

Bioassays of

Jacksonville Electric Authority-Southwest District Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026468

Sampled 8/6/01

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

Jacksonville Electric Authority- Southwest District Wastewater Treatment Plant, 5420 118th Street, Jacksonville, Duval County, Florida, NPDES #FL0026468, tests performed on 7 to 9 August 2001.

This activated-sludge wastewater treatment plant has a design flow of 10.0 MGD and an average flow of 6.973 MGD. The wastewater treatment consists of influent screening, grit removal, aeration, secondary clarification, ultraviolet disinfection, and post aeration. Residuals are stabilized by aerobic digestion, then gravity thickened and transported to Buckman WWTP for incineration. The treated wastewater is discharged into the Class III marine waters of the St. John's River through Outfall D001. During the sampling event, the facility was testing a new ultraviolet light disinfection system but continued to chlorinate and dechlorinate the effluent during this period (facility summary provided by Jessica Lippincott, 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 and total ammonia were not detected in the sample in the laboratory. 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 6, 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 Jacksonville Electric Authority-Southwest District Wastewater Treatment Plant, 5420 118th Street, Jacksonville, Duval County, Florida, NPDES# FL0026468 performed from 7 to 9 August 2001.

Facility:	**JEA-Southwest District WWTP**		**NPDES #**	**FL0026468**	Facility Type: **Wastewater**	**Analysts:**	Della Parker-Hanson
Location:	5420 118th Street, Jacksonville		Contact/District:	Pat O'Connor/Northeast	**Treatment Plant**		Shannon Gerardi
County:	Duval		Test type:	static acute screen			Joshua Ayres
Sample Collection Date:	8/6/01	Time: 0800	# tests:	2	Receiving Water: St. Johns River		Marshall Faircloth
Test Beginning Date:	8/7/01	Time: 1330	Chlorination Type:	Chlorinated			
Test Ending Date:	8/9/01	Time: 1300		sample collected after dechlorination	**Page 1 of 1**	**Reviewer:**	David Whiting

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

	Sample/Diluent	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	8.3	-	8.3	24.6	-	23.5	7.9	-	8.2	170	185
Control B	0/20	5	5	5	-	-	8.4	-	-	23.2	-	-	8.1	-	180
Control C	0/20	5	5	5	-	-	8.4	-	-	23.1	-	-	8.2	-	180
Control D	0/20	5	5	5	-	-	8.4	-	-	22.7	-	-	8.1		185
100% A	20/0	5	5	5	7.6	-	8.5	24.7	-	22.7	7.3	-	8.3	565	605
100% B	20/0	5	5	5	-	-	8.5	-	-	22.8	-	-	8.2	-	580
100% C	20/0	5	5	5	-	-	8.6	-	-	22.7	-	-	8.3	-	580
100% D	20/0	5	5	5	-	-	8.6	-	-	22.7	-	-	8.2	-	590

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-26.0°C.
Incubator #2 temperature range for the test period was 24.5-25.5°C.

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

	Sample/Diluent	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	8.4	8.4	8.5	24.8	24.6	24.8	8.7	7.9	7.4	250	255
Control B	0/500	5	5	5	8.4	8.4	8.5	24.7	24.3	24.8	8.8	7.8	7.4	255	260
Control C	0/500	5	5	5	8.4	8.4	8.5	24.7	24.5	24.8	8.9	7.8	7.5	255	260
Control D	0/500	5	5	5	8.4	8.5	8.6	24.8	24.2	24.7	8.8	7.7	7.5	255	260
100% A	500/0	5	5	5	7.5	7.8	8.2	24.4	25.2	24.6	7.2	5.6	7.4	570	585
100% B	500/0	5	5	5	7.4	7.8	8.2	24.4	24.2	24.5	7.2	6.1	7.1	570	585
100% C	500/0	5	5	5	7.5	7.9	8.2	24.4	23.8	25.3	7.3	6.8	6.5	570	590
100% D	500/0	5	5	5	7.4	7.9	8.2	24.5	24.4	25.1	7.3	6.9	6.4	570	595

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-26.0°C.
Incubator #3 temperature range for the test period was 24.5-25.5°C.

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

Total Residual CL2	mg/L	Method
Field:	-	-
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:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	139	139
20% Dilute Mineral Water (cladocerans):	73	80
100% Sample:	112	154

Table 2. Results of chemical analyses on the effluent from Jacksonville Electric Authority-Southwest District Wastewater Treatment Plant sampled on August 6, 2001.

Metals

Calcium	41.6	mg/L	
Copper	1.55	µg/L	
Iron	61	µg/L	I
Lead	0.39	µg/L	I
Magnesium	13.4	mg/L	
Zinc	16	µg/L	

Pesticides and Herbicides

Atrazine	0.1	µg/L	I
Diazinon	0.13	µg/L	I
Fonofos	0.21	µg/L	I

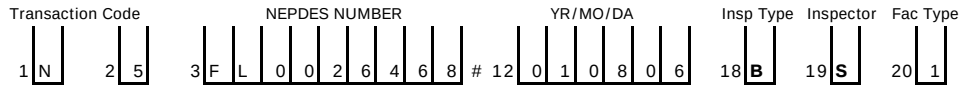
Base, Neutral, & Acid Extractable Organics

None detected

[I] Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

The Bioassay of JEA-Southwest District Wastewater Treatment Plant effluent sampled on August 6, 2001, NPDES #FL0026468.

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

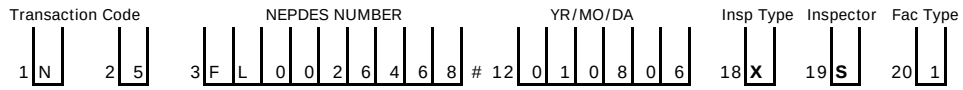


Remarks

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The Priority Pollutants Analysis for Bioassay of JEA-Southwest District Wastewater Treatment Plant effluent sampled on August 6, 2001, NPDES #FL0026468.

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Remarks

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