

Bioassays of

Bayou Marcus Water Reclamation Facility

Escambia County

NPDES #FL0031801

Sampled February 6, 8, and 10, 2006

May 2006

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Bayou Marcus Water Reclamation Facility, 305 Fayal Drive, Pensacola, Escambia County, Florida, NPDES #FL0031801. Effluent samples for this facility were collected on February 6, 8 and 10, 2006.

Introduction

The Bayou Marcus Water Reclamation Facility is an extended-aeration advanced domestic wastewater treatment plant. The facility has a design flow of 8.2 million gallons per day (MGD) annual average daily flow (AADF). The AADF from January 2005 through December 2005 was 5.179 MGD. The facility utilizes the activated-sludge system with the conventional plug flow mode for wastewater treatment. The treatment process consists of flow equalization, influent fine screening, anoxic/oxic activated-sludge biological treatment, alum addition for phosphorus removal, secondary clarification, tertiary filters, recirculation, and disinfection by an ultraviolet system to obtain basic level disinfection. The facility has an 8.2 million gallon holding pond for effluent not suitable for immediate discharge (rejects). Residuals are sent to the Escambia County Utility Authority Main Street WWTP for proper treatment and disposal. Treated effluent is discharged to a 408.7 hectare (1,010 acre) receiving wetland (Class III freshwater) thence to the Class III marine waters of Perdido Bay.

There no Administrative Orders (AO) or Consent Orders (CO) for this facility. The facility has no mixing zones. During the past year, the facility had one exceedance of its permitted limit for total suspended solids [TSS] (11.6 mg/L on May 15, 2005; permitted limit is 10.0 mg/L). Facility information provided by Glenn Butts of FDEP Northwest District.

Methods

Samples were collected from the EFF-01 NPDES sampling point for Outfall D-002 by Glenn Butts (FDEP Northwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOP's are available on the web at: http://www.floridadep.org/labs/qa/sops.htm. See Appendix 1 for the completed chain of custody form.

The chronic screening toxicity tests and algal growth potential tests were performed following internal DEP SOP's TA07_05, TA07_09, and TA08_01 through TA08_09. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Prior to test initiation and daily renewal, bioassay samples were aerated for up to 30 minutes at approximately 100 bubbles per minute, to decrease the dissolved oxygen concentration from > 9 mg/L to < 9 mg/L. Prior to test initiation and daily renewal for the *Ceriodaphnia dubia* tests only, bioassay samples were filtered through a 60 µm mesh to remove particulates.

An additional AGP test was performed on a salinity-adjusted aliquot of sample because Perdido Bay, which receives water from the receiving wetlands, is a Class III marine waterbody. Sample salinity was increased to 7 parts per thousand (ppth) to meet the minimum salinity requirements of the marine test species.

Dunnett's procedure (available at Statistical Analysis for Biological Methods http://www.epa.gov/EERD/stat2.htm) and T-tests were used to analyze data from these tests.

Toxicity Test Results

Tests were performed February 7 - 14, 2006.

Ceriodaphnia dubia 7-day chronic screening bioassay –	NOEC = 100%, for both survival and reproduction

Pimephales promelas 7-day chronic screening bioassay – NOEC = 100%, for both survival and growth

The bioassay samples were not chronically toxic to the *Ceriodaphnia dubia* or *Pimephales promelas* test organisms.

See Appendix 2 for bioassay bench sheets and the statistical analysis of these data.

See Appendix 3 for results of the standard reference toxicant (SRT) tests and bench sheets and statistical analyses of the SRT tests that correspond to these facility tests.

See Appendix 4 for purchased organism receipts.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) of the three effluent samples were 23.9, 32.7 and 25.7 mg dry wt/L, respectively, of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is co-limited by both nitrogen and phosphorus.

The predicted AGP of the three effluent samples based on inorganic nitrogen concentrations were 16.61, 18.01, and 13.00 (±20%) mg dry wt/L. The predicted AGP of the three effluent samples based on inorganic phosphorus concentrations were 13.30, 11.18, and 16.77 (±20%) mg dry wt/L. (Table 1; Miller et al. 1978).

The effluent Algal Growth Potential (AGP) of each of the salinity-adjusted aliquots of the effluent was less than the practical quantitation limit (0.9 mg dry wt/L) of the saltwater species *Dunaliella tertiolecta.* Raschke and Shultz found that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication with Ron Raschke USEPA Region 4 1987). One potential reason for such low growth in the salinity-adjusted sample is that the orthophosphate could have been made biologically unavailable by the added salts (Manahan 1994).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay samples in the laboratory. The total ammonia concentrations were 0.057, 0.044, and 0.052 mg/L, respectively, in the samples which were collected and preserved for chemical analyses. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration in each of the samples was <0.02 mg/L.

Copper and zinc were detected in each of the three effluent samples. Iron was detected in the samples collected on 2/6/06 and 2/10/06. Lead was detected in the samples collected on 2/6/06 and 2/8/06. Nickel was detected in the sample collected on 2/10/06. These analytes were all detected at levels that comply with Class III fresh water quality criteria. Cadmium and iron (in the sample collected on 2/8/06), lead (in the sample collected on 2/10/06) and nickel (in the samples collected on 2/6/06 and 2/8/06) were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Effluent analyte concentrations did not exceed permitted limits or Class III freshwater quality standards. Aluminum was detected in all three effluent samples. Atrazine was detected in the sample collected on 2/6/06.

See Table 2 for results of analytes detected in the effluent, and corresponding limits.

See Appendix 5 for a complete list of chemical analyses performed.

Conclusion

The effluent samples collected from Outfall D-002 for this facility on February 6, 8, and 10, 2006, were not chronically toxic to either test species during the chronic screen 7-day bioassays. The effluent AGP results with the freshwater unicellular green alga, *Pseudokirchneriella subcapitata* exceeded the "problem" threshold for fresh receiving waters, suggesting nutrient enrichment may be an issue; however, the saltwater AGP results were contradictory, potentially due to the salt manipulation of the sample. Effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

Manahan, S. E. 1994. Environmental Chemistry, 6th edition. Lewis Publishers, USA. 811 pp.

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) of the freshwater species Pseudokirchneriella subcapitata *for total soluble nitrogen (TSIN), ortho phosphate (OP), total nitrogen (TN), and total phosphorus (TP) limitation, the AGP (salt adjusted) for* Duneliella tertiolecta, *and ratios of nitrogen to phosphorus for samples collected from Bayou Marcus Water Reclamation Facility on February 6, 8, and 10, 2006.*

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	AGP (salt adjusted)	Inorganic N:P ratio	Total N:P ratio
Effluent 02-06-06	23.9	16.61 ± 3.322	13.33 ± 2.666	60.04 ± 12.008	64.50 ± 12.9	0.796 I	14.1	10.53
Effluent 02-08-06	32.7	18.01 ± 3.602	11.18 ± 2.236	69.54 ± 13.908	55.90 ± 11.18	0.675 I	18.23	14.08
Effluent 02-10-06	25.7	13.00 ± 2.6	16.77 ± 3.354	83.22 ± 16.644	77.40 ± 15.48	0.3 U	8.77	12.17

Table 2. Effluent limits, Class III Freshwater Criteria, and chemical and microbiological data for samples collected from Bayou Marcus Water Reclamation Facility on February 6, 8, and 10, 2006.

Bayou Marcus WRF NPDES# FL0031801	Class III Freshwater Stds	Effluent Limits	# 1 (Effluent 2-6-06)	# 2 (Effluent 2-8-06)	# 3 (Effluent 2-10-06)
Organic Constituents (µg/L)					
Atrazine	-	-	0.23	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	198 f	152	224
Arsenic	≤ 50	-	4 U	4 U	4 U
Cadmium	≤ 1.3 b	-	0.05 U	0.43 I	0.05 U
Calcium (mg/L)	-	-	23.2	24	25.2
Chromium-III	≤ 96.2 b	-	2 U	2 U	2 U
Copper	≤ 10.5 b	≤ 10.5 b	1.53	1.45	1.7
Iron	≤ 1,000	-	43	39 I	51
Lead	≤ 3.8 b	-	0.65	0.9	0.67 I
Magnesium (mg/L)	-	-	13.7	12.4	11.4
Nickel	≤ 58.4 b	-	2.9 I	3.3 I	5.2
Selenium	≤ 5	-	0.5 U	0.5 U	0.5 U
Silver	≤ 0.07	-	0.025 U	0.025 U	0.025 U
Zinc	≤ 134.2 b	≤ 134.2 b	81	82	81
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.031	0.026	0.039 Q
Total Phosphorus	-	≤ 2 s	0.15	0.13	0.18 A
Ammonia	-	≤ 3.2 s	0.057 g	0.044	0.052
Unionized Ammonia	≤ 0.02	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate+Nitrite	-	-	0.38	0.43	0.29
Total Kjeldahl Nitrogen	-	-	1.2	1.4	1.9 A
Organic Nitrogen	-	-	1.14 c	1.36 c	1.85 c
Total Nitrogen	-	≤ 6.0 s	1.58 c	1.83 c	2.19 c
General Physical and Chemical Parameters					
pH (S.U.)	6.0-8.5	6.0-8.5 s	6.2	6.1	6.4
Conductivity (umhos/cm)	≤ 1,275	-	457.2	459.9	567.3
Temperature (C)	-	-	19	18.4	18.1
Dissolved Oxygen (mg/L)	≥ 5	≥ 5 s	8.5	8.6	8.4
CBOD (mg/L)	-	≥ 5 s	1.5 I	-	-
Chlorophyll *a* (µg/L)	-	-	0.85 U	1.2 U	0.85 UQ
Phaeophytin *a* (µg/L)	-	-	1.5 U	2.1 U	1.5 UQ
Flow (MGD)	-	8.2 a	5.179 a	5.179 a	5.179 a
TSS (mg/L)	-	≤ 10 s	4 I	-	-
Sulfide (mg/L)	-	-	0.05 UY	-	-
Sulfate (mg/L)	-	-	61	-	-
Alkalinity (mg/L)	≥ 20	-	103	-	-
Hardness (mg/L)	-	-	114.3 c	111 c	109.9 c
Microbiology (# counts/100ml)					
Fecal Coliforms-Membrane Filter	≤ 800 s	≤ 800 s	-	-	-

Value exceeds the Class III Fresh Water Quality Criteria (62-302, F.A.C.) and/or Effluent Limits

a - Annual average
b - Value is calculated based on hardness
c - Calculated value
f - Aluminum was detected in the field blank at a concentration of 11 µg/L
g- Ammonia was detected in the field blank at a concentration of 0.022 µg/L
s - Single sample
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the minimum detection limit
Y - The analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

MONDAY 02-06-06

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-02-06-18
Bayou Marcus Water Reclamation Facility

Requester: Shannan Bogdanov
Field Report Prepared By: Glenn Butts

Customer: NW-DIST
Collected By: Glenn Butts
Send Final Report To Greg Smith

Project ID: FYI5
Sampling Agency: FDEP NW DISTRICT
Glenn Butts

PMAS: 1143
7:00am
7:00am

Lab ID *	Location: BAYOU MARCUS WWT FACILITY	☒ Comp ☐ Grab	Collection (begin) Date 02-06-06 Time Eastern Central	Collection (end) Date 02-06-06 Time 1005 Eastern Central	Bottle Group(s)**		
	Field ID: # 1	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.44	Storet Station Number: GMS FL0031801			
	Matrix (Include type e.g. Salt, Fresh, etc): FRESH	Temp (C): 19.0	pH: 6.23	Sample Depth ☐ m ☐ ft: 0.23	☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm): 457.2	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location: NW DISTRICT CHEM LAB	☐ Comp ☒ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date 02-06-06 Time 0700 Eastern Central	Bottle Group(s)**		
	Field ID: BLANKS	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc): FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
				2-7-06 09:15				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

WEDNESDAY 02-08-06

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-02-06-18
Bayou Marcus Water Reclamation Facility

Requester: Shannan Bogdanov
Field Report Prepared By: Glenn Butts
Collected By: Glenn Butts
Send Final Report To Greg Smith
Sampling Agency: FDEP NW DISTRICT
Glenn Butts

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

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	BAYOU MARCUS AWT FACILITY	☒ Comp ☐ Grab	Date 02-07-06 Time	Date 02-08-06 Time 0925 Eastern Central	
	Field ID # 2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.58	Storet Station Number GMS FL003/801	
	Matrix (Include type e.g. Salt, Fresh, etc FRESH	Temp (C) 18.38	pH 6.07	Sample Depth 0.5 ☐ m ☒ ft	0.23 ☐ Salinity (PPTh) 459.9 ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' " .	Longitude o ' " .	Comments		

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

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

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Glenn Butts	02-08-06	DHL	Tom. E	2/9/06 8:26				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 4

1 BSH 2/9/06 1015 SP

FRIDAY 02-10-06

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-02-06-18
Bayou Marcus Water Reclamation Facility

Requester: Shannan Bogdanov
Field Report Prepared By: Glenn Butts

Customer: NW-DIST
Collected By: Glenn Butts
Send Final Report To Greg Smith

Project ID: FYI5
Sampling Agency: FDEP NW DISTRICT

PMAS: 1143
7:00 am
7:00 am Glenn Butts

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	BAYOU MARCUS AWT FACILITY	☒ Comp ☐ Grab	Date 02-09-06 Time	Date 02-10-06 Time 0950	
	Field ID 3	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.44	Storet Station Number GMS FL0031801	
	Matrix (Include type e.g. Salt, Fresh, etc FRESH / Temp (C) 18.07 / pH 6.45	Sample Depth ☐ m ☐ ft 0.29	567.3	☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' " . / Longitude o ' " .	Comments			

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

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

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
			M. Faircloth	2/11/06 1010			Tom-E	2/13/06 1600

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix 2. Bench Sheets and Statistical Analyses

Chronic Screening Bioassay Benchsheet

Bayou Marcus WRF — Sample Identification, Test Conditions and Physical Chemistry

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
Ceriodaphnia dubia Bench Sheet

Sample Source: Dupont Hirsch Mine SP
Address: 305 Fayal Drive
County: Escambia
NPDES Permit #FL 0031801
Contact/District Glenn Butts / northwest
Start Date 2-7-06 Time 1305 End Date: 2-14-06 Time 1330
LIMS entry: 2-23-06 MF verified 2/23/06 SP
Incubator # 2 Temperature Range: 24.4-26.2
Room B246 Temperature Range: 22.9-25.1

SOP#: TA07_05
Light Intensity : 50 - 100 ft. candles (yes) no
Photoperiod : 16 light 8 dark - (yes) no
Chamber size : 30 ml Organism Batch #: 7-06
Sample volume : 20 ml Organism age : <24 hours

Feeding: Daily YCT Batch#: 5-05 0.1 ml
P. subcapitata Batch #: 8-05 0.1 ml

Organism: *Ceriodaphnia dubia*

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	117	114	120	118	111	112
Diluent/Control:				<0.03	<0.03	<0.03	89	89	84	82	82	83
Method:	-	-	-	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	-	-	-	BA	SP	BA	BA	SP/BA/MF	BA	BA	BA/SP	BA/SP
Verified by:	SP	SP	SP	SP	MF	MF	MF	MF	MF	MF	MF	MF

	Conductivity (circle one) (mhos-cm)		mmhos-cm	Ammonia mg/L			Salinity ‰		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	500	500	521	<0.017	<0.017	<0.017	NA	NA	NA
Diluent/Control:	180	180	168	<0.017	<0.017	<0.017	NA	NA	NA
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	MF	SP	SP/BA	MF	MF	MF	NA	NA	NA
Verified by:	SP	MF	MF	SP	SP	SP	NA	NA	NA

NOEC: 100%

NA: Not applicable

conv. = conversion based on conductivity and temperature

Sample Received	LAB ID #	LIMS SAMPLE #	LIMS JOB #
Test Day 0	Sample: 1	897634	TLH - 2006-02-07-13
Test Day 2	Sample: 2	899502	TLH - 2006-02-09-33
Test Day 4	Sample: 3	899632	TLH ~~2006-02-11-57~~ TLH-2006-02-13-15

Lab Sample #	Collection Date/Time	Received Date/Time
1	2-6-06 1000	2-7-06 1100
2	2-8-06 0925	2-9-06 1015
3	2-10-06 0950	2-11-06 1045

Diluent / Control Batch #:	Days Used
3-06 20% Dmw	1,2,3,4
4-06 20% DMW	3mf 5,6,7

Investigators' signatures
Crystal Pinchard
Marshall Faircloth
Buck Pearson
Jason Ford
Sidney Owen

reviewer Nicki Wellendorf

Comments:
Sample was aerated for 30 minutes at approximately 100 bubbles per minute to decrease DO from 10.7 mg/L to 8.1 mg/L
Sample screened through at 60um cloth filter to remove particulate matter. MF 2-7-06 Prior to each daily use, sample was screened ~~prior~~ to remove particulate matter MF-2/13/06
Prior to daily use, each bioassay sample was aerated for up to 30 minutes to reduce the dissolved oxygen concentration from a ≥ 9.0 mg/L to ≤ 9.0 mg/L MF 2-13-06

revised 6/14/04 JF

Test Page 1 000021

Facility: ~~Dupont Highlands Mine~~ Bayou Marcus WRF

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
Ceriodaphnia dubia Bench Sheets - Reproduction
SOP TA07_05

Begin Test:
Date: 2-7-06 Time: 1305
End Test:
Date: 2-14-06 Time: 1330

LIMS Sample # 897034 for lab sample #1.

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	total # young	# original organisms	young per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	5	0	5	5	4	2	3	4	0	4	32	10	3.2
	5	0	1	0	0	0	0	0	0	10	8	24	10	2.4
	6	9	9	6	13	9	9	9	9	11	0	84	10	8.4
	7	1	0	8	11	12	7	2	4	0	9	54	10	5.4
	8													
	Total	15	15	19	29	25	18	14	17	21	21	194	10	19.4
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	0	0	0	0	0	0	0	0	mf 3	10	0.3
	4	3	0	4	4	5	4	3	2	5	4	34	10	3.4
	5	0	7	0	0	0	8	0	0	9	0	24	10	2.4
	6	7	9	9	9	8	9	7	7	11	11	87	10	8.7
	7	10	0	9	10	13	0	10	14	0	11	77	10	7.7
	8													
	Total	20	19	22	23	26	21	20	23	25	26	222	10	22.2

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

organisms loaded by: mf	
Day	****Counted by:**
0	SP
1	mf
2	SP
3	mf
4	mf
5	mf
6	mf
7	mf
8	

**Initials-signatures on Chemistry page.

Comments:
1 pooled from vials
B1
B5
B8
B9
B10
B11
B12
B15
B17
A8

T-test Value -1.8137
T-Table Value 1.734 df = 18

reproduction	
LOEC =	NA
NOEC =	100%

Test acceptability
Mean control reproduction 15/female (yes) no
Third Brood ≥8 in 60% of surviving females: (yes) no (A)
Temperature range ≤3°: (yes) no
Control survival ≥80%: (yes) no

Test terminated while 3rd brood reproduction was in progress.

M. Faircloth 2-23-05
(A) Test acceptability requirements ~~are~~ for 60% of surviving control females to produce 3rd brood.
(2) 80% control survival
(3) average of 15 or more young per surviving control female.

revised 7/14/04 JF

000022

Test Page 2

Appendix 2. (continued)

Ceriodaphnia dubia Chronic Bioassay Parameters

Bayou Marcus WRF SOP TA07_05

Sample Source: ~~Dupont Highlands Mine~~ SP

LIMS Sample #: 897634 (for lab sample 1)

Start Date: 2-7-06 End Date: 2-14-06

Time: 1305 Time: 1330

Comment:

Test Day			New Sample						Old Sample					
			Test	pH	Temp	DO	Cond (µmhos/cm)		Test	pH	Temp	DO	Cond (µmhos/cm)	
↓		Conc.	Rep.	(su)	(°C)	(mg/L)	(mmhos/cm)		Rep.	(su)	(°C)	(mg/L)	(mmhos/cm)	
Day 0	sample:	Control	A	8.2	24.8	8.0	180							
	1	100%	A	8.1	24.4	7.9	500							
	Measured by:			mf	mf	mf	mf							
	Recorded by:			mf	mf	mf	mf							
Day 1	sample:	Control	B	8.2	24.7	7.3	~~##~~183		B	8.0	24.0	6.7	180	
	1	100%	B	7.8	24.8	8.0	505		B	8.1	24.0	6.9	531	
	Measured by:			mf	mf	mf	mf			mf	mf	mf	mf	
	Recorded by:			mf	mf	mf	mf			mf	mf	mf	mf	
Day 2	sample:	Control	C	8.2	24.1	8.2	180		C	7.9	24.0	7.4	215	(A) use my box corrected value 8.2 su SP
	2	100%	C	~~8.3~~ (A)	24.8	8.3	500		C	8.0	24.0	6.9	605	
	Measured by:			SP	SP	SP	SP			SP	SP	SP	SP	
	Recorded by:			SP	SP	SP	SP			SP	SP	SP	SP	
Day 3	sample:	Control	D	8.2	24.7	7.3	177		D	8.0	24.6	6.9	185	
	2	100%	D	8.2	24.8	7.6	489		D	8.1	24.3	6.7	546	
	Measured by:			mf	mf	mf	mf			mf	mf	mf	mf	
	Recorded by:			mf	mf	mf	mf			mf	mf	mf	mf	
Day 4	sample:	Control	E	8.2	25.1	7.3	168		E	7.9	24.4	6.5	210	
	3	100%	E	7.7	25.9	8.0	504		E	8.1	24.5	6.9	503	
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
Day 5	sample:	Control	F	8.2	24.0	7.9	175		F	8.0	24.2	7.1	179	
	3	100%	F	7.7	24.7	7.9	515		F	8.1	24.3	6.9	560	
	Measured by:			mf	mf	mf	mf			mf	mf	mf	mf	
	Recorded by:			mf	mf	mf	mf			mf	mf	mf	mf	
Day 6	sample:	Control	G	8.2	24.0	7.8	199		G	8.1	24.0	7.6	190	
	3	100%	G	8.2	24.2	7.3	549		G	8.2	24.3	7.7	610	
	Measured by:			mf	mf	mf	mf			mf	mf	mf	mf	
	Recorded by:			mf	mf	mf	mf			mf	mf	mf	mf	
Day 7	sample:	Control	H						H	7.9	24.4	6.4	210	
	3	100%	H						H	8.0	24.9	6.9	557	
	Measured by:									mf	mf	mf	mf	
	Recorded by:									mf	mf	mf	mf	
Day 8	sample:	Control							I					
	3	100%							I					
	Measured by:													
	Recorded by:													

Test Rep. = Replicate Circle µmhos-cm or mmhos-cm

revised 6/24/04 mf

Test Page 3

000023

Appendix 2. (continued)



Chronic Screening Bioassay Benchsheet

Sample Identification, Test Conditions and Physical Chemistry

Sample Source: Bayou Marcus WRF / Dupont Highlands Mine SP
Address: 305 Fayal Drive
County: Escambia
NPDES Permit #FL 0031601
Contact/District Glenn Butts / Northwest
Start Date 2-7-06 Time 1345 End Date: 2-14-06 Time 1130
LIMS entry: 2-20-06 Verified: 2/23/06 SF
Incubator # 2 Temperature Range: 24.4-26.2
Room B246 Temperature Range: 22.9-25.1
Feeding: 2 X Daily Artemia Lot:#: GSL-536-90

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas and *M. beryllina* Bench Sheet

P. promelas SOP#: TA07_09 *M. beryllina* SOP#: TA07_14
Light Intensity : 50 - 100 ft. candles - (yes) no
Photoperiod : 16 light 8 dark (yes) no
Chamber size : 1 L Organism Batch #: 2-06
Sample volume : 500 ml Organism age : <24 (hours) days
Organism: (*P. promelas*) *M.beryllina* (circle one)

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	117	114	120	118	111	112
Diluent/Control:				<0.03	<0.03	<0.03	81	81	77	102	102	92
Method:	-	-	-	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	-	-	-	BA	SP	BA	BA	SA/BA	SA/BA	BA	SP/BA	
Verified by:	SP	SP	SP	SP	MF	MF	MF	MF	SP	MF	MF	MF

	Conductivity (circle one) (umhos-cm) mmhos-cm			Ammonia mg/L			Salinity ‰			Statistics
Lab Sample#:	1	2	3	1	2	3	1	2	3	
Sample:	527	505	521	<0.017	<0.017	<0.017	NA	NA	NA	Control %cv: 5.9
Diluent/Control:	332	332	mf 165310	<0.017	<0.017	<0.017	NA	NA	NA	Dunnetts PMSD: 17.45
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler	Survival NOEC: 100
Measured by:	SP	BH	BA/SP	MF	MF	MF	NA	NA	NA	Survival LOEC: —
Verified by:	MF	MF	MF	SP	SP	SP	NA	NA	NA	Growth NOEC: 100
										Growth LOEC: —

conv. = conversion based on conductivity and temperature

NA = Not Applicable

Sample Received	LAB ID #	LIMS SAMPLE #	LIMS JOB #
Test Day 0	Sample: 1	897634	TLH - 2006-02-07-13
Test Day 2	Sample: 2	898849	TLH - 2006-02-09-33
Test Day 4	Sample: 3	899502	TLH - 2006-02-13-15

Lab Sample #	Collection Date/Time	Received Date/Time
1	2-6-06 1000	~~2-6-06~~ 2-7-06 1100
2	2-8-06 0925	2-9-06 1115
3	2-10-06 0950	2-11-06 1045

Diluent / Control Batch #:	Days Used
MHW 1-06	1,2
MHW 2-06	3,4,5
MHW 3-06	6,7

Investigators' signatures
Basal Pichaud
Mansfield Faircloth
reviewer Nicole Wellendorf

Comments:
Sample was aerated for 30 minutes at approximately 100 bubbles/minute to decrease DO from 10.7 mg/L to 8.1 mg/L. (sample 1)
Prior to daily use, each bioassay sample was aerated for up to 30 minutes to Reduce the Dissolved Oxygen concentrations from > 9.0 mg/L to < 9.0 mg/L
MF 2-13-06

revised 6/11/04 JP

Test Page 1 000042

Appendix 2. (continued)



Chronic Screening Test Survival Benchsheet

Facility: Bayou Marcus WRF

LIMS Sample Number: 897634
(for Lab Sample # 1)

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

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

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	9[10]
100 % sample concentration	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	8[20]
Control	A	10							
	B	10							
	C	10							
	D	10							
% sample concentration	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: JD	Checked by: [redacted]		JD	JD	JD	JD	MF	JD	JD
Verified by: BA									

Survival	%CV	PMSD
Control	5.1	9.33

Survival	Table	Calculated	dF
T-test	1.94300	0.34655	6

Comments: No observed effect Concentration for Survival was 100% sample
MF 2/23/06

revised 6/24/04 MF

Appendix 2. (continued)

[redacted]

Biology Laboratory Chronic Screening Bioassay Benchsheet
Parameters
***P. promelas* SOP TA-07_09 *M. beryllina* SOP TA-07_14**

Sample Source: Bayou Marcus WRF
LIMS Sample #: 897634 (for Lab sample #1)
Start Date: 2-7-05 End Date: 2-14-05
Time: 1345 Time: 1130

Test Day		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth
Day 0	sample:	Control	A	8.2	25.0	8.0	332	<1	[redacted]					
	1	100%	A	8.2	24.9	8.1	527	<1						
	Measured by:		[redacted]	SP	SP	SP	SP	SP						
	Recorded by:			SP	SP	SP	SP	SP						
Day 1	sample:	Control	B	8.0	24.0	7.1	378	<1	B	8.2	24.4	6.7	357	<1
	1	100%	B	8.1	24.2	6.6	524	<1	B	7.9	24.4	7.1	510	<1
	Measured by:		[redacted]	SP	SP	SP	SP	SP		JD	JD	JD	JD	JD
	Recorded by:			SP	SP	SP	SP	SP		JD	JD	JD	JD	JD
Day 2	sample:	Control	C	8.1	24.5	7.5	332	0.08	C	8.0	24.3	5.9	355	0.10
	2	100%	C	8.1	24.6	7.0	505	0.18	C	7.9	24.1	6.6	534	0.19
	Measured by:		[redacted]	BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA	BA		BA	BA	BA	BA	BA
Day 3	sample:	Control	D	8.1	24.7	7.0	321	<1	D	7.9	24.7	6.1	325	<1
	2	100%	D	8.1	24.8	6.0	501	<1	D	7.9	24.6	5.4	516	<1
	Measured by:		[redacted]	BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
	Recorded by:			BA	BA	BA	BA	BA		JD	JD	JD	JD	JD
Day 4	sample:	Control	A	8.1	24.9	7.2	310	~1	A	7.8	24.7	6.9	324	<1
	3	100%	A	7.7	25.5	7.5	532	<1	A	7.8	24.7	6.6	510	<1
	Measured by:		[redacted]	JD	JD	JD	JD	JD		BA	BA	BA	BA	BA
	Recorded by:			JD	JD	JD	JD	JD		BA	BA	BA	BA	BA
Day 5	sample:	Control	B	8.1	24.5	7.6	320	<1	B	7.9	24.1	6.5	318	<1
	3	100%	B	7.8	24.1	7.8	510	<1	B	7.9	24.0	6.3	535	<1
	Measured by:		[redacted]	MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF	MF		MF	MF	MF	MF	MF
Day 6	sample:	Control	C	8.1	24.4	7.6	352	<1	C	7.8	24.0	6.7	345	<1
	3	100%	C	8.1	24.4	7.0	542	<1	C	7.9	24.2	6.5	517	<1
	Measured by:		[redacted]	JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
Day 7	sample:	Control	[redacted]						D	7.9	24.1	7.2	371	<1
	3	100%							D	8.0	24.5	7.0	557	<1
	Measured by:									JD	JD	JD	JD	JD
	Recorded by:									JD	JD	JD	JD	JD

Test Rep. = Replicate | Record Salinity = 1 if freshwater | Circle µmhos-cm or mmhos-cm

Comments:

revised 6/24/04 mf

Test Page 3

000044

Test page 4 (000045) was not used.

Appendix 2. (continued)

[redacted]

Chronic Screening Test Weighing Benchsheet

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas and *M. beryllina* Bench Sheet
SOP TA06_21

Facility: Bayou Marcus WRF

LIMS Sample Number: 397634
(for Lab Sample # 1)

Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Control	A	183	0.02527	0.02785	0.00258	10	0.258
	B	189	0.02443	0.02689	0.00246	10	0.246
	C	190	0.02579	0.02846	0.00267	10	0.267
	D	191	0.02623	0.02906	0.00283	10	0.283
100 % sample	A	192	0.02396	0.02693	0.00297	10	0.297
	B	193	0.02533	0.02836	0.00303	10	0.303
	C	194	0.02475	0.02707	0.00232	10	0.232
	D	195	0.02491	0.02706	0.00215	10	0.215
Control	A					10	
	B					10	
	C					10	
	D					10	
% sample	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		MF	JD			

Growth	%CV	PMSD
Control	5.9	17.45

Growth	Table	Calculated	dF
T-test	1.94300	0.07382	6

Drying	
Temperature °C:	105
Hours:	8

Tare Weighing Date: 2-13-06 Final Weighing Date: 2/16/06

			Measured Value		S-weight Value
Tare Pan 1 after Pan 5	0.02527 @ 0.02529	S-weights	0.01500	@	0.01499
Tare Pan 1 after Pan 8	0.02527 @ 0.02529	at tare	0.03000	@	0.02997
Final Pan 1 after Pan 5	(A) 0.02877 @ 0.02878	S-weights	0.02000	@	0.01997
Final Pan 1 after Pan 8	0.02877 @ 0.02882	at final	0.03000	@	0.02997

Comments: mean dry wt for control organisms was 0.265 mg/original organism. MF 2/23/06
mean dry wt for 100% sample organisms was 0.262 mg/original organism.

(A) These Pan weights are from SRT PAN 1 MF 3/3/06
since SRT and tests were weighed at same time.

revised 6/21/04 MF

000046

Test Page 5

Appendix 2. (continued)

Bayou Marcus WWTP *Ceriodaphnia dubia* Reproduction

Dunnett's
Summary Statistics and ANOVA

Transformation = None

Concentration	Replicates	Reproduction Mean	s.d.	cv%
Control	10	19.4000	4.7656	24.6
100%	10	22.5000	2.5495	11.3

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -2.956788
This difference corresponds to -15.24 percent of control

Between concentrations
sum of squares = 48.050000 with 1 degrees of freedom.

Error mean square = 14.605556 with 18 degrees of freedom.

Bartlett's test p-value for equality of variances = .071

Appendix 2. (continued)

Bayou Marcus WWTP *P. promelas* Survival

Dunnett's
Summary Statistics for Raw Data

Concentration	replicates	Survival Mean	s.d.	cv%
Control	4	.9750	.0500	5.1
100%	4	.9500	.1000	10.5

Summary Statistics and ANOVA

Transformation = Arc Sine Square Root

Concentration	replicates	Mean	s.d.	cv%
Control	4	1.3713	.0815	5.9
100%	4	1.3358	.1524	11.4

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -.167663
This corresponds to a difference of -.089590 in original units
This difference corresponds to -9.33 percent of control

Between concentrations sum of squares = .002517 with 1 degrees of freedom.
Error mean square = .014938 with 6 degrees of freedom.
Bartlett's test p-value for equality of variances = .306

Bayou Marcus WWTP *P. promelas* Growth

Dunnett's
Summary Statistics and ANOVA

Transformation = None

Concentration	replicates	Weight Mean	s.d.	cv%
Control	4	.2635	.0156	5.9
100%	4	.2618	.0448	17.1

*) the mean for this conc. is significantly less than
the control mean at alpha = 0.05 (1-sided) by Dunnett's test

Minimum detectable difference for Dunnett's test = -.045990
This difference corresponds to -17.45 percent of control

Between concentrations sum of squares = .000006 with 1 degrees of freedom.
Error mean square = .001124 with 6 degrees of freedom.
Bartlett's test p-value for equality of variances = .100

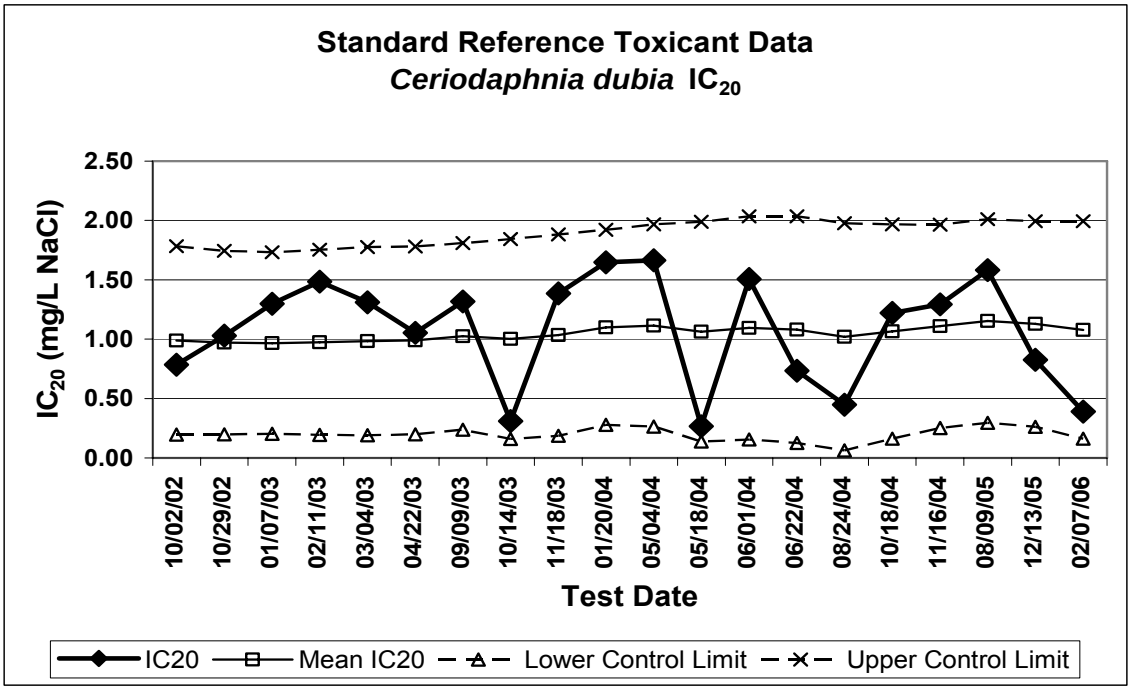
Appendix 3. SRT Bench Sheets and Statistical Analysis

Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
10/02/02	0.78	0.99	0.40	0.20	1.78
10/29/02	1.03	0.97	0.39	0.20	1.74
01/07/03	1.30	0.97	0.38	0.20	1.73
02/11/03	1.48	0.97	0.39	0.19	1.75
03/04/03	1.31	0.98	0.40	0.19	1.78
04/22/03	1.05	0.99	0.40	0.20	1.78
09/09/03	1.32	1.02	0.39	0.24	1.81
10/14/03	0.31	1.00	0.42	0.16	1.84
11/18/03	1.39	1.03	0.42	0.19	1.88
01/20/04	1.65	1.10	0.41	0.28	1.92
05/04/04	1.66	1.12	0.43	0.26	1.97
05/18/04	0.27	1.06	0.46	0.14	1.99
06/01/04	1.51	1.10	0.47	0.15	2.04
06/22/04	0.73	1.08	0.48	0.13	2.03
08/24/04	0.45	1.02	0.48	0.06	1.98
10/18/04	1.22	1.07	0.45	0.16	1.97
11/16/04	1.29	1.11	0.43	0.25	1.96
08/09/05	1.58	1.15	0.43	0.30	2.01
12/13/05	0.83	1.13	0.43	0.26	1.99
02/07/06	0.39	1.08	0.46	0.16	1.99

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



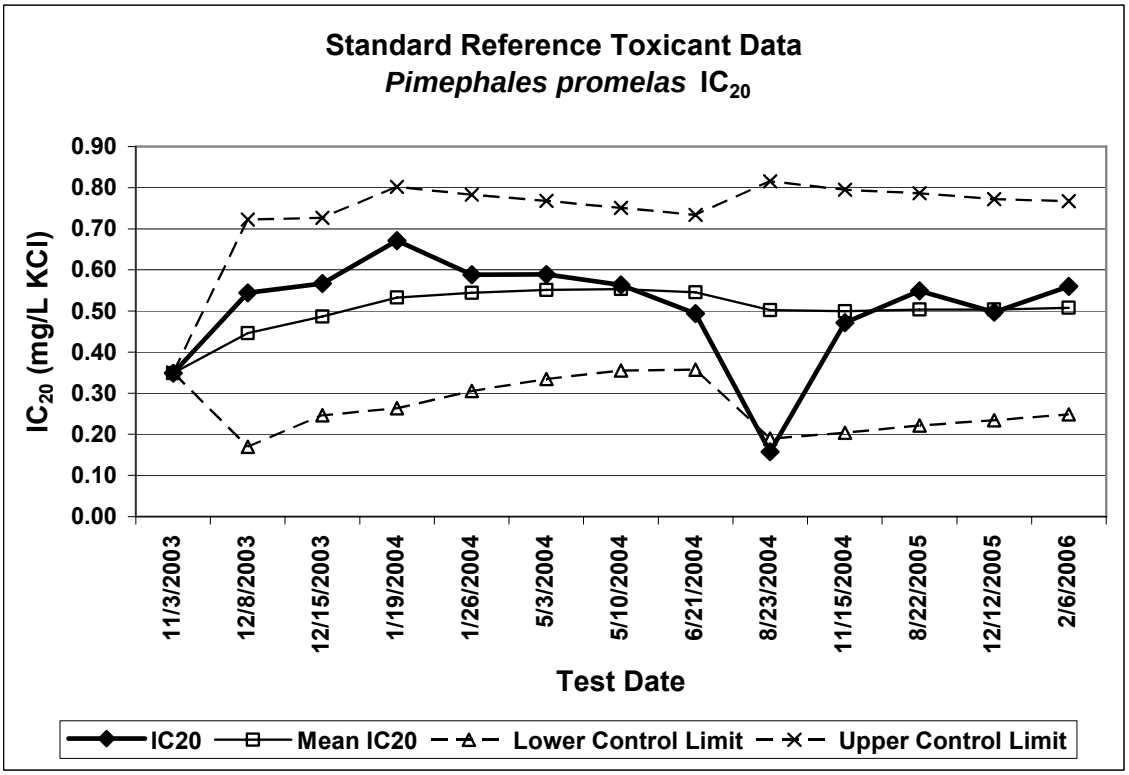
Appendix 3. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
11/3/03	0.35	0.35	0.35	0.35	0.35
12/8/03	0.54	0.45	0.14	0.17	0.72
12/15/03	0.57	0.49	0.12	0.25	0.73
1/19/04	0.67	0.53	0.13	0.26	0.80
1/26/04	0.59	0.54	0.12	0.31	0.78
5/3/04	0.59	0.55	0.11	0.33	0.77
5/10/04	0.56	0.55	0.10	0.36	0.75
6/21/04	0.49	0.55	0.09	0.36	0.73
8/23/04	0.16	0.50	0.16	0.19	0.82
11/15/04	0.47	0.50	0.15	0.20	0.80
8/22/05	0.55	0.50	0.14	0.22	0.79
12/12/05	0.50	0.50	0.13	0.23	0.77
2/6/06	0.56	0.51	0.13	0.25	0.77

Means are from all SRT tests, up to 20 tests..
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



Appendix 3. (continued)



Ceriodaphnia dubia NaCl Standard Reference Toxicity Test
Sodium chloride is the toxicant.
20% DMW is the diluent.

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Bioassay
Ceriodaphnia dubia Bench Sheets - Reproduction

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	# young	# adults	young adults
Control	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	0	0	0	0	0	0	4	0	7	10	0.7
	4	6	0	4	3	4	5	4	4	0	4	34	10	3.4
	5	0	6	81	6	8	8	0	0	7	9	55	10	5.5
	6	9	12	1	0	0	0	8	8	9	1	48	10	4.8
	7	12	11	6	8	12	9	7	4	0	10	79	10	7.9
	8	—	(0)											
	Total	27	33	22	17	24	22	19	16	20	24	223	10	22.3
0.59 ppt	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	0	0	0	0	0	0	0	0	3	10	0.3
	4	5	2	4	4	2	4	4	4	4	4	36	10	3.6
	5	1	0	6	3	0	8	2	0	3	5	28	10	2.8
	6	4	12	1	0	0	1	4	7	1	0	30	10	3.0
	7	8	0	7	10	0	7	7	8	3	5	55	10	5.5
	8													
	Total	18	16	18	17	2	20	17	19	11	14	152	10	15.2
0.89 ppt	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	6	0	6	10	0.6
	4	3	4	3	3	4	3	3	4	0	2	29	10	2.9
	5	6	5	8	4	0	3	6	6	4	3	40	10	4.0
	6	1	2	0	6	0	0	0	0	10	8	27	9	3.0
	7	6	7	11	7	8	7	5	7	0	6	57	9	6.3
	8													
	Total	16	9	23	16	15	16	14	15	19	16	159	9	17.6
1.3 ppt	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	4	0	4	10	0.4
	4	1	3	2	4	3	2	3	1	0	4	23	10	2.3
	5	0	7	5	0	0	0	5	0	3	4	29	10	2.9
	6	0	7	0	1	5	6	0	5	8	0	32	10	3.2
	7	0	0	6	9	7	6	6	4	0	9	47	10	4.7
	8													
	Total	1	17	13	14	15	14	14	10	15	22	135	10	13.5
2.0 ppt	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	1	0	0	0	0	0	0	0	0	0	1	10	0.1
	4	0	1	0	0	2	0	2	0	2	0	7	10	0.7
	5	0	4	0	0	0	1	0	2	0	0	7	10	0.7
	6	2	0	2	4	3	6	3	2	1	2	25	10	2.5
	7	1	4	3	4	1	3	5	1	3	1	26	10	2.6
	8													
	Total	4	9	5	8	6	10	10	5	6	3	66	10	6.6
3.0 ppt	0												10	
	1												9	
	2	X	X	X		X	X	X	X	X	X	0	0	0
	3													
	4													
	5													
	6													
	7													
	8													
	Total													

Begin Test:
Date: 2-7-06 Time: 1120
End Test:
Date: 2/14/06 Time: 19:42
loaded by MF

Day	Counted by:
1	BA by MF
2	BA
3	BA
4	BA
5	MF
6	BA
7	BA
8	—

organism batch 7-06

Remarks:
vials used to load
B1 MF 2/7/06
B5
B8
B9
B10
B11
B12 (B) Rep 3 live adult MF area. 9 neonates MF 2-12-06
B15
B17
A8

(A) Day 5 0.59ppt Rep 2 recorded as dead ... live adult MF 2-12-06

(C) Rep A Day 5 0 neonates MF 2/12/06

D total 32, transcription error BA

IC_{20} 0.3898
95% CI (0.3040-0.9385)
Investigators' Signatures
LOEC 0.59% PMSD 19.86%
Marshall Faircloth
Bill Alderman
Janet Pinkney
Anne Andes

reviewer

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form updated 11/03/03 JA

Appendix 3. (continued)



February 2006

Ceriodaphnia dubia NaCl Standard Reference Toxicant Test

Sodium Chloride is the Toxicant
20% DMW is the Diluent
Test start - 2-7-06 1120
test end: 2-14-06 1442

	Conc.	New Sample pH (su)	New Sample Temp (°C)	New Sample DO (mg/L)	New Sample Cond (µmhos/cm)	Old Sample pH (su)	Old Sample DO (mg/L)
Day 0	Control	8.1	24.8	7.9	189		
Day: 2/7	0.59 ‰	8.1			1317		
Measured	0.89 ‰	8.1			1881		
by: MF	1.3 ‰	8.1			2680		
Recorded	2.0 ‰	8.1			3330		
by: MF	3.0 ‰	8.1	24.4	7.9	5530		
Day 1	Control	8.1	24.0	7.7	329	8.1	6.9
Day: 2/8	0.59 ‰	8.1			1340	8.0	7.2
Measured	0.89 ‰	8.1			1899	8.0	7.1
by: SP	1.3 ‰	8.1			2730	8.0	7.2
Recorded	2.0 ‰	8.1			3870	8.0	7.1
by: SP	3.0 ‰	8.1	24.1	7.6	5650	8.0	7.2
Day 2	Control	8.1	24.3	8.3	184	8.0	7.9
Day 2/9	0.59 ‰	8.1			13600	8.0	7.9
Measured	0.89 ‰	8.1			1913	8.0	7.8
by: SP/MF	1.3 ‰	8.1			2750	8.1	7.8
Recorded	2.0 ‰	8.1	24.5	8.1	3920	8.0	7.9
by: SP/MF	3.0 ‰	8.1	24.0	8.3	5730	8.0	7.9
Day 3	Control	8.2	24.3	7.4	182	8.1	6.3
Day: 2/10	0.59 ‰	8.2			1320	8.1	6.0
Measured	0.89 ‰	8.2			1886	8.1	6.4
by: [illegible]	1.3 ‰	8.1			2710	8.1	6.5
Recorded	2.0 ‰	8.1	25.3	7.4	3880	8.0	6.5
by: MF BA	3.0 ‰	—	—	—	—	—	—

Remarks: Record 2.0 ‰ data when all organisms in 3.0 ‰ are dead.
Day 4 and Day 6 Conductivity for 1.3% and 2.0% in millimhos.
MF 4-11-06

State of Florida
Department of Environmental Protection
Biology Laboratory Chronic Bioassay
Ceriodaphnia dubia Bench Sheet - Chemistry

	Conc.	New Sample pH (su)	New Sample Temp (°C)	New Sample DO (mg/L)	New Sample Cond (µmhos/cm)	Old Sample pH (su)	Old Sample DO (mg/L)
Day 4	Control	8.2	24.3	7.0	201	8.1	7.1
Day: 2/11	0.59 ‰	8.1			1287	8.0	7.1
Measured	0.89 ‰	8.1			1875	8.1	7.2
by: BA	1.3 ‰	8.1			2.71	8.1	7.1
Recorded	2.0 ‰	8.0	24.6	7.0	3.85	8.0	7.0
by: BA	3.0 ‰	—	—	—	—	—	—
Day 5	Control	8.3	24.2	7.6	176	8.2	7.5
Day:	0.59 ‰	8.2			1286	8.1	7.5
Measured	0.89 ‰	8.1			1856	8.1	7.5
by: MF	1.3 ‰	8.1			2650	8.1	7.6
Recorded	2.0 ‰	8.1	24.2	7.5	3790	8.0	7.5
by: MF	3.0 ‰	—	—	—	—	—	—
Day 6	Control	8.1	24.0	7.0	180.3	8.1	6.9
Day:	0.59 ‰	8.1			1361	8.1	7.2
Measured	0.89 ‰	8.1			1931	8.1	6.9
by: BA	1.3 ‰	8.1			2.75	8.1	7.1
Recorded	2.0 ‰	8.1	24.0	7.7	3.94	8.1	6.9
by: BA	3.0 ‰	—	—	—	—	—	—
Day 7	Control	[illegible]	[illegible]	[illegible]	[illegible]	8.1	6.7
Day:	0.59 ‰	[illegible]	[illegible]	[illegible]	[illegible]	8.1	6.8
Measured	0.89 ‰	[illegible]	[illegible]	[illegible]	[illegible]	8.1	7.0
by: BA	1.3 ‰	[illegible]	[illegible]	[illegible]	[illegible]	8.1	7.2
Recorded	2.0 ‰	[illegible]	[illegible]	[illegible]	[illegible]	8.1	7.0
by: BA	3.0 ‰	[illegible]	[illegible]	[illegible]	[illegible]	—	—
Day 8	Control	[illegible]	[illegible]	[illegible]	[illegible]		
Day:	0.59 ‰	[illegible]	[illegible]	[illegible]	[illegible]		
Measured	0.89 ‰	[illegible]	[illegible]	[illegible]	[illegible]		
by:	1.3 ‰	[illegible]	[illegible]	[illegible]	[illegible]		
Recorded	2.0 ‰	[illegible]	[illegible]	[illegible]	[illegible]		
by:	3.0 ‰	[illegible]	[illegible]	[illegible]	[illegible]		

Water Quality Parameters

	Chlorine	Alkalinity	Hardness	Ammonia
20 % DMW	<0.03	89	82	<0.017
NaCl	<0.03	79	—	<0.017
Measured by:	BA	SA	BA	MF
Verified by:	MF	MF	MF	SP

Investigators' signatures
Laurel Richard
Marshall Faircloth
Brad Alexander
Bess Anderson
[illegible]
Nicole Wellendorf
reviewer

Chlorine blank: <0.03
Ammonia meter slope: -57.28
Ammonia blank: <0.017

C. dubia batch #: 7-06
NaCl batch #: 1-06
YCT batch #: 5-05
Algae batch #: 8-05
Diluent batch #: 3-06 Days Used: 4
Diluent batch #: 4-06 Days Used: 3

form updated 11/03/03 JA

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Appendix 3. (continued)

FDEP Biology Section—Chronic SRT Bench Sheet

Survival

Test Type: Screening / Definitive
Temperature range: room B 346 22.1-25.1°C
incubator #2 24.4-26.2°C
Test Number: 1
D=Dead M=Missing

Test Beginning: Date 2-7-06 Time 1300
Test Ending: Date 2-12-06 Time 1100
Organism Batch# 206 Diluent Batch #: MHW 1-06
Organism age: <24hrs 2-06

Comments:

Test organism: P. promelas

Toxicant - KCL
Batch 1-06

(g/L) Concentration		Replicate/ Chamber #	Day 0	1	2	3	4	5	6	7	8
CTRL	A	E1	10	10	10	10	10	10	10	9 10	
	B	E2	10	10	10	10	10	10	10	10	
	C	E3	10	10	10	10	10	10	10	10	
	D	E4	10	10	10	10	10	10	10	10	
0.125	A	E5	10		10	10	10	10	10	10	
	B	E6	10	10	10	10	10	9 10	9	8 D	
	C	E7	10	10	10	10	10	10	10	10	
	D	E8	10	10	10	10	10	10	10	10	
0.250	A	E9	10	10	10	10	10	9 10	9	9	
	B	E10	10	10	10	10	10	10	10	10	
	C	E11	10	10	10	10	10	10	10	10	
	D	E12	10	10	10	9 D	9	9	9	9	
0.500	A	E13	10	10	10	10	10	10	10	10	
	B	E14	10	10	10	10	10	10	10	10	
	C	E15	10	10	10	10	10	10	10	10	
	D	E16	10	10	10	10	10	10	10	10	
1.00	A	E17	10	9 D	5 D	3 D	2	1 D	1	0 D	
	B	E18	10	6 D	4 D	3 D	2 D	2	0 D	—	
	C	E19	10	7 D	2 D	5 D	5	4 D	4	3 D	
	D	E20	10	5 D	5	4 D	4	3 D	1 D	0 D	
2.00	A	E21	10	0 D	—	—	—	—	—	—	
	B	E22	10	0 D	—	—	—	—	—	—	
	C	E23	10	0 D	—	—	—	—	—	—	
	D	E24	10	0 D	—	—	—	—	—	—	

Loaded by: JD Renewed by: — JD JD JD JD MF JD JD
Concentrations Prepared by: JD MF JD JD JD SP JD JD
Investigators' signatures verified: SP

Water Quality Parameters
Verified by: MF/SP

	Diluent	Sample	Method	Measured by
Field total residual Cl_2:	—	—	—	—
Lab total residual Cl_2:	<0.03	—	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	77	77	Hach	BA/SA
Hardness (mg/L as $CaCO_3$):	92	—	Hach	BA/SA
Ammonia (mg/L as N):	<0.17	—	Denver	MF

reviewer (sign above)

Ammonia blank: <0.17 TRC blank: 0.13 Salinity: Control 0.0 Sample NA

revised 08/14/02

(A) 4 D fd
(B) 6 D fd

SAVP
NOEC - 0.500 g/L
LOEC - 1.0 g/L
WT. PMSD - 12.9%

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Page 000121 not used.

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas						Organism Batch # 2-06				
Test Number: 1	Date: 2.7.06			Hour of test: 0			Dilution H20 Batch # 1-06				
	Before Renewal			Time: 1300			After Renewal			Time: 1444	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.	Rep	pH	Temp.C	D.O.	Cond.	
CTRL	A	8.1	24.7	8.1 7.4@	0.325m						
0.125	A	8.2	24.8	8.0	0.450m						
0.250	A	8.1	24.7	8.3	0.665m						
0.500	A	8.1	24.6	8.1	1.12m						
1.00	A	8.1	24.6	8.2	2.08m						
2.00	A	9.1	24.5	8.3	3.77m						
^ Measured by:		JD	JD	JD	JD						
^ Recorded by:		JD	JD	JD	JD						

NO ENTRIES

revised 8/14/02

^ See first test page for investigator signatures

@ initial reading incorrect. J.D.

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Appendix 3. (continued)

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCL	Test Organism: P. promelas	Organism Batch # 2-06
Test Number: 1	Date: 2-8-06	Hour of test: 24	Dilution H20 Batch # 1-06

Concentrations g/L	After Before Renewal Rep	pH	Temp.C	D.O.	Time: 1330 Cond. m	Before After Renewal Rep	pH	Temp.C	D.O.	Time: 1400 1330 Cond.
CONTROL	B	8.1	24.0	7.5	0.332 m	B	7.9	24.0	7.1	0.340m
0.125	B	8.1	24.1	7.4	0.564m	B	7.9	24.0	7.0	0.518m
0.250	B	8.1	24.0	7.4	0.778m	B	8.0	24.1	7.1	0.795m
0.500	B	8.1	24.0	7.4	1.20 m	B	7.9	24.2	6.9	1.29m
1.0	B	8.0	24.1	7.4	2.25m	B	8.0	24.1	7.0	2.17m
2.0	B	-	-	-	-	B	8.0	24.2	6.9	3.90 m
^ Measured by:	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP
^ Recorded by:	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP

m = mmhos/cm

revised 8/14/02

^ See first test page for investigator signatures

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Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas						Organism Batch # 2-06			
Test Number: 1	Date: 2-9-06			Hour of test: 48			Dilution H20 Batch # 2-06			
	Before Renewal			Time: ~~12.10~~ 12.10		After Renewal			Time: 12.20	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.^M	Rep	pH	Temp.C	D.O.	Cond.^M
CTRL	C	7.7	24.7	6.9	0.312 m	C	8.0	24.1	7.3	0.329 m
0.125	C	7.8	24.7	6.6	0.580 m	C	8.0	24.7	7.1	0.545 m
0.250	C	7.8	24.8	6.8	0.821 m	C	8.0	24.7	6.9	0.814 m BA
0.500	C	7.8	24.8	6.0	1.362 m	C	7.9	24.5	7.1	1.270 m
1.0	C	7.7	24.7	6.3	2.24 m	C	7.9	24.2	7.3	2.11 m
^ Measured by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
^ Recorded by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

m = milli mhos - cm

revised 8/14/02

^ See first test page for investigator signatures



Appendix 3. (continued)

Chronic SRT Bench Sheet
Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: Pimephales	Organism Batch # 2-06
Test Number: 1	Date: 2-16-06 Hour of test: 72	Dilution H20 Batch # 2.06

Concentrations g/L	Rep	Before Renewal Time: 1352 pH	Temp.C	D.O.	Cond.	Rep	After Renewal Time: 1415 pH	Temp.C	D.O.	Cond.
CTRL	D	8.0	24.7	7.3	0.325	D	8.1	25.0	6.1	0.316
0.125	D	7.9	24.8	6.0	0.553	D	8.1	24.9	6.3	0.541
0.250	D	7.9	24.7	6.1	0.829	D	8.0	24.8	6.4	0.783
0.5 00	D	7.9	24.6	5.9	1.241	D	8.0	24.6	6.5	1.176
1.0	D	7.8	24.6	6.0	2.21	D	8.0	24.6	6.3	2.14
^ Measured by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
^ Recorded by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

^ See first test page for investigator signatures

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Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas						Organism Batch # 2-06				
Test Number: 1	Date: 2/11/06			Hour of test: 96			Dilution H20 Batch # 2-06, 3-06				
	Before Renewal			Time: 9 30			After Renewal			Time: 9 45	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond. M	Rep	pH	Temp.C	D.O.	Cond. M	
Ctrl	A	7.8	24.6	6.2	0.311 M	A	8.0	24.6	6.6	0.315 M	
0.125	A	7.8	24.6	6.0	0.546 M	A	7.9	24.9	6.8	0.557 M	
0.250	A	7.8	24.6	5.9	0.770 M	A	8.0	24.9	6.7	0.785 M	
0.500	A	7.8	24.5	6.0	1.251 M	A	8.0	25.0	6.8	1.211 M	
1.0	A	7.8	24.5	6.1	2.01 M	A	8.0	25.0	6.8	2.12 M	
^ Measured by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	
^ Recorded by:	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	

M = millimhos-cm

revised 8/14/02

^ See first test page for investigator signatures



Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: P. promelas					Organism Batch # 2-06				
Test Number: 1	Date: 2-12-06			Hour of test: 120		Dilution H20 Batch # 306				
	Before Renewal			Time: 0900		After Renewal			Time: 0915	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.	Rep	pH	Temp.C	D.O.	Cond.
CTRL	B	7.8	24.8	6.9	0.305m 0.174m (B)	B	8.0	24.3	7.5	0.321 m
~~0.56~~ SP 0.125	B	7.9	24.9	7.0	0.568m 1.27m (B)	B	8.0	24.4	7.5	0.563 m
0.250	B	8.0	24.5	7.1	0.793m 1.04m (B)	B	8.0	24.5	7.5	0.788 m
0.500	B	7.9	25.1	7.0	1.22 m (B)	B	8.0	24.6	7.5	1.23 m
1.00	B	7.9	24.7	7.1	2.12m	B	8.0	24.6	7.5	2.13 m
^ Measured by:	SB	SP	SP	SP	SP	SP	SP	SP	SP	SP
^ Recorded by:	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP

m: m.Mmho/cm

revised 8/14/02

^ See first test page for investigator signatures

(B) measurements taken from wrong aliquot SP

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Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCL	Test Organism: P. promelas					Organism Batch # 2-06				
Test Number: 1	Date: 2-13-06			Hour of test: 144		Dilution H20 Batch # 3-06				
	Before Renewal			Time: 13:20		After Renewal			Time: 1340	
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.M	Rep	pH	Temp.C	D.O.	Cond.M
CTRL	C	7.7	24.0	7.0	.1345	C	8.0	24.0	7.0	.1367
0.125	C	7.8	24.0	6.4	.2600	C	8.0	21.3	7.1	.0606
0.250	C	7.8	24.0	6.3	.8413	C	8.0	21.2	7.0	.0860
0.500	C	7.8	24.0	6.2	1.327	C	7.9	21.3	6.9	1.297
1.00	C	7.8	24.0	6.3	2.25	C	8.0	21.6	7.0	2.17
^ Measured by:	MF	BA	BA	BA	BA	BA	BA	BA	BA	BA
^ Recorded by:	MF	BA	BA	BA	BA	BA	BA	BA	BA	BA

M = mmhos/cm

revised 8/14/02

^ See first test page for investigator signatures



Appendix 3. (continued)

[redacted]

Chronic SRT Bench Sheet

Physical-Chemistry Parameters

Toxicant: KCl	Test Organism: Pimephales						Organism Batch # 3-06					
Test Number: 1	Date: 2/4/06			Hour of test: ~~1100~~ 168			Dilution H20 Batch # 3-06					
	Before Renewal			Time: 1100			After Renewal			Time:		
Concentrations g/L	Rep	pH	Temp.C	D.O.	Cond.	Rep	pH	Temp.C	D.O.	Cond.		
Ctrl	D	7.9	24.0	7.0	0.761							
0.125	D	7.8	24.0	7.1	0.813							
0.250	D	7.8	24.1	7.1	0.891							
.5	D	7.8	24.0	7.2	1.241							
1.0	C	7.9	24.0	7.3	2.28							
^ Measured by:		JJ	JH	JH	JH							
^ Recorded by:		JH	JH	JH	JH							

M : mg/L ; us/cm

revised 8/14/02

^ See first test page for investigator signatures

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Weight Data for SRT, larval survival and growth test.

Test Date(s): 2-7-06 2-14.06
Tare weighing Date: 2-13.06
Final weighing Date: 2-16-06

Drying Temperature (°C): 105°C
Drying Time (h): 8 hr

KCl g/L

Concentration	Pan # Rep #	A (g) Wgt.of Tare	B (g) Dry Wgt. tare and larve	B-A (g) Total Dry Wgt. of larve	C Number of orig larve	(B-A)/C mg Mean Dry Wgt. of Larve	Comments
Control	168	0.02530	0.02877	0.00347	10	0.347	
	169	0.02581	0.02881	0.00300	10	0.300	
	170	0.02510	0.02869	0.00359	10	0.359	mean
	171	0.02443	0.02777	0.00334	10	0.334	0.3350
Concentration 0.125	172	0.02528	0.02791	0.00263	10	0.263	
	173	0.02563	0.02846	0.00278	10	0.278	
	174	0.02542	0.02857	0.00315	10	0.315	
	175	0.02556	0.02870	0.00314	10	0.314	mean 0.2925
Concentration 0.250	176	0.02520	0.02822	0.00302	10	0.302	
	177	0.02480	0.02792	0.00312	10	0.312	
	178	0.02477	0.02768	0.00291	10	0.291	
	179	0.02431	0.02715	0.00284	10	0.284	mean 0.2973
Concentration 0.500	180	0.02563	0.02872	0.00304	10	0.304	
	181	0.02592	0.02861	0.00269	10	0.269	
	182	0.02496	0.02806	0.00310	10	0.310	
	183	0.02665	0.03018	0.00353	10	0.353	mean 0.3090
Concentration 1.00	184	0.02498	00	—	10	—	
	185	0.02502	00	—	10	—	
	186	0.02530	0.02665	0.00135	10	0.135	
	187	0.02596	00	—	10	—	
Concentration							
Concentration							
Weighed by		MF	JD	MF	MF	MF	

Weigh Boats prepared by: Deanna Nicholson hgmt

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S weights at Tare

1 2.01566 @ 0.02479

2 0.03010 @ 0.02997

S weights at Final

1 0.03100 @ 0.02497

2 0.02000 @ 0.01497

ICp 20 = 0.5594811
95% CI (0.5232 – 0.6035)

ICp 25 = 0.5709
95% CI (0.5484 – 0.6278)

wt control CV 7.6%

2-13-06
Pan # 168 after 172 0.02534
Pan # 168 after 177 0.02532
Pan # 168 after 182 0.02533
Pan # 168 after 187 0.02575

2/16/06
Pan 168 after 172 0.02529
Pan 168 after 177 0.02539
Pan 168 after 182 0.02584
revised 5/21/98
Pan 168 after 187 0.02583

Appendix 3. (continued)

FDEP Bureau of Laboratories
Chronic Standard Reference Toxicant Bioassay Inhibition Concentration Calculation

Test Species: *Ceriodaphnia dubia* Test Duration: 7 days
Toxicant: NaCl Concentration: g/L
Test Start Date: 2/7/06 Test Ending Date: 2/14/06
DATA FILE: cdsrtf06.icp **IC_{20} calculation**

Conc. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	10	22.3	4.785	22.300
0.590	10	15.2	5.308	15.550
0.89	10	15.9	3.542	15.550
1.3	10	13.5	5.359	13.500
2.0	10	6.6	2.503	6.600
3.0	10	0.0	0.000	0.000

The Linear Interpolation Estimate: 0.3898 Entered P Value: 20

Number of Resamplings: 80 80 Resamples Generated
The Bootstrap Estimates Mean: 0.4581 Standard Deviation: 0.1681
Original Confidence Limits: Lower: 0.3040 Upper: 0.9385
Resampling time in Seconds: 0.00 Random_Seed: 435963822

IC_{20} = 0.3898

Test Species: *Ceriodaphnia dubia* Test Duration: 7 days
Toxicant: NaCl Concentration: g/L
Test Start Date: 2/7/06 Test Ending Date: 2/14/06
DATA FILE: cdsrtf06.icp **IC_{25} calculation**

Conc. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	10	22.3	4.785	22.300
0.590	10	15.2	5.308	15.550
0.89	10	15.9	3.542	15.550
1.3	10	13.5	5.359	13.500
2.0	10	6.6	2.503	6.600
3.0	10	0.0	0.000	0.000

The Linear Interpolation Estimate: 0.4873 Entered P Value: 25

Number of Resamplings: 80 80 Resamples Generated
The Bootstrap Estimates Mean: 0.5924 Standard Deviation: 0.2322
Original Confidence Limits: Lower: 0.3540 Upper: 1.1064
Resampling time in Seconds: 0.00 Random_Seed: 632132334

IC_{25} = 0.4873

Appendix 3. (continued)

FDEP Bureau of Laboratories
Chronic Standard Reference Toxicant Bioassay Inhibition Concentration Calculation

Test Species: *Pimephales promelas* Test Duration: 7 days
Toxicant: KCl Concentration: g/L
Test Start Date: 2/7/06 Test Ending Date: 2/14/06
DATA FILE: ppfeb06.icp IC_{20} calculation

Conc. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	4	0.335	0.025	0.335
0.125	4	0.292	0.026	0.300
0.25	4	0.297	0.012	0.300
0.5	4	0.309	0.034	0.300
1.0	4	0.034	0.068	0.034

The Linear Interpolation Estimate: 0.5594 Entered P Value: 20

Number of Resamplings: 80 80 Resamples Generated
The Bootstrap Estimates Mean: 0.5618 Standard Deviation: 0.0202
Original Confidence Limits: Lower: 0.5232 Upper: 0.6033
Expanded Confidence Limits: Lower: 0.5015 Upper: 0.6297
Resampling time in Seconds: 0.00 Random_Seed: -220066312

IC_{20} = 0.5594

Test Species: *Pimephales promelas* Test Duration: 7 days
Toxicant: KCl Concentration: g/L
Test Start Date: 2/7/06 Test Ending Date: 2/14/06
DATA FILE: ppfeb06.icp IC_{25} calculation

Conc. ID	Number Replicates	Response Means	Std. Dev.	Pooled Response Means
Control	4	0.335	0.025	0.335
0.125	4	0.292	0.026	0.300
0.25	4	0.297	0.012	0.300
0.5	4	0.309	0.034	0.300
1.0	4	0.034	0.068	0.034

The Linear Interpolation Estimate: 0.5909 Entered P Value: 25

Number of Resamplings: 80 80 Resamples Generated
The Bootstrap Estimates Mean: 0.5925 Standard Deviation: 0.0227
Original Confidence Limits: Lower: 0.5484 Upper: 0.6378
Expanded Confidence Limits: Lower: 0.5229 Upper: 0.6660
Resampling time in Seconds: 0.00 Random_Seed: 1277532088

IC_{25} = 0.5909

Appendix 4. Test Organism Receipts

CHESAPEAKE CULTURES, INC.
P.O. BOX 507
HAYES, VA 23072
(804) 693-4046 Phone
(804) 694-4704 Fax
growfish@c-cultures.com

Packing Slip

DATE	INVOICE #
2/6/2006	5323

BILL TO:

Hydrosphere Research
11842 Research Circle
Alachua, FL 32615

SHIP TO:

Marshall Faircloth
FDEP
Biology M/S 6515
2600 Blairstone Rd.
Tallahassee, FL 32399

P.O. NUMBER	TERMS	REP	SHIP	VIA	F.O.B.	PROJECT
verbal			2/6/2006	FEDEX		

QUANTITY	ITEM CODE	DESCRIPTION	PRICE EACH	AMOUNT
350	pp	Pimephales promelas 24 hrs, hatched 2/06 1400 1430hrs		
120	pp	Pimephales promelas 5d; hatched 1/31/06		

Appendix 4. (continued)

Chesapeake Cultures

P.O. Box 507 Hayes. VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

FDEP
Shipment Information

Species Pimephales promelas		Date 2/6/06
Age ~~24hrs; hatched 2/6 1400-1430hrs~~	8d; hatched 1/30/06	P.O. No. –
Quanitity 350+	120+	Invoice No. 5323

Temperature 24°C Salinity – pH 7.97

Notes Thank you!

Biologist

** Please inspect shipment and report any problem immediately **

Appendix 5. Chemical Analyses performed on the effluent from the Bayou Marcus Water Reclamation Facility Outfall D-002, sampled on February 6, 8 and 10, 2006.

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 10:05	# 1	Bio-AGP/LimNut	Algal Growth Potential	23.9	mg DryWt/L		0.3	0.9
02-06-06 10:05	# 1	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	0.796	mg DryWt/L	I	0.3	0.9
02-08-06 09:25	# 2	Bio-AGP/LimNut	Algal Growth Potential	32.7	mg DryWt/L		0.3	0.9
02-08-06 09:25	# 2	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	0.675	mg DryWt/L	I	0.3	0.9
02-10-06 09:50	# 3	Bio-AGP/LimNut	Algal Growth Potential	25.7	mg DryWt/L		0.3	0.9
02-10-06 09:50	# 3	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	0.3	mg DryWt/L	U	0.3	0.9
02-06-06 10:05	# 1	Bio-BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.5	mg/L	I	0.2	2.0
02-06-06 10:05	# 1	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
02-06-06 10:05	# 1	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
02-08-06 09:25	# 2	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	1.2	ug/L	U	1.2	3.7
02-08-06 09:25	# 2	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	2.1	ug/L	U	2.1	6.4
02-10-06 09:50	# 3	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	UQ	0.85	2.6
02-10-06 09:50	# 3	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	UQ	1.5	4.5
02-06-06 10:05	# 1	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100	NOEC			
02-06-06 10:05	# 1	Bio-Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100	NOEC			
02-06-06 10:05	# 1	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
02-06-06 10:05	# 1	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	58
02-06-06 10:05	# 1	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	2-Nitrophenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
02-06-06 10:05	# 1	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 10:05	# 1	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
02-06-06 10:05	# 1	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Benzidine	96	ug/L	U	96	380
02-06-06 10:05	# 1	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
02-06-06 10:05	# 1	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
02-06-06 10:05	# 1	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
02-06-06 10:05	# 1	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
02-06-06 10:05	# 1	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
02-06-06 10:05	# 1	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
02-06-06 10:05	# 1	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
02-06-06 10:05	# 1	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
02-06-06 10:05	# 1	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 10:05	# 1	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12
02-06-06 10:05	# 1	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7
02-06-06 10:05	# 1	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
02-06-06 10:05	# 1	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
02-06-06 10:05	# 1	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
02-06-06 10:05	# 1	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
02-06-06 10:05	# 1	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
02-06-06 07:00	BLANKS	BNA-Water	1,2,4-Trichlorobenzene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	1,2-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	1,3-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	1,4-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2,4,6-Trichlorophenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2,4-Dichlorophenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2,4-Dimethylphenol	49	ug/L	U	49	200
02-06-06 07:00	BLANKS	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	59
02-06-06 07:00	BLANKS	BNA-Water	2,4-Dinitrotoluene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2,6-Dinitrotoluene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2-Chloronaphthalene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2-Chlorophenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	2-Nitrophenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	3,3'-Dichlorobenzidine	39	ug/L	U	39	160
02-06-06 07:00	BLANKS	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	4-Bromophenyl phenyl ether	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	4-Chloro-3-methylphenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	7.8
02-06-06 07:00	BLANKS	BNA-Water	4-Nitrophenol	15	ug/L	U	15	59
02-06-06 07:00	BLANKS	BNA-Water	Acenaphthene	0.98	ug/L	U	0.98	3.9

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 07:00	BLANKS	BNA-Water	Acenaphthylene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Aldrin	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Anthracene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Benzidine	98	ug/L	U	98	390
02-06-06 07:00	BLANKS	BNA-Water	Benzo(a)anthracene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Benzo(a)pyrene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Benzo(b)fluoranthene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Benzo(g,h,i)perylene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Benzo(k)fluoranthene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Bis(2-chloroethoxy)methane	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Bis(2-chloroethyl)ether	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	59
02-06-06 07:00	BLANKS	BNA-Water	Butyl benzyl phthalate	4.9	ug/L	U	4.9	20
02-06-06 07:00	BLANKS	BNA-Water	Chrysene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Dibenzo(a,h)anthracene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Diethyl phthalate	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Dimethyl phthalate	49	ug/L	U	49	200
02-06-06 07:00	BLANKS	BNA-Water	Di-n-butyl phthalate	4.9	ug/L	U	4.9	20
02-06-06 07:00	BLANKS	BNA-Water	Di-n-octyl phthalate	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Endosulfan I	3.9	ug/L	U	3.9	16
02-06-06 07:00	BLANKS	BNA-Water	Endosulfan II	3.9	ug/L	U	3.9	16
02-06-06 07:00	BLANKS	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Endrin	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Endrin aldehyde	3.9	ug/L	U	3.9	16
02-06-06 07:00	BLANKS	BNA-Water	Fluoranthene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Fluorene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	5.9
02-06-06 07:00	BLANKS	BNA-Water	Hexachlorobenzene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 07:00	BLANKS	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	Indeno(1,2,3-cd)pyrene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Isophorone	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Naphthalene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Nitrobenzene	2	ug/L	U	2	7.8
02-06-06 07:00	BLANKS	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	7.8
02-06-06 07:00	BLANKS	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	7.8
02-06-06 07:00	BLANKS	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
02-06-06 07:00	BLANKS	BNA-Water	Phenanthrene	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Phenol	0.98	ug/L	U	0.98	3.9
02-06-06 07:00	BLANKS	BNA-Water	Pyrene	0.98	ug/L	U	0.98	3.9
02-06-06 10:05	# 1	GC-Water	Alachlor	0.58	ug/L	U	0.58	2.3
02-06-06 10:05	# 1	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.19
02-06-06 10:05	# 1	GC-Water	Atrazine	0.23	ug/L		0.048	0.19
02-06-06 10:05	# 1	GC-Water	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
02-06-06 10:05	# 1	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
02-06-06 10:05	# 1	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
02-06-06 10:05	# 1	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
02-06-06 10:05	# 1	GC-Water	Chlorpyrifos Methyl	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Diazinon	0.048	ug/L	U	0.048	0.19
02-06-06 10:05	# 1	GC-Water	Ethion	0.048	ug/L	U	0.048	0.19
02-06-06 10:05	# 1	GC-Water	Ethoprop	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
02-06-06 10:05	# 1	GC-Water	Fonofos	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Hexazinone	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
02-06-06 10:05	# 1	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
02-06-06 10:05	# 1	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.9
02-06-06 10:05	# 1	GC-Water	Metribuzin	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
02-06-06 10:05	# 1	GC-Water	Naled	0.77	ug/L	U	0.77	3.1
02-06-06 10:05	# 1	GC-Water	Norflurazon	0.14	ug/L	U	0.14	0.56
02-06-06 10:05	# 1	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
02-06-06 10:05	# 1	GC-Water	Parathion Methyl	0.096	ug/L	U	0.096	0.38
02-06-06 10:05	# 1	GC-Water	Phorate	0.048	ug/L	U	0.048	0.19
02-06-06 10:05	# 1	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 10:05	# 1	GC-Water	Simazine	0.048	ug/L	U	0.048	0.19
02-06-06 07:00	BLANKS	GC-Water	Alachlor	0.59	ug/L	U	0.59	2.4
02-06-06 07:00	BLANKS	GC-Water	Ametryn	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Atrazine	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
02-06-06 07:00	BLANKS	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
02-06-06 07:00	BLANKS	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
02-06-06 07:00	BLANKS	GC-Water	Chlorpyrifos Ethyl	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Chlorpyrifos Methyl	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Diazinon	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Ethion	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Ethoprop	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
02-06-06 07:00	BLANKS	GC-Water	Fonofos	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Hexazinone	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Malathion	0.15	ug/L	U	0.15	0.6
02-06-06 07:00	BLANKS	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
02-06-06 07:00	BLANKS	GC-Water	Metolachlor	0.49	ug/L	U	0.49	2
02-06-06 07:00	BLANKS	GC-Water	Metribuzin	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
02-06-06 07:00	BLANKS	GC-Water	Naled	0.78	ug/L	U	0.78	3.1
02-06-06 07:00	BLANKS	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
02-06-06 07:00	BLANKS	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
02-06-06 07:00	BLANKS	GC-Water	Parathion Methyl	0.098	ug/L	U	0.098	0.39
02-06-06 07:00	BLANKS	GC-Water	Phorate	0.049	ug/L	U	0.049	0.2
02-06-06 07:00	BLANKS	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
02-06-06 07:00	BLANKS	GC-Water	Simazine	0.049	ug/L	U	0.049	0.2
02-06-06 10:05	# 1	Metals-Water	Aluminum	198	ug/L		5	20
02-06-06 10:05	# 1	Metals-Water	Arsenic	4	ug/L	U	4	16
02-06-06 10:05	# 1	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
02-06-06 10:05	# 1	Metals-Water	Calcium	23.2	mg/L		0.05	0.2
02-06-06 10:05	# 1	Metals-Water	Chromium	2	ug/L	U	2	8
02-06-06 10:05	# 1	Metals-Water	Copper	1.53	ug/L		0.25	1
02-06-06 10:05	# 1	Metals-Water	Iron	43	ug/L		10	40
02-06-06 10:05	# 1	Metals-Water	Lead	0.65	ug/L		0.075	0.3
02-06-06 10:05	# 1	Metals-Water	Magnesium	13.7	mg/L		0.01	0.04
02-06-06 10:05	# 1	Metals-Water	Nickel	2.9	ug/L	I	1	4

Appendix 5. (continued)

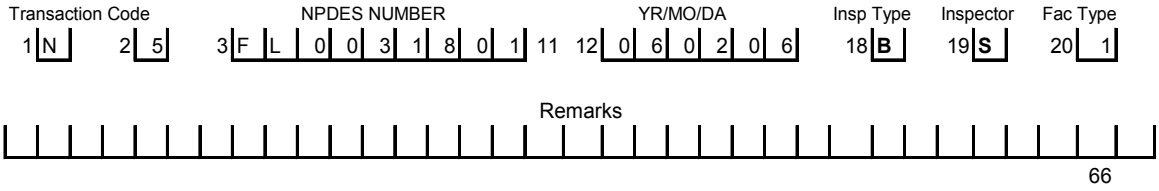
Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 10:05	# 1	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
02-06-06 10:05	# 1	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
02-06-06 10:05	# 1	Metals-Water	Zinc	81	ug/L		3	12
02-08-06 09:25	# 2	Metals-Water	Aluminum	152	ug/L		5	20
02-08-06 09:25	# 2	Metals-Water	Arsenic	4	ug/L	U	4	16
02-08-06 09:25	# 2	Metals-Water	Cadmium	0.43	ug/L	I	0.14	0.56
02-08-06 09:25	# 2	Metals-Water	Calcium	24	mg/L		0.05	0.2
02-08-06 09:25	# 2	Metals-Water	Chromium	2	ug/L	U	2	8
02-08-06 09:25	# 2	Metals-Water	Copper	1.45	ug/L		0.25	1
02-08-06 09:25	# 2	Metals-Water	Iron	39	ug/L	I	15	60
02-08-06 09:25	# 2	Metals-Water	Lead	0.9	ug/L		0.075	0.3
02-08-06 09:25	# 2	Metals-Water	Magnesium	12.4	mg/L		0.01	0.04
02-08-06 09:25	# 2	Metals-Water	Nickel	3.3	ug/L	I	1	4
02-08-06 09:25	# 2	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
02-08-06 09:25	# 2	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
02-08-06 09:25	# 2	Metals-Water	Zinc	82	ug/L		3	12
02-10-06 09:50	# 3	Metals-Water	Aluminum	224	ug/L		5	20
02-10-06 09:50	# 3	Metals-Water	Arsenic	4	ug/L	U	4	16
02-10-06 09:50	# 3	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
02-10-06 09:50	# 3	Metals-Water	Calcium	25.2	mg/L		0.05	0.2
02-10-06 09:50	# 3	Metals-Water	Chromium	2	ug/L	U	2	8
02-10-06 09:50	# 3	Metals-Water	Copper	1.7	ug/L		0.25	1
02-10-06 09:50	# 3	Metals-Water	Iron	51	ug/L		10	40
02-10-06 09:50	# 3	Metals-Water	Lead	0.67	ug/L	I	0.17	0.68
02-10-06 09:50	# 3	Metals-Water	Magnesium	11.4	mg/L		0.01	0.04
02-10-06 09:50	# 3	Metals-Water	Nickel	5.2	ug/L		1	4
02-10-06 09:50	# 3	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
02-10-06 09:50	# 3	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
02-10-06 09:50	# 3	Metals-Water	Zinc	81	ug/L		3	12
02-06-06 07:00	BLANKS	Metals-Water	Aluminum	11	ug/L	I	5	20
02-06-06 07:00	BLANKS	Metals-Water	Arsenic	4	ug/L	U	4	16
02-06-06 07:00	BLANKS	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
02-06-06 07:00	BLANKS	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2
02-06-06 07:00	BLANKS	Metals-Water	Chromium	2	ug/L	U	2	8
02-06-06 07:00	BLANKS	Metals-Water	Copper	0.25	ug/L	U	0.25	1
02-06-06 07:00	BLANKS	Metals-Water	Iron	10	ug/L	U	10	40
02-06-06 07:00	BLANKS	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3

Appendix 5. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
02-06-06 07:00	BLANKS	Metals-Water	Magnesium	0.01	mg/L	U	0.01	0.04
02-06-06 07:00	BLANKS	Metals-Water	Nickel	1	ug/L	U	1	4
02-06-06 07:00	BLANKS	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
02-06-06 07:00	BLANKS	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
02-06-06 07:00	BLANKS	Metals-Water	Zinc	3	ug/L	U	3	12
02-06-06 10:05	# 1	Nutrients-Liquid	Alkalinity	103	mg CaCO3/L		0.65	2.5
02-06-06 10:05	# 1	Nutrients-Liquid	Ammonia-N	0.057	mg N/L		0.01	0.02
02-06-06 10:05	# 1	Nutrients-Liquid	Kjeldahl Nitrogen	1.2	mg N/L		0.08	0.2
02-06-06 10:05	# 1	Nutrients-Liquid	NO2NO3-N	0.38	mg N/L		0.004	0.01
02-06-06 10:05	# 1	Nutrients-Liquid	O-Phosphate-P	0.031	mg P/L		0.004	0.01
02-06-06 10:05	# 1	Nutrients-Liquid	Sulfate	61	mg SO4/L		0.4	1
02-06-06 10:05	# 1	Nutrients-Liquid	Sulfide	0.05	mg S/L	UY	0.05	0.2
02-06-06 10:05	# 1	Nutrients-Liquid	Total-P	0.15	mg P/L		0.02	0.06
02-06-06 10:05	# 1	Nutrients-Liquid	TSS	4	mg/L	I	4	16
02-08-06 09:25	# 2	Nutrients-Liquid	Ammonia-N	0.044	mg N/L		0.01	0.02
02-08-06 09:25	# 2	Nutrients-Liquid	Kjeldahl Nitrogen	1.4	mg N/L		0.08	0.2
02-08-06 09:25	# 2	Nutrients-Liquid	NO2NO3-N	0.43	mg N/L		0.004	0.01
02-08-06 09:25	# 2	Nutrients-Liquid	O-Phosphate-P	0.026	mg P/L		0.004	0.01
02-08-06 09:25	# 2	Nutrients-Liquid	Total-P	0.13	mg P/L		0.02	0.06
02-10-06 09:50	# 3	Nutrients-Liquid	Ammonia-N	0.052	mg N/L		0.01	0.02
02-10-06 09:50	# 3	Nutrients-Liquid	Kjeldahl Nitrogen	1.9	mg N/L	A	0.08	0.2
02-10-06 09:50	# 3	Nutrients-Liquid	NO2NO3-N	0.29	mg N/L		0.004	0.01
02-10-06 09:50	# 3	Nutrients-Liquid	O-Phosphate-P	0.039	mg P/L	Q	0.004	0.01
02-10-06 09:50	# 3	Nutrients-Liquid	Total-P	0.18	mg P/L	A	0.02	0.06
02-06-06 07:00	BLANKS	Nutrients-Liquid	Ammonia-N	0.022	mg N/L		0.01	0.02
02-06-06 07:00	BLANKS	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
02-06-06 07:00	BLANKS	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
02-06-06 07:00	BLANKS	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
02-06-06 07:00	BLANKS	Nutrients-Liquid	Sulfide	0.05	mg S/L	UY	0.05	0.2
02-06-06 07:00	BLANKS	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06

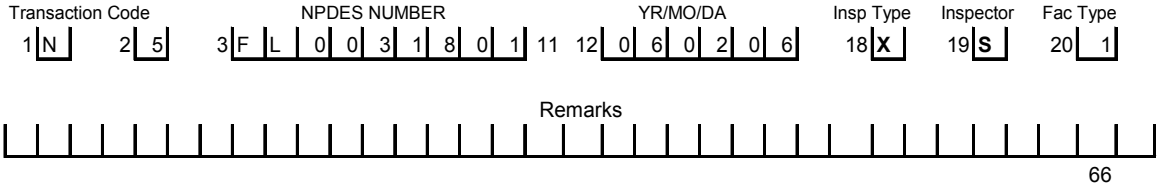
The Bioassay of Bayou Marcus Water Reclamation Facility effluent sampled on February 6, 8 and 10, 2006. NPDES #FL0031801.

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



The Priority Pollutants Analysis of Bayou Marcus Water Reclamation Facility effluent sampled on February 6, 8 and 10, 2006. NPDES #FL0031801.

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



Biological Analyses of Bayou Marcus Water Reclamation Facility effluent sampled on February 6, 8 and 10, 2006. NPDES #FL0031801.

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

