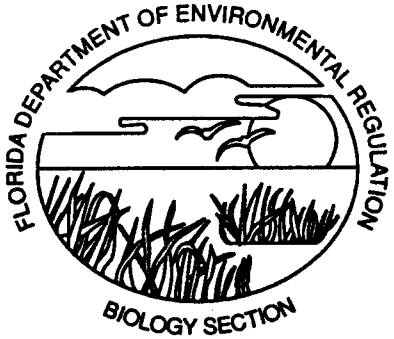


Bioassays of

Beacon Hills Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026778

Sampled 10/7/91

November 4, 1991

Biology Section
Division of Technical Services

Bioassays of

Beacon Hills Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026778

Biology Section
Bureau of Laboratories
November 4, 1991

Introduction

Beacon Hills WWTP, Jacksonville, Duval County, Florida, NPDES #FL0026778 on 8 to 10 October, 1991.

This facility is located on Beacon Drive in Jacksonville. It is a 1.78 MGD WWTP that is currently being operated as an extended aeration plant. The facility utilizes a dechlorination unit. Effluent is discharged to the St. Johns River (1991 Compliance Sampling Inspection Report. K. Gerard, FDER Northeast District, Jacksonville).

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The Biology Section performed two acute screening toxicity bioassays on a sample of effluent from this facility. The bioassay test organisms used for these tests were the water flea, *Ceriodaphnia dubia* and the fish, *Notropis leedsi*. These tests indicated that the sample was not toxic.

Total residual chlorine was not detected in the sample. The total ammonia and unionized ammonia concentrations were 0.6 mg/L and 0.004 mg/L, respectively. Further chemical analysis resulted in the tentative identification of aliphatic compounds with an estimated concentrations of 11 µg/L. The metals, copper (17 µg/L), iron (53 µg/L), and zinc (31 µg/L), were detected in the sample. Pesticides were not detected.

Conclusion

The sample of effluent from this facility was not toxic on 7 October, 1991.

Table 1. Concentration Series and Volumes Used for The Static Screening Bioassays of the Beacon Hills WWTP on 8 to 10 October, 1991.

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. Results of chemical analyses on the sample of effluent from the Beacon Hills WWTP, Duval County, on 7 October, 1991.

Base-Neutral & Acid Extractables

Tentitive Identification	*Estimated concentrations*
Aliphatics	11 µg/L

Chlorinated Pesticides

None Detected

Metals

Copper	17 µg/L
Iron	53 µg/L
Zinc	31 µg/L

Table 3. Data recorded during the acute screening bioassay of a sample of effluent from the Beacon Hills WWTP Jacksonville, Duval County, Florida, NPDES# FL0026778, on 8 to 10 October, 1991.

Facility:	**Beacon Hills WWTP**		NPDES #	**FL0026778**	Facility Type: **Wastewater Treatment**
Location:	4680 Fulton Drive, Jacksonville		Contact/District:	J. Wright / Northeast	
County:	Duval		Test type:	static screening	
Sample Collection Date:	**10/7/91**	Time: 1300	# tests:	2	Receiving Water: St. Johns River
Test Beginning Date:	10/8/91	Time: 1400	Chlorination Type:	**dechlorinated**	
Test Ending Date:	10/10/91	Time: 1400	Dechlor Method:	Plant dechlorination unit	**Page 1 of 1**

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	0.0	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:	0.60	0.004

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	120	130
Cond. Control Water (daphnids):	65	85
100% Sample:	130	267

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours
LC50: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	9.2	-	8.7	6.8	-	8.3	20.0	-	20.3	198	219
Control	5	5	5	-	-	8.7	-	-	8.3	-	-	-	-	-
Control	5	5	5	-	-	8.7	-	-	8.3	-	-	-	-	-
Control	5	5	5	-	-	8.7	-	-	8.3	-	-	-	-	-
100%	5	5	5	8.0	-	8.7	7.2	-	8.5	20.1	-	20.5	1050	1193
100%	5	5	5	-	-	8.7	-	-	8.5	-	-	-	-	-
100%	5	5	5	-	-	8.7	-	-	8.5	-	-	-	-	-
100%	5	5	5	-	-	8.7	-	-	8.5	-	-	-	-	-

Organism: ***Notropis leedsi*** Age: 24 days
LC50: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			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	8.3	7.9	7.8	8.1	8.2	19.9	19.9	20.3	-	-
Control	5	5	5	8.5	8.3	8.0	7.8	8.1	8.2	-	-	-	239	245
100%	5	5	5	7.5	7.6	7.5	7.1	7.8	8.0	20.3	20.1	20.5	-	-
100%	6	6	6	7.5	7.6	7.5	7.1	7.8	8.0	-	-	-	1070	1071

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Beacon Hills
Address/City:
County: Duval
Contact/District: Jim Wright / NE
NPDES Permit #: FL00 26778 Outfall #:

Sample Collection: Date 10/7/91 Time 1300
Test Beginning: Date 10-8-91 Time 1400
Test Ending: Date 10/10/91 Time 1400
Test Organism: Notropis leedsi
Life Stage/Age: 22 days

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

Remarks:

24068

Instrument Calibrations:

	pH	DO	Temp	Cond umhos
0 hr	7@7.99	9.00 21°C	20.4@23.4°C	1355@23.3°C@PH61
24 hr	7@7.99	9.0@21.5°C	20.2@23.4°C	1366@23.9° 1377
48 hr	7@7.99	9.00 21°	20.5@23.9	1370@22.0 @1380

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control		5	5	5	7.8	8.1	8.2	19.9	19.7	20.3	8.5	8.3	7.9			
Control		5	5	5	7.8	8.1	8.2				8.5	8.3	8.0	239	242	245
1000%		5	5	5	7.1	7.8	8.0	20.3	20.1	20.5	7.5	7.6	7.5			
100%		6	6	6	7.1	7.8	8.0				7.5	7.6	7.5	1080	1070	1071
Measured/Loaded by:		MF	AJ	AJ	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	AJ	AJ	MF	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ	AJ

Investigators' Signatures

Rachel Faircloth
Alan Jordan

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:	Chlorine 0				
Lab Tot. Resid. Cl2:			0	HACH	MF
Alkalinity:	120	65	130	HACH	AJ
Hardness:	130	55	267	HACH	AJ
Total Ammonia:	0.0	0.0	0.6	Hach	MF

Ammonia Meter Slope: _____
Ammonia Blank: 0.0
Salinity Sample: _____ ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: Beacon Hills WWTP
Address/City: _____
County: Duval
Contact/District: Jim Wright / NE
NPDES Permit #: FL0026778 Outfall #: _____

Sample Collection: Date 10/7/91 Time 1300
Test Beginning: Date 10-8-91 Time 1400
Test Ending: Date 10/10/91 Time 1400
Test Organism: Ceriodaphnia dubia
Life Stage/Age: <24 hours

Test Number: 1 of 2 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7.99	9.0@21°C	20.4@23.4°C	1355@2330 1361
24 hr	7.97@9	8.9@21.5°	20.2@23.4°	1366@23.9@1377
48 hr	7.97@9	9.0@21°	20.5@23.9	1370@24° 1350

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
control		5	5	5	6.8		8.3	20.0		20.3	9.2		8.7	198		219
control		5	5	5			8.3						8.7			
control		5	5	5			8.3						8.7			
control		5	5	5			8.3						8.7			
100%		5	5	5	7.2		8.5	20.1		20.5	8.0		8.3	1050		1173
100%		5	5	5			8.5						8.7			
100%		5	5	5			8.5						8.3			
100%		5	5	5			8.5						8.7			

24068 91-OCT-08-12-01

BIOLOGY Matrix: W-EFFLUENT
Date Collected: 7-OCT-1991 13:00:00.
Field ID:
BSY-SN-CLD BSY-SN-FSH

entered 10/11/91 pwp

Measured/Loaded by:		MF	MF	MF	MF		MF	MF			MF		MF	MF		MF
Recorded by:		AJ	AJ	AJ	MF		AJ	AJ			AJ		AJ	AJ		AJ

Investigators' Signatures

Marshall Faircloth
Alison Jordan
_____
_____
Renewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:	Blank	0			
Lab Tot. Resid. Cl2:			0	HACH	MF
Alkalinity:	120	65	130	HACH	AJ
Hardness:	130	55	267	HACH	AJ
Total Ammonia:	0.0	0.0	0.6	Nessler	MF

Ammonia Meter Slope: _____ Ammonia Blank: 0.0 Salinity Sample: _____ ppt