

Effluent Quality Assessment

Julington Creek Water Reclamation Facility

St. Johns County

NPDES #FL0043591

Sampled March 18, 2013

July 2013

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

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Julington Creek Water Reclamation Facility (WRF), 220 Davis Pond Boulevard, St. Johns, St. Johns County, Florida, 32259. NPDES #FL0043591.

Facility Overview

Julington Creek Water Reclamation Facility (WRF) treats domestic wastewater for public access use or discharge to the St. John's River. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent 16-hour flow proportional composite samples for toxicity testing were collected on March 18, 2013. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on March 18, 2013. All samples were collected from the EFD-1 NPDES sampling point for Outfall D-001 by Eesa Ali and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix C).

The 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09 (see Appendix C).

Results

Chemistry Results (See Table 1 and Appendix D)

- Total residual chlorine (TRC) was detected in the effluent in the field and in the bioassay sample in the bioassay laboratory. The TRC was expected as the effluent was going to reuse and not being discharged to surface waters, hence the effluent was not being dechlorinated. Total ammonia was not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.004 I mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.
- The effluent's total phosphorus (3.5 mg/L) exceeded the permitted limit (≤ 3.0 mg/L). Copper, fluoride, residual chlorine, total nitrogen and zinc were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Atrazine, aluminum, iron, nickel and total suspended solids (TSS) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential (See Table 2 and Appendix D)

- The effluent Algal Growth Potential (AGP) was 76.0 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited (Miller et al. 1978).
- An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts from an apparent salinity of approximately 0.7 parts per thousand (ppth) to a salinity of approximately 7 ppth to meet the salinity requirements of the test species. The salinity adjusted AGP aliquot was also dechlorinated by the addition of approximately 0.5 mL of Sodium Thiosulfate (0.025 N) per liter of sample to reduce the chlorine content of the sample from 0.45mg/L to ≤0.03 mg/L.
- The salinity adjusted effluent algal growth potential (AGP) was 124 mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP with Ron Raschke USEPA Region 4, 1987).

Toxicity Test Results (See Appendices D- G)

- Tests were performed March 19 - 23, 2013.

Ceriodaphnia dubia 96-hour acute definitive bioassay – (Dechlorinated sample)	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours
Pimephales promelas 96-hour acute definitive bioassay – (Dechlorinated sample)	LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

*NOTE: In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).

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

- Total residual chlorine (TRC) (5.18 mg/L) was detected in the bioassay sample (LIMS #1489833) in the laboratory. An aliquot of this sample was dechlorinated by the addition of sodium thiosulfate (0.025 N) at a rate of 5 mL per liter of sample to neutralize the chlorine. During communication with FDEP Northeast personnel, a decision was made to only perform toxicity tests on the dechlorinated aliquot. The decision to perform only dechlorinated sample tests was made based on the experience of the Northeast district toxicity coordinator and the FDEP bioassay laboratory coordinator and the known acute toxicity of TRC concentrations of this magnitude. TRC concentrations as low as 0.028 mg/L have been found to be acutely toxic to some freshwater fish and invertebrates (EPA Quality Criteria for Water 1986, EPA 44015-86-001, 1986). The same concentration of sodium thiosulfate was added to the dechlorinated test controls. The purpose of the dechlorinated test controls was to confirm that there was no adverse effect of adding sodium thiosulfate to the sample. There was no mortality in the dechlorinated controls of either test species.

Conclusion

Bioassays were not performed with the chlorinated effluent sample collected from the EFD-1 NPDES sampling point for this facility on March 18, 2013, due to the concentration of TRC exceeding TRC concentrations known to be acutely toxic to the test species. Bioassays performed with aliquots of dechlorinated effluent did not show acute toxicity to either test species during the 96-hour acute definitive bioassays. The effluent AGP result as well as the salinity-adjusted AGP result was, respectively, greater than the "problem" threshold for fresh receiving waters and marine receiving waters, suggesting that nutrient enrichment may be an issue. The effluent's total phosphorus (3.5 mg/L) exceeded the permitted limit (≤ 3.0 mg/L). Additional effluent water quality samples collected on March 18, 2013, did not exceed any applicable water quality standards or violate any permit conditions

Literature Cited

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

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

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

Julington Creek WRF	Class III Criteria	Effluent Limits	Grab	
Organic Constituents (µg/L)				
Atrazine	-	-	0.19	I
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	7.7	I
Arsenic	≤ 50	-	0.25	U
Cadmium	≤ 8.8	-	0.050	U
Calcium (mg/L)	-	-	74.7	
Chromium-III	-	-	0.30	U
Copper	≤ 3.7	-	1.24	
Iron	≤ 300	-	32	I
Lead	≤ 8.5	-	0.20	U
Magnesium (mg/L)	-	-	37.8	
Nickel	≤ 8.3	-	0.93	I
Selenium	≤ 71	-	0.20	U
Silver	≤ 2.3	≤ 2.3 s	0.025	U
Zinc	≤ 86	-	29	
Nutrients (mg/L)				
Ortho-phosphate	-	-	2.5	
Total Phosphorus	-	≤ 3.0 s	3.5	
Total Ammonia	-	Report	0.004	I
Un-ionized Ammonia	-	Report	< 0.02	c
Nitrate and Nitrite	-	-	5.3	
Total Kjeldahl Nitrogen	-	-	0.83	
Organic Nitrogen	-	-	0.8260	c
Total Nitrogen	-	≤ 12.0 s	6.1300	c
Total Organic Carbon	-	-	6.7	
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0 s	≥ 4.0 s	7.41	
pH (SU)	6.5 - 8.5 s	6.5 - 8.5 s	7.38	
Temperature (°C)	-	Report	23.13	
Salinity	-	-	0.68	
Total Residual Chlorine (mg/L)	≤ 0.01 s	≤ 0.01	3.2	
Total Suspended Solids (mg/L)	-	≤ 10.0 s	4	I
Alkalinity (mg CaCO3/L)	-	-	134	A
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s	2.2	
Oils and Greases (mg/L)	≤ 5.0 s	≤ 10.0 s	0.75	U
Chloride (mg/L)	-	-	210	
Cyanide (µg/L)	≤ 1.0 s	≤ 1.0 s	0.005	U
Fluoride (mg/L)	≤ 5.0 s	-	0.66	
Sulfate (mg/L)	-	-	250	
Flow (MGD)	-	0.476 a	0.763	a
Hardness (mg $CaCO_3$)	-	-	342.1863	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	≤ 14 a	2	U

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

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
s - Single sample
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
¥ - Fecal coliform analysis performed by Columbia Analytical Services, Jacksonville
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

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

Julington Creek WRF						
Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	Fresh	76.0	201.6 ± 40.3	232.9 ± 46.6	2.1	1.8
Effluent	Marine	124 *			2.1	1.8

* - sample salinity adjusted to 7.2 ppth

Appendix A
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event		
Prepared By: Edward Jamro		Contact Number: (904) 256-1617
Facility Name (as it appears on permit): Julington Creek WRF		Former Names:
NPDES Permit Number: FL0043591	Permit Expiration Date: May 11, 2014	
Physical Address: 220 Davis Pond Boulevard St. Johns, Florida 32259		
District: NED	County: St. Johns	
Function of Facility: Treat domestic wastewater for public access reuse or discharge to St John's River.		
Facility Type: Domestic Wastewater	Permitted Capacity (MGD): 1.0	
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): *based on data in PCS on 02/05/13.* 0.017 MGD from 12/2011 – 11/2012. Due to flow from tropical Storm Debby in late June 2012.		
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): 0.763 MGD from 12/2011 – 11/2012.		
Description of type of Discharge: Continuous operation ☐ Continuous ☒ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify @ D001 if reuse happening		

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):
EFD-1 – Effluent sample point after dechlorination and post aeration treatment but prior to the Apricot Act Discharge

Description of Permitted Outfall(s):

Surface Water Discharge: An existing 0.476 MGD annual average daily flow (AADF) or 173.7 million gallons (MG) discharge under the APRICOT Act (Section 403.086(7) of Florida Statutes) to St. Johns River (Class III predominantly marine water – WBID 2213H) at Discharge Location/Outfall D-001 which is a 16-inch diameter pipe and 2,200 feet from the shore at a depth of 6 feet below the surface water. The point of discharge is located approximately at latitude 30 ° 05' 48" N, longitude 81 ° 38' 32" W.

Surface Water Discharge: An existing permitted discharge of final treated effluent to St. Johns River (Class III predominantly marine water – WBID 2213H) at Discharge Location/Outfall D-002 which is a 16- inch diameter pipe and 2,200 feet from the shore at a depth of 6 feet below the surface water.). The D-002 is used only during periods of heavy rainfall and is classified as a Limited Wet Weather Discharge (LWWD). The point of discharge is located approximately at latitude 30 ° 05' 48" N, longitude 81 ° 38' 32" W.

Note: *Outfalls D-001 and D-002 are at the same location. They are named separately due to different disposal mechanisms.*

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

- **A Headwork system consisting of two automatic bar screens;**
- **Two biological treatment units named Bioreactor 1 (223,000 gallons) and Bioreactor 2 (446,000 gallons);**
- **Two rectangular clarifiers, each with a dimension of 86.5 ft by 25.25 ft and a site water depth of 12.5 feet;**
- **Six tertiary filter cells, with a surface area of 1,900 ft^2 each;**
- **One chlorine contact chamber consisting of three parallel trains, 28,118 gallons each; using liquid hypochlorite solution as disinfected agent;**
- **Two sludge holding basins, each with a volume of 130,000 gallons and a processing sludge tank of 45,000 gallons,**
- **Chemical feed systems including a alum feed system, chlorination feed system and a dechlorination feed system;**
- **Additional monitoring and control systems incorporated into the Supervisory Control and Data Acquisition (SCADA) system.**
- **And a collection/transmission system loop which allows up to 0.250 MGD of flow to be diverted to JEA Blacks Ford WRF (FL017441) as necessary.**

The primary method of disposal is reuse of reclaimed water via spray irrigation to public access reuse sites. The filtered and chlorinated reclaimed water (high level disinfection) shall be conveyed to Golf Course Lake Number 4 and then land-applied. The permittee is also authorized to apply reclaimed water to the rapid rate infiltration basin (RIB) system. Surface water discharges, which include the limited wet weather discharge and Apricot Act discharge, are the alternative (backup) disposal methods.

The priority for this facility is to first provide public access reuse of reclaimed water. The second choice for reuse is land application to the rapid rate infiltration basin. The third option is to use the APRICOT discharge and the last choice is to use the limited wet weather discharge. The approved operating protocol provides details and procedures for system operation.

Domestic wastewater residuals are transported to the Buckman RMF for final treatment and disposal.

Land Application: An existing 1.537 MGD annual average daily flow (AADF) permitted capacity slow-rate public access reuse system (R-001).

Land Application: An existing 0.048 MGD annual average daily flow (AADF) permitted capacity rapid infiltration basin system (R-002). R-002 consists of RIBs located approximately at latitude 30^{o} 06' 17" N, longitude 81^{o} 20' 36" W.

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 from Outfall D-001(Apricot Act Discharge)	MGD	Maximum	0.476	Report	-	-	Continuous (During Discharge)	Recording flow meters and totalizers	EFD-1	See Cond. I.A.4
Annual Volume of Effluent (Apricot Act Discharge)	MG	Total Maximum	173.7 (Annual Total)	Report (Monthly Total)	-	Report (Daily Total)	Daily (During Discharge)	Calculated	CAL-1	
BOD, Carbonaceous 5-day, 20°C	MG/L	Maximum	5.0	6.25	7.5	10.0	Daily (During Discharge)	Grab	EFD-1	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Daily (During Discharge)	Grab	EFD-1	
Total Nitrogen, as N	MG/L	Maximum	6.0	7.5	9.0	12.0	Daily (During Discharge)	Grab	EFD-1	
Water Temperature (°C)	degree °C	Minimum	-	-	-	Report	Daily during discharge	Instrument	EFD-1	
Ammonia, as N	MG/L	Maximum	-	Report	-	Report	Daily (During Discharge)	Grab	EFD-1	See Cond. I.A.8
Unionized ammonia, as N	MG/L	Maximum	-	Report	-	Report	Daily (During Discharge)	Calculated	CAL-2	See Cond. I.A. 9
Total Phosphorous, as P	MG/L	Maximum	-	Report	-	3.0	Daily (During Discharge)	Grab	EFD-1	
pH	SU	Range	-	-	-	6.5 to 8.5	Continuous (During Discharge)	Meter	EFA-1	See Cond. I.A.3
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.5.				Weekly (During Discharge)	Grab	EFD-1	

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
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	Continuous (During Discharge)	Meter	EFA-1	See Cond. I.A.3 and 6
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Daily (During Discharge)	Meter	EFD-1	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	4.0	Daily (During Discharge)	Meter	EFD-1	See Cond. I.A.7
Total Cyanide	µg/L	Maximum	-	-	-	1.0	Monthly (During Discharge)	Grab	EFD-1 or EFD-2	See Cond. I.B. 11, 12, & 13
Silver, Total Recoverable	µg/L	Maximum	-	-	-	2.3	Monthly (During Discharge)	Grab	EFD-1 or EFD-2	See Cond. I.B. 11, 12, & 13
Chronic Whole Effluent Toxicity	See Permit Condition I.A.11						Annually (During Discharge)	24-hr FPC	EFD-1 or EFD-2	
Ambient Stream Sampling	See Permit Condition I.A.12									

Parameter	Max/Min	Annual Total Mass Load	Monthly Total Mass Load	Weekly mass Load	Daily Mass Load	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes	
Total Nitrogen, as N	Maximum	Report (Lbs/Day)	Report (Lbs/year)	-	-	Monthly	Calculation	CAL-6	See Cond.I.C.3	

I.A.

3. Hourly measurement of pH and total residual chlorine for disinfection during the period of required operator attendance may be substituted for continuous measurement. *[Chapter 62-601, Figure 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 14 per 100 mL of effluent sample. The median value of the fecal coliform values for a minimum number of 10 samples of reclaimed water or effluent, each collected on a separate day during a period of 30 consecutive days (monthly) shall not exceed 14 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 43 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(6)(c)]*

6. A minimum of 1.0 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. *[62-600.440(4)(b)]*

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. The pH and temperature of the effluent shall be taken at the time of the total ammonia sample collection.

9. Unionized ammonia shall be calculated based on a separate single grab sample for total ammonia. The pH and temperature at the time of the grab sample shall be used for the calculation and reported on the DMR. *[62-302.530(3)]*

10. Florida water quality criteria and standards shall not be violated as a result of the discharge. [62-620.320(9), and 62-302.510(5)]

11. The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001 and/or D-002. Annual samples for routine chronic toxicity testing shall be collected for either discharge i.e. if the Apricot Act discharge occurs, then the samples shall be collected form Outfall D-001 at EFD-1, and if the LWWD occurs, then the samples shall be collected from Outfall D-002 at EFD-2. No more than one routine toxicity test annually shall be required for this WRF. When discharge occurs neither from Outfall D-002 nor Outfall D-001, this fact shall be report in the DMR/EDMR

    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 annually, starting within 12 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%, 75%, 50%, 25%, and 12.5% 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.

12. 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 with or within the week of the quarterly effluent-nutrients sample event collected at EFD-1 as described in Condition I.A.1 and I.A.2. 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)] [62-4.240(3)(c)]*

The final limit for total cyanide is held in abeyance until the final compliance date listed in Section VI.1. of the permit is complete.

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 meets permit limit specified Condition I.A.1 or I.B.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), F.A.C.]

PART I: Continued	
Receiving Waters: St. John's River	Classification (indicate whether fresh or marine): Class III, predominately marine waters – WBID 2213H

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

96-hr Acute – LC50 at 100%. See I.A.11. on page 6 of this report.
Ceriodaphnia dubia (Routine)
Pimephales promelas (Routine)

Ceriodaphnia dubia (Additional)
Pimephales promelas (Additional)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
5/11/2009 – AO 115 NE – Cyanide interim limit of 9.0 ug/l until 12/31/12.

Facility Mixing Zone Details (if applicable): NONE

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

Based on PCS data – December 2011 to November 2012

	Parameter and Units	Limit	Result
NONE	NONE	NONE	NONE

Describe previous FYI and WQBEL study:

i) **The Third-Year inspection was conducted on December 17, 2007, 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 not detected in the bioassay sample in the laboratory. The total ammonia and unionized ammonia were detected in the bioassay sample at concentration of 0.051 mg/L and <0.02 mg/L, respectively.
- Atrazine, nickel, and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria.

(2) Toxicity Test Result:

The effluent sample collected by DEP from D-001 for this facility on December 17, 2007, was not acutely toxic to test species during the 96-hour acute screen bioassays.

(3) Algal Growth Potential:

The effluent AGP result was approximately 63 times greater than the "problem" threshold for fresh receiving waters; the presumptive evidence suggests that nutrient-enrichment would also have been demonstrated with the saltwater species

ii) Summary of Whole Effluent Toxicity (WET) Testing at D-001

The toxicity summary showed only one violation of the permit condition with LC50 < 100% effluent in their history of annual testing at D-001 during the current permit cycle since Oct 2003. This event happened in November 2005 and was attributed to total residual chlorine in the sample. Repeat samples of dechlorinated final effluent were collected the following week. The repeat tests passed with no mortality to either test species.

Although the discharge to surface waters at D-001 and D-002 is intermittent, the number days of discharge per month are about equal to the days of non-discharge on an annual basis. Therefore, the WET test requirements in this permit will remain as annual but switch to chronic definitives since the combined discharge from D-001 and D-002 appears to exceed 15 days per month over the last year review.

Receiving Water Characteristics

The final treated effluent from the WRF is discharged to the Lower St. Johns River (Class III – Predominately Marine Water), WBID 2363H (St. Johns River above Julington Creek).

Currently, the segment 2213H has not in the 303(d) Listed impairments, but in the Draft Verify 303 (d) Lists (dated March 20, 2009), nutrients and specific conductance are listed as concerning parameters (Parameters Assessed Using the Impaired Surface Waters Rule).

The basin south/upstream in the Lower St. Johns River (Class III – Predominately Marine Water), is WBID 2363I (St. Johns River above Black Creek) and is 303(d) list impaired for silver.

The basin north/downstream is WBID 2213G was listed impaired for cadmium, iron and nutrients. Also, Draft Verify 303 (d) Lists (dated March 20, 2009) proposes for specific conductance and thallium as impaired parameters.

The water segment is also TMDL-TN listed water (Group II) of Lower St. Johns River. This facility complies with the water quality standard for cadmium.

(a) **Other Water Quality Standards Requirements for Both Apricot Act Discharge and Limited Wet Weather Discharge**: Although both Apricot and LWWD are intermitting discharge, the effluent has to meet the Florida State Surface Water Quality Standards (Chapter 62-302, FAC), which is a state regulation designed to protect the beneficial uses of the surface waters of the state.

(i) Dissolved Oxygen: 7. The average concentration 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. 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.

(ii) Total Cyanide: The Expanded Effluent Testing Data shows that the maximum and average concentrations of total cyanide were 5.0 µg/L and 2.7 µg/L, which were exceeded the Florida Water Quality Criteria for total cyanide (< 1.0 µg/L). Therefore. The permittee is required to sample for cyanide. 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.

(iii) Enterococci: The Environmental Protection Agency (EPA) promulgated water quality criteria for Enterococci for coastal recreation waters in Florida effective December 16, 2004. However, the WRF discharges to WBID 2213H which is more than 20 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 Outfalls D-001 or D-002. Enterococci limits and monitoring are not required.

(iv) Silver: The permittee will continue to monitor for silver as required in the previous permit. However, limit for the total recoverable silver is changed from 0.07 µg/L to 2.3 µg/L due to the change of receiving waterbody classification (The receiving waterbody (WBID 2213H) has been change from fresh water to predominantly marine water (LSJR TMDL BMAP).

(v) Unionized Ammonia: The permittee will continue to calculate unionized ammonia based on the total ammonia, pH, temperature and salinity as required in the previous permit. However, the limit for the unionized ammonia is changed from 0.02 µg/L to "Report" due to the change of receiving waterbody classification (The receiving waterbody (WBID 2213H) has been change from fresh water to predominantly marine water (LSJR TMDL BMAP).

(vi) Toxicity: 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. [62-620.620(3)]

vii. Ambient Sampling: The Permittee shall conduct regular monitoring of the segment of the SJ River for maintaining data on the impact of the discharge to the water quality of the surface water body.

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

- Currently, the segment 2213H has not in the 303(d) Listed impairments, but in the Draft Verify 303 (d) Lists (dated March 20, 2009), **nutrients** and **specific conductance** are listed as concerning parameters (Parameters Assessed Using the Impaired Surface Waters Rule).

- The basin south/upstream in the Lower St. Johns River (Class III – Predominately Marine Water), is WBID 2363I (St. Johns River above Black Creek) and is 303(d) list impaired for **silver**.

- The basin north/downstream is WBID 2213G was listed impaired for **cadmium**, **iron** and **nutrients**. Also, Draft Verify 303 (d) Lists (dated March 20, 2009) proposes for **specific conductance** and **thallium** as impaired parameters.

a. **Silver**: The facility has been required to monitor for silver. As shown in the Table 1, the average, median, mode, and maximum concentrations of total recoverable silver were 0.043 µg/L, 0.033 µg/L, 0.05 µg/L, and 0.155 µg/L, respectively. In addition, the Expansion Effluent Testing Data shows that the maximum and average concentrations of silver were 0.052 µg/L and 0.033 µg/L, which also were below the water quality criterion for the parameter. There is no sign of effect of silver concentration of the discharge to the waterbody; additional treatment for silver is not recommended.

b. **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. Cadmium: Results of the Department third year inspection (December 17, 2007) show the concentration of cadmium in the effluent sample was undetectable at a MDL of 0.02 µg/L, which was below the water quality standard criterion for cadmium. The facility receives 100 % domestic wastewater. There is no evident that the discharge has contributed or will effect to the cadmium level of the receiving waterbody.

c. **Iron:** Results of the Department third year inspection (December 17, 2007) show the concentration of iron in the effluent sample was 56 µg/L, which was below the water quality standard criterion for iron of 300.0 µg/L. The facility receives 100 % domestic wastewater. There is no evident that the discharge has or will effect to the iron level of the receiving waterbody.

d. **Thallium:** the Expansion Effluent Testing Data shows that the maximum and average concentrations of thallium were 0.36 µg/L and 0.235 µg/L, which also were below the water quality criterion for the parameter. There is no sign of effect of thallium concentration of the discharge to the waterbody; additional treatment for the parameter is not recommended.

e. **Specific Conductance**: Results of the Department third year inspection (December 17, 2007) show the specific conductance of the effluent was 1086 umhos/cm which was below the water quality criterion for specific conductance of 1275 umhos/cm. Therefore, monitoring for the parameter is not recommended.

(a) **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 WRF 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 2213H). TMDL – BMAP allows total waste allocation of total nitrogen for this WRF is 3,552 kg/year (7,814.4 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 WRF - FL0026778; Buckman WRF - FL0026000; District II WRF - FL0026450; Jacksonville Heights WRF - FL0023671; Julington Creek WRF -FL0043591; Mandarin WRF - FL0023493; Monterey WRF - FL0023604; Royal Lakes WRF - FL0026751; San Jose WRF FL0023663; San Pablo WRF - FL0024767; Southwest District WRF - FL0026468; Woodmere WRF - FL0026786; and JEA Power Plant-FL), which are listed in the JEA - Aggregated Total Nitrogen (Permit ID: FL0620564).

JULINGTON CREEK (JEA) – FACILITY SUMMARY – FL0043591 – FEBRUARY-2013

Describe previous or current Enforcement Actions (including WLs): NONE No warning Letters or Consent Orders since 2009.
Describe any violations or problems noted in previous inspection: None in past year. Inspection conducted on 2/2/2012 resulted in In-Compliance rating.
Discuss whether DMR trends within previous five years are improving or declining: No real trends in EFD-1. Most flow went to R001.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): Almost all of the effluent is reclaimed.

PART II: Sampling Event Information	
Date(s) sample collected: March 25, 2013 - planned	Sampler(s): Sharon Piltz, Jann Gruentzel
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:	

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID.*

Request Number: RQ-2013-03-18-10
FYI3 Julington Creek WRF Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: E. ALI
Collected By: E.A / SP
Send Final Report To: Tom Rauth
Sampling Agency: DEP

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

Lab ID*	Location	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Julington Creek WWTF 16hr FPC	☑ Comp ☐ Grab Date 3-17-13 Time 2107 Central	Date 3-18-13 Time 1300 Central	A/C
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Effluent; Temp (C): 8.9°C; pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FL0043591	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments: TOxic (C) Nutrients (A), BOD (A)	

Lab ID*	Location	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Julington Creek WWTF grab	☐ Comp ☑ Grab Date 3-18-13 Time 1342 Central	Date Time Central	A
	Field ID	Tot Res Chlorine (mg/L) 3.2 mg/L / Diss Oxygen (mg/L) 7.41	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): effluent; Temp (C): 23.13; pH 7.38	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FL0043591	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments: reuse no de-chlorination	

Lab ID*	Location	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Blank	☐ Comp ☐ Grab Date Time 1340 Central	Date Time Central	
	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	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Central	Date Time Central	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc); Temp (C); pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
E.Ali	3-18-13 1323	FedEx					I...	3-19-13/9:00

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 3

AP 3-19-13 10:17
Bioassay

CN preserved - 1 Ascorbic acid + NaOH @ 1500. (Sample collected @ 1342).

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
3/18/2013 13:00	JULINGTON CREEK WWTF	Toxicology	BSY-AD-FW-C.dubia, LC50	100	L	LC50		
3/18/2013 13:00	JULINGTON CREEK WWTF	Toxicology	BSY-AD-FW-Fish, LC50	100	L	LC50		
3/18/2013 13:00	JULINGTON CREEK WWTF	Field Parameter	Temperature	0.9		C		
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Overflow	Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL	2	
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Potassium	15.8		mg/L	0.3	1.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Sodium	145		mg/L	0.5	2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Copper	1.24		ug/L	0.5	1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Chromium	0.30	U	ug/L	0.3	1.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Selenium	0.20	U	ug/L	0.2	0.8
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Iron	32	I	ug/L	30	120
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Zinc	29		ug/L	5	20
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Calcium	74.7		mg/L	0.075	0.3
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Magnesium	37.8		mg/L	0.04	0.16
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Aluminum	7.7	I	ug/L	5	20
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Lead	0.20	U	ug/L	0.2	0.8
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Metals	Nickel	0.93	I	ug/L	0.25	1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Ammonia-N	0.004	I	mg N/L	0.002	0.005
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Chloride	210		mg Cl/L	4	10
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Total-P	3.5		mg P/L	0.025	0.25
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Organic Carbon	6.7		mg C/L	0.5	1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Kjeldahl Nitrogen	0.83		mg N/L	0.08	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	O-Phosphate-P	2.5		mg P/L	0.16	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Fluoride	0.66		mg F/L	0.035	0.1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Alkalinity	134	A	mg CaCO3/L	0.65	2.5
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	TSS	4	I	mg/L	2	10
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Nutrients	Sulfate	250		mg SO4/L	4	10
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Mevinphos	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Prometryn	0.10	U	ug/L	0.1	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Naled	0.20	U	ug/L	0.2	0.8
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Atrazine	0.19	I	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Phorate	0.025	U	ug/L	0.025	0.1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Parathion Methyl	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Fenamiphos	0.15	UJ	ug/L	0.15	0.6

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Diazinon	0.050	UJ	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Chlorpyrifos Methyl	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Bromacil	0.20	UJ	ug/L	0.2	0.8
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Azinphos Methyl	0.10	U	ug/L	0.1	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Metalaxyl	0.20	UJ	ug/L	0.2	0.8
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Simazine	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Parathion Ethyl	0.10	UJ	ug/L	0.1	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Ethion	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Ametryn	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Chlorpyrifos Ethyl	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Alachlor	0.30	UJ	ug/L	0.3	1.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Metribuzin	0.10	U	ug/L	0.1	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Malathion	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.6
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.1
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Butylate	0.10	U	ug/L	0.1	0.4
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Fonofos	0.050	U	ug/L	0.05	0.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Metolachlor	0.30	U	ug/L	0.3	1.2
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Field Parameter	pH	7.38				
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Field Parameter	Total Residual Chlorine	3.2		mg/L		
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Field Parameter	Temperature	23.13		C		
3/18/2013 13:42	JULINGTON CREEK WWTF GRAB	Field Parameter	Dissolved Oxygen	7.41		mg/L		
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	AGP/LN	Algal Growth Potential	76.0		mg DryWt/L	0.3	0.9
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	AGP/LN	AGP-Salinity Adjusted	124		mg DryWt/L	3	3
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Chlorophyll/Grain Size/BOD	BOD-5 Day,N-Inhib	2.2		mg/L	0.2	2
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Nutrients	Organic Carbon	6.7		mg C/L	0.5	1
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Nutrients	NO2NO3-N	5.3		mg N/L	0.08	0.2
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Nutrients	Ammonia-N	0.004	I	mg N/L	0.002	0.005
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Nutrients	Kjeldahl Nitrogen	0.83		mg N/L	0.08	0.2
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Nutrients	Total-P	3.5		mg P/L	0.025	0.25
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Overflow	Oil and Grease	0.75	U	mg/L	0.75	2.7
3/18/2013 13:00	JULINGTON CREEK WWTI HHR FPC	Field Parameter	Temperature	0.9		C		
3/18/2013 13:40	BLANK	Metals	Iron	30	U	ug/L	30	120
3/18/2013 13:40	BLANK	Metals	Aluminum	5.0	U	ug/L	5	20
3/18/2013 13:40	BLANK	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
3/18/2013 13:40	BLANK	Metals	Sodium	0.50	U	mg/L	0.5	2
3/18/2013 13:40	BLANK	Metals	Selenium	0.20	U	ug/L	0.2	0.8
3/18/2013 13:40	BLANK	Metals	Copper	0.50	U	ug/L	0.5	1
3/18/2013 13:40	BLANK	Metals	Chromium	0.30	U	ug/L	0.3	1.2
3/18/2013 13:40	BLANK	Metals	Potassium	0.30	U	mg/L	0.3	1.2
3/18/2013 13:40	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
3/18/2013 13:40	BLANK	Metals	Lead	0.20	U	ug/L	0.2	0.8

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
3/18/2013 13:40	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/18/2013 13:40	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
3/18/2013 13:40	BLANK	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
3/18/2013 13:40	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/18/2013 13:40	BLANK	Metals	Zinc	5.0	U	ug/L	5	20
3/18/2013 13:40	BLANK	Nutrients	Ammonia-N	0.002	U	mg N/L	0.002	0.005
3/18/2013 13:40	BLANK	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
3/18/2013 13:40	BLANK	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
3/18/2013 13:40	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
3/18/2013 13:40	BLANK	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
3/18/2013 13:40	BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
3/18/2013 13:40	BLANK	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1
3/18/2013 13:40	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
3/18/2013 13:40	BLANK	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
3/18/2013 13:40	BLANK	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
3/18/2013 13:40	BLANK	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
3/18/2013 13:40	BLANK	Overflow	Oil and Grease	0.75	U	mg/L	0.75	2.7
3/18/2013 13:40	BLANK	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Prometryn	0.098	U	ug/L	0.098	0.39
3/18/2013 13:40	BLANK	Pesticides	Naled	0.20	U	ug/L	0.2	0.79
3/18/2013 13:40	BLANK	Pesticides	Mevinphos	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Fenamiphos	0.15	UJ	ug/L	0.15	0.59
3/18/2013 13:40	BLANK	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Alachlor	0.29	UJ	ug/L	0.29	1.2
3/18/2013 13:40	BLANK	Pesticides	Parathion Methyl	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.59
3/18/2013 13:40	BLANK	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Phorate	0.025	U	ug/L	0.025	0.098
3/18/2013 13:40	BLANK	Pesticides	Metalaxyl	0.20	U	ug/L	0.2	0.79
3/18/2013 13:40	BLANK	Pesticides	Bromacil	0.20	UJ	ug/L	0.2	0.79
3/18/2013 13:40	BLANK	Pesticides	Parathion Ethyl	0.098	U	ug/L	0.098	0.39
3/18/2013 13:40	BLANK	Pesticides	Chlorpyrifos Methyl	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.098
3/18/2013 13:40	BLANK	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Malathion	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Fonofos	0.049	U	ug/L	0.049	0.2
3/18/2013 13:40	BLANK	Pesticides	Butylate	0.098	U	ug/L	0.098	0.39
3/18/2013 13:40	BLANK	Pesticides	Azinphos Methyl	0.098	U	ug/L	0.098	0.39
3/18/2013 13:40	BLANK	Pesticides	Metribuzin	0.098	U	ug/L	0.098	0.39
3/18/2013 13:40	BLANK	Pesticides	Metolachlor	0.29	U	ug/L	0.29	1.2
3/18/2013 13:40	BLANK	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.59

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Julington Creek WRF
Address: 220 Davis Pond Boulevard
City: St. Johns **County:** St. Johns
Contact/District: Esra Ali / Northeast District
NPDES Permit #: FL DO43591
LIMS Job #: ILH-2013-03-19-13-01 SM **LIMS Sample #:** 1489833
Lims Data Entry: 3-27-13 MF **Data Entry Verification:** 3-27-13 AP

Sample Collection: Date: 3-18-13 Time: 1300
Hold Time Start: Date: 3-18-13 Time: 1300

Comments: Sample dechlorinated by the addition of 5.0mL of 0.025N Sodium thiosulfate. Definitive test run with dechlorinated sample diluted with regular control water (No Sodium thiosulfate added) for the <100% Concentrations. A control with Sodium thiosulfate added was also run (5.0mL of 0.025N sodium thiosulfate). MF 3-19-13

Initial sample handling:
Instructions: Check yes or no. If yes is checked, complete blanks

PH adjustment: ☐ yes ☑ no Initial pH: ____ NaOH ____N HCl ____N ____Drops mL Final pH: ____
Aeration: ☑ yes ☐ no Initial DO: 11.2 mg/L Final DO: 8.3 mg/L Duration: ____minutes Rate: ~____bubbles/min
Salinity adjusted (Test 1): ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Salinity adjusted (Test 2): ☐ yes ☑ no Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Dechlorination: ☑ yes ☐ no 5.0 mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: <0.03

Sample Validation:
Instructions: Check yes or no. Fill in temperatures.

Temperature: Shipped ≤ 6°C ☑ Yes ☐ No --- IF Hand Delivered: Cooling ☐ Yes ☐ No (received ____°C collected____°C)
Holding Time: ≤ 36 Hours ☑ Yes ☐ No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures:	Initials:
Bruce Olander	BA
Hebrianne Pennington	AP
Marshall Faircloth	MF

REVIEWER: Liz Molen 3/27/13

Diluent/Control Batch#:	3-5-13	3-5-13	3.5.13						
Water Quality Parameters	~~mHwCD 20% DMW~~ MF	mHwCD Well Water with MF	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other: Dechlorinated Sample	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A			
Lab Total Residual Cl_2 (mg/L):	<0.03	Sodium	<0.03			<0.03	5.18	~~BA~~ MF	AP/MF
Alkalinity (mg/L as $CaCO_3$):	75	thiosulfate	70				143	AP	MF
Hardness (mg/L as $CaCO_3$):	90	5mL/L	84				323	AP	MF
Total Ammonia (mg/L as N):	<0.017		<0.017				<0.017	MF	AP
Conductivity: ☑ µmhos ☐ mmhos	325	539	305				1445	BA/MF	AP
Salinity (ppth):									

V 1.8 1/13/10

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FDEP Biology Laboratory - Acute Bioassay Survival Bench Sheet

LIMS Sample # 1489833 **SOP#: TA 07** 01 **Test #** 1 **of** 2

Test Species:
Batch #: 3-19-13 Age: < 24 hours
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

Test Validation
Control Survival ≥ 90%: [x] Yes [ ] No
Temperature Range ≤ 3° C: [x] Yes [ ] No

Diluent (Batch # 3-5-13 **)**
- [ ] ASW
- [x] MHWCD
- [ ] MHW
- [ ] Well

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

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

Test Started: Date 3-19-13 Time 1300

Test Ended: Date 3.23.13 Time 9:30

Chamber Size 30 **ml**
Test Volume: 20 **ml**

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Dechlorinated control	A	1	5	5	5	5	5	5
	B	2	5	5	5	5	5	5
	C	3	5	5	5	5	5	5
	D	4	5	5	5	5	5	5
12.5%	A	5	5	5	5	5	5	5
	B	6	5	5	5	5	5	5
	C	7	5	5	5	5	5	5
	D	8	5	5	5	5	5	5
25%	A	9	5	5	5	5	5	5
	B	10	5	5	5	5	5	5
	C	11	5	5	5	5	5	5
	D	12	5	5	5	5	5	5
50%	A	13	5	5	5	5	5	5
	B	14	5	5	5	5	5	5
	C	15	5	5	5	5	5	5
	D	16	5	5	5	5	5	5
75%	A	17	5	5	5	5	5	5
	B	18	5	5	5	5	5	5
	C	19	5	5	5	5	5	5
	D	20	5	5	5	5	5	5
100%	A	21	5	5	5	5	5	5
	B	22	5	5	5	5	5	5
	C	23	5	5	5	5	5	5
	D	24	5	5	5	5	5	5
Control	A	25	5	5	5	5	5	5
	B	26	5	5	5	5	5	5
	C	27	5	5	5	5	5	5
	D	28	5	5	5	5	5	5
		Checked or Verified by:	mf	BA	mf	MK	MF	BA

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

Food
- [x] YCT Batch# 11-14-12
- [x] P. subcapitata Batch# 1-18-13
- [ ] Artemia Lot#_____

Feeding and Artemia Batch #
- [x] 0 hr____ [x] Prior to Test
- [ ] 24 hr____
- [x] 48 hr____ [x] Prior to Renewal
- [ ] 72 hr____

Temperature Range (°C)
Incubator # ~~3~~ MF 3
min 25.7 max 27.5 mean ___

Incubator #___
min.____max.____mean____

Waterbath #___
min.____max.____mean____

Room B246
min 24.6 max 25.4 mean ___

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 LC50: > 100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.6 2-15-13

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

FDEP Biology Laboratory - Acute Bioassay Survival Bench Sheet

LIMS Sample # 14898833 SOP#: TA 07-02 Test # 2 of 2

Test Species:
Batch #: 3.19.13 Age: 9
- ☐ *Ceriodaphnia dubia*
- ☐ *Cyprinella leedsi*
- ☑ *Pimephales promelas*
- ☐ *Menidia beryllina*
- ☐ *Americamysis bahia*
- ☐ Other:

Test Validation
Control Survival ≥ 90%: ☑ Yes ☐ No
Temperature Range ≤ 3° C: ☑ Yes ☐ No

Diluent (Batch # 3/5/13)
☐ ASW ☐ MHWCD ☑ MHW ☐ Well

Test Type: ☐ Screen ☑ Definitive ☐ Static ☒ Static Renewal ☐ Flow-Through

Test Duration: ☐ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 3.19.13 Time 12:45

Test Ended: Date 3.23.13 Time 9:00

Chamber Size 1000 ml
Test Volume: 500 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
DCL Ctrl	A	E1	10	10	10	10	10	10
	B	E2	10	10	10	10	10	10
DCL 12.5%	A	E3	10	~~9~~ 8	9	9	9	9
	B	E4	10	8 2D	8	8	8	8
DCL 25%	A	E5	10	10	10	10	10	10
	B	E6	10	10	10	10	10	10
DCL 50%	A	E7	10	10	10	10	10	10
	B	E8	10	10	9 1D	9	9	9
DCL 75%	A	E9	10	10	10	10	10	10
	B	E10	10	10	10	10	10	10
DCL 100%	A	E11	10	10	10	10	10	10
	B	E12	10	10	10	10	10	10
Ctrl	A	E17	10	10	10	10 m 10	10	10
	B	E18	10	10	10	10	10	10
Checked or Verified by:			BA	BA	AP	AP	BA	AP

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☑ Artemia Lot# 08812

Feeding and Artemia Batch #
- ☑ 0 hr 51.13 ☑ Prior to Test
- ☐ 24 hr
- ☑ 48 hr 52.13 ☑ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 2
min. 25.1 max. 26.5 mean ___
Incubator #___
min.___ max.___ mean___
Waterbath #___
min.___ max.___ mean___
Room B246
min. 24.6 max. 25.4 mean ___
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

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

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0 LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.6 2-15-13

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

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LIMS Sample #14898833 Test # 1 of 2

Test Species:

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
Dechlorinated Control	M	0 hr	7.9	24.9	8.1	539	
	m	24 hr		24.8			
	A	48 hr BR	8.1	24.2	7.9	448	
	M	48 hr AR	8.1	24.2	7.9	332	
		72 hr		24.5			
	A	96 hr	7.8	24.7	7.5	376	
12.5%	M	0 hr	7.8	25.0	8.0	477	
	m	24 hr		24.2			
	A	48 hr BR	8.2	24.8	7.8	585	
	M	48 hr AR	8.1	25.0	8.1	~~335~~ MF 513	
		72 hr		24.0			
	A	96 hr	7.8	24.5	7.5	561	
25%	M	0 hr	7.8	25.0	8.1	613	
	m	24 hr		25.0			
	A	48 hr BR	8.2	25.4	8.0	MF ~~972~~ 608	
	M	48 hr AR	8.1	25.0	8.1	659	
		72 hr		24.6			
	A	96 hr	7.8	24.3	7.4	762	
50%	M	0 hr	7.8	25.0	8.1	884	
	m	24 hr		25.4			
	A	48 hr BR	8.2	25.4	8.1	MF ~~983~~ 810	
	M	48 hr AR	8.1	25.1	8.0	975	
		72 hr		24.7			
	A	96 hr	7.8	24.1	7.5	1038 MF	
75%	M	0 hr	7.9	25.0	8.1	1114	
	m	24 hr		25.5			
	A	48 hr BR	8.1	25.1	8.2	MF ~~1257~~ 1161	
	M	48 hr AR	8.0	25.2	8.3	1173	
		72 hr		24.3			
	A	96 hr	7.9	24.0	7.5	1268	
100%	M	0 hr	8.1	25.1	8.1	1439	
	m	24 hr		25.0			
	A	48 hr BR	8.1	25.4	8.2	~~1355~~ MF	
	M	48 hr AR	7.9	25.3	8.2	1547	
		72 hr		24.0			
	A	96 hr	8.0	24.0	7.5	1647	
Control	M	0 hr	7.9	24.8	8.1	325	
	m	24 hr		24.0			
	A	48 hr BR	8.1	24.9	8.0	345	
	M	48 hr AR	8.1	24.4	7.9	327	
		72 hr		24.2			
	A	96 hr	8.2	24.0	7.5	386	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

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

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1489833 Test # 2 of 2

Test Species:

☐ *Ceriodaphnia dubia* ☑ *Pimephales promelas* ☐ *Americamysis bahia*

☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
DCl Ctrl	A	0 hr	7.4	25.1	7.6	327	
	B	24 hr	7.1	25.7	7.2	359	
	A	48 hr BR	7.3	24.9	6.7	AP 3?4 16	
	A	48 hr AR	7.3	24.1	7.3	357	
	B	72 hr	7.3	25.3	6.8	353	
	A	96 hr	7.3	25.3	7.3	AP 323 381	
DCl 12.5%	A	0 hr	7.4	24.5	7.6	460	
	B	24 hr	7.1	24.7	7.2	475	
	A	48 hr BR	7.3	26.0	6.9	479	
	A	48 hr AR	7.3	23.8	7.4	452	
	B	72 hr	7.2	24.7	6.7	477	
	A	96 hr	7.3	25.4	7.3	484	
DCl 25%	A	0 hr	7.4	24.6	7.7	618	
	B	24 hr	7.1	24.7	7.1	630	
	A	48 hr BR	7.5	25.7	6.9	631	
	A	48 hr AR	7.5	23.8	7.5	588	
	B	72 hr	7.2	24.8	6.9	632	
	A	96 hr	7.5	24.8	7.3	619	
DCl 50%	A	0 hr	7.4	24.6	7.8	887	
	B	24 hr	7.1	24.9	7.2	905	
	A	48 hr BR	7.7	24.7	6.7	897	
	A	48 hr AR	7.7	23.8	7.4	864	
	B	72 hr	7.4	24.7	6.9	923	
	A	96 hr	7.7	24.4	7.2	922	
DCl 75%	A	0 hr	7.8	25.0	7.8	1187	
	B	24 hr	7.3	24.5	7.1	1169	
	A	48 hr BR	7.8	24.6	6.6	1161	
	A	48 hr AR	7.8	23.9	7.2	1110	
	B	72 hr	7.5	24.8	6.8	1165	
	A	96 hr	7.7	25.0	7.2	1146	
DCl 100%	A	0 hr	8.0	25.2	7.8	1445	
	B	24 hr	7.5	25.0	7.1	1481	
	A	48 hr BR	7.9	24.9	6.2	1471	
	A	48 hr AR	7.8	24.3	7.2	1442	
	B	72 hr	7.5	24.7	6.6	1505	
	A	96 hr	7.9	24.8	6.9	1472	
AP ~~DCl~~ Ctrl	A	0 hr	8.1	25.3	8.0	305	
	B	24 hr	7.8	24.4	7.2	325	
	A	48 hr BR	7.9	25.6	7.3	329	
	A	48 hr AR	7.9	24.0	7.5	303	
	B	72 hr	7.8	24.9	6.3	337	
	A	96 hr	7.9	24.8	7.4	323	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: BA
24 hr: BA
48 hr BR: AP
48 hr AR: AP
72 hr: BA
96 hr: AP

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V. 2.3 1-13-10

Test ID: Julington Creek WRF Dates: 3-19 – 3.23.13

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	#4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

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

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

Entered By: 3-27-13 AP

V 1.3 2/15/13 MF

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Appendix F
Standard Reference Toxicant Data

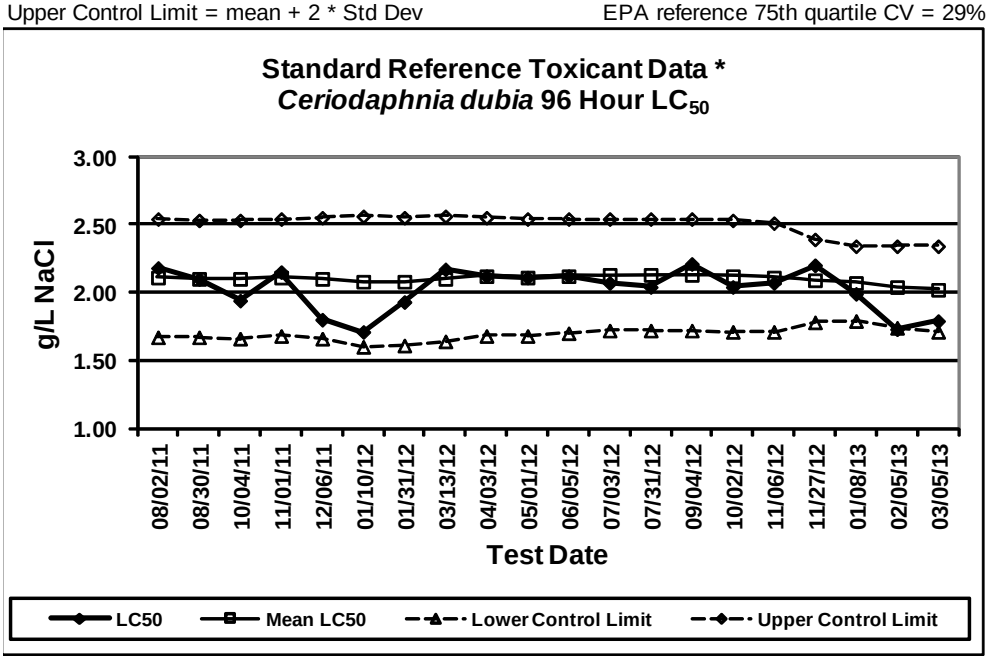
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
08/02/11	2.18	2.11	0.22	1.67	2.54
08/30/11	2.10	2.10	0.22	1.67	2.53
10/04/11	1.94	2.10	0.22	1.66	2.53
11/01/11	2.15	2.11	0.22	1.68	2.54
12/06/11	1.80	2.10	0.22	1.66	2.55
01/10/12	1.71	2.08	0.24	1.60	2.56
01/31/12	1.93	2.08	0.24	1.61	2.55
03/13/12	2.17	2.10	0.23	1.64	2.56
04/03/12	2.12	2.12	0.22	1.68	2.55
05/01/12	2.11	2.11	0.22	1.68	2.54
06/05/12	2.12	2.12	0.21	1.70	2.54
07/03/12	2.07	2.13	0.21	1.72	2.54
07/31/12	2.04	2.13	0.20	1.72	2.54
09/04/12	2.21	2.13	0.21	1.72	2.54
10/02/12	2.04	2.12	0.20	1.71	2.53
11/06/12	2.07	2.11	0.20	1.71	2.51
11/27/12	2.20	2.09	0.15	1.78	2.39
01/08/13	1.99	2.07	0.14	1.79	2.34
02/05/13	1.73	2.04	0.15	1.74	2.34
03/05/13	1.79	2.02	0.16	1.71	2.34

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

CV = 7.78
EPA reference 75th quartile CV = 29%



FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☐ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☐ renewal

Test Page 1 of 2

Diluent/ Batch #: MHWCD / 2-26-13
Toxicant/ Batch#: NaCl / 3-5-13

Organism Batch: 3-5-13 Age: <24hrs

Test Beginning: Date: 3-5-13 Time: 1030
Test Ending: Date: 3-9-13 Time: 1000

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AP
Alkalinity (mg/L as $CaCO_3$):	69	TA06_08	AP
Hardness (mg.L as $CaCO_3$):	88	TA06_09	AP
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity ~~µmhos~~ mmhos	3.26	TA06_25	MF
Salinity (ppth):		TA06_25	

Food:	Batch
☑ YCT	11-14-12
☑ *P. subcapitata*	1-18-13
☐ Artemia Lot #	

Artemia Batch:

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

Chamber size: 30 mL
Test volume: 20 mL per replicate

Concentrations prepared by: MF

Test Incubated in: Incubator # 3 Waterbath # ____

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:(if used)
Incubator # 3 min 26.0 max 28.0 mean —
Waterbath # ___ min _____ max _____ mean _____
Room B246 min 24.9 max 25.3 mean —

Feeding: √ as needed
☑ Before test
☐ 24 hr
☑ 48 hr
☐ 72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

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

Concentration µg/L mg/L (g/L)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	1	5	5	5	5	5	5
	B	2	5	5	5	5	5	5
	C	3	5	5	5	5	5	5
	D	4	5	5	5	5	5	5
1.5	A	5	5	5	5	5	5	5
	B	6	5	5	5	5	5	5
	C	7	5	5	5	5	5	3 2D
	D	8	5	5	5	5	5	3 2D
2.0	A	9	5	5	4 1D	4	4	1 3D
	B	10	5	5	3 2D	3	3	2 1D
	C	11	5	5	3 2D	3	3	3
	D	12	5	5	4 1D	4	4	0 4D
2.5	A	13	5	1 4D	0 1D			
	B	14	5	2 3D	0 2D			
	C	15	5	3 2D	0 3D			
	D	16	5	1 4D	0 1D			
3.0	A	17	5	0 5D				
	B	18	5	0 5D				
	C	19	5	0 5D				
	D	20	5	2 3D	0 2D			
4.0	A	21	5	0 5D				
	B	22	5	0 5D				
	C	23	5	0 5D				
	D	24	5	0 5D				
Organisms loaded by: MF		Checked by: BR	MF	MF	MF	MF	MF	MF

Loading Verified by: BR
AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Investigators' Signatures
Marshall Faircloth
Adrienne Pennington
Bruce Abate

Reviewer: Liz Miller

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: —	—	—
96 hour: 1.79	1.64	1.94

00003

PAGE

Revised 7/15/2008 mf

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 3-5-13 Time: 1030
Test Ending: Date: 3-9-13 Time: 1000

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	8.1	24.0	8.0	326	
	Ⓐ M	24 hr		24.5	~~8.1~~ MF		
	A	48 hr BR	8.0	24.1	8.1	329	
	M	48 hr AR	8.1	24.0	8.1	336	
	Ⓐ M	72 hr		24.4			
	A	96 hr	8.0	25.1	8.1	388	
1.5	M	0 hr	8.0	24.7	7.8	3100	
	Ⓐ M	24 hr		24.8			
	A	48 hr BR	8.0	24.1	7.9	3500	
	M	48 hr AR	7.9	24.4	8.0	3440	
	Ⓐ M	72 hr		24.6			
	A	96 hr	8.0	25.4	7.8	3590	
2.0	M	0 hr	8.0	24.6	7.9	4220	
	Ⓐ M	24 hr		25.1			
	A	48 hr BR	8.0	24.3	8.3	4800	
	M	48 hr AR	8.0	24.6	8.2	4390	
	Ⓐ M	72 hr		24.3			
	A	96 hr	8.1	25.3	7.8	4520	
2.5	M	0 hr	8.1	24.6	7.9	4860	
	Ⓐ M	24 hr		25.3			
	A	48 hr BR	8.1	24.3	8.3	5430	
		48 hr AR		~~24.5~~ MA	~~8.1~~ MF		
		72 hr					
		96 hr					
3.0	M	0 hr	8.0	24.4	7.8	5970	
	A	24 hr	7.8	25.3	8.0	5950	
	D	48 hr BR	8.1	24.3	8.0	6680	
		48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	8.1	24.0	7.8	7750	
	A	24 hr	7.9	25.5	7.9	8090	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faucett
Adrienne Remington
Bree Rider

Reviewed By: Lizy Miller

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

Measure/record salinity for marine tests

Comments:
Ⓐ Temperature only measured at 24 and 72 hours unless all organisms in replicate were dead MF 3/11/13

PAGE 00004

Revised 07/15/2008 MF

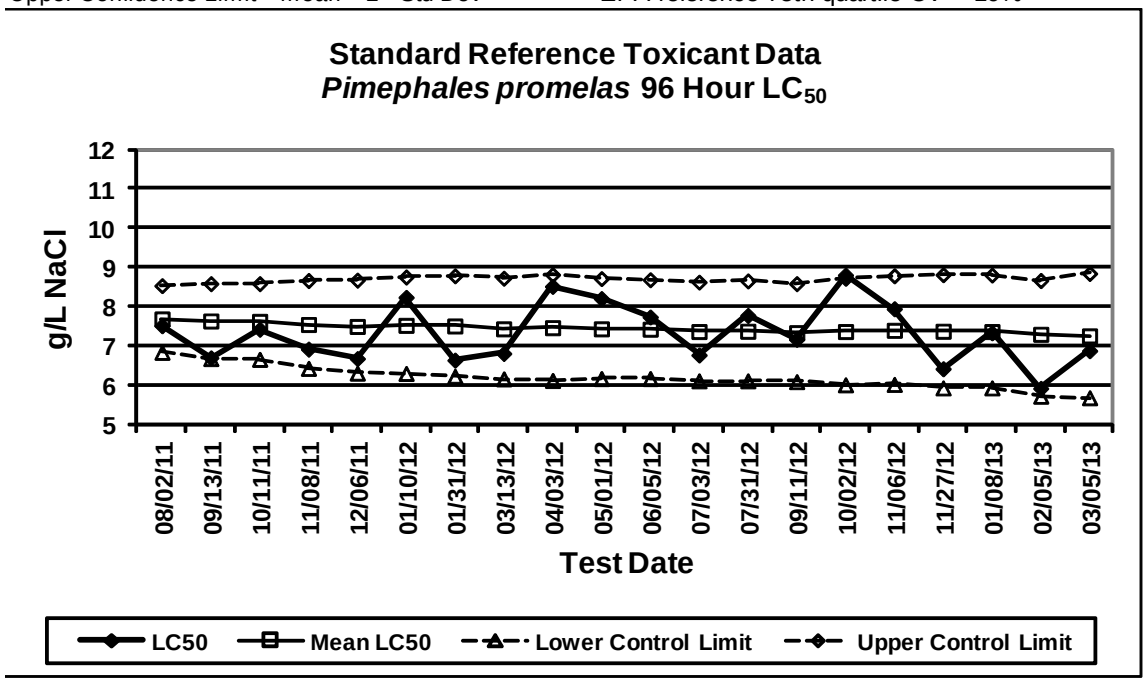
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Pimephales promelas (fathead minnow) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
08/02/11	7.51	7.68	0.43	6.83	8.53
09/13/11	6.69	7.63	0.48	6.67	8.58
10/11/11	7.42	7.62	0.48	6.65	8.58
11/08/11	6.91	7.54	0.56	6.42	8.66
12/06/11	6.67	7.49	0.59	6.3	8.67
01/10/12	8.23	7.52	0.61	6.29	8.75
01/31/12	6.63	7.5	0.64	6.22	8.78
03/13/12	6.80	7.43	0.64	6.15	8.72
04/03/12	8.51	7.46	0.68	6.11	8.81
05/01/12	8.20	7.43	0.64	6.16	8.71
06/05/12	7.73	7.42	0.63	6.16	8.68
07/03/12	6.76	7.36	0.63	6.1	8.62
07/31/12	7.77	7.37	0.64	6.1	8.65
09/11/12	7.16	7.33	0.62	6.08	8.58
10/02/12	8.80	7.36	0.68	6	8.72
11/06/12	7.94	7.39	0.69	6.01	8.78
11/27/12	6.41	7.37	0.72	5.92	8.81
01/08/13	7.33	7.36	0.72	5.92	8.8
02/05/13	5.91	7.29	0.79	5.71	8.66
03/05/13	6.87	7.25	0.79	5.67	8.84

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

CV = 10.93
EPA reference 75th quartile CV = 19%



FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☐ *Cyprinella leedsi* Method 2000.0 TA07.02 ☑ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: MHW 12.20.13/3.5.13 **Organism Batch:** 3.5.13 **Test Beginning:** Date: 3.5.13 Time: 13:15
Toxicant/ Batch#: 96HR Ni Cl 1.3.4.13 Age: 8 days **Test Ending:** Date: 3-9-13 Time: 1030

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AP
Alkalinity (mg/L as $CaCO_3$):	71	TA06_08	AP
Hardness (mg.L as $CaCO_3$):	81	TA06_09	AP
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos ~~mmhos~~	0.379	TA06_25	AP
Salinity (ppth):		TA06_25	

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☑ Artemia Lot #	088812

Artemia Batch:
0 hr: 40,13
24 hr:
48 hr: 42,13
72 hr:

Chamber size: 1000 mL **Test volume:** 500 mL per replicate

Concentrations prepared by: BA

Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 24.9 max 26.3 mean –

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

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

Feeding: √ as needed
☑ Before test
☐ 24 hr
☑ 48 hr
☐ 72 hr

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L	mg/L	g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control			A	E13	10	10	10	10	10	10
			B	E14	10	10	10	10	10	10
5			A	E15	10	10	10	10	10	10
			B	E16	10	10	10	10	9 1D	8 1D
6			A	E17	10	10	10	10	10	10
			B	E18	10	10	9 1D	9	9	9
7			A	E19	10	9 1D	8 1D	8	7 1D	7
			B	E20	10	5 5D	3 2D	3	2 1D	2
8			A	E21	10	1 9D	0 1D	–	–	
			B	E22	10	4 6D	1 3D	1	0 1D	
10			A	E23	10	0 10D				
			B	E24	10	0 10D				
Organisms loaded by: AP			Checked by:		BA	BA	AP	BA	BA	MF

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

Loading Verified by: AP AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Comments: MHW 3.5.13 parameters AP
Cl_2: <0.03 conductivity: 0.365 mmhos
Alkalinity: 70
Hardness: 84
Ammonia: <0.017

Investigators' Signatures
Adrienne Pennington
Brian Beck
Marshall Faircloth

Reviewer: Liz Mclean

Method: TSK 95% confidence intervals

Statistics: LC50	Lower	Upper
48 hour:	–	–
96 hour: 6.87	6.61	7.14

00005

Revised 7/15/2008 mf

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☑ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 3.5.13 Time: 1315
Test Ending: Date: 3-9-13 Time: 1030

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (g/L)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	7.6	24.0	8.0	0.319	
	B	24 hr	7.4	24.0	7.5	0.309	
	A	48 hr BR	7.4	25.5	7.7	0.329	
	A	48 hr AR	7.6	24.0	7.1	0.312	
	B	72 hr	7.4	25.5	7.5	0.365	
	A	96 hr	7.9	25.6	7.2	0.345	
5	A	0 hr	7.7	23.9	8.0	9.40	
	B	24 hr	7.3	24.8	7.7	9.62	
	A	48 hr BR	7.6	25.8	7.7	9.43	
	A	48 hr AR	7.5	24.1	7.0	9.77	
	B	72 hr	7.5	25.4	7.2	9.81	
	A	96 hr	7.9	25.4	6.9	10.7	
6	A	0 hr	7.8	23.9	8.0	11.1	
	B	24 hr	7.3	25.3	7.6	11.3	
	A	48 hr BR	7.6	25.9	7.7	11.2	
	A	48 hr AR	7.6	24.1	6.9	11.2	
	B	72 hr	7.5	25.5	7.3	11.6	
	A	96 hr	7.9	25.6	6.9	11.9	
7	A	0 hr	7.8	23.9	8.0	13.0	
	B	24 hr	7.3	25.4	7.7	13.3	
	A	48 hr BR	7.6	25.9	7.6	13.2	
	A	48 hr AR	7.6	24.1	6.9	~~15.14.5~~ AP	13.0
	B	72 hr	7.5	25.5	7.3	13.7	
	A	96 hr	7.9	25.6	6.8	13.9	
8	A	0 hr	7.8	23.7	8.0	14.3	
	B	24 hr	7.4	25.2	7.5	14.4	
	A	48 hr BR	~~A~~ 7.6 AP	25.9	7.7	14.5	
	B	48 hr AR	7.6	24.1	7.0	14.4	
	B	72 hr	7.6	26.1	7.3	15.2	
		96 hr					
10	A	0 hr	7.8	23.7	8.0	17.9	
	B	24 hr	7.4	25.7	7.5	18.2	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Adrienne Pennington
Bree Allen
Marshall Fantel

Reviewed By: Lisa Miller

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

Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

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: 3/4/13

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	150 ac	10 days	CL130222	25	7.8	80
Pimephales promelas	300	<24	FM130303-1615	25	7.8	80
	150 ac	7 days	FM130225-1630	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM / AB

Shipped Via: FedEx

Notes:

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 3/18/13

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	450 ac*	8 DAYS	FM 130310	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: *10 days or less.

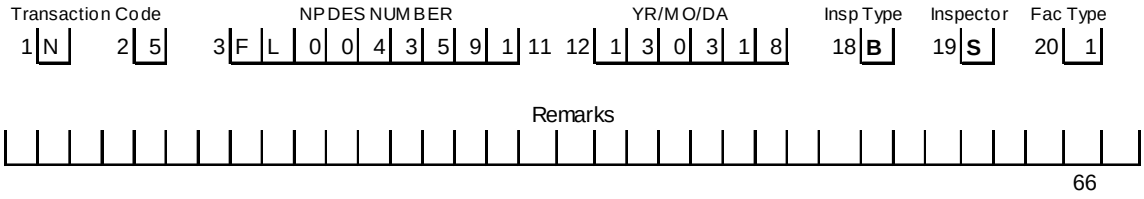
Thank you for your order.

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EPA End Sheet

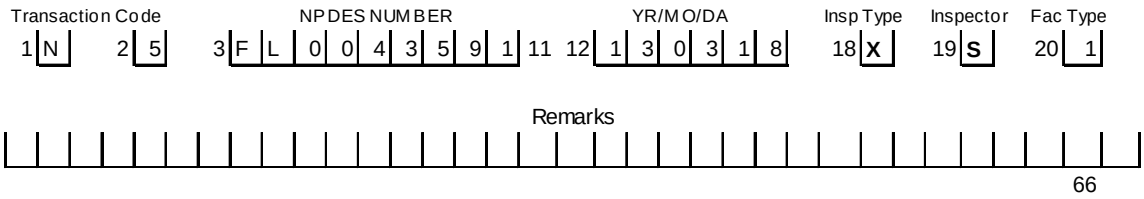
The Bioassay of Julington Creek WRF effluent sampled on March 18, 2013. NPDES #FL0043591.

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



The Priority Pollutants Analysis of Julington Creek WRF effluent sampled on March 18, 2013. NPDES #FL0043591.

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



Biological Analyses of Julington Creek WRF effluent sampled on March 18, 2013. NPDES #FL0043591.

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

