


Bioassays of

# Eastern Hillsboro Canal ASR System

Palm Beach County

NPDES #FL0267538

Sampled July 25, 2005

November 2005

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

Quality Manual No. 870346G
NELAC Certification No. E31780

Eastern Hillsboro Canal ASR System, located 700 meters east of structure S-39 on Hillsboro Canal, near south end of Loxahatchee National Wildlife Refuge, Palm Beach County, Florida, NPDES #FL0267538. Effluent samples for this facility were collected on July 25, 2005.

## Introduction

The Eastern Hillsboro Canal ASR (Aquifer Storage and Recovery) System project was permitted to discharge Floridan Aquifer water during the construction process (Phase I) and recovered (stored) water during the operational phase (Phase II). This sampling event occurred at the beginning of Phase II.

During Phase I, water from reverse air well drilling procedures and pump tests was discharged to the Hillsboro Canal, a Class III fresh surface water, after settling in an 8,000 gallon steel circulation tank. Also during Phase I, mixing zones of 150 meters for both turbidity and dissolved oxygen, and 800 meters for specific conductance were authorized. There was no design flow for Phase I. Flow data from July 2004 through June 2005 shows monthly average discharges of 4.509 million gallons per day (MGD) during February 2005 and 3.857 MGD during May 2005.

During Phase II, discharges to the Hillsboro Canal are expected to occur during the dry season for three days per week, at a flow rate of 5 million gallons per day (MGD). The discharge will consist of surficial aquifer water taken from the water treatment plant raw water supply wells that has been stored in the ASR wells during the wet season. The Phase II discharge outfall structure (D-001) is located approximately at latitude 26º19'58"N and longitude 80º13'24"W in the Hillsboro canal. The outfall is a submerged 50.8 cm (20 inch) diameter reinforced concrete pipe. The structure is equipped with an eductor system designed to mix a side-stream of canal water (400 gallons per minute (GPM)) and approximately 150 GPM of air into the discharge in order to maintain a minimum of 5.0 mg/L dissolved oxygen. Effluent is not chlorinated. There are no mixing zones permitted for Phase II, and there is no toxicity testing requirement for this facility (facility information provided by Terry Davis and Len Fishkin of FDEP Southeast District).

## Methods

Samples were collected from the NPDES sampling point for Outfall D-001 by Terry Davis (FDEP Southeast 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_09. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp The Department uses the 48-hour acute screening toxicity test to provide reasonable assurance that the facility does not adversely affect waters of the state.

Prior to test initiation, bioassay samples were aerated for 40 minutes at approximately 100 bubbles per minute, to increase the dissolved oxygen concentration from 3.4 mg/L to 8.0 mg/L.

## Toxicity Test Results

Tests were performed July 26 - 28, 2005.

| | |
|---|---|
| *Ceriodaphnia dubia* 48-hr acute screening bioassay – | $LC_{50}$ > 100%, 25% mortality* in 100% sample at 48 hours |
| *Cyprinella leedsi* 48-hr acute screening bioassay – | $LC_{50}$ > 100%, 5% mortality* in 100% sample at 48 hours |

The bioassay sample showed a low level of acute toxicity to the *Ceriodaphnia dubia* test organisms, but was not acutely toxic to the *Cyprinella leedsi* test organisms. The cause of the observed mortality in *C. dubia* was not determined.

See Appendix 1 for bioassay bench sheets.

*NOTE: In a 48-hour 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 0.300 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. This value is reported as the laboratory method detection limit (MDL). 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 phosphorus-limited. The predicted AGP based on phosphorus concentrations was 12.04 (±20%) mg dry wt/L (Table 1; Miller et al. 1978). Differences between actual and predicted AGP values greater than an order of magnitude are considered sufficient evidence to warrant follow up testing with the algal growth inhibition bioassay. True algal growth inhibition can only be determined by performing an actual algal growth inhibition test. Should algal growth inhibition be suspected, the district should request that the algal growth inhibition test be performed as a follow-up to the inspection.

See Table 1 for AGP results.

## Chemistry Results

Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected at a concentration of 0.272 mg/L in the bioassay sample in the laboratory. The unionized ammonia concentration in the bioassay sample was < 0.02 mg/L based on calculations using sample parameters taken in the lab. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.44 mg/L. Based on the pH, salinity and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

The effluent dissolved oxygen concentration (3.1 mg/L) failed to meet both the Class III freshwater quality criterion of ≥ 5.0 mg/L (62-302.530(31), F.A.C.) and the permit limit of ≥ 4.0 mg/L (daily minimum).

Iron was detected in the effluent at levels that comply with Class III fresh water quality criteria. Selenium was detected between the laboratory minimum detection limit (MDL) and practical quantitation limit (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 Outfall D-001 for this facility on July 25, 2005, showed a low level of acute toxicity to the *Ceriodaphnia dubia* test organisms but was not acutely toxic to the *Cyprinella leedsi* test organisms during the acute screen 48-hour bioassays. The cause of the observed mortality in *C. dubia* was not determined. The effluent AGP result was less than the "problem" threshold for fresh receiving waters and was sufficiently less than the predicted AGP value to suggest inhibition. The effluent dissolved oxygen level met neither the Class III freshwater quality standard nor the permit limit.

## 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) of* Pseudokirchneriella subcapitata *for ortho phosphate (OP) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus for samples collected from Eastern Hillsboro Canal ASR System on July 25, 2005.*

| Location | AGP (measured) | Predicted AGP (OP) ± 20% | Predicted AGP (TP) ± 20% | Inorganic N:P ratio | Total N:P ratio |
|---|---|---|---|---|---|
| Effluent Samples | 0.300 U | 12.04 ± 2.408 | 15.05 ± 3.01 | 15.71 | 23.71 |

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

*Table 2. Effluent limits, Class III Freshwater Criteria, and chemical and microbiological data for samples collected from Eastern Hillsboro Canal ASR System on July 25, 2005.*

| **Eastern Hillsboro Canal ASR System NPDES # FL0267538** | Class III Freshwater Stds | Effluent Limits | Effluent Samples |
|---|---|---|---|
| **Metals (µg/L unless otherwise noted)** | | | |
| Aluminum | - | - | 5 U |
| Arsenic | ≤ 50 | - | 12 U |
| Cadmium | ≤ 3.1 b | - | 0.5 U |
| Calcium (mg/L) | - | - | 136 A |
| Chromium-III | ≤ 244.5 b | - | 2 U |
| Copper | ≤ 27.7 b | - | 0.5 U |
| Iron | ≤ 1,000 | - | 158 A |
| Lead | ≤ 16.1 b | - | 0.075 U |
| Magnesium (mg/L) | - | - | 4.3 A |
| Nickel | ≤ 153.2 b | - | 2 U |
| Selenium | ≤ 5 | - | 1.3 I |
| Silver | ≤ 0.07 | - | 0.025 U |
| Sodium (mg/L) | - | ≤ 160 | - |
| Zinc | ≤ 352.5 b | - | 3 U |
| **Nutrients (mg/L)** | | | |
| Ortho-phosphate | - | - | 0.028 |
| Total Phosphorus | - | Report | 0.035 I |
| Ammonia | - | Report | 0.44 |
| Unionized Ammonia | ≤ 0.02 | - | ≤ 0.02 |
| Nitrate+Nitrite | - | - | 0.004 U |
| Total Kjeldahl Nitrogen | - | - | 0.83 |
| Organic Nitrogen | - | - | 0.39 c |
| Total Nitrogen | - | Report | 0.83 c |
| **General Physical and Chemical Parameters** | | | |
| pH (S.U.) | 6.0-8.5 s | 6.0-8.5 s | 6.9 |
| DO (mg/L) | ≥ 5.0 s | ≥ 4.0 s | 3.1 c |
| Conductivity (umhos/cm) | ≤ 1,275 | ≤ 1,275 | 885 |
| Temperature (C) | - | - | 26.9 |
| Turbidity | ≤ 29 t | ≤ 29 | 1.2 |
| TDS (mg/L) | - | ≤ 500 | - |
| Hardness (mg/L) | - | - | 357.3 c |
| Chloride (mg/L) | - | ≤ 250 | 51 |
| **Microbiology (# counts/100ml)** | | | |
| Fecal Coliforms-Membrane Filter | ≤ 800 | ≤ 200 | - |
| Total Coliforms | ≤ 2,400 | ≤ 1,000 | - |

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

b - Value is calculated based on hardness

c - Calculated value

s - Single sample

t - Shall not exceed 29 NTUs above background

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

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

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

# FDEP Biology Section - Acute Bioassay Bench Sheets

(aka) South Florida Water management District ASR Pilot Project.

Facility: Palm Beach County Eastern Hillsboro Canal ASR

Address (Location): 700 meters east of structure S-39 on Hillsboro Canal near South End of

City: Loxahatchee National Wildlife Refuge. County: Palm Beach

Contact/District: Terry Davis / Southeast

NPDES Permit #: FL 0267538

LIMS Job # TLH-2005-07-26-So - 01 LIMS Sample #: 852481

Lims Data Entry: 7-28-05 MF Data Entry Verification: 7.29.05 JD

Sample Collection: Date: 07/25/05 Time: 1035

Hold time Start: Date: 07/25/05 Time: 1035

Comments: Sample aerated to increase DO prior to test initation MF 7-26-05

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:

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

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

Aeration : (yes) no Initial DO: 3.4 mg/L Final DO: 8.0 mg/L Duration: 40 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

Temperature Range °C

Incubator # 2 Range 24.4 - 26.2

Room B246: 22.5 - 23.9

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

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 | - | | MF |
| Lab Total Residual Cl2 (mg/L): | <0.03 | <0.03 | | | | <0.03 | HACH | DN/JD | DN |
| Alkalinity (mg/L as $CaCO_3$): | 128 | 157 | | | | 358 | HACH | DN | DN |
| Hardness (mg/L as $CaCO_3$): | 122 | 122 | | | | 82 | HACH | DN | DN |
| Total Ammonia (mg/L as N): | <0.017 | <0.017 | | | | 0.272 | DENVER | MR | DN |
| Salinity (ppth): | <1 | <1 | | | | <1 | YSI Mettler | DN | DN |

Page 000031

[redacted]

## Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 852481 Test #: 1 Test Started: Date 7/26/05 Time: 1300

Organism: C. dubia Test Ended: Date 7/28/05 Time: 1350

Organism Batch: 26-05 Diluent/Batch: 20% DMW/ 22-05

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

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

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 |
| Control | A | 5 | 5 | 5 | 5 | | | |
| | B | 5 | 5 | 5 | 5 | | | |
| | C | 5 | 5 | 5 | 5 | | | |
| | D | 5 | 5 | 5 | 5 | | | |
| 100% | A | 5 | 5 | 5 | 3 2D | | | |
| | B | 5 | 5 | 5 | 3 2D | | | |
| | C | 5 | 5 | 5 | 4 1D | | | |
| | D | 5 | 5 | 5 | 5 | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Organisms loaded by: DN<br>Loading verified at 0 hours by: MF | | Checked by: (initials) | [redacted] | JS | DN | | | |

Comments:

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

**Test Results:**

% mortality in 100% sample 25

$LC_{50}$: >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).

v1.2 3/8/05

Page 000032

## Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 852481 Test #: 2 Test Started: Date 7/26/05 Time: 1345

Organism: C. leedsi Test Ended: Date 7/28/05 Time: 1400

Organism Batch: 22-05 Diluent/ Batch: Well H₂O / N/A

Organism Age: 5 dys Food: YCT P. subcapitata Artemia

Chamber Size 1000 mL Batch: — — 3513842S GR

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 |
|---|---|---|---|---|---|---|---|---|
| Control | A1 | A1 | 5 | 5 | 5 | | | |
| | B | A2 | 5 | 5 | 5 | | | |
| | C | A3 | 5 | 5 | 5 | | | |
| | D | A4 | 5 | 5 | 5 | | | |
| 100% | A | A5 | 5 | 5 | 4 1D | | | |
| | B | A6 | 5 | 5 | 5 | | | |
| | C | A7 | 5 | 5 | 5 | | | |
| | D | A8 | 5 | 5 | 5 | | | |
| Organisms loaded by: DN<br>Loading verified at 0 hours by: mF | Checked by: (initials) | | [redacted] | Jo | DN | | | |

Comments:

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

Test Results:

% mortality in 100% sample 5

$LC_{50}$: >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 000033 v1.2 3/8/05

Bioassay Parameters

LIMS Sample # : 852481 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 | 24.4 | \| | 24.0 | | | |
| Dissolved Oxygen mg/L | 7.9 | \| | 7.9 | | | |
| Conductivity (µmhos) mmhos | 175 | \| | 200 | | | |
| (initials) Measured by: | DN | | DN | | | |
| (initials) Recorded by: | DN | | DN | | | |

Comments:

| Concentration 10% | 0 Hr. | 24 Hr. | 48 Hr. before renewal | 48 Hr. after renewal | 72 Hr. | 96 Hr. |
|---|---|---|---|---|---|---|
| Replicate | A | \| | B | | | |
| pH (S.U.) | 8.1 | \| | 8.2 | | | |
| Temperature °C | 25.2 | \| | 24.0 | | | |
| Dissolved Oxygen mg/L | 7.6 | \| | 7.8 | | | |
| Conductivity (µmhos) mmhos | 815 | \| | ⓐ 580 | | | |
| (initials) Measured by: | DN | | DN | | | |
| (initials) Recorded by: | DN | | DN | | | |

Comments: ⓐ verified conductivity reading & second measurement and checked calibration & standard. DN 9/28/05.

| 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 1. Bench Sheets (continued)

Bioassay Parameters

**LIMS Sample #:** 85248 **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 CH | 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 | 8.3 | | | |
| Temperature °C | 24.8 | 24.1 | 24.1 | | | |
| Dissolved Oxygen mg/L | 7.8 | 7.5 | 7.6 | | | |
| Conductivity (µmhos) mmhos | 275 | 290 | 295 | | | |
| (initials) Measured by: | JD | JD | DN | | | |
| (initials) Recorded by: | JD | JD | DN | | | |

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 | 8.2 | 8.1 | | | |
| Temperature °C | 25.7 | 24.2 | 24.1 | | | |
| Dissolved Oxygen mg/L | 8.0 | 7.3 | 7.8 | | | |
| Conductivity (µmhos) mmhos | 835 | 790 | 700 | | | |
| (initials) Measured by: | JD | JD | DN | | | |
| (initials) Recorded by: | JD | JD | DN | | | |

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

Page 0000135

**Appendix 2. Chemical Analyses performed on the effluent from the Eastern Hillsboro Canal ASR System Outfall D-001, sampled on July 25, 2005.**

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Effluent | Bio-AGP/LimNut | Algal Growth Potential | 0.3 | mg DryWt/L | U | 0.3 | 0.9 |
| 7/25/2005 10:35 | Effluent | Bio-Chl-a | Chlorophyll-A, Monochromatic, Water | 0.85 | ug/L | U | 0.85 | 2.6 |
| 7/25/2005 10:35 | Effluent | Bio-Chl-a | Phaeophytin-A, Monochromatic, Water | 0.85 | ug/L | U | 0.85 | 2.6 |
| 7/25/2005 10:35 | Effluent | Bio-Toxicology | Bioassay-Acute-Screen-FW-C.dubia, LC50 | 100 | LC50 | L | | |
| 7/25/2005 10:35 | Effluent | Bio-Toxicology | Bioassay-Acute-Screen-FW-Fish, LC50 | 100 | LC50 | L | | |
| 7/25/2005 10:35 | Effluent | BNA-Water | 1,2,4-Trichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 1,2-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 1,3-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 1,4-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,4,6-Trichlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,4-Dichlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,4-Dimethylphenol | 48 | ug/L | U | 48 | 190 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,4-Dinitrophenol | 14 | ug/L | U | 14 | 58 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,4-Dinitrotoluene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2,6-Dinitrotoluene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2-Chloronaphthalene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2-Chlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2-Methyl-4,6-dinitrophenol | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 2-Nitrophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 3,3'-Dichlorobenzidine | 38 | ug/L | UJ | 38 | 150 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4,4'-DDD | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4,4'-DDE | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4,4'-DDT | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4-Bromophenyl phenyl ether | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4-Chloro-3-methylphenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4-Chlorophenyl phenyl ether | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Effluent | BNA-Water | 4-Nitrophenol | 14 | ug/L | U | 14 | 58 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Acenaphthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Acenaphthylene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Aldrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | alpha-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzidine | 96 | ug/L | U | 96 | 380 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzo(a)anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzo(a)pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzo(b)fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzo(g,h,i)perylene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Benzo(k)fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | beta-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Bis(2-chloroethoxy)methane | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Bis(2-chloroethyl)ether | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Bis(2-chloroisopropyl)ether | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Bis(2-ethylhexyl)phthalate | 14 | ug/L | U | 14 | 58 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Butyl benzyl phthalate | 4.8 | ug/L | U | 4.8 | 19 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Chrysene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | delta-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Dibenzo(a,h)anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Dieldrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Diethyl phthalate | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Dimethyl phthalate | 48 | ug/L | U | 48 | 190 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Di-n-butyl phthalate | 4.8 | ug/L | U | 4.8 | 19 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Di-n-octyl phthalate | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Endosulfan I | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Endosulfan II | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Endosulfan sulfate | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Endrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Endrin aldehyde | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Fluorene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | gamma-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Heptachlor | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Heptachlor epoxide | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Hexachlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Hexachlorobutadiene | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Hexachlorocyclopentadiene | 2.9 | ug/L | UJ | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Hexachloroethane | 2.9 | ug/L | U | 2.9 | 12 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Effluent | BNA-Water | Indeno(1,2,3-cd)pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Isophorone | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Naphthalene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Nitrobenzene | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Effluent | BNA-Water | N-Nitrosodimethylamine | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Effluent | BNA-Water | N-Nitrosodi-n-propylamine | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Effluent | BNA-Water | N-Nitrosodiphenylamine | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Pentachlorophenol | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Phenanthrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Phenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | BNA-Water | Pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 1,2,4-Trichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 1,2-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 1,3-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 1,4-Dichlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,4,6-Trichlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,4-Dichlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,4-Dimethylphenol | 48 | ug/L | U | 48 | 190 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,4-Dinitrophenol | 14 | ug/L | U | 14 | 58 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,4-Dinitrotoluene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2,6-Dinitrotoluene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2-Chloronaphthalene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2-Chlorophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2-Methyl-4,6-dinitrophenol | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | 2-Nitrophenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 3,3'-Dichlorobenzidine | 38 | ug/L | UJ | 38 | 150 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4,4'-DDD | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4,4'-DDE | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4,4'-DDT | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4-Bromophenyl phenyl ether | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4-Chloro-3-methylphenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4-Chlorophenyl phenyl ether | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Blank | BNA-Water | 4-Nitrophenol | 14 | ug/L | U | 14 | 58 |
| 7/25/2005 10:35 | Blank | BNA-Water | Acenaphthene | 0.96 | ug/L | U | 0.96 | 3.8 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Blank | BNA-Water | Acenaphthylene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Aldrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | alpha-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzidine | 96 | ug/L | U | 96 | 380 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzo(a)anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzo(a)pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzo(b)fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzo(g,h,i)perylene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Benzo(k)fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | beta-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Bis(2-chloroethoxy)methane | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Bis(2-chloroethyl)ether | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Bis(2-chloroisopropyl)ether | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Bis(2-ethylhexyl)phthalate | 22 | ug/L | I | 14 | 58 |
| 7/25/2005 10:35 | Blank | BNA-Water | Butyl benzyl phthalate | 4.8 | ug/L | U | 4.8 | 19 |
| 7/25/2005 10:35 | Blank | BNA-Water | Chrysene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | delta-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Dibenzo(a,h)anthracene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Dieldrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Diethyl phthalate | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Dimethyl phthalate | 48 | ug/L | U | 48 | 190 |
| 7/25/2005 10:35 | Blank | BNA-Water | Di-n-butyl phthalate | 4.8 | ug/L | U | 4.8 | 19 |
| 7/25/2005 10:35 | Blank | BNA-Water | Di-n-octyl phthalate | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Endosulfan I | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Blank | BNA-Water | Endosulfan II | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Blank | BNA-Water | Endosulfan sulfate | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Endrin | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Endrin aldehyde | 3.8 | ug/L | U | 3.8 | 15 |
| 7/25/2005 10:35 | Blank | BNA-Water | Fluoranthene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Fluorene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | gamma-BHC | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Heptachlor | 1.4 | ug/L | U | 1.4 | 5.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Heptachlor epoxide | 1.4 | ug/L | U | 1.4 | 5.8 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Blank | BNA-Water | Hexachlorobenzene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Hexachlorobutadiene | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Hexachlorocyclopentadiene | 2.9 | ug/L | UJ | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Hexachloroethane | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Indeno(1,2,3-cd)pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Isophorone | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Naphthalene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Nitrobenzene | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Blank | BNA-Water | N-Nitrosodimethylamine | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Blank | BNA-Water | N-Nitrosodi-n-propylamine | 1.9 | ug/L | U | 1.9 | 7.7 |
| 7/25/2005 10:35 | Blank | BNA-Water | N-Nitrosodiphenylamine | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Pentachlorophenol | 2.9 | ug/L | U | 2.9 | 12 |
| 7/25/2005 10:35 | Blank | BNA-Water | Phenanthrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Phenol | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Blank | BNA-Water | Pyrene | 0.96 | ug/L | U | 0.96 | 3.8 |
| 7/25/2005 10:35 | Effluent | GC-Water | Alachlor | 0.6 | ug/L | U | 0.6 | 2.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Ametryn | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Atrazine | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Azinphos Methyl | 0.2 | ug/L | U | 0.2 | 0.8 |
| 7/25/2005 10:35 | Effluent | GC-Water | Bromacil | 0.2 | ug/L | U | 0.2 | 0.8 |
| 7/25/2005 10:35 | Effluent | GC-Water | Butylate | 0.2 | ug/L | UJ | 0.2 | 0.8 |
| 7/25/2005 10:35 | Effluent | GC-Water | Chlorpyrifos Ethyl | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Chlorpyrifos Methyl | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Diazinon | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Ethion | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Ethoprop | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Fenamiphos | 0.2 | ug/L | U | 0.2 | 0.8 |
| 7/25/2005 10:35 | Effluent | GC-Water | Fonofos | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Hexazinone | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Malathion | 0.15 | ug/L | UJ | 0.15 | 0.6 |
| 7/25/2005 10:35 | Effluent | GC-Water | Metalaxyl | 0.25 | ug/L | U | 0.25 | 1 |
| 7/25/2005 10:35 | Effluent | GC-Water | Metolachlor | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Metribuzin | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Mevinphos | 0.2 | ug/L | U | 0.2 | 0.8 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Effluent | GC-Water | Naled | 0.8 | ug/L | UJ | 0.8 | 3.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Norflurazon | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Effluent | GC-Water | Parathion Ethyl | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Effluent | GC-Water | Parathion Methyl | 0.1 | ug/L | U | 0.1 | 0.4 |
| 7/25/2005 10:35 | Effluent | GC-Water | Phorate | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | GC-Water | Prometryn | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Effluent | GC-Water | Simazine | 0.05 | ug/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Alachlor | 0.58 | ug/L | U | 0.58 | 2.3 |
| 7/25/2005 10:35 | Blank | GC-Water | Ametryn | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Atrazine | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Azinphos Methyl | 0.19 | ug/L | U | 0.19 | 0.76 |
| 7/25/2005 10:35 | Blank | GC-Water | Bromacil | 0.19 | ug/L | U | 0.19 | 0.76 |
| 7/25/2005 10:35 | Blank | GC-Water | Butylate | 0.19 | ug/L | UJ | 0.19 | 0.76 |
| 7/25/2005 10:35 | Blank | GC-Water | Chlorpyrifos Ethyl | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Chlorpyrifos Methyl | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Diazinon | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Ethion | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Ethoprop | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Fenamiphos | 0.19 | ug/L | U | 0.19 | 0.76 |
| 7/25/2005 10:35 | Blank | GC-Water | Fonofos | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Hexazinone | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Malathion | 0.15 | ug/L | UJ | 0.15 | 0.6 |
| 7/25/2005 10:35 | Blank | GC-Water | Metalaxyl | 0.24 | ug/L | U | 0.24 | 0.96 |
| 7/25/2005 10:35 | Blank | GC-Water | Metolachlor | 0.49 | ug/L | U | 0.49 | 2 |
| 7/25/2005 10:35 | Blank | GC-Water | Metribuzin | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Mevinphos | 0.19 | ug/L | U | 0.19 | 0.76 |
| 7/25/2005 10:35 | Blank | GC-Water | Naled | 0.78 | ug/L | UJ | 0.78 | 3.1 |
| 7/25/2005 10:35 | Blank | GC-Water | Norflurazon | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Blank | GC-Water | Parathion Ethyl | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Blank | GC-Water | Parathion Methyl | 0.097 | ug/L | U | 0.097 | 0.39 |
| 7/25/2005 10:35 | Blank | GC-Water | Phorate | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Blank | GC-Water | Prometryn | 0.15 | ug/L | U | 0.15 | 0.6 |
| 7/25/2005 10:35 | Blank | GC-Water | Simazine | 0.049 | ug/L | U | 0.049 | 0.2 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Aluminum | 5 | ug/L | U | 5 | 20 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Effluent | Metals-Water | Arsenic | 12 | ug/L | U | 12 | 48 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Cadmium | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Calcium | 136 | mg/L | A | 0.05 | 0.2 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Chromium | 2 | ug/L | U | 2 | 8 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Copper | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Iron | 158 | ug/L | A | 10 | 40 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Lead | 0.075 | ug/L | U | 0.075 | 0.3 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Magnesium | 4.3 | mg/L | A | 0.01 | 0.04 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Nickel | 2 | ug/L | U | 2 | 8 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Selenium | 1.3 | ug/L | I | 0.5 | 2 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Silver | 0.025 | ug/L | U | 0.025 | 0.1 |
| 7/25/2005 10:35 | Effluent | Metals-Water | Zinc | 3 | ug/L | U | 3 | 12 |
| 7/25/2005 10:35 | Blank | Metals-Water | Aluminum | 5 | ug/L | U | 5 | 20 |
| 7/25/2005 10:35 | Blank | Metals-Water | Arsenic | 4 | ug/L | U | 4 | 16 |
| 7/25/2005 10:35 | Blank | Metals-Water | Cadmium | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Blank | Metals-Water | Calcium | 0.05 | mg/L | U | 0.05 | 0.2 |
| 7/25/2005 10:35 | Blank | Metals-Water | Chromium | 2 | ug/L | U | 2 | 8 |
| 7/25/2005 10:35 | Blank | Metals-Water | Copper | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Blank | Metals-Water | Iron | 10 | ug/L | U | 10 | 40 |
| 7/25/2005 10:35 | Blank | Metals-Water | Lead | 0.64 | ug/L | U | 0.64 | 2.6 |
| 7/25/2005 10:35 | Blank | Metals-Water | Magnesium | 0.01 | mg/L | U | 0.01 | 0.04 |
| 7/25/2005 10:35 | Blank | Metals-Water | Nickel | 2 | ug/L | U | 2 | 8 |
| 7/25/2005 10:35 | Blank | Metals-Water | Selenium | 0.5 | ug/L | U | 0.5 | 2 |
| 7/25/2005 10:35 | Blank | Metals-Water | Silver | 0.025 | ug/L | U | 0.025 | 0.1 |
| 7/25/2005 10:35 | Blank | Metals-Water | Zinc | 3 | ug/L | U | 3 | 12 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | Ammonia-N | 0.44 | mg N/L | | 0.02 | 0.04 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | Chloride | 51 | mg Cl/L | | 2 | 5 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | Kjeldahl Nitrogen | 0.83 | mg N/L | | 0.12 | 0.4 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | NO2NO3-N | 0.004 | mg N/L | U | 0.004 | 0.01 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | O-Phosphate-P | 0.028 | mg P/L | | 0.004 | 0.01 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | Total-P | 0.035 | mg P/L | I | 0.02 | 0.06 |
| 7/25/2005 10:35 | Effluent | Nutrients-Liquid | Turbidity | 1.2 | NTU | | 0.05 | 0.05 |
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | Ammonia-N | 0.01 | mg N/L | U | 0.01 | 0.02 |
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | Chloride | 0.2 | mg Cl/L | U | 0.2 | 0.5 |

## Appendix 2. Chemical Analyses (continued)

| Date Sampled | Field ID | Analysis Group | Component | Result | Units | Remark | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | Kjeldahl Nitrogen | 0.06 | mg N/L | U | 0.06 | 0.2 |
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | NO2NO3-N | 0.004 | mg N/L | U | 0.004 | 0.01 |
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | O-Phosphate-P | 0.004 | mg P/L | U | 0.004 | 0.01 |
| 7/25/2005 10:35 | Blank | Nutrients-Liquid | Total-P | 0.02 | mg P/L | U | 0.02 | 0.06 |

## The Bioassay of Eastern Hillsboro Canal ASR System effluent sampled on July 25, 2005. NPDES #FL0267538.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 F L 0 2 6 7 5 3 8 11 | 12 0 5 0 7 2 5 | 18 **B** | 19 **S** | 20 2 |

Remarks

66

## The Priority Pollutants Analysis of Eastern Hillsboro Canal ASR System effluent sampled on July 25, 2005. NPDES #FL0267538.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 F L 0 2 6 7 5 3 8 11 | 12 0 5 0 7 2 5 | 18 **X** | 19 **S** | 20 2 |

Remarks

66

## Biological Analyses of Eastern Hillsboro Canal ASR System effluent sampled on July 25, 2005. NPDES #FL0267538.

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

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 F L 0 2 6 7 5 3 8 11 | 12 0 5 0 7 2 5 | 18 **S** | 19 **S** | 20 2 |

Remarks

66