

Bioassays of

Navarre Beach Wastewater Treatment Plant

Navarre, Santa Rosa County, Florida

NPDES #FL0023981

Sampled 8/19/02

November 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Introduction

Navarre Beach Wastewater Treatment Plant, 8220 Gulf Boulevard, Navarre, Santa Rosa County, Florida, NPDES #FL0023981, tests performed on 20 to 22 August 2002.

This wastewater treatment plant has a design flow of 0.90 MGD and an average daily flow of 0.257 MGD (August 1 – August 19, 2002). Treatment is accomplished through an activated-sludge system, which includes flow equalization, oxidation, tertiary filtration, chlorination and de-chlorination. Effluent is reclaimed at a maximum of 0.032 MGD for plant grounds or discharged into the Class III Marine waters of the Santa Rosa Sound. A 0.90 MGD emergency holding pond also exists (facility information provided by Glenn Butts, 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 acute screening toxicity bioassays on a sample of effluent collected from the outfall of this facility. The test species used were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. There was no toxicity observed to either test species during the 48-hour test (Table 1).

Total residual chlorine and total ammonia were not detected in the bioassay sample. Additional samples of effluent were collected from this facility and analyzed for herbicides, pesticides, nutrients, metals, as well as, base-, neutral-, and acid-extractable organic compounds. Several metals and nutrients were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on August 19, 2002 did not show acute toxicity to either test species during the 48-hour bioassay test.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Navarre Beach Wastewater Treatment Plant, 8220 Gulf Boulevard, Navarre, Santa Rosa County, Florida, NPDES# FL0023981, performed from 20 to 22 August 2002.

Facility:	**Navarree Beach WWTP**		**NPDES #**	**FL0023981**	Facility Type: **WWTP**	**Analysts:**	Jacquelyn Brynda
Location:	8220 Gulf Boulevard		Contact/District:	Butts/ NW			Joshua Ayres
County:	Santa Rosa		Test type:	static acute screen			Christa Pierini
Sample Collection Date:	8/19/2002	Time: 1045	# tests:	2	Receiving Water: Santa Rosa Sound		Marshall Faircloth
Test Beginning Date:	8/20/2002	Time: 1400	Chlorination Type:	Chlorinated	Class III Marine		
Test Ending Date:	8/22/2002	Time: 1355		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	-	7.9	24.6	-	25.2	7.6	-	7.3	179	190
Control B	0/20	5	5	5	-	-	7.9	-	-	25.3	-	-	7.3	-	190
Control C	0/20	5	5	5	-	-	7.9	-	-	25.4	-	-	6.7	-	190
Control D	0/20	5	5	5	-	-	8.0	-	-	25.4	-	-	6.8	-	190
100% A	20/0	5	5	5	7.3	-	8.5	24.7	-	25.1	7.8	-	7.2	882	1185
100% B	20/0	5	5	5	-	-	8.5	-	-	25.1	-	-	7.3	-	1175
100% C	20/0	5	5	5	-	-	8.5	-	-	25.1	-	-	7.3	-	1150
100% D	20/0	5	5	5	-	-	8.5	-	-	25.1	-	-	7.2	-	1115

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-27.5 °C.
Incubator #3 temperature range for the test period was 24.5-25.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 6 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	7.8	8.4	8.4	25.6	24.9	24.5	7.2	7.4	7.6	250	270
Control B	0/500	5	5	5	7.8	8.4	8.4	25.5	25.2	24.5	7.4	7.4	7.5	261	270
Control C	0/500	5	5	5	7.8	8.3	8.4	25.4	25.3	24.4	7.2	7.4	7.5	262	270
Control D	0/500	5	5	5	7.8	8.3	8.4	25.4	24.9	24.5	7.4	7.2	7.5	264	280
100% A	500/0	5	5	5	7.2	7.8	8.3	25.3	24.9	24.5	7.4	7.3	7.3	890	985
100% B	500/0	5	5	5	7.2	7.8	8.3	25.2	24.9	24.7	7.5	7.0	7.3	954	1000
100 % C	500/0	5	5	5	7.2	7.8	8.3	25.2	24.7	24.5	7.2	7.1	7.2	970	1035
100% D	500/0	5	5	5	7.2	7.8	8.3	25.2	24.9	24.5	7.3	7.2	7.3	970	1015

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-27.5°C.
Incubator #3 temperature range for the test period was 24.5-25.5°C.

LIMS	
Job number:	TLH-2002-08-20-01
sample number:	615587

Data Transcription Verification	
date:	10/11/2002
by:	Christa Pierini
	Joshua Ayres

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):	142	131
Control water (water flea):	80	81
100% Sample:	161	50

Table 2. Results of chemical analyses on the effluent from Navarre Beach WWTP sampled on August 19, 2002.

Metals

Aluminum	24	ug/L	
Cadmium	0.049	ug/L	I
Calcium	10.3	mg/L	
Copper	11.8	ug/L	J
Iron	216	ug/L	
Lead	0.14	ug/L	I
Magnesium	4.7	mg/L	
Zinc	17	ug/L	

Pesticides and Herbicides

None detected

Nutrients

Nitrates and Nitrites	3.9	mg N/L
Ortho-Phosphate	0.65	mg P/L
Total Phosphorous	0.73	mg P/L
Total Kjeldahl Nitrogen	0.67	mg N/L

Base, Neutral, & Acid Extractable Organics

None detected

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

The Bioassay of Navarre Beach WWTP effluent sampled on August 19, 2002, NPDES #FL0023981.

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

Transaction Code		NPDES NUMBER		YR/MO/DA		Insp Type	Inspector	Fac Type
1 N	2 5	3 F L 0 0 2 3 9 8 1 #	#	0 2 0 8 1 9	#	**B**	# **S**	# 1

Remarks

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The Priority Pollutants Analysis for Bioassay of Navarre Beach WWTP effluent sampled on August 19, 2002, NPDES #FL0023981.

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