

Bioassays of the City of

Cottondale Wastewater Treatment Plant

Cottondale, Jackson County, Florida

NPDES #FL0030058

Sampled 3/3/97

June 1997

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

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Introduction

City of Cottondale WWTP, 2659 Front Street, Cottondale, Jackson County, Florida, NPDES #FL0030058, tests performed on 4 to 6 March, 1997.

This wastewater treatment facility has a design flow of 0.125 MGD and an annual average flow of 0.099 MGD. Wastewater is treated by screening, comminution, aeration, clarification, chlorination for disinfection, and dechlorination with sulfur dioxide gas prior to being discharged via an unnamed stormwater ditch to Jackson Pond. Residuals are aerobically digested, dried on beds, and transported to the Springhill landfill for disposal (facility summary provided by Amy Hospodar and Nicole Kilburn, FDEP, Pensacola).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

Results and Discussion

The FDEP 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*. There was no mortality observed in the *Ceriodaphnia dubia* 100% whole effluent by 48-hours. The *Cyprinella leedsi* test showed minimal toxicity, producing 10% mortality at 48-hours. (Table 1).

Total residual chlorine was not detected in the sample. The total and unionized ammonia concentrations were 0.025 mg/L and 0.002 mg/L, respectively. Further chemical analyses were performed on the sample (Table 2). Pesticides, herbicides, and organic compounds were not detected in the sample. Analyses for metals were not performed.

Conclusion

The sample of effluent collected from this facility on March 3, 1997, did not show toxicity to *Ceriodaphnia dubia* and showed minimal toxicity to *Cyprinella leedsi*.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the City of Cottondale WWTP, Cottondale, Jackson County, Florida, NPDES# FL0030058, performed on 4 to 6 March, 1997.

Facility:	**City of Cottondale WWTP**			**NPDES #**	**FL0030058**	Facility Type:	**Wastewater Treatment Plant**
Location:	2659 Front Street, Cottondale			Contact/District:	Glenn Butts/Northwest		
County:	Jackson			Test type:	static acute screen		
Sample Collection Date:	3/3/97	Time:	1020	# tests:	2	Receiving Water:	unnamed ditch to Caney Pond to Gnat Hole
Test Beginning Date:	3/4/97	Time:	1330	Chlorination Type:	Chlorinated		
Test Ending Date:	3/6/97	Time:	1315	Sample collected after plant dechlorination unit.			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	<0.017
Control Water (20% DMW) (cladocerans):	<0.017	<0.017
100% Sample:	0.025	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	122	130
Control Water (20% DMW) (cladocerans):	70	90
100% Sample:	103	112

Salinity	(ppt)
Control Water (fish):	0
Control Water (20% DMW) (cladocerans):	0
100% Sample:	0

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	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 A	0/20	5	5	5	7.9	-	8.1	24.0	-	24.8	8.0	-	7.6	175	165
Control B	0/20	5	5	5	-	-	8.1	-	-	24.8	-	-	7.7	-	185
Control C	0/20	5	5	5	-	-	8.1	-	-	24.6	-	-	7.7	-	185
Control D	0/20	5	5	5	-	-	8.1	-	-	24.3	-	-	7.7	-	190
100% A	20/0	5	5	5	7.1	-	8.3	23.9	-	24.8	6.7	-	7.7	385	365
100% B	20/0	5	5	5	-	-	8.3	-	-	24.7	-	-	7.7	-	375
100% C	20/0	5	5	5	-	-	8.3	-	-	24.5	-	-	7.7	-	375
100% D	20/0	5	5	5	-	-	8.3	-	-	24.3	-	-	7.7	-	385

[A] Temperature of test incubator was continously recorded on a strip chart recorder.

Incubator temperature range for the test period was 24.4-25.6°C.

Organism: ***Cyprinella leedsi*** Age: 11 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	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 A	0/500	5	5	5	7.7	8.1	8.2	24.3	24.2	23.8	7.8	7.6	7.8	250	250
Control B	0/500	5	5	5	7.7	8.1	8.2	24.2	24.1	23.6	7.8	7.7	7.7	250	250
Control C	0/500	5	5	5	7.7	8.1	8.2	24.0	24.1	23.6	7.7	7.7	7.8	250	250
Control D	0/500	5	5	5	7.7	8.1	8.2	24.0	24.1	23.7	7.8	7.7	7.8	250	250
100% A	500/0	5	5	5	7.2	7.8	8.1	23.8	24.2	24.0	6.9	7.4	7.7	370	375
100% B	500/0	5	5	5	7.2	7.8	8.1	23.6	24.3	23.9	6.9	7.4	7.7	370	375
100% C	500/0	5	5	4	7.2	7.8	8.1	23.6	24.2	23.8	6.8	7.4	7.8	365	375
100% D	500/0	5	5	4	7.2	7.8	8.1	23.6	24.3	23.8	6.8	7.4	7.8	365	375

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 24.0-25.0°C.

Table 2. Results of chemical analyses on the effluent from the City of Cottondale Wastewater Treatment Facility sampled on March 3, 1997.

Pesticides and Herbicides

none detected

Base, Neutral, & Acid Extractable Organics

none detected

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Cottondale, City of
County: Jackson
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0030058
LIMS Sample #: 170737 LIMS Job #: 97-MAR-04-11
sample log: 37-97 mf

Sample Collection: Date 3-3-97 Time 1020
Test Beginning: Date 3-4-97 Time 1330
Test Ending: Date 3-6-97 Time 1315
Organism Batch #: 7 Diluent Batch #: 7
Organism Age: <24 hr old

Test Organism: Ceriodaphnia dubia (<24 hr old)

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24-25°C
incubator 24.4-25.6°C
Test Number: 1 of 2
Remarks: D = dead, M = missing

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	~~7.3~~ A 8.2 @ 24.5 Corrected MF @ ~~23.3~~ °C	103.0 @ 101.8 982 @ 1001 @ 24.6 °C 9930 @ 9825
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.2	8.2 @ 24.9 °C	103.1 @ 101.8 995 @ 1001 @ 25.1 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.1 °C	101.2 @ 101.8 985 @ 1001 @ 24.7 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	Cond. 24 h	Cond. 48 h
Control A	A	5	5	5	7.9		8.1	24.0		24.8	8.0		7.6	175		165
Control B	B	5	5	5			8.1			24.8			7.7			185
Control C	C	5	5	5			8.1			24.6			7.7			185
Control D	D	5	5	5			8.1			24.3			7.7			190
100% A	A	5	5	5	7.1		8.3	23.9		24.8	6.7		7.7	385		365
100% B	B	5	5	5			8.3			24.7			7.7			375
100% C	C	5	5	5			8.3			24.5			7.7			375
100% D	D	5	5	5			8.3			24.3			7.7			385
Measured/Loaded by		MF	MF	MF	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		DW	MF	MF	MF		KR	MF		KR	MF		KR	MF		KR

Investigators' Signatures

Marshall Faircloth
Todd Wright
Kelli Kratten
A.J. Wolfe

Water Quality Parameters

	Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L)			Not measured		
Lab Total Residual Cl2 (mg/L)		<0.03	<0.03	DR 100	NL
Alkalinity (mg/L as $CaCO_3$)		70	103	Hach	KR
Hardness (mg/L as $CaCO_3$)		90	112	Hach	KR
Total ammonia (mg/L as N)		<0.017	0.025	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope -54.7
Ammonia Blank: <0.017
Control Salinity 0 ppt
Sample Salinity 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Cottondale, City of WWTP
County: Jackson
Contact / District: Glenn Butts / Northeast
NPDES Permit #: FL0030058
LIMS Sample #: 170737 LIMS Job #: 97-MAR-04-11
sample log: 3-7-97 MF

Sample Collection: Date 3-3-97 Time 1020
Test Beginning: Date 3-4-97 Time 1330
Test Ending: Date 3-13-97 Time 1315
Organism Batch #: 14 Diluent Batch #: Well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24-25°C.
incubator 24.4-25.6°C
Test Number: 2 of 2
Remarks: D = dead, M = missing

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.2 @ 9.0	23.4 @ 23.4	8.2 @ 24.9 °C	1020 @ 101.8 982 @ 1001 @ 24.6 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.2 @ 24.2	8.2 @ 24.9 °C	1021 @ 101.8 995 @ 1001 @ 25.1 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.2 @ 25.1 °C	101.2 @ 101.8 985 @ 1001 @ 24.7 °C

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control A	G1	5	5	5	7.7	8.1	8.2	24.3	24.2	23.8	7.9	7.6	7.8	250	250	250
Control B	G2	5	5	5	7.7	8.1	8.2	24.2	24.1	23.6	7.8	7.7	7.7	250	250	250
Control C	G3	5	5	5	7.7	8.1	8.2	24.0	24.1	23.6	7.8	7.7	7.8	250	250	250
Control D	G4	5	5	5	7.7	8.1	8.2	24.0	24.1	23.7	7.8	7.7	7.8	250	250	250
100% A	G5	5	5	5	7.2	7.8	8.1	23.8	24.2	24.0	6.9	7.4	7.7	370	375	375
100% B	G6	5	5	5	7.2	7.8	8.1	23.6	24.3	23.9	6.9	7.4	7.7	370	375	375
100% C	G7	5	5	4 10	7.2	7.8	8.1	23.6	24.2	23.8	6.8	7.4	7.8	365	375	375
100% D	G8	5	5	4 10	7.2	7.8	8.1	23.6	24.3	23.8	6.8	7.4	7.8	365	375	375
Measured/Loaded by:		ND	ND	ND	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	ND	MF	MF	ND	KR	MF	ND	KR	MF	ND	KR	MF	ND	KR

Investigators' Signatures
Marshall Faircloth
Kelli Kaufman
reviewer

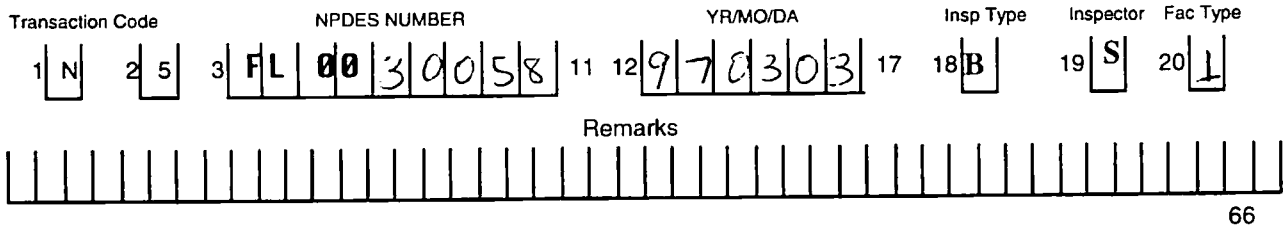
form updated 4/01/96

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			NOT	measured	
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR100	ND
Alkalinity (mg/L as $CaCO_3$) :	122	—	103	Hach	KK
Hardness (mg/L as $CaCO_3$) :	131	—	112	Hach	KR
Total ammonia (mg/L as N) :	<0.017	—	0.025	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -54.7 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the City of Cottondale WWTP effluent sampled on March 3, 1997, NPDES #FL0030058.

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



The Priority Pollutants Analysis for the Bioassay of the City of Cottondale WWTP effluent sampled on March 3, 1997, NPDES #FL0030058.

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

