

Effluent Quality Assessment

Chevron Port Tampa Terminal

Hillsborough County

NPDES #FL0035921

Sampled August 25, 2008

February 2009

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

Chevron Port Tampa Terminal, 550 Commerce Street, Tampa, Hillsborough County, Florida, 33616. NPDES #FL0035921. Effluent samples for this facility were collected on August 25, 2008.

Introduction

Chevron Port Tampa Terminal is a petroleum products bulk storage facility. The effluent discharge is intermittent and rainfall dependent and consists of contact and non-contact stormwater and hydrostatic test water. Discharges range between 2,000 and 100, 000 gallons per day on an as needed basis. Effluent is discharged via emergency Outfall D-003 and Outfall D-004 to the Class II marine waters of Picnic Island Creek and thence to Tampa Bay. The points of discharge for Outfall D-003 and Outfall D-004 are located approximately at latitude 27º 51' 24" N, longitude 82º 32' 13" W, and latitude 27º 51' 29" N, longitude 82º 32' 17" W, respectively. The facility does not have a design flow. The average annual daily flow through Outfall D-004 from August 2007 through July 2008 was 0.012 million gallons per day.

Hydrostatic test water is potable city water that is used to fill a storage tank after completion of modifications or repairs to the tank. The terminal does not discharge any process wastewater. All process water is delivered to a petroleum recycler. Load-rack spills and precipitate from storage racks are routed to an underground storage tank for subsequent off-site disposal.

The facility has no Administrative Orders, Consent Orders or mixing zones. A review of Discharge Monitoring Report Data for the past year revealed no permit violations. (Facility information provided by Jason Cohen FDEP Southwest District.)

Methods

Samples were collected from the EFF-4 NPDES sampling point for Outfall D-004 by Jason Cohen and Peter Wenner (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 48-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Although the 48-hour acute screening toxicity test does not reflect the required permit conditions, passing test results provide confidence that the required permit conditions would likely be met.

Prior to test initiation, bioassay samples were aerated for 30 minutes at approximately 100 bubbles per minute, to decrease the dissolved oxygen concentration from 11.2 mg/L to 8.2 mg/L.

An aliquot of the AGP sample was salinity adjusted to meet the minimum salinity requirements of the test species. Both a freshwater and a marine AGP test were performed.

Toxicity Test Results

Tests were performed August 26 - 28, 2008.

Ceriodaphnia dubia 48-hour acute screening bioassay – LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

Cyprinella leedsi 48-hour acute screening bioassay – LC_{50} > 100%, 5% mortality* in 100% sample at 48 hours

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

See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

*NOTE: In a 48-hour acute screening test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1)(a)4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3)(a), F.A.C.).

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 19.4 mg dry wt/L 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 nitrogen-limited. The predicted AGPs based on inorganic nitrogen and total nitrogen concentrations were 1.5 (±20%) mg dry wt/L and 76.2 (±20%) mg dry wt/L, respectively (Table 1; Miller et al. 1978).

The salinity-adjusted effluent AGP was 3.0 U (U - Material was analyzed for but not detected; the report value is the minimum detection limit) 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, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987). One potential reason for the lack of growth in the salinity-adjusted sample is precipitation of enough orthophosphate by the added salts that the sample became extremely phosphorus-limited (Manahan 1994).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.034 mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Chemical substances of concern were not detected in the effluent at levels that did not comply with Class II marine water quality criteria (62-302.530, F.A.C.) or permit conditions. It should be noted that due to a priority Central Laboratory project, samples for metal and organic constituent analyses were not collected.

The effluent's fecal coliform bacteria concentration (590 colony forming units per 100 ml (CFU)) exceeded the water quality standard for fecal coliform bacteria in Class III marine waters (≤ 400 CFU/100 ml; 62-302.530(6), F.A.C.)

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed. See Appendix F for bioassay lab equipment.

Conclusion

The effluent sample collected from the NPDES sampling point for Outfall D-004 for this facility on August 25, 2008, was not acutely toxic to either test species during the 48-hour acute screening bioassays. Although the marine AGP result was less that the method detection limit (likely due to nutrient removal by the salts added during salinity adjustment), the effluent AGP result exceeded the "problem" threshold for fresh receiving waters suggesting that nutrient enrichment may be an issue. The effluent's fecal coliform

bacteria concentration (590 CFU/100 ml) exceeded the water quality standard for fecal coliform bacteria in Class III marine waters (≤ 400 CFU/100 ml; 62-302.530(6), F.A.C.). Additional effluent water quality samples (not including metals or organic constituents) did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

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 1a. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), orthophosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* for samples collected from the Chevron Port Tampa Terminal on August 25, 2008.

Chevron Port Tampa Terminal							
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	19.4	1.5 ± 0.3	24.5 ± 4.9	76.2 ± 15.2	94.6 ± 18.9	0.7	9.1

Table 1b. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the Chevron Port Tampa Terminal on August 25, 2008.

Chevron Port Tampa Terminal			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent*	3.0 U	0.7	9.1

* - sample salinity adjusted to 7ppt

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

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical data for samples collected from the Chevron Port Tampa Terminal on August 25, 2008.

Chevron Port Tampa Terminal NPDES# FL0035921	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Not Collected*	-	-	-	
Metals (µg/L unless otherwise noted) Not Collected*				
Aluminum	≤ 1,500	-	-	
Arsenic	≤ 50	-	-	
Cadmium	≤ 8.8	-	-	
Copper	≤ 3.7	Report	-	
Iron	≤ 300	Report	-	
Lead	≤ 8.5	Report	-	
Mercury	≤ 0.025	Report	-	
Nickel	≤ 8.3	-	-	
Selenium	≤ 71	-	-	
Silver	≤ 2.3	-	-	
Zinc	≤ 86	-	-	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.057	
Total Phosphorus	-	-	0.22	
Total Ammonia	-	-	0.034	
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	0.006	I
Total Kjeldahl Nitrogen	-	-	2	
Organic Nitrogen	-	-	1.966	c
Total Nitrogen	-	-	2.006	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0 s	-	8.0	
pH (SU)	6.5 - 8.5 s	6.5 - 8.5 s	8.3	
Conductivity (µmhos/cm)	-	-	416	
Temperature °C	-	-	32.4	
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.03	UQ£
Chlorophyll a (µg/L) - Corrected	-	-	26	
Phaeophytin (µg/L)	-	-	6	
Turbidity (NTU)	< 29 t		12	
CBOD, 5 day (mg/L), N - inhibited	-	-	5.9	
Flow (MGD)	-	-	0.012	a
Cyanide (µg/L)	≤ 1.0	Report	0.005	U
Hardness (mg $CaCO_3$)	-	-	119	£
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms	≤ 400s #	-	590	

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
£ - Bioassay laboratory measurement
* - Samples not collected due to priority event in Central Laboratroy
# - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2008-08-25-31
Chevron USA-Bulk Terminal, Commerce St

Customer: SW-DIST

Project ID: FYI3

PMAS: 1143

Event ID *

Requester: Jennifer Paris

Collected By: PETE WENNER, JASON COHEN

Sampling Agency: FDEP

Field Report Prepared By:

Send Final Report To Ilia Balcom

Lab ID *	Location: D00-1			☐ Comp ☑ Grab	Collection (begin) Date 8/25/08 Time	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**	
	Field ID: 36693			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.97		Storet Station Number		A	
	Matrix (Include type e.g. Salt, Fresh, etc): FRESH	Temp (C): 32.42	pH: 8.33	Sample Depth: 0.2 ☑ m ☐ ft	0.20 / 416		☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number		
	Latitude: 27° 51' 31.7" N	Longitude: 82° 32' 16.1" W		Comments: DO% 111%						
Lab ID *	Location: FIELD BLANK			☐ Comp ☑ Grab	Collection (begin) Date 8/25/08 Time	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**	
	Field ID: 36694			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		B	
	Matrix (Include type e.g. Salt, Fresh, etc): LAB DI WATER	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number		
	Latitude ° ' "	Longitude ° ' "		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 ° ' "	Longitude ° ' "		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 ° ' "	Longitude ° ' "		Comments: 2 Biomass Recd in Tox by J.D. 10:30 8.26.08						

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	8/25/08: 1630	DHL						8.26.08 / 9:00a

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Chevron USA - Bulk Terminal, Commerce St.
Address: 5500 Commerce Street
City: TAMPA **County:** Hillsborough ~~DE~~ MF 33316
Contact/District: Pete Wenner / SW - DIST
NPDES Permit #: FL 0035921
LIMS Job #: TLH-2008-08-26-42 **LIMS Sample #:** 1127471
Lims Data Entry: 9-4-08 MF Data Entry Verification: 9-4-08 BA

Sample Collection: Date: 8-25-08 Time: 14:10
Hold Time Start: Date: 8-25-08 Time: 14:10

Comments:

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: (Screen)
(Static) / Static Renewal / Flow-through
Test Duration: (96) 96 Hours.

Test 1 validation: **Test 1:** SOP TA 07_01
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: **Test 2:** SOP TA 07_02
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

(√one)
Test 1 incubated in: ☑ Incubator #: 1 ☐ Waterbath #:
Test 2 incubated in: ☑ Incubator #: 1 ☐ Waterbath #:

Initial sample handling:
PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration : (yes) no Initial DO: 11.5 mg/L Final DO: 8.2 mg/L Duration: 30 minutes Rate: ~ 100 bubbles/min
Salinity adjusted (Test 1): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Salinity adjusted (Test 2): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine
Dechlorination: yes (no) ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C: (If used)
Incubator # 2 min. 25.7 max. 26.7 mean 26.3
Incubator # ____ min. ____ max. ____ mean ____
Waterbath # ____ min. ____ max. ____ mean ____
Room B246 min. 25.2 max. 26.0 mean 25.6

Sample Validation:
Temperature: Shipped ≤6°C (Yes) No — IF Hand Delivered: Cooling (received °C < collected °C) NA MF (Yes) No
Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Batch #	8-26-08	8-25-08							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	NO treatment	BA	
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					<0.03	SD	BA
Alkalinity (mg/L as $CaCO_3$):	87	148				+-	131	BA	JD
Hardness (mg/L as $CaCO_3$):	85	140					119	BA	JD
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.017	MF	JD
Conductivity: µmhos mmhos	178	274					443	JD	BA
Salinity (ppth):	<1	<1				~~2~~ JD	<1	JD	BA

Investigators' Signatures
James Daniels
Bruce Alexander
Manfred Feinbloth

Loretta C. Wolfe
REVIEWER

V 1.6 7/8/08

Page 1 MF ~~100000~~

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1127471 Test #: 1/2 SOP#:TA 07 01 Test Started: Date 8-26-08 Time: 12:35

Organism/Batch/Age: C. dubia / 31-08 / <24 hr Test Ended: Date 8.28.08 Time: 1230

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: DMW / 8-26-08 Test Duration: (48) hr 96 hr

Food/Batch: [✓] YCT 6-18-08 [✓] P.sub 7-18-08

[–] Artemia Lot# – Batch #: 0hr – 24hr – 48hr – 72hr –

Feeding: [✓] Prior to Test [NA] Prior to Renewal [✓] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
Loaded/Verified by: BPX / JD		Checked by:	BPX	JD	JD			

m = missing d = dead BR/AR = Before/After Renewal

Comments:

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0% LC50: >100 %

If Calculated: 95% CI________ Method________ V 2.3 7/15/2008

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

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1127471 Test #: 2/2 SOP#:TA 07 02 Test Started: Date 8.26.08 Time: 1245
Organism/Batch/Age: C.leodsi / 8.26.08 / 12days Test Ended: Date 8.28.08 Time: 1235
Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Well / 8.25.08 Test Duration: (48) hr 96 hr

Food/Batch: ☐ YCT — ☐ P.sub —
[-] Artemia Lot# 38438 Batch #: 0hr 130 24hr — 48hr — 72hr —

Feeding: ☑ Prior to Test ☐ Prior to Renewal ☑ 0 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	B1	5	5	5			
	B	B2	5	(1) ~~4/10~~ 5	5			
	C	B3	5	5	5			
	D	B4	5	5	5			
100%	A	B5	5	5	5			
	B	B6	5	4/0	4			
	C	B7	5	5	5			
	D	B8	5	5	5			
Loaded/Verified by: [initials] BA		Checked by:	JD	JD	JD			

m = missing d = dead BR/AR = Before/After Renewal

Comments: (1) Loaded by JD (2) Transcription error JD.

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 5 % LC50: >100 %
If Calculated: 95% CI______ Method______

V 2.3 7/15/2008

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

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 112747 1 (3a) Test #: 1 of 2

TEST SOP #: TA07_ ~~02~~ 01 Test Species: ☒ *Ceriodaphnia dubia* ☐ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	8.0		8.2			
Temperature °C	(A) ~~24.0~~ 24.7		24.5			
Dissolved Oxygen mg/L aerate if < 4	7.8		7.5			
Conductivity ~~µmhos~~ mmhos	178		184			
Salinity ppth	<1		–			
(initials) Measured by:	BA	–	JD			
(initials) Recorded by:	BA		JD			

Comments: (A) Equilibrating error: 24.3 BA 8-26-08

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	8.1		8.4			
Temperature °C	24.0		24.0			
Dissolved Oxygen mg/L aerate if < 4	8.0		7.7			
Conductivity µmhos mmhos	434		544			
Salinity ppth	<1		–			
(initials) Measured by:	BA		JD			
(initials) Recorded by:	BA		JD			

Comments:

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

000004

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 127471 Test #: 2 of 2

TEST SOP #: TA07_02 Test Species: ☐ *Ceriodaphnia dubia* ☒ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.0	8.1	8.3			
Temperature °C	24.0	24.0	24.0			
Dissolved Oxygen mg/L aerate if < 4	8.2	7.2	7.4			
Conductivity (µmhos) mmhos	274	280	287			
Salinity ppth	-	—	—			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.1	8.0	8.1			
Temperature °C	24.0	24.1	24.2			
Dissolved Oxygen mg/L aerate if < 4	@ 8.3 240 JD	6.5	7.1			
Conductivity (µmhos) mmhos	447	442	448			
Salinity ppth	—	—	—			
(initials) Measured by:	JD	JD	JD			
(initials) Recorded by:	JD	JD	JD			

Comments: @ wrote temperature in D.O. space. ID. 82605

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Bioassay Instrument ID

Test ID: Chevron USA - Bulk Terminal Commerce Street Dates: August 26-28, 2008

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	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	SM 2510 B	✓
			Salinity	SM 2520 B	
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
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)

V 1.1 6/12/08 MF

000006

PAGE

Appendix C. SRT Bench Sheets and Statistical Analysis

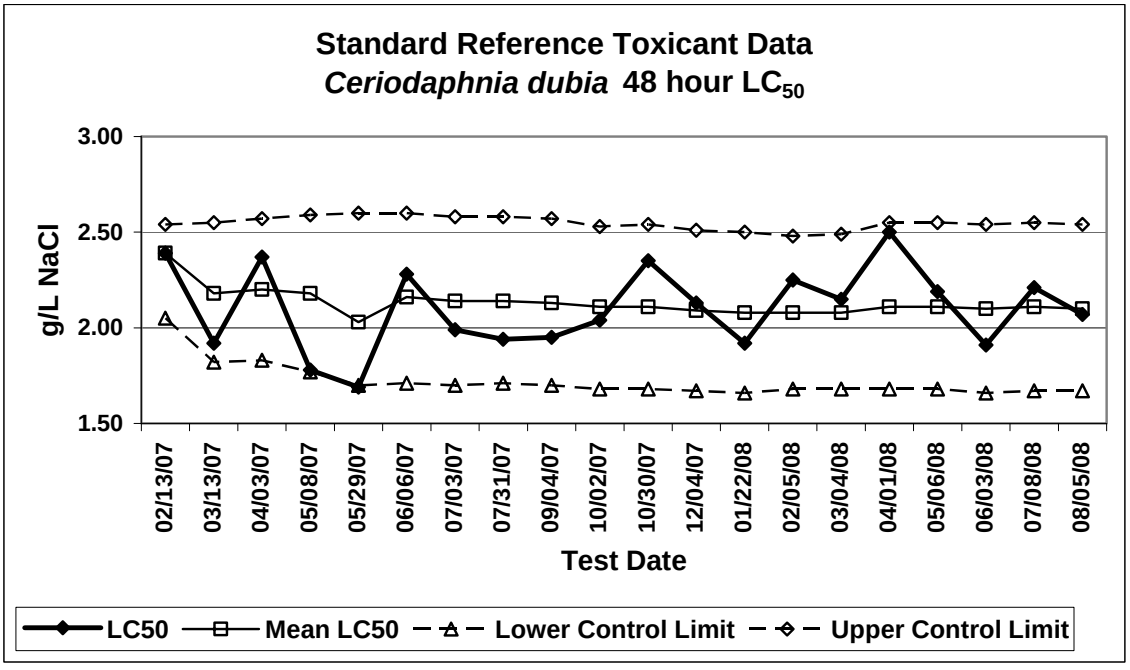
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
02/13/07	2.39	2.39	0.17	2.05	2.54
03/13/07	1.92	2.18	0.18	1.82	2.55
04/03/07	2.37	2.20	0.18	1.83	2.57
05/08/07	1.78	2.18	0.21	1.77	2.59
05/29/07	1.69	2.03	0.23	1.70	2.60
06/06/07	2.28	2.16	0.22	1.71	2.60
07/03/07	1.99	2.14	0.22	1.70	2.58
07/31/07	1.94	2.14	0.22	1.71	2.58
09/04/07	1.95	2.13	0.22	1.70	2.57
10/02/07	2.04	2.11	0.21	1.68	2.53
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54

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

CV = 10.32
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

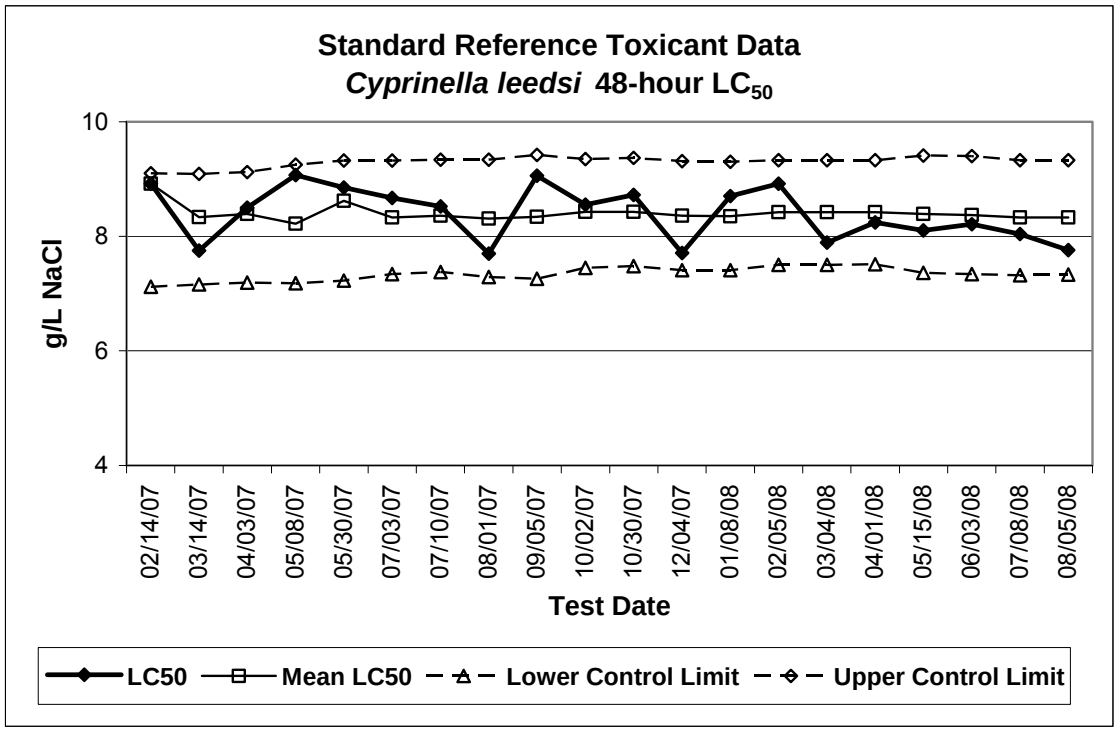
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

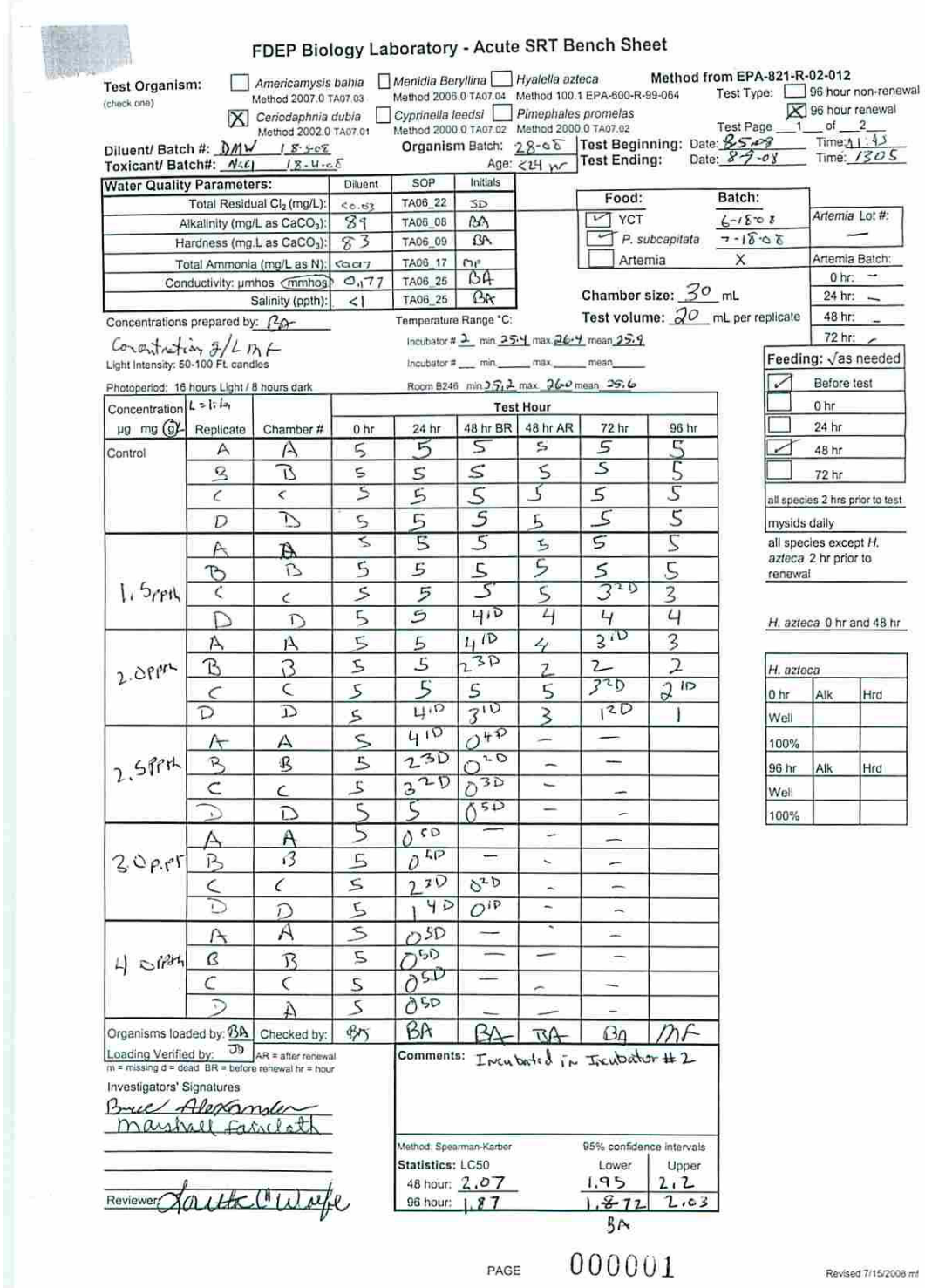
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
02/14/07	8.92	8.92	0.49	7.12	9.10
03/14/07	7.75	8.34	0.48	7.16	9.09
04/03/07	8.50	8.39	0.48	7.19	9.12
05/08/07	9.07	8.22	0.52	7.18	9.25
05/30/07	8.85	8.62	0.53	7.23	9.32
07/03/07	8.67	8.33	0.50	7.34	9.32
07/10/07	8.52	8.36	0.49	7.38	9.34
08/01/07	7.7	8.31	0.51	7.29	9.34
09/05/07	9.06	8.34	0.54	7.26	9.42
10/02/07	8.55	8.43	0.47	7.45	9.35
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33

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

CV = 6.02
EPA reference 75th quartile CV = 19%



Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

Method from EPA-821-R-02-012

Test Type: ☐ 96 hour non-renewal ☒ 96 hour renewal

Test Page 1 of 2

Diluent/ Batch #: DMW 1.8.08

Toxicant/ Batch#: NaCl 1.8.08

Organism Batch: 28-08 Age: <24 hr

Test Beginning: Date: 8.5.08 Time: 11:45

Test Ending: Date: 8.9.08 Time: 1305

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	SD
Alkalinity (mg/L as $CaCO_3$):	89	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	83	TA06_09	BA
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos (mmhos)	0.177	TA06_25	BA
Salinity (ppth):	<1	TA06_25	BA

Food: ☑ YCT Batch: 6-18-08; ☑ P. subcapitata 7-18-08; ☐ Artemia X

Artemia Lot #: —

Artemia Batch: 0 hr: — 24 hr: — 48 hr: — 72 hr: —

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: BA

Concentration g/L MF

Temperature Range °C:

Incubator # 2 min 25.4 max 26.4 mean 25.9

Incubator # ___ min ___ max ___ mean ___

Room B246 min 25.2 max 26.0 mean 25.6

Light Intensity: 50-100 FL candles

Photoperiod: 16 hours Light / 8 hours dark

Feeding: √as needed

☑ Before test 0 hr

☐ 24 hr

☑ 48 hr

☐ 72 hr

all species 2 hrs prior to test mysids daily

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

H. azteca 0 hr and 48 hr

Concentration µg mg (g) L = 1 : 1/4	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5ppt	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	3 2D	3
	D	D	5	5	4 1D	4	4	4
2.0ppt	A	A	5	5	4 1D	4	3 1D	3
	B	B	5	5	2 3D	2	2	2
	C	C	5	5	5	5	3 2D	2 1D
	D	D	5	4 1D	3 1D	3	1 2D	1
2.5ppt	A	A	5	4 1D	0 4D	—	—	
	B	B	5	2 3D	0 2D	—	—	
	C	C	5	3 2D	0 3D	—	—	
	D	D	5	5	0 5D	—	—	
3.0ppt	A	A	5	0 5D	—	—	—	
	B	B	5	0 4D	—	—	—	
	C	C	5	2 1D	0 2D	—	—	
	D	D	5	1 4D	0 1D	—	—	
4 ppt	A	A	5	0 5D	—	—	—	
	B	B	5	0 5D	—	—	—	
	C	C	5	0 5D	—	—	—	
	D	A	5	0 5D	—	—	—	
Organisms loaded by: BA	Checked by:		BA	BA	BA	BA	BA	MF
Loading Verified by: JD								

m = missing d = dead BR = before renewal hr = hour AR = after renewal

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

Comments: Incubated in Incubator #2

Investigators' Signatures

Bruce Alexander

Marshall Faircloth

Reviewer: Laurie Wolfe

Method: Spearman-Karber

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour:	2.07	1.95	2.2
96 hour:	1.87	1.872	2.03

BA

PAGE 000001

Revised 7/15/2008 mf

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

0-96 hour parameters

Method from EPA-821-R-02-012

Test Page 2 of 2

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

Test Beginning: Date: 8.5.08 Time: 1145
Test Ending: Date: 8.9.08 Time: 1305

Test Type: ☐ 96 hour non-renewal ☒ 96 hour renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg mg (g/L) mf L = Irr$_{eq}$	Replicate	Chamber #	Test Time	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐µmhos ☒mmhos
Control	M	–	0 hr	8.1	24.2	7.4	0.177
	–	–	24 hr	–	–	–	–
	A	–	48 hr BR	8.2	24.0	~~6.7~~ ~~7.5~~	0.197
	M	–	48 hr AR	8.0	24.0	BR ~~6.7~~ 7.5	0.181
		–	72 hr				
	A	–	96 hr	8.0	24.7	7.6	1.91
1.5 ppt	M	–	0 hr	8.1	24.4	7.4	2.92
	–	–	24 hr	–	–	–	–
	A	–	48 hr BR	8.1	24.0	6.8	2.16
	M	–	48 hr AR	8.0	24.1	7.4	2.84
	–	–	72 hr				~~2.85~~ mf
	A	–	96 hr	8.0	24.7	7.4	2.85
2.0 ppt	M	–	0 hr	8.1	24.5	7.3	3.82
	–	–	24 hr	–	–	–	–
	A	–	48 hr BR	8.1	24.0	7.1	3.90
	M	–	48 hr AR	8.0	24.2	7.4	3.73
	–	–	72 hr				~~3.80~~ mf
	A	–	96 hr	8.0	24.6	7.5	3.80
2.5 ppt	M	–	0 hr	8.1	24.4	7.3	4.70
	–	–	24 hr	–	–	–	–
	A	–	48 hr BR	8.1	24.0	7.1	4.84
		–	48 hr AR				
		–	72 hr				
		–	96 hr				
3.0 ppt	M	–	0 hr	8.1	24.4	7.3	5.55
	–	–	24 hr	–	–	–	–
	A	–	48 hr BR	8.1	24.0	7.1	5.75
		–	48 hr AR				
		–	72 hr				
		–	96 hr				
4 ppt	M	–	0 hr	8.1	24.3	7.2	7.24
	A	–	24 hr	8.0	24.0	7.0	7.43
	~~A~~	–	48 hr BR				
		–	48 hr AR				
		–	72 hr				
		–	96 hr				

Investigators Signatures
Bruce Alexander
Marshall Faircloth

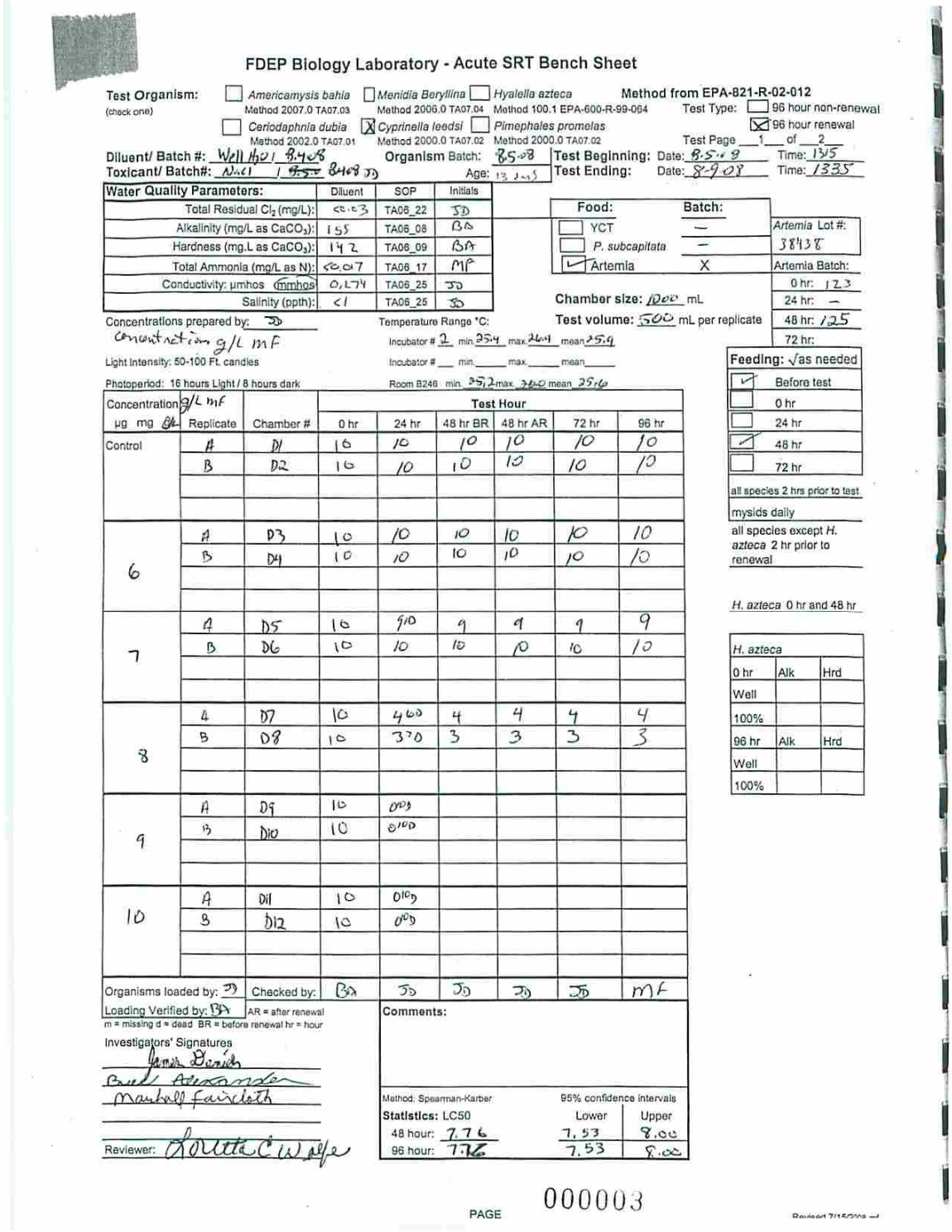
Reviewed By: Martha C. Wolfe

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

Comments: M = Motor Vial BA

PAGE 000002

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

Method from EPA-821-R-02-012

Test Type: ☐ 96 hour non-renewal ☒ 96 hour renewal

Test Page 1 of 2

Diluent/ Batch #: Well H2O / B.408

Toxicant/ Batch#: NaCl / B.50 B.408 JD

Organism Batch: B.5.08 Age: 13 days

Test Beginning: Date: 8.5.08 Time: 1345

Test Ending: Date: 8.9.08 Time: 1335

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	JD
Alkalinity (mg/L as $CaCO_3$):	155	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	142	TA06_09	BA
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos (mmhos)	0.274	TA06_25	JD
Salinity (ppth):	<1	TA06_25	JD

Food:	Batch:
☐ YCT	—
☐ *P. subcapitata*	—
☑ Artemia	X

Artemia Lot #: 38438

Artemia Batch:

0 hr: 123

24 hr: —

48 hr: 125

72 hr:

Chamber size: 1000 mL

Test volume: 500 mL per replicate

Concentrations prepared by: JD

Concentration g/L MF

Temperature Range °C:

Incubator # 2 min 25.4 max 26.4 mean 25.9

Incubator # ___ min ___ max ___ mean ___

Room B246 min 25.2 max 26.0 mean 25.6

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Feeding: √as needed

- ☑ Before test
- ☐ 0 hr
- ☐ 24 hr
- ☑ 48 hr
- ☐ 72 hr

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

Concentration g/L MF µg mg %	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	D1	10	10	10	10	10	10
	B	D2	10	10	10	10	10	10
6	A	D3	10	10	10	10	10	10
	B	D4	10	10	10	10	10	10
7	A	D5	10	9D	9	9	9	9
	B	D6	10	10	10	10	10	10
8	A	D7	10	4D	4	4	4	4
	B	D8	10	3D	3	3	3	3
9	A	D9	10	0D				
	B	D10	10	0D				
10	A	D11	10	0D				
	B	D12	10	0D				
Organisms loaded by: JD		Checked by:	BA	JD	JD	JD	JD	MF
Loading Verified by: BA		AR = after renewal						

m = missing d = dead BR = before renewal hr = hour

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

Comments:

Investigators' Signatures

Jason Davis

Brad Alexander

Marshall Faircloth

Reviewer: Lorette C. Wolfe

Method: Spearman-Karber	95% confidence intervals	
Statistics: LC50	Lower	Upper
48 hour: 7.76	7.53	8.00
96 hour: 7.76	7.53	8.00

PAGE 000003

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters
Method from EPA-821-R-02-012

Test Page 2 of 2

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

Test Beginning: Date: 8-5-08 Time: 1515
Test Ending: Date: 8-9-08 Time: 1335
Test Type: ☐ 96 hour non-renewal ☒ 96 hour renewal

Concentration µg/L mg/L hr = hour AR = after renewal BR = before renewal

Concentration µg mg ⓞ	Replicate	Chamber #	Test Time	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos
Control	A	D1	0 hr	7.9	24.0	7.5	0.274
	B	D2	24 hr	8.1	24.1	6.4	0.290
	A	D1	48 hr BR	8.0	24.4	6.6	0.333
	A	D1	48 hr AR	7.9	24.0	7.3	0.295
	B	D2	72 hr	8.0	24.8	6.3	0.279
	A	D1	96 hr	7.8	25.0	7.4	0.302
6	A	D3	0 hr	7.8	24.1	7.4	11.1
	B	D4	24 hr	8.0	24.3	6.1	10.9
	A	D3	48 hr BR	8.1	24.5	6.5	10.8
	A	D3	48 hr AR	7.9	24.0	7.1	10.8
	B	D4	72 hr	8.0	24.7	6.2	10.8
	A	D3	96 hr	8.0	25.1	6.6	10.9
7	A	D5	0 hr	7.9	24.1	7.4	12.8
	B	D6	24 hr	8.0	24.3	6.0	12.7
	A	D5	48 hr BR	8.2	24.4	6.4	12.6
	A	D5	48 hr AR	8.0	24.0	7.0	12.9
	B	D6	72 hr	8.0	24.7	6.3	13.1
	A	D5	96 hr	8.0	25.1	6.6	13.1
8	A	D7	0 hr	7.9	24.0	7.4	14.8
	B	D8	24 hr	8.0	24.3	6.0	14.7
	A	D7	48 hr BR	8.1	24.2	6.4	14.6
	A	D7	48 hr AR	8.0	24.0	7.0	14.7
	B	D8	72 hr	8.1	24.3	6.4	14.8
	A	D7	96 hr	8.1	25.2	6.5	14.8
9	A	D9	0 hr	7.9	24.0	7.5	16.2
	B	D10	24 hr	8.0	24.4	5.9	16.1
			48 hr BR				
			48 hr AR				
			72 hr				
			96 hr				
10	A	D11	0 hr	7.9	24.0	7.4	17.9
	B	D12	24 hr	7.9	24.4	5.6	17.7
			48 hr BR				
			48 hr AR				
			72 hr				
			96 hr				

Investigators Signatures
James Daniels
Marshall Faircloth

Reviewed By: Loretta C. Wolfe

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

Comments:

PAGE 000004

Appendix C. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 8-5-08 DURATION: 48 hr TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	1
2.00	20	6
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: **LC50: 2.07**
95% LOWER CONFIDENCE: 1.95
95% UPPER CONFIDENCE: 2.20

***Cyprinella leedsi* Acute Standard Reference Toxicant Test**

DATE: 8-5-08 DURATION: 48 hr TOXICANT : NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	0
7.00	20	1
8.00	20	13
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: **LC50: 7.76**
95% LOWER CONFIDENCE: 7.53
95% UPPER CONFIDENCE: 8.00

Appendix D. Test Organism Receipt(s)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 8/4/08

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temp. °C	pH S.U.	Salinity ‰
Mysidopsis bahia	150	4 DAYS	MS080731	25	7.8	20
Menidia beryllina	150	11 DAYS	SS080724	25	7.7	19.5
						Hardness
Cyprinella leedsi	150	12 DAYS	CL080723	25	7.8	90
Pimephales promelas	200	8 DAYS	FM080725	25	7.9	90

Packed by: JJ

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 D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 8/25/08

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	100	11 DAYS	CL080814	28°C	7.8 s.u.	80 mg/L
Pimephales promelas						

Packed by: DW

Shipped Via: FedEx

Notes:

Thank you for your order.

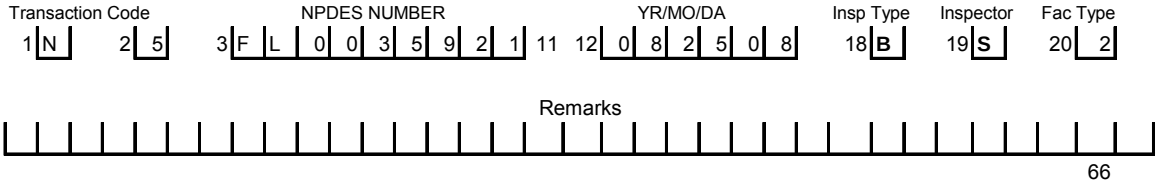
4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix E. Chemical Analyses performed on the effluent from the Chevron Port Tampa Terminal Outfall D-004, sampled on August 25, 2008.

Date Sampled	Field ID	Analyses	Component	Result	Remark	Units	MDL	PQL
8/25/2008 14:10	Effluent	AGP/LN	Algal Growth Potential	19.4		mg DryWt/L	0.3	0.9
8/25/2008 14:10	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	3	U	mg DryWt/L	3	3
8/25/2008 14:10	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	26		ug/L	0.73	2.3
8/25/2008 14:10	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	5.9		mg/L	0.2	2
8/25/2008 14:10	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	6		ug/L	0.32	0.95
8/25/2008 14:10	Effluent	Overflow	Fecal Coliforms-Membrane Filter	590		#/100 mL	10	
8/25/2008 14:10	Effluent	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
8/25/2008 14:10	Effluent	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
8/25/2008 14:10	Effluent	Nutrients	NO2NO3-N	0.006	I	mg N/L	0.004	0.01
8/25/2008 14:10	Effluent	Nutrients	Kjeldahl Nitrogen	2		mg N/L	0.08	0.2
8/25/2008 14:10	Effluent	Nutrients	O-Phosphate-P	0.057		mg P/L	0.004	0.01
8/25/2008 14:10	Effluent	Nutrients	Total-P	0.22		mg P/L	0.02	0.06
8/25/2008 14:10	Effluent	Nutrients	Ammonia-N	0.034		mg N/L	0.01	0.02
8/25/2008 14:10	Effluent	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/25/2008 14:10	Effluent	Nutrients	Turbidity	12		NTU	0.1	0.1
8/25/2008 14:10	Effluent	Field Parameter	Specific Conductance	416		umhos/cm		
8/25/2008 14:10	Effluent	Field Parameter	Sample Depth	0.2		m		
8/25/2008 14:10	Effluent	Field Parameter	Temperature	32.42		C		
8/25/2008 14:10	Effluent	Field Parameter	Dissolved Oxygen	7.97		mg/L		
8/25/2008 14:10	Effluent	Field Parameter	pH	8.33				
8/25/2008 13:55	Field Blank	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.2	U	mg/L	0.2	2
8/25/2008 13:55	Field Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
8/25/2008 13:55	Field Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
8/25/2008 13:55	Field Blank	Nutrients	Total-P	0.02	U	mg P/L	0.02	0.06
8/25/2008 13:55	Field Blank	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/25/2008 13:55	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
8/25/2008 13:55	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01

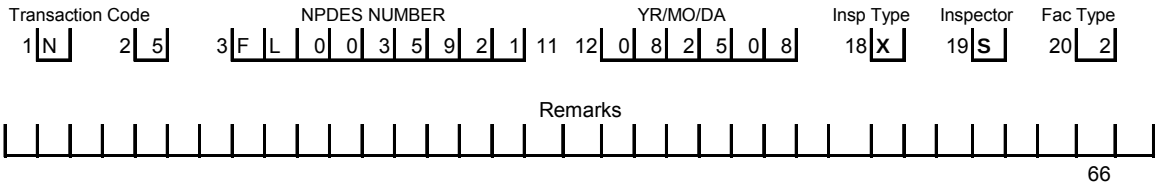
The Bioassay of the Chevron Port Tampa Terminal effluent sampled on August 25, 2008. NPDES #FL0035921.

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



The Priority Pollutants Analysis of the Chevron Port Tampa Terminal effluent sampled on August 25, 2008. NPDES #FL0035921.

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



Biological Analyses of the Chevron Port Tampa Terminal effluent sampled on August 25, 2008. NPDES #FL0035921.

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

