

Effluent Quality Assessment

Buckman Wastewater Treatment Facility

Duval County

NPDES #FL0026000

Sampled July 29, July 31 and August 2, 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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Buckman Wastewater Treatment Facility (WWTF), 2221 Buckman Street, Jacksonville, Duval County, Florida, 32206. NPDES #FL0026000.

Facility Overview

Buckman WWTF is an activated sludge WWTF which treats domestic wastewater. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent composite samples for toxicity testing were collected on July 29 and 31, and August 2, 2013. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on July 29, 2013. All samples were collected from the EFD-1 NPDES sampling point for Outfall D001 by Sharon Piltz, Eesa Ali, Kyle Watson, and Jeremy Parrish (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix C).

The 7-day chronic definitive toxicity tests were performed following internal DEP SOPs TA07_05 and TA07_09 (see Appendix C).

Results

Chemistry Results (See Table 1 and Appendix D)

- Total residual chlorine (TRC) and total ammonia were detected in each of the three bioassay samples in the bioassay laboratory. The TRC concentrations measured in the lab (0.04 mg/L each sample) were probably due to interfering substances in the sample(s) as chlorine is not used as a disinfectant in the wastewater treatment process. The total ammonia concentrations were, respectively, in order of bioassay sample collection, (0.254 mg N/L; 1.10 mg N/L and 4.67 mg N/L). Based on the pH, salinity, and temperature of the effluent as measured in the bioassay laboratory, the unionized ammonia concentrations were, respectively, in order of collection, (0.03, 0.09 and 0.37 mg/L). The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.53 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.
- Atrazine, arsenic, carbonaceous biochemical oxygen demand (CBOD), nickel and fluoride were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Aluminum, chromium, copper, iron, selenium, zinc, and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Toxicity Test Results (See Appendices D- G)

- Tests were performed July 30 – August 6, 2013.

Ceriodaphnia dubia 7 –day chronic definitive bioassay –	IC25: 57.7% NOEC: 50%
Pimephales promelas 7-day chronic definitive bioassay –	IC25: 91.8% NOEC: 50%

- The bioassay samples were chronically toxic to the test organisms. The cause of toxicity was attributed at least in part to the unionized ammonia in the bioassay samples.
- Bioassay samples # 1 and # 2 were aerated for 30 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 9.4 and 10.2 mg/L to 8.2 and 8.2 mg/L, respectively.

Conclusion

The effluent samples collected from the EFD-1 NPDES sampling point for this facility on July 29 and 31, and August 2, 2013, were chronically toxic to both test species during the 7-day chronic definitive bioassays. The toxicity was attributed at least in part to the unionized ammonia in the bioassay samples. Effluent water quality samples collected on July 29, 2013, did not exceed any applicable water quality standards or violate any permit conditions.

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

Buckman WWTF	Class III Criteria	Effluent Limits	Effluent Composite	
Organic Constituents (µg/L)				
Atrazine	-	-	0.27	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	76	I
Arsenic	≤ 50	-	1.35	
Cadmium	≤ 8.8	-	0.050	U
Calcium (mg/L)	-	-	72.4	
Chromium-III	-	-	0.56	I
Copper	≤ 3.7	≤ 3.7 p	0.82	I
Iron	≤ 300	≤ 300 p	82	I
Lead	≤ 8.5	≤ 16.7 p	0.20	U
Magnesium (mg/L)	-	-	21.6	
Nickel	≤ 8.3	≤ 8.3 p	4.67	
Potassium (mg/L)	-	-	12.3	
Selenium	≤ 71	-	0.31	I
Silver	≤ 2.3	-	0.025	U
Sodium	-	-	119	
Zinc	≤ 86	-	10	I
Nutrients (mg/L)				
Ortho-phosphate	-	Report	4	Q
Total Phosphorus	-	Report	2.8	
Total Ammonia	-	Report	0.53	
Un-ionized Ammonia	-	Report	< 0.02	c
Nitrate and Nitrite	-	Report	7.4	
Total Kjeldahl Nitrogen	-	Report	2.0	
Organic Nitrogen	-	-	1.47	c
Total Nitrogen	-	Report	9.40	c
Total Organic Carbon	-	-	10	
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 4.0	5.14	
pH (SU)	6.5 - 8.5	6.5 - 8.5	6.96	
Specific Conductance (µmhos/cm)	-	-	983	
Temperature (°C)	-	Report	30.48	
Salinity	-	-	0.48	
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.04	Q£†
Total Suspended Solids (mg/L)	-	≤ 60.0 p	4	I
Color (true, PCU)	-	-	49	A
Alkalinity (mg CaCO3/L)	-	-	179	
CBOD, 5 day (mg/L), N - inhibited	-	≤ 60.0 p	2.0	AJ
Chloride (mg/L)	-	-	130	
Cyanide (mg/L)	≤ 1.0	≤ 1.0	0.005	U
Fluoride (mg/L)	≤ 5.0	-	0.63	
Sulfate (mg/L)	-	-	140	
Flow (MGD)	-	52.5 a	24.77	a*
Hardness (mg $CaCO_3$)	-	-	269.73	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	≤ 400s #	340	

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

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

c - Value is calculated

p - 24 hour flow proportioned composite

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

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

J - Estimated value

Q - Sample held beyond normal holding time

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

¥ - Fecal coliform analysis performed by Columbia Analytical Services lab

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

£ - measurement taken in the FDEP laboratory

† - Chlorine detection probably due to laboratory interference

Appendix A
Facility Summary

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Ed Jamro	**Contact Number:** (904) 256-1617
Facility Name (as it appears on permit): Buckman Wastewater Treatment Facility	**Former Names:**
NPDES Permit Number: FL0026000	**Permit Expiration Date:** 4/20/2014
Physical Address: 2221 Buckman Street Jacksonville, Florida 32206	
District: NED	**County:** Duval
Function of Facility: Treat wastewater to be discharged to St John's River.	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 52.5
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 24.77 MGD from 06/2012 – 05/2013.	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A – no reuse.	
Description of type of Discharge: Continuous operation, effluent mostly reused ☒Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):
EFF-1 - Sample point at the ultraviolet UV channels.

EFD-1 - Sample point immediately after final treatment and prior to discharge from outfall D001 to the surface water.

Description of Permitted Outfall(s):
An existing 52.5 Mgd AADF permitted discharge to St. Johns River (Class III marine waters – WBID 2213D) at Discharge Location (D001). The outfall discharges at a depth of approximately 30.5 feet. The point of discharge is located approximately at latitude 30° 21' 00" N, longitude 81° 37' 16" W.

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

An existing 52.5 million gallon per day (MGD) annual average daily flow (AADF) permitted capacity activated sludge wastewater treatment facility (WWTF). The plants can operate in the plug flow or complete mix mode. The facility consists of the following process units:

- Two 60-MGD capacity mechanical bar screens with ½ inch opening;
- **An influent wet well / dry well pump station with four pumps.**
- **A 0.151 million gallon (MG) aerated grit chamber consisting of three grit removal pumps each with a capacity of 200 gpm @ 34 ft total dynamic head (TDH);**
- **A pre-aeration basin which the structure is 290 ft long x 30 ft wide with a 15 ft side water depth a volume of 0.979 MG. Aeration and mixing of the basin is accomplished by the introduction of 4,166 cfm of air supplied by the plant blowers;**
- **Eight primary clarifiers (225 ft long x 18 ft wide x 12 ft side water depth) with a surface water loading rate of 1,296 gpd/ft2 at ADF and 2,593 gpd/ft2 at PHF; and a weir loading rate of 20,195 gpd/ft at ADF and 40,384 gpd/ft;**
- **Four aeration tanks operated in series plug flow mode. The structure of basin is 310 ft long x 55 ft wide with a side water depth of 15 ft. Ceramic, fine bubble diffusers are used to aerate and mix each basin and are supplied five-drop pipes per tank. Three Roots centrifugal blowers, 1,250 hp each, provide the required air with a total volume of 7.652 mg.**
- **Four square center feed, radical weirs secondary clarifiers with a structure of 120 ft long x 120 ft wide with a side water depth of 12 ft and a hydraulic loading rate of 608 gpd/ft^2;**
- **Two circular peripheral collection in serpentine with a diameter of 136 ft and a hydraulic loading rate of 602 gpd/ft^2;**
- **An Ultraviolet disinfection system comprising three channels with two UV banks per channel. UV system produces a dosage of 29 mW-sec/cm^2 at 65% UV transmittance, 157.5 MGD PHF.**
- **Two gravity sludge thickeners with a total volume of 0.728 mg.**
- **Two sludge holding tanks with a total volume of 5.438 mg.**
- **Three centrifuges for sludge dewatering.**
- **Two multiple-hearth incinerators for sludge incineration (inactive).**
- **Chlorination facility for the return activated sludge.**
- **A groundwater dewatering system with discharge into the aeration tanks.**

NOTE – The system is being modified and upgraded to run in a Biological Nitrogen Removal (BNR) mode.

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	MAX/ MIN	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow, through the wastewater treatment facility	MGD	Max	52.5	Report	-	-	Continuous	Recording flow meters and totalizers	EFD-1	See Cond. I.A.4
Percent Capacity, (TMADF/Permitted Capacity) x 100	PERCENT	Max	-	Report	-	-	Monthly	Calculated	CAL-1	
BOD, Carbonaceous – 5-day, 20°C	mg/L	Max	20.0	25.0	40.0	60.0	Daily (7 days/wk)	24-hour flow proportioned composite	EFD-1	
$CBOD_5$, % Removal	%	Min	-	85.0	-	-	Monthly	Calculated	CAL-2	See Cond. I.A.6
Solids, Total Suspended	mg/L	Max	20.0	30.0	45.0	60.0	Daily (7 days/wk)	24-hour flow proportioned composite	EFD-1	
Solids, Suspended, % Removal	%	Min	-	85.0	-	-	Monthly	Calculated	CAL-2	See Cond. I.A.6
pH	s.u.	Range	-	-	-	6.5 to 8.5	Continuous	Meter	EFD-1	See Cond. I.A.3
Coliform, Fecal	See Permit Condition I.A.5.						Daily (7 days/wk)	Grab	EFD-1	

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

Parameter	Units	MAX/ MIN	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Ultraviolet Light Dosage	mW-s/cm^2	Min	-	-	-	-	Daily (7 days/wk)	Monitored	EFF-1	See Cond. I.A.8
Ultraviolet Light Transmittance	%	Min	-	-	-	-	Daily (7 days/wk)	Monitored	EFF-1	See Cond. I.A.8
Ultraviolet Light Intensity	MW/cm^2	Min	-	-	-	-	Daily (7 days/wk)	Monitored	EFF-1	See Cond. I.A.8
Dissolved Oxygen	mg/L	Min	-	-	-	4.0	Daily (7 days/wk)	Meter/Instrument	EFD-1	See Cond. I.A.7
Nitrogen, Total (as N)	mg/L	Max	Report	Report	-	Report	Daily (7 days/wk)	24-hour flow proportioned composite	EFD-1	See Cond. I.A.13
Nitrogen, Total (as N) (TMDL TN Load)	-	Max	Report (Annual Total Mass Load)	Report (Monthly Total Mass Load)	-	-	Monthly	Calculated	CAL-3	See Cond. I.A.13
Total Cyanide	µg/L	Max	-	-	-	1.0	Monthly	Grab	EFD-1	See Cond. I.A.9 & 11
Copper, Total Recoverable	ug/L	Max	-	-	-	3.7	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.9

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

Parameter	Units	MAX/ MIN	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Lead, Total Recoverable	ug/L	Max	-	-	-	16.7	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.12
Nickel, Total Recoverable	ug/L	Max	-	-	-	8.3	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.9
Iron, Total Recoverable	ug/L	Max	-	-	-	300.0	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.9
Lindane (gamma-benzene hexachloride)	ug/L	Max	0.063	-	-	0.16	Monthly	24-hour flow proportioned composite	EFD-1	
Aldrin	ug/L	Max	0.00014	-	-	1.3	Monthly	24-hour flow proportioned composite	EFD-1	
Nitrogen, Organic, Total (as N)	mg/L	Max	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.15
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.15
Nitrite plus Nitrate, Total (as N)	mg/L	Max	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.15
Nitrogen, Ammonia, Total(as N)	mg/L	Max	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.15

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

Parameter	Units	MAX/ MIN	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Temperature, water	Deg C	Max	-	-	-	Report	Monthly	Meter/Instrument	EFD-1	See Cond. I.A.15
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	-	-	-	Report	Monthly	Calculated	CAL-4	See Cond. I.A.15
Phosphorus, Total (as P)	mg/L	Max	-	-	-	Report	Monthly	24-hour flow proportioned composite	EFD-1	See Cond. I.A.15
Phosphate, Ortho (as P)	mg/L	Max	-	-	-	Report	Monthly	Filtered grab	EFD-1	See Cond. I.A.15
Chronic Whole Effluent Toxicity	See Permit Condition I.A.15								EFD-1	
Ambient Sampling	See Permit Condition I.A.14									

I.A.

3. **Hourly measurement of pH during the period of required operator attendance may be substituted for continuous measurement.** ***[Chapter 62-601, Figure 2, Footnotes 1 and 2]***

4. **Recording flow meters and totalizers shall be utilized to measure flow and calibrated at least annually.** ***[62-601.200(17) and .500(6)]***

5. **The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of effluent sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of effluent each collected on a separate day during a period of 30 consecutive days (monthly) shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during**

the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. ***[62-600.440(4)(c)]***

6. **The monthly average effluent carbonaceous biochemical oxygen demand 5-day (CBOD5) and total suspended solids concentrations shall not exceed 15% of the respective influent values (85% removal).** ***[62-620.620(1)(o) and (3)]***

7. **The average of DO level shall not be less than 5.0 mg/L in a 24-hour period and shall never be less than 4.0 mg/L. Normal daily and seasonal fluctuations above these levels shall be maintained. The lower St. Johns River has an SSAC for DO in accordance with the Lower St. Johns River Basin Management Action Plan (BMAP) adopted on October 10, 2008.** ***[62-302.530(30)]***

8. **This facility utilizes an ultraviolet disinfection system as the primary means of disinfection. This UV system shall be monitored for proper operation on each day of operator attendance. The ultraviolet light intensity, ultraviolet light dosage, ultraviolet light transmittance and unit operation shall be verified. The operation and maintenance shall be performed on a regular basis in accordance with the manufacturer recommended factor of safety.** ***[62-600.440(4)(b)]***

9. **The final limit for total cyanide, total recoverable nickel, total recoverable iron, and total recoverable copper are held in abeyance until the final compliance date listed in Section VI.1. of the permit is complete.**

10. **The permittee shall be deemed in compliance with the Surface Water Quality Standards for total cyanide, when concentration for the total cyanide in the effluent meet permit limit specified Condition I.A.1 or shall be undetectable or less than the method detection limit (MDL) level established by Department corresponding to approved analytical method.** ***[62-4.246, 62-302.530(24), FAC]***

11. **A mixing zone has been established for lead. The mixing zone for lead is an area with a semi-circular shape originating at the bulkhead at the point of discharge. The size of each mixing zone is 308 square meters with a radius of approximately 14 meters.** ***[62-4.224 and 62-302, FAC]***

12. **The permittee, JEA, shall meet the aggregate cap through collectively managing the total nitrogen loads from individual JEA facilities (Arlington East WRF -FL0026441; Beacon Hills WWTF - FL0026778; Buckman WWTF - FL0026000; District II WWTF - FL0026450; Jacksonville Heights WWTF-FL0023671; Julington Creek WWTF -FL0043591; Mandarin WRF- FL0023493; Monterey WWTF- FL0023604; Royal Lakes WWTF - FL0026751; San Jose WWTF -FL0023663; San Pablo WWTF-FL0024767; Southwest District WWTF-FL0026468; WoodmereWWTF-FL0026786; and JEA Power Plant-FPL), which are listed in the JEA - Aggregate Total Nitrogen (Permit ID: FL0620564). The monthly mass load and annually mass loads of total nitrogen shall be calculated as follows:**

- Monthly Mass Load (ML)

$$\textbf{ML (Lbs/Mon)} = (\textbf{Flow}(\frac{MG}{Mon})\textbf{x TN } (\frac{mg}{L}) \textbf{ x 8.34 } (\frac{L}{MG}\ \frac{Lbs}{mg})$$

Where:

ML = Monthly mass load of total nitrogen; (Lbs/Mon)

Flow = Monthly total volume effluent discharged from D-001 in a given month; (million gallons (MG))

TN = Monthly average concentration of total nitrogen monitored at EFD-1; (mg/L)

- Annually Mass Load (AL)

  The annual mass load is computed using a rolling twelve (12) – month period. The calculation shall be the sum of the twelve most recent monthly mass loading of total nitrogen starting from the second month following permit issuance month.

13. The Florida water quality criteria and standards shall not be violated as a result of the discharge. ***[62-620.320(9)] & [62-302.530]***

14. Ambient stream monitoring and reporting shall be conducted in accordance with the locations, frequencies, and parameters in the latest, Department approved, version of JEA's Ambient Stream Monitoring Plan. The ambient stream sample event shall coincide within one week of the effluent-nutrients sample event collected at EFD-1 as described in Condition I.A.1. JEA will submit to the Department's Northeast District office a report with stream sample data results and graphical analyses for each sample location. Data qualifiers and any important comments concerning the sample event and sample results will be included. The annual report (calendar year monitoring period) shall be submitted to the Northeast District wastewater permitting section by March 1, of the following year. ***[62-4.240(3)(c)]***

15. The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001.

a. Effluent Limitation

(1) Whole effluent chronic toxicity shall not result in an Inhibition Concentration 25% (IC_{25}) less than 100% effluent in any test. ***[Rule 62-302.530(61), as defined in 62-302.200(14) F.A.C.]***

(2) Whole effluent acute toxicity shall not result in a 96-hour LC50 less than 100% effluent in any test. ***[Rule 62-302.500(1)(a)4., F.A.C.]***

b. Monitoring Frequency

(1) Routine toxicity tests shall be conducted once every six months, starting within 6 months of the most recent test, and lasting for the duration of the permit.

c. Sampling Requirements

(1) For each routine test or additional follow-up test conducted, a total of three *flow proportional 24-hour composite* samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.

(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

(3) Samples for routine and additional follow-up tests shall not be collected on the same day.

d. Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5% **and** 6.25% **final effluent.**

(2) The permittee shall conduct a daphnid, *Ceriodaphnia dubia*, **Survival and Reproduction Test and a fathead minnow,** *Pimephales promelas*, **Larval Survival and Growth Test, concurrently.**

(3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th ed., EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.

(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.

16. The Department reserves the right to require the Permittee to conduct a reconnaissance sediment sampling event to include up to six transects with a minimum of three transects located (1) along the outfall, D-001, and approximately 300 feet upstream and 300 feet downstream of the outfall, D-001, for the purpose of establishing final sampling locations for permit monitoring. ***[BPJ]***

17. JEA shall provide an initial report concerning the integrity of the outfall and shall determine and propose an evaluation and analysis method. The initial report shall be submitted to DEP within one year from permit issuance. Then, annual reports shall be submitted based on the approved evaluation and analysis method to indicate the status of the outfall line on or before January 01 of each year. ***[BPJ]***

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART I: Continued	
Receiving Waters: **St. John's River**	**Classification (indicate whether fresh or marine):** **Class III marine waters - WBID 2213D**

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

7-DAY IC25 CHRONIC W.E.T. & 96-HR ACUTE W.E.T.
See I.A.15. on page 8 & 9 of this report.
Ceriodaphnia dubia (Routine)
Pimephales promelas (Routine)

Ceriodaphnia dubia (Additional)
Pimephales promelas (Additional)

Note – facilityhas had a couple test failures but passes upon the retests.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
CO-13-0910 – executed 4/16/13 – for copper exceedances in 1Q-2013 – Interim limit of 17 ug/l until 12/31/14.
CO-06-1796-C – 1st executed 12/11/06 for SSO's throughout the JEA systems, updated/renewed 03/25/13.

4/21/2009 – AO 130 NE – Submit plan of action identifying sources of cyanide, iron, recoverable nickel and recoverable copper, submit a plan of action proposing actions to bring these parameters down to permitted levels, implement plan with periodic reported updates. Comply with permitted limits by 12/31/2012.
Final date revised to 02/28/2014 for nickel only. Other three parameters in compliance.

Facility Mixing Zone Details (if applicable): None currently.
Permittee may be applying for a mixing zone for nickel. Permittee is doing a mixing zone study under AO-130.

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

Date	Parameter	Limit & Units	Result & Units
Aug-2012	**Fecal Coliform**	**800 cts/100mls (MAX)**	**4300 cts/100mls**
Aug-2012	**Fecal Coliform**	**400 cts/100mls (90th %)**	**1300 cts/100mls**
Aug-2012	**Total Suspended solids**	**60 mg/l (MAX)**	**179 mg/l**
Sept-2012	**Cyanide, Total**	**9 ug/l (MAX)**	**44 ug/l**
Dec-2012	**IC25 Statre 7-day CHR Ceriodaphnia**	**100% (MIN)**	**11.27%**
Jan-2013	**Copper**	**3.7 ug/l (MAX)**	**11.3 ug/l**
Feb-2013	**Copper**	**3.7 ug/l (MAX)**	**7.59 ug/l**
March-2013	**Total Suspended solids**	**45 mg/l (Weekly avg.)**	**46.971 mg/l**
March-2013	**Total Suspended solids**	**60 mg/l (MAX)**	**125 mg/l**
March-2013	**Copper**	**3.7 ug/l (MAX)**	**8.22**

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

Describe previous FYI and WQBEL study:

i) The Third-Year inspection was conducted on June 14 , 2004 for the effluent discharge through Outfall D-001; the result is summarized following:

(1) Results of the Water Chemistry:

Total residual chlorine and total ammonia were both detected in the bioassay sample in the laboratory at concentrations of 0.04 mg/L and 0.036 mg/L, respectively. The total residual chlorine was likely an artifact of the test procedure rather than actual TRC within the sample. A chlorine solution is used to clean the clarifier weirs and to control filamentous bacteria in the sludge return system; however, Buckman Street personnel stated that chlorine was not used immediately prior to nor during the sampling event. Total ammonia was detected in the sample preserved for chemical analyses at a concentration of 0.087 mg/L. Based on the pH, salinity and temperature of the effluent as collected, the calculated unionized ammonia of the effluent was ≤ 0.02 mg/L.

Cadmium, copper, and silver were detected in the effluent sample at levels between the laboratory method detection limit and the laboratory practical quantitation limit (Table 2).

The iron (407 mg/L) concentration of the effluent sample collected on June 14, 2004, exceeded the Class III Marine Water Quality Criterion of < 300 mg/L (62-302.530[39], F.A.C.; Table 2).

The concentration of nickel (10.9 mg/L) detected in the effluent exceeded the Class III Marine Water Quality Criteria (< 8.3 mg/L; 62-302.530[45], F.A.C.), but did not exceed the effluent limit of < 89.3. The facility has mixing zones for nickel, lead, and copper.

(2) Toxicity Test Result:

The effluent sample collected from D-001 was not acutely toxic to test organisms during the acute screen 96-hour bioassays.

+ *Americamysis bahia* 48-hr acute screening bioassay – LC50 > 100%, 5%* mortality in 100% sample at 48 hours

+ *Menidia beryllina* 48-hr acute screening bioassay – LC50 > 100%, 5%* mortality in 100% sample at 48 hours

The toxicity summary showed no violation of the permit condition LC50 < 100% effluent in the facility history of semi-annual testing at D-001 during the last 5 years (June 2004 to February 2009). The facility has not only met the permit condition of LC50 > 100% effluent, but the effluent samples have historically caused little to no mortality at all test concentrations for either species tested

(3) Algal Growth Potential:

The effluent AGP result exceeded the "problem" threshold for fresh receiving waters and by inference the "problem" threshold for marine waters.

Technology-based Effluent Limitations (TBEL's) & Water Quality Based Effluent Limitation (WQBEL)

See excerpt from permit fact sheet at the end the end of this report – Pages 11 & 12.

Describe previous or current Enforcement Actions (including WLs):
The Buckman WWTP is JEA's "reference facility" the SSO Consent order.
A CO for copper was issued in April 2013.

Describe any violations or problems noted in previous inspection:
None listed. Inspection conducted on 07/12/2012.

Discuss whether DMR trends within previous five years are improving or declining:
Improving. Effluent lead decreased since late 2010. Effluent Dissolved Oxygen has increased slightly since 2009. Effluent ammonia-N has become significantly lower since mid-2010.
Declining – Effluent copper concentration spiked upwards in early 2013. Effluent Total-N mass has increased over the past year.

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): NONE

Technology-based Effluent Limitations (TBEL's) & Water Quality Based Effluent Limitation (WQBEL)

Discussion of the Limitations:

The Buckman WWTF is located in the Tallyrand area and discharges to the St. Johns River from the west bank. This reach of the river is the area from north of the Mathews Bridge to the mouth of the Trout River. The discharge point (Outfall D-001) is located on WBID 2213 D.

The limits in this permit are based in part on information received in the application, the wastewater characterization reported on the DMR, the results of Third-Year inspection and the receiving water body characterization (There are three ambient water quality sampling stations in this reach of the river. The sites are numbered B4, B1, and B2). The limits necessary to meet the rules and regulations of the State of Florida were determined and included in this permit.

(a) **Technology-Based Effluent Limitations (TBELs):** The Buckman WWTF, a municipal wastewater treatment facility, is a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These regulations are performance standards that constitute all known available and reasonable assurance of prevention, control, and treatment for municipal wastewater.

The limitations and conditions of the CBOD5 and pH have been developed to comply with the technology-based standards of the Clean Water Act.

(i) Carbonaceous BOD: DMR reports of the last five years show that the maximum, average, median, and mode concentration of CBOD5 in the effluent samples were 3.0 mg/L, 2.24 mg/L, 2.0 mg/L and 2.1 mg/L. which were 10% of the annual average concentration limits for CBOD5. The Ambient sampling report showed the maximum concentration of $CBOD_5$ was 2.0 mg/L. The median $CBOD_5$ was 1.1 mg/L. There is no sign of effect of $CBOD_5$ from the discharge to the waterbody. Monitoring frequency and limit for $CBOD_5$ remains as the previous permit.

(ii) pH: DMR reports of the last five years show that the pH of the effluent samples were in the range limits. The Ambient sampling report showed the maximum pH of segment waterbody was 8.0 SU, and the minimum pH was 7.1 SU. There is no sign of effect of pH of the discharge to the waterbody. Monitoring frequency and limits for pH remain as the previous permit.

(b) Water Quality Based Effluent Limitation (WQBEL)

(i) Dissolved Oxygen: The STORET data shows that average dissolved oxygen (DO) concentrations of the water body complies with the water quality criterion. The facility is required monitor the DO level in the effluent in accordance with Rule 62-302.530(30), FAC.

(ii) Enterococci: The Environmental Protection Agency (EPA) promulgated water quality criteria for Enterococci for coastal recreation waters in Florida effective December 16, 2004. However, the Buckman WWTF discharges to WBID 2213D which is more than 12 miles away from coastal recreation waters of the U.S. therefore, the JEA is not required to monitor for Enterococci in the effluent discharged from Outfall D-001. Therefore, Enterococci limits and monitoring is not required

(iii) Cyanide: The Expanded Effluent Testing Data shows that the maximum concentration of total cyanide was not detectable at the MDL of 2.7 µg/L. The MDL value was higher than the Florida Water Quality Criteria for total cyanide (< 1.0 µg/L). Therefore, it is impossible to determine if the cyanide in the sample exceeded the criterion. The permittee is required to sample for cyanide with a MDL of 1.0 µg/L or at a MDL approved by the Department. Limit for cyanide is established based on Rules 62-302.530(24) and 62-601, FAC.

The monitoring requirements and limitation of total cyanide is new and more stringent than the previous permit requirements. Therefore, in accordance with Sections 403.088(2)(e) and (f) of the FS, the permit shall be issued, accompanied by an administrative order which contains interim limits and establishes a schedule for achieving compliance with the final limits for the parameter.

(iv) Lead: DMR reports of the last five years show that the maximum, 95th percentile, average, median, and mode concentrations of total recoverable lead in the effluent samples were 7.4 µg/L, 1.98 µg/L, 0.80 µg/L, 0.5 µg/L and 0.5 µg/L. The facility receives a significant industrial wastewater; therefore, it is required to continue monitor for lead. Lead is not listed as an impaired parameter for the any segments of the river; therefore, the existing limit for lead is retained in the new permit.

(v) Aldrin and Lindane: The permittee will continue to monitor for Aldrin and Lindane as required in the previous permit.

(i) **Monitor requirements to protect waterbody in the 303(d) List:**

303 (d) Lists Impaired Water:

Basin	St. Johns River Above Dames Point *(Basin North/Downstream of Outfall)*		St. Johns River Above Trout River *(Basin Immediate Outfall)*		St. Johns River Above Trout River *(Basin West/Upstream of Outfall)*	
WBID	2213C		2213D		2213E	
303(d) List	EPA 303(d)*	FDEP 303(d)**	EPA 303(d)*	FDEP 303(d)**	EPA 303(d)*	FDEP 303(d)**
Impaired Parameter	Nutrients, Turbidity & Total Suspended Solids	Copper, Iron, & Nickel	Coliforms, Nutrients & Total Suspended Solids	Copper, Iron, & Nickel	Coliforms &Nutrients	Copper, Iron, & Nickel

1. Total Suspended Solids: DMR reports of the last five years show that the maximum, average, median, and mode concentration of TSS in the effluent samples were 7.0 mg/L, 4.01 mg/L, 4.0 mg/L and 4.0 mg/L which were 10% of the annual average concentration limits for TSS. There is no sign of effect of TSS from the discharge to the waterbody. Monitoring frequency and limit for TSS remains as the previous permit.

2. Coliforms: Results of effluent samples (from 01/01/2003 through 12/31/2008) show average, mode and maximum of annual average of the fecal coliform were 6.4 #/100 mL, 5.0 #/100 mL, and 10.7 #/100 mL, respectively. The average, mode, and maximum monthly average (Geo mean) of fecal coliform were 6.4 #/100 mL, 3.0 #/100 mL and 18.6 #/100 mL, respectively. There is no sign of impact of discharge to the fecal coliform level of the receiving water. Therefore, monitoring frequency and limitation for fecal coliform and disinfection treatment level are retained as they were in the previous permit

3. Nickel: Results of the expanded effluent testing showed that the average and maximum concentrations of nickel were 12.0 µg /L and < 8.34µg /L, respectively. The chemical data included in third year sampling inspection report showed that nickel was 10.9 µg /L. The concentration of nickel from sampling events exceeded the water quality criterion for nickel of 8.3 µg /L, although they complied with the permit limit based on the mixing zone for nickel.

Due to the fact that all three segments of the river: WBID 2213D (outfall location), WBID 2213C (upstream/north of the outfall location), and WBID 2213E (downstream/south of the outfall location) has listed impairment for nickel, the existing mixing zone limit for the parameter is no longer acceptable; it needs to be fully evaluated.

Realizing the discharge is necessary and based on the fact that the permittee needs time to collect samples, conduct a study, and evaluate and consider options for meeting the surface water quality standard for total nickel at the point of discharge, an administrative order will be issued in conjunction with the permit to allow time for the facility to conduct, evaluate and consider options to bring total nickel back to compliance with Department rules. The interim limit was been established by using "Reasonable Assurance Verification Workbook" and data reported in the DMRs in the last 2 years. The interim limit for nickel will be 20.0 µg/ in the area of 1,711 square meters with a radius of approximately 33 meters. The boundary was established in the previously permit.

4. Copper: The chemical data included in the third year sampling inspection report showed that the effluent copper concentration (2.2 µg/L) was below the Class III marine criterion for copper. A review, of the expanded effluent testing data showed that the average and maximum concentrations of copper were also at levels that were below the Class III marine criterion for copper (3.7 µg /L). DMR reports of the last five years show that the maximum, 95th percentile, average, median, and mode concentrations of total recoverable copper in the effluent samples were 15.0 µg/L, 3.93 µg/L, 2.5 µg/L, 1.9 µg/L and 2.1 µg/L. The maximum and 95th percentile concentrations of the total recoverable copper were exceeded the water quality criterion, although they complied with the permit limit based on the existing mixing zone limit for copper.

Due to the fact that all three segments of the river: WBID 2213D (outfall location), WBID 2213C (north of the outfall location), and WBID 2213E (south of the outfall location) has listed impaired for copper, the existing mixing zone is no longer acceptable and it needs to be fully evaluated. (Note: Based on the recently testing data, the facility may not need a mixing zone for copper.)

5. Iron: results of the Department third year inspection show the concentration of iron in the effluent sample was 407 µg/L, which exceeds the water quality standard criterion for iron of 300.0 µg/L. In addition, iron is listed as an impaired parameter of the three segments of the river (WBIDs 2213 C, 2213 D and 2213 E). The permit is required to monitor for this parameter.

Realizing the discharge is necessary and based on the fact that the permittee needs time to collect samples, conduct a study, and evaluate and consider options for meeting the surface water quality standard for total iron at the point of discharge, an administrative order will be issued in conjunction with the permit to allow time for the facility to conduct, evaluate and consider options to bring total iron back to compliance with Department rules. The interim limit for iron will be 350 µg/L which is based on the projection from the RAV analysis.

6. Nutrients: Concern of nutrient enrichment from the discharge is addressed by the Lower St. Johns River Basin Management Action Plan (BMAP) adopted on November 24, 2008, which is discuss below.

(ii) Ambient Sampling: The Permittee shall conduct regular monitoring of the segment of the St. Johns River for maintaining data on the impact of the discharge to the water quality of the surface water body.

(iii) Toxicity Testing Requirements: In order to provide reasonable assurance that the discharge will not adversely affect the designated use of the receiving water, chronic whole effluent toxicity testing is required by Rule 62-620.620(3), FAC.

(iv) Macroinvertebrate Communities: The Department reserves the right to request the permittee to monitor for macroinvertebrate communities near the WWTF outfall for data on the impact of the discharge to the water body.

(b) **Total Maximum Daily Load of Total Nitrogen**:

FDEP's application of the EPA methodology to develop a SSAC for DO for the marine portion of the river between Julington Creek and the mouth of the river is detailed in the April 2006 report, Site Specific Alternative Dissolved Oxygen Criterion to Protect Aquatic Life in the Marine Portions of the Lower St. Johns River Technical Support Document. The SSAC for DO was adopted by the State and approved by EPA.

After the SSAC was approved by EPA, the Department worked with SJRWMD to remodel the river to determine the allowable nutrient load that would maintain dissolved oxygen levels above the levels established in the SSAC, and a revised TMDL was developed based on the results of that re-assessment. On September 30, 2007, EPA proposed a new TMDL based on the SSAC for DO in the marine portion of the Lower St. Johns River. After public review and comment, this TMDL was finalized

Discharge from Buckman WWTF is subject to the effluent limitation for annual mass load of the total nitrogen (i.e., the sum of monthly mass loading of total for each month starting from the first day of the second month following permit issuance through the last day of the 12th month period (rolling 12 month period)) discharge to Johns River Basin (WBID 2213D). TMDL – BMAP allows total waste allocation of total nitrogen for this WWTF is 253,852 kg/year (558,474.4 Lbs/yr).

The permittee, JEA, shall meet the aggregate cap through collectively managing the total nitrogen loads from each individual JEA's facilities (Arlington East WRF -FL0026441; Beacon Hills WWTF - FL0026778; Buckman WWTF - FL0026000; District II WWTF - FL0026450; Jacksonville Heights WWTF - FL0023671; Julington Creek WWTF -FL0043591; Mandarin WRF - FL0023493; Monterey WWTF - FL0023604; Royal Lakes WWTF - FL0026751; San Jose WWTF - FL0023663; San Pablo WWTF - FL0024767; Southwest District WWTF - FL0026468; Woodmere WWTF - FL0026786; and JEA Power Plant-FL), which are listed in the JEA - Aggregated Total Nitrogen (Permit ID: FL0620564).

BUCKMAN WWTP (JEA) – FACILITY SUMMARY – FL0026000 – JULY - 2013

PART II: Sampling Event Information	
Date(s) sample collected: July 29, 2013 - planned	**Sampler(s):** Eesa Ali, Sharon Piltz
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix B
Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2013-07-2922

Event ID *: .

Requester:

Customer:

Collected By: S. Piltz

Project ID:

PMAS:

Sampling Agency:

Field Report Prepared By: Amzad Shaik

Send Final Report To:

Lab ID *	Field	Value
	Location	BUCKMAN WWTP – Final Grab
	Field ID	Final Grab
	Matrix (include type e.g. Salt, Fresh, etc)	
	Temp (C)	
	pH	
	Latitude ☐ dd ☐ dms	
	Longitude ☐ dd ☐ dms	
	☐ Comp ☑ Grab	Grab
	Collection (comp begin or grab) Eastern Central	Date 7/29/13 Time 9:45
	Composite end Eastern Central	Date Time
	Tot Res Chlorine (mg/L)	
	Diss Oxygen (mg/L)	
	Storet Station Number	
	Sample Depth ☐ m ☐ ft	
	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	
	NPDES Number	
	Comments	
	Bottle Group(s)**	P-GT, BNA, CN, TOC (A)

Lab ID *	Field	Value
	Location	BUCKMAN – WWTP – Final Comp
	Field ID	
	Matrix (include type e.g. Salt, Fresh, etc)	
	Temp (C)	
	pH	
	Latitude ☐ dd ☐ dms	
	Longitude ☐ dd ☐ dms	
	☑ Comp ☐ Grab	Comp
	Collection (comp begin or grab) Eastern Central	Date 7/28 Time 8:00
	Composite end Eastern Central	Date 7/29 Time 7:20
	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	
	Bottle Group(s)**	P-GT, NUT, metals, BSD, TOX (B)

Lab ID *	Field	Value
	Location	Field blk
	Field ID	
	Matrix (include type e.g. Salt, Fresh, etc)	
	Temp (C)	
	pH	
	Latitude ☐ dd ☐ dms	
	Longitude ☐ dd ☐ dms	
	☐ Comp ☐ Grab	
	Collection (comp begin or grab) Eastern Central	Date 7/29 Time 9:45
	Composite end Eastern Central	Date Time
	Tot Res Chlorine (mg/L)	
	Diss Oxygen (mg/L)	
	Storet Station Number	
	Sample Depth ☐ m ☐ ft	
	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	
	NPDES Number	
	Comments	
	Bottle Group(s)**	CN, P24-F (C)

Lab ID *	Field	Value
	Location	
	Field ID	
	Matrix (include type e.g. Salt, Fresh, etc)	
	Temp (C)	
	pH	
	Latitude ☐ dd ☐ dms	
	Longitude ☐ dd ☐ dms	
	☐ Comp ☐ Grab	
	Collection (comp begin or grab) Eastern Central	Date Time
	Composite end Eastern Central	Date Time
	Tot Res Chlorine (mg/L)	
	Diss Oxygen (mg/L)	
	Storet Station Number	
	Sample Depth ☐ m ☐ ft	
	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	
	NPDES Number	
	Comments	
	Bottle Group(s)**	

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* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 2

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Number: RQ-2013-07-29-22
FY13 Buckman WWTF Sampling Inspection

Requester: Jennifer G. Weger
Field Report Prepared By: S. Piltz

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

Collected By: J Parrish / S. Piltz
Send Final Report To: Heather Webber

Sampling Agency:

Lab ID *	Location: Buckman WWTP final grab			☐ Comp ☑ Grab	Collection (comp begin or grab) Eastern Date 7/29/13 Time 0945 Central	Composite end Eastern Date Time Central		Bottle Group(s)**	PCB/T BNA
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 5.14	Storet Station Number		A	
	Matrix (include type e.g. Salt, Fresh, etc) EFF	Temp (C) 30.48	pH 6.96	Sample Depth 0.5 ☐ m ☐ ft		8.48 ☑ Salinity (PPTh) 8.83 ☑ Sp Conductance (umho/cm)	NPDES Number			
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: Collected @ Eff'l after final treatment						
Lab ID *	Location: Buckman WWTP-final comp.			☑ Comp ☐ Grab	Collection (comp begin or grab) Eastern Date 7/29/13 Time 0800 Central	Composite end Eastern Date 7/29/13 Time 0720 Central		Bottle Group(s)**	PCB	
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		B	
	Matrix (include type e.g. Salt, Fresh, etc) EFF	Temp (C) *	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number			
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: * Fridge Temp 2.5°C 25.68 MGD Collected @ EFA-1 after final Treatment						
Lab ID *	Location: Field Blanks			☐ Comp ☑ Grab	Collection (comp begin or grab) Eastern Date 7/29/13 Time 0945 Central	Composite end Eastern Date Time Central		Bottle Group(s)**	TOC FND PCB/T	
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number		C	
	Matrix (include type e.g. Salt, Fresh, etc) DI	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number			
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments						
Lab ID *	Location			☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Date Time Central	Composite end Eastern Date Time Central		Bottle Group(s)**		
	Field ID				Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number			
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments						

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	7/29/13	Fed Ex						7-31-13 0920

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** 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-2013-07-29-22
FYI3 Buckman WWTF Sampling Inspection

Requester: Jennifer G. Weger
Field Report Prepared By: S. Piltz

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

Collected By: S. Piltz
Send Final Report To: Heather Webber
Sampling Agency: FDEP NED

Lab ID *	Loca	Buckman WWTP-final comp.			☑ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central Date 7/30/13 Time 0800	Composite end Eastern Central Date 7/31/13 Time 0713	Bottle Group(s)** B
	Field					Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) Eff	Temp (C) *	pH		Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms		Comments * Fridge 3.1°C 24.19 MGD				
Lab ID *	Locatio	Buckman WWTP-final grab			☐ Comp ☑ Grab	Collection (comp begin or grab) Eastern Central Date 7/31/13 Time 0955	Composite end Eastern Central Date Time	Bottle Group(s)** —
	Field ID					Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 3.08	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) Eff	Temp (C) 31.12	pH 7.17		Sample Depth ☑ m 0.5 ☐ ft	☑ Salinity (PPTh) 0.58 ☐ Sp Conductance (umho/cm) 1177		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms		Comments				
Lab ID *	Location				☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central Date Time	Composite end Eastern Central Date Time	Bottle Group(s)**	
	Field ID					Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH		Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms		Comments				
Lab ID *	Location				☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central Date Time	Composite end Eastern Central Date Time	Bottle Group(s)**	
	Field ID					Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH		Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude	☐ dd ☐ dms		Comments				

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	7/31/13							

2 bioassays 8-1-13 @ 1022 AP

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-2013-07-29-22
FYI3 Buckman WWTF Sampling Inspection

Requester: Jennifer G. Weger
Field Report Prepared By: E. Alt
Collected By: E. Alt + K. Watson
Send Final Report To: Heather Webber
Sampling Agency: DEP NED

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

Lab ID *	Location / Field ID / Matrix / Latitude / Longitude	Collection / Composite / Results	Bottle Group(s)**
	Location: Buckman Final effluent Field ID: Matrix: Temp (C): 30.19 pH: 7.15 Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☑ Grab Collection (comp begin or grab) Eastern Central Date 8.2.13 Time 913 Composite end Eastern Central Date Time Tot Res Chlorine (mg/L) Diss Oxygen (mg/L) 6.59 Storet Station Number Sample Depth ☑ m ☐ ft 0.3 ☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm) 948 NPDES Number Comments: meter reading	n/a
	Location: Buckman Final Effluent Field ID: Matrix: Temp (C) 30C pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☐ Grab Collection (comp begin or grab) Eastern Central Date 8.1.13 Time 1000 Composite end Eastern Central Date 8.2.13 Time 800 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	B
	Location: ~~Field~~ Equipment Blank Field ID: Matrix: Temp (C) pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☑ Grab Collection (comp begin or grab) Eastern Central Date 8.2.13 Time 820 Composite end Eastern Central Date Time Tot Res Chlorine (mg/L) Diss Oxygen (mg/L) Storet Station Number Sample Depth ☐ m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number Comments	D
	Location: Field ID: Matrix: Temp (C) pH: Latitude ☐ dd ☐ dms Longitude ☐ dd ☐ dms	☐ Comp ☐ Grab Collection (comp begin or grab) Eastern Central Date Time Composite end Eastern Central Date Time Tot Res Chlorine (mg/L) Diss Oxygen (mg/L) Storet Station Number Sample Depth ☐ m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number Comments	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
E. Alt	8.2.13	self					SC	8.2.13 / 1:09pm

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix C
Explanation of measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

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

(3) Toxicity Bioassays

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

(4) Bacteriological Testing

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

(5) Algal Growth Potential (AGP)

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

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

(7) Chlorophyll *a* Content

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

(8) Definition of Qualifiers

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

Appendix D
Chemical Analyses of Effluent

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 7:20	FINAL COMP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	2.0	AJ	mg/L	0.2	2
7/29/2013 7:20	FINAL COMP	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	57.7		IC25		
7/29/2013 7:20	FINAL COMP	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	50.0		NOEC		
7/29/2013 7:20	FINAL COMP	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	91.8		IC25		
7/29/2013 7:20	FINAL COMP	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	50.0		NOEC		
7/29/2013 7:20	FINAL COMP	Metals	Magnesium	21.6		mg/L	0.04	0.16
7/29/2013 7:20	FINAL COMP	Metals	Silver	0.025	U	ug/L	0.025	0.1
7/29/2013 7:20	FINAL COMP	Metals	Aluminum	76	I	ug/L	60	240
7/29/2013 7:20	FINAL COMP	Metals	Nickel	4.67		ug/L	0.25	1
7/29/2013 7:20	FINAL COMP	Metals	Copper	0.82	I	ug/L	0.5	1
7/29/2013 7:20	FINAL COMP	Metals	Potassium	12.3		mg/L	0.3	1.2
7/29/2013 7:20	FINAL COMP	Metals	Arsenic	1.35		ug/L	0.25	1
7/29/2013 7:20	FINAL COMP	Metals	Sodium	119		mg/L	0.5	2
7/29/2013 7:20	FINAL COMP	Metals	Selenium	0.31	I	ug/L	0.2	0.8
7/29/2013 7:20	FINAL COMP	Metals	Chromium	0.56	I	ug/L	0.3	1.2
7/29/2013 7:20	FINAL COMP	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
7/29/2013 7:20	FINAL COMP	Metals	Iron	82	I	ug/L	30	120
7/29/2013 7:20	FINAL COMP	Metals	Calcium	72.4		mg/L	0.075	0.3
7/29/2013 7:20	FINAL COMP	Metals	Lead	0.20	U	ug/L	0.2	0.8
7/29/2013 7:20	FINAL COMP	Metals	Zinc	10	I	ug/L	5	20
7/29/2013 7:20	FINAL COMP	Nutrients	Fluoride	0.63		mg F/L	0.035	0.1
7/29/2013 7:20	FINAL COMP	Nutrients	Sulfate	140		mg SO4/L	2	5
7/29/2013 7:20	FINAL COMP	Nutrients	Alkalinity	179		mg CaCO3/L	0.65	2.5
7/29/2013 7:20	FINAL COMP	Nutrients	Kjeldahl Nitrogen	2.0		mg N/L	0.08	0.2
7/29/2013 7:20	FINAL COMP	Nutrients	Total-P	2.8		mg P/L	0.025	0.25
7/29/2013 7:20	FINAL COMP	Nutrients	Color (true)	49	A	PCU	2.5	6
7/29/2013 7:20	FINAL COMP	Nutrients	TSS	4	I	mg/L	2	10
7/29/2013 7:20	FINAL COMP	Nutrients	NO2NO3-N	7.4		mg N/L	0.04	0.1
7/29/2013 7:20	FINAL COMP	Nutrients	Ammonia-N	0.53		mg N/L	0.02	0.05
7/29/2013 7:20	FINAL COMP	Nutrients	Chloride	130		mg Cl/L	2	5
7/29/2013 7:20	FINAL COMP	Pesticides	Aldrin	0.0019	U	ug/L	0.0019	0.0078
7/29/2013 7:20	FINAL COMP	Pesticides	Gamma-BHC	0.0019	U	ug/L	0.0019	0.0078
7/29/2013 7:20	FINAL COMP	Pesticides	Gamma-BHC	0.0022	U	ug/L	0.0022	0.0089
7/29/2013 7:20	FINAL COMP	Pesticides	Aldrin	0.0022	U	ug/L	0.0022	0.0089
7/29/2013 9:45	FINAL GRAB	Overflow	Fecal Coliforms-Membrane Filter	340		cfu/100 mL	10	
7/29/2013 9:45	FINAL GRAB	Nutrients	Organic Carbon	10		mg C/L	0.5	1
7/29/2013 9:45	FINAL GRAB	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
7/29/2013 9:45	FINAL GRAB	Nutrients	O-Phosphate-P	4.3	Q	mg P/L	0.08	0.2
7/29/2013 9:45	FINAL GRAB	Pesticides	Azinphos Methyl	0.019	U	ug/L	0.019	0.078

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 9:45	FINAL GRAB	Pesticides	Metribuzin	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FINAL GRAB	Pesticides	Parathion Ethyl	0.019	UJ	ug/L	0.019	0.078
7/29/2013 9:45	FINAL GRAB	Pesticides	Prometryn	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FINAL GRAB	Pesticides	Simazine	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Ethoprop	0.0049	U	ug/L	0.0049	0.019
7/29/2013 9:45	FINAL GRAB	Pesticides	Metalaxyl	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FINAL GRAB	Pesticides	Metolachlor	0.058	U	ug/L	0.058	0.23
7/29/2013 9:45	FINAL GRAB	Pesticides	Mevinphos	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Alachlor	0.058	U	ug/L	0.058	0.23
7/29/2013 9:45	FINAL GRAB	Pesticides	Atrazine	0.27		ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Bromacil	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FINAL GRAB	Pesticides	Chlorpyrifos Ethyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Fenamiphos	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FINAL GRAB	Pesticides	Fonofos	0.026	U	ug/L	0.026	0.1
7/29/2013 9:45	FINAL GRAB	Pesticides	Norflurazon	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FINAL GRAB	Pesticides	Ametryn	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Ethion	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Hexazinone	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FINAL GRAB	Pesticides	Malathion	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Naled	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FINAL GRAB	Pesticides	Parathion Methyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Butylate	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FINAL GRAB	Pesticides	Phorate	0.0049	U	ug/L	0.0049	0.019
7/29/2013 9:45	FINAL GRAB	Pesticides	Chlorpyrifos Methyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Pesticides	Diazinon	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	58
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Di-n-butyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Butyl benzyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Butyl benzyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Dimethyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Diethyl phthalate	0.97	UJ	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Di-n-butyl phthalate	0.97	UJ	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	58
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Dimethyl phthalate	0.97	UJ	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	UJ	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Pyrene	0.19	UJ	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
7/29/2013 9:45	FINAL GRAB	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
7/29/2013 9:45	FIELD BLANK	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
7/29/2013 9:45	FIELD BLANK	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1
7/29/2013 9:45	FIELD BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
7/29/2013 9:45	FIELD BLANK	Pesticides	Norflurazon	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FIELD BLANK	Pesticides	Butylate	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FIELD BLANK	Pesticides	Azinphos Methyl	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FIELD BLANK	Pesticides	Metalaxyl	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FIELD BLANK	Pesticides	Alachlor	0.058	U	ug/L	0.058	0.23
7/29/2013 9:45	FIELD BLANK	Pesticides	Ametryn	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Atrazine	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Chlorpyrifos Ethyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Metribuzin	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FIELD BLANK	Pesticides	Parathion Ethyl	0.019	UJ	ug/L	0.019	0.078
7/29/2013 9:45	FIELD BLANK	Pesticides	Phorate	0.0049	U	ug/L	0.0049	0.019
7/29/2013 9:45	FIELD BLANK	Pesticides	Hexazinone	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FIELD BLANK	Pesticides	Fonofos	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Prometryn	0.019	U	ug/L	0.019	0.078
7/29/2013 9:45	FIELD BLANK	Pesticides	Ethion	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Naled	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FIELD BLANK	Pesticides	Simazine	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Bromacil	0.039	U	ug/L	0.039	0.16
7/29/2013 9:45	FIELD BLANK	Pesticides	Diazinon	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Malathion	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Metolachlor	0.058	U	ug/L	0.058	0.23
7/29/2013 9:45	FIELD BLANK	Pesticides	Chlorpyrifos Methyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Fenamiphos	0.029	U	ug/L	0.029	0.12
7/29/2013 9:45	FIELD BLANK	Pesticides	Mevinphos	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Pesticides	Ethoprop	0.0049	U	ug/L	0.0049	0.019
7/29/2013 9:45	FIELD BLANK	Pesticides	Parathion Methyl	0.0097	U	ug/L	0.0097	0.039
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Chrysene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	0.98	UJ	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0	U	ug/L	2	7.8
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Nitrobenzene	2.0	U	ug/L	2	7.8
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2-Chlorophenol	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Fluorene	0.20	U	ug/L	0.2	0.78

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Isophorone	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Pyrene	0.20	UJ	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Diethyl phthalate	0.98	UJ	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Dimethyl phthalate	0.98	UJ	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	UJ	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2-Nitrophenol	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Acenaphthylene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzidine	98	U	ug/L	98	390
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0	U	ug/L	2	7.8
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Fluoranthene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Naphthalene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	59
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0	U	ug/L	2	7.8
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Acenaphthene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0	U	ug/L	2	7.8
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Phenanthrene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.8	U	ug/L	9.8	39
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.98	U	ug/L	0.98	3.9
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Anthracene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20	U	ug/L	0.2	0.78
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/29/2013 9:45	FIELD BLANK	Priority Organic Pollutants	Phenol	0.98	U	ug/L	0.98	3.9
8/2/2013 8:00	FINAL COMP	Field Parameter	Temperature	3		C		
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Iron	30	U	ug/L	30	120

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Zinc	5.0	U	ug/L	5	20
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Sodium	0.50	U	mg/L	0.5	2
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Chromium	0.30	U	ug/L	0.3	1.2
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Copper	0.50	U	ug/L	0.5	1
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Potassium	0.30	U	mg/L	0.3	1.2
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Lead	0.20	U	ug/L	0.2	0.8
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Aluminum	60	U	ug/L	60	240
8/2/2013 8:20	EQUIPMENT BLANK	Metals	Selenium	0.20	U	ug/L	0.2	0.8
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Color (true)	2.5	U	PCU	2.5	6
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	TSS	2	U	mg/L	2	10
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Ammonia-N	0.002	U	mg N/L	0.002	0.005
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
8/2/2013 8:20	EQUIPMENT BLANK	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5

Appendix E
Bioassay Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Buckman WWTF MF
Address: 2221 Buckman Street Jacksonville
County: Duval 32206
NPDES Permit #: FL 0026000
Contact/District: Elisa Ali / Northeast

LIMS entry: 8-13-13 MF verified: 8.12.13 BA

Diluent/ Batch: MHWCD / 7.25.13 Test Days Used: 0-7 AP
MHWCD / _____ Test Days Used: _____

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

Organism: *Ceriodaphnia dubia*
Organism Batch #: 7.30.13
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 5.28.13 7.22.13
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-2013-07-30-54	1522387	7-29-13 0720	7-30-13/1030
Test Day 2	2	TLH-2013-08-01-109	1523383	7-31-13 0713	8-1-13/1022
Test Day 4	3	TLH-2013-08-02-74	1523641	8-[illegible]-13 0800	8-2-13/AP 1330

Water Quality Parameters	Batch # 7.25.13 MHWCD	MHWCD	Sample 1 NA	Sample 2 NA	Sample 3 NA	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		0.04	0.04	0.04		AP	CR
Alkalinity (mg/L as $CaCO_3$):	65		168	200	198		CR/AP	AP/CR
Hardness (mg/L as $CaCO_3$):	63		264	270	251		CR/AP	AP/CR
Total Ammonia (mg/L as N):	<0.017		0.254	1.10	4.67		MF/BA	CR
Conductivity: (µmhos) mmhos:	258		1065	1234	1170		AP/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 24.9 max 26.1
Room B246 min 24.8 max 25.2
Test min 24.0 max 25.9

Loaded by: AP

Test Replicates	Loaded from culture vial
1	D2
2	D3
3	D4
4	D5
5	D8
6	D11
7	D13
8	D14
9	D17
10	D18

Results	
Control % CV:	41.2%
Dunnetts PMSD:	39.2%
Reproduction NOEC:	50 %
Reproduction LOEC:	100 %
Survival NOEC:	100 %
Survival LOEC:	>100 %
ICP_{20}:	23.7%
ICP_{25}:	57.7%

Investigators' signatures

	Initials
Adrienne Pennington	AP
Cassidy Mejicht	CR
Brad Burke	BA
Marshall Fairchild	MF

REVIEWER Liz Meier

Comments:

Test Page 1 of 6

PAGE 000001

revised 02/15/13 MF

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Buckman WWTF

LIMS Sample #: 1522387 for lab sample #1

Start Date: 7.30.13 Time: 1320

End Date: 8-7-13 Time: 0900

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	0	0	0	0	0	0	0	0	10	0
	4	5	0	0	5	0	0	4	0	6	1	21	10	2.1
	5	3	5	0	4	10	3	9	3	9	6	52	10	5.2
	6	0	0	0	0	0	0	16	0	0	0	16	10	1.6
	7	8	18	5	18	18	14	0	11	12	19	123	10	12.3
	8	6	16	0	14	17	16	19	10	7	17	59	10	5.9
	Total	16	39	5	27	45	33	29	24	27	26	271	10	27.1

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	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	2	0	1	0	0	0	0	0	3	10	0.3
	5	0	0	1	2	1	0	3	2	0	5	14	10	1.4
	6	10	0	0	0	0	0	0	0	0	0	10	10	1.0
	7	0	4	0	16	16	8	4	13	2	10	73	10	7.3
	8	18	11	0	13	16	7	16	16	15	19	115	10	11.5
	Total	28	15	3	~~31~~ 31 AP	18	15	23	31	17	31	215	10	21.5

Organisms loaded by: AP

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

Concentration	Mean neonates /female	% survival
Control	27.1	100%
6.25%	21.5	100%
12.50%	23.2	90%
25%	15.0	70%
50%	28.2	100%
100%	13.3	90%

Test acceptability

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

Comments: (A) 4th brood. Not included

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

200000

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Buckman

LIMS Sample # : 1522387 for lab sample #1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	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	X	0	0	0	0	0	0	0	0	0	~~AP 0~~ 9	0
	4	2	|	0	0	0	0	0	0	4	0	6	~~AP 10~~ 9	0.6
	5	2	|	2	1	9	7	8	2	3	1	35	9	3.5
	6	13	|	0	0	0	0	0	0	14	0	27	9	2.7
	7	0	|	12	17	11	12	17	15	0	0	84	9	8.4
	8	0	|	8	16	13	12	14	17	~~8~~ 8	0	80	9	8.0
	Total	17	0	22	34	33	31	39	34	21	1	232	9 (10)	23.2

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	Neonates per female
25%	0*												10	
	1		X										9	
	2	0	|	0	0	0	0	0	0	0	0	0	~~9~~ 8 ~~10~~ AP	
	3	0	|	0	0	X	0	0	0	0	0	0	8 ~~10~~ AP	
	4	0	|	3	0	|	0	2	3	1	1	10	8	1.0
	5	0	|	3	1	|	4	7	0	8	2	25	8	2.5
	6	0	|	16	0	|	0	17	0	0	0	33	8	3.3
	7	13	|	0	19	|	X0	0	2	2	17	57	7	5.7
	8	0	|	~~0~~ 8	12	|	|	~~0~~ 9	13	~~0~~ 4	~~0~~ 6	25	7	2.5
	Total	13	0	22	32	0	4	26	18	15	20	150	7 (10)	15.0

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	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	2	0	0	0	4	4	4	0	14	10	1.4
	5	7	8	10	8	0	6	5	5	3	8	60	10	6.0
	6	0	0	0	0	0	0	17	0	0	0	17	10	1.7
	7	12	16	19	11	15	9	0	17	15	14	128	10	12.8
	8	9	15	~~A 5~~	12	5	5	17	13	18	17	63	10	6.3
	Total	28	39	31	31	20	20	26	26	22	39	282		28.2

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			X									9	
	2	0	0	|	0	0	0	0	0	0	0	0	9	0
	3	0	0	|	0	0	0	0	0	0	0	0	9	0
	4	0	0	|	2	0	0	0	0	2	0	4	9	0.4
	5	2	1	|	4	4	0	2	2	3	0	18	9	1.8
	6	9	7 MF	|	3	0	3	11	0	0	0	33	9	3.3
	7	0	0	|	0	10	0	0	8	8	5	31	9	3.1
	8	0	13	|	~~0~~ 10	5	0	15	0	0	14	47	9	4.7
	Total	11	21	0	9	19	3	28	10	13	19	133	9 (10)	13.3

Comments: (S) split brood 25% rep9 Day 8 MF

(A) 4th brood NOT included

*Day 0 is test initiation day

X = Dead (original organism)

000003

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Buckman SOP TA07_05

LIMS Sample #: 1522387 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.9	25.3	8.0	~~3258~~ AP					
	1	6.25%	M	7.9	25.0	8.1	315					
	1	12.5%	M	8.1	24.9	8.1	369					
	1	25%	M	8.1	24.9	8.0	470					
	1	50%	M	8.2	24.8	8.0	680					
	1	100%	M	8.3	24.9	8.0	1065					
	Measured by:			AP	AP	AP	AP					
	Recorded by:			AP	AP	AP	AP					
Day 1	sample:	Control	M	7.9	24.0	8.1	327	M	8.1	24.7	8.2	267
	1	6.25%	M	7.9	24.3	8.1	308	M	8.0	24.8	8.2	323
	1	12.5%	M	7.9	24.1	8.1	358	M	8.1	24.7	8.1	384
	1	25%	M	7.9	24.2	8.1	469	M	8.1	24.6	8.1	486
	1	50%	M	7.9	24.1	8.1	658	M	8.2	23.8	8.0	756
	1	100%	M	7.8	24.0	8.2	1030	M	8.3	23.7	8.1	1156
	Measured by:			AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:			AP	AP	AP	AP		AP	AP	AP	AP
Day 2	sample:	Control	M	8.2	24.6	7.5	255	M	8.3	24.0	7.8	299
	2	6.25%	M	8.2	24.7	7.5	321	M	8.3	24.0	7.6	335
	2	12.5%	M	8.2	24.8	7.5	384	M	8.2	24.0	7.5	390
	2	25%	M	8.2	24.7	7.6	506	M	8.2	24.0	7.5	504
	2	50%	M	8.1	24.7	7.6	741	M	8.1	24.0	7.5	723
	2	100%	M	8.1	24.8	7.8	1234	M	8.1	24.0	7.5	1188
	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	8.0	24.6	8.0	266	M	8.2	24.0	8.1	298
	2	6.25%	M	8.0	24.7	8.1	321	M	8.1	24.0	8.2	348
	2	12.5%	M	8.0	24.6	8.1	403	M	8.1	24.0	8.2	410
	2	25%	M	8.1	24.6	8.1	511	M	8.1	24.1	8.2	527
	2	50%	M	8.1	24.6	8.1	708	M	8.2	24.1	8.1	753
	2	100%	M	8.1	24.6	8.1	1185	M	8.3	24.2	8.1	1253
	Measured by:			AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:			AP	AP	AP	AP		AP	AP	AP	AP

Comments:

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

SOP TA07_05

Facility: Buckman

LIMS Sample #: 1522387 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	8.1	24.8	8.1	327	M	8.0	25.2	8.1	275
	3	6.25%	M	8.1	25.2	8.2	~~330~~ 331	M	8.0	25.4	8.0	339
	3	12.5%	M	8.1	25.3	8.2	383	M	8.6	25.4	8.1	403
	3	25%	M	8.0	25.4	8.2	499	M	8.1	25.2	8.2	545
	3	50%	M	8.0	25.7	8.2	732	M	8.2	25.3	8.2	747
	3	100%	M	7.7	25.9	8.2	1170	M	8.3	25.4	8.1	1249
	Measured by:			AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:			AP	AP	AP	AP		AP	AP	AP	AP
Day 5	sample:	Control	M	8.1	24.8	7.8	306	M	8.0	25.0	7.9	282
	3	6.25%	M	8.0	25.0	7.9	330	M	8.1	25.2	7.8	341
	3	12.5%	M	8.0	25.0	7.9	386	M	8.1	25.1	7.9	407
	3	25%	M	8.0	25.0	8.0	498	M	8.2	24.9	7.9	533
	3	50%	M	7.9	25.0	7.9	730	M	8.2	24.1	7.9	822
	3	100%	M	7.8	25.0	8.0	1175	M	8.3	24.4	8.0	1263
	Measured by:			AP	AP	AP	AP		AP	AP	AP	AP
	Recorded by:			AP	AP	AP	AP		AP	AP	AP	AP
Day 6	sample:	Control	M	7.6	24.4	7.0	263	M	7.9	24.7	5.5	~~263~~ 289 BA
	3	6.25%	M	7.6	24.7	7.1	326	M	7.9	240	6.5	346
	3	12.5%	M	7.6	24.5	7.2	385	M	7.9	24.0	6.8	403
	3	25%	M	7.6	24.6	7.2	503	M	79	24.0	7.1	536
	3	50%	M	7.6	24.5	7.1	734	M	7.9	24.0	7.3	775
	3	100%	M	7.7	24.4	7.1	1185	M	8.0	24.0	7.4	1283
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 7	sample:	Control	M	8.0	24.4	8.0	288	M	8.2	24.7	8.0	284
	3	6.25%	M	8.0	24.2	8.1	328	M	8.1	24.9	8.0	341
	3	12.5%	M	8.1	24.2	8.2	386	M	8.2	24.9	8.0	403
	3	25%	M	8.1	24.2	8.2	505	M	8.2	24.9	8.0	520
	3	50%	M	8.1	24.2	8.1	737	M	8.2	24.7	8.0	753
	3	100%	M	8.1	24.2	8.1	1192	M	8.3	24.6	8.0	1262
	Measured by:			AP	MF	AP	AP		AP	MF	AP	AP
	Recorded by:			AP	CR	AP	AP		AP	CR	AP	AP
Day 8	sample:	Control	M					M	7.9	24.7	7.9	288
	3	6.25%	M					M	8.0	25.2	7.8	338
	3	12.5%	M					M	8.0	25.4	7.7	391
	3	25%	M					M	8.1	25.3	7.7	528
	3	50%	M					M	8.3	25.2	7.6	748
	3	100%	M					M	8.4	25°	7.8	1215
	Measured by:								CR	MF	CR	CR
	Recorded by:								CR	MF	CR	CR

Comments:

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revised 02/15/13 MF

Test ID: Buckman WWTF Dates: 7-30-13 — 8-7-13

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	NA
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: MeFarduth 8-7-13

V 1.3 2/15/13 MF

900000

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	7/30/2013 13:20	Test ID:	buckcd713	Sample ID:	Buckman July 30, 2013
End Date:	8/7/2013 09:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF1-POTW
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	CD-Ceriodaphnia dubia

Comments: Ceriodaphnia dubia chronic bioassay for Buckman WWTF July 30, 2013

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	16.000	39.000	5.000	27.000	45.000	33.000	29.000	24.000	27.000	26.000
6.25	28.000	15.000	3.000	31.000	18.000	15.000	23.000	31.000	17.000	34.000
12.5	17.000	0.000	22.000	34.000	33.000	31.000	39.000	34.000	21.000	1.000
25	13.000	0.000	22.000	32.000	0.000	4.000	26.000	18.000	15.000	20.000
50	28.000	39.000	31.000	31.000	20.000	20.000	26.000	26.000	22.000	39.000
100	11.000	21.000	0.000	9.000	19.000	3.000	28.000	10.000	13.000	19.000

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	27.100	1.0000	27.100	5.000	45.000	41.217	10	27.100	1.0000
6.25	21.500	0.7934	21.500	3.000	34.000	44.948	10	22.350	0.8247
12.5	23.200	0.8561	23.200	0.000	39.000	59.511	10	22.350	0.8247
25	15.000	0.5535	15.000	0.000	32.000	72.623	10	21.600	0.7970
50	28.200	1.0406	28.200	20.000	39.000	24.557	10	21.600	0.7970
100	13.300	0.4908	13.300	0.000	28.000	64.294	10	13.300	0.4908

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.523353	1.035	-0.41247	-0.22817
Bartlett's Test indicates equal variances (p = 0.45)	4.705148	15.08627		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL		Skew
IC05*	1.783	12.930	0.972	54.662	2.7538
IC10*	3.566	17.946	1.944	60.087	1.8080
IC15*	5.349	23.124	2.916	68.132	0.8411
IC20	23.667				
IC25	57.681				
IC40	82.169				
IC50	98.494				

* indicates IC estimate less than the lowest concentration

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Buckman WWTF
Address: 2221 Buckman Street, Jacksonville, FL, 32206
County: Duval
NPDES Permit #: FL 0026000
Contact/District: Ed Samro / NED
Easa Ali

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: 7.30.13 Time: 1415
End Date: 8.6.13 Time: ~~0830~~ AP 1015

Diluent/ Batch:
MHW / 7.20.13 Test Days Used: 0
MHW / 7.30.13 Test Days Used: 1-6
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 #: 7.30.13	
Artemia Batch #	
Day 0 142.13	Day 3 145.13
Day 1 143.13	Day 4 146.13
Day 2 ~~143~~ 144.13	Day 5 147.13
	Day 6 148.13

LIMS entry: 8-13-13 MF Entry verification: 8.12.13 BA

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2013-07-30-54	1522387	7-29-13 0720	7-30-13/1030
Test Day 2	2	TLH-2013-08-01-109	1523383	7-31-13 0713	8-1-13/1022
Test Day 4	3	TLH-2013-08-03-74	1523661	8-2-13 0800	8-2-13/1335

Batch #	7.20.13	7.30.13	NA	NA	NA			
Water Quality Parameters	MHW ASW (circle one)	MHW ASW (circle one)	Sample 1	Sample 2	Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA		Not measured			—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	0.04	0.04	0.04		AP	CR
Alkalinity (mg/L as $CaCO_3$):	70	61	168	200	198		AP/CR	CR/AP
Hardness (mg/L as $CaCO_3$):	81	66	264	270	251		AP/CR	CR/AP
Total Ammonia (mg/L as N):	<0.017	<0.017	0.254	1.10	4.67		MF/BA	CR
Conductivity (µmhos mmhos):	313	285	1068	1150	1186		AP/CR	CR/AP
Salinity (ppth):								

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 24.5 max 25.6
Test min 24.0 max 25.6
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 %
Growth IC_{20}:	80.4 %
Growth IC_{25}:	91.8 %
Ctrl % CV:	8.3 %
Dunnetts PMSD:	21 %
Survival NOEC:	100 %
Survival LOEC:	>100 %

Investigators' signatures

	Initials:
Adrienne Pennington	AP
Cassidy Rolando	CR
Bruce Alumbaugh	BA
Marshall Faircloth	MF

REVIEWER Liz Miller

Comments:

revised 07/23/13 AP

Chronic Bioassay Survival Benchsheet

Facility: Buckman WWTF

LIMS Sample Number: 1522387
(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	9 1D	9	9	8 1D	8	8
	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	10	10	10	10	10	10
	C	10	10	10	10	9 1D	8 1D	7 1D	7
	D	10	10	10	10	9 1D	8 1D	8	8
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	9 1D	9	9
	C	10	~~9~~ 3ND 10	10	10	9 1D	8 1D	8	8
	D	10	7 3D	7	7	7	6 1D	6	6
Sample 100 %	A	10	8 2D	8	8	8	8	7 1D	7
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	8 2D	7 1D	7
	D	10	10	10	10	10	AP ~~8 2D~~ 9 1D	7 2D	7
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: CR	Checked by:		AP	AP	CR	AP	AP	CR	CR
Verified by: AP									

Comments:

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Chronic Bioassay Parameters Benchsheet

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

Sample Source: Buckman WW + F — Start Date: 7.30.13 End Date: 8.6.13

LIMS Sample #: 1522387 (for Lab sample #1) — Start Time: 1415 End Time: 1015

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	7.9	24.6	8.1	313							
	1	6.25%	A	7.9	24.7	8.1	339							
	1	#AP25%	A	8.0	24.7	8.1	389							
	1	25%	A	8.2	24.6	8.1	491							
	1	50%	A	8.3	24.6	8.2	688							
	1	100%	A	8.3	24.6	8.2	1068							
	1		A											
	Measured by:			AP	AP	AP	AP							
	Recorded by:			AP	CR	AP	AP							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.8	25.4	8.0	311		B	8.0	24.1	8.0	285	
	1	6.25%	B	7.9	24.8	7.9	343		B	8.0	24.0	7.9	317	
	1	12.5%	B	7.9	25.3	7.9	400		B	8.0	24.0	7.9	371	
	1	25%	B	8.0	25.2	7.7	501		B	8.0	24.1	7.8	473	
	1	50%	B	8.1	25.3	7.5	694		B	8.0	24.1	7.7	676	
	1	100%	B	8.3	25.2	7.6	1073		B	8.1	24.6	7.9	1073	
	1		B						B					
	Measured by:			CR	CR	CR	CR			CR	AP	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	7.8	25.1	7.3	339		C	7.7	24.0	7.5	294	
	2	6.25%	C	7.7	24.7	7.0	330		C	7.7	24.0	7.2	313	
	2	12.5%	C	7.7	25.2	6.9	382		C	7.7	24.0	7.2	345	
	2	25%	C	7.8	25.1	6.9	489		C	7.8	24.0	7.3	484	
	2	50%	C	7.9	25.1	6.9	692		C	7.9	24.3	7.3	718	
	2	100%	C	8.0	25.3	6.7	1096		C	8.0	24.7	7.2	1150	
	2		C						C					
	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 3	sample:	Control	D	7.7	24.9	7.3	285		D	7.9	24.4	8.0	276	
	2	6.25%	D	7.7	25.3	7.3	335		D	7.9	24.4	7.9	312	
	2	12.5%	D	7.8	25.2	7.3	384		D	7.9	24.4	7.9	375	
	2	25%	D	7.8	24.9	7.2	499		D	8.0	24.5	7.8	495	
	2	50%	D	7.9	25.5	7.2	748		D	8.0	24.5	7.6	740	
	2	100%	D	8.1	25.3	6.7	1178		D	8.1	24.7	7.7	1205	
	2		D						D					
	Measured by:			CR	CR	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	AP	CR	CR			CR	CR	CR	CR	

Comments:

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

Page 000003

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Buckman WWTP — Start Date: 7.30.13 End Date: 8.06.13 (parameter pg. 2)

LIMS Sample #: 1522387 (for Lab sample #1) — Start Time: 1415 End Time: 1015

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	sample:	Control	A	7.7	25.2	7.8	269		A	8.1	24.9	8.0	266	
	3	6.25%	A	7.7	25.4	7.7	330		A	8.0	24.8	8.0	321	
	3	12.5%	A	7.7	25.4	7.6	386		A	8.0	24.8	8.0	380	
	3	25%	A	7.8	25.0	7.6	511		A	7.9	24.8	7.9	498	
	3	50%	A	7.9	25.3	7.5	754		A	7.9	25.1	7.9	741	
	3	100%	A	8.1	24.9	7.5	1205		A	7.8	25.3	7.8	1186	
	3		A						A					
	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 5	sample:	Control	B	7.7	25.5	7.5	268		B	7.9	24.8	7.5	257	
	3	6.25%	B	7.7	25.3	7.5	332		B	7.9	24.7	7.6	317	
	3	12.5%	B	7.7	25.3	7.1	390		B	7.9	24.7	7.4	375	
	3	25%	B	7.8	24.7	7.1	496		B	7.9	24.7	7.4	492	
	3	50%	B	7.8	25.3	6.9	731		B	7.8	24.7	7.4	736	
	3	100%	B	8.0	24.7	6.9	1184		B	7.8	24.7	7.4	1175	
	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	7.8	25.4	6.9	312		C	8.0	24.4	7.8	285	
	3	6.25%	C	7.8	25.1	6.7	327		C	8.0	24.4	7.5	312	
	3	12.5%	C	7.8	24.9	6.8	382		C	7.9	24.3	7.2	370	
	3	25%	C	7.8	25.6	6.1	504		C	7.9	24.3	7.1	491	
	3	50%	C	7.9	25.1	6.2	757		C	8.0	24.3	7.1	731	
	3	100%	C	8.0	24.6	6.1	1203		C	8.1	24.4	7.4	1161	
	3		C						C					
	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 7	sample:	Control	D	7.7	25.1	7.2	267		D					
	3	6.25%	D	7.7	25.4	6.9	318		D					
	3	12.5%	D	7.7	25.1	6.9	375		D					
	3	25%	D	7.8	24.9	6.7	490		D					
	3	50%	D	7.9	25.5	6.6	742		D					
	3	100%	D	8.0	24.8	6.0	1155		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.

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Chronic Bioassay Weighing Benchsheet

Facility: Buckman WWTF

LIMS Sample Number: 1522387 (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	1	0.026036	0.03254	0.006618	10	0.618	
	B	2	0.025565	0.03102	0.00537	10	0.537	
	C	3	0.02559	0.03104	0.00545	10	0.545	0.553
	D	4	0.02551	0.03062	0.00511	10	0.511	
sample 6.25 %	A	5	0.025565	0.030069	0.00504	10	0.504	
	B	6	0.03506	0.02947	0.00441	10	0.441	
	C	7	0.026030	0.03039	0.00409	10	0.409	0.454
	D	8	0.026027	0.03087	0.00460	10	0.460	
sample 12.5 %	A	9	0.026025	0.03208	0.00583	10	0.583	
	B	10	0.02540	0.03124	0.00584	10	0.584	
	C	11	0.026012	0.03093	0.00481	10	0.481	0.541
	D	12	0.02582	0.03099	0.00517	10	0.517	
sample 25 %	A	13	0.02592	0.03208	0.006616	10	0.616	
	B	14	0.025561	0.03098	0.00537	10	0.537	
	C	15	0.02548	0.03080	0.00532	10	0.532	0.546
	D	16	0.02557	0.03055	0.00498	10	0.498	
sample 50 %	A	17	0.02570 CR 99	0.03273	0.00674	10	0.674	
	B	18	~~0.025768~~ CR 7099	0.03090	~~0.00491~~ CR 0.00530	10	~~0.491~~ CR 0.530	
	C	19	0.025768	0.03052	0.00484	10	0.484	0.524
	D	20	0.02568	0.02987	0.00419	10	0.419	
sample 100 %	A	21	0.02578	0.02968	0.00390	10	0.390	
	B	22	0.02575	0.03086	0.00511	10	0.511	
	C	23	0.025767	0.02938	0.00371	10	0.371	0.395
	D	24	0.02579	0.02885	0.00306	10	0.306	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		CR	CR		revised 7/16/08 mf		

Comments:

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

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

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Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Buckman

LIMS Sample Number: 1522387 (for Lab Sample # 1)

P. promelas and M. beryllina **Bench sheet**

SOPs TA07_09, TA07_14 and TA06_21

Drying Oven ID:	ER034000	Tare weighed by:	CR
Temperature °C:	100	Final weighed by:	CR
Hours:	8		

Tare Weighing Date: 8.5.13 Final Weighing Date: 8.7.13

				Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.026637	@	0.026636	S-weights	0.00998	@ 0.01
Tare Pan 1 after Pan 10 (g)	0.026637	@	0.026636	at tare	0.03003	@ 0.03
Tare Pan 1 after Pan 15 (g)	0.026638	@	0.026636	S-weights	0.00999	@ 0.01
Tare Pan 1 after Pan 20 (g)	0.026636	@	0.026636	at final	0.05002	@ 0.05
Tare Pan 1 after Pan 25 (g)	0.026636	@	0.026636			
Tare Pan 1 after Pan 30 (g)		@		Balance: Ohaus 250D Ser# 1125481084		
Tare Pan 1 after Pan 35 (g)		@		S-Weights: BIO-S-Weights-01		
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)	0.03254	@	0.03254			
Final Pan 1 after Pan 10 (g)	0.03254	@	0.03254			
Final Pan 1 after Pan 15 (g)	0.03253	@	0.03254			
Final Pan 1 after Pan 20 (g)	0.03253	@	0.03254			
Final Pan 1 after Pan 25 (g)	0.03252	@	0.03254			
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)		@				

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: Buckman WWTF Dates: 7.30.13 – 8.6.13

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 8.7.13

V 1.3 2/15/13 MF

PAGE

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	7/30/2013 14:15	Test ID:	BUCKpp713	Sample ID:	Buckman
End Date:	8/6/2013 10:15	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF1-POTW
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	Pimephales promelas chronic bioassay for Buckman WWTF July 2013				

Conc-%	1	2	3	4
D-Control	0.6180	0.5370	0.5450	0.5110
6.25	0.5040	0.4410	0.4090	0.4600
12.5	0.5830	0.5840	0.4810	0.5170
25	0.6160	0.5370	0.5320	0.4980
50	0.6740	0.5200	0.4840	0.4190
100	0.3900	0.5110	0.3710	0.3060

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.5528	1.0000	0.5528	0.5110	0.6180	8.296	4	0.5528	1.0000
6.25	0.4535	0.8204	0.4535	0.4090	0.5040	8.755	4	0.5162	0.9339
12.5	0.5413	0.9792	0.5413	0.4810	0.5840	9.414	4	0.5162	0.9339
25	0.5458	0.9873	0.5458	0.4980	0.6160	9.150	4	0.5162	0.9339
50	0.5243	0.9484	0.5243	0.4190	0.6740	20.645	4	0.5162	0.9339
100	0.3945	0.7137	0.3945	0.3060	0.5110	21.696	4	0.3945	0.7137

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.947678	0.884	0.736924	0.664745
Bartlett's Test indicates equal variances (p = 0.48)	4.469895	15.08627		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)		Skew
IC05*	4.724	23.835	0.532	96.452	0.5539
IC10	57.689				
IC15	69.045				
IC20	80.401				
IC25	91.757				
IC40	>100				
IC50	>100				

* indicates IC estimate less than the lowest concentration

Appendix F
Standard Reference Toxicant Data

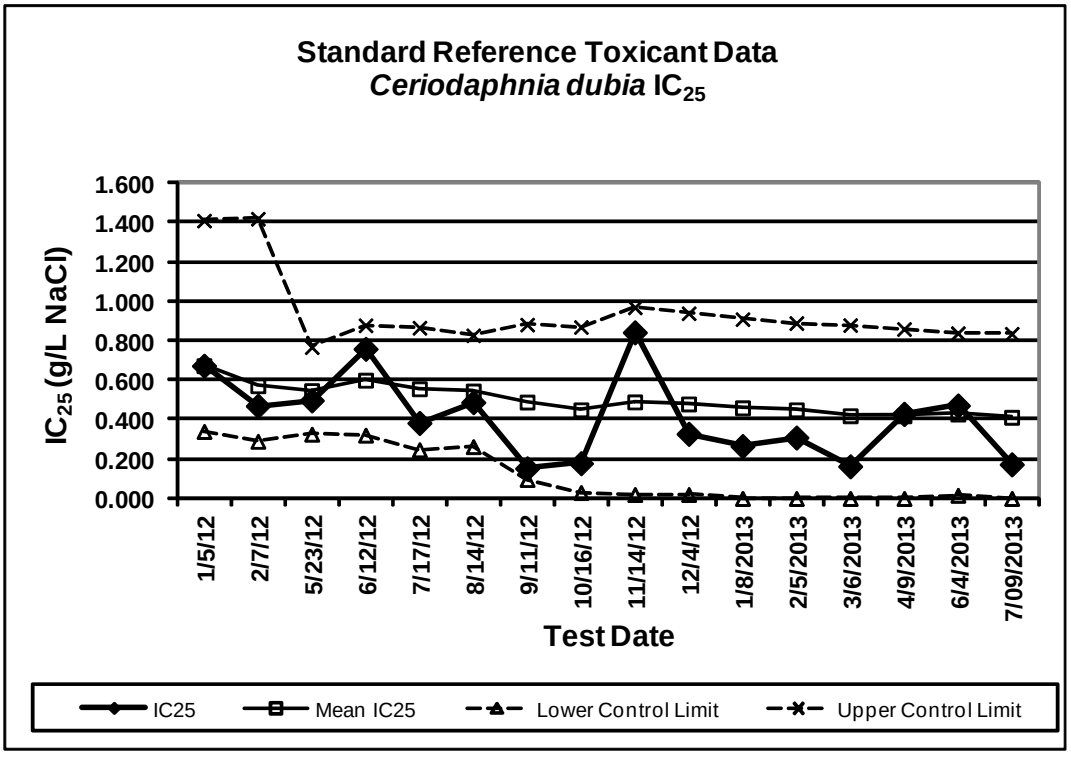
Florida Department of Environmental Protection
Bureau of Laboratories

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 Repr **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}:	0.139 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	C28
7	A18
8	A27
9	B3
10	B22

Comments:

Investigators' signatures	Initials
Adrienne Perrywater	AP
Cassidy Reichardt	CR
Bree Parker	BA
Marshall Sandwich	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)	Replicate	New Sample 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)	Old Sample Replicate	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									
	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

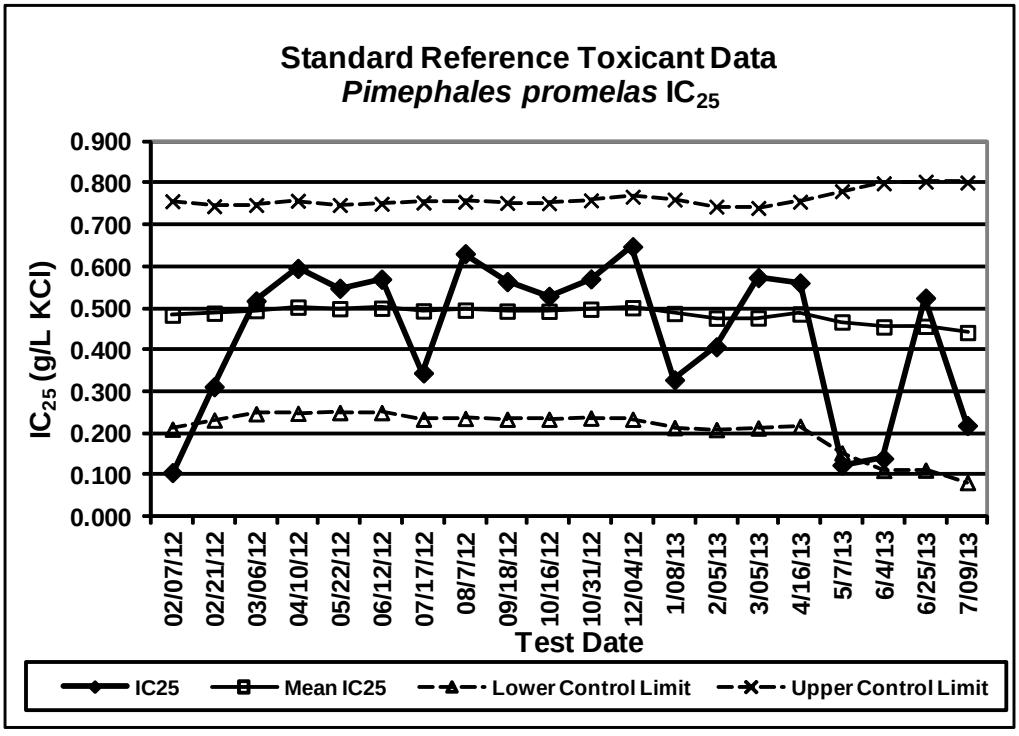
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Florida Department of Environmental Protection
Bureau of Laboratories
Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

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 Start Date: 7.9.13 Time: 1445

Diluent/ Batch: MHW/7.11.13 Test Days Used: 4-6 End Date: 7.16.13 Time: 1000

Toxicant/ Batch # : 20% KCl / 7.9.13 Organism Batch #/ Age: 7.9.13 / 24 hrs.

Artemia Lot # : 03812

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:	0.125 g/L
Growth IC_{20}:	0.1464 g/L
Growth IC_{25}:	0.219 g/L
Ctrl % CV:	14.7%
Dunnetts PMSD:	17.7%
Survival NOEC:	0.5 g/L
Survival LOEC:	1 g/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 2 min. 24.0 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 Alcala

Marshall Faircloth

REVIEWER Liz Miller

Comments:

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/CR D4	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	10	9 1D	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	~~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	0.025671	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	0.025951	0.03951	0.00356	10	0.356	
	C	11	0.025571	0.02947	0.00390	10	0.390	0.393
	D	12	0.024501	0.02777	0.00327	10	0.327	
0.5	A	13	0.023557	0.02860	0.00303	10	CR ~~0.180~~ 0.303	
	B	14	0.024931	0.02853	0.00360	10	0.360	
	C	15	0.025501	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	0.00038	10	0.038	
	C	18	0.027501	0.03815	0.00065	10	0.065	0.045
	D	19	0.027001	0.02743	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	0.02568	@ 0.02567
after Pan 10	0.02567	@ 0.02567
after Pan 15	0.02568	@ 0.02567
after Pan 20	0.02567	@ 0.02567
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	@ 0.1
	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	@ 0.1
	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:

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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Appendix G
Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 7/8/13

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (°/00)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	150	11 days	CL130627	25	7.8	80
Pimephales promelas	150 ac	7 days	FM130701	25	7.8	80
	300	> 24 hrs	FM130707-1620	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: 7/29/13

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						
Pimephales promelas	300	< 24 HRS	FM130728-1645	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 Buckman WWTF effluent sampled on July 29 and 31, and August 2, 2013. NPDES #FL0026000.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 6 0 0 0 11	12 1 3 0 7 2 9	18 **B**	19 **S**	20 1

Remarks

66

The Priority Pollutants Analysis of Buckman WWTF effluent sampled on July 29, 2013. NPDES #FL0026000.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 6 0 0 0 11	12 1 3 0 7 2 9	18 **X**	19 **S**	20 1

Remarks

66

Biological Analyses of Buckman WWTF effluent sampled on July 29, 2013. NPDES #FL0026000.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 2 6 0 0 0 11	12 1 3 0 7 2 9	18 **S**	19 **S**	20 1

Remarks

66