Florida

Department of Environmental Protection

Bioassays of

Florida Distillers Company

Auburndale, Polk County, Florida

NPDES #FL0029017

Sampled 3/22/93

August 1993

Biology Section
Division of Technical Services

Bioassays of

Florida Distillers Company

Auburndale, Polk County, Florida

NPDES #FL0029017

Biology Section
Bureau of Laboratories
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Introduction

Florida Distillers Company, Auburndale, Polk County, Florida, NPDES #FL0029017 tests performed on 23 to 25 March, 1993.

This facility is a distillery which produces alcoholic beverages from citrus molasses, sugar cane, and grain. The process residue is dried and sold as fertilizer or animal feed. The effluent is composed of evaporator condensate, non-contact cooling water, boiler blowdown, cleaning water from the area drains, stormwaters, and sanitary wastewater. Wastewater treatment consists of neutralization, aeration in two lagoons, clarification, chlorination, and polishing-pond aeration prior to discharge to Lake Lena Run which flows into Lake Hancock. The average discharge is 2.6 MGD (Bioassessment of Florida Distillers, Biology Section, 1992, p1).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1991, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition (EPA/600/4-90/027).

Results and Discussion

The FT EP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi* (formerly *Notropis leedsi*). The test results indicated minimal toxicity (1 death to *C. leedsi*).

Conclusion

The sample of effluent collected from this facility on 22 March, 1993, showed minimal toxicity (1 death to *C. leedsi*).

Table 1. Concentration series and volumes used for the 48-hour static acute screening bioassays of the Florida Distillers Company effluent performed on 23 to 25 March, 1993.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 mL	20 mL
100 %	0 mL	20 mL	20 mL

Cyprinella leedsi (bannerfin shiner, formerly *Notropis leedsi*)

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 48-hour acute screening bioassays of a sample of effluent from the Florida Distillers Company, Auburndale, Polk County, Florida, NPDES# FL0029017, performed on 23 to 25 March, 1993.

Facility:	**Florida Distillers Company**		NPDES #	FL0029017	Facility Type: **Distillery**
Location:	Auburndale		Contact / District:	Kathy Hicks/SW	
County:	Polk		Test type:	static acute screen	
Sample Collection Date:	**3/22/93**	Time: 1010	# tests:	2	Receiving Water: **Lake Lena Run**
Test Beginning Date:	3/23/93	Time: 1230	Chlorination Type:	**Non-chlorinated**	
Test Ending Date:	3/25/93	Time: 1300			**Page 1 of 1**

Total Residual Cl2	mg/l	Method
Field:	-	
Lab:	< 0.03	DR-100

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	< 0.017	0.00

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	125	125
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	145	150

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.3	-	8.5	24.0	-	23.5	7.9	-	8.1	175	190
Control	5	5	5	-	-	8.5	-	-	-	-	-	8.1	-	180
Control	5	5	5	-	-	8.5	-	-	-	-	-	8.1	-	175
Control	5	5	5	-	-	8.4	-	-	-		-	8.1	-	185
100%	5	5	5	8.5	-	8.7	24.2	-	23.5	7.7	-	8.2	285	320
100%	5	5	5	-	-	8.7	-	-	-	-	-	8.2	-	305
100%	5	5	5	-	-	8.7	-	-	-	-	-	8.2	-	315
100%	5	5	5	-	-	8.7	-	-	-	-	-	8.2	-	310

Organism: ***Cyprinella leedsi*** Age: 13 days

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.0	8.2	8.5	24.6	23.4	23.4	7.8	8.1	7.7	250	245
Control	5	5	5	8.0	8.2	8.5	-	-	-	7.8	8.0	7.8	250	245
100%	5	4	4	8.5	8.4	8.6	24.6	23.4	23.3	7.8	8.2	7.6	300	295
100%	5	5	5	8.5	8.4	8.6	-	-	-	7.8	8.2	7.6	300	295

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Sample Source: Florida Distillers
Location:
County: Polk
Contact/District: Kathryn Hicks / SWD
NPDES Permit #: FL0029017 Outfall #:
93MAR2302 52912

Test Beginning: Date
Test Ending: Date 3/25/93 Time 1300
Organism Batch #: 13 Diluent Batch #: 4
Organism Age: <24 hrs.

Test Organism: Ceriodaphnia dubia

Test Type: (Screening) | Definitive
(Static) / Static Renewal | Flow-through

Test Number: 1 of 2
Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmho
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.4 @ 24.0	999 @ 1,000 10,000 @ 10,000
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.4 @ 24.5	8.3 @ 24.9	1000 @ 1,000 10,100 @ 10,000
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.5	8.35 @ 24.2	1000 @ 1,000 10,100 @ 10,000

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temperature (°C) 0	24	48	D.O. (mg/L) 0	24	48	Cond. (mmhos/cm) Cond. (µmhos/cm) 0	24	48
Control	A	5	5	5	8.3		8.5	24.0		23.5	7.9		8.1	175		190
Control	B	5	5	5			8.5						8.1			180
Control	C	5	5	5			8.5						8.1			175
Control	D	5	5	5			8.4						8.1			185
100%	A	5	5	5	8.5		8.7	24.2		23.5	7.7		8.2	265		320
100%	B	5	5	5			8.7						8.2			305
100%	C	5	5	5			8.7						8.2			315
100%	D	5	5	5			8.7						8.2			310
Measured/Loaded by:		MF	TM	TM	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		TM	TM	TM	TM		KP	TM		KP	TM		KP	TM		KP

Investigators' Signatures

Tina Mikulski
Marshall Faircloth
Kim Pearce

Reviewer

form updated 10/20/92

	Salt Water/ Well Water	Water Quality Parameters 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:					
Lab Total Residual Cl2:	<0.03	<0.03	<0.03	DR-100	TM
Alkalinity:	125	70	145	Hach	TM
Hardness:	125	80	150	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	MF

Cl_2 Blank: _____ Ammonia Meter Slope: -56.3 Ammonia Blank: <0.017 Sample Salinity: 0 ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Florida Distillers
Location:
County: Polk
Contact/District: Kathryn Hicks / SW
NPDES Permit #: FL00 29017 Outfall #:
93, MAR 2902 5-21-0

Sample Collection: Date 3/22/93 Time 10:10
Test Beginning: Date 3/23/93 Time 12:30
Test Ending: Date 3/28/93 Time 1300
Organism Batch #: 13 Diluent Batch #: well
Organism Age: 9 days
Test Organism: Notropis Leedsi

Test Type: (Screening) Definitive
(Static) Static Renewal | Flow-through

Test Number: 2 of 2
Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.4 @ 24.0	999 @ 1,000 19000 @ 10,000
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.4 @ 24.5	8.3 @ 24.9	1000 @ 1,000 19,100 @ 10,000
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.5	8.35 @ 24.2	1000 @ 1,000 19,100 @ 10,000

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temperature (°C) 0	24	48	D.O. (mg/L) 0	24	48	Cond. (mmhos/cm) Cond. (µmhos/cm) 0	24	48
Control	163	5	5	5	8.0	8.2	8.5	24.6	23.4	23.4	7.8	8.1	7.7	250	245	245
Control	413	5	5	5	8.0	8.2	8.5				7.8	8.0	7.8	250	245	245
100%	147	5	4	4	8.5	8.4	8.6	24.6	23.4	23.3	7.8	8.2	7.6	300	245	295
100%	19	5	5	5	8.5	8.4	8.6				7.8	8.2	7.6	300	240	295
Measured/Loaded by:		TM	TM	TM	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		TM	TM	TM	TM	TM	KP	TM	TM	KP	TM	TM	KP	TM	TM	KP

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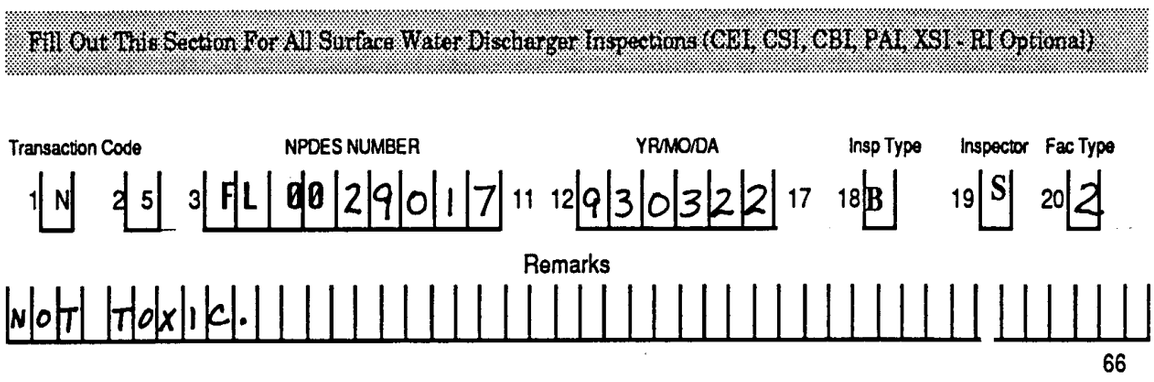
form updated 10/20/92

Water Quality Parameters

	Salt Water/ Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:					
Lab Total Residual Cl2:	<0.03	<0.03	<0.03	DR-100	TM
Alkalinity:	125	70	145	Hach	TM
Hardness:	125	80	150	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	MF

Cl_2 Blank: _____ Ammonia Meter Slope: -56.3 Ammonia Blank: <0.017 Sample Salinity: 0 ppt

The Bioassay of Florida Distillers Company effluent sampled on March 22, 1993, NPDES #FL0029017.



The Priority Pollutants Analyses for the Bioassay of Florida Distillers Company effluent sampled on March 22, 1993, NPDES #FL0029017.

