

Bioassays of

Beacon Hills Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026778

Sampled 8/14/01

December 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Beacon Hills Wastewater Treatment Plant, 4894 Ashley Manor Way West, Jacksonville, Duval County, Florida, NPDES #FL0026778, tests performed on 14 to 16 August 2001.

This wastewater treatment plant has a 0.836 MGD design flow in the extended-aeration mode and a 1.3 MGD design flow in the contact stabilization mode. The annual average flow is 0.62 MGD. The treatment system consists of an influent bar rack, contact zone, re-aeration zone, secondary clarifier, chlorine contact chamber, dechlorination chamber, and aerobic digester. The dechlorination of the wastewater is achieved using sulfur dioxide. The wastewater is continuously discharged though a 150-ft pipe to the Class III marine waters of the St. Johns River (facility summary provided by Kathleen Gerard, FDEP, Jacksonville).

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 collected from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did not indicate toxicity to either test species within 48 hours (Table 1).

Total residual chlorine was undetected in the sample in the laboratory. Total and unionized ammonia in the sample were 0.363 mg/L and 0.004 mg/L, respectively. Further chemical analyses were performed on the sample, and several metals were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on August 13, 2001 did not show acute toxicity to the either test species within 48 hours.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Beacon Hills Wastewater Treatment Plant, 4894 Ashley Manor Way West, Jacksonville, Duval County, Florida, NPDES# FL0026778 performed from 14 to 16 August 2001.

Facility:	**Beacon Hills WWTP**	**NPDES #**	**FL0026778**	Facility Type:	**Wastewater**	**Analysts:**	Marshall Faircloth
Location:	4894 Ashley Manor Way West, Jacksonville	Contact/District:	Pat O'Connor/Northeast		**Treatment Plant**		Della Parker-Hanson
County:	Duval	Test type:	static acute screen				Joshua Ayres
Sample Collection Date:	8/13/01 Time: 1110	# tests:	2	Receiving Water:	St. Johns River		
Test Beginning Date:	8/14/01 Time: 1315	Chlorination Type:	Chlorinated			**Reviewer:**	David Whiting
Test Ending Date:	8/16/01 Time: 1315		sample collected after dechlorination		**Page 1 of 1**		

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

	Sample/Diluen	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected 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	8.2	-	8.2	24.3	-	24.7	7.9	-	8.1	195	185
Control B	0/20	5	5	5	-	-	8.3	-	-	24.5	-	-	8.0	-	180
Control C	0/20	5	5	5	-	-	8.3	-	-	24.5	-	-	8.1	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	24.5	-	-	8.1		180
100% A	20/0	5	5	5	7.2	-	8.6	24.3	-	24.5	7.8	-	8.1	1270	1330
100% B	20/0	5	5	5	-	-	8.5	-	-	24.4	-	-	8.0	-	1405
100% C	20/0	5	5	5	-	-	8.6	-	-	24.4	-	-	8.2	-	1580
100% D	20/0	5	5	5	-	-	8.6	-	-	24.4	-	-	8.1	-	1450

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-25.5°C.
Incubator #2 temperature range for the test period was 26.0-26.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 12 days

	Sample/Diluen	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected 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	8.0	8.3	8.5	25.1	25.0	24.7	7.5	7.3	7.7	255	265
Control B	0/500	5	5	5	8.0	8.4	8.5	25.2	24.7	24.6	7.5	7.4	7.6	255	260
Control C	0/500	5	5	3	8.0	8.4	8.4	25.2	24.5	24.5	7.5	7.6	7.7	255	265
Control D	0/500	5	5	5	8.0	8.4	8.5	25.2	24.6	24.5	7.5	7.6	7.7	255	260
100% A	500/0	5	5	5	7.2	8.0	8.3	24.9	24.6	24.6	6.9	7.7	7.7	1270	1300
100% B	500/0	5	5	5	7.2	8.0	8.3	24.8	24.5	24.6	6.8	7.5	7.7	1300	1305
100% C	500/0	5	5	5	7.2	8.0	8.3	24.8	24.6	24.6	6.9	7.4	7.7	1300	1330
100% D	500/0	5	5	5	7.2	8.0	8.3	24.7	24.5	24.6	7.0	7.3	7.7	1310	1320

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-25.5°C.
Incubator #3 temperature range for the test period was 25.0-25.5°C.

Data Transcription Verification	
date:	11/28/01
by:	Victor Brunell
	Della Parker-Hanson

Total Residual CL2	mg/L	Method
Field:	0.00	-
Lab:	<0.03	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	<0.017
20% Dilute Mineral Water (cladocerans):	< 0.017	<0.017
100% Sample:	0.363	0.004

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	146	137
20% Dilute Mineral Water (cladocerans):	70	80
100% Sample:	157	274

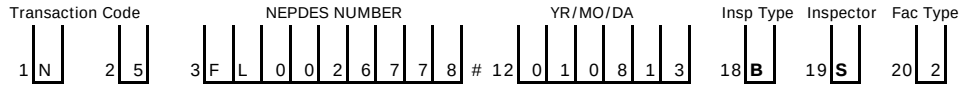
Table 2. Results of chemical analyses on the effluent from Beacon Hills Wastewater Treatment Plant sampled on August 13, 2001.

Metals			
Aluminum	160	µg/L	I
Cadmium	0.029	µg/L	I
Calcium	66.2	mg/L	A
Copper	2.21	µg/L	
Iron	33	µg/L	I
Lead	0.31	µg/L	I
Magnesium	26.7	mg/L	A
Selenium	0.84	µg/L	I
Zinc	40	µg/L	
Pesticides and Herbicides			
Atrazine	0.12	µg/L	I
Base, Neutral, & Acid Extractable Organics			
None detected			

[A] The value reported is the mean of two or more determinations.
[I] Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

The Bioassay of Beacon Hills Wastewater Treatment Plant effluent sampled on August 13, 2001, NPDES #FL0026778.

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

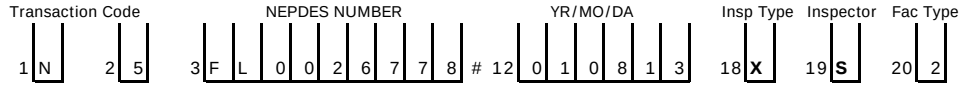


Remarks

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The Priority Pollutants Analysis for Bioassay of Beacon Hills Wastewater Treatment Plant effluent sampled on August 13, 2001, NPDES #FL0026778.

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Remarks

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