

Bioassays of

Stone Container Corporation

Duval County

NPDES #FL0000400

Sampled May 24, 2004

September 2004

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Stone Container Corporation, P.O. Box 26998, Jacksonville, Duval County, Florida, NPDES #FL0000400. Effluent samples for this facility were collected on May 24, 2004.

Introduction

The Stone Container Corporation's Pulp and Paper facility's industrial wastewater treatment plant has a design flow of 20 MGD (million gallons per day) and a daily maximum flow of 6.8 MGD (flow data from December 2002 - November 2003). This plant discharges processed wastewater from pulp and paper operations, domestic wastewater, and stormwater to surface water. Pulp is generated from an on-site old corrugated cardboard (OCC) recycling operation or through the purchase of bleached pulp. Domestic wastewater from all lavatories drains into a separate sanitary sewage system. Domestic wastewater is collected in a sanitary basin, and then pumped into an IMHOFF Septic-like tank. Solids are settled out in this tank, and there is some facultative digestion. Waste overflow then goes to another basin where sodium hypochlorite (bleach) is added before the material is pumped into the clarifier outlet. Treatment of Industrial Wastewater consists of grit removal, primary clarification and aeration. Domestic and Industrial wastewater are combined prior to discharge to two 3.5-acre unlined holding ponds for aeration. After aeration, effluent is discharged to a 60-acre unlined stabilization basin with discharge to outfall D001 via a Parshall flume and then through four 36-inch diffusers to the St. Johns River, a Class III Marine surface water. Pursuant to FAC Rule 62-4.244, the permittee has been granted a mixing zone for chronic toxicity for the effluent discharge from Outfall D001 into the St. Johns River that designates a chronic toxicity limit of 13.8% effluent. The permittee has also been granted a mixing zone for pH, Lead, and Copper for the effluent discharge from Outfall D001 into the St. Johns River (facility information provided by Jeremy Richarde, FDEP, Northeast District, Jacksonville).

Methods

Samples were collected from the D001 NPDES sampling point by Jeremy Richarde (FDEP, Northeast District, Jacksonville) 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 acute screen toxicity tests and algal growth potential tests discussed in this report were performed following internal DEP SOP's TA07_03, TA07_04, and TA08_01 through TA08_06. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp. While these toxicity tests do not reflect the permit-required conditions, the Department uses the 48-hr acute screen test to provide reasonable assurance that the facility does not adversely affect waters of the state.

The bioassay sample was salted to approximately 20 ppth (parts per thousand) with 40 Fathoms® artificial sea salts per request from the Northeast District. The sample was aerated prior to test initiation for approximately 30 minutes to increase the dissolved oxygen from an initial concentration of approximately 2.0 mg/L to >4.0 mg/L. Due to the decrease in the dissolved oxygen concentrations in the test replicates at 24 hours, all replicates, including the control replicates, were aerated at a rate of approximately 100 bubbles per minute. A salt control, prepared by diluting artificial sea water (ASW) with well water to the apparent salinity of approximately 0.6 ppth, then adjusting the salinity with 40 Fathoms® artificial sea salts to approximately 20 ppth, was used to ensure that the addition of sea salts to the bioassay sample did not contribute to any observed toxic response in the test organisms.

The Algal Growth Potential (AGP) tests were performed using the freshwater test species in the original sample and the saltwater test species in a salinity-adjusted aliquot of the sample. The aliquot used for the saltwater AGP test was salinity adjusted to 7 ppth (minimum salinity required for the test) with 40 Fathoms® artificial sea salts. The saltwater AGP test was performed because the bioassay test was performed as a saltwater test and the receiving waters are classified as Marine.

Toxicity Test Results

Tests were performed May 25-27, 2004.

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

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

*NOTE: In a 48-hr acute screen 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.).

See Appendix 1 for bioassay bench sheets.

Algal Growth Potential

The Algal Growth Potential (AGP) of the effluent was 68.4 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is co-limited by nitrogen and phosphorus. The predicted AGP based on the nitrogen concentration was 140.6 (±20%) mg dry wt/L (Table 1). 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 be suspected, the district should request that the algal growth inhibition test be performed as a follow-up to the inspection.

The AGP of the salinity-adjusted effluent was 45.9 mg dry wt/L of *Dunaliella tertiolecta.* Raschke and Shultz (personal communication with Ron Raschke USEPA Region 4 1987) found that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment.

See Table 1 for AGP freshwater results.

Chemistry Results

Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia was detected in the bioassay sample and in the sample preserved for chemical analyses at 3.82 and 3.7 mg/L, respectively. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration of the effluent was 0.11 mg/L.

Aluminum, iron and lead were detected in the effluent sample at concentrations that complied with Class III Marine Water Quality Criteria (62-302 F.A.C.).

Cadmium, copper, nickel, and zinc were detected in the effluent sample at concentrations between the laboratory method detection limit and the laboratory practical quantitation limit.

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 samples collected from this facility on May 24, 2004, did not show acute toxicity to either test species during the 48-hour bioassay tests. Effluent freshwater and saltwater AGP results both exceeded the "problem" thresholds for fresh and marine receiving waters.

Literature Cited

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) for total soluble inorganic nitrogen (TSIN) and ortho phosphate (OP) limitation for the sample of effluent collected from the Stone Container Corporation on May 24, 2004.*

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Inorganic N:P ratio
Effluent Samples	68.4	140.6 ± 28.12	137.6 ± 27.52	11.56

Table 2. *Effluent limits, Class III Criteria and chemical data from samples collected from the Stone Container Corporation sampled on May 24, 2004.*

Stone Container Corporation	Class III Marine Stds	Effluent Limits	Effluent Samples
Organic Constituents (µg/L)			
None Detected	-	-	-
Metals (µg/L unless otherwise noted)			
Aluminum	≤ 1500	1.5	304
Arsenic	≤ 50	-	5 U
Cadmium	≤ 3.1 b	-	0.025 I
Calcium (mg/L)	-	-	103
Chromium-III	-	-	2 U
Copper	3.7	7.0	2.4 I
Iron	300	-	116
Lead	8.5	14.0	0.46
Magnesium (mg/L)	-	-	24.3
Nickel	8.3	-	3 I
Selenium	71	-	3.8 U
Silver	2.3	-	0.02 U
Zinc	86	86.0	3.7 I
Nutrients (mg/L)			
Ortho-phosphate	-	-	0.32
Total Phosphorus	-	Report	0.49
Ammonia	-	Report	3.7 A
Unionized Ammonia	-	-	0.11 c
Nitrate+Nitrite	-	-	0.004 U
Total Kjeldahl Nitrogen	-	Report	6.7
Organic Nitrogen	-	-	3 c
Total Nitrogen	-	Report	6.7 c
General Physical and Chemical Parameters			
Algal Growth Potential-Salinity Adjusted (mg DryWt/L)	-	-	45.9
Dissolved Oxygen (mg/L)	≥ 4	-	0.6
pH (S.U.)	6.5 - 8.5	6.0 - 9.0	7.6
Conductivity (umhos/cm)	-	-	1329
Temperature (C)	-	35 - 38	27.6
Hardness (mg/L)	-	-	357.3 c
AGP (mg DryWt/L)	-	-	68.4
Total Residual Chlorine (100% mg/L) lab	≤ 0.01	-	≤ 0.03 U

Value exceeds the Effluent Limit for this facility/the Class III Marine Water Quality Criteria

b - Value is calculated based on hardness

c - calculated value

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 Screening Bioassay Bench Sheets

Facility: Stone Container Corporation

Sample Collection: Date: 5-24-04 Time: 10:29

Address: PO Box 26998

City: Jacksonville **County:** Duval

Contact/District: Jeremy Richards/NE

NPDES Permit #: FL 0000400

LIMS Job #: TLH-2004-05-25-17 **LIMS Sample #:** 756395

Lims Data Entry: 5/25/04 MF Data Entry Verification: 5/28/04 CAP

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

Test Type: Screening

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:
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation:
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: 8.0 mg/L Final DO: 8.5 mg/L Duration: 30 minutes Rate: ~100 bubbles/min

Salinity adjusted (Test 1): (yes) no Initial Salinity: ~0.6ppt Final Salinity: ~20ppt (Salts) Hypersaline brine

Salinity adjusted (Test 2): (yes) no Initial Salinity: ~0.6ppt Final Salinity: ~20ppt (Salts) Hypersaline brine

Dechlorination: yes (no) mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC

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)

Comments:
- Sample Salted to 20ppt per NE District.
- Sample aerated 30 minutes to increase DO to > 4.0 mg/L.
- Due to DO Drop at 24 hours, all concentration & control replicates were aerated w 100 bubbles/min.
- Salt control (ASW) was diluted with well water to ~0.6ppt, then salted with 40 fathoms artificial seasalts to ~20ppt.

Temperature Range °C
Incubator # 3 Range 23.5-24.5°C
Room B246: 24.0-24.5°C
Waterbath: N/A

Investigators' Signatures

Amanda Devine
Jayne Daniels
Sarah Pritchard
Ann Anson
Denise Nicholson
Maribel Faircloth
REVIEWER

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		—	CAP
Lab Total Residual Cl2 (mg/L):			<0.03	<0.03		<0.03	HACH	SD	CAP
Alkalinity (mg/L as $CaCO_3$):			277	277		512	HACH	SD	CAP
Hardness (mg/L as $CaCO_3$):			—	—		321	HACH	SD	CAP
Total Ammonia (mg/L as N):			<0.034	<0.034		3.82	DENVER	MF	CAP
Salinity (ppt):			~20ppt	~20ppt		~0.6ppt	YSI	CAP	MF

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FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 756395 **Test #:** 1 **Test Started: Date** 5-25-04 **Time:** 115

Organism: A. bahia **Test Ended: Date** 5-27-04 **Time:** 1400

Organism Batch: 140 **Diluent/ Batch:** ASW 1 25

Organism Age: 4 days **Food:** YCT *P. subcapitata* *Artemia* 0194042SG

Chamber Size 1000 mL **Batch:** ___ ___

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	A13	5	5	5			
	B	A14	5	5	5			
	C	A15	5	5	5			
	D	A16	5	5	5			
SALT CTRL	A	A17	5	5	5			
	B	A18	5	5	5			
	C	A19	5	5	5			
	D	A20	5	5	5			
100%	A	A21	5	5	5			
	B	A22	5	5	5			
	C	A23	5	5	5			
	D	A24	5	5	5			

Organisms loaded by: JD Checked by: JD CAP DN (initials)

Loading Verified by: CAP

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

Comments: Test replicate aerated at 24 hours. MF-5/27/04

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).

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FDEP Biology Section - - Bioassay Bench Sheet
Survival

LIMS Sample #: 756395 Test #: 2 Test Started: Date 5-25-04 Time: 1315
Organism: M. beryllina Test Ended: Date 5-27-04 Time: 1400
Organism Batch: 17 Diluent/ Batch: ASW 125
Organism Age: 13 Days Food: YCT *P. subcapitata* *Artemia* 01940425G
Chamber Size 1000 mL Batch: ___ ___
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	A1	10	10	10			
	B	A2	10	10	10			
SAIT CTRL	A	A5	10	10	10			
	B	A6	10	10	10			
100%	A	A9	10	10	10			
	B	A10	10	10	10			
					DN			

Organisms loaded by: SD Checked by: SD CAP DN
Loading Verified by: SA (initials)

Comments: Sample mf test replicates aerated at 24 hours mf. 5/26/04

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).

V.1 2/23/04

Bioassay Parameters

LIMS Sample # : 756395 **Test # :** 1 **of** 2

TEST SOP: TA07_ 03 **Test Species:** *Ceriodaphnia dubia Cyprinella leedsi Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

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Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.3	8.4	8.4			
Temperature °C	24.4	24.2	24.9			
Dissolved Oxygen mg/L	8.6	5.1	6.9			
Conductivity µmhos (CAP) mmhos	31.4	31.5	34.4			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	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.)	8.3	8.3	8.5			
Temperature °C	24.8	24.5	24.8			
Dissolved Oxygen mg/L	8.9	5.1	6.8			
Conductivity µmhos (CAP) mmhos	30.9	31.6	32.6			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	JD	DN			

Comments:

Concentration SALT CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.3	8.3	8.4			
Temperature °C	24.3	24.2	24.8			
Dissolved Oxygen mg/L	8.8	5.1	6.7			
Conductivity µmhos mmhos	31.9	33.1	34.7			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	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:

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Bioassay Parameters

LIMS Sample # : 756395 **Test # :** 2 **of** 2

TEST SOP: TA-07- 04 **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	A			
pH (S.U.)	8.4	8.3	8.4			
Temperature °C	24.5	24.4	24.9			
Dissolved Oxygen mg/L	7.9	4.1	6.7			
Conductivity µmhos (mmhos)	30.3	30.9	34.1			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	JD	DN			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	8.3	8.3	8.6			
Temperature °C	24.3	24.1	24.9			
Dissolved Oxygen mg/L	8.5	5.0	6.6			
Conductivity µmhos (mmhos)	31.1	31.6	33.2			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	JD	DN			

Comments:

Concentration SALT CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	8.3	8.3	8.4			
Temperature °C	24.2	24.1	24.9			
Dissolved Oxygen mg/L	7.7	5.0	6.5			
Conductivity µmhos (mmhos)	31.8	33.0	35.2			
(initials) Measured by:	CAP	JD	DN			
(initials) Recorded by:	CAP	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:

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Appendix 2. Chemical Analyses performed on the effluent from the Stone Container Corporation sampled on 24 May, 2004.

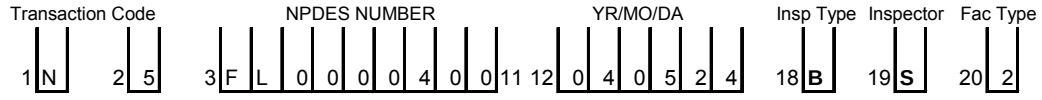
DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
5/24/2004 10:05	FIELD BLANK	BNA-Water	1,2,4-Trichlorobenzene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	1,2-Dichlorobenzene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	1,3-Dichlorobenzene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	1,4-Dichlorobenzene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,4,6-Trichlorophenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,4-Dichlorophenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,4-Dimethylphenol	55	ug/L	U	55	220
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,4-Dinitrophenol	16	ug/L	U	16	66
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,4-Dinitrotoluene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2,6-Dinitrotoluene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2-Chloronaphthalene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2-Chlorophenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	3.3	ug/L	U	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	2-Nitrophenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	3,3'-Dichlorobenzidine	44	ug/L	U	44	180
5/24/2004 10:05	FIELD BLANK	BNA-Water	4,4'-DDD	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	4,4'-DDE	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	4,4'-DDT	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	4-Bromophenyl phenyl ether	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	4-Chloro-3-methylphenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	4-Chlorophenyl phenyl ether	2.2	ug/L	U	2.2	8.8
5/24/2004 10:05	FIELD BLANK	BNA-Water	4-Nitrophenol	16	ug/L	U	16	66
5/24/2004 10:05	FIELD BLANK	BNA-Water	Acenaphthene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Acenaphthylene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Aldrin	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Anthracene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzidine	110	ug/L	U	110	440
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzo(a)anthracene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzo(a)pyrene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzo(b)fluoranthene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzo(g,h,i)perylene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Benzo(k)fluoranthene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Bis(2-chloroethoxy)methane	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Bis(2-chloroethyl)ether	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	3.3	ug/L	U	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	16	ug/L	U	16	66
5/24/2004 10:05	FIELD BLANK	BNA-Water	Butyl benzyl phthalate	5.5	ug/L	U	5.5	22
5/24/2004 10:05	FIELD BLANK	BNA-Water	Chrysene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Di-n-butyl phthalate	5.5	ug/L	U	5.5	22
5/24/2004 10:05	FIELD BLANK	BNA-Water	Di-n-octyl phthalate	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Dibenzo(a,h)anthracene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Dieldrin	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Diethyl phthalate	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Dimethyl phthalate	55	ug/L	U	55	220
5/24/2004 10:05	FIELD BLANK	BNA-Water	Endosulfan I	4.4	ug/L	U	4.4	18
5/24/2004 10:05	FIELD BLANK	BNA-Water	Endosulfan II	4.4	ug/L	U	4.4	18
5/24/2004 10:05	FIELD BLANK	BNA-Water	Endosulfan sulfate	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Endrin	1.6	ug/L	UJ	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Endrin aldehyde	4.4	ug/L	UJ	4.4	18
5/24/2004 10:05	FIELD BLANK	BNA-Water	Fluoranthene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Fluorene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Heptachlor	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Heptachlor epoxide	1.6	ug/L	UJ	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	Hexachlorobenzene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Hexachlorobutadiene	3.3	ug/L	U	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	Hexachlorocyclopentadiene	3.3	ug/L	UJ	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	Hexachloroethane	3.3	ug/L	U	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Isophorone	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	N-Nitrosodi-n-propylamine	2.2	ug/L	U	2.2	8.8
5/24/2004 10:05	FIELD BLANK	BNA-Water	N-Nitrosodimethylamine	2.2	ug/L	U	2.2	8.8
5/24/2004 10:05	FIELD BLANK	BNA-Water	N-Nitrosodiphenylamine	3.3	ug/L	UJ	3.3	13

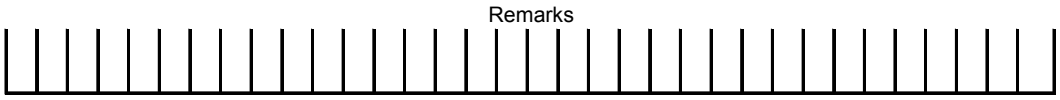
5/24/2004 10:05	FIELD BLANK	BNA-Water	Naphthalene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Nitrobenzene	2.2	ug/L	U	2.2	8.8
5/24/2004 10:05	FIELD BLANK	BNA-Water	Pentachlorophenol	3.3	ug/L	UJ	3.3	13
5/24/2004 10:05	FIELD BLANK	BNA-Water	Phenanthrene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Phenol	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	Pyrene	1.1	ug/L	U	1.1	4.4
5/24/2004 10:05	FIELD BLANK	BNA-Water	alpha-BHC	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	beta-BHC	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	delta-BHC	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	BNA-Water	gamma-BHC	1.6	ug/L	U	1.6	6.6
5/24/2004 10:05	FIELD BLANK	Metals-Water	Aluminum	5	ug/L	U	5	20
5/24/2004 10:05	FIELD BLANK	Metals-Water	Arsenic	5	ug/L	U	5	20
5/24/2004 10:05	FIELD BLANK	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
5/24/2004 10:05	FIELD BLANK	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2
5/24/2004 10:05	FIELD BLANK	Metals-Water	Chromium	2	ug/L	U	2	8
5/24/2004 10:05	FIELD BLANK	Metals-Water	Copper	0.75	ug/L	U	0.75	3
5/24/2004 10:05	FIELD BLANK	Metals-Water	Iron	5	ug/L	U	5	20
5/24/2004 10:05	FIELD BLANK	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
5/24/2004 10:05	FIELD BLANK	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
5/24/2004 10:05	FIELD BLANK	Metals-Water	Nickel	2	ug/L	U	2	8
5/24/2004 10:05	FIELD BLANK	Metals-Water	Selenium	1	ug/L	U	1	4
5/24/2004 10:05	FIELD BLANK	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
5/24/2004 10:05	FIELD BLANK	Metals-Water	Zinc	2	ug/L	U	2	8
5/24/2004 10:05	FIELD BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
5/24/2004 10:05	FIELD BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
5/24/2004 10:05	FIELD BLANK	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	0.06	0.2
5/24/2004 10:05	FIELD BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
5/24/2004 10:05	FIELD BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-AGP/LimNut	Algal Growth Potential	68.4	mg DryWt/L		0.1	0.3
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	45.9	mg DryWt/L		0.1	0.3
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	18	ug/L		0.85	2.6
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L		0.85	2.6
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
5/24/2004 10:05	FINAL EFFLUENT D001	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	58
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	2-Nitrophenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzidine	96	ug/L	U	96	380
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8

5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Endrin	1.4	ug/L	UJ	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Endrin aldehyde	3.8	ug/L	UJ	3.8	15
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Heptachlor epoxide	1.4	ug/L	UJ	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Pentachlorophenol	2.9	ug/L	UJ	2.9	12
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Aluminum	304	ug/L		5	20
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Arsenic	5	ug/L	U	5	20
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Cadmium	0.025	ug/L	I	0.025	0.1
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Calcium	103	mg/L		0.05	0.2
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Chromium	2	ug/L	U	2	8
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Copper	2.4	ug/L	I	0.75	3
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Iron	116	ug/L		5	20
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Lead	0.46	ug/L		0.05	0.2
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Magnesium	24.3	mg/L		0.02	0.08
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Nickel	3	ug/L	I	2	8
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Selenium	3.8	ug/L	U	3.8	15
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
5/24/2004 10:05	FINAL EFFLUENT D001	Metals-Water	Zinc	3.7	ug/L	I	2	8
5/24/2004 10:05	FINAL EFFLUENT D001	Nutrients-Liquid	Ammonia-N	3.7	mg N/L	A	0.2	0.4
5/24/2004 10:05	FINAL EFFLUENT D001	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
5/24/2004 10:05	FINAL EFFLUENT D001	Nutrients-Liquid	N_KJEL_TOT	6.7	mg N/L		0.6	2
5/24/2004 10:05	FINAL EFFLUENT D001	Nutrients-Liquid	O-Phosphate-P	0.32	mg P/L		0.016	0.04
5/24/2004 10:05	FINAL EFFLUENT D001	Nutrients-Liquid	Total-P	0.49	mg P/L		0.02	0.06

The Bioassay of the Stone Container Corporation effluent sampled on 24 May 2004, NPDES #FL0000400.

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





The Priority Pollutants Analysis for Bioassay of the Stone Container Corporation effluent sampled on 24 May 2004, NPDES #FL0000400.

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