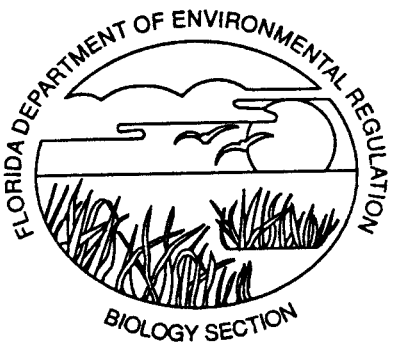



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DO NOT REMOVE

Bioassays of

**Stone Container Corporation**

Panama City, Bay County, Florida

No NPDES Number

Sampled 4/8/91

July 5, 1991

**Biology Section**

**Division of Administrative and Technical Services**

Bioassays of

# Stone Container Corporation

Panama City, Bay County, Florida

No NPDES Number

**Biology Section**
**Bureau of Laboratories**
**July 5, 1991**

## Introduction

Stone Container Corporation, Panama City, Bay County, Florida, on 9 to 12 April, 1991.

The effluent from this paper mill receives primary treatment on site and final treatment at the Bay County Regional WWTP. The samples were collected for these bioassays to assess a suspected groundwater leachate problem which had been sampled and tested March 12-14, 1991.

The first sample was obtained directly from the primary clarifier. The clarifier begins the first stage of treatment for the paper mill wastewater. The second sample was collected where a tidally-influenced (saltwater) ditch from the property discharges into St. Andrew Bay. The third sample was collected from the same ditch, but further inland, at the point where a groundwater drain pipe from beneath the earthen clarifier was discharging into the ditch.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

## Results and Discussion

The Biology Section performed static acute toxicity bioassays on three samples from this facility. The duration of the tests was extended from 48 to 72 hours at the request of the district. The bioassay organisms used for these tests were the water flea, *Ceriodaphnia dubia*, the fish, *Notropis leedsi*, and the mysid shrimp, *Mysidopsis bahia*. The mysid shrimp was used to test only sample #2 which had an initial salinity of 3.5 ppt. The tests indicated that sample #1 (primary clarifier) was toxic to both *C. dubia* and *N. leedsi*. Sample #2 (the saltwater ditch) was not toxic to *N. leedsi* or *M. bahia*. The sample of most concern, #3 from the groundwater leachate, was not toxic to *C. dubia* or *N. leedsi*.

Total residual chlorine was not detected in any of the samples. No further chemical analyses were performed on the samples.

## Conclusion

The sample from the primary clarifier was toxic on 9 April, 1991. The saltwater ditch sample and the sample of groundwater leachate were not toxic on 9 April, 1991.

**Table 1. Concentration Series and Volumes Used for the Static Acute Bioassays of Stone Container Corporation on 9 to 12 April, 1991.**

*Ceriodaphnia dubia* (water flea)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 20 mL | 0 mL | 20 mL |
| 50 % | 10 mL | 10 mL | 20 mL |
| 75 % | 6 mL | 14 mL | 20 mL |
| 100 % | 0 mL | 20 mL | 20 mL |

*Notropis leedsi* (bannerfin shiner)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 500 mL | 0 mL | 500 mL |
| 100 % | 0 mL | 500 mL | 500 mL |

*Mysidopsis bahia* (mysid shrimp)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 500 mL | 0 mL | 500 mL |
| 100 % | 0 mL | 500 mL | 500 mL |

Table 2. Data recorded during the static acute screening bioassays of a sample from the primary clarifier at Stone Container Corporation, Panama City, Bay County, Florida, on 9 to 12 April, 1991.

| | | | | | |
|---|---|---|---|---|---|
| Facility: | **Stone Container Primary Clarifier** | **NPDES #** | **discharge via WWTP** | Facility Type: | **Paper mill** |
| Location: | Panama City | Contact/District: | Glen Butts / NW | | |
| County: | Bay | Test type: | static acute screen | | |
| Sample Collection Date: | **4/8/91** Time: 1045 | # tests: | 6 | Receiving Water: | St. Andrew Bay |
| Test Beginning Date: | 4/9/91 Time: 1130 | Chlorination Type: | **unchlorinated** | | |
| Test Ending Date: | 4/12/91 Time: 1130 | | | **Page 1 of 3** | |

| **Total Residual Cl2** | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.0 | Hach |
| Lab: | - | - |

| **Alk & Hardness** | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 140 |
| Cond. Control Water (daphnids): | 65 | 85 |
| 100% Sample: | 90 | 150 |

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
**LC50:** <100% Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 72 hour |
| Control | 5 | 5 | 5 | 5 | 8.2 | 8.5 | 8.3 | 9.2 | 7.9 | 7.4 | 7.9 | 8.1 | 21.5 | 21.5 | 21.5 | 21.8 | 183 | 249 |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 1 | 1 | 0 | 2.2 | 2.9 | 6.0 | 8.2 | 6.0 | 7.2 | 7.7 | 7.9 | 21.0 | 21.5 | 21.5 | 21.8 | 1,829 | 1,823 |
| 100% | 5 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Organism: ***Notropis leedsi*** Age: 20 days
**LC50:** <100% Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 hour |
| Control | 5 | 5 | 5 | 5 | 8.5 | 8.0 | 8.0 | 8.9 | 7.6 | 8.0 | 8.1 | 8.2 | 21.0 | 21.2 | 21.5 | 21.7 | - | - |
| Control | 5 | 5 | 5 | 5 | 8.6 | 8.0 | 7.9 | 8.9 | 7.6 | 8.0 | 8.2 | 8.2 | - | - | - | - | 241 | 246 |
| 100% | 5 * | 0 | - | - | 0.6 ** | 5.1 | - | - | 5.9 | 7.7 | - | - | 21.0 | 21.3 | - | - | - | - |
| 100% | 5 * | 0 | - | - | 0.2 ** | 3.7 | - | - | 5.9 | 7.7 | - | - | - | - | - | - | 1,935 | 1,896 |

* fish dying within 15 minutes of loading ** aerated to raise D.O. to 4.6 - 4.9 mg/L before loading.

Table 3. Data recorded during the static acute screening bioassays of a sample from a saltwater ditch at Stone Container Corporation, Panama City, Bay County, Florida, on 9 to 12 April, 1991.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Facility: | **Stone Container-Saltwater Ditch** | | **NPDES #** | **discharge via WWTP** | Facility Type: | **Paper mill** | |
| Location: | Panama City | | Contact/District: | Glen Butts / NW | | | |
| County: | Bay | | Test type: | static acute screen | | | |
| Sample Collection Date: | **4/8/91** | Time: 1030 | # tests: | 6 | Receiving Water: | St. Andrew Bay | |
| Test Beginning Date: | 4/9/91 | Time: 1130 | Chlorination Type: | **unchlorinated** | | | |
| Test Ending Date: | 4/12/91 | Time: 1130 | | | **Page 2 of 3** | | |

| **Total Residual Cl2** | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.0 | 0 |
| Lab: | - | - |

| **Alk & Hardness** | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 140 |
| Cond. Control Water (daphnids): | 65 | 85 |
| 100% Sample: | 540 | 7600 |

Organism: ***Notropis leedsi*** Age: 20 days
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 72 hour |
| Control | 5 | 5 | 5 | 5 | 8.5 | 8.0 | 8.0 | 8.9 | 7.6 | 8.0 | 8.1 | 8.2 | 21.0 | 21.2 | 21.5 | 21.7 | - | - |
| Control | 5 | 5 | 5 | 5 | 8.6 | 8.0 | 7.9 | 8.9 | 7.6 | 8.0 | 8.2 | 8.2 | - | - | - | - | 241 | 253 |
| 100% | 5 | 5 | 5 | 5 | 5.9 | 7.1 | 7.5 | 8.6 | 7.8 | 8.2 | 8.5 | 8.6 | 20.0 | 21.2 | 21.0 | 21.2 | - | - |
| 100% | 5 | 5 | 5 | 5 | 6.1 | 6.9 | 7.5 | 8.4 | 7.8 | 8.2 | 8.5 | 8.6 | - | - | - | - | 5,820 | 6,030 |

Organism: ***Mysidopsis bahia*** Life stage: <3 days
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 24 h r | 48 hr | 72 hr | 0 hour | 72 hour |
| Control | 5 | 5 | 5 | 5 | 8.8 | 7.4 | 6.3 | 7.6 | 8.5 | 8.2 | 8.0 | 7.9 | 21.5 | 21.2 | 21.0 | 21.2 | - | - |
| Control | 5 | 5 | 5 | 5 | 8.9 | 7.4 | 6.4 | 7.5 | 8.5 | 8.2 | 8.0 | 7.9 | - | - | - | - | 28,100 | 28,800 |
| 100.0% | 5 | 5 | 5 | 5 | 7.3 | 7.0 | 6.3 | 7.8 | 7.8 | 8.1 | 8.3 | 8.4 | 21.0 | 21.2 | 21.5 | 21.5 | - | - |
| 100.0% | 5 | 5 | 5 | 5 | 7.4 | 7.0 | 6.4 | 7.8 | 7.8 | 8.1 | 8.3 | 8.4 | - | - | - | - | 28,700 | 30,000 |

| **Salinity (ppt)** | |
|---|---|
| Control Water: | 19 |
| 100% Sample: | 3.5 |

sample salinity adjusted to 19.8 prior to test

Table 4. Data recorded during the static acute screening bioassays of a sample of leachate in groundwater behind guard shack at Stone Container Corporation, Panama City, Bay County, Florida, on 9 to 12 April, 1991.

| | | | | | | |
|---|---|---|---|---|---|---|
| Facility: | **Stone Cont-Guard shack** | | **NPDES #** | **discharge via WWTP** | Facility Type: | **Paper mill** |
| Location: | Panama City | | Contact/District: | Glen Butts / NW | | |
| County: | Bay | | Test type: | static acute definitive | | |
| Sample Collection Date: | **4/8/91** | Time: 1015 | # tests: | 6 | Receiving Water: | St Andrew Bay |
| Test Beginning Date: | 4/9/91 | Time: 1130 | Chlorination Type: | **unchlorinated** | | |
| Test Ending Date: | 4/12/91 | Time: 1130 | | | **Page 3 of 3** | |

| **Total Residual Cl2** | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.0 | Hach |
| Lab: | - | - |

| **Alk & Hardness** | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 140 |
| Cond. Control Water (daphnids): | 65 | 85 |
| 100% Sample: | 650 | 335 |

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 72 hour |
| Control | 5 | 5 | 5 | 5 | 8.2 | 8.5 | 8.3 | 9.2 | 7.9 | 7.4 | 7.9 | 8.1 | 21.5 | 21.5 | 21.5 | 21.8 | 183 | 249 |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Control | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 50% | 5 | 5 | 5 | 5 | 5.0 | 8.1 | 8.1 | 9.3 | 8.1 | 8.6 | 8.8 | 8.8 | 21.0 | 21.5 | 21.5 | 21.8 | 1,230 | 1,579 |
| 50% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 50% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 50% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 75% | 5 | 5 | 5 | 5 | 5.1 | 8.0 | 8.2 | 9.2 | 8.1 | 8.6 | 8.8 | 8.8 | 21.0 | 21.6 | 21.5 | 22.0 | 1,520 | 1,536 |
| 75% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 75% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 75% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 5 | 5 | 5 | 2.7 | 8.0 | 8.3 | 9.4 | 8.1 | 8.7 | 8.7 | 8.8 | 20.5 | 21.3 | 21.5 | 21.7 | 2,270 | 2,280 |
| 100% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 100% | 5 | 5 | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Organism: ***Notropis leedsi*** Age: 20 days
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | | Dissolved Oxygen | | | | pH | | | | Temperature | | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | at 24 hr | at 48 hr | at 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 24 hr | 48 hr | 72 hr | 0 hour | 72 hour |
| Control | 5 | 5 | 5 | 5 | 8.5 | 8.0 | 8.0 | 8.9 | 7.6 | 8.0 | 8.1 | 8.2 | 21.0 | 21.2 | 21.5 | 21.7 | - | - |
| Control | 5 | 5 | 5 | 5 | 8.6 | 8.0 | 7.9 | 8.9 | 7.6 | 8.0 | 8.2 | 8.2 | - | - | - | - | 241 | 253 |
| 100% | 5 | 5 | 5 | 3 | 1.7 * | 8.5 | 7.0 | 8.1 | 8.0 | 8.7 | 8.6 | 8.7 | 20.0 | 21.2 | 21.0 | 21.2 | - | - |
| 100% | 5 | 5 | 5 | 5 | 0.8 * | 8.5 | 6.4 | 7.8 | 8.0 | 8.7 | 8.6 | 8.6 | - | - | - | - | 2,310 | 2,350 |

* aerated to 6.2 & 6.8 mg/L before loading

# DER Biology Section - Acute Bioassay Bench Sheet

Sample Source: Stone Container Primary Clarifier — Date: 4-5 [illegible] 95

Address/City: — Test Starting Date: 4-7-95 Time: [illegible]

County: Bay — Test Ending Date: 4/12/95 Time: 1130

Contact/District: NW Glen Bch — Test Organism: N. tenuis

NPDES Permit #: _____ Outfall #: _____ File Storage Adr.: Todays

Test Number: 1 of 8 — Test Type: Screening | Definitive

(Static) Static Renewal | Flow-through

Remarks: * re-titrated to 7.6 - 7.8 before loading. Each dilution water is measured in a graduated cylinder & is measured from the control.

Instrument Calibrations:

| | pH | DO | Cond. | Temp |
|---|---|---|---|---|
| 0 hr | 7.07, 9.69 | 8.5 @ 22.5 | 14936 | 24.1 21.9 @ 24.0 |
| 24 hr | 7.09, 9.69 | 8.8 @ 22 | 14946 | 24.0 21.7 @ 24.3 |
| 48 hr | 7.09, 9.69 | 8.7 @ 23 | 14936 | 24.0 21.5 @ 23.9 |

| Conc. | Chamber # | Number Live 0 | 24 | 48 | DO (mg/l) 0 | 24 | 48 | pH 0 | 24 | 48 | Temp. (°C) 0 | 24 | 48 | Cond. (µmhos/cm) 0 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 25 | 5 | 5 | 5 | 8.5 | 8.0 | 8.0 | 7.6 | 8.0 | 8.1 | 21 | 21.2 | 21.5 | | 246 | |
| Control | 76 | 5 | 5 | 5 | 8.6 | 8.0 | 7.9 | 7.6 | 8.0 | 8.2 | | | | 241 | 254 | 251 |
| 100% | 7 | 5* | 0 | — | .68 | 5.1 | | 5.9 | 7.7 | | 21 | 21.3 | | | | |
| 100% | 14 | 5* | 0 | — | .29 | 3.7 | | 5.9 | 7.7 | | | | | 1935 | 1896 | |
| | | | | | | | | | | | | | | | | |
| | | 72 hours | | | | | | | | | | | | | | |
| CONTROL | 25 | 5 | | | 8.9 | | | 8.2 | | | 21.7 | | | | | |
| CONTROL | 76 | 5 | | | 8.9 | | | 8.2 | | | | | | 253 | | |
| 100% | 7 | KP | | | MF | | | 5.6 | KP | | MF | | | MF | | |
| 100% | 14 | KP | | | KP | | | 5.6 | KP | | KP | | | KP | | |
| | | | | | | | | MF | | | | | | | | |
| | | | | | | | | KP | | | | | | | | |

Measured/Loaded by: MF MF MF KP MF KP KP MF KP KP MF KP KP MF KP

Recorded by: MF MF MF AJ KP AJ AJ KP AJ AJ KP AJ AJ KP AJ

Investigators' Signatures

Kim Pearce

Reviewer

Water-quality Parameters

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl: | | | | | |
| Lab Tot. Resid. Cl: | | | D.O | titr. | KP |
| Alkalinity: | 15 | | | | |
| Hardness: | 7[illegible] | | | | |
| Total Ammonia: | | | | | |

Ammonia molar slope: _____

Sample Source: Stone Container Primary Clari
Address City:
County: Bat
Contact/District: Nil Clear Tufts
NPDES Permit #: Outfall #:

Test Number: 2 of 8
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks:

Sample Collection: Date 4-3-91 Time
Test Beginning: Date 4-9-91 Time 11:30
Test Ending: Date Time
Test Organism: C. dubia
Life Stage/Age: <24hrs

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | 7.9@9 | 8.8@22 | 1514@24.7 | 25°C |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live 0 | 24 | 48 | DO (mg/l) 0 | 24 | 48 | pH 0 | 24 | 48 | Temp. (°C) 0 | 24 | 48 | Cond. (µmhos/cm) 0 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | A | 5 | 5 | 5 | 8.2 | 8.5 | 8.3 | 7.9 | 7.4 | 7.9 | 21.5 | 21.5 | 21.5 | 183 | 184 | 185 |
| Control | B | 5 | 5 | 5 | | | | | | | | 21.5 | | 185 | | |
| Control | C | 5 | 5 | 5 | | | | | | | | | | | | |
| Control | D | 5 | 5 | 5 | | | | | | | | | | | | |
| 100% | A | 5 | 1 | 1 | 2.2 | 2.4 | 6.0 | 6.0 | 7.2 | 7.7 | 21.0 | 21.5 | 21.5 | 1829 | 1706 | 1820 |
| 100% | B | 5 | 1 | 1 | | | | | | | | | | | | |
| 100% | C | 5 | 1 | 1 | | | | | | | | | | | | |
| 100% | D | 5 | 1 | 1 | | | | | | | | | | | | |
| CONTROL | KP | 72 hours | | | | | | 8.1 | KP | | | | | | | |
| 100% | A | | | | | | | | | | | | | | | |
| 100% | B | | | | | | | | | | | | | | | |
| 100% | C | | | | | | | | | | | | | | | |
| 100% | D | | | | | | | | | | | | | | | |
| | | 72 hours | | | | | | | | | | | | | | |
| control | A | conf | | | 9.2 | | | 8.1 | | | 21.8 | | | 249 | | |
| 100% | A | - | | | 8.2 | | | 7.9 | | | 21.8 | | | 1823 | | |
| | | | | | MF | | | MF | | | MF | | | MF | | |
| | | | | | KP | | | KP | | | KP | | | KP | | |
| Measured/Loaded by: | | KP | | | MJ | MF | KP | KP | MF | KP | KP | MF | KP | KP | MF | KP |
| Recorded by | | KP | | | AJ | KP | AJ | AJ | KP | AJ | KP | KP | AJ | KP | KP | AJ |

Water-quality Parameters

Investigators' Signatures

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2 | | | | | |
| Lab Tot. Resid. Cl2 | | | | | |
| Alkalinity | | | | | |
| Hardness | | | | | |
| Total Ammonia | | | | | |

Acceptable water slope

# DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: #2 Stone Corkins Salt Water Ditch at Psc-1 — Sample Collection: Date 4-8-9 Time 10 30

Address/City: — Test Beginning: Date 4-9-9 Time 11 30

County: Bay — Test Ending: Date 4-12-9 Time 11 30

Contact/District: NW/ Glenn Betts — Test Organism: M. tenella

NPDES Permit #: — Outfall #: — Life Stage/Age: 20 days

Test Number: 3 of 8 — Test Type: Screening | Definitive

Static | Static Renewal | Flow-through

Remarks: Solution of pH found within recorded limits. Temp. was maintained at 25° ± 1°C. 72 hr Chamber validated

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | 7.9 & 9.5 | 7.83 | 2.5 1496 | 24.1° 21.9 E 24.3 |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live 0 | 24 | 48 | DO (mg/l) 0 | 24 | 48 | pH 0 | 24 | 48 | Temp. (°C) 0 | 24 | 48 | Cond. (µmhos/cm) 0 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 25 | 5 | 5 | 5 | | | | | | | | | | | | |
| Control | 76 | 5 | 5 | 5 | | | | | | | | | | | | |
| 100% | 28 | 5 | 5 | 5 | 5.9 | 7.1 | 7.5 | 7.8 | 8.2 | 8.4 | 20 | 21.2 | 21.0 | 5820 | | |
| 100% | 8 | 5 | 5 | 5 | 6.1 | 6.9 | 7.5 | 7.8 | 8.2 | 8.5 | | | | 5820 | 5910 | 5950 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | • | 72 hours | | | | | | | | | | | | | | |
| 100% | 23 | 5 | | | 8.6 | | | 8.6 | | | 21.2 | | | | | 2 |
| 100% | 3 | 5 | | | 8.4 | | | 8.6 | | | | | | 6030 | | |
| | | MF | | | MF | | | MF | | | MF | | | MF | | |
| | | KP | | | KP | | | KP | | | KP | | | KP | | |
| Measured/Loaded by: | | MF | MF | | KP | MF | KP | KP | MF | KP | KP | MF | KP | KP | MF | K |
| Recorded by: | | MF | MF | | AJ | KP | AJ | AJ | KP | AJ | AJ | KP | AJ | AJ | KP | |

Investigators' Signatures:

Alexander Lam

Mashid Tamiti

Kim Pearce

Reviewer

Water quality Parameters

| | Wet Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | | | |
| Lab Tot. Resid. Cl2: | | | | | |
| Alkalinity: | | | | | |
| Hardness: | | | | | |
| Total Ammonia: | 0.0 | | 0.2 | HACH | KP |

Ammonia Method Code

# DER Biology Section – Acute Bioassay Data

Sample Source: #2 Storage Container Salt Water D.I. Water (at Bay)
Address/City:
County: Bay
Contact/District: NRC Glenn Butts
NPDES Permit #: Outfall #:
Test Number: 4 of 8
Test Type: (Screening) | Definitive
Static | Static Renewal | Flow-through
Remarks: adjusted salinity from 3.5‰ to ~18-19‰

Sample Collection: Date 4-8-91 Time 10:30
Test Beginning: Date 4-9-91 Time 11:30
Test Ending: Date 4-12-91 Time 11:20
Test Organism: M. bahia
Life Stage/Age: < 3 days

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | | | | |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live 0 | 24 | 48 | DO (mg/l) 0 | 24 | 48 | pH 0 | 24 | 48 | Temp. (°C) 0 | 24 | 48 | Cond. (µmhos/cm) 0 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 39 | 5 | 5 | 5 | 8.8 | 7.4 | 6.3 | 8.5 | 8.2 | 8.0 | 21.5 | 21.2 | 21.0 | 28,000 | | |
| Control | 142 | 5 | 5 | 5 | 8.9 | 7.4 | 6.4 | 8.5 | 8.2 | 8.0 | | | | 28,000 | 28200 | 28500 |
| 100% | 23 | 5 | 5 | 5 | 7.3 | 7.0 | 5.6 | 7.8 | 8.1 | 8.3 | 21.0 | 21.2 | 21.5 | 28,000 | | |
| 100% | 71 | 5 | 5 | 5 | 7.4 | 7.0 | 6.4 | 7.8 | 8.1 | 8.3 | | | | 28,000 | 29400 | 27700 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | 72 hours | | | – | | | – | | | | | | | | > |
| 100% | 25 | 5 | | | 7.8 | | | 8.4 | | | 21.5 | | | | | |
| 100% | 77 | 5 | | | 7.8 | | | 8.4 | | | | | | 28000 | | |
| control | 39 | 5 | | | 7.6 | | | 7.9 | | | 21.2 | | | | | |
| control | 142 | 5 | | | 7.5 | | | 7.9 | | | | | | 28900 | | |
| | | MF | | | MF | | | MF | | | MF | | | MF | | |
| | | KP | | | KP | | | KP | | | KP | | | KP | | |
| | | | | | | | | • | | | | | | | | |
| Measured/Loaded by | | MF | MF | | KP | MF | KP | KP | MF | KP | KP | MF | KP | KP | MF | KP |
| Recorded by | | | | | AJ | KP | | AJ | KP | | AJ | KP | | AJ | KP | |

Investigators' Signatures

Water-quality Parameters

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | | | |
| Lab Tot. Resid. Cl2: | | | | | |
| Alkalinity: | | | | | |
| Hardness: | | | | | |
| Total Ammonia: | | | | | |

Ammonia sample stored at >

# DER Biology Section — Acute Bioassay Bench Sheet

#3

Sample Source: Stone Container Behind Guard Shack  Sample Collection: Date 7-8-91 Time 10:15

Address/City: _____  Test Beginning: Date 7-9-91 Time 11:30

County: Bay  Test Ending: Date 7-11-91 Time 11:30

Contact/District: NW Glenn Butts  Test Organism: N. reesi

NPDES Permit #: _____ Outfall #: _____  Life Stage/Age: 2 days

Test Number: 5 of 8  Test Type: Screening | Definitive  KP

Static | Static Renewal | Flow-through

Remarks: * acetate 7.2 - 7.8 upon loading

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | X2 9.99 | 8.78 | 2571 4966 | 24.1 21.9 21.0 |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live 0 | 24 | 48 | DO (mg/l) 0 | 24 | 48 | pH 0 | 24 | 48 | Temp. (°C) 0 | 24 | 48 | Cond. (µmhos/cm) 0 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 25 | 5 | 5 | 5/5 | | | | | | | | | | | | |
| Control | 76 | 5 | 5 | 5/5 | | | | | | | | | | | | |
| 100% | 87 | 5 | 5 | 5/5 | 1.7* | 8.5 | 7.0 | 8.0 | 8.7 | 8.6 | 20.0 | 21.2 | 21.0 | 2340 | | |
| 100% | 47 | 5 | 5 | 5/5 | 1.8* | 8.5 | 6.4 | 8.0 | 8.7 | 8.6 | | | | 2310 | 2360 | 2340 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | 72 hours | | | | | | | | | | | | | | |
| 100% | 87 | 3 | | | 8.1 | | | 8.7 | | | 21.2 | | | | | |
| 100% | 47 | 5 | | | 7.8 | | | 8.6 | | | | | | 2340 | | |
| | | MF | | | MF | | | MF | | | MF | | | MF | | |
| | | KP | | | KP | | | KP | | | KP | | | KP | | |

Measured/Loaded by: KM MF KP KD MF KD KP MF KD KD MF KD KP MF KD

Recorded by: AJ AJ AJ AJ KP AJ AJ KP AJ AJ KP AJ AJ KP AJ

Investigators' Signatures

Alison Jack

Mark Finkbeiner

Kim Pearce

Reviewer

Water-quality Parameters

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2 | | | | | |
| Lab Tot. Resid. Cl2 | | | Grab | Hach | KP |
| Alkalinity | | | | | |
| Hardness | | | | | |
| Total Ammonia | | | | | |

Ammonia meter slope: _____

DER Biology

Sample Source: #3 Stone Container Behind Guard Shack

Address/City:

County: Bay

Contact/District: NW Area - 13 Hrs

NPDES Permit #: Outfall #:

Test Number: 6 of 8 Test Type: Screening | Definitive (Static) Static Renewal | Flow-through

Remarks:

Sample Collection: Date 4-7-91 Time

Test Beginning: Date 4-7-91 Time 11:30

Test Ending: Date 4-12-91 Time

Test Organism: C. gibbosa

Life Stage/Age: 3-24 hrs

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | | | | |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live 0 | Number Live 24 | Number Live 48 | DO (mg/l) 0 | DO (mg/l) 24 | DO (mg/l) 48 | pH 0 | pH 24 | pH 48 | Temp. (°C) 0 | Temp. (°C) 24 | Temp. (°C) 48 | Cond. (µmhos/cm) 0 | Cond. (µmhos/cm) 24 | Cond. (µmhos/cm) 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50% | A | 5 | | 5 | 5.0 | 8.1 | 8.1 | 8.1 | 8.6 | 8.5 | 21.0 | 21.5 | 21.5 | 1230 | 1365 | 1383 |
| 50% | B | 5 | | 5 | | | | | | | | | | | | |
| 50% | C | 5 | | 5 | | | | | | | | | | | | |
| 50% | D | 5 | | 5 | 5.1 | 8.0 | 8.2 | 8.1 | 8.6 | 8.5 | 21.0 | 21.6 | 21.5 | 1520 | 1548 | 1580 |
| 75% | A | 5 | | 5 | | | | | | | | | | | | |
| 75% | B | 5 | | 5 | | | | | | | | | | | | |
| 75% | C | 5 | | 5 | | | | | | | | | | | | |
| 75% | D | 5 | | 5 | 2.7 | 8.0 | 8.3 | 8.1 | 8.7 | 8.7 | 20.5 | 21.5 | 21.5 | 0210 | 2220 | 2330 |
| 100% | A | 5 | | 5 | | | | | | | | | | | | |
| 100% | B | 5 | | 5 | | | | | | | | | | | | |
| 100% | C | 5 | | 5 | | | | | | | | | | | | |
| 100% | D | 5 | | 5 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | → | | |
| | | 72 hours | | | | | | | | | | | | | | |
| 50% | A | 5 | | | 9.3 | | | 8.6 | | | 21.8 | | | 1979 | | |
| 75% | A | 5 | | | 9.2 | | | 8.8 | | | 22.0 | | | 1536 | | |
| 100% | A | 5 | | | 9.4 | | | 8.8 | | | 21.7 | | | 2280 | | |
| | | | | | MF | | | MF | | | MF | | | MF | | |
| | | | | | KP | | | KP | | | KP | | | KP | | |
| 100% | | | | | | | | | | | | | | | | |
| 100% | | | | | | | | | | | | | | | | |
| 100% | | | | | | | | | | | | | | | | |
| 100% | | | | | | | | | | | | | | | | |
| Measured/Loaded by | | KP | | | KP | MF | KP | NP | MF | NP | NP | MF | MF | KP | MF | KP |
| Recorded by | | KP | | | MF | KP | MF | KP | KP | KP | AT | KP | AT | MF | KP | KP |

Water-quality Parameters

Investigators' Signatures

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2 | | | | | |
| Lab Tot. Resid. Cl2 | | | | | |
| Alkalinity | | | | | |
| Hardness | | | | | |
| Total Ammonia | | | | | |

Ammonia meter slope: