Florida

Department of Environmental Protection

Bioassays of the City of

Blountstown Wastewater Treatment Plant

Blountstown, Calhoun County, Florida

NPDES #FL0026867

Sampled 8/9/93

August 1993

Biology Section
Division of Technical Services

Bioassays of the City of

Blountstown Wastewater Treatment Plant

Blountstown, Calhoun County, Florida

NPDES #FL0026867

Biology Section
Bureau of Laboratories
August 1993

Introduction

City of Blountstown Wastewater Treatment Plant, Blountstown, Calhoun County, Florida, NPDES #FL0026867, tests performed on 10 to 12 August, 1993.

This facility is located at 232 Iola Avenue in Blountstown. The wastewater treatment facility has a 0.60 MGD design capacity which is often exceeded because of inflow and infiltration problems. The activated sludge treatment process includes an oxidation ditch, followed by biological treatment using activated sludge, clarification, chlorination, and dechlorination with sulfur dioxide prior to discharge to Sutton Creek, a tributary of the Apalachicola River..

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 FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays with 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 with one death in the *Ceriodaphnia dubia* test. No mortality occurred in the *Cyprinella leedsi* test.

Total residual chlorine and total ammonia were not detected in the sample.

Conclusion

The sample of effluent collected from this facility on 9 August, 1993, showed only minimal toxicity to *Ceriodaphnia dubia*.

Table 1. Concentration series and volumes used for the 48-hour static acute screening toxicity bioassays of the City of Blountstown WWTP effluent performed on 10 to 12 August, 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 City of Blountstown WWTP, Bloutstown, Calhoun County, Florida, NPDES# FL0026867, performed on 10 to 12 August, 1993.

Facility:	City of Blountstown WWTP	NPDES #	FL0026867	Facility Type:	Wastewater Treatment Plant
Location:	Blountstown	Contact / District:	Glenn Butts/NW		
County:	Calhoun	Test type:	static acute screen		
Sample Collection Date:	8/9/93 Time: 1000	# tests:	2	Receiving Water:	Sutton Creek to Apalachicola River
Test Beginning Date:	8/10/93 Time: 1130	Chlorination Type:	Dechlorinated in plant		
Test Ending Date:	8/12/93 Time: 1300			Page 1 of 1	

Total Residual Cl2	mg/l	Method
Field:	<0.01	-
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):	120	120
20% Dilute Mineral Water (cladocerans):	80	70
100% Sample:	125	155

Salinity (ppt)	
Control Water:	0
100% Sample:	0

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	7.7	-	8.3	23.2	-	24.2	8.1	-	7.5	165	170
Control	5	5	5	-	-	8.3	-	-	24.1	-	-	7.6	-	175
Control	5	5	5	-	-	8.3	-	-	24.1	-	-	7.6	-	170
Control	5	5	5	-	-	8.3	-	-	24.1	-	-	7.6	-	175
100%	5	5	4	7.6	-	8.5	23.6	-	24.2	7.8	-	7.6	720	745
100%	5	5	5	-	-	8.5	-	-	24.2	-	-	7.6	-	700
100%	5	5	5	-	-	8.5	-	-	24.2	-	-	7.6	-	755
100%	5	5	5	-	-	8.5	-	-	24.2	-	-	7.6	-	745

Organism: ***Cyprinella leedsi*** Age: 10 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	8.4	23.8	23.5	23.7	7.9	8.3	7.7	245	245
Control	5	5	5	8.0	8.2	8.4	-	-	23.6	7.9	8.3	7.7	245	245
100%	5	5	5	7.8	8.0	8.2	24.5	23.6	23.7	7.6	7.6	7.5	760	750
100%	5	5	5	7.8	8.0	8.3	-	-	23.6	7.6	7.8	7.5	760	750

Sample Source: Blountstown WWTP
Location:
County: CALHOUN
Contact/District: GLEN BUTTS / NW
NPDES Permit #: FL0026867 Outfall #:

Sample Collection: Date 03/09/93 Time 1000
Test Beginning: Date 03/10/93 Time 1130
Test Ending: Date 3-12-93 Time 1300
Organism Batch #: 104 Diluent Batch #: 18
Organism Age: <24 hrs
Test Organism: Ceriodaphnia dubia

93-AUG-10-05 60195

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 µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.1	8.3 @ 24.6	1010 @ 1,000 9710 @ 10,000 @ 24.5 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.4	8.4 @ 23.8	100 @ 1,000 9650 @ 10,000 @ 24.5 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.3 @ 24.4	8.3 @ 24.4	1010 @ 1,000 9690 @ 10,000 @ 24.5 °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	24 h	48 h
Control	A	5	5	5	7.7	8.3 →		23.2		24.2	8.1		7.5	1165		170
Control	B	5	5	5		8.3 →				24.1			7.6			175
Control	C	5	5	5		8.3 →				24.1			7.6			170
Control	D	5	5	5		8.3 →				24.1			7.6			175
100%	A	5	5	4	7.6	8.5 →		23.6		24.2	7.8		7.6	720		745
100%	B	5	5	5		8.5 →				24.2			7.6			700
100%	C	5	5	5		8.5 →				24.2			7.6			755
100%	D	5	5	5		8.5 →				24.2			7.6			745
						data deleted in 48 hr column AP 9-17-93										
Measured/Loaded by:		MF	MF	TM	MF		TM	MF		TM	MF		TM	MF		TM
Recorded by:		TM	MF	TM	TM		EAM	TM		EAM	TM		EAM	TM		EAM

Investigators' Signatures

Tina M. Kubsh
Marshall Faircloth
Edward McAllen

Reviewer

form updated 7/8/93

Water Quality Parameters	Salt Water/ Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			<0.01	—	GB
Lab Total Residual Cl2:	<0.03	<0.03	<0.03	DR-100	TM
Alkalinity:	120	80	125	Hach	TM
Hardness:	120	70	155	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -55.2 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Blountstown WWTP
Location:
County: CALHOUN
Contact/District: GLEN BUTTS / NW
NPDES Permit #: FL0026867 Outfall #:

Sample Collection: Date 08/09/93 Time 1000
Test Beginning: Date 08/10/93 Time 1130
Test Ending: Date 8-12-93 Time 1300
Organism Batch #: 33 Diluent Batch #: well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

93-AUG-10-05 60195

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
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0@7.0 9.0@9.0	24.0@24.1	8.3@24.6	1010@1,000 9710@10,000@24.5°C
24 hr	7.0@7.0 9.0@9.0	23.3@23.4	8.4@23.8	1010@1,000 9650@10,000@24.5°C
48 hr	7.0@7.0 9.0@9.0	24.3@24.4	8.3@24.4	1010@1,000 9690@10,000@24.5°C

Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED ~~Cond. (mmhos/cm)~~ Cond. (µmhos/cm) 0 hr	24 h	48 h
Control	15	5	5	5	8.0	8.2	8.4	23.8	23.5	23.7	7.9	8.3	7.7	245	245	245
Control	891	5	5	5	8.0	8.2	8.4			23.6	7.9	8.3	7.7	245	245	245
100%	120	5	5	5	7.8	8.0	8.2	24.5	23.6	23.7	7.6	7.6	7.5	760	745	750
100%	147	5	5	5	7.8	8.0	8.3			23.6	7.6	7.8	7.5	760	750	750
Measured/Loaded by:		TM	TM	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM
Recorded by:		TM	TM	TM	TM	TM	EAM	TM	TM	EAM	TM	TM	EAM	TM	TM	EAM

Investigators' Signatures

Yiing Michelsis
Marshall Faircloth
Edward Miller

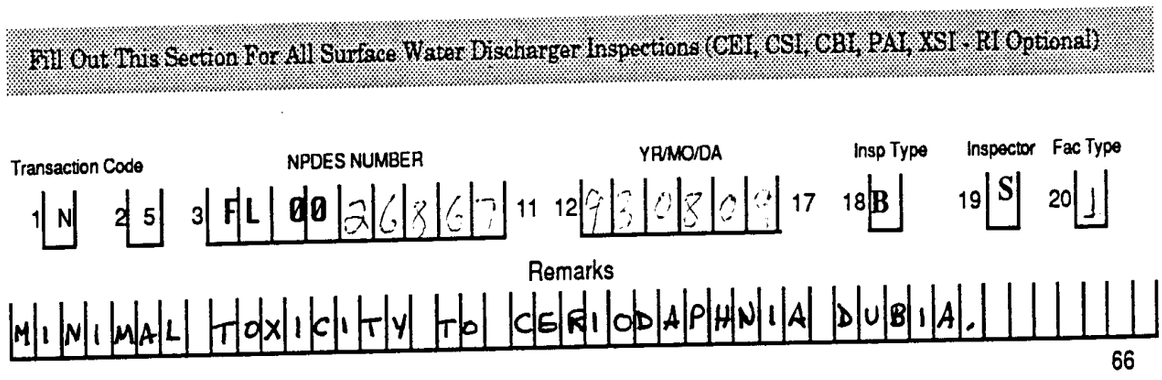
Reviewer

form updated 7/8/93

	Salt Water/ (Well Water)	Water Quality Parameters 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			<0.01	—	GB
Lab Total Residual Cl2:	<0.03	<0.03	<0.03	DR.100	TM
Alkalinity:	120	80	125	Hach	TM
Hardness:	120	70	155	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: 55.2 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the City of Blountstown WWTP effluent sampled on August 9, 1993, NPDES# FL0026867.



The Priority Pollutants Analysis for the Bioassay of the City of Blountstown WWTP effluent sampled on August 9, 1993, NPDES# FL0026867.

