

Biological Assessment of

Navarre Beach WWTF

Santa Rosa County

NPDES #FL0023981

Sampled December 9-14, 2012

May 2013

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

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Facility Overview

The Navarre Beach Wastewater Treatment Facility is a Domestic Wastewater Treatment Plant. The effluent is discharged into the Santa Rosa Sound, a Class III Marine Water (see map Appendix A). The design flow of the wastewater system is 0.90 million gallons per day (MGD) annual average daily flow. The annual average effluent flow for December 2011 to November 2011 was 0.266 MGD. The facility discharges continuously, and the flow measured during this survey was 0.099 MGD (Northwest District sampling staff).

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

See the Facility Summary (Appendix B) for a description of the facility, a summary of permit limits, Administrative Order (AO) 076NW, Consent Order (CO) OCG#07-1203-57-DW and Discharge Monitoring Report (DMR) information.

Methods

The purpose of this investigation was to determine the discharger's effects on the biota of the receiving waters. Chemical and biological comparisons were made 50 m southeast (Test Site 1) and 50 m northwest (Test Site 2) of Outfall D-001 and at a Control Site approximately 690 m east from D-001. These three locations were used because they are historical sampling sites for this facility. Sites were sampled on an incoming tide. Effluent samples were collected as grab and composite samples from monitoring location EFF-01 after dechlorination.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Nathan Mulkey and Rick Abad (FDEP Northwest District) and the FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski and Michelle Fish).

Results and Discussion

Organic Constituents (See Table 1 and Appendix F)

- Sucralose was detected in effluent, Test Site 1, and Test Site 2 grab samples which indicates that the Test Sites were receiving effluent at the time of sampling. The amount of sucralose detected in both Test Site grab samples was similar and indicates there is not significant direction of flow in Santa Rosa Sound. The amount detected in the Control Site grab sample was between the minimum detection limit (MDL) and the practical quantitation limit (PQL).
- No additional organic constituents were detected in the effluent grab samples or in the study sites' grab samples.
- No organic constituents were detected in the field blank.

Metals (See Table 2 and Appendix F)

- Zinc detected in the effluent grab sample (105 A µg/L) exceeded Class III Marine Water Quality Criteria (62-302.530 (70), F.A.C.)
- All other metals in the effluent, Control Site, and both Test Sites' samples were either undetected or detected at levels that complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.) and/or effluent permit limits.
- Metals were not detected in the field blank.

Toxicity Whole Effluent Test (See Table 1 and Appendices G and H)

- Tests were performed December 11 through December 18, 2012.
- The effluent composite sample IC25 for the mysid, *Americamysis bahia*, and the IC25 for the fish, *Menidia beryllina*, were calculated as being greater than 100% effluent. If inhibition of growth, survival, or reproduction did occur in these tests, it was less than 25% in 100% effluent; therefore, the effluent was in compliance with effluent permit limits for toxicity.

Physical and Chemical Parameters (See Table 1 and Appendices E and F)

- The shoreline was mostly natural with occasional riprap at the Control Site, Test Site 1, and Test Site 2. All three sites had similar tidal fluctuations, flow and wave action. The benthic substrate was 100% sand at all three sites. The Control Site received only natural runoff, whereas Test Site 1 and Test Site 2 received runoff from a few, small stormwater sources.
- Dissolved oxygen and pH of the effluent, the Control Site and both Test Sites complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.
- Total residual chlorine (TRC) of the effluent, measured in the field, complied with Class III Marine Water Quality Criteria and effluent permit limits.
- Chlorophyll *a* (corrected) was not detected in the effluent grab sample but was detected between the MDL and PQL in the grab samples of all three study sites.
- Total suspended solids (TSS) and carbonaceous biochemical oxygen demand (CBOD) were detected in the effluent composite samples between the MDL and PQL and complied with effluent permit limits.
- Turbidity and fluoride were detected in the effluent, Control Site, Test Site 1 and Test Site 2 grab samples in amounts that complied with Class III Marine Water Quality Criteria.

Microbiology (See Table 1 and Appendix F)

- Enterococci were undetected in the effluent grab sample. This is a single sample result while the effluent permit limit is a geometric mean of 5 samples per month.
- Fecal coliforms detected in the effluent grab sample complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.

Nutrients (See Table 1 and Appendices F)

- Total phosphorus and total nitrogen of the effluent composite sample complied with effluent permit limits.
- All nutrients were either undetected or detected at low and/or similar amounts in the Control Site, Test Site 1, and Test Site 2 grab samples.
- All nutrients with the exception of total organic carbon detected in the effluent grab and composite samples were higher than the amounts detected in the Control Site, Test Site 1 and Test Site 2 grab samples. Total organic carbon was detected in similar amounts in the effluent grab sample and in the study sites' grab samples. There was no detectable nutrient enrichment from the effluent at Test Site 1 and Test Site 2. However the effluent does have the potential to cause nutrient enrichment of Santa Rosa Sound.
- Nutrients were not detected in the field blank.

Algal Growth Potential (See Table 3 and Appendix F)

- Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L, which represents a “problem” threshold for fresh receiving waters, imply nutrient enrichment. The AGP of the freshwater effluent sample was 53 times the problem threshold for the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. The result was J-qualified because the lights above the test flasks were out for an unknown period of time (<24 hours).
- Raschke and Shultz (1987) determined that AGP values above 10.0 mg dry weight/L, which represents a “problem” threshold for marine receiving waters, imply nutrient enrichment. The

AGP of the salinity adjusted effluent sample was 11 times the problem threshold for the saltwater species *Dunaliella tertiolecta*.

- The ratio of total nitrogen to total phosphorus suggests that the effluent is nitrogen limited.
- The AGP values of the Control Site, Test Site 1, and Test Site 2 samples were below the detection limit for the saltwater species *Dunaliella tertiolecta*. The ratio of total nitrogen to total phosphorus suggests that all three sites are phosphorus limited.
- The effluent is being sufficiently diluted and is not contributing to nutrient enrichment at the Test Sites.

Bioassessment

Phytoplankton (See Table 4 and Appendices I-1 and I-2)

- Phytoplankton communities at the Control and both Test Sites consisted mostly of diatoms. *Chaetoceros* sp., a lightly silicified diatom, was the most abundant taxon at all three study sites. The algal community at Test Site 1 also had a high number of *Alexandrium* sp. *Alexandrium* sp. was also present in less abundance at the Control Site and at Test Site 2. There were no adverse affects apparent in the phytoplankton community in the Santa Rosa Sound from the effluent.

Macroinvertebrates (See Table 5 and Appendices J-1 and J-2)

- No study establishing the path of the effluent plume was conducted prior to sampling. The effluent plume was assumed to move both East and West of Outfall D-001. Historical sampling sites were used for this assessment.
- The Shannon-Weaver Diversity score and the number of taxa at the Control Site, Test Site 1 and Test Site 2 were similar. The dominant taxon at the Control Site and Test Site 2 was the gastropod, *Acteocina* sp. The dominant taxon at Test Site 1 was *Mediomastus ambiseta*, a polychaete. Test Site 2 had a lower percentage of amphipods than the Control Site and Test Site 1 which had similar numbers of amphipods. The Control Site had a higher percentage of gastropods than both of the Test Sites. Polychaetes were the most abundant at all three sites and made up over half of the community at Test Site 1. The Control Site and Test Site 2 had fewer polychaetes. Test Site 1 had almost twice as many burrowing deposit feeders than the Control Site and Test Site 2. Test Site 2 had a larger percentage of predators than the Control Site and Test Site 1. The Control Site had higher numbers of scrapers than the Test Sites. Overall, there were no negative effects on macroinvertebrates at either of the Test Sites that were attributable to the effluent.

Conclusion

Zinc detected in the effluent grab sample exceeded Class III Marine Water Quality Criteria (62-302.530 (70), F.A.C.). All nutrients detected in the effluent grab and composite samples were detected in higher amounts than those detected in the Control Site, Test Site 1 and Test Site 2 samples. Nutrients were detected in similar amounts in the Control Site, Test Site 1 and Test Site 2 samples. The AGP value of the effluent was 53 times higher than the freshwater problem threshold and 11 times higher than the saltwater problem threshold. The AGP values of the Control Site, Test Site 1, and Test Site 2 samples were below the detection limit. There was no detectable nutrient enrichment from the effluent at Test Site 1 and Test Site 2 based on nutrient and AGP samples. Phytoplankton and macroinvertebrate communities at the Control Site, Test Site 1 and Test Site 2 were similar. There were no negative effects on the macroinvertebrate or phytoplankton communities at Test Site 1 and Test Site 2 that were attributable to the effluent.

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

Navarre Beach WWTF	Class III Criteria	Effluent Limits	Effluent 24-h Composite	Effluent Grab	Control Site	Test Site 1	Test Site 2
Organic Constituents (µg/L)							
Sucralose	-	-	-	21	0.051 I	0.09	0.089
Nutrients (mg/L)							
Ortho-phosphate	-	-	-	0.85	0.004 U	0.004 U	0.004 U
Total Phosphorus	-	≤ 10.0 p	0.86	-	0.008 I	0.009 I	0.009 I
Total Ammonia	-	-	0.023	-	0.01 U	0.01 U	0.01 UJ
Un-ionized Ammonia	-	-	-	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	5.3	-	0.014	0.009 I	0.005 I
Total Kjeldahl Nitrogen	-	-	0.42	-	0.2 I	0.26 I	0.24 I
Organic Nitrogen	-	-	0.397 c	-	0.2 c	0.26 c	0.24 c
Total Nitrogen	-	≤ 18.0 p	5.72 c	-	0.214 c	0.269 c	0.245 c
Total Organic Carbon	-	-	-	3.1	3.4	3.3	3.3
General Physical and Chemical Parameters							
Pchem Measurement Depth (m)-top	-	-	-	-	0.2	0.1	0.2
Pchem Measurement Depth (m)-middle	-	-	-	-	0.9	1.1	0.9
Pchem Measurement Depth (m)-bottom	-	-	-	-	1.9	2.2	1.9
Dissolved Oxygen (mg/L)-top	≥ 4.0	≥ 4.0	-	9.0	7.6	7.6	7.7
Dissolved Oxygen (mg/L)-middle	≥ 4.0	-	-	-	7.6	7.6	7.8
Dissolved Oxygen (mg/L)-bottom	≥ 4.0	-	-	-	7.4	7.6	7.8
Dissolved Oxygen (% saturation)-top	-	-	-	-	95.5	96.6	98.2
Dissolved Oxygen (% saturation)-middle	-	-	-	-	95.3	96.3	98.8
Dissolved Oxygen (% saturation)-bottom	-	-	-	-	93.2	96.0	98.7
pH (SU)-top	6.5 - 8.5	6.5 - 8.5	-	6.7	8.0	8.0	8.0
pH (SU)-middle	6.5 - 8.5	-	-	-	8.0	8.0	8.0
pH (SU)-bottom	6.5 - 8.5	-	-	-	8.0	8.0	8.0
Conductivity (µmhos/cm)-top	-	-	-	1,177	37,252	37,688	38,040
Conductivity (µmhos/cm)-middle	-	-	-	-	37,442	38,147	38,113
Conductivity (µmhos/cm)-bottom	-	-	-	-	38,722	38,846	38,756
Salinity-top	-	-	-	-	23.7	23.4	24.2
Salinity-middle	-	-	-	-	23.7	24.3	24.3
Salinity-bottom	-	-	-	-	24.3	24.8	24.7
Temperature (°C)-top	-	-	-	20.9	19.9	20.1	20.2
Temperature (°C)-middle	-	-	-	-	19.8	19.9	20.2
Temperature (°C)-bottom	-	-	-	-	19.7	19.7	19.9
Salinity-calculated	-	-	-	0 c	26.5 c	26.7 c	26.9 c
Sample Depth (m)	-	-	-	0.15	0.15	0.15	0.15
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	< 0.01	-	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	-	0.55 U	0.61 I	0.67 I	0.68 I
Phaeophytin (µg/L)	-	-	-	0.4 U	0.4 U	0.4 U	0.4 U
Total Suspended Solids (mg/L)	-	≤ 10.0 p	3 I	-	3 U	3 U	3 U
Turbidity (NTU)	< 29 t	-	-	0.4	0.4	0.35	0.45
Color (true, PCU)	-	-	-	3.3 I	2.5 U	2.5 U	7.5 U
Alkalinity (mg CaCO3/L)	-	-	-	31	99	100	101
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 p	0.56 I	-	0.2 U	0.2 U	0.25 I
Chloride (mg/L)	-	-	-	300	15,000	15,000	15,000
Fluoride (mg/L)	≤ 5.0	-	-	0.066 I	0.99	1	1
Sulfate (mg/L)	-	-	-	76	2,000	2,000	2,000
Flow (MGD)	-	0.90 a	-	0.23 a	-	-	-
Hardness (mg $CaCO_3$)	-	-	-	142.7 c	4,729 c	4,731 c	4,825 c
Toxicity (Chronic Screen, IC25, % effluent)							
Bioassay - Mysid *(Americamysis bahia)*- growth and survival	-	≥ 100	>100	-	-	-	-
Bioassay - Fish *(Menidia beryllina)*- growth and survival	-	≥ 100	> 100	-	-	-	-
Microbiology (Number of colony forming units/100ml)							
Enterococci¥	-	35†	-	2 U	-	-	-
Fecal Coliforms ¥	≤ 400s #	≤ 800s	-	2 B	-	-	-

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

a - Annual average

c - Value is calculated

p - 16-hour flow proportioned composite

s - Single sample

t - Shall not exceed 29 NTUs above background

B - Results based on colony counts outside the acceptance range

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

J - Estimated value; total ammonia quality control failure observed

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

IC25 - 25 percent inhibition concentration

¥ - Fecal coliform analysis performed by UWF Overflow Laboratory for NWD

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

† - monthly geometric mean

Table 2. Effluent limits, Class III Marine Criteria and metals data

Navarre Beach WWTF	Class III Criteria	Effluent Limits	Effluent 24-h Composite	Effluent Grab	Control Site	Test Site 1	Test Site 2
Metals (µg/L unless otherwise noted)							
Aluminum	≤ 1,500	-	-	15 U	15 U	15 U	15 U
Arsenic	≤ 50	-	-	0.75 U	0.75 U	0.75 U	0.81 I
Cadmium	≤ 8.8	-	-	0.15 U	0.15 U	0.15 U	0.25 U
Calcium (mg/L)	-	-	-	25.8 A	304	300	311
Chromium-III	-	-	-	0.9 U	0.9 U	0.9 U	0.9 U
Copper	≤ 3.7	≤ 3.7	2.5 I	1.7 I	1.5 U	1.5 U	1.5 U
Iron	≤ 300	-	-	78 I	90 U	90 U	90 U
Lead	≤ 8.5	-	-	0.6 U	0.6 U	0.6 U	1 U
Magnesium (mg/L)	-	-	-	19 A	964	967	983
Nickel	≤ 8.3	-	-	1.2 I	0.75 U	0.75 U	0.75 U
Selenium	≤ 71	-	-	0.6 U	0.6 U	0.6 U	0.6 U
Silver	≤ 2.3	-	-	0.075 U	0.075 U	0.075 U	0.12 U
Sodium	-	-	-	175 A	7,750	7,740	7,840
Zinc	≤ 86	-	-	105 A	15 U	15 U	15 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 - 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

Table 3a. 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 subcapitat* a and ratios of nitrogen to phosphorus

Navarre Beach WWTF					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	265.0 J	202.3 ± 40.5	217.4 ± 43.5	6.3	6.7

J - Estimated value; Instrument malfunction occurred during analysis. Lights were out for unknown period <24 hrs during algal growth.

Table 3b. Measured and predicted algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus.

Navarre Beach WWTF			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent *	112.0	6.3	6.7
Control Site	3.0 U	6.0	26.8
Test Site 1	3.0 U	4.8	29.9
Test Site 2	3.0 AU	3.8	27.2

* - sample salinity adjusted to 8.0 ppth

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

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

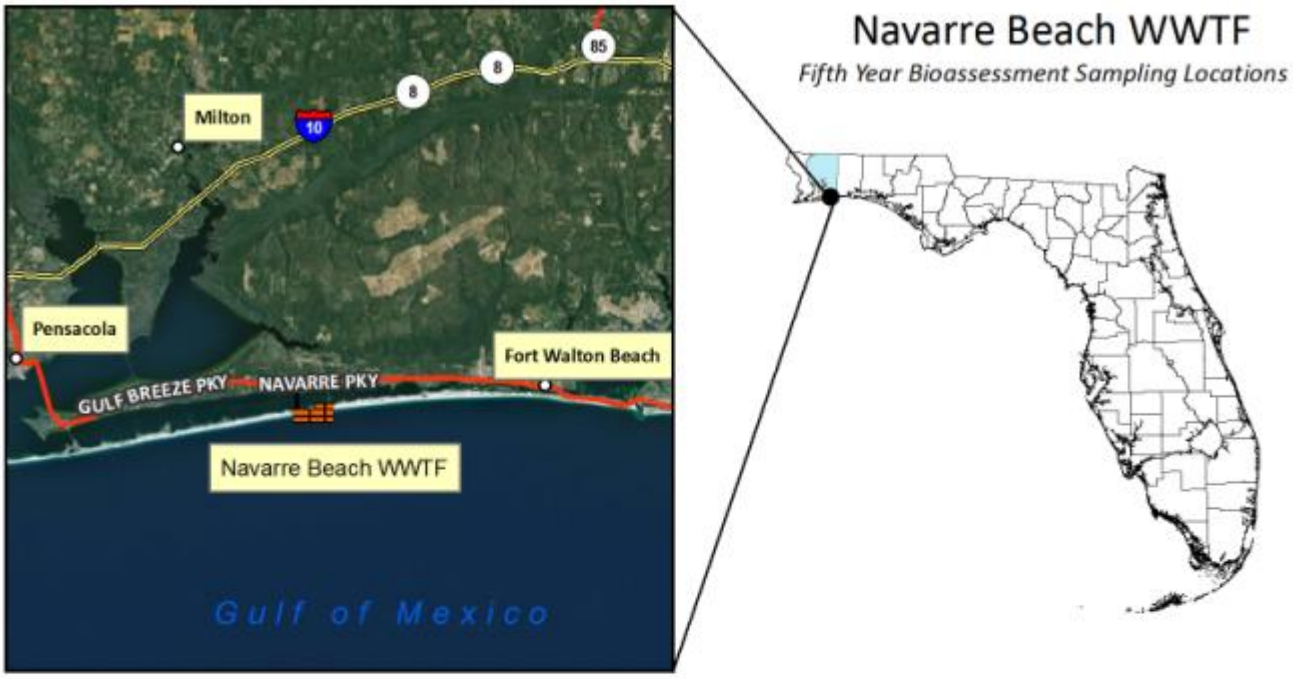
Table 4. Phytoplankton composition

Navarre Beach WWTF	Control Site	Test Site 1	Test Site 2
Number of Taxa	13	19	13
Number of Wet Algal Units Identified	300	300	300
Algal Density (number/mL)	570	681	433
Percent Dominant Taxon	11.2	13.4	12.0
Dominant Taxon Name	*Chaetoceros* sp. (Bacillariophyta)	*Chaetoceros* sp. (Bacillariophyta)	*Chaetoceros sp.* (Bacillariophyta)
Percent Dominant Non-Diatom Taxon	4.4	12.0	2.3
Dominant Non-Diatom Taxon Name	*Alexandrium* sp. (Pyrrophycophyta)	*Alexandrium* sp. (Pyrrophycophyta)	*Prorocentrum micans* (Pyrrophycophyta)
Incorporated Percent Dominant Diatom Taxon	10.8	7.6	14.8
Dominant Diatom Taxon Name	*Opephora* sp.	*Cocconeis* sp.	*Amphora* sp.
Number of Diatom Taxa	39	42	43
Number of Diatom Valves Identified	493	500	500
Percent Dominant Diatom Taxon	15.0	13.4	10.8
Percentage Composition of Wet Algae			
Blue-green algae	0.0	0.3	0.0
Green algae	1.6	2.1	2.1
Diatoms	89.0	75.3	86.8
Cryptophytes	1.1	1.3	0.7
Pyrrophytes-Dinoflagellates	8.4	20.7	10.4

Table 5. Macroinvertebrate petite ponar samples - quantitative

Navarre Beach WWTF	Control Site	Test Site 1	Test Site 2
Summary Statistics			
Shannon-Weaver Diversity	4.30	4.30	4.44
Number of Taxa	42	44	42
Percent Dominant Taxon	18.7	30.0	12.7
Dominant Taxon Name	*Acteocina* sp. (Gastropoda)	*Mediomastus ambiseta* (Polychaeta)	*Acteocina* sp. (Gastropoda)
Number of samples/site	6	6	6
Total Number of Individuals (counted)	359	400	427
Community Composition: Percent of total			
Amphipoda	13.1	11.5	4.5
Bivalvia	2.5	4.3	4.7
Cumacea	0.3	2.0	1.2
Decapoda	0.6	0.0	0.0
Echinodermata	1.1	0.0	1.6
Gastropoda	24.5	6.3	16.9
Isopoda	0.0	0.5	0.0
Nemertea	1.7	1.8	2.1
Oligochaeta	1.1	1.5	0.7
Polychaeta	31.8	61.5	42.9
Tanaidacea	0.6	1.5	3.0
Other	22.8	9.2	22.6
Functional Feeding Groups: Percent of total			
Browser-Grazers	5.7	4.5	2.1
Burrowing Deposit Feeders	21.2	40.5	25.3
Piercers	0.0	0.0	0.0
Predators	12.5	12.6	22.3
Scavengers	6.4	4.8	2.9
Scrapers	24.2	6.3	16.6
Shredders	0.6	0.0	0.0
Surface Deposit Feeders	4.7	7.1	2.8
Suspension Feeders	22.6	15.9	19.2
Unknown	2.0	8.3	8.8

Appendix A
Navarre Beach WWTF
Fifth Year Bioassessment Sampling Locations





Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** 595-0553
Facility Name (as it appears on permit): Navarre Beach WWTF	**Former Names:**
NPDES Permit Number: FL0023981	**Permit Expiration Date:** September 15, 2013
Physical Address: 1411 Utility Drive, Navarre Beach, FL 32566	
District: NWD	**County:** Santa Rosa
Function of Facility: Municipal wastewater treatment facility	
Facility Type: DW	**Permitted Capacity (MGD):** 0.90 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **0.23 mgd (11/1/2011 – 10/31/2012)**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Description of Permitted Outfall(s):

An existing 0.90 MGD annual average daily flow (AADF) permitted discharge to Santa Rosa Sound (Class III marine waters) at Discharge Location (D-001) which is approximately 400 feet in length and discharges at a depth of approximately six feet. The point of discharge is located approximately at latitude 30 o 22' 58" N, longitude 86 o 52' 38" W.

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

The facility is a 0.90 MGD annual average daily flow (AADF) oxidation ditch WWTP with flow equalization clarifiers, tertiary filters, chlorination, dechlorination and effluent discharge via a 12" diameter pipe extending approximately 400 feet into the Class III marine water zone of Santa Rosa Sound at a depth of six feet. The facility has a 0.90 MG emergency holding pond.

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)

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to Santa Rosa Sound. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.C.7:

			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	MGD	Maximum	0.90	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-01	See Cond.I.A.3
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
pH	SU	Range	-	-	-	6.5 to 8.5	5 Days/Week	Grab	EFF-01	
Coliform, Fecal	#/100 ML	Maximum	See Permit Condition I.A.4.				Weekly	Grab	EFF-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	1.0	5 Days/Week	Grab	EFA-01	See Cond.I.A.5
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Weekly	Grab	EFF-01	
Nitrogen, Total (as N)	MG/L	Maximum	9.0	11.25	13.5	18.0	Weekly	16-hour flow proportioned composite	EFF-01	
Nitrogen, Total	LBS/DAY	Maximum	67.5	-	-	-	Weekly	16-hour flow proportioned composite	EFF-01	
Phosphorus, Total (as P)	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Phosphorus, Total (as P)	LBS/DAY	Maximum	37.5	-	-	-	Weekly	16-hour flow proportioned composite	EFF-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	4.0	5 Days/Week	Grab	EFF-01	
Copper, Total Recoverable	UG/L	Maximum	-	-	-	3.7	Weekly	16-hour flow proportioned composite	EFF-01	
Enterococci	#/100 mL	Maximum	-	35 (Geo. Mean)	-	-	5/month	Grab	EFF-01	See Cond.I.A.6

PART I: Continued	
Receiving Waters: Santa Rosa Sound	**Classification (indicate whether fresh or marine):** Class III Marine

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

The frequency listed below was reduced to semi-annually on 10/13/11.

PERMIT CONDITION I.A.7.

7. 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) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent.
      [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]
      (2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test.
      [Rule s 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.] Separate acute effluent toxicity tests are not required except as set forth in 7.g.(4).

   b. Monitoring Frequency
      (1) Routine toxicity tests shall be conducted quarterly, the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.
      (2) Upon completion of four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 7.a.(1) above, the permittee may submit a written request to the Department for a reduction in monitoring frequency to once every six months. The request shall include a summary of the data and the complete bioassay laboratory reports for each test used to demonstrate compliance. The Department shall act on the request within 45 days of receipt. Reductions in monitoring shall only become effective upon the Department's written confirmation that the facility has completed four consecutive valid routine tests that demonstrate compliance with the effluent limitation in 7.a.(1) above.
      (3) If a test within the sequence of the four is deemed invalid based on the acceptance criteria in EPA-821-R-02-013, but is replaced by a repeat valid test initiated within 21 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency.

   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-02-014, 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 7-day survival and growth chronic toxicity tests with a mysid shrimp, **Americamysis (Mysidopsis) bahia**, Method 1007.0, and an inland silverside, **Menidia beryllina**, Method 1006.0, 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 Marine and Estuarine Organisms**, 3rd Edition, EPA-821-R-02-014. 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 used shall be artificial sea salts as described in EPA-821-R-02-014, Section 7.2. The test salinity shall be determined as follows:
         (a) For the **Americamysis bahia** bioassays, the effluent shall be adjusted to a salinity of 20 parts per thousand (ppt) with artificial sea salts. The salinity of the control/dilution water (0% effluent) shall be 20 ppt. If the salinity of the effluent is greater than 20 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.

   (b) For the **Menidia beryllina** bioassays, if the effluent salinity is less that 5 ppt, the salinity shall be adjusted to 5 ppt with artificial sea salts. The salinity of the control/dilution water (0% effluent) shall be 5 ppt. If the salinity of the effluent is greater than 5 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.
   (c) If the salinity of the effluent requires adjustment, a salinity adjustment control should be prepared and included with each bioassay. The salinity adjustment control is intended to identify toxicity resulting from adjusting the effluent salinity with artificial sea salts. To prepare the salinity adjustment control, dilute the control/dilution water to the salinity of the effluent and adjust the salinity of the salinity adjustment control at the same time and to the same salinity that the salinity of the effluent is adjusted using the same artificial sea salts.

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

AO 076NW was issued 2/26/10 and gave a report only for WET for 1 year. CO OGC #07-1203-57-DW was issued 9/12/08 and gave an interim limit of 12 ug/L for Copper until 3/11. Both of these Orders will be closed.

Facility Mixing Zone Details (if applicable):

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

Date	Parameter and Units	Limit	Result
11/11 **9/12**	**Copper (ug/L)** **Copper (ug/L)**	**3.7 ug/L** **3.7 ug/L**	**4.4 ug/L** **3.9 ug/L**

Describe previous FYI and WQBEL study:

The last FYI5 was performed in 1999 and the last FYI3was performed in 2002.

There was a Level I WQBEL review for the 9/16/08 permit performed. An excerpt from the Statement of Basis is below:

Navarre Beach WWTP discharges to Santa Rosa Sound which is on the FDEP's 303(d) list of impaired waters. The water body ID (WBID) is 915 and the parameters identified on the verified list pursuant to the impaired water rule are fecal coliform (shellfish harvesting) and Mercury (in fish tissue). The permit writer has determined that an effluent limitation is needed for fecal coliform and the treatment plant has intermediate level disinfection requirement in part because of effluent travel time to Class II waters and the permit includes appropriate limits for residual chlorine (for disinfection) and fecal coliform. The permit application reported data indicates average daily fecal coliform count of 1/100 ML and maximum daily of 7/100 ML. The discharge to Santa Rosa Sound is within the federally managed Gulf Island National Seashore. The discharge thus occurs within an Outstanding Florida Water (OFW) as provided by Rules 62-302.700(2)(e) and 62-302.700(9(g), F.A.C. Rule 62-302.700(1), F.A.C., requires that the Department afford the highest protection to OFW. No degradation of water quality, other than that allowed in Rule 62-4.242(2) and (3), F.A.C., is to be permitted in Outstanding Florida Waters, respectively, notwithstanding any other Department rules that allow water quality lowering. The Navarre Beach WWTP was discharging when Santa Rosa Sound was designated an OFW, March 1979, and is therefore, grandfathered as an allowable discharge load that effects the existing ambient water quality of the OFW, 62-4.242(2)(c), F.A.C.

Although effluent limits are at an advanced wastewater treatment level of 5/5/9/5 mg/L annual averages for CBOD5/TSS/TN/TP respectively , the reported effluent data consistently meets higher AWT levels of 5/5/3/1 mg/L. Since the Santa Rosa Sound is not impaired for dissolved oxygen or nutrients, their permitted AWT CBOD5/TSS/TN/TP concentrations are considered protective of the Sound's water quality

Describe previous or current Enforcement Actions (including WLs):

Consent Order, OGC No. 07-1203-57-DW was executed 9/12/08 for effluent Copper exceedences. The CO required the facility to evaluate the system and make any necessary improvements to meet the water quality standard. It also provided an interim limit of 12 ug/L until 3/11.

Describe any violations or problems noted in previous inspection:

10. EFFLUENT QUALITY: Out of Compliance

Facility Self Monitoring Data

Compliance Issue: A review of the DMRs for the period from May 2011 through June 2012 indicated the following effluent quality and/or permit limit violations.

Date	Parameters	Permit Limit	Analytical Value
August 2011	Total Nitrogen	18.0 mg/L maximum	23.07 mg/L
November 2011	Total Recoverable Copper	3.7 ug/L Maximum	4.4 ug/L

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

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

PART II: Sampling Event Information	
Date(s) sample collected: 12/10/12	Sampler(s): Nathan Mulkey/Rick Abad
Temperature (Deg C): 20.85	pH (SU): 6.71
Dissolved Oxygen (mg/L): 9.01	Conductivity (umhos/cm): 1177
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L): 0.01
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD): 0.099	
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:	

Blank Page 9 of 9 of Facility Summary was omitted.

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

The effluent and water from sampling stations were analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides. 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 exceedences 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) Chlorophyll *a* Content

Chlorophyll *a* content is an estimate algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may constitute exceedences 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..

(6) 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 10.0 mg dry weight/L represents a “problem” threshold for marine receiving waters, implying nutrient enrichment. High AGP values may constitute exceedences 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 in a low salinity sample 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 (EPA-822-B-00-002). 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.. Expected AGP is not calculated for marine samples incubated with *Dunaliella*.

(7) Benthic Macroinvertebrate Assemblages

Benthic macroinvertebrates were collected using a petite ponar dredge at all sampling stations. Six replicate ponar samples were collected at each station and sieved through a 500 μm mesh. Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species.

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Decreases in taxa richness related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedences 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..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between samples at test and control sites constitutes exceedences of 62-302.530(10) 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

Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2012-12-03-08
FYI Navarre Beach WWTP Sampling Inspection

Requester: Michelle Fish

Field Report Prepared By: N. Milky

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

Collected By: Nathan Milky / Rick Bland

Send Final Report To: Toni Edwards

Sampling Agency: FDEP

Lab ID *	Location	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Navarre Beach WWTP	☐ Comp ☑ Grab Date 12/10/12 Time 0940 (Central)	Date Time (Central)	B
	Field ID: Effluent	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 9.01	Storet Station Number
	Matrix (include type e.g. (Salt) Fresh, etc)	Temp (C) 20.85	pH 6.71	Sample Depth ☑ m ☐ ft .15
				☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm) 1177
				NPDES Number
	Latitude 30.38141 ☑ dd ☐ dms	Longitude 86.87954 ☑ dd ☐ dms	Comments	

Lab ID *	Location	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Navarre Beach WWTP	☑ Comp ☐ Grab Date 12/9/12 Time 0900 (Central)	Date 12/10/12 Time 0900 (Central)	A
	Field ID: Effluent Ccomp	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)**
	Navarre Beach WWTP	☑ Comp ☐ Grab Date 12/9/12 Time 0900 (Central)	Date 12/10/12 Time 0900 (Central)	A
	Field ID: TOX 1	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)**
	Navarre Beach WWTP	☐ Comp ☐ Grab Date 12/10/12 Time 1000 (Central)	Date Time (Central)	E
	Field ID: Field Blank	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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* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2 Biosassay Jugs
12-11-12 1009 m Fowler

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2012-12-03-08
FYI Navarre Beach WWTP Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: N. Mulkey
Collected By: Nathan Mulkey / Rick Mead
Send Final Report To: Toni Edwards
Sampling Agency: FDEP

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

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Santa Rosa Sound near Paradise Point	☐ Comp ☑ Grab Date 12/10/12 Time 1115 Central	Date Time	C+D
	Field ID: Control	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.56	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C): 19.91	pH: 7.96	Sample Depth ☑ m ☐ ft: 0.15
	Salinity (PPTh) ☑ Sp Conductance (umho/cm): 37252	NPDES Number		
	Latitude: 30.38413 ☑ dd ☐ dms	Longitude: 86.87267 ☑ dd ☐ dms	Comments	

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Santa Rosa Sound near Navarre outfall	☐ Comp ☑ Grab Date 12/10/12 Time 1200 Central	Date Time	C+D
	Field ID: Test 1	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.61	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C): 20.11	pH: 7.97	Sample Depth ☑ m ☐ ft: 0.15
	Salinity (PPTh) ☑ Sp Conductance (umho/cm): 37688	NPDES Number		
	Latitude: 30.38185 ☑ dd ☐ dms	Longitude: 86.87889 ☑ dd ☐ dms	Comments	

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Santa Rosa Sound near Navarre outfall	☐ Comp ☑ Grab Date 12/10/12 Time 1230 Central	Date Time	C+D
	Field ID: Test 2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.70	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C): 20.23	pH: 8.00	Sample Depth ☑ m ☐ ft: 0.15
	Salinity (PPTh) ☑ Sp Conductance (umho/cm): 38040	NPDES Number		
	Latitude: 30.38220 ☑ dd ☐ dms	Longitude: 86.87988 ☑ dd ☐ dms	Comments	

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

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	12/10/12	Fed Ex	AQB	12/11/12 0815				

* 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-2012-12-03-08
FYI Navarre Beach WWTP Sampling Inspection

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

Requester: Michelle Fish
Collected By: Nathan Mulkey
Sampling Agency: FDEP

Field Report Prepared By: N. Mulkey
Send Final Report To: Toni Edwards

Lab ID *	Location	Comp / Grab	Collection (comp begin or grab) Eastern	Composite end Eastern	Bottle Group(s)**
	Navarre Beach WWTP	☒ Comp ☐ Grab	Date 12/12/12 Time 0900 (Central)	Date 12/13/12 Time 0900 (Central)	A
	Field ID: TOX 2	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	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	

Lab ID *	Location	Comp / Grab	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	

Lab ID *	Location	Comp / Grab	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
[illegible]	12/13/12	FedEx	MB	12-13-12 09:08				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

took Received 2 Biomass Jugs 12-13-12 0927

Page 1 of 5

12-03-08

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2012-~~[redacted]~~

~~[redacted]~~

Event ID *

Requester: ~~[redacted]~~ Field Report Prepared By: N. Milby

Customer: NW-DIST
Project ID: ~~DISCRETIONARY~~ FY15
PMAS: ~~[redacted]~~ 1143

Collected By: Nathan Milby Send Final Report To: ~~[redacted]~~

Sampling Agency: FDEP

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Navarre Beach WWTP	☑ Comp ☐ Grab Date 12/13/12 Time 0900	Date 12/14/12 Time 0900	A
	Field ID: JOX3	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 Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time	Date Time	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments	

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

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	12/14/12	Fed Ex	[signature]	12/15/12 0908				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2 coolers → 0.9°C
Blue large 2 Jug M Fairbeth
Blue small 1 Jug 1.3°C

Appendix E

Physical/Chemical and Habitat Assessment field sheets

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FD9000-26 MARINE PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (4/25/00)

LAT/LONGS:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
30.38413, 086.87267	33030141	12-10-12	1115	Santa Rosa Sound

REMARKS:	COUNTY:	SITE LOCATION:	FIELD ID/NAME:
FYI Navarre WWTP	Santa Rosa	Control Santa Rosa Sound	Control

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
✓				✓			

Local Watershed Erosion (check box): None ☐ Slight ☒ Moderate ☐ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

Width of riparian vegetation (m) on least buffered side:

Draw aerial view sketch of sampling area including habitats and community types

Artificially Channelized ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark: ____ (m above present water level) + ____ (present depth in m) = ____ (m above bed)

Tide Types and Times

0600 : (AM) PM ____ : AM PM

0800 : AM (PM) ____ : AM PM

Canopy Cover % : Open : ☒ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐ ____

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none slight moderate severe Silt smothering: none slight moderate severe Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Seagrass				Sand	100	6	Panel
Rock or Shell Rubble				Mud/Muck/Silt			
Aquatic Vegetation				Other:			

Community Types

Mangroves ☐ Oyster bars ☐ Reef ☐ Natural beach ☒ Other: ☐ ____

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	% DO	‰ Sal	Secchi (m):
Top	0.212	19.91	7.96	7.56	37252	95.5	23.65	
Mid-depth	0.908	19.78	7.97	7.56	37442	95.3	23.79	>
Bottom	1.894	19.69	7.98	7.42	38722	93.2	24.32	

System Type : Stream: ☐ (1st - 2nd order 3rd - 4th order 5th - 6th order 7th order or greater) Estuary: ☐ Other: ☐ ____

Water Odors (check box): Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐ ____

Water Surface Oils (check box): None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☒ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☒ Other: ☐ ____

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☒	☐	☐
Fish	☐	☒	☐	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Nathan Mulkey Rick Abad	R Abad	12-10-12

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FD 9000-30 MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: FDEP	STORET STATION NUMBER: 33030H41	DATE (M/D/Y): 12/10/12	RECEIVING BODY OF WATER: Santa Rosa Sound

REMARKS: FYI Navarre Beach WWTP	LOCATION: Santa Rosa Sound Parker Pt	FIELD ID/NAME: Control

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 8	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 32	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 5	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 9	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 11	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 75

COMMENTS:

ANALYSIS DATE: 12/10/12	ANALYST: Nathan Malloy	SIGNATURE: Nathan Malloy

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FD9000-26 MARINE PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (4/25/00)

LAT/LONGS:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
30.38185 086.87889	33030#31	12-10-12	1200	Santa Rosa Sound

REMARKS:	COUNTY:	SITE LOCATION:	FIELD ID/NAME:
Navarre WWTP F/I	Santa Rosa	Test 1 Navarre WWTP disch	Test 1

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
✓				✓		✓	

Local Watershed Erosion (check box): None ☐ Slight ☒ Moderate ☐ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☒

Width of riparian vegetation (m) on least buffered side:

Draw aerial view sketch of sampling area including habitats and community types

Artificially Channelized ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark: ____ (m above present water level) + ____ (present depth in m) = ____ (m above bed)

Tide Types and Times

0600 : AM / PM ____ : AM / PM

0800 : AM / PM ____ : AM / PM

Canopy Cover % : Open : ☒ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded:

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none slight moderate severe Silt smothering: none slight moderate severe Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Seagrass				Sand	100	6	Primer
Rock or Shell Rubble				Mud/Muck/Silt			
Aquatic Vegetation				Other:			

Community Types

Mangroves ☐ Oyster bars ☐ Reef ☐ Natural beach ☒ Other: ☐

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	% DO	‰ Sal	Secchi (m):
Top	0.136	20.11	7.97	7.61	37688	96.6	23.97	>
Mid-depth	01.137	19.86	8.00	7.61	38147	96.3	24.30	
Bottom	2.227	19.73	8.01	7.59	38846	96.0	24.77	

System Type : Stream: ☐ (1st - 2nd order 3rd - 4th order 5th - 6th order 7th order or greater) Estuary: ☒ Other: ☐

Water Odors (check box): Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☒ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☒ Other: ☐

Weather Conditions/Notes:

Overcast unseasonably warm 75°F

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☒	☐	☐
Fish	☐	☒	☐	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Nathan Mulkey Rick Abad	R Abad	12-10-12

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FD 9000-30 MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
POEP	33080 H3 1	12/10/12	Santa Rosa Sound

REMARKS:	LOCATION:	FIELD ID/NAME:
PTI Navarre Beach WWTP	50 m 03/07/13 20m East of Discharge	Test 1

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 6	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 26	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 5	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 6	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 10	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 63

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12/10/12	Nathan Melby	

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FD 9000-30 MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: FDEP	STORET STATION NUMBER: 33030H50	DATE (M/D/Y): 12/10/12	RECEIVING BODY OF WATER: Santa Rosa Sound
REMARKS: FYI Navarre Beach WWTP	LOCATION: 50 yds 03/07/13 20m West of Ditch		FIELD ID/NAME: Test 2

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 6	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 26	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 5	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 6	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 10	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 10	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 63

COMMENTS: 20m West of Facility

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12/10/12	Nathan Malloy	

Appendix F

Chemical analyses of effluent and receiving water

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 10:00	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.56	I	mg/L	0.2	2
12/10/2012 10:00	Effluent	Metals	Copper	2.5	I	ug/L	1.5	3
12/10/2012 10:00	Effluent	Nutrients	Ammonia-N	0.023		mg N/L	0.01	0.02
12/10/2012 10:00	Effluent	Nutrients	Kjeldahl Nitrogen	0.42		mg N/L	0.16	0.4
12/10/2012 10:00	Effluent	Nutrients	NO2NO3-N	5.3		mg N/L	0.04	0.1
12/10/2012 10:00	Effluent	Nutrients	Total-P	0.86		mg P/L	0.04	0.1
12/10/2012 10:00	Effluent	Nutrients	TSS	3	I	mg/L	2	10
12/10/2012 10:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-SW-Fish, IC25	100	L	IC25		
12/10/2012 10:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-SW-Fish, NOEC	100	K	NOEC		
12/10/2012 10:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-SW-Mysid, IC25	100	L	IC25		
12/10/2012 10:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-SW-Mysid, NOEC	100		NOEC		
12/10/2012 10:40	Effluent	AGP/LN	Algal Growth Potential	265	J	mg DryWt/L	0.3	0.9
12/10/2012 10:40	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	112		mg DryWt/L	3	3
12/10/2012 10:40	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
12/10/2012 10:40	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
12/10/2012 10:40	Effluent	Field Parameter	Dissolved Oxygen	9.01		mg/L		
12/10/2012 10:40	Effluent	Field Parameter	pH	6.71				
12/10/2012 10:40	Effluent	Field Parameter	Sample Depth	0.15		m		
12/10/2012 10:40	Effluent	Field Parameter	Specific Conductance	1177		umhos/cm		
12/10/2012 10:40	Effluent	Field Parameter	Temperature	20.85		C		
12/10/2012 10:40	Effluent	Metals	Aluminum	15	U	ug/L	15	60
12/10/2012 10:40	Effluent	Metals	Arsenic	0.75	U	ug/L	0.75	3
12/10/2012 10:40	Effluent	Metals	Cadmium	0.15	U	ug/L	0.15	0.6
12/10/2012 10:40	Effluent	Metals	Calcium	25.8	A	mg/L	0.075	0.3
12/10/2012 10:40	Effluent	Metals	Chromium	0.90	U	ug/L	0.9	3.6
12/10/2012 10:40	Effluent	Metals	Copper	1.7	I	ug/L	1.5	3
12/10/2012 10:40	Effluent	Metals	Iron	78	I	ug/L	30	120
12/10/2012 10:40	Effluent	Metals	Lead	0.60	U	ug/L	0.6	2.4
12/10/2012 10:40	Effluent	Metals	Magnesium	19.0	A	mg/L	0.04	0.16
12/10/2012 10:40	Effluent	Metals	Nickel	1.2	I	ug/L	0.75	3
12/10/2012 10:40	Effluent	Metals	Selenium	0.60	U	ug/L	0.6	2.4
12/10/2012 10:40	Effluent	Metals	Silver	0.075	U	ug/L	0.075	0.3
12/10/2012 10:40	Effluent	Metals	Sodium	175	A	mg/L	0.5	2

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 10:40	Effluent	Metals	Zinc	105	A	ug/L	5	20
12/10/2012 10:40	Effluent	Nutrients	Alkalinity	31		mg CaCO3/L	0.65	2.5
12/10/2012 10:40	Effluent	Nutrients	Chloride	300		mg Cl/L	2	5
12/10/2012 10:40	Effluent	Nutrients	Color (true)	3.3	I	PCU	2.5	6
12/10/2012 10:40	Effluent	Nutrients	Fluoride	0.066	I	mg F/L	0.035	0.1
12/10/2012 10:40	Effluent	Nutrients	O-Phosphate-P	0.85		mg P/L	0.04	0.1
12/10/2012 10:40	Effluent	Nutrients	Organic Carbon	3.1		mg C/L	0.4	0.8
12/10/2012 10:40	Effluent	Nutrients	Sulfate	76		mg SO4/L	2	5
12/10/2012 10:40	Effluent	Nutrients	Turbidity	0.4		NTU	0.1	0.1
12/10/2012 10:40	Effluent	Overflow	Enterococci-Membrane Filter	2	U	cfu/100 mL	2	2
12/10/2012 10:40	Effluent	Overflow	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL	1	1
12/10/2012 10:40	Effluent	Pesticides	Alachlor	0.30	U	ug/L	0.3	1.2
12/10/2012 10:40	Effluent	Pesticides	Ametryn	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Atrazine	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Azinphos Methyl	0.10	U	ug/L	0.1	0.4
12/10/2012 10:40	Effluent	Pesticides	Bromacil	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Pesticides	Butylate	0.10	U	ug/L	0.1	0.4
12/10/2012 10:40	Effluent	Pesticides	Chlorpyrifos Ethyl	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Chlorpyrifos Methyl	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Diazinon	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Ethion	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.1
12/10/2012 10:40	Effluent	Pesticides	Fenamiphos	0.15	U	ug/L	0.15	0.6
12/10/2012 10:40	Effluent	Pesticides	Fonofos	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.6
12/10/2012 10:40	Effluent	Pesticides	Malathion	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Metalaxyl	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Pesticides	Metolachlor	0.30	U	ug/L	0.3	1.2
12/10/2012 10:40	Effluent	Pesticides	Metribuzin	0.10	U	ug/L	0.1	0.4
12/10/2012 10:40	Effluent	Pesticides	Mevinphos	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Naled	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
12/10/2012 10:40	Effluent	Pesticides	Parathion Ethyl	0.10	U	ug/L	0.1	0.4
12/10/2012 10:40	Effluent	Pesticides	Parathion Methyl	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Phorate	0.025	U	ug/L	0.025	0.1
12/10/2012 10:40	Effluent	Pesticides	Prometryn	0.10	U	ug/L	0.1	0.4
12/10/2012 10:40	Effluent	Pesticides	Simazine	0.050	U	ug/L	0.05	0.2
12/10/2012 10:40	Effluent	Pesticides	Sucralose	21		ug/L	0.2	1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 10:40	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	60
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
12/10/2012 10:40	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0	U	ug/L	2	8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	60
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Acenaphthene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Acenaphthylene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Anthracene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	400
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	60
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.0	U	ug/L	5	20
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Chrysene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.0	U	ug/L	5	20
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.0	U	ug/L	1	4

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Fluoranthene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Fluorene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Hexachloroethane	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Isophorone	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Naphthalene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Nitrobenzene	2.0	U	ug/L	2	8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0	U	ug/L	2	8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0	U	ug/L	2	8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.0	U	ug/L	3	12
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Phenanthrene	0.20	U	ug/L	0.2	0.8
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Phenol	1.0	U	ug/L	1	4
12/10/2012 10:40	Effluent	Priority Organic Pollutants	Pyrene	0.20	U	ug/L	0.2	0.8
12/10/2012 12:15	Control Site	AGP/LN	Algal Growth Potential	3.00	U	mg DryWt/L	3	3
12/10/2012 12:15	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.20	U	mg/L	0.2	2
12/10/2012 12:15	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.61	I	ug/L	0.55	1.7
12/10/2012 12:15	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
12/10/2012 12:15	Control Site	Field Parameter	Dissolved Oxygen	7.56		mg/L		
12/10/2012 12:15	Control Site	Field Parameter	pH	7.96				
12/10/2012 12:15	Control Site	Field Parameter	Sample Depth	0.15		m		
12/10/2012 12:15	Control Site	Field Parameter	Specific Conductance	37252		umhos/cm		
12/10/2012 12:15	Control Site	Field Parameter	Temperature	19.91		C		
12/10/2012 12:15	Control Site	Metals	Aluminum	15	U	ug/L	15	60
12/10/2012 12:15	Control Site	Metals	Arsenic	0.75	U	ug/L	0.75	3
12/10/2012 12:15	Control Site	Metals	Cadmium	0.15	U	ug/L	0.15	0.6
12/10/2012 12:15	Control Site	Metals	Calcium	304		mg/L	0.22	0.9
12/10/2012 12:15	Control Site	Metals	Chromium	0.90	U	ug/L	0.9	3.6
12/10/2012 12:15	Control Site	Metals	Copper	1.5	U	ug/L	1.5	3
12/10/2012 12:15	Control Site	Metals	Iron	90	U	ug/L	90	360
12/10/2012 12:15	Control Site	Metals	Lead	0.60	U	ug/L	0.6	2.4
12/10/2012 12:15	Control Site	Metals	Magnesium	964		mg/L	2	8
12/10/2012 12:15	Control Site	Metals	Nickel	0.75	U	ug/L	0.75	3
12/10/2012 12:15	Control Site	Metals	Selenium	0.60	U	ug/L	0.6	2.4
12/10/2012 12:15	Control Site	Metals	Silver	0.075	U	ug/L	0.075	0.3

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 12:15	Control Site	Metals	Sodium	7750		mg/L	25	100
12/10/2012 12:15	Control Site	Metals	Zinc	15	U	ug/L	15	60
12/10/2012 12:15	Control Site	Nutrients	Alkalinity	99		mg CaCO3/L	0.65	2.5
12/10/2012 12:15	Control Site	Nutrients	Ammonia-N	0.010	U	mg N/L	0.01	0.02
12/10/2012 12:15	Control Site	Nutrients	Chloride	15000		mg Cl/L	40	100
12/10/2012 12:15	Control Site	Nutrients	Color (true)	2.5	U	PCU	2.5	6
12/10/2012 12:15	Control Site	Nutrients	Fluoride	0.99		mg F/L	0.18	0.5
12/10/2012 12:15	Control Site	Nutrients	Kjeldahl Nitrogen	0.20	I	mg N/L	0.16	0.4
12/10/2012 12:15	Control Site	Nutrients	NO2NO3-N	0.014		mg N/L	0.004	0.01
12/10/2012 12:15	Control Site	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/10/2012 12:15	Control Site	Nutrients	Organic Carbon	3.4		mg C/L	0.8	1.6
12/10/2012 12:15	Control Site	Nutrients	Sulfate	2000		mg SO4/L	40	100
12/10/2012 12:15	Control Site	Nutrients	Total-P	0.008	I	mg P/L	0.004	0.01
12/10/2012 12:15	Control Site	Nutrients	TSS	3	U	mg/L	3	10
12/10/2012 12:15	Control Site	Nutrients	Turbidity	0.4		NTU	0.1	0.1
12/10/2012 12:15	Control Site	Overflow	Enterococci-Membrane Filter	2	U	cfu/100 mL	2	2
12/10/2012 12:15	Control Site	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	1
12/10/2012 12:15	Control Site	Overflow	Macroinvert-Marine-Quan-NatSubstr-# Taxa	42		# Taxa		
12/10/2012 12:15	Control Site	Pesticides	Sucralose	0.051	I	ug/L	0.011	0.053
12/10/2012 13:00	Test Site 1	AGP/LN	Algal Growth Potential	3.00	U	mg DryWt/L	3	3
12/10/2012 13:00	Test Site 1	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.20	U	mg/L	0.2	2
12/10/2012 13:00	Test Site 1	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.67	I	ug/L	0.55	1.7
12/10/2012 13:00	Test Site 1	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
12/10/2012 13:00	Test Site 1	Field Parameter	Dissolved Oxygen	7.61		mg/L		
12/10/2012 13:00	Test Site 1	Field Parameter	pH	7.97				
12/10/2012 13:00	Test Site 1	Field Parameter	Sample Depth	0.15		m		
12/10/2012 13:00	Test Site 1	Field Parameter	Specific Conductance	37688		umhos/cm		
12/10/2012 13:00	Test Site 1	Field Parameter	Temperature	20.11		C		
12/10/2012 13:00	Test Site 1	Metals	Aluminum	15	U	ug/L	15	60
12/10/2012 13:00	Test Site 1	Metals	Arsenic	0.75	U	ug/L	0.75	3
12/10/2012 13:00	Test Site 1	Metals	Cadmium	0.15	U	ug/L	0.15	0.6
12/10/2012 13:00	Test Site 1	Metals	Calcium	300		mg/L	0.22	0.9
12/10/2012 13:00	Test Site 1	Metals	Chromium	0.90	U	ug/L	0.9	3.6
12/10/2012 13:00	Test Site 1	Metals	Copper	1.5	U	ug/L	1.5	3
12/10/2012 13:00	Test Site 1	Metals	Iron	90	U	ug/L	90	360
12/10/2012 13:00	Test Site 1	Metals	Lead	0.60	U	ug/L	0.6	2.4

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 13:00	Test Site 1	Metals	Magnesium	967		mg/L	2	8
12/10/2012 13:00	Test Site 1	Metals	Nickel	0.75	U	ug/L	0.75	3
12/10/2012 13:00	Test Site 1	Metals	Selenium	0.60	U	ug/L	0.6	2.4
12/10/2012 13:00	Test Site 1	Metals	Silver	0.075	U	ug/L	0.075	0.3
12/10/2012 13:00	Test Site 1	Metals	Sodium	7740		mg/L	25	100
12/10/2012 13:00	Test Site 1	Metals	Zinc	15	U	ug/L	15	60
12/10/2012 13:00	Test Site 1	Nutrients	Alkalinity	100		mg CaCO3/L	0.65	2.5
12/10/2012 13:00	Test Site 1	Nutrients	Ammonia-N	0.010	U	mg N/L	0.01	0.02
12/10/2012 13:00	Test Site 1	Nutrients	Chloride	15000		mg Cl/L	40	100
12/10/2012 13:00	Test Site 1	Nutrients	Color (true)	2.5	U	PCU	2.5	6
12/10/2012 13:00	Test Site 1	Nutrients	Fluoride	1		mg F/L	0.18	0.5
12/10/2012 13:00	Test Site 1	Nutrients	Kjeldahl Nitrogen	0.26	I	mg N/L	0.16	0.4
12/10/2012 13:00	Test Site 1	Nutrients	NO2NO3-N	0.009	I	mg N/L	0.004	0.01
12/10/2012 13:00	Test Site 1	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/10/2012 13:00	Test Site 1	Nutrients	Organic Carbon	3.3		mg C/L	0.8	1.6
12/10/2012 13:00	Test Site 1	Nutrients	Sulfate	2000		mg SO4/L	40	100
12/10/2012 13:00	Test Site 1	Nutrients	Total-P	0.009	I	mg P/L	0.004	0.01
12/10/2012 13:00	Test Site 1	Nutrients	TSS	3	U	mg/L	3	10
12/10/2012 13:00	Test Site 1	Nutrients	Turbidity	0.35		NTU	0.1	0.1
12/10/2012 13:00	Test Site 1	Overflow	Enterococci-Membrane Filter	2	U	cfu/100 mL	2	2
12/10/2012 13:00	Test Site 1	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	1
12/10/2012 13:00	Test Site 1	Pesticides	Sucralose	0.09		ug/L	0.01	0.05
12/10/2012 13:00	Test Site 1	Field Parameter	Dissolved Oxygen	7.61		mg/L		
12/10/2012 13:00	Test Site 1	Field Parameter	pH	7.97				
12/10/2012 13:00	Test Site 1	Field Parameter	Sample Depth	0.15		m		
12/10/2012 13:00	Test Site 1	Field Parameter	Specific Conductance	37688		umhos/cm		
12/10/2012 13:00	Test Site 1	Field Parameter	Temperature	20.11		C		
12/10/2012 13:00	Test Site 1	Overflow	Macroinvert-Marine-Quan-NatSubstr-# Taxa	44		# Taxa		
12/10/2012 13:30	Test Site 2	AGP/LN	Algal Growth Potential	3.00	AU	mg DryWt/L	3	3
12/10/2012 13:30	Test Site 2	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.25	I	mg/L	0.2	2
12/10/2012 13:30	Test Site 2	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.68	I	ug/L	0.55	1.7
12/10/2012 13:30	Test Site 2	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
12/10/2012 13:30	Test Site 2	Field Parameter	Dissolved Oxygen	7.7		mg/L		
12/10/2012 13:30	Test Site 2	Field Parameter	pH	8				
12/10/2012 13:30	Test Site 2	Field Parameter	Sample Depth	0.15		m		
12/10/2012 13:30	Test Site 2	Field Parameter	Specific Conductance	38040		umhos/cm		
12/10/2012 13:30	Test Site 2	Field Parameter	Temperature	20.23		C		
12/10/2012 13:30	Test Site 2	Metals	Aluminum	15	U	ug/L	15	60

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 13:30	Test Site 2	Metals	Arsenic	0.81	I	ug/L	0.75	3
12/10/2012 13:30	Test Site 2	Metals	Cadmium	0.25	U	ug/L	0.25	1
12/10/2012 13:30	Test Site 2	Metals	Calcium	311		mg/L	0.22	0.9
12/10/2012 13:30	Test Site 2	Metals	Chromium	0.90	U	ug/L	0.9	3.6
12/10/2012 13:30	Test Site 2	Metals	Copper	1.5	U	ug/L	1.5	3
12/10/2012 13:30	Test Site 2	Metals	Iron	90	U	ug/L	90	360
12/10/2012 13:30	Test Site 2	Metals	Lead	1.0	U	ug/L	1	4
12/10/2012 13:30	Test Site 2	Metals	Magnesium	983		mg/L	2	8
12/10/2012 13:30	Test Site 2	Metals	Nickel	0.75	U	ug/L	0.75	3
12/10/2012 13:30	Test Site 2	Metals	Selenium	0.60	U	ug/L	0.6	2.4
12/10/2012 13:30	Test Site 2	Metals	Silver	0.12	U	ug/L	0.12	0.5
12/10/2012 13:30	Test Site 2	Metals	Sodium	7840		mg/L	25	100
12/10/2012 13:30	Test Site 2	Metals	Zinc	15	U	ug/L	15	60
12/10/2012 13:30	Test Site 2	Nutrients	Alkalinity	101		mg CaCO3/L	0.65	2.5
12/10/2012 13:30	Test Site 2	Nutrients	Ammonia-N	0.010	UJ	mg N/L	0.01	0.02
12/10/2012 13:30	Test Site 2	Nutrients	Chloride	15000		mg Cl/L	40	100
12/10/2012 13:30	Test Site 2	Nutrients	Color (true)	7.5	U	PCU	7.5	18
12/10/2012 13:30	Test Site 2	Nutrients	Fluoride	1		mg F/L	0.18	0.5
12/10/2012 13:30	Test Site 2	Nutrients	Kjeldahl Nitrogen	0.24	I	mg N/L	0.16	0.4
12/10/2012 13:30	Test Site 2	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
12/10/2012 13:30	Test Site 2	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/10/2012 13:30	Test Site 2	Nutrients	Organic Carbon	3.3		mg C/L	0.8	1.6
12/10/2012 13:30	Test Site 2	Nutrients	Sulfate	2000		mg SO4/L	40	100
12/10/2012 13:30	Test Site 2	Nutrients	Total-P	0.009	I	mg P/L	0.004	0.01
12/10/2012 13:30	Test Site 2	Nutrients	TSS	3	U	mg/L	3	10
12/10/2012 13:30	Test Site 2	Nutrients	Turbidity	0.45		NTU	0.1	0.1
12/10/2012 13:30	Test Site 2	Overflow	Enterococci-Membrane Filter	2	U	cfu/100 mL	2	2
12/10/2012 13:30	Test Site 2	Overflow	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL	1	1
12/10/2012 13:30	Test Site 2	Pesticides	Sucralose	0.089		ug/L	0.01	0.05
12/10/2012 13:30	Test Site 2	Overflow	Macroinvert-Marine-Quan-NatSubstr-# Taxa	42		# Taxa		
12/10/2012 11:00	Field Blank	Metals	Aluminum	5.0	U	ug/L	5	20
12/10/2012 11:00	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
12/10/2012 11:00	Field Blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
12/10/2012 11:00	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
12/10/2012 11:00	Field Blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
12/10/2012 11:00	Field Blank	Metals	Copper	0.50	U	ug/L	0.5	1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 11:00	Field Blank	Metals	Iron	30	U	ug/L	30	120
12/10/2012 11:00	Field Blank	Metals	Lead	0.20	U	ug/L	0.2	0.8
12/10/2012 11:00	Field Blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
12/10/2012 11:00	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
12/10/2012 11:00	Field Blank	Metals	Selenium	0.20	U	ug/L	0.2	0.8
12/10/2012 11:00	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
12/10/2012 11:00	Field Blank	Metals	Sodium	0.50	U	mg/L	0.5	2
12/10/2012 11:00	Field Blank	Metals	Zinc	5.0	U	ug/L	5	20
12/10/2012 11:00	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
12/10/2012 11:00	Field Blank	Nutrients	Ammonia-N	0.010	U	mg N/L	0.01	0.02
12/10/2012 11:00	Field Blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
12/10/2012 11:00	Field Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
12/10/2012 11:00	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
12/10/2012 11:00	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
12/10/2012 11:00	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
12/10/2012 11:00	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
12/10/2012 11:00	Field Blank	Nutrients	Organic Carbon	0.40	U	mg C/L	0.4	0.8
12/10/2012 11:00	Field Blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
12/10/2012 11:00	Field Blank	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
12/10/2012 11:00	Field Blank	Nutrients	Turbidity	0.10	U	NTU	0.1	0.1
12/10/2012 11:00	Field Blank	Pesticides	Alachlor	0.33	U	ug/L	0.33	1.3
12/10/2012 11:00	Field Blank	Pesticides	Ametryn	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Atrazine	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Azinphos Methyl	0.11	U	ug/L	0.11	0.44
12/10/2012 11:00	Field Blank	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.89
12/10/2012 11:00	Field Blank	Pesticides	Butylate	0.11	U	ug/L	0.11	0.44
12/10/2012 11:00	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Chlorpyrifos Methyl	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Diazinon	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Ethion	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Ethoprop	0.028	U	ug/L	0.028	0.11
12/10/2012 11:00	Field Blank	Pesticides	Fenamiphos	0.17	U	ug/L	0.17	0.67
12/10/2012 11:00	Field Blank	Pesticides	Fonofos	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Hexazinone	0.17	U	ug/L	0.17	0.67
12/10/2012 11:00	Field Blank	Pesticides	Malathion	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Metalaxyl	0.22	U	ug/L	0.22	0.89
12/10/2012 11:00	Field Blank	Pesticides	Metolachlor	0.33	U	ug/L	0.33	1.3
12/10/2012 11:00	Field Blank	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.44

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 11:00	Field Blank	Pesticides	Mevinphos	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Naled	0.22	U	ug/L	0.22	0.89
12/10/2012 11:00	Field Blank	Pesticides	Norflurazon	0.17	U	ug/L	0.17	0.67
12/10/2012 11:00	Field Blank	Pesticides	Parathion Ethyl	0.11	U	ug/L	0.11	0.44
12/10/2012 11:00	Field Blank	Pesticides	Parathion Methyl	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Phorate	0.028	U	ug/L	0.028	0.11
12/10/2012 11:00	Field Blank	Pesticides	Prometryn	0.11	U	ug/L	0.11	0.44
12/10/2012 11:00	Field Blank	Pesticides	Simazine	0.055	U	ug/L	0.055	0.22
12/10/2012 11:00	Field Blank	Pesticides	Sucralose	0.010	U	ug/L	0.01	0.051
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	44
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	66
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	44	U	ug/L	44	180
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.8
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	66
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	440
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.4

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	66
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.5	U	ug/L	5.5	22
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	44
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.5	U	ug/L	5.5	22
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Hexachloroethane	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.8
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.8
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.8
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Pentachlorophenol	3.3	U	ug/L	3.3	13
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.88
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.4
12/10/2012 11:00	Field Blank	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.88

Appendix G

Toxicological results

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Americamysis bahia

SOP#: TA07_15 EPA-821-R-02-014 Method 1007.0

Facility: Navarre Beach WWTP
Address: 1411 Utility Dr. ZIP
County: Navarre, Florida 32566-7153
NPDES Permit #: FL 0023981
Contact/District: Nathan Mulkey / Northwest

Start Date: 12-11-12 Time: 1400
End Date: 12-18-12 Time: 1015

Organism age : 1 days
Feeding Prior to Test and Daily
Artemia Lot # : 0813
Chamber size : 400 ml
Test volume : 250 ml

Artemia Batch #	Day 3 12-12
Day 0 12-12	Day 4 12-12
Day 1 12-12	Day 5 12-12
Day 2 12-12	Day 6 12-12

Diluent/ Batch:
ASW / 12-11-12 Test Days Used: 0-6
ASW /_____ Test Days Used: _____

LIMS entry: 1-2-13 MF Entry Verification: 1.2.13 BA

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH- 2012-12-11-07	1472245	12/10/2012 1000	12/11/12 1009
Test Day 2	2	TLH- 2012-12-13-43	1473389	12/12/2012 1000	12/13/12 0928
Test Day 4	3	TLH- 2012-12-11-01	1473726	12/14/2012 1000	12/15/12 0908

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	NOT measured			<0.03	<0.03	<0.03	49	45	49	131	137	131
Diluent/Control:				<0.03	—	—	211			—		
Method:				Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:				MF	MF	MF	~~MF/BA/HW~~	MF	MF	HW	MF	MF
Verified by:	MF	MF	MF	BA	BA	BA	MF	BA	BA	MF	BA	BA

	Conductivity (circle one) (µmhos-cm) mmhos-cm)			Ammonia (mg/L)			Salinity (original sample) (ppth)			Salinity (adjusted sample) (ppth)		
Lab Sample#:	1	2	3	1	2	3	1 MF	2	3	MF-1	2	3
µmhos Sample:	1282			<0.017	0.023	<0.017	~~0.03~~ 0.62	0.60	0.63	~~32.1~~ 20)	19.7	19.3
mmhos Diluent/Control:	32.1	34.7	32.7	<0.034	<0.034	<0.034	20.0	21.6	20.4	~~32.1~~ 20)	31.4	20.4
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler	Mettler	Mettler	Mettler
Measured by:	~~BA~~ BA	MF/BA	MF/BA	MF	MF	MF	BA/MF	MF/BA	MF/BA	BA	BA	BA
Verified by:	MF	BA/MF	BA/MF	BA	BA	BA	MF/BA	1 /MF	/MF	MF	MF	MF

Parameters are for original sample except as noted.

Results	
Growth NOEC:	100%
Growth LOEC:	>100%
Growth IC_{20}:	>100%
Growth IC_{25}:	>100%
Ctrl % CV:	5.97%
Dunnetts PMSD:	7.29%
Survival NOEC:	100%
Survival LOEC:	>100%

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (all samples) (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 24.5 max 26.5 mean —
Water bath # ____ min. _____ max. _____ mean _____
Room B246 min. 25.2 max. 25.8 mean —

Investigators' signatures	Initials
Marshall Faircloth	MF
Hans Walker	HW
Brandi Albritton	BA
Lisa Miller	LM

REVIEWER

Comments: Sample 1 salinity adjusted from 0.62 ppth to 20ppt by the addition of artificial sea salts, Sample 2 (0.60ppth) and sample 3 (0.63 ppth) salinity adjusted by the addition of artificial seasalts to ~ 20 ± 1 ppth. MF 1-3-13

Test Page 1 of 8

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revised 2/201/11 MF

Chronic Survival Benchsheet

A. bahia SOP TA07_15

Loaded by (0 hour): BA Verified by (0 hour): MF

Concentration: ~~µg/L~~ mf % D = dead M = missing

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
SALT Control	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
100%	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
Checked by:			MF	MF	MF	BA	MF	MF	BA

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
Checked by:									

Comments: Due to insufficient # of organism, a regular Control was not run. MF 1-17-13

revised 2/20/11 MF

Test Page 2 of 8

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A. bahia Chronic Parameters Benchsheet

SOP TA07_15

Start Date: 12-11-12 Time: 1400

End Date: 12-18-12 Time: 1015

Organism: *A. bahia*

Concentration: µg/L % mf

Test Day		Before Renewal						After Renewal					
↓	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 0	salt Control	A	8.3	24.0	6.4	32.1	20.0						
	100%	A	8.7	24.0	6.5	32.1	20.0						
		A											
		A											
		A											
		A											
		A											
		A											
	Measured by:		BA	BA	BA	BA	BA						
	Recorded by:		BA	BA	BA	BA	BA						
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 1	salt Control	B	8.3	24.0	6.4	32.9	20.6	B	8.2	24.0	6.5	34.3	21.4
	100%	B	8.3	24.1	6.3	33.1	20.7	B	8.5	24.0	6.3	30.8	19.1
		B						B					
		B						B					
		B						B					
		B						B					
		B						B					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 2	salt Control	C	8.2	24.0	6.4	34.7	21.6	C	8.3	24.0	6.6	32.8	20.4
	100%	C	8.3	24.0	6.5	31.7	19.7	C	8.6	24.0	6.6	31.6	19.7
		C				BBA		C					
		C						C					
		C						C					
		C						C					
		C						C					
		C						C					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 3	salt Control	D	8.2	24.0	6.4	33.6	21.1	D	8.3	24.0	6.7	32.3	20.1
	100%	D	8.2	24.0	6.4	32.5	20.4	D	8.4	24.0	6.8	31.0	19.3
		D						D					
		D						D					
		D						D					
		D						D					
		D						D					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

revised 2/20/11 MF

A. bahia Chronic Parameters Benchsheet

SOP TA07_15

Start Date: 12.11.12 Time: 1900

End Date: 12-18-12 Time: 1015

Organism: *A. bahia*

Concentration: ~~µg/L~~ % MH

Test Day ↓	Conc	Before Renewal: Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	After Renewal: Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 4	Salt Control	E	8.1	24.2	6.1	32.7	20.4	E	8.2	24.0	6.5	31.9	19.9
	100%	E	8.1	24.0	6.0	31.1	19.3	E	8.4	24.0	6.4	30.9	19.2
		E						E					
		E						E					
		E						E					
		E						E					
		E						E					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 5	Salt Control	F	8.2	24.2	6.1	32.1	20.2	F	8.2	24.6	4.9	32.0	20.0
	100%	F	8.2	24.1	6.1	32.2	20.1	F	8.4	24.9	4.8	32.2	20.1
		F						F					
		F						F					
		F						F					
		F						F					
		F						F					
	Measured by:		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 6	Salt Control	G	8.2	25.3	6.3	32.6	20.3	G	8.0	24.0	6.3	33.0	20.6
	100%	G	8.2	25.4	6.3	32.5	20.3	G	8.4	24.0	6.3	30.4	18.8
		G						G					
		G						G					
		G						G					
		G						G					
		G						G					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 7	Salt Control	H	8.0	24.0	5.9	33.5	20.9						
	100%	H	8.1	24.0	5.8	31.2	19.4						
		H											
		H											
		H											
		H											
		H											
	Measured by:		BA	BA	BA	BA	BA						
	Recorded by:		BA	BA	BA	BA	BA						

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

revised 2/20/11 MF

Chronic Weighing Benchsheet

A. bahia

Reference SOPs TA07_15 and TA06_21

mean wt =Mysid wt divided by 5

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mean Mysid wt. g	Original # mysids	Mean wt. mg Mysid g	Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg
Salt Control	A	69	0.0 1921	0.0 2050	0.00258	5	0.0129		A					5	
	B	70	0.0 1967	0.0 2087	0.00240	5	0.012		B					5	
	C	71	0.0 1981	0.0 2110	0.00258	5	0.0129		C					5	
	D	72	0.0 1970	0.0 2115	0.00290	5	0.0145		D					5	
	E	73	0.0 1868	0.0 1994	0.00252	5	0.0126		E					5	
	F	74	0.0 1785	0.0 1907	0.00244	5	0.0122	0.259	F					5	
	G	75	0.0 1901	0.0 2033	0.00264	5	0.0132		G					5	
	H	76	0.0 1821	0.0 1954	0.00266	5	0.0133		H					5	
	A	77	0.0 1963	0.0 2083	0.0024	5	0.012		A					5	
100%	B	78	0.0 1871	0.0 1997	0.00252	5	0.0126		B					5	
	C	79	0.0 1890	0.0 2019	0.00258	5	0.0129		C					5	
	D	80	0.0 1884	0.0 2033	0.00298	5	0.0149	0.244	D					5	
	E	81	0.0 1877	0.0 1983	0.00212	5	0.0106		E					5	
	F	82	0.0 1917	0.0 2043	0.00252	5	0.0126		F					5	
	G	83	0.0 1791	0.0 1904	0.00226	5	0.0113		G					5	
	H	84	0.0 1914	0.0 2029	0.0023	5	0.0115		H					5	
	A					5			A					5	
	B					5			B					5	
	C					5			C					5	
	D					5			D					5	
	E					5			E					5	
	F					5			F					5	
	G					5			G					5	
	H					5			H					5	
	A					5			A					5	
	B					5			B					5	
	C					5			C					5	
	D					5			D					5	
	E					5			E					5	
	F					5			F					5	
	G					5			G					5	
	H					5			H					5	
Weighed by initials:			BA	BA				Weighed by initials:							

Comments:

Chronic Weighing Benchsheet

Quality Control

A. bahia

SOPs TA07_15 and TA06_21

Empty Pan Weights Date: 12.17.12 By: BA

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01867	@ 0.01868
after Pan 10	0.01867	@ 0.01868
after Pan 15	0.01869	@ 0.01868
after Pan 20	0.01868	@ 0.01868
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)		S-weight Value (g)
S-weights	0.01001	@	0.01
	0.04999	@	0.05

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

Fish + Pan Weights Date: 12.20.12 By: BA

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02027	@ 0.02025
after Pan 10	0.02024	@ 0.02025
after Pan 15	0.02027	@ 0.02025
after Pan 20	0.02026	@ 0.02025
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)		S-weight Value (g)
S-weights	0.01997	@	0.02
	0.05001	@	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 2/20/11 MF

A. bahia Chronic Fecundity Bench Sheet

Americamysis bahia SOP TA07_15

Concentration	Replicate	Total Mysids	Females		Males	Immature	Concentration	Replicate	Total Mysids	Females		Males	Immature
			Eggs	No Eggs						Eggs	No Eggs		
Control	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
Checked by:							Checked by:						

Comments: This Page NOT Used.

revised 2/20/11 MF

Test ID: Navarre MF Beach WWTP Dates: December 11-18, 2012

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

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

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

entered by MFaircloth 1-3-13

V 1.1 9/21/10 MF/jd

Page 48

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: ASW 12-11-12 Test Days Used: 0-6

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : CuCl2 / 12-11-12

Artemia Lot # : 08813

Start Date: 12-11-12 Time: 1230

End Date: 12-18-12 Time: 1000

Organism Batch #/ Age: 12-11-12 / 10 days

Artemia Batch #	Day 2 164-12	Day 5 167-12
Day 0 162-12	Day 3 165-12	Day 6 168-12
Day1 163-12	Day 4 166-12	

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 ASW 12-11-12	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	MF	BA
Alkalinity (mg/L as $CaCO_3$):	211		HACH	HW	MF
Hardness (mg/L as $CaCO_3$):	—		HACH	—	—
Total Ammonia (mg/L as N):	<0.034		DENVER	MF	BA
Conductivity µmhos-cm ~~mmhos-cm~~:	33.8		METTLER	BA	MF

Statistics	
Growth NOEC:	125 ug/L
Growth LOEC:	250 ug/L
Growth IC_{20}:	166.3 ug/L
Growth IC_{25}:	176.6 ug/L
Ctrl % CV:	15%
Dunnetts PMSD:	30.8%
Survival NOEC:	125 ug/L
Survival LOEC:	250 ug/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 3 min. 24.5 max. 26.5

Water bath # ____ min. _____ max. _____

Room B246 min. 25.2 max. 25.8

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

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

Investigators' signatures

Marshall Faircloth (MF)

Hans Wabbe

Bill Nula

Liz Miller

REVIEWER

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) MF

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	F1	10	10	9 1D	9	9	9	9	9
	B	F2	10	9 1D	8 1D	7 1D	6 1D	6	6	6
	C	F3	10	10	10	10	10	10	10	10
	D	F4	10	10	10	10	10	10	10	10
62.5 ug/L	A	F5	10	10	9 1D	8 1D	8	8	8	8
	B	F6	10	9 MF	9	9	9	9	9	9
	C	F7	10	10 MF	10 9 MF	10	10	10	10	10
	D	F8	10	10 MF	9 1D	9	9	9	9	9
125 ug/L	A	F9	10	10 MF	9 1D	9	9	9	9	9
	B	F10	10	10 MF	8 2D	8	8	8	8	8
	C	F11	10	9 MF	9	9	9	9	9	9
	D	F12	10	9 MF	8 1D	8	8	8	8	8
250 ug/L	A	F13	10	BA	7 1D	6 1D	6	6	6	6
	B	F14	10	BA	3	3	3	3	3	3
	C	F15	10	BA	1 2D	1	1	1	1	1
	D	F16	10	BA	5 3D	4 1D	4	4	4	4
500 ug/L	A	F17	10	MF 3 7D	0 3D					
	B	F18	10	1 9D	0 1D					
	C	F19	10	2 8D	0 2D					
	D	F20	10	2 8D	0 2D					
1000 ug/L	A	F21	10	0 10D	—					
	B	F22	10	1 9D	0 1D					
	C	F23	10	0 10D	—					
	D	F24	10	0 10D	—					
	A	~~F25~~ MF	10							
	B	~~F26~~ MF	10							
	C		10							
	D		10							
Loaded by (0 hr): BA		Checked by:		MF	MF	MF	MF	MF	MF	MF
Verified by (0 hr): MF										
Concentrations prepared by:				BA	BA	BA	BA	MF	MF	MF

Comments:

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: 12-11-12 End Date: 12-18-12

Start Time: 1230 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day		Before Renewal						After Renewal					
←	Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	8.2	24.0	6.6	33.8	21.1						
	62.5	A	8.2	24.0	6.8	33.5	20.1						
	125	A	8.2	24.0	7.2	33.8	21.2						
	250	A	8.2	24.0	7.3	33.8	21.2						
	500	A	8.2	24.0	7.3	33.8	21.1						
	1000	A	8.1	24.0	7.3	33.8	21.2						
		A											
	Measured by		BA	BA	BA	BA	BA						
	Recorded by		BA	BA	BA	BA	BA						
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	8.3	25.2	6.3	34.2	21.6	B	8.3	24.0	6.3	33.9	21.2
	62.5	B	8.3	24.0	6.3	33.9 BA 21.3	~~34.2~~	B	8.3	24.0	6.3	33.9	21.3
	125	B	8.3	24.7	6.2	33.9	21.2	B	8.3	24.0	6.2	33.9	21.2
	250	B	8.3	24.0	6.3	34.9	21.9	B	8.3	24.0	6.2	34.3	21.5
	500	B	8.3	24.2	6.3	34.1	21.4	B	8.3	24.0	6.2	33.4	20.9
	1000	B	8.2	24.3	6.3	34.2	21.4	B	8.2	24.0	6.4	33.7	21.1
		B						B					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	8.3	25.4	6.1	33.9	21.4	C	8.3	24.0	6.4	33.8	21.1
	62.5	C	8.3	25.4	6.1	34.2	21.4	C	8.3	24.0	6.4	33.9	21.2
	125	C	8.3	25.6	6.1	34.1	21.3	C	8.3	24.0	6.4	33.7	21.1
	250	C	8.3	25.7	6.2	34.5	21.7	C	8.3	24.0	6.5	33.9	21.3
	500	C	8.3	26.0	6.3	33.4	20.9	C					
	1000	B C	8.3	25.8	6.3	33.7	21.1	C					
		C						C					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	8.2	25.2	6.8	34.5	21.7	D	8.2	24.0	6.4	33.9	21.2
	62.5	D	8.2	26.0	6.7	35.4	22.3	D	8.2	24.0	6.3	33.9	21.2
	125	D	8.3	25.2	6.5	34.9	21.9	D	8.3	24.0	6.3	33.9	21.3
	250	D	8.2	25.1	6.4	34.8	21.9	D	8.2	24.0	6.4	34.0	21.3
	BA ~~500~~	D						D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA

Comments:

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

Chronic SRT Parameters Benchsheet

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

Start Date: 12-11-12 End Date: 12-18-12

Start Time: 1230 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	8.1	24.3	5.7	34.6	21.8	A	8.2	24.0	6.2	34.5	~~34.5~~ BA 21.5
	62.5	A	8.2	24.1	6.1	35.6	22.4	A	8.2	24.0	6.2	34.6	21.8
	125	A	8.2	24.0	6.1	35.1	21.9	A	8.2	24.0	6.2	34.3	21.5
	250	A	8.1	24.0	6.0	34.8	21.9	A	8.2	24.0	6.3	33.8	21.2
		A						A					
		A						A					
		A						A					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	8.0	24.1	5.7	34.8	21.9	B	8.2	24.7	6.4	33.7	20.9
	62.5	B	8.1	24.3	6.0	35.1	22.1	B	8.2	24.8	6.4	34.3	21.5
	125	B	8.1	24.3	6.0	35.0	22.1	B	8.2	24.8	6.4	33.9	21.3
	250	B	8.1	24.4	6.2	34.9	22.0	B	8.2	24.7	6.4	33.7	21.2
		B						B					
		B						B					
		B						B					
	Measured by		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Recorded by		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	8.1	25.3	6.4	34.0	21.4	C	8.1	24.0	6.0	33.9	21.2
	62.5	C	8.1	24.9	6.7	34.5	~~21.7~~ BA	C	8.1	24.0	6.1	34.5	~~33.9~~ 21.6BA
	125	C	8.1	25.0	6.6	34.4	21.6	C	8.1	24.0	6.0	34.3	21.5
	250	C	8.1	24.9	6.6	34.4	21.5	C	8.1	24.0	6.0	33.7	21.1
		C						C					
		C						C					
		C						C					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	8.0	24.4	5.5	35.1	22.0	D					
	62.5	D	8.0	24.0	5.6	34.7	21.8	D					
	125	D	8.0	24.0	5.7	34.6	21.7	D					
	250	D	8.0	24.0	5.7	34.6	21.8	D					
		D						D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA	BA						
	Recorded by		BA	BA	BA	BA	BA						

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

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

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

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	
Control	A	41	0.01907	0.02689	0.00782	10	0.782	
	B	42	0.01837	0.02392	0.00555	10	0.555	0.7155
	C	43	0.01904	0.02667	0.00763	10	0.763	
	D	44	0.01822	0.02584	0.00762	10	0.762	
62.5	A	45	0.01905	0.02705	0.00800	10	0.800	
	B	46	0.01971	0.02839	0.00868	10	0.868	0.8513
	C	47	0.01964	0.02918	0.00954	10	0.954	
	D	48	0.01842	0.02625	0.00783	10	0.783	
125	A	49	0.01903	0.02841	0.00938	10	0.938	
	B	50	0.01875	0.02726	0.00851	10	0.851	0.8443
	C	51	0.01925	0.02814	0.00889	10	0.889	
	D	52	0.01948	0.02647	0.00699	10	0.699	
250	A	53	0.01823	0.02296	0.00473	10	0.473	
	B	54	0.01892	0.02083	0.00191	10	0.191	0.3173
	C	55	0.01929	0.02012	0.00083	10	0.083	
	D	56	0.01845	0.02367	0.00522	10	0.522	
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	BA	BA				

Comments:

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

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: 12,17,12 Weighed by: BA

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01868	@ 0.01868
after Pan 10	0.01866	@ 0.01868
after Pan 15	0.01868	@ 0.01868
after Pan 20	0.01868	@ 0.01868
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	0.0001	@ 0.01
	0.04999	@ 0.05

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 12.20.12 Weighed by: BA

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02023	@ 0.02025
after Pan 10	0.02023	@ 0.02025
after Pan 15	0.02023	@ 0.02025
after Pan 20	0.02024	@ 0.02025
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	0.1997	@ 0.02
	0.0500	@ 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: Meridia SRT December 2012 Dates: 12-11-12 — 12-18-12

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+5
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: M. Faircloth 1-2-13

V 1.2 2/20/11 MF/jd

~~Test Page 8 of 8~~ 98

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Appendix H

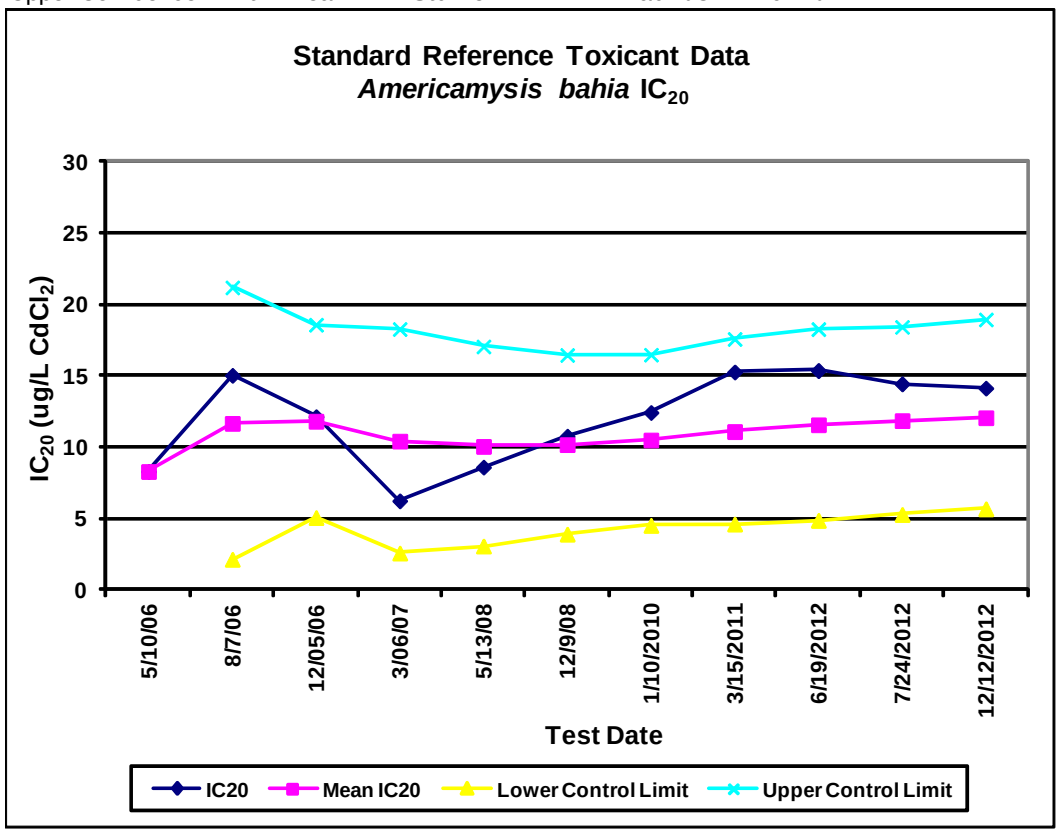
Standard Reference Toxicant Data

Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
5/10/06	8.3284	8.33			
8/7/06	15.064	11.70	4.76	2.17	21.22
12/05/06	12.168	11.85	3.38	5.10	18.61
3/06/07	6.27	10.46	3.92	2.61	18.31
5/13/08	8.63	10.09	3.50	3.10	17.08
12/9/08	10.8	10.21	3.14	3.93	16.49
1/10/2010	12.46	10.53	2.99	4.55	16.51
3/15/2011	15.3	11.13	3.24	4.65	17.61
6/19/2012	15.4	11.60	3.35	4.90	18.30
7/24/2012	14.47	11.89	3.29	5.32	18.46
12/12/2012	14.17	12.10	3.19	5.71	18.98

Fewer than 20 chronic SRTs (cadmium) have been performed for this species.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev
EPA %CV 75th percentile = 32%
Lab %CV = 26.4%



FDEP Biology Laboratory - Chronic SRT Benchsheet

Americamysis bahia

SOP#: TA07_15 EPA 821-R-02-014 Method 1007.0

Diluent/ Batch: ASW 12-1-12 Test Days Used: 0-6 Test Duration: 7 days
Diluent/ Batch: _____ Test Days Used: _____ Organism Batch # : 12-11-12
Toxicant/ Batch # : $CdCl_2$ 100mg/L 12-1-12 Organism Age: 7 days ✓MF
Artemia Lot # : 09813

Artemia Batch #		Day 2	164-12
Day 0	162-12	Day 3	165-12
Day 1	163-12	Day 4	166-12
Feeding: 2 X Daily		Day 5	167-12
150 artemia/mysid (total)		Day 6	168-12

Start Date: 12-11-12 Time: 1400
End Date: 12-18-12 Time: 1100

Chamber size : 400 mL (400 recommended)
Sample volume : 250 mL (minimum 150 ml)

Water Quality Parameters	Diluent	Diluent (or other)	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		MF	BA
Alkalinity (mg/L as $CaCO_3$):	211		HW	MF
Hardness (mg/L as $CaCO_3$):	—		—	—
Total Ammonia (mg/L as N):	<0.034		MF	BA
Conductivity mmhos-cm:	33.1		BA	MF
Salinity ppth:	20.7		BA	MF

Results	
Growth NOEC:	10 ug/L
Growth LOEC:	20 ug/L MF
Growth IC_{20}:	14.17 ug/L
Growth IC_{25}:	15.31 ug/L MF
Ctrl % CV	8.90 %
Dunnetts PMSD:	12.05 %
Survival NOEC:	10 mg/L
Survival LOEC:	20 mg/L

PMSD Bounds for Growth
Lower: 11
Upper: 37

✓ one ☐ Waterbath: #____
Test incubated in: ☑ Incubator: # 2

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
(if used) Incubator # 2 min. 25.3 max. 26.5 mean —
(if used) Water bath # ____ min. _____ max. _____ mean _____
Room B246 min. 25 ✓ max. ~~25.8~~ 25.9 mean —

Comments:

Investigators' signatures	Initials
Marshall Faircloth	MF
Bay Area	BA
Hans Wolfe	HW
Sign here	Print here

REVIEWER

revised 2/20/11 MF

Chronic SRT Survival Benchsheet

A. bahia SOP TA07_15

Loaded by (0 hour): BA Verified by (0 hour): MF Concentration: µg/L D = dead M = missing

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
Control	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
5 µg/L	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
10 µg/L	A	5	5	5	5	5	5	5	5
	B	5	5	5	5	5	5	5	5
	C	5	5	5	5	5	5	5	5
	D	5	5	5	5	5	5	5	5
	E	5	5	5	5	5	5	5	5
	F	5	5	5	5	5	5	5	5
	G	5	5	5	5	5	5	5	5
	H	5	5	5	5	5	5	5	5
20 µg/L	A	5	5	4 1D	4	4	4	4	4
	B	5	5	5	4 1D	4	3 1D	3	2 1D
	C	5	5	5	3 2D	3	3	3	3
	D	5	5	5	~~0 5D~~	3 2D	3	3	3
	E	5	5	5	4 1D	4	3 1D	2 1D	2
	F	5	5	5	3 2D	3	3	3	3
	G	5	5	5	5	5	5	5	5
	H	5	4 1D	4	4	4	4	4	4
Checked by:			BA	BA	BA	BA	MF	BA	BA

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
40 µg/L	A	5	5	5	2 3D	2	0 2D	—	
	B	5	5	2 3D	0 2D	—	0	—	
	C	5	5	4 1D	1 3D	1	1	0 1D	
	D	5	5	1 4D	1	1	1	0 1D	
	E	5	5	1 4D	0 1D	—	—	—	
	F	5	5	3 2D	2 1D	~~0 2D~~ 2 Bk	1 1D	0 1D	
	G	5	5	4 1D	1 3D	1	0 1D	—	
	H	5	5	3 2D	0 3D		—	—	
80 µg/L	A	5	4 1D	0 4D	—	—			
	B	5	5	2 3D	0 2D	—			
	C	5	5	0 5D	—	—			
	D	5	4 1D	1 3D	0 1D	—			
	E	5	5	0 5D	—	—			
	F	5	4 1D	1 3D	1	0 1D			
	G	5	5	2 3D	0 2D	←			
	H	5	5	0 5D	—	—			
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
	A	5							
	B	5							
	C	5							
	D	5							
	E	5							
	F	5							
	G	5							
	H	5							
Checked by:			BA	BA	BA	MF	MF	BA	

Comments:

revised 2/20/11 MF

A. bahia Chronic Parameters Benchsheet

SOP TA07_15

Start Date: 12.11.12 Time: 1400

End Date: 12-18-12 Time: 1100

Organism: *A. bahia*

Concentration: µg/L

Test Day		Before Renewal						After Renewal					
	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 0	Control	A	8.2	24.6	6.0	33.1	20.7						
	5	A	8.2	24.4	6.2	33.2	20.7						
	10	A	8.2	24.1	6.4	33.4	20.9						
	20	A	8.2	24.0	6.5	33.6	21.0						
	40	A	8.2	24.0	6.5	33.5	21.0						
	80	A	8.2	24.0	6.5	33.9	21.2						
		A											
	Measured by:		BA	BA	BA	BA	BA						
	Recorded by:		BA	BA	BA	BA	BA						
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 1	Control	B	8.2	25.3	5.9	34.0	20.9	B	8.3	24.9	6.2	33.0	20.5
	5	B	8.2	24.7	5.9	33.9	21.3	B	8.3	24.5	6.3	33.2	20.8
	10	B	8.2	24.9	5.9	34.3	21.5	B	8.3	24.2	6.3	33.5	20.9
	20	B	8.2	24.7	5.9	35.0	22.0	B	8.3	24.0	6.1	33.8	21.2
	40	B	8.2	25.1	5.9	34.7	21.8	B	8.3	24.0	6.2	33.9	21.2
	80	B	8.1	25.1	6.1	35.4	22.2	B	8.2	24.0	6.4	34.1	21.4
		B						B					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 2	Control	C	8.2	24.4	5.9	33.8	21.0	C	8.2	24.2	6.4	33.3	21.0
	5	C	8.2	24.8	5.8	34.3	21.6	C	8.3	24.0	6.4	33.7	21.0
	10	C	8.2	25.9	5.9	34.1	21.4	C	8.3	24.0	6.4	33.9	21.3
	20	C	8.2	25.9	5.9	34.4	21.6	C	8.3	24.0	6.4	34.1	21.4
	40	C	8.2	25.8	5.9	33.9	21.2	C	8.3	24.0	6.4	33.9	21.2
	80	C	8.2	25.4	5.9	34.3	21.5	C	8.2	24.0	6.3	34.3	21.5
		C						C					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 3	Control	D	8.1	25.7	6.6	35.3	22.5	D	8.1	24.8	6.2	33.3	21.0
	5	D	8.2	25.4	5.8	35.1	22.1	D	8.2	24.3	6.3	33.5	20.9
	10	D	8.2	24.9	5.8	35.3	22.2	D	8.2	24.1	6.3	33.8	21.2
	20	D	8.2	25.1	6.1	35.7	22.4	D	8.2	24.0	6.4	33.9	21.2
	40	D	8.1	24.8	6.1	35.4	22.4	D	8.2	24.0	6.4	34.0	21.3
	80	D	8.1	25.1	6.3	35.3	22.2	D	8.2	24.0	6.4	34.0	21.3
		D						D					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

revised 2/20/11 MF

A. bahia Chronic Parameters Benchsheet

SOP TA07_15

Start Date: 12-11-12 Time: 1400

End Date: 12-18-12 Time: 1100

Organism: *A. bahia*

Concentration: µg/L

Test Day		Before Renewal						After Renewal					
	Conc	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)	Test Rep	pH (su)	Temp (°C)	DO (mg/L)	Cond (mmhos-cm)	Sal (ppth)
Day 4	Control	E	8.1	24.7	5.6	34.9	22.1	E	8.2	24.0	5.7	34.3	21.7
	5	E	8.1	24.4	5.2	35.2	22.2	E	8.2	24.0	5.9	34.3	21.5
	10	E	8.0	24.6	5.3	35.1	22.1	E	8.2	24.0	5.9	34.5	21.6
	20	E	8.0	24.6	5.3	35.0	22.0	E	8.2	24.0	6.0	34.3	21.5
	40	E	8.0	24.6	5.4	35.6	22.4	E	8.2	24.0	6.2	34.5	21.6
	80	E	8.0	24.6	5.4	35.2	22.1	E					
		E						E					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 5	Control	F	8.1	24.3	6.0	34.5	21.8	F	8.1	24.6	6.8	33.7	21.4
	5	F	8.1	24.3	6.1	35.0	22.2	F	8.2	24.6	6.8	34.0	21.4
	10	F	8.1	24.1	6.1	34.9	22.0	F	8.2	24.6	6.9	34.2	21.5
	20	F	8.1	24.2	6.2	35.0	22.1	F	8.2	24.6	6.9	34.5	21.7
	40	F	8.0	24.1	6.3	35.1	22.2	F	8.2	24.7	7.0	34.3	21.5
		F						F					
		F						F					
	Measured by:		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 6	Control	G	8.0	24.9	6.8	34.2	21.2	G	8.1	24.3	5.8	34.1	21.4
	5	G	8.0	25.1	6.7	33.9	21.2	G	8.1	24.1	5.8	~~21.3~~ 34.1	21.3
	10	G	8.0	25.5	6.7	34.3	21.5	G	8.1	~~24.9~~ 24.1	5.9	34.1	21.5
	20	G	8.0	25.6	6.7	34.5	21.7	G	8.1	24.0	5.9	33.9	21.2
	40	G	8.0	25.5	6.7	34.7	21.8	G					
		G						G					
		G						G					
	Measured by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Conc	Rep	pH	Temp	DO	Cond	Sal	Rep	pH	Temp	DO	Cond	Sal
Day 7	Control	H	7.9	25.3	5.8	34.6	21.6						
	5	H	7.9	24.9	5.7	34.6	21.7						
	10	H	7.9	24.7	5.6	35.3	22.1						
	20	H	7.9	24.4	5.5	34.6	21.8						
	~~40~~ BA	H											
		H											
		H											
	Measured by:	—	BA	BA	BA	BA	BA						
	Recorded by:	—	BA	BA	BA	BA	BA						

conc = concentration rep = replicate cond = conductivity Sal = salinity

Comments:

revised 2/20/11 MF

Chronic SRT Test Weighing Benchsheet

A. bahia

Reference SOPs TA07_15 and TA06_21

mean wt =Mysid wt divided by 5 — convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg	Concentration	Replicate	Pan #	Pan wt. g	Pan + mysid g	Mysid wt. g	Original # mysids	Mean wt. mg
Control	A	1	0.01868	0.02025	0.00157	5	0.314		A					5	
	B	2	0.01906	0.02040	0.00134	5	0.268		B					5	
	C	3	0.01886	0.02023	0.00157	5	0.314		C					5	
	D	4	0.01849	0.01998	0.00149	5	0.298		D					5	
	E	5	0.01932	0.02059	0.00127	5	0.254		E					5	
	F	6	0.01924	0.02050	0.00126	5	0.252		F					5	
	G	7	0.01999	0.02135	0.00136	5	0.272		G					5	
	H	8	0.01854	0.01990	0.00136	5	0.272		H					5	
5	A	9	0.01947	0.02092	0.00145	5	0.290		A					5	
	B	10	0.01927	0.02097	0.00165	5	0.330		B					5	
	C	11	0.01932	0.02091	0.00159	5	0.318		C					5	
	D	12	0.01884	0.01966	0.00162	5	0.324		D					5	
	E	13	0.01843	0.01993	0.00150	5	0.300		E					5	
	F	14	0.01997	0.02158	0.00160	5	0.322		F					5	
	G	15	0.01979	0.02126	0.00147	5	0.294		G					5	
	H	16	0.01930	0.02136	0.00206	5	0.412		H					5	
10	A	17	0.01834	0.01983	0.00147	5	0.294		A					5	
	B	18	0.01972	0.02111	0.00139	5	0.278		B					5	
	C	19	0.01979	0.02115	0.00136	5	0.272		C					5	
	D	20	0.01887	0.02050	0.00163	5	0.326		D					5	
	E	21	0.01911	0.02067	0.00156	5	0.312		E					5	
	F	22	0.01953	0.02100	0.00147	5	0.294		F					5	
	G	23	0.01994	0.02129	0.00145	5	0.290		G					5	
	H	24	0.01886	0.02041	0.00155	5	0.310		H					5	
20	A	25	0.01934	0.02036	0.00102	5	0.204		A					5	
	B	26	0.01994	0.02060	0.00066	5	0.132		B					5	
	C	27	0.02048	0.02124	0.00078	5	0.156		C					5	
	D	28	0.01871	0.01950	0.00079	5	0.158		D					5	
	E	29	0.01931	0.01991	0.00060	5	0.120		E					5	
	F	30	0.01839	0.01902	0.00063	5	0.126		F					5	
	G	31	0.01924	0.02032	0.00108	5	0.216		G					5	
	H	32	0.01945	0.02047	0.00102	5	0.204		H					5	
Weighed by initials:			BS	BS				Weighed by initials:							

Comments:

Chronic SRT Test Weighing Benchsheet

Quality Control

A. bahia

SOPs TA07_15 and TA06_21

Empty Pan Weights Date: 12.17.12 By: BA

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01868	@ 0.01868
after Pan 10	0.01869	@ 0.01868
after Pan 15	0.01871 BA	@ 0.01868
after Pan 20	0.01868	@ 0.01868
after Pan 25	0.01867	@ 0.01868
after Pan 30	0.01867	@ 0.01868
after Pan 35	0.01867	@ 0.01868
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)	S-weight Value (g)
S-weights	0.01001	@ 0.01
	0.04999	@ 0.05

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

Fish + Pan Weights Date: 12.20.12 By: BA

Weights in grams	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02024	@ 0.02025
after Pan 10	0.02028	@ 0.02025
after Pan 15	0.02028	@ 0.02025
after Pan 20	0.02028	@ 0.02025
after Pan 25	0.02024	@ 0.02025
after Pan 30	0.02028	@ 0.02025
after Pan 35	0.02030 BA	@ 0.02025
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value (g)	S-weight Value (g)
S-weights	0.01997	@ 0.02
	0.05001	@ 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 2/20/11 MF

A. bahia Chronic SRT Fecundity Bench Sheet

Americamysis bahia SOP TA07_15

Concentration	Replicate	Total Mysids	Females		Males	Immature	Concentration	Replicate	Total Mysids	Females		Males	Immature
			Eggs	No Eggs						Eggs	No Eggs		
Control	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
	A							A					
	B							B					
	C							C					
	D							D					
	E							E					
	F							F					
	G							G					
	H							H					
Checked by:							Checked by:						

Comments:

Page not used. LM

Test ID: a Bahia Chronic SRT Dates: Dec, 11-18, 2012

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

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

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

entered by M. Faircloth 1-2-13

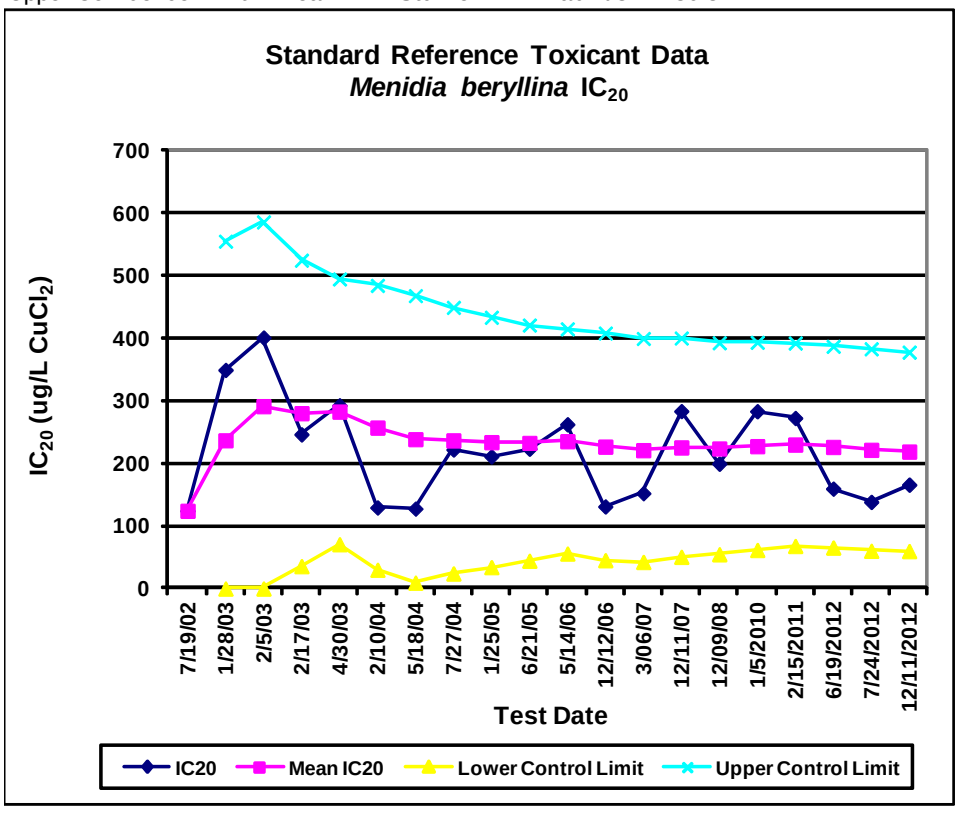
V 1.1 9/21/10 MF/jd

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
7/19/02	124.6	124.6			
1/28/03	349.9	237.2	159.3	0.0	555.9
2/5/03	401.6	292.0	147.3	0.0	586.6
2/17/03	246.8	280.7	122.4	36.0	525.5
4/30/03	293.2	283.2	106.1	71.0	495.5
2/10/04	129.8	257.6	113.7	30.2	485.1
5/18/04	128.0	239.1	114.8	9.5	468.7
7/27/04	222.6	237.1	106.4	24.2	449.9
1/25/05	211.5	234.2	99.9	34.4	434.1
6/21/05	223.7	233.2	94.3	44.6	421.7
5/14/06	262.9	235.9	89.9	56.1	415.6
12/12/06	131.5	227.2	90.8	45.5	408.9
3/06/07	152.6	221.4	89.4	42.6	400.2
12/11/07	284.0	225.9	87.5	50.9	400.9
12/09/08	200.0	224.2	84.6	55.0	393.4
1/5/2010	283.9	227.9	83.1	61.8	394.1
2/15/2011	273.0	230.6	81.2	68.2	392.9
6/19/2012	160.0	226.6	80.5	65.7	387.6
7/24/2012	138.7	222.0	80.8	60.5	383.6
12/11/2012	166.3	219.2	79.6	60.0	378.4

Fewer than 20 chronic SRTs have been performed for this species.
Lower Confidence Limit = mean - 2 * Std Dev EPA CV 75th percentile - 43%
Upper Confidence Limit = mean + 2 * Std Dev Lab %CV = 36.3



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: FSW 12-11-12 Test Days Used: 0-6

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : CuCl / 12-11-12

Artemia Lot # : 08813

Start Date: 12-11-12 Time: 1230

End Date: 12-18-12 Time: 1000

Organism Batch #/ Age: 12-11-12 / 10 days

Artemia Batch #					
Day 0	12-12	Day 2	12-12	Day 5	12-12
Day1	12-12	Day 3	12-12	Day 6	12-12
		Day 4	12-12		

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 FSW 12-11-12	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	MF	BA
Alkalinity (mg/L as $CaCO_3$):	211		HACH	HW	MF
Hardness (mg/L as $CaCO_3$):	—		HACH	—	—
Total Ammonia (mg/L as N):	<0.034		DENVER	MF	BA
Conductivity µmhos-cm ~~mmhos-cm~~:	33.8		METTLER	BA	MF

Statistics	
Growth NOEC:	125 ug/L
Growth LOEC:	250 ug/L
Growth IC_{20}:	166.3 ug/L
Growth IC_{25}:	176.6 ug/L
Ctrl % CV:	15%
Dunnetts PMSD:	30.8%
Survival NOEC:	125 ug/L
Survival LOEC:	250 ug/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 3 min. 24.5 max. 26.5

Water bath # ____ min. _____ max. _____

Room B246 min. 25.2 max. 25.8

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

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

Investigators' signatures

Marshall Faircloth (MF)

Hans Wabbe

Brec Mola

Liz Miller

REVIEWER

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)

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

D = dead M = missing

Concentration	Replicate	Chamber	TEST DAY 0	1	2	3	4	5	6	7
Control	A	F1	10	10	9 1D	9	9	9	9	9
	B	F2	10	9 1D	8 1D	7 1D	6 1D	6	6	6
	C	F3	10	10	10	10	10	10	10	10
	D	F4	10	10	10	10	10	10	10	10
62.5 µg/L	A	F5	10	10	9 1D	8 1D	8	8	8	8
	B	F6	10	9 MF	9	9	9	9	9	9
	C	F7	10	10 MF	10 MF	10	10	10	10	10
	D	F8	10	10 MF	9 1D	9	9	9	9	9
125 µg/L	A	F9	10	10 MF	9 1D	9	9	9	9	9
	B	F10	10	10 MF	8 2D	8	8	8	8	8
	C	F11	10	9 MF	9	9	9	9	9	9
	D	F12	10	9 MF	8 1D	8	8	8	8	8
250 µg/L	A	F13	10	8 MF	7 1D	6 1D	6	6	6	6
	B	F14	10	8 MF	3	3	3	3	3	3
	C	F15	10	8 MF	1 2D	1	1	1	1	1
	D	F16	10	8 MF	5 3D	4 1D	4	4	4	4
500 µg/L	A	F17	10	MF 3 7D	0 3D					
	B	F18	10	1 9D	0 1D					
	C	F19	10	2 8D	0 2D					
	D	F20	10	2 8D	0 2D					
1000 µg/L	A	F21	10	0 10D	—					
	B	F22	10	1 9D	0 1D					
	C	F23	10	0 10D	—					
	D	F24	10	0 10D	—					
	A	~~F25~~ MF	10							
	B	~~F26~~ MF	10							
	C		10							
	D		10							
Loaded by (0 hr): BA		Checked by:		MF	MF	MF	MF	MF	MF	MF
Verified by (0 hr): MF										
Concentrations prepared by:				BA	BA	BA	BA	MF	MF	MF

Comments:

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: 12-11-12 End Date: 12-18-12

Start Time: 1230 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day		Before Renewal						After Renewal					
	Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	8.2	24.0	6.6	33.8	21.1						
	62.5	A	8.2	24.0	6.8	33.5	20.1						
	125	A	8.2	24.0	7.2	33.8	21.2						
	250	A	8.2	24.0	7.3	33.8	21.2						
	500	A	8.2	24.0	7.3	33.8	21.1						
	1000	A	8.1	24.0	7.3	33.8	21.2						
		A											
	Measured by		BA	BA	BA	BA	BA						
	Recorded by		BA	BA	BA	BA	BA						
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	8.3	25.2	6.3	34.2	21.6	B	8.3	24.0	6.3	33.9	21.2
	62.5	B	8.3	24.0	6.3	33.9 BA 21.3	~~34.2~~	B	8.3	24.0	6.3	33.9	21.3
	125	B	8.3	24.7	6.2	33.9	21.2	B	8.3	24.0	6.2	33.9	21.2
	250	B	8.3	24.0	6.3	34.9	21.9	B	8.3	24.0	6.2	34.3	21.5
	500	B	8.3	24.2	6.3	34.1	21.4	B	8.3	24.0	6.2	33.4	20.9
	1000	B	8.2	24.3	6.3	34.2	21.4	B	8.2	24.0	6.4	33.7	21.1
		B						B					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	8.3	25.4	6.1	33.9	21.4	C	8.3	24.0	6.4	33.8	21.1
	62.5	C	8.3	25.4	6.1	34.2	21.4	C	8.3	24.0	6.4	33.9	21.2
	125	C	8.3	25.6	6.1	34.1	21.3	C	8.3	24.0	6.4	33.7	21.1
	250	C	8.3	25.7	6.2	34.5	21.7	C	8.3	24.0	6.5	33.9	21.3
	500	C	8.3	26.0	6.3	33.4	20.9	C					
	1000	B C	8.3	25.8	6.3	33.7	21.1	C					
		C						C					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	8.2	25.2	6.8	34.5	21.7	D	8.2	24.0	6.4	33.9	21.2
	62.5	D	8.2	26.0	6.7	35.4	22.3	D	8.2	24.0	6.3	33.9	21.2
	125	D	8.3	25.2	6.5	34.9	21.9	D	8.3	24.0	6.3	33.9	21.3
	250	D	8.2	25.1	6.4	34.8	21.9	D	8.2	24.0	6.4	34.0	21.3
	BA ~~ED~~	D						D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA

Comments:

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

Chronic SRT Parameters Benchsheet

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

Start Date: 12-11-12 End Date: 12-18-12

Start Time: 1230 End Time: 1200

conc = concentration rep = replicate

Test Day	Conc.	Test Rep.	Before Renewal pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	Test Rep.	After Renewal pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 4	Control	A	8.1	24.3	5.7	34.6	21.8	A	8.2	24.0	6.2	34.3	~~34.5~~ 21.5
	62.5	A	8.2	24.1	6.1	35.6	22.4	A	8.2	24.0	6.2	34.6	21.8
	125	A	8.2	24.0	6.1	35.1	21.9	A	8.2	24.0	6.2	34.3	21.5
	250	A	8.1	24.0	6.0	34.8	21.9	A	8.2	24.0	6.3	33.8	21.2
		A						A					
		A						A					
		A						A					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	8.0	24.1	5.7	34.8	21.9	B	8.2	24.7	6.4	33.7	20.9
	62.5	B	8.1	24.3	6.0	35.1	22.1	B	8.2	24.8	6.4	34.3	21.5
	125	B	8.1	24.3	6.0	35.0	22.1	B	8.2	24.8	6.4	33.9	21.3
	250	B	8.1	24.4	6.2	34.9	22.0	B	8.2	24.7	6.4	33.7	21.2
		B						B					
		B						B					
		B						B					
	Measured by		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Recorded by		MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	8.1	25.3	6.4	34.0	21.4	C	8.1	24.0	6.0	33.9	21.2
	62.5	C	8.1	24.4	6.7	34.5	~~21.7~~ BA	C	8.1	24.0	6.1	34.5	~~33.9~~ 21.6BA
	125	C	8.1	25.0	6.6	34.4	21.6	C	8.1	24.0	6.0	34.3	21.5
	250	C	8.1	24.9	6.6	34.4	21.5	C	8.1	24.0	6.0	33.7	21.1
		C						C					
		C						C					
		C						C					
	Measured by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by		BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	8.0	24.4	5.5	35.1	22.0	D					
	62.5	D	8.0	24.0	5.6	34.7	21.8	D					
	125	D	8.0	24.0	5.7	34.6	21.7	D					
	250	D	8.0	24.0	5.7	34.6	21.8	D					
		D						D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA	BA						
	Recorded by		BA	BA	BA	BA	BA						

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

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

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

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	
Control	A	41	0.01907	0.02689	0.00782	10	0.782	
	B	42	0.01837	0.02392	0.00555	10	0.555	0.7155
	C	43	0.01904	0.02667	0.00763	10	0.763	
	D	44	0.01822	0.02584	0.00762	10	0.762	
62.5	A	45	0.01905	0.02705	0.00800	10	0.800	
	B	46	0.01971	0.02839	0.00868	10	0.868	0.8513
	C	47	0.01964	0.02918	0.00954	10	0.954	
	D	48	0.01842	0.02625	0.00783	10	0.783	
125	A	49	0.01903	0.02841	0.00938	10	0.938	
	B	50	0.01875	0.02726	0.00851	10	0.851	
	C	51	0.01925	0.02814	0.00889	10	0.889	0.8443
	D	52	0.01948	0.02647	0.00699	10	0.699	
250	A	53	0.01823	0.02296	0.00473	10	0.473	
	B	54	0.01892	0.02083	0.00191	10	0.191	
	C	55	0.01929	0.02012	0.00083	10	0.083	0.3173
	D	56	0.01845	0.02367	0.00522	10	0.522	
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	BA	BA				

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: 12.17.12 Weighed by: BA

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01868 @	0.01868
after Pan 10	0.01866 @	0.01868
after Pan 15	0.01868 @	0.01868
after Pan 20	0.01868 @	0.01868
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	0.01001 @	0.01
	0.04999 @	0.05

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 12.20.12 Weighed by: BA

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02023 @	0.02025
after Pan 10	0.02023 @	0.02025
after Pan 15	0.02023 @	0.02025
after Pan 20	0.02024 @	0.02025
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	0.01997 @	0.02
	0.05001 @	0.05

Drying Oven ID: EB034000

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: Meridia SRT December 2012 Dates: 12-11-12 — 12-18-12

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+5
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: M. Faircloth 1-2-13

V 1.2 2/20/11 MF/jd

~~Test Page 8 of 8~~ 98

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MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 12/10/12

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	~~600~~	6DA-15	MS 12 12 04	25	7.9	20
	400					
Menidia beryllina	~~600~~ CH	9 DAYS	SS 12 12 01	25	7.9	20
	400					
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas						
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix I-1

Wet ID taxa list and density (number/mL) for quantitative phytoplankton collections made from the Navarre Beach WWTF on 12/10/2012.

	Control Site	Test Site 1	Test Site 2
Bacillariophyta			
Bacillariophyta	411	388	315
Bacteriastrum delicatulum	2	-	-
Cerataulina bicornis	-	2	-
Cerataulina sp.	-	2	-
Chaetoceros affinis	-	7	-
Chaetoceros costatus	-	-	4
Chaetoceros sp.	64	91	52
Cylindrotheca closterium	6	-	-
Dactyliosolen blavyanus	4	-	-
Rhizosolenia sp.	6	7	-
Rhizosolenia alata	8	7	4
Rhizosolenia setigera	6	-	-
Skeletonema costatum	-	9	1
Chlorophycota			
Chlorella marina	-	14	9
Chlorella sp.	9	-	-
Cryptomonas sp.	6	9	3
Cyanophycota			
Anabaena sp.	-	2	-
Prasinophyta			
Tetraselmis sp.	-	2	-
Pyrrophycophyta			
Alexandrium sp.	25	82	10
Ceratium lineatum	-	9	1
Gonyaulax sp.	6	11	3
Peridinium claudicans	2	-	-
Prorocentrum sp.	-	-	3
Prorocentrum gracile	-	2	-
Prorocentrum micans	15	14	22
Prorocentrum minimum	-	5	-
Protoperidinium sp.	-	9	6
Protoperidinium depressum	-	9	-

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for quantitative phytoplankton collected from Navarre Beach WWTF on 12/10/2012.

	Control Site	Test Site 1	Test Site 2
Bacillariophyta			
Bacillariophyceae			
Achnanthes brevipes	-	-	1
Achnanthidium exiguum	-	-	1
Achnanthidium microcephalum	-	-	37
Achnanthidium minutissimum	-	3	-
Amphora coffaeiformis	1	1	1
Amphora laevissima	-	1	-
Amphora pediculus	6	16	20
Amphora sp.	65	59	54
Bacillaria paxillifer	1	12	5
Capartogramma crucicula	-	1	-
Catenula sp.	11	15	12
Cocconeis disculus	4	4	7
Cocconeis placentula	1	-	-
Cocconeis sp.	71	67	53
Diploneis bombus	5	3	3
Diploneis parma	7	16	10
Diploneis sp.	51	38	49
Entomoneis sp.	3	-	2
Fallacia sp.	11	10	17
Gomphonemopsis sp.	-	-	7
Gyrosigma sp.	-	2	4
Karayevia clevei	1	-	-
Mastogloia sp.	3	12	11
Navicula recens	2	-	-
Navicula sp.	22	21	26
Nitzschia amphibia	-	-	10
Nitzschia dissipata	2	-	-
Nitzschia insignis	4	-	-
Nitzschia intermedia	-	2	2
Nitzschia reversa	1	-	-
Nitzschia sigma	-	-	1
Nitzschia sp.	10	16	14
Nitzschia ventricosa	3	-	-
Parlibellus sp.	-	1	-
Planothidium delicatulum	-	1	4
Planothidium rostratum	-	2	-
Planothidium sp.	-	2	6

Appendix J-1 (continued)

Psammodiscus nitidus	7	17	16
Rhopalodia musculus	-	2	-
Sellaphora laevissima	-	1	-
Stauroneis sp.	-	-	1
Tryblionella sp.	8	11	6
Coscinodiscophyceae			
Aulacoseira sp.	-	4	-
Actinoptychus senarius	-	1	-
Aulacoseira granulata	-	-	2
Coscinodiscus sp.	-	-	2
Cymatosira belgica	14	1	-
Dimeregramma minor	2	12	4
Paralia sulcata	2	2	1
Plagiogramma sp.	-	1	-
Fragilariophyceae			
Fragilariaceae	-	-	2
Hyalosynedra laevigata	5	5	1
Opephora sp.	74	59	36
Pseudostaurosira brevistriata	-	-	2
Staurosira construens	4	-	-
Staurosirella pinnata	10	8	21
Synedra sp.	3	2	3
Synedra ulna	1	-	-
Tabularia fasciculata	2	-	2
Tabularia investiens	24	30	24
Thalassionema nitzschioides	3	-	-
Mediophyceae			
Cyclotella meneghiniana	-	1	-
Cyclotella ocellata	13	19	10
Cyclotella striata	28	14	9
Stephanodiscus sp.	-	5	-
Thalassiosira eccentrica	8	-	-
Thalassiosira sp.	-	-	1

Appendix J-1

Benthic macroinvertebrates collected from ponar samples at a Control Site and two Test Sites bracketing the Navarre Beach WWTF effluent discharge pipe (D-001). Taxa collected and density (average number of individuals/m^2) rounded to the nearest individual (n = 6 samples/site). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site 1	Test Site 2
Annelida			
Oligochaeta			
Enchytraeidae	7	28	-
Naididae	21	14	21
Polychaeta			
Ancistrosyllis hartmanae	-	-	7
Apoprionospio pygmaea	26	167	104
Aricidea (acmira) simplex	-	7	-
Axiothella sp.	-	76	69
Axiothella sp. A	97	-	-
Carazziella sp.	9	-	-
Clymenella torquata	-	111	188
Dipolydora sp.	9	-	-
Eupolymnia nebulosa	-	83	125
Fimbriosthenelais sp.	-	7	-
Galathowenia sp.	-	-	7
Glycera americana	-	14	-
Glycera sp. C	42	63	49
Glycinde solitaria	-	49	35
Leitoscoloplos fragilis	28	-	7
Lumbrineris coccinea	-	-	21
Magelona sp.	7	7	7
Mediomastus ambiseta	-	833	345
Mediomastus californiensis	-	-	65
Mediomastus sp.	271	-	-
Mystides borealis	-	-	14
Neanthes sp.	-	-	7
Nereiphylla sp.	-	14	-
Owenia fusiformis	83	35	-
Paraprionospio yokoyamai	68	76	14
Pectinaria gouldi	-	7	28
Piromis roberti	-	7	-
Podarkeopsis levifuscina	7	-	-
Polynoidae	7	-	7
Prionospio heterobranchia	-	49	-
Sabaco elongatus	14	7	28
Salvatoria clavata	-	-	7

Scoletoma sp.	42	28	125
Scoloplos rubra	-	7	-
Sigambra sp.	7	-	-
Sphaerosyllis sp.	76	63	14
Arthropoda			
Crustacea			
Amphipoda			
Acanthohaustorius shoemakeri	14	42	-
Ampelisca holmesi	125	188	69
Grandidierella bonnieroides	97	42	7
Hartmanodes nyei	-	28	7
Hyalella sp. C	28	-	-
Listriella barnardi	63	21	49
Cumacea			
Cyclaspis sp.	7	56	35
Decapoda			
Pinnotheridae	7	-	-
Portunidae	7	-	-
Isopoda			
Edotea triloba	-	14	-
Tanaidacea			
Alokalliapseudes macsweenyi	14	42	90
Chordata			
Ascidiacea			
Molgulidae	368	63	347
Cephalochordata			
Branchiostoma sp.	21	83	-
Cnidaria			
Edwardsia sp.	111	104	285
Echinodermata			
Amphiuridae	28	-	49
Mollusca			
Bivalvia			
Angulus versicolor	-	-	77
Laevicardium mortoni	-	15	-
Lyonsia floridana	-	15	31
Mytilidae (mollusca)	16	30	31
Tagelus divisus	16	-	-
Tellinidae	31	59	-
Gastropoda			
Acteocina sp.	465	118	375
Aeolidiidae	7	-	7
Astyris lunata	21	21	-

Appendix J-1 (continued)

	Haminoea succinea	83	14	56
	Nassarius sp.	14	21	-
	Turbonilla sp.	21	-	63
Nemertea				
	Cerebratulus lacteus	-	49	-
	Undetermined Nemertea	42	-	63
Phoronida				
	Undetermined Phoronida	69	7	21
Platyhelminthes				
	Turbellaria	-	-	14

Appendix J-2

Benthic macroinvertebrates collected from ponar samples at a Control Site and two Test Sites bracketing the Navarre Beach WWTF effluent discharge pipe (D-001). Taxa collected and total number of individuals counted (n = 6 samples/site).

	Control Site	Test Site 1	Test Site 2
Annelida			
Oligochaeta			
Enchytraeidae	1	4	-
Naididae	3	2	3
Polychaeta			
Ancistrosyllis hartmanae	-	-	1
Apoprionospio pygmaea	3	24	15
Aricidea (acmira) simplex	-	1	-
Axiothella sp.	-	11	10
Axiothella sp. A	12	-	-
Carazziella sp.	1	-	-
Clymenella torquata	-	16	27
Dipolydora sp.	1	-	-
Eupolymnia nebulosa	-	12	18
Fimbriosthenelais	-	1	-
Galathowenia sp.	-	-	1
Glycera americana	-	2	-
Glycera sp. C	6	9	7
Glycinde solitaria	-	7	5
Leitoscoloplos fragilis	4	-	1
Lumbrineris coccinea	-	-	3
Magelona sp.	1	1	1
Maldanidae	2	-	-
Mediomastus ambiseta	-	72	37
Mediomastus californiensis	-	-	7
Mediomastus sp.	39	48	15
Mystides borealis	-	-	2
Neanthes sp.	-	-	1
Nereiphylla sp.	-	2	-
Owenia fusiformis	12	5	-
Paraprionospio yokoyamai	8	11	2
Pectinaria gouldi	-	1	4
Piromis roberti	-	1	-
Podarkeopsis levifuscina	1	-	-
Polynoidae	1	-	1
Prionospio heterobranchia	-	7	-
Sabaco elongatus	2	1	4
Salvatoria clavata	-	-	1

Appendix J-2 (continued)

Scoletoma sp.	6	4	18
Scoloplos rubra	-	1	-
Sigambra sp.	1	-	-
Sphaerosyllis sp.	11	9	2
Spionidae	3	-	-
Arthropoda			
Crustacea			
Amphipoda			
Acanthohaustorius shoemakeri	2	6	-
Ampelisca sp.	12	19	6
Ampelisca holmesi	6	8	4
Grandidierella bonnieroides	14	6	1
Hartmanodes nyei	-	4	1
Hyalella sp. C	4	-	-
Listriella barnardi	9	3	7
Cumacea			
Cyclaspis sp.	1	8	5
Decapoda			
Pinnotheridae	1	-	-
Portunidae	1	-	-
Isopoda			
Edotea triloba	-	2	-
Tanaidacea			
Alokalliapseudes macsweenyi	2	6	13
Chordata			
Ascidiacea			
Molgulidae	53	9	50
Cephalochordata			
Branchiostoma	3	12	-
Cnidaria			
Actiniaria sp.	8	13	27
Edwardsia sp.	8	2	14
Echinodermata			
Amphiuridae	4	-	7
Mollusca			
Bivalvia			
Angulus versicolor	-	-	1
Laevicardium mortoni	-	1	-
Lyonsia floridana	-	1	2
Mytilidae (mollusca)	1	2	2
Tagelus divisus	1	-	-
Tellinidae	2	4	4
Undetermined Bivalvia	5	9	11

Gastropoda				
	Acteocina sp.	67	17	54
	Aeolidiidae	1	-	1
	Astyris lunata	3	3	-
	Haminoea succinea	12	2	8
	Nassarius sp.	2	3	-
	Turbonilla sp.	3	-	9
Nemertea				
	Cerebratulus lacteus	-	2	-
	Undetermined Nemertea	6	5	9
Phoronida				
	Undetermined Phoronida	10	1	3
Platyhelminthes				
	Turbellaria	-	-	2

EPA End Sheet

The Bioassay of the Navarre Beach WWTF effluent sampled on December 9-14, 2012 NPDES #FL0023981

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	3	9	8	1	11	12	1	2	1	2	0	9	# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Navarre Beach WWTF effluent sampled on December 10, 2012 NPDES #FL0023981

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	3	9	8	1	11	12	1	2	1	2	1	0	# X	# S	# 1

Remarks

#

Biological Analyses of the Navarre Beach WWTF effluent sampled on December 10, 2012, NPDES #FL0023981

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	3	9	8	1	11	12	1	2	1	2	1	0	# S	# S	# 1

Remarks

#