0.3030	0.3600	0.2440	0.2900
1	0.0000	0.0280	0.0650	0.0430
2	0.0000	0.0000	0.0000	0.0000

			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.5375	1.0000	0.5375	0.4480	0.6270	14.683	4	0.5375	1.0000
0.125	0.4353	0.8098	0.4353	0.3950	0.4820	8.946	4	0.4353	0.8098
0.25	0.3925	0.7302	0.3925	0.3270	0.4970	18.923	4	0.3925	0.7302
0.5	0.2993	0.5567	0.2993	0.2440	0.3600	15.960	4	0.2993	0.5567
1	0.0340	0.0633	0.0340	0.0000	0.0650	80.261	4	0.0340	0.0633
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9787	0.868	0.397853	-0.21577
Bartlett's Test indicates equal variances (p = 0.44)	3.763249	13.2767		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL(Exp)		Skew
IC05*	0.0329	0.0312	0.0141	0.1921	4.8256
IC10*	0.0657	0.0429	0.0281	0.2715	3.0355
IC15*	0.0986	0.0559	0.0422	0.3952	2.0639
IC20	0.1404	0.0711	0.0509	0.4566	0.9840
IC25	0.2189	0.0784	0.0375	0.4799	0.3663
IC40	0.4377	0.0771	0.1314	0.6241	-0.5296
IC50	0.5575	0.0497	0.4083	0.6849	-0.2388

* indicates IC estimate less than the lowest concentration

Appendix G
Organism Receipt(s)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 7/6/8/13

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	11 days	CL 130827	25	7.8	80
Pimephales promelas	150 ac	7 days	FM 130701	25	7.8	80
	300	>24hrs	FM 130707-1620	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

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 7/22/13

Ship to: FLDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	600	<24hrs	FM130721-1600	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 Tampa Electric Company- Polk Power Station effluent sampled on July 22, 2013. NPDES #FL0043869.

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 4 3 8 6 9 11	12 1 3 0 7 2 2	18 **B**	19 **S**	20 2

Remarks

66

The Priority Pollutants Analysis of Tampa Electric Company- Polk Power Station effluent sampled on July 22, 2013. NPDES #FL0043869.

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 4 3 8 6 9 11	12 1 3 0 7 2 2	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of Tampa Electric Company- Polk Power Station effluent sampled on July 22, 2013. NPDES #FL0043869.

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 4 3 8 6 9 11	12 1 3 0 7 2 2	18 **S**	19 **S**	20 2

Remarks

66