Bioassays of

G & M Truck Plaza Wastewater Treatment Plant

St. Augustine, St. Johns County, Florida

NPDES #FL0022551

Sampled 8/11/92

September 1992

Biology Section
Division of Technical Services

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Biology Section
Bureau of Laboratories
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Introduction

G & M Truck Plaza WWTP, St. Augustine, St. Johns County, Florida, NPDES #FL0022551, tests performed on 12 to 15 August, 1992.

This facility is located at Interstate 95 and State Road 210 in St. Augustine. The wastewater treatment facility has a 18,800 gpd capacity. Treatment of wastewater consists of extended aeration with effluent discharged to a ditch which flows into Durbin Creek, then to Julington Creek, and finally to the St. Johns 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 FDER Biology Section performed two 72-hour static acute screening toxicity bioassays with a sample of effluent from this facility. The bioassay organisms used for these tests were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Notropis leedsi*. The test results indicated some toxicity in the *N. leedsi* test.

Total residual chlorine was measured in the field and laboratory and was <0.05 mg/L and 0.03 mg/L, respectively. Total and unionized ammonia concentrations were 7.1 mg/L and 0.17 mg/L, respectively.

Conclusion

The sample of effluent from this facility collected on 11 August, 1992, showed some toxicity. The LC_{50} was > 100%; however, calculation of the exact LC_{50} is not possible from a screening test. Ammonia was a possible cause of toxicity.

Table 1. Concentration Series and Volumes Used for the 72-hr Static Acute Screening Bioassays of the G & M Truck Plaza WWTP effluent on 12 to 15 August, 1992.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 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

Table 2. Data recorded during the 72-hour acute screening bioassays of a sample of effluent from the G & M Truck Plaza WWTP, St. Augustine, St. Johns County, Florida, NPDES# FL0022551, performed on 12 to 15 August, 1992.

Facility:	G & M Truck Plaza WWTP	NPDES #	FL0022551	Facility Type:	WWTP
Location:	I-95 & SR 210, St. Augustine	Contact/District:	Ken Kohn/NE		
County:	St. Johns	Test type:	static acute screen		
Sample Collection Date:	8/11/92 Time: 1053	# tests:	2	Receiving Water:	Durbin Creek to Julington Creek to St. Johns River
Test Beginning Date:	8/12/92 Time: 1330	Chlorination Type:	Chlorinated		
Test Ending Date:	8/15/92 Time: 1400				Page 1 of 1

Total Residual Cl2	mg/l	Method
Field:	< 0.05	Hach
Lab:	0.03	Hach

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	7.10	0.17

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	120	133
Cond. Control Water (daphnids):	68	78
100% Sample:	200	43

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

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

	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	8.5	-	8.4	23.7	-	23.5	7.7	-	8.1	160	194
Control	5	5	5	-	-	8.6	-	-	-	-	-	8.1	-	-
Control	5	5	5	-	-	8.6	-	-	-	-	-	8.1	-	-
Control	5	5	5	-	-	8.6	-	-	-	-	-	8.1	-	-
100%	5	5	5	7.7	-	8.8	23.3	-	23.5	6.6	-	8.2	1239	1550
100%	5	5	5	-	-	8.8	-	-	-	-	-	8.2	-	-
100%	5	5	5	-	-	8.8	-	-	-	-	-	8.2	-	-
100%	5	5	5	-	-	8.8	-	-	-	-	-	8.2	-	-

Organism: ***Notropis leedsi*** Age: 11 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	7.9	8.3	8.6	24.1	23.5	23.2	7.1	8.0	8.0	-	-
Control	5	5	5	7.9	8.3	8.6	-	-	-	7.1	8.0	8.0	247	252
100%	5	5	4	7.6	8.1	8.4	23.0	23.5	23.2	6.0	6.8	7.8	-	-
100%	5	4	4	7.6	8.1	8.4	-	-	-	6.0	6.8	7.8	1303	1327

Sample Source: G & M Truck Plaza

Address/City:

County: ST JOHNS

Contact/District: KEN KOHN NE

NPDES Permit #: FL00 Outfall #:

Sample Collection: Date 8/11/92 Time 1053

Test Beginning: Date 8/12/92 Time 1330

Test Ending: Date 8/15/92 Time 1400

Test Organism: Ceriodaphnia dubia

Life Stage/Age: < 24 hr

Test Number: 1 of 2 Test Type: (Screening) | Definitive

(Static) | Static Renewal | Flow-through

92AUG12 12 39149

Simple log 8/18/92

Remarks:

* Biomassay person absent due to hospitalization of daughter, 4th hour reading not done MF 8/15/92

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7.0, 7.0, 10.0	8.4 @ 25°C	26.0 @ 26.0	999 9950 @ 24.1
24 hr	7.0, 7.0, 10.0	8.4 @ 25°C	24.9 @ 24.9	1000 10000 @ 24.5
48 hr	7.0, 7.0, 10.0	8.5 @ 24°C	23.5 @ 23.5	990 9950 @ 23.5

Conc.	Chamber #	Number Live 0	24	48* 72	pH 0	24	48 72	Temp. (°C) 0	24	48 72	DO (mg/L) 0	24	48 72	Cond. (µmhos/cm) 0	24	48 72
control	A	5	5	5	8.5		8.4	23.7		23.5	7.7		8.1	160		194
control	B	5	5	5			8.6						8.1			
control	C	5	5	5			8.6						8.1			
control	D	5	5	5			8.6						8.1			
100%	A	5	5	5	7.7		8.8	23.3		23.5	6.3		8.2	1239		1550
100%	B	5	5	5			8.8						8.2			
100%	C	5	5	5			8.8						8.2			
100%	D	5	5	5			8.8						8.2			
Measured/Loaded by:		MF	MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF
Recorded by:		MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF

Investigators' Signatures

Kim Pearce

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	~~Cond.~~ SACT Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			<0.05	Hach	KK
Lab Tot. Resid. Cl2:			0.03	DR 100	KP
Alkalinity:	120	68	200	Hach	KP
Hardness:	133	78	43	Hach	KP
Total Ammonia:	0.0	0.0	7.1	Orion	MF

Ammonia Meter Slope: -55.0

Ammonia Blank: 0.0

Salinity Sample: 0 ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Gum Truck Plaza
Address/City:
County: ST JOHNS
Contact/District: KEN KOHN NE
NPDES Permit #: FL00 Outfall #:

Sample Collection: Date 8/17/92 Time 1053
Test Beginning: Date 8/14/92 Time 1330
Test Ending: Date 8/15/92 Time 1400
Test Organism: Mysidopsis bahia
Life Stage/Age: 11 days

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

92 AUG 12 12 39149
Sample log 8/18/92

Remarks:

* 72 hour bioassay person absent due to hospitalization of Daughter 48hr reading not done mf 8/15/92

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7.7, 7.0, 10	8.4 @ 25°C	24.4 @ 26.0	999 / 9950 @ 24.1
24 hr	7.7, 7.0, 10	8.1 @ 25°C	24.9 @ 24.9	1000 / 10000 @ 24.5
~~48~~ 72 hr	7.7, 7.0, 10	8.5 @ 24°C	23.5 @ 23.5	990 / 9950 @ 23.5

Conc.	Chamber #	Number Live 0	24	~~48~~ 72	pH 0	24	~~48~~ 72	Temp. (°C) 0	24	~~48~~ 72	DO (mg/L) 0	24	~~48~~ 72	Cond. (µmhos/cm) 0	24	~~48~~ 72
control	67	5	5	5	7.9	8.3	8.6	24.1	23.5	23.2	7.1	8.0	8.0			
control	16	5	5	5	7.9	8.3	8.6				7.1	8.0	8.0	247	245	252
100%	209	5	5	4	7.6	8.1	8.4	23.0	23.5	23.2	6.0	6.8	7.8			
100%	315	5	4	4	7.6	8.1	8.4				6.0	6.8	7.8	1303	1303	1327
Measured/Loaded by:		MF	MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF
Recorded by:		MF	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF	KP	MF	MF

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Marshall Faircloth

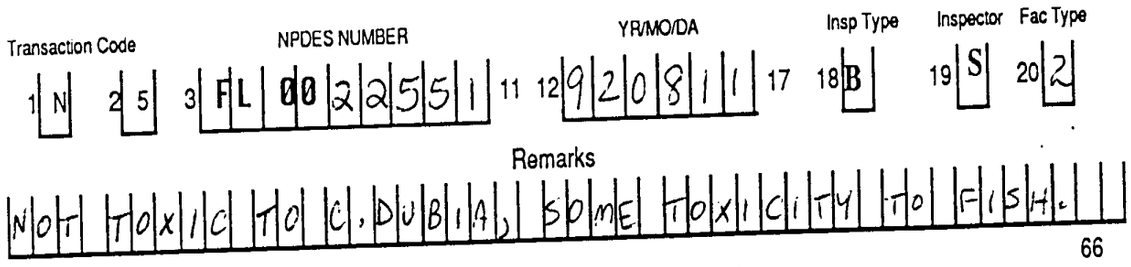
Reviewer

Water-quality Parameters

	Well Water	~~SALT~~ Conc. Water	Sample	Method	Measured by
Field Tot. Resid. Clz:			<0.05	Hach	KK
Lab Tot. Resid. Clz:			0.03	DR100	KP
Alkalinity:	120	68	200	Hach	KP
Hardness:	133	78	43	Hach	KP
Total Ammonia:	0.0	0.0	7.1	Orion	MF

Ammonia Meter Slope: -55.0
Ammonia Blank: 0.0
Salinity

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



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

