


Bioassays of

# Fleming Island Regional Wastewater Treatment Facility

Clay County

NPDES #FL0043834

Sampled July 11, 2005

November 2005

**Biology Section**
**Bureau of Laboratories**
**Division of Resource Assessment and Management**

Quality Manual No. 870346G
NELAC Certification No. E31780

Fleming Island Regional Wastewater Treatment Facility, Town Center Boulevard, Orange Park, Clay County, Florida, NPDES #FL0043834. Effluent samples for this facility were collected on July 11, 2005.

## Introduction

Fleming Island Regional Wastewater Treatment Facility is an activated-sludge advanced secondary domestic wastewater treatment plant. The facility has a design flow of 4.0 million gallons per day (MGD) and an average annual flow from July 2004 through June 2005 of 2.2 MGD. The treatment process includes influent screening, a grit chamber, an influent flow splitter, a pre-anoxic reactor, two oxidation ditches (Carrousel 2-stage denitrification process, 1.50 million gallons each), a clarifier box, three clarifiers, four traveling bridge filters (32.53 sq. m (350 sq. ft.) filtration area each), four chlorine contact chambers (53,000; 49,000; 65,709; and 65,709 gallons) an 845,000 gallon digester and a reclaimed water distribution box to direct reclaimed water flow from the Ridaught Landing WWTF. Hypochlorite is used for chlorination/disinfection and sodium bisulfite is used for dechlorination. The facility has a slow-rate public access irrigation reuse system with a design flow of 9.63 MGD; however, the permitted capacity of the reuse system is limited at 6.365 MGD due to the limit of the available acreage (5,261 hectares (13,000 acres)). The reuse system consists of the Eagle Harbor Golf Course (golf course), Fleming Island Plantation Golf (golf course), and the Fleming Island Service Area (residential area).

The primary method of disposal of treated effluent from the facility is reuse of reclaimed water via spray irrigation to the public access reuse sites. Surface water discharge is the alternative (backup) disposal method. The facility is permitted to discharge treated wastewater to the Class III freshwaters of the St. Johns River via Outfall D-001. The discharge pipe is approximately 167.6 m (550 ft) in length and discharges at a depth of 1.21 m (4 ft). The approximate location of Outfall D-001 is latitude 30º 05' 46" N, longitude 81º 41' 25". Residuals are disposed by land application or by disposal in a Class 1 or Class 2 landfill.

There are no outstanding Administrative Orders or Consent Orders for this facility. Discharge Monitoring Report data do not show any violations within the past year. The facility has no mixing zones. Semi-annual acute screening toxicity tests performed from January 2002 to January 2005 did not show toxicity to the freshwater test species, *Cyprinella leedsi* and *Ceriodaphnia dubia* (facility information provided by Chet McGhee of FDEP Northeast District).

## Methods

Samples were collected from the EFD-1 NPDES sampling point by Joe Jordan and Lacey Smith (FDEP Northeast 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.

The 48-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOP's TA07_01,TA07_02, and TA08_01 through TA08_07. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp. While the 48-hour acute screening toxicity test does not reflect the permit required conditions, the Department uses it to provide reasonable assurance that the facility does not adversely affect waters of the state.

Prior to test initiation, bioassay samples were aerated for 15 minutes at approximately 100 bubbles per minute, to decrease the dissolved oxygen concentration from 10.8 mg/L to 8.3 mg/L.

## Toxicity Test Results

Tests were performed July 12 - 14, 2005.

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

*Cyprinella leedsi* 48-hr acute screening bioassay – $LC_{50}$ > 100%, 0% mortality* in 100% sample at 48 hours

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

See Appendix 1 for bioassay bench sheets.

*NOTE: In a 48-hr acute screening test of 100% effluent, mortality of <20% provides reasonable assurance 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% mortality indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% provides reasonable assurance 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 5.69 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 wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited. The predicted AGP based on the inorganic nitrogen concentration was 7.98 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

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 0.04 mg/L. Based on the pH, salinity and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Iron and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria. Atrazine, aluminum, cadmium, copper, lead, and nickel were detected between the laboratory minimum detection limits (MDL) and practical quantitation limits (PQL).

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

See Appendix 2 for a complete list of chemical analyses performed.

## Conclusion

The effluent sample collected from D-001 for this facility on July 11, 2005, was not acutely toxic to either test species during the acute screen 48-hour bioassays. The effluent AGP result exceeded the "problem" threshold for fresh receiving waters. Effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

## Literature Cited

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

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

*Table 1. Measured and predicted algal growth potential (AGP; mg dry wt/L) for total soluble nitrogen (TSIN) and total nitrogen (TN) limitation of* Psudeokirchneriella subcapitata*, and ratios of nitrogen to phosphorus for samples collected from Fleming Island Regional WWTF on July 11, 2005.*

| Location | AGP (measured) | Predicted AGP (TSIN) ± 20% | Predicted AGP (TN) ± 20% | Inorganic N:P ratio | Total N:P ratio |
|---|---|---|---|---|---|
| Effluent Samples | 5.69 | 7.98 ± 1.596 | 27.74 ± 5.548 | 0.34 | 1.01 |

*Table 2. Effluent limits, Class III Criteria, and chemical data for samples collected from Fleming Island Regional WWTF on July 11, 2005.*

| **Fleming Island Regional WWTF NPDES# FL0043834** | Class III Freshwater Stds | Effluent Limits | Effluent Samples |
|---|---|---|---|
| **Organic Constituents (µg/L)** | | | |
| Atrazine | - | - | 0.098 I |
| **Metals (µg/L unless otherwise noted)** | | | |
| Aluminum | - | - | 8.7 I |
| Arsenic | ≤ 50 | - | 4 U |
| Cadmium | ≤ 1.1 b | - | 0.067 I |
| Calcium (mg/L) | - | - | 22.1 |
| Chromium-III | ≤ 81.8 b | - | 2 U |
| Copper | ≤ 8.8 b | - | 0.7 I |
| Iron | ≤ 1000 | - | 156 |
| Lead | ≤ 2.9 b | - | 0.088 I |
| Magnesium (mg/L) | - | - | 9.4 |
| Nickel | ≤ 49.5 b | - | 2 I |
| Selenium | ≤ 5 | - | 0.5 U |
| Silver | ≤ 0.07 | - | 0.025 U |
| Zinc | ≤ 113.6 b | - | 38 |
| **Nutrients (mg/L)** | | | |
| Ortho-phosphate | - | Report | 0.61 Q |
| Total Phosphorus | - | ≤ 4.0 s | 0.72 |
| Ammonia | - | Report | 0.04 |
| Unionized Ammonia | ≤ 0.02 | ≤ 0.02 | ≤ 0.02 |
| Nitrate+Nitrite | - | Report | 0.17 |
| Total Kjeldahl Nitrogen | - | Report | 0.56 |
| Organic Nitrogen | - | Report | 0.52 c |
| Total Nitrogen | - | ≤20 s | 0.73 c |
| **General Physical and Chemical Parameters** | | | |
| Dissolved Oxygen (mg/L) | ≥ 5 | ≥ 5 | 6 |
| pH (S.U.) | 6.0-8.5 s | 6.0-8.5 s | 7.1 |
| Conductivity (umhos/cm) | ≤ 1,275 | - | 575 |
| Temperature (C) | - | Report | 28.8 |
| CBOD (mg/L) | - | ≤ 40 s | 1.4 AI |
| TSS (mg/L) | - | ≤ 60 s | 4 U |
| Total resuidual chlorine (mg/L) | ≤ 0.01 | ≤ 0.01 | - |
| Flow (MGD) | - | ≤6.365 a | 2.2 a |
| Hardness (mg/L) | - | - | 93.9 c |

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

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 lim

Q - Sample held beyond normal holding time

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

# FDEP Biology Section - Acute Bioassay Bench Sheets

Facility: Fleming Island WWTF

Address: Town Center Boulevard

City: Orange Park County: Clay

Contact/District: Chet McGhee

NPDES Permit #: FL 0043834

LIMS Job #: TLH-2005-07-12-69 LIMS Sample #: ~~848105~~ (wrong facility) 848149

Lims Data Entry: 7-22-05 MF Data Entry Verification: DN 7/22/05

Sample Collection: Date: 7-11-05 Time: 1140

Hold time Start: Date: 7-11-05 Time: 1140

Comments: Sample aerated for 15 minutes to reduce DO (Dissolved Oxygen) concentration To < 9.0 mg/L from 10.8 mg/L, MF 7-22-05

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

Test Type: (Screening) Definitive
(Static) Static Renewal / Flow-through
Test Duration: (48) 96 Hours
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 hours light 8 hours dark

Initial sample handling:

pH adjustment : yes (no) Initial pH NaOH N HCl N Drops mL Final pH

Aeration : (yes) no Initial DO: 10.8 mg/L Final DO: 8.3 mg/L Duration: 15 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

Test 1 validation: Test 1: SOP TA07_01
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA07_02
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Temperature Range °C
Incubator # 3 Range 24.1-24.9
Room B246: 23.6-24.2
Waterbath: n/a

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

Investigators' Signatures,

Sarah Pritchard

Marshall Faircloth

James Daniels

Nicole Wellendorf

REVIEWER

V.1.6 7/1/05

| Water Quality Parameters | 20% DMW | Well Water | Salt Water ASW NSW Test 1 | Salt Water ASW NSW Test 2 | Moderately Hard Water | Original Sample | Method | Measured by | Verified by |
|---|---|---|---|---|---|---|---|---|---|
| Field Total Residual Cl2 (mg/L): | N/A | N/A | N/A | N/A | N/A | not measured | | - | SP |
| Lab Total Residual Cl2 (mg/L): | <0.03 | <0.03 | | | | <0.03 | HACH | EW/SP | MF |
| Alkalinity (mg/L as $CaCO_3$): | 97 | 106 | | | | 108 | HACH | SP | MF |
| Hardness (mg/L as $CaCO_3$): | 85 | 132 | | | | 88 | HACH | SP | MF |
| Total Ammonia (mg/L as N): | <0.017 | <0.017 | | | | <0.017 | DENVER | DN | SP |
| Salinity (ppth): | <1 | <1 | | | | <1 | YSI Mettler | MF | SP |

Page 000006

## Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 848149 Test #: 1 Test Started: Date 7-12-05 Time: 1615

Organism: C.dubia Test Ended: Date 7-14-05 Time: 1300

Organism Batch: 23-05 Diluent/ Batch: DMW / 21-05

Organism Age: <24hrs Food: (YCT) (P. subcapitata) Artemia

Chamber Size 30 mL Batch: 3-05 2-05

Test Volume 20 mL Feeding: (Prior to test) Prior to renewal - Daily

| 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 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Organisms loaded by: SP | | Checked by: (initials) | | DN | DN | | | |

Loading verified at 0 hours by: DN

Comments:

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

**Test Results:**

% mortality in 100% sample 0

$LC_{50}$: >100 If Calculated: 95% CI______ Method:______

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

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

Page 000007

v1.2 3/8/05

## Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet
Survival

LIMS Sample #: 848149 Test #: 2 Test Started: Date 7-12-05 Time: 1630
Organism: C. leedsi Test Ended: Date 7-14-05 Time: 1330
Organism Batch: 20-05 Diluent/ Batch: Well / NA
Organism Age: 6 days Food: YCT P. subcapitata (Artemia)
Chamber Size 1000 mL Batch: 35138425GR
Test Volume 500 mL Feeding: (Prior to test) Prior to renewal - Daily

| Concentration | Replicate | Chamber # | Test Hour: 0 hr | 24 hr | 48 hr BR | 48 hr AR | 72 hr | 96 hr |
|---|---|---|---|---|---|---|---|---|
| CTRL | A | D9 | 5 | 5 | 5 | | | |
| | B | D10 | 5 | 5 | 5 | | | |
| | C | D11 | 5 | 5 | 5 | | | |
| | D | D12 | 5 | 5 | 5 | | | |
| 100% | A | D13 | 5 | 5 | 5 | | | |
| | B | D14 | 5 | 5 | 5 | | | |
| | C | D15 | 5 | 5 | 5 | | | |
| | D | D16 | 5 | 5 | 5 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Organisms loaded by: JD | | Checked by: (initials) | [redacted] | JD | JD | | | |

Loading verified at 0 hours by: SP

Comments:

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

**Test Results:**

% mortality in 100% sample 0

$LC_{50}$: >100 If Calculated: 95% CI______ Method:______

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

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

Page 000008 v1.2 3/8/05

## Appendix 1. Bench Sheets (continued)

Bioassay Parameters

LIMS Sample #: 84814 Test #: 1 of 2

TEST SOP: TA07_01 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas*
*Americamysis bahia* *Menidia beryllina* Other:

v.1 2/24/04

| Concentration CTRL | 0 Hr. | 24 Hr. | 48 Hr. before renewal | 48 Hr. after renewal | 72 Hr. | 96 Hr. |
|---|---|---|---|---|---|---|
| Replicate | A | | B | | | |
| pH (S.U.) | 8.1 | | 8.1 | | | |
| Temperature °C | 24.1 | | 24.0 | | | |
| Dissolved Oxygen mg/L | 8.4 | | 7.9 | | | |
| Conductivity ~~µmhos~~ mmhos | 7.176 SP 188 | | 185 | | | |
| (initials) Measured by: | JS | | DN | | | |
| (initials) Recorded by: | JS | | SP | | | |

Comments:

| Concentration 100% | 0 Hr. | 24 Hr. | 48 Hr. before renewal | 48 Hr. after renewal | 72 Hr. | 96 Hr. |
|---|---|---|---|---|---|---|
| Replicate | A | | B | | | |
| pH (S.U.) | 8.2 | | 8.2 | | | |
| Temperature °C | 23.9 | | 24.0 | | | |
| Dissolved Oxygen mg/L | 8.3 | | 7.8 | | | |
| Conductivity ~~µmhos~~ mmhos | 570 ~~0.570~~ SP | | 595 | | | |
| (initials) Measured by: | JS | | DN | | | |
| (initials) Recorded by: | JS | | SP | | | |

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 | | | | | | |
| Conductivity µmhos ~~mmhos~~ | | | | | | |
| (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 | | | | | | |
| Conductivity µmhos ~~mmhos~~ | | | | | | |
| (initials) Measured by: | | | | | | |
| (initials) Recorded by: | | | | | | |

Comments:

v1.1 2/24/04

Page

Bioassay Parameters

**LIMS Sample # :** 848149 **Test # :** 2 **of** 2

**TEST SOP: TA07_** 02 **Test Species:** *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

V.1 2/24/04

| 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.) | 7.9 | 8.3 | 8.4 | | | |
| Temperature °C | 24.4 | 24.9 | 24.8 | | | |
| Dissolved Oxygen mg/L | 8.4 | 7.7 | 7.5 | | | |
| Conductivity ~~µmhos~~ mmhos | ~~267~~ 0.267 SP | 300 | 310 | | | |
| (initials) Measured by: | JD | JD | JD | | | |
| (initials) Recorded by: | JD | SP | 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.) | 8.2 | 8.2 | 8.3 | | | |
| Temperature °C | 25.3 | 25.4 | 24.4 | | | |
| Dissolved Oxygen mg/L | 8.0 | 7.2 | 7.3 | | | |
| Conductivity ~~µmhos~~ mmhos | ~~564~~ 0.564 SP | 620 | 645 | | | |
| (initials) Measured by: | JD | JD | JD | | | |
| (initials) Recorded by: | JD | SP | JD | | | |

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 | | | | | | |
| Conductivity µmhos mmhos | | | | | | |
| (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 | | | | | | |
| Conductivity µmhos mmhos | | | | | | |
| (initials) Measured by: | | | | | | |
| (initials) Recorded by: | | | | | | |

Comments:

V.1 2/24/04





**Appendix 2. Chemical Analyses performed on the effluent from the Fleming Island Regional WWTF Outfall D-001, sampled on July 11, 2005.**

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | FLEMING | Bio-AGP/LimNut | Algal Growth Potential | 5.69 | mg DryWt/L | | 0.3 | 0.9 |
| 7/11/2005 11:10 | FLEMING | Bio-BOD | Biochemical Oxygen Demand-5 Day,N-Inhib | 1.4 | mg/L | AI | | |
| 7/11/2005 11:10 | FLEMING | Bio-Chl-a | Chlorophyll-A, Monochromatic, Water | 0.85 | ug/L | U | 0.85 | 2.6 |
| 7/11/2005 11:10 | FLEMING | Bio-Chl-a | Phaeophytin-A, Monochromatic, Water | 0.85 | ug/L | U | 0.85 | 2.6 |
| 7/11/2005 11:10 | FLEMING | Bio-Toxicology | Bioassay-Acute-Screen-FW-C.dubia, LC50 | 100 | LC50 | L | | |
| 7/11/2005 11:10 | FLEMING | Bio-Toxicology | Bioassay-Acute-Screen-FW-Fish, LC50 | 100 | LC50 | L | | |
| 7/11/2005 11:10 | BLANK | BNA-Water | 1,2,4-Trichlorobenzene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 1,2-Dichlorobenzene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 1,3-Dichlorobenzene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 1,4-Dichlorobenzene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,4,6-Trichlorophenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,4-Dichlorophenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,4-Dimethylphenol | 65 | ug/L | U | 65 | 260 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,4-Dinitrophenol | 19 | ug/L | U | 19 | 78 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,4-Dinitrotoluene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2,6-Dinitrotoluene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2-Chloronaphthalene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2-Chlorophenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2-Methyl-4,6-dinitrophenol | 3.9 | ug/L | U | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 2-Nitrophenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 3,3'-Dichlorobenzidine | 52 | ug/L | U | 52 | 210 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4,4'-DDD | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4,4'-DDE | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4,4'-DDT | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4-Bromophenyl phenyl ether | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4-Chloro-3-methylphenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4-Chlorophenyl phenyl ether | 2.6 | ug/L | U | 2.6 | 10 |
| 7/11/2005 11:10 | BLANK | BNA-Water | 4-Nitrophenol | 19 | ug/L | U | 19 | 78 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Acenaphthene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Acenaphthylene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Aldrin | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | alpha-BHC | 1.9 | ug/L | U | 1.9 | 7.8 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | BLANK | BNA-Water | Anthracene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzidine | 130 | ug/L | U | 130 | 520 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzo(a)anthracene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzo(a)pyrene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzo(b)fluoranthene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzo(g,h,i)perylene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Benzo(k)fluoranthene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | beta-BHC | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Bis(2-chloroethoxy)methane | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Bis(2-chloroethyl)ether | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Bis(2-chloroisopropyl)ether | 3.9 | ug/L | U | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Bis(2-ethylhexyl)phthalate | 19 | ug/L | U | 19 | 78 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Butyl benzyl phthalate | 6.5 | ug/L | U | 6.5 | 26 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Chrysene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | delta-BHC | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Dibenzo(a,h)anthracene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Dieldrin | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Diethyl phthalate | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Dimethyl phthalate | 65 | ug/L | U | 65 | 260 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Di-n-butyl phthalate | 6.5 | ug/L | U | 6.5 | 26 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Di-n-octyl phthalate | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Endosulfan I | 5.2 | ug/L | U | 5.2 | 21 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Endosulfan II | 5.2 | ug/L | U | 5.2 | 21 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Endosulfan sulfate | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Endrin | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Endrin aldehyde | 5.2 | ug/L | U | 5.2 | 21 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Fluoranthene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Fluorene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | gamma-BHC | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Heptachlor | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Heptachlor epoxide | 1.9 | ug/L | U | 1.9 | 7.8 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Hexachlorobenzene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Hexachlorobutadiene | 3.9 | ug/L | U | 3.9 | 16 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | BLANK | BNA-Water | Hexachlorocyclopentadiene | 3.9 | ug/L | UJ | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Hexachloroethane | 3.9 | ug/L | U | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Indeno(1,2,3-cd)pyrene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Isophorone | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Naphthalene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Nitrobenzene | 2.6 | ug/L | U | 2.6 | 10 |
| 7/11/2005 11:10 | BLANK | BNA-Water | N-Nitrosodimethylamine | 2.6 | ug/L | U | 2.6 | 10 |
| 7/11/2005 11:10 | BLANK | BNA-Water | N-Nitrosodi-n-propylamine | 2.6 | ug/L | U | 2.6 | 10 |
| 7/11/2005 11:10 | BLANK | BNA-Water | N-Nitrosodiphenylamine | 3.9 | ug/L | U | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Pentachlorophenol | 3.9 | ug/L | U | 3.9 | 16 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Phenanthrene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Phenol | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | BLANK | BNA-Water | Pyrene | 1.3 | ug/L | U | 1.3 | 5.2 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 1,2,4-Trichlorobenzene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 1,2-Dichlorobenzene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 1,3-Dichlorobenzene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 1,4-Dichlorobenzene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,4,6-Trichlorophenol | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,4-Dichlorophenol | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,4-Dimethylphenol | 51 | ug/L | U | 51 | 200 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,4-Dinitrophenol | 15 | ug/L | U | 15 | 61 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,4-Dinitrotoluene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2,6-Dinitrotoluene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2-Chloronaphthalene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2-Chlorophenol | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2-Methyl-4,6-dinitrophenol | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 2-Nitrophenol | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 3,3'-Dichlorobenzidine | 40 | ug/L | U | 40 | 160 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4,4'-DDD | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4,4'-DDE | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4,4'-DDT | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4-Bromophenyl phenyl ether | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4-Chloro-3-methylphenol | 1 | ug/L | U | 1 | 4 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4-Chlorophenyl phenyl ether | 2 | ug/L | U | 2 | 8.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | 4-Nitrophenol | 15 | ug/L | U | 15 | 61 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Acenaphthene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Acenaphthylene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Aldrin | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | alpha-BHC | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Anthracene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzidine | 100 | ug/L | U | 100 | 400 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzo(a)anthracene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzo(a)pyrene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzo(b)fluoranthene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzo(g,h,i)perylene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Benzo(k)fluoranthene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | beta-BHC | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Bis(2-chloroethoxy)methane | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Bis(2-chloroethyl)ether | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Bis(2-chloroisopropyl)ether | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Bis(2-ethylhexyl)phthalate | 15 | ug/L | U | 15 | 61 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Butyl benzyl phthalate | 5.1 | ug/L | U | 5.1 | 20 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Chrysene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | delta-BHC | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Dibenzo(a,h)anthracene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Dieldrin | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Diethyl phthalate | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Dimethyl phthalate | 51 | ug/L | U | 51 | 200 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Di-n-butyl phthalate | 5.1 | ug/L | U | 5.1 | 20 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Di-n-octyl phthalate | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Endosulfan I | 4 | ug/L | U | 4 | 16 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Endosulfan II | 4 | ug/L | U | 4 | 16 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Endosulfan sulfate | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Endrin | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Endrin aldehyde | 4 | ug/L | U | 4 | 16 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Fluoranthene | 1 | ug/L | U | 1 | 4 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | FLEMING | BNA-Water | Fluorene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | gamma-BHC | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Heptachlor | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Heptachlor epoxide | 1.5 | ug/L | U | 1.5 | 6.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Hexachlorobenzene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Hexachlorobutadiene | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Hexachlorocyclopentadiene | 3 | ug/L | UJ | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Hexachloroethane | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Indeno(1,2,3-cd)pyrene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Isophorone | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Naphthalene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Nitrobenzene | 2 | ug/L | U | 2 | 8.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | N-Nitrosodimethylamine | 2 | ug/L | U | 2 | 8.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | N-Nitrosodi-n-propylamine | 2 | ug/L | U | 2 | 8.1 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | N-Nitrosodiphenylamine | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Pentachlorophenol | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Phenanthrene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Phenol | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | FLEMING | BNA-Water | Pyrene | 1 | ug/L | U | 1 | 4 |
| 7/11/2005 11:10 | BLANK | GC-Water | Alachlor | 0.68 | ug/L | U | 0.68 | 2.7 |
| 7/11/2005 11:10 | BLANK | GC-Water | Ametryn | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Atrazine | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Azinphos Methyl | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Bromacil | 0.23 | ug/L | U | 0.23 | 0.92 |
| 7/11/2005 11:10 | BLANK | GC-Water | Butylate | 0.23 | ug/L | U | 0.23 | 0.92 |
| 7/11/2005 11:10 | BLANK | GC-Water | Chlorpyrifos Ethyl | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Chlorpyrifos Methyl | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Diazinon | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Ethion | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Ethoprop | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Fenamiphos | 0.23 | ug/L | U | 0.23 | 0.92 |
| 7/11/2005 11:10 | BLANK | GC-Water | Fonofos | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Hexazinone | 0.11 | ug/L | U | 0.11 | 0.44 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | BLANK | GC-Water | Malathion | 0.17 | ug/L | U | 0.17 | 0.68 |
| 7/11/2005 11:10 | BLANK | GC-Water | Metalaxyl | 0.28 | ug/L | UJ | 0.28 | 1.1 |
| 7/11/2005 11:10 | BLANK | GC-Water | Metolachlor | 0.57 | ug/L | U | 0.57 | 2.3 |
| 7/11/2005 11:10 | BLANK | GC-Water | Metribuzin | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Mevinphos | 0.23 | ug/L | U | 0.23 | 0.92 |
| 7/11/2005 11:10 | BLANK | GC-Water | Naled | 0.91 | ug/L | U | 0.91 | 3.6 |
| 7/11/2005 11:10 | BLANK | GC-Water | Norflurazon | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Parathion Ethyl | 0.17 | ug/L | U | 0.17 | 0.68 |
| 7/11/2005 11:10 | BLANK | GC-Water | Parathion Methyl | 0.11 | ug/L | U | 0.11 | 0.44 |
| 7/11/2005 11:10 | BLANK | GC-Water | Phorate | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | BLANK | GC-Water | Prometryn | 0.17 | ug/L | U | 0.17 | 0.68 |
| 7/11/2005 11:10 | BLANK | GC-Water | Simazine | 0.057 | ug/L | U | 0.057 | 0.23 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Alachlor | 0.62 | ug/L | U | 0.62 | 2.5 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Ametryn | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Atrazine | 0.098 | ug/L | I | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Azinphos Methyl | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Bromacil | 0.21 | ug/L | U | 0.21 | 0.84 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Butylate | 0.21 | ug/L | U | 0.21 | 0.84 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Chlorpyrifos Ethyl | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Chlorpyrifos Methyl | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Diazinon | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Ethion | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Ethoprop | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Fenamiphos | 0.21 | ug/L | U | 0.21 | 0.84 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Fonofos | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Hexazinone | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Malathion | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Metalaxyl | 0.26 | ug/L | UJ | 0.26 | 1 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Metolachlor | 0.52 | ug/L | U | 0.52 | 2.1 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Metribuzin | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Mevinphos | 0.21 | ug/L | U | 0.21 | 0.84 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Naled | 0.82 | ug/L | U | 0.82 | 3.3 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Norflurazon | 0.1 | ug/L | U | 0.1 | 0.4 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | FLEMING | GC-Water | Parathion Ethyl | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Parathion Methyl | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Phorate | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Prometryn | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/11/2005 11:10 | FLEMING | GC-Water | Simazine | 0.052 | ug/L | U | 0.052 | 0.21 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Aluminum | 5 | ug/L | U | 5 | 20 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Arsenic | 4 | ug/L | U | 4 | 16 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Cadmium | 0.17 | ug/L | U | 0.17 | 0.68 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Calcium | 0.05 | mg/L | U | 0.05 | 0.2 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Chromium | 2 | ug/L | U | 2 | 8 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Copper | 0.5 | ug/L | U | 0.5 | 2 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Iron | 10 | ug/L | U | 10 | 40 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Lead | 0.19 | ug/L | U | 0.19 | 0.76 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Magnesium | 0.01 | mg/L | U | 0.01 | 0.04 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Nickel | 2 | ug/L | U | 2 | 8 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Selenium | 0.5 | ug/L | U | 0.5 | 2 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Silver | 0.025 | ug/L | U | 0.025 | 0.1 |
| 7/11/2005 11:10 | BLANK | Metals-Water | Zinc | 3 | ug/L | U | 3 | 12 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Aluminum | 8.7 | ug/L | I | 5 | 20 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Arsenic | 4 | ug/L | U | 4 | 16 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Cadmium | 0.067 | ug/L | I | 0.05 | 0.2 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Calcium | 22.1 | mg/L | | 0.05 | 0.2 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Chromium | 2 | ug/L | U | 2 | 8 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Copper | 0.7 | ug/L | I | 0.5 | 2 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Iron | 156 | ug/L | | 10 | 40 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Lead | 0.088 | ug/L | I | 0.075 | 0.3 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Magnesium | 9.4 | mg/L | | 0.01 | 0.04 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Nickel | 2 | ug/L | I | 2 | 8 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Selenium | 0.5 | ug/L | U | 0.5 | 2 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Silver | 0.025 | ug/L | U | 0.025 | 0.1 |
| 7/11/2005 11:10 | FLEMING | Metals-Water | Zinc | 38 | ug/L | | 3 | 12 |
| 7/11/2005 11:10 | BLANK | Nutrients-Liquid | Ammonia-N | 0.01 | mg N/L | U | 0.01 | 0.02 |
| 7/11/2005 11:10 | BLANK | Nutrients-Liquid | Kjeldahl Nitrogen | 0.06 | mg N/L | U | 0.06 | 0.2 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/11/2005 11:10 | BLANK | Nutrients-Liquid | NO2NO3-N | 0.004 | mg N/L | U | 0.004 | 0.01 |
| 7/11/2005 11:10 | BLANK | Nutrients-Liquid | O-Phosphate-P | 0.004 | mg P/L | U | 0.004 | 0.01 |
| 7/11/2005 11:10 | BLANK | Nutrients-Liquid | Total-P | 0.02 | mg P/L | U | 0.02 | 0.06 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | Ammonia-N | 0.04 | mg N/L | | 0.01 | 0.02 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | Kjeldahl Nitrogen | 0.56 | mg N/L | | 0.06 | 0.2 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | NO2NO3-N | 0.17 | mg N/L | | 0.004 | 0.01 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | O-Phosphate-P | 0.61 | mg P/L | Q | 0.016 | 0.04 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | Total-P | 0.72 | mg P/L | | 0.02 | 0.06 |
| 7/11/2005 11:10 | FLEMING | Nutrients-Liquid | TSS | 4 | mg/L | U | 4 | 16 |

## The Bioassay of Fleming Island Regional WWTF effluent sampled on July 11, 2005. NPDES #FL0043834.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 FL0043834 11 | 12 050711 | 18 B | 19 S | 20 1 |

Remarks

66

## The Priority Pollutants Analysis of Fleming Island Regional WWTF effluent sampled on July 11, 2005. NPDES #FL0043834.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 FL0043834 11 | 12 050711 | 18 X | 19 S | 20 1 |

Remarks

66

## Biological Analyses of Fleming Island Regional WWTF effluent sampled on July 11, 2005. NPDES #FL0043834.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 FL0043834 11 | 12 050711 | 18 S | 19 S | 20 1 |

Remarks

66