

Bioassays of

San Pablo Wastewater Treatment Facility

Jacksonville, Duval County, Florida

NPDES #FL0024767

Sampled 3/25/02

September 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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San Pablo Wastewater Treatment Facility

Jacksonville, Duval County, Florida

NPDES #FL0024767

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Bureau of Laboratories
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Introduction

San Pablo Wastewater Treatment Facility, 3755 Foggy Vale Court, Jacksonville, Duval County, Florida, NPDES #FL0024767, tests performed on 26 to 28 March, 2002.

This facility has a design flow of 0.750 MGD and an annual average daily flow of 0.564 MGD (measured May 2001-April 2002). This facility consists of an extended-aeration activated sludge wastewater treatment system with influent screening, extended aeration, secondary clarification, aerobic digestion, and ultraviolet disinfection. The effluent is discharged into a canal, which then flows into the Class III marine waters of Pablo Creek (facility information provided by Kathleen H. 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 freshwater test species used for these bioassays were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The *C. leedsi* 100% sample had 15% mortality, but 10% mortality was observed in the *C. leedsi* controls, so the mortality in the sample cannot be attributed to the toxicity of the sample. 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 effluent sample in the laboratory. Further chemical analyses were performed on the sample for herbicides, organic compounds, metals, nutrients, and pesticides. Several metals and pesticides were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on March 25, 2002, 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 San Pablo Waste Water Treatment Facility, 3755 Foggy Vale Court, Jacksonville, Duval County, Florida, NPDES# FL0024767, performed from 26 to 28 March 2002.

Facility:	**San Pablo WWTF**	**NPDES #**	**FL0024767**	Facility Type:	**Wastewater**	**Analysts:**	Della Parker-Hanson
Location:	3755 Foggy Vale Court	Contact/District:	O'Connor/Northeast		**Treatment Facility**		Joshua Ayres
County:	Duval	Test type:	static acute screen				Gary Hardie
Sample Collection Date:	03/25/02 Time: 1135	# tests:	2	Receiving Water:	Pablo Creek		Marshall Faircloth
Test Beginning Date:	03/26/02 Time: 1600	Chlorination Type:	non-chlorinated		Class III Marine Waters		
Test Ending Date:	03/28/02 Time: 1400				**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	-	8.0	24.3	-	23.1	8.0	-	7.7	165	185
Control B	0/20	5	5	5	-	-	8.1	-	-	23.1	-	-	7.8	-	190
Control C	0/20	5	5	5	-	-	8.1	-	-	23.1	-	-	7.8	-	190
Control D	0/20	5	5	5	-	-	8.2	-	-	22.9	-	-	7.9	-	200
100% A	20/0	5	5	5	8.5	-	8.4	24.6	-	23.0	8.1	-	7.9	980	1045
100% B	20/0	5	5	5	-	-	8.4	-	-	23.0	-	-	7.9	-	1135
100% C	20/0	5	5	5	-	-	8.4	-	-	23.0	-	-	7.8	-	1195
100% D	20/0	5	5	5	-	-	8.4	-	-	22.9	-	-	7.9	-	1180

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.0-25.5 °C.
Incubator #3 temperature range for the test period was 23.5-25.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 8 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	7.9	8.3	8.4	26.8	24.3	22.9	8.0	7.8	7.5	270	245
Control B	0/500	5	3	3	7.9	8.3	8.4	27.0	24.5	22.9	7.8	7.3	7.5	275	255
Control C	0/500	5	5	5	7.9	8.3	8.4	27.2	24.4	22.7	7.8	7.5	7.4	275	255
Control D	0/500	5	5	5	7.9	8.3	8.4	27.3	24.3	22.7	7.7	7.6	7.6	275	250
100% A	500/0	5	3	3	7.4	8.1	8.2	25.8	25.3	22.5	7.4	7.2	7.6	1045	980
100% B	500/0	5	5	5	7.4	8.1	8.1	25.5	24.4	22.5	7.8	7.5	6.9	1020	1000
100 % C	500/0	5	5	5	7.4	8.1	8.1	25.3	24.8	22.5	7.8	7.5	6.8	1025	1000
100% D	500/0	5	5	4	7.4	8.1	8.1	25.2	24.2	22.4	7.9	7.5	7.0	1065	1000

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

LIMS	
Job number:	TLH-2002-03-26-53
sample number:	584347

Data Transcription Verification	
date:	7/9/02
by:	Joshua Ayres
	Gary Hardie

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
Control water (water flea):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water (fish):	174	166
Control water (water flea):	74	76
100% Sample:	120	266

Table 2. Results of chemical analyses on the effluent from San Pablo Wastewater Treatment Plant sampled on March 25, 2002.

Metals

Cadmium	0.058	ug/L	[I]
Calcium	61.3	mg/L	
Copper	2.8	ug/L	[I]
Magnesium	33.2	mg/L	
Silver	0.024	ug/L	[I]
Zinc	41.4	ug/L	

Pesticides and Herbicides

Atrazine	0.6	ug/L	
Diazinon	0.11	ug/L	[I]

Base, Neutral, & Acid Extractable Organics

None detected.

Nutrients

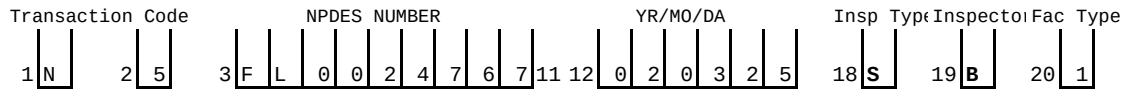
Nitrates and Nitrites	7.4	mg N/L	[J]
Ortho-Phosphate	3.6	mg P/L	
Total Kjeldahl Nitrogen	1	mg N/L	
Total Phosphorous	3.5	mg P/L	
Ammonia as Nitrogen	0.041	mg N/L	

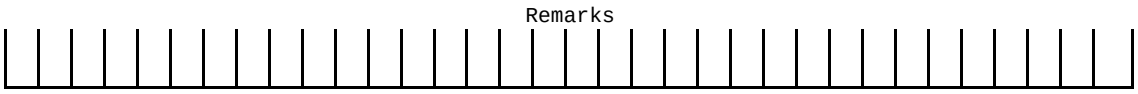
[I] The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

[J] The reported value is an estimated value.

The Bioassay of San Pablo Waste Water Treatment Plant effluent sampled on March 25, 2002, NPDES #FL0024767.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, X

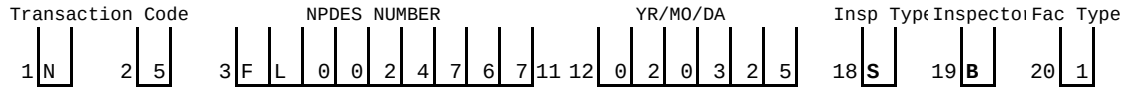


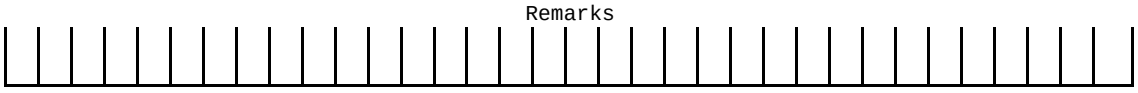


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The Priority Pollutants Analysis for Bioassay of San Pablo Waste Water Treatment Plant effluent sampled on March 25, 2002, NPDES #FL0024767.

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