

Bioassays of

Navarre Beach Wastewater Treatment Plant

Navarre Beach, Escambia County, Florida

NPDES #FL0023981

Sampled 5/2/94

June 1994

Biology Section
Division of Technical Services

Bioassays of

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Navarre Beach, Escambia County, Florida

NPDES #FL0023981

Biology Section
Bureau of Laboratories
June 1994

Introduction

Navarre Beach Wastewater Treatment Facility, Navarre Beach, Escambia County, Florida, NPDES #FL0023981, tests performed on 3 to 5 May, 1994.

This facility is located at 8220 Gulf Boulevard in Navarre Beach and has a 0.9 MGD capacity. Treatment of wastewater consists of an activated sludge process that includes an oxidation ditch, equalization basin, tertiary filters, chlorination for disinfection, and dechlorination. An average of 0.179 MGD of effluent is discharged to Santa Rosa Sound (facility summary provided by Dawn Gorres, FDEP Pensacola).

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 water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did not indicate toxicity.

Total residual chlorine of the sample was < 0.03 mg/L in the laboratory and 0.4 mg/L in the field. Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample and several metals were identified (Table 2). Pesticides and organics were not detected.

Conclusion

The sample of effluent collected from this facility on 2 May, 1994, did not show toxicity.

Table 1. Concentration series and volumes used for the 48-hour static acute screening toxicity bioassays of the Navarre Beach WWTF effluent performed on 3 to 5 May, 1994.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 mL	20 mL
100 %	0 mL	20 mL	20 mL

Cyprinella 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 effluent from the Navarre Beach WWTF, sampled on 2 May, 1994.

Metals

Cadmium	0.16 mg/L	I *
Calcium	11.6 mg/L	A
Copper	26 µg/L	A
Iron	35 µg/L	A **
Magnesium	2.7 mg/L	A
Zinc	31 µg/L	A

Pesticides

None Detected

Base-Neutral & Acid Extractables

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.

* Cadmium concentration in trip blank (0.29 µg/L I).
** Iron contamination (11 µg/L) in trip blank confirmed.

Table 3. Data recorded during the 48-hour static acute screening bioassays of a sample of effluent from the Navarre Beach WWTF, Navarre Beach, Escambia County, Florida, NPDES# FL0023981. performed on 3 to 5 May, 1994.

Facility:	**Navarre Beach WWTF**			**NPDES #**	**FL0023981**	Facility Type:	**Sewage Treatment Plant**
Location:	Gulf Blvd., Navarre Beach			Contact/District:	G. Butts/NW		
County:	Escambia			Test type:	static acute screen		
Sample Collection Date:	5/2/94	Time:	1035	# tests:	2	Receiving Water:	Santa Rosa Sound
Test Beginning Date:	5/3/94	Time:	1400	Chlorination Type:	**Sample collected**		to Gulf of Mexico
Test Ending Date:	5/5/94	Time:	1400		**after dechlorination**	**Page 1 of 1**	

Total Residual Cl2	mg/L	Method
Field:	0.4	-
Lab:	< 0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	<0.017	0.00
100% Sample:	< 0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	115
20% Dilute Mineral Water (cladocerans):	70	75
100% Sample:	145	40

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

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

	SURVIVAL			pH			Temperature			Dissolved Oxygen			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	8.1	-	8.3	23.5	-	23.5	8.8	-	8.4	165	175
Control	5	5	5	-	-	8.3	-	-	23.4	-	-	8.4	-	170
Control	5	5	5	-	-	8.3	-	-	23.4	-	-	8.4	-	170
Control	5	5	5	-	-	8.3	-	-	23.4	-	-	8.4	-	170
100%	5	5	5	7.0	-	8.6	23.4	-	23.6	8.4	-	8.3	1005	1000
100%	5	5	5	-	-	8.6	-	-	23.6	-	-	8.3	-	1050
100%	5	5	5	-	-	8.6	-	-	23.6	-	-	8.3	-	1035
100%	5	5	5	-	-	8.6	-	-	23.5	-	-	8.3	-	1050

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

	SURVIVAL			pH			Temperature			Dissolved Oxygen			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 A	5	5	5	7.7	8.2	8.3	23.6	24.1	23.7	8.7	7.9	8.0	245	250
Control B	5	5	5	7.7	8.2	8.3			23.6	8.7	7.9	8.0	245	250
100% A	5	5	5	6.7	7.5	8.0	23.0	24.0	23.6	7.8	7.0	8.0	1045	1060
100% B	5	5	5	6.7	7.5	8.0			23.5	7.8	7.0	7.6	1045	1065

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Navarre Beach STP
Location: KP
County: ~~Santa Rosa~~ ESCAMBIA
Contact/District: Glenn Butts/NW
NPDES Permit #: FL0023981 Outfall #:

Sample Collection: Date 5/2/94 Time 1035
Test Beginning: Date 5/3/94 Time 1400
Test Ending: Date 5/5/94 Time 1400
Organism Batch #: 15 Diluent Batch #: 16
Organism Age: <24 hrs.
Test Organism: Ceriodaphnia dubia

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

Test Number: 1 of 2

Remarks:
Initial Parameters: pH: 6.6
Temp: 22.8°C
D.O.: 7.5
Conductivity: 1030 umhos

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	23.9 @ 24.0	8.5 @ 23.5	980 @ 1,000 9770 @ 10,000 @ 24.0 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.9	8.3 @ 24.7	975 @ 1,000 9720 @ 10,000 @ 23.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.6	8.4 @ 24.0	980 @ 1,000 9750 @ 10,000 @ 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	A	5	5	5	8.1	~~8~~	8.3	23.5		23.5	8.8		8.4	165	~~175~~	175
Control	B	5	5	5			8.3			23.4			8.4		~~170~~	170
Control	C	5	5	5			8.3			23.4			8.4		~~170~~	170
Control	D	5	5	5			8.3			23.4			8.4		~~170~~	170
100%	A	5	5	5	7.0		8.6	23.4		23.6	8.4		8.3	1005	~~1000~~	1000
100%	B	5	5	5			8.6			23.6			8.3		~~1050~~	1050
100%	C	5	5	5			8.6			23.6			8.3		~~1035~~	1035
100%	D	5	5	5			8.6			23.5			8.3		~~1050~~	1050
															TM	
															wrong thermom	
															TM 5/5/94	
Measured/Loaded by:		TM	MF	MF	MF		MF	MF		MF	MF		MF	MF		MF
Recorded by:		TM	TM	TM	TM		TM	TM		TM	TM		TM	TM		TM

Investigators' Signatures
Tina Mihuleli
Marshall Faircloth
Kim Pearce

Steven H Wolfe
Reviewer

form updated 7/8/93

Water Quality Parameters	Salt Water/ Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			0.4	—	GB
Lab Total Residual Cl2:	0.04	<0.03	<0.03	DR-100	KP
Alkalinity:	120	70	145	Hach	TM
Hardness:	115	75	40	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	mf

Ammonia Meter #98136 Ammonia Meter Slope: -57.8 Ammonia Blank: <0.017 Control Salinity: ( ) ppt Sample Salinity: ( ) ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Navarre Beach STP
Location: KP
County: ~~Santa Rosa~~ ESCAMBIA
Contact/District: Glenn Butts / NW
NPDES Permit #: FL00 23981 Outfall #:

Sample Collection: Date 5/2/94 Time 10:35
Test Beginning: Date 5/3/94 Time 1400
Test Ending: Date 5/5/94 Time 1345
Organism Batch #: 17 Diluent Batch #: well
Organism Age: 11 day old
Test Organism: Cyprinella leedsi

94-May-03-16 78928

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

Test Number: 2 of 2

Remarks:
Initial Parameters: pH: 6.6
Temp
D.O.
Conductivity

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	23.9 @ 24.0	8.5 @ 23.5	980 @ 1,000 9770 @ 10,000 @ 24.0 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.8 @ 23.9	8.3 @ 24.7	975 @ 1,000 9720 @ 10,000 @ 23.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.6	8.4 @ 24.0	980 @ 1,000 9750 @ 10,000 @ 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 A	65	5	5	5	7.7	8.2	8.3	23.6	24.1	23.7	8.7	7.9	8.0	245	250	250
Control B	149	5	5	5	7.7	8.2	8.3			23.6	8.7	7.9	8.0	245	250	250
100% A	76	5	5	5	6.7	7.5	8.0	23.0	24.0	23.6	7.8	7.0	8.0	1045	1060	1060
100% B	120	5	5	5	6.7	7.5	8.0			23.5	7.8	7.0	7.6	1045	1070	1065
Measured/Loaded by:		TM	TM	TM	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF
Recorded by:		TM	TM	TM	TM	MF	TM	TM	MF	TM	TM	MF	TM	TM	MF	TM

Investigators' Signatures

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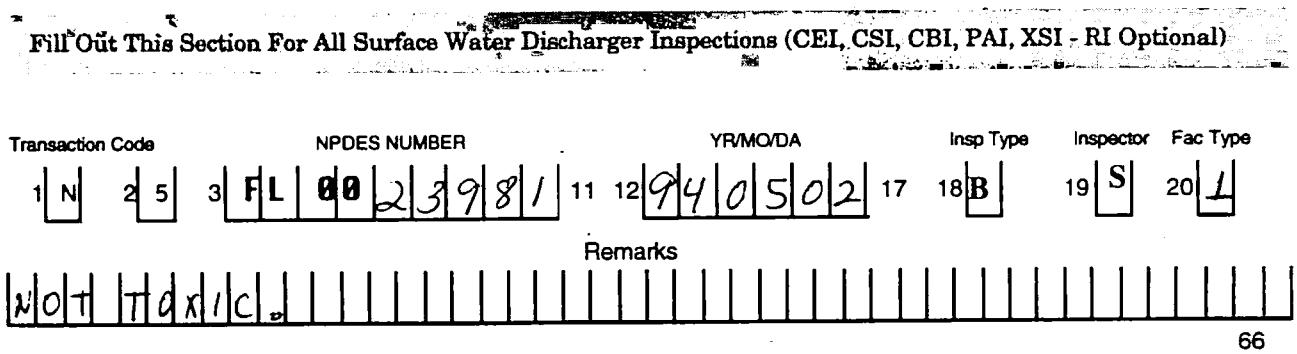
Steven H Wolfe
Reviewer

form updated 7/8/93

	Salt Water/ (Well Water)	Water Quality Parameters 20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2:			0.4	—	G-B
Lab Total Residual Cl2:	0.04	<0.03	<0.03	DR-100	KP
Alkalinity:	120	70	145	Hach	TM
Hardness:	115	75	40	Hach	TM
Total Ammonia:	<0.017	<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: 57.8 Ammonia Blank: <0.017 Control Salinity: ( ) ppt Sample Salinity: ( ) ppt

The Bioassay of the Navarre Beach WWTF effluent sampled on May 2, 1994, NPDES #FL0023981.



The Priority Pollutants Analysis for the Bioassay of the Navarre Beach WWTF effluent sampled on May 2, 1994, NPDES #FL0023981.

