

Bioassays of

Marsh Landing Wastewater Treatment Facility

Ponte Vedra, St. Johns County, Florida

NPDES #FL0044253

Sampled 10/16/00

May 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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NPDES #FL0044253

Biology Section
Bureau of Laboratories
May 2001

Introduction

Marsh Landing Wastewater Treatment Facility, 166 Marsh Cove Drive, Ponte Vedra, St Johns County, Florida, NPDES #FL0044253, tests performed on 17 to 19 October 2000.

This wastewater treatment facility has an average flow of 0.600 MGD and discharges intermittently into the Class III marine waters of the Intracoastal Waterway. Treatment of wastewater includes an influent lift station, a 0.145 MG flow-equalization basin, influent static screens, an aeration basin, secondary clarification, and a cloth-membrane filtration system (Aqua Disk Filtration $_{TM}$). The treated wastewater then flows sequentially into a 0.900 MG lined reject pond, a 4.1 MG unlined holding pond, and a 4.3 MG lined holding pond. The effluent is chlorinated for disinfection. The detention time in the holding ponds provide dechlorination prior to the surface water discharge.

A new 0.500 MGD plant was constructed and put into operation several weeks after the bioassay samples were collected. The facility now has a capacity of 0.800 MGD, and the facility is permitted to operate in either the extended or conventional mode of operation. The facility also discharges to reuse land application systems that consist of various golf course sites (facility summary provided by Kathleen 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 four 48-hour static acute definitive toxicity bioassays on a sample of effluent from this facility. The sample was a fresh water sample. Two tests were performed using the freshwater test species, the bannerfin shinner, *Cyprinella leedsi*, and the water flea, *Ceriodaphnia dubia*. At the request of the Northeast District, two additional tests were performed using the saltwater test species, the mysid shrimp, *Americamysis bahia*, and the inland silverside minnow, *Menidia beryllina*. The initial salinity of the effluent was less than one part per thousand (ppt). The salinity of an aliquot of the sample was adjusted to 20 ppt using Forty Fathoms® artificial sea salts for the saltwater species tests. The control water was natural seawater (NSW) diluted to 20 ppt for the saltwater tests. The salt control was FDEP well water salinity salted to 20 ppt using Forty Fathoms® artificial sea salts. The purpose for the salt control was to test for possible effects of adding artificial sea salts to the sample. No toxic effects were observed in any of the controls.

The sample was aerated for 15 minutes prior to test initiation to lower the initial dissolved oxygen of 9.0 mg/L to 8.0 mg/L. The sample did not show acute toxicity to any of the test species within 48 hours (Tables 1 and 2).

Total residual chlorine was detected at 0.08 mg/L in the sample. Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample, and several metals and the pesticide atrazine were identified (Table 3). The samples collected for pesticide and herbicide analysis exceeded the allowed holding time.

Conclusion

The sample of effluent collected from this facility on October 16, 2000, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Marsh Landing Wastewater Treatement Facility, 166 Marsh Cove Drive, Ponte Vedra, St. Johns County, Florida. NPDES# FL0044253 performed on 17 to 19, October 2000.

Facility:	**Marsh Landing WWTF**			**NPDES #**	**FL0044253**	Facility Type:	**Wastewater**
Location:	166 Marsh Cove Drive, Ponte Vedra			Contact/District:	P. O'Connor/NE District		**Treatment Facility**
County:	St Johns			Test type:	static acute screen		
Sample Collection Date:	10/16/00	Time:	1250	# tests:	2	Receiving Water:	Intracoastal Waterway
Test Beginning Date:	10/17/00	Time:	1300	Chlorination Type:	Chlorinated		
Test Ending Date:	10/19/00	Time:	1310		sample taken after dechlorination		**Page 1 of 1**

Total Residual Cl2	mg/L	Method
Field:	0.04	-
Lab:	0.08	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):	130	126
20% Dilute Mineral Water (cladocerans):	69	72
100% Sample:	129	264

Salinity[C]	(ppt)
Control Water:	<1
100% Sample:	<1

[C] Salinity based on conductivity and temperature measurements.

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

	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	8.5	-	8.0	23.9	-	24.3	8.2	-	7.8	160	195
Control B	0/20	5	5	5	-	-	8.2	-	-	24.2	-	-	7.8	-	170
Control C	0/20	5	5	5	-	-	8.3	-	-	24.1	-	-	7.8	-	170
Control D	0/20	5	5	5	-	-	8.2	-	-	24.2	-	-	7.8	-	175
100% A	20/0	5	5	5	8.5	-	8.7	24.6	-	24.1	8.1	-	8.2	1040	1170
100% B	20/0	5	5	5	-	-	8.7	-	-	24.1	-	-	8.4	-	1220
100% C	20/0	5	5	5	-	-	8.7	-	-	24.1	-	-	8.4	-	1225
100% D	20/0	5	5	5	-	-	8.7	-	-	24.2	-	-	8.4	-	1267

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-26.0°C.
Incubator #2 temperature range for the test period was 23.5-25.0°C.

Organism: *Cyprinella leedsi* Age: 13 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	8.0	8.3	8.5	24.7	26.0	25.1	7.8	7.1	7.6	255	270
Control B	0/500	5	5	5	8.0	8.4	8.5	24.8	24.7	24.6	7.8	7.4	7.5	255	275
Control C	0/500	5	5	5	8.0	8.4	8.4	24.8	24.9	24.5	7.8	7.4	7.5	255	265
Control D	0/500	5	5	5	8.0	8.4	8.5	24.8	25.3	24.8	7.8	7.4	7.4	255	270
100% A	500/0	5	5	5	8.5	8.4	8.4	24.9	26.1	24.6	8.0	7.2	7.6	1080	1165
100% B	500/0	5	5	5	8.5	8.4	8.4	24.9	25.0	24.7	8.0	7.2	7.5	1100	1140
100% C	500/0	5	5	5	8.6	8.4	8.4	24.9	24.8	24.5	8.0	7.3	7.5	1100	1160
100% D	500/0	5	5	5	8.6	8.4	8.4	24.9	25.3	24.6	8.0	7.2	7.6	1100	1145

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25 25.0-26.0°C
Incubator #3 temperature range for the test period was 24.0-25.0°C.

Table 2. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Marsh Landing Wastewater Treatement Facility, 166 Marsh Cove Drive, Ponte Vedra, St. Johns County, Florida, NPDES# FL0044253 performed on 17 to 19, October 2000.

Facility:	Marsh Landing WWTF			NPDES #	FL0044253	Facility Type:	Wastewater
Location:	166 Marsh Cove Drive, Ponte Vedra			Contact/District:	P. O'Connor/NE District		Treatment Facility
County:	St Johns			Test type:	static acute screen		
Sample Collection Date:	10/16/00	Time:	1250	# tests:	2	Receiving Water:	Intracoastal Waterway
Test Beginning Date:	10/17/00	Time:	1300	Chlorination Type:	Chlorinated		
Test Ending Date:	10/19/00	Time:	1310		sample taken after dechlorination		Page 1 of 1

Total Residual CL2	mg/L	Method
Field:	0.04	-
Lab:	0.08	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
NSW:	< 0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
NSW:	130	126
100% Sample:	129	264

Salinity[C]	(ppt)
NSW:	<1
100% Sample:	<1
Adjusted sample	20 ppt

[C] Salinity based on conductivity and temperature measurements.

Organism: *Americamysis bahia* Life stage: 3 days

	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	0/500	5	5	5	8.0	8.0	8.0	25.0	23.9	24.1	7.0	6.5	6.3	31.5	31.8
Control B	0/500	5	5	5	8.0	8.0	8.0	25.5	23.8	23.8	7.0	6.5	6.4	32.2	31.6
Control C	0/500	5	5	5	8.0	8.0	8.0	25.3	23.8	23.6	6.9	6.5	6.6	32.1	31.7
Control D	0/500	5	5	5	8.0	8.1	8.0	25.3	23.8	23.5	6.9	6.5	6.6	32.1	31.2
Salt Ctrl A	0/500	5	5	5	8.2	8.3	8.3	25.3	23.7	23.5	7.1	6.5	6.6	31.7	31.2
Salt Ctrl B	0/500	5	5	5	8.2	8.3	8.3	25.3	23.7	23.5	7.1	6.3	6.4	31.8	31.3
Salt Ctrl C	0/500	5	5	5	8.2	8.3	8.3	25.3	23.8	23.7	7.1	6.2	6.3	31.9	31.9
Salt Ctrl D	0/500	5	5	5	8.2	8.3	8.3	25.2	24.0	23.5	7.1	6.3	6.3	31.7	31.3
100% A	500/0	5	5	5	8.4	8.4	8.3	25.1	23.9	23.8	7.4	6.4	6.3	32.0	31.9
100% B	500/0	5	5	5	8.4	8.4	8.4	25.1	23.8	23.9	7.4	6.5	6.3	32.2	31.9
100% C	500/0	5	5	5	8.4	8.4	8.3	25.1	24.2	23.7	7.4	6.4	6.4	32.0	32.1
100% D	500/0	5	5	5	8.4	8.4	8.3	25.1	24.4	23.6	7.5	6.3	6.3	32.2	31.8

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 25.0-26.0°C.
Incubator #2 temperature range for the test period was 24.0-25.0°C.

Organism: *Menidia beryllina* Age: 11 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	8.0	8.0	8.1	25.2	24.4	24.1	6.9	6.4	6.6	31.8	31.2
Control B	0/500	5	5	5	8.0	8.1	8.1	25.2	24.5	23.9	6.9	6.4	6.7	32.0	32.1
Control C	0/500	5	5	5	8.0	8.1	8.1	25.2	24.2	23.8	6.8	6.6	6.7	32.1	31.9
Control D	0/500	5	5	5	8.0	8.1	8.1	25.1	24.3	23.6	6.9	6.5	6.7	32.1	31.3
Salt Ctrl A	0/500	5	5	5	8.2	8.3	8.3	25.2	24.1	23.6	7.1	6.5	6.8	31.9	32.5
Salt Ctrl B	0/500	5	5	5	8.2	8.3	8.3	25.2	24.4	23.7	7.1	6.4	6.6	31.9	31.3
Salt Ctrl C	0/500	5	5	5	8.2	8.3	8.3	25.1	24.4	23.6	7.1	6.4	6.6	32.0	32.4
Salt Ctrl D	0/500	5	5	5	8.2	8.3	8.3	25.1	24.0	23.7	7.1	6.5	6.6	32.1	32.3
100% A	500/0	5	5	5	8.5	8.4	8.4	25.2	24.2	23.7	7.3	6.6	6.8	32.1	31.6
100% B	500/0	5	5	5	8.5	8.4	8.5	25.1	24.2	23.7	7.4	6.6	6.9	32.2	32.2
100% C	500/0	5	5	5	8.5	8.5	8.4	25.0	24.0	23.7	7.4	7.1	6.9	32.0	32.3
100% D	500/0	5	5	5	8.5	8.4	8.4	24.9	23.8	23.6	7.4	6.7	6.8	32.0	32.0

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22 25.0-26.0°C
Incubator #3 temperature range for the test period was 24.0-25.0°C.

Table 3. Results of chemical analyses on the effluent from Marsh Landing Wastewater Treatment Plant sampled on October 16, 2000.

Metals

Cadmium	0.033	µg/L	I
Calcium	64.9	mg/L	A
Copper	1.5	µg/L	I
Iron	24	µg/L	I
Magnesium	30.9	mg/L	A
Zinc	29.9	µg/L	A

Pesticides and Herbicides

Atrazine	0.12	µg/L	IQ

Base, Neutral, & Acid Extractable Organics

None detected

[A] 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.
[Q] Sample held beyond the accepted holding time.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marsh Landing WWTP
County: St Johns
Contact / District: P. O'Connor / NE
NPDES Permit #: FL0044253
LIMS Sample #: 487484 LIMS Job #: TLH-2000-0017-36
sample log 10-12-00 MF
Test Type: (Screening) | Definitive
Static | Static Renewal | Flow-through
Test Number: 1 of 4

Sample Collection: Date 10/16/00 Time 1250
Test Beginning: Date 10/17/00 Time 1305
Test Ending: Date 10/19/00 Time 1315
Organism Batch #: 54 Diluent Batch #: #33
Organism Age: 24 hrs. SRT toxicant batch #: —
Test organism: C. dubia

Remarks: Sample DO. 9.0 mg/L @ 25°C aerated 15 min DO Reduced to 8.0 @ 25.1°C MF 10-16-00

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) (umhos/cm) 0 hr	UNCORRECTED Cond. (umhos/cm) 24 h	UNCORRECTED Cond. (umhos/cm) 48 h
CNTL.	A	5	5	5	8.5	—	8.0	23.9	—	24.3	8.2	—	7.8	160	—	195
	B	5	5	5	—	—	8.2	—	—	24.2	—	—	7.8	—	—	178
	C	5	5	5	—	—	8.3	—	—	24.1	—	—	7.8	—	—	170
	D	5	5	5	—	—	8.2	—	—	24.2	—	—	7.8	—	—	175
100%	A	5	5	5	8.5	—	8.7	24.6	—	24.1	8.1	—	8.2	1040	—	1170
	B	5	5	5	—	—	8.7	—	—	24.1	—	—	8.4	—	—	1220
	C	5	5	5	—	—	8.7	—	—	24.1	—	—	8.4	—	—	1225
	D	5	5	5	—	—	8.7	—	—	24.2	—	—	8.4	—	—	1267
measured by:		JA	SG	SG	SG	—	SG	SG	—	SG	SG	—	SG	SG	—	SG
recorded by:		SG	SG	SG	JA	—	JA	SG	—	JA	SG	—	JA	JA	—	JA

Investigators' Signatures
Shannon Gerard
Marshall Faudoa
Joshua Cyr

Temperature Range °C
Incubator # 2 23.5° – 25°C
Room B240 25-26°C

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NA	NA	—	—
Lab Total Residual Cl2 (mg/L):		<0.03	0.08	DR100	JA	SG
Alkalinity (mg/L as $CaCO_3$):		69	129	Hach	SG	SG
Hardness (mg/L as $CaCO_3$):		72	264	Hach	SG	SG
Total ammonia (mg/L as N):		<0.017	<0.017	Denver	MF	SG
Salinity:		0	~0	Ysi	MF	SG

A. H. Wolfe
reviewer

form updated 3/3/99

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marsh Landing WWTP
County: St Johns
Contact / District: P. O'Connor / NE
NPDES Permit #: FL00 44253
LIMS Sample #: 487484 LIMS Job #: TLH-2000-1077-36
sample log 10-20-00 MF
Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 2 of 4

Sample Collection: Date 10/16/00 Time 1250
Test Beginning: Date 10/17/00 Time 1300
Test Ending: Date 10/19/00 Time 1310
Organism Batch #: 81 Diluent Batch #: Well
Organism Age: 14 days SRT toxicant batch #: —
Test organism: C. leedsi

Remarks:
Sample aerated for 15 minutes to increase original DO of 9.0 mg/L at 25.7°C to 8.0 mg/L at 25.1°C
TDPH 10/16/00

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
CNTL A	C1	5	5	5	8.0	8.3	8.5	24.7	24.0	25.1	7.8	7.1	7.6	255	280	270
B	C2	5	5	5	8.0	8.4	8.5	24.8	24.7	24.6	7.8	7.4	7.5	255	265	275
C	C3	5	5	5	8.0	8.4	8.4	24.8	24.9	24.5	7.8	7.4	7.5	255	270	265
D	C4	5	5	5	8.0	8.4	8.5	24.8	25.3	24.8	7.8	7.4	7.4	255	265	270
100% A	C5	5	5	5	8.5	8.4	8.4	24.9	26.1	24.6	8.0	7.2	7.6	1080	1150	1165
B	C6	5	5	5	8.5	8.4	8.4	24.9	25.0	24.7	8.0	7.2	7.5	1100	1120	1140
C	C7	5	5	5	8.6	8.4	8.4	24.9	24.8	24.5	8.0	7.3	7.5	1100	1140	1160
D	C8	5	5	5	8.6	8.4	8.4	24.9	25.3	24.6	8.0	7.2	7.6	1100	1135	1145
measured by:		SG	JA	SG	SG	SG	SG	JA	SG	SG	SG	SG	SG	SG	SG	SG
recorded by:		JA	JA	SG	SA	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA

Investigators' Signatures
Marshall Faircloth
Shawna Eurach
John Lyons
Della Parker-Hons

Temperature Range °C
Incubator # 3 24.0°C - 25.0°C
Room B246 25.0 - 26.0°C

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			N/A	N/A	—	—
Lab Total Residual Cl2 (mg/L):	<0.03		0.09	DR100	JA	SG
Alkalinity (mg/L as $CaCO_3$):	130		129	Hach	SG	SG
Hardness (mg/L as $CaCO_3$):	126		264	Hach	SG	SG
Total ammonia (mg/L as N):	<0.017		<0.017	Denver	MF	SG
Salinity:	0		≈0	YSI	MF	SG

A H Wolfe
reviewer

form updated 3/3/99

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marsh Landing
County: St. Johns
Contact / District: P.O'Connor/NE
NPDES Permit #: FL00 44253
LIMS Sample #: 487484 LIMS Job #: TLH-2000-10-17-36
sample log 10-20 20

Sample Collection: Date 10/16/00 Time 1250
Test Beginning: Date 10/17/00 Time 1315
Test Ending: Date 10/19/00 Time 1310
Organism Batch #: 288 Diluent Batch #: NSLW
Organism Age: 3days SRT toxicant batch #: —
Test organism: A. bahia

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 3 of 4

Remarks: Sample aerated for 15 minutes in order to lower the original D.O. of 9.0mg/L at 25.7°C to a D.O. of 8.0mg/L at 25.1°C DPH 10/16/00

	Conc.	Chamber #	Number Live 0 hr	24 h	48 h	pH 0 hr	24 h	48 h	Temperature (°C) 0 hr	24 h	48 h	D.O. (mg/L) 0 hr	24 h	48 h	UNCORRECTED Cond (mmhos/cm) 0 hr	24 h	48 h
Diluted NSW	CNTL. A	A1	5	5	5	8.0	8.0	8.0	25.0	23.9	24.1	7.0	6.5	6.3	31.5	31.7	31.8
	B	A2	5	5	5	8.0	8.0	8.0	25.5	23.8	23.8	7.0	6.5	6.4	32.2	31.1	31.6
	C	A3	5	5	5	8.0	8.0	8.0	25.3	23.8	23.6	6.9	6.5	6.6	32.1	31.5	31.7
	D	A4	5	5	5	8.0	8.1	8.0	25.3	23.8	23.5	6.9	6.5	6.6	32.1	31.9	*32.1
Salted NSW	CNTL. A	A5	5	5	5	8.2	8.3	8.3	25.3	23.7	23.5	7.1	6.5	6.6	31.7	30.3	32.2
	B	A6	5	5	5	8.2	8.3	8.3	25.3	23.7	23.5	7.1	6.3	6.4	31.8	31.0	31.3
	C	A7	5	5	5	8.2	8.3	8.3	25.3	23.8	23.7	7.1	6.2	6.3	31.9	31.5	31.9
	D	A8	5	5	5	8.2	8.3	8.3	25.2	24.0	23.5	7.1	6.3	6.3	31.7	31.0	31.3
Salted Sample	100% A	A9	5	5	5	8.4	8.4	8.3	25.1	23.9	23.8	7.4	6.4	6.3	32.0	31.6	31.9
	B	A10	5	5	5	8.4	8.4	8.4	25.1	23.8	23.9	7.4	6.5	6.3	32.2	31.3	31.9
	C	A11	5	5	5	8.4	8.4	8.3	25.1	24.2	23.7	7.4	6.4	6.4	32.0	32.1	32.1
	D	A12	5	5	5	8.4	8.4	8.3	25.1	24.4	23.6	7.5	6.3	6.3	32.2	32.2	31.8
	measured by:		SG	JA	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG
	recorded by:		JA	JA	SG	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA

* 10/19/00 JA F.O.

Investigators' Signatures
Shannon Gerards
Marbell Sandoth
John Ayer
Della Parker-House
Ann Wolfe
reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 3 24.0-25.0°C
Room B246 23.5 MF Inquirit Chart 25.0°C-26.0°C

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field-Total Residual Cl2 (mg/L):			N/A	N/A	—	—
Lab Total Residual Cl2 (mg/L):	<0.03		0.08	DR100	JA	SG
Alkalinity (mg/L as $CaCO_3$):	120		129	Hach	SG	SG
Hardness (mg/L as $CaCO_3$):	N/A		264	Hach	SG	SG
Total ammonia (mg/L as N):	<0.017		<0.017	Denver	MF	SG
Salinity:	≈20		≈0	Ysi	MF	SG

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Marsh Landing
County: St. Johns
Contact / District: T. O'Connor / NE
NPDES Permit #: FL0044253
LIMS Sample #: 487484 **LIMS Job #:** TLH-2000-10-17-36
sample log 10-20-00

Sample Collection: Date 10/16/00 Time 1250
Test Beginning: Date 10/17/00 Time 1315
Test Ending: Date 10/19/00 Time 1315
Organism Batch #: 40 **Diluent Batch #:** NSW
Organism Age: 11 days SRT toxicant batch #: —
Test organism: M. bergylina

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 4 of 4

DPH Remarks: 10/16/00 Sample was aerated for 15 minutes in order to lower the original D.O. of 9.0 mg/L at 25.7°C to a D.O. of 8.0 mg/L at 25.1°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) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
	CNTL A	A13	5	5	5	8.0	8.0	8.1	25.2	24.4	24.1	6.9	6.4	6.6	31.5	31.3	31.2
	B	A14	5	5	5	8.0	8.1	8.1	25.2	24.5	23.9	6.9	6.4	6.7	32.0	32.0	32.1
20% Diluted NSW	C	A15	5	5	5	8.0	8.1	8.1	25.2	24.2	23.8	6.8	6.6	6.7	32.1	32.1	31.9
	D	A16	5	5	5	8.0	8.1	8.1	25.1	24.3	23.6	6.9	6.5	6.7	32.1	31.6	31.3
	CNTL A	A17	5	5	5	8.2	8.3	8.3	25.2	24.1	23.6	7.1	6.5	6.8	31.9	31.8	32.5
20% Salted NSW	B	A18	5	5	5	8.2	8.3	8.3	25.2	24.4	23.7	7.1	6.4	6.6	31.9	31.5	31.3
	C	A19	5	5	5	8.2	8.3	8.3	25.1	24.4	23.6	7.1	6.4	6.6	32.0	32.5	32.4
	D	A20	5	5	5	8.2	8.3	8.3	25.1	24.0	23.7	7.1	6.5	6.6	32.1	31.8	32.3
	100% A	A21	5	5	5	8.5	8.4	8.4	25.2	24.2	23.7	7.3	6.6	6.8	32.1	31.5	31.6
	B	A22	5	5	5	8.5	8.4	8.5	25.1	24.2	23.7	7.4	6.6	6.9	32.2	32.1	32.2
	C	A23	5	5	5	8.5	8.5	8.4	25.0	24.0	23.7	7.4	7.1	6.9	32.0	32.4	32.3
20% Salted Sample	D	A24	5	5	5	8.5	8.4	8.4	24.9	23.8	23.6	7.4	6.7	6.8	32.0	32.4	32.6
	measured by:		JA	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	JA	SG	SG
	recorded by:		SG	SG	SG	JA	SA	JA	JA	JA	JA	JA	JA	JA	JA	JA	JA

Investigators' Signatures
Marshall Faircloth
Shannon Edwards
John Lopez
Julia Parker-Hamm

A H Wolfe
reviewer

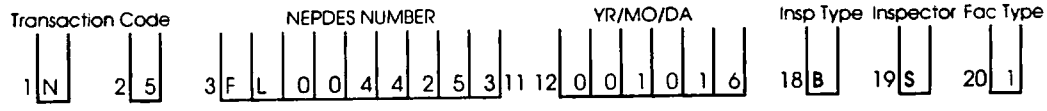
form updated 3/3/99

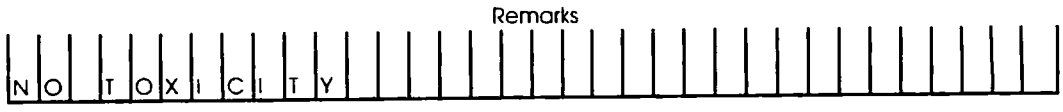
Temperature Range °C
Incubator # 3 24.0-25.0°C
Room B246 25.0°C-26.0°C

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
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Hardness (mg/L as $CaCO_3$):	N/A		264	Hach	SG	SG
Total ammonia (mg/L as N):	<0.017		<0.017	Deriver	MF	SG
Salinity:	≈20		≈0	Vsi	MF	SG

The Bioassay of Marsh Landing WWTF effluent sampled on October 16, 2000, NPDES #FL0044253.

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

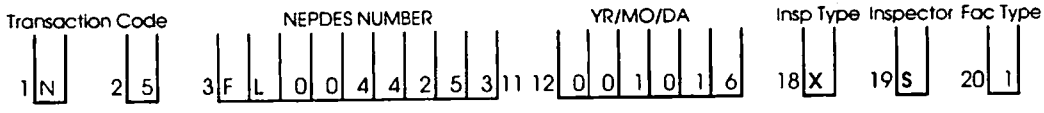


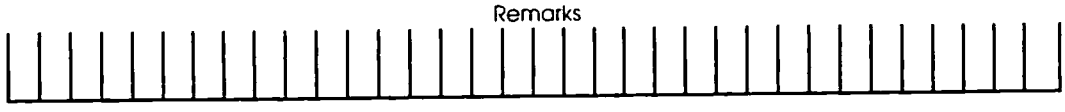


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The Priority Pollutants Analysis for Bioassay of Marsh Landing WWTF effluent sampled on October 16, 2000, NPDES #FL0044253.

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





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