

Bioassays of

San Pablo Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0024767

Sampled 11/7/94

January 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of

San Pablo Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0024767

Biology Section
Bureau of Laboratories
January 1995

Introduction

San Pablo Wastewater Treatment Plant, Jacksonville, Duval County, Florida, NPDES #FL0024767, tests performed on 8 to 10 November, 1994.

This privately owned, extended-aeration wastewater treatment plant is located between Petite Drive South and Stacey Road in Jacksonville. It has a design flow of 0.499 MGD and a mean flow of 0.323 MGD. Treatment of wastewater includes grit removal, chlorination, and dechlorination with sulfur dioxide prior to discharge to the Intracoastal Waterway. Sludge is treated on-site by aerobic digestion and is disposed of by off-site land application (facility summary provided by Ha Nguyen and Tim McKelvey, 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 with a sample of effluent from this facility. The test species used for these bioassays were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did not indicate toxicity (Table 1).

Total residual chlorine and total ammonia were not detected in the sample. Further chemical analyses were performed on the sample and several metals were identified (Table 2). The metals do not appear to be present in concentrations known to be acutely toxic to the test species. Pesticides and organics were not detected.

Conclusion

The sample of effluent collected from this facility on 7 November, 1994, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the San Pablo Wastewater Treatment Plant, Jacksonville, Duval County, Florida, NPDES# FL0024767, performed on 8 to 10 November, 1994.

Facility:	**San Pablo Wastewater Treatment Plant**			NPDES #	FL0024767	Facility Type:	**Wastewater**
Location:	Jacksonville			Contact/District:	T. McKelvey/NE		**Treatment Plant**
County:	Duval			Test type:	static acute screen		
Sample Collection Date:	**11/7/94**	Time:	1230	# tests:	2	Receiving Water:	Intracoastal Waterway
Test Beginning Date:	11/8/94	Time:	1500	Chlorination Type:	**Sample collected**		
Test Ending Date:	11/10/94	Time:	1500		**after dechlorination**	**Page 1 of 1**	

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature			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	23.7	-	23.7	8.2	-	8.1	170	180
Control B	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	8.1	-	180
Control C	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	8.1	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	8.2	-	190
100% A	20/0	5	5	5	7.3	-	8.2	23.6	-	23.9	8.3	-	8.2	900	905
100% B	20/0	5	5	5	-	-	8.2	-	-	24.0	-	-	8.2	-	950
100% C	20/0	5	5	5	-	-	8.2	-	-	23.9	-	-	8.1	-	1065
100% D	20/0	5	5	5	-	-	8.2	-	-	24.0	-	-	8.1	-	1030

Organism: ***Cyprinella leedsi*** Age: 11 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature			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	7.8	8.2	8.3	23.1	23.4	23.4	8.5	8.5	8.5	245	255
Control B	0/500	5	5	5	7.8	8.2	8.3	-	-	23.3	8.5	8.5	8.5	245	255
Control C	0/500	5	5	5	7.8	8.3	8.3	-	-	23.3	8.5	8.7	8.5	245	252
Control D	0/500	5	5	5	7.8	8.2	8.3	-	-	23.3	8.5	8.7	8.7	245	260
100% A	500/0	5	5	5	7.2	7.9	7.9	23.2	23.4	23.5	8.6	8.5	8.4	940	955
100% B	500/0	5	5	5	7.2	7.9	7.9	-	-	23.4	8.6	8.4	8.4	940	955
100% C	500/0	5	5	5	7.2	7.9	7.9	-	-	23.3	8.7	8.4	8.3	940	955
100% D	500/0	5	5	5	7.2	7.9	7.9	-	-	23.3	8.7	8.4	8.4	940	960

Total Residual CL2	mg/L	Method
Field:	0.00	-
Lab:	< 0.03	DR-100

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):	120	125
20% Dilute Mineral Water (cladocerans):	75	80
100% Sample:	80	285

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

Table 2. Results of chemical analyses on the effluent from the San Pablo Wastewater Treatment Plant sampled on November 7, 1994.

Metals

Arsenic	0.5	µg/L [I]
Aluminum	110	µg/L [I]
Cadmium	0.12	µg/L [I]
Calcium	56.7	mg/L
Copper	15.7	µg/L
Iron	46	µg/L
Magnesium	25.4	mg/L
Nickel	4	µg/L [I]
Silver	0.11	µg/L [I]
Zinc	34	µg/L

Pesticides and Herbicides

none detected

Base-Neutral & Acid Extractables

none detected

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

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: San Pablo WWTP
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0024767
LIMS Sample #: 93071 (Entered 11/22/94) LIMS Job #: 94-NOV-08-20

Sample Collection: Date 11-07-94 Time 1230
Test Beginning: Date 11/08/94 Time 1500
Test Ending: Date 11/10/94 Time 1500
Organism Batch #: 43 Diluent Batch #: 43
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through

Test Number: 1 of 2

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.5 @ 22.6	8.4 @ 23.9 °C	109.6 @ 102.6 1028 @ 1047 @ 24.0 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.3 @ 24.7 °C	112.1 @ 1026 1044 @ 1047 @ 24.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.5 @ 22.6	8.4 @ 23.9 °C	106 @ 1026 1030 @ 1047 @ 24.1 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control	A	5	5	5	8.2		8.2	23.7		23.7	8.2		8.1	170		180
Control	B	5	5	5			8.3			23.8			8.1			180
Control	C	5	5	5			8.3			23.8			8.1			185
Control	D	5	5	5			8.3			23.8			8.2			190
100%	A	5	5	5	7.3		8.2	23.6		23.9	8.3		8.2	900		985
100%	B	5	5	5			8.2			24.0			8.2			950
100%	C	5	5	5			8.2			23.9			8.1			1065
100%	D	5	5	5			8.2			24.0			8.1			1030
Recorded by:		TM	MF	TR	JRS		TR	JRS		TR	JRS		TR	JRS		TR
Measured/Loaded by:		TM	MF	JLS	TM		JLS	TM		JLS	TM		JLS	TM		JLS

Investigators' Signatures

Marshall Faircloth
Jennifer Sparagana
Kristin A. Rucker
Tina Mikulski
Reviewer

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	—	TM
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	TM
Alkalinity (mg/L as $CaCO_3$):	—	75	80	Hach	TR
Hardness (mg/L as $CaCO_3$):	—	80	285	Hach	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -59.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: San Pablo WWTP
County: Duval
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0024767
LIMS Sample #: 93071 LIMS Job #: 94-NOV-08-20

Sample Collection: Date 11-07-94 Time 1230
Test Beginning: Date 11/08/94 Time 1500
Test Ending: Date 11/10/94 Time 1500
Organism Batch #: 45 Diluent Batch #: well
Organism Age: 1 day old
Test Organism: Cyprinella leedsi

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

Test Number: 2 of 2

Remarks:

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.5 @ 22.6	8.4 @ 23.9 °C	109.6 @ 102.6 1028 @ 1047 @ 24.0 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.3 @ 23.3	8.3 @ 24.7 °C	112.1 @ 102.6 1044 @ 1047 @ 24.0 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.5 @ 22.6	8.4 @ 23.9 °C	106 @ 102.6 1030 @ 1047 @ 24.1 °C

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control	43	5	5	5	7.8	8.2	8.3	23.1	23.4	23.4	8.5	8.5	8.5	245	250	255
Control	147	5	5	5	7.8	8.2	8.3			23.3	8.5	8.5	8.5	245	255	255
Control	30	5	5	5	7.8	8.3	8.3			23.3	8.5	8.7	8.5	245	250	250
Control	412	5	5	5	7.8	8.2	8.3			23.3	8.5	8.7	8.7	245	260	260
100%	443	5	5	5	7.2	7.7	7.9	23.2	23.4	23.5	8.6	8.3	8.4	940	950	955
100%	41	5	5	5	7.2	7.7	7.9			23.4	8.6	8.4	8.4	940	950	955
100%	41	5	5	5	7.2	7.7	7.9			23.3	8.7	8.4	8.3	940	950	955
100%	27	5	5	5	7.2	7.7	7.9			23.3	8.7	8.4	8.4	940	955	960
Recorded by:		TM	MF	JR	JAS	MF	TP	JAS	MF	JR	JAS	MF	TP	JAS	NA	TP
Measured/Loaded by:		TM	MF	JLS	TM	MF	JLS	TM	MF	JLS	TM	MF	JLS	TM	MF	JLS

Investigators' Signatures

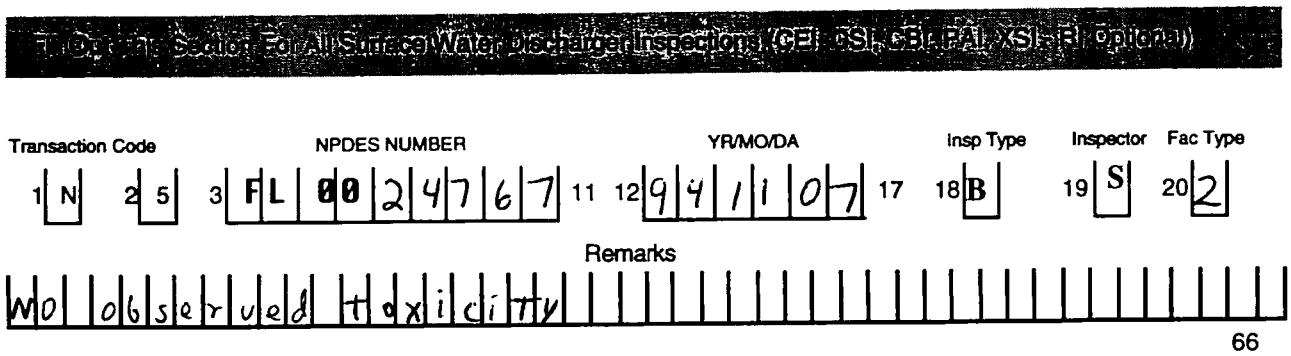
Marshall Faircloth
Jennifer Sparagan
Tabitha C. Kacka
Tina M. Kuklok
Reviewer

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0	—	TM
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	<0.03	DR-100	TM
Alkalinity (mg/L as $CaCO_3$):	120	—	80	Hach	TP
Hardness (mg/L as $CaCO_3$):	125	—	285	Hach	TP
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -596 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

form updated 10/05/94

The Bioassay of the San Pablo Wastewater Treatment Plant effluent sampled on November 7, 1994, NPDES #FL0024767.



The Priority Pollutants Analysis for the Bioassay of the San Pablo Wastewater Treatment Plant effluent sampled on November 7, 1994, NPDES #FL0024767.

