

Bioassays of

Port of the Islands

Everglades City, Collier County, Florida

NPDES #FL0141704

Sampled 6/17/02

November 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Port of the Islands

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NPDES #FL0141704

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Bureau of Laboratories
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Introduction

Port of the Islands, 1200 Union Road, Everglades City, Collier County, Florida, NPDES #FL0141704, test performed on 18 to 20 June 2002.

This domestic wastewater treatment plant has a design flow of 0.200 MGD and an annual average daily flow of 0.104 MGD (measured from October 2001-October 2002). Treatment of wastewater consists of the Bardenpho process, chlorination for disinfection, and dechlorination with sulfur dioxide. Previously, this facility discharged to a 35-acre wetland site, however treated wastewater is currently discharged to groundwater and a berm is being constructed to block wastewater from entering the wetland site. A new permit is being issued for this facility, which changes its designation from a surface water discharger to a ground water discharger (facility information provided by Thomas Jackson, FDEP, Fort Myers).

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 freshwater test species used were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. Due to the presence of 0.28 mg/L residual chlorine in the sample, an aliquot of sample dechlorinated with sodium thiosulfate was tested as well as a control treated with sodium thiosulfate (Table 1). The only observed mortality was in one of the *Cyprinella leedsi* dechlorinated sample replicates. We suspect that the observed mortality was due to contamination of the test vessel from an unknown source rather than from any constituent of the sample.

Total ammonia was not detected in the bioassay sample, however 0.0275 mg/L total ammonia was detected in the sample preserved for chemistry. Additional samples of effluent were collected from this facility and were analyzed for nutrients, metals, organic compounds, herbicides, and pesticides. Several metals and nutrients were detected (Table 2).

Conclusion

The sample of effluent collected from this facility on June 17, 2002, was not acutely toxic to either test species within 48 hours of test initiation. Test vessel contamination is suspected to be the source of the only observed mortality.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from Port of the Islands, 1200 Union Road, Everglades City, Collier County, Florida, performed from 18 to 20 June 2002.

Facility:	**Port of the Islands**		**NPDES:**	**FL0141704**	Facility Type:	**Wastewater Treatment**	**Analysts:**	Jacquelyn Brynda
Location:	1200 Union Road		Contact/District:	Jackson/South				Joshua Ayres
County:	Collier		Test type:	Static acute screen				Gary Hardie
Sample Collection Date:	6/17/2002	Time: 1100	# tests:	2	Receiving Water:	35 acre wetland		Marshall Faircloth
Test Beginning Date:	6/18/2002	Time: 1415	Chlorination Type:	dechlorinated				
Test Ending Date:	6/20/2002	Time: 1345				**Page 1 of 2**	**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	8.0	-	8.3	24.6	-	23.3	7.9	-	7.4	155	210
Control B	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.3	-	200
Control C	0/20	5	5	5	-	-	8.3	-	-	23.9	-	-	7.3	-	195
Control D	0/20	5	5	5	-	-	8.4	-	-	24.1	-	-	7.2	-	180
Dechlor Cntl A	0/20	5	5	5	8.2	-	8.3	24.6	-	23.9	7.9	-	7.3	165	195
Dechlor Cntl B	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.3	-	195
Dechlor Cntl C	0/20	5	5	5	-	-	8.3	-	-	23.9	-	-	7.3	-	190
Dechlor Cntl D	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.3	-	190
100% Dechlor A	20/0	5	5	5	8.0	-	8.5	24.9	-	23.7	8.0	-	7.4	890	970
100% Dechlor B	20/0	5	5	5	-	-	8.5	-	-	23.8	-	-	7.4	-	970
100% Dechlor C	20/0	5	5	5	-	-	8.5	-	-	23.9	-	-	7.3	-	975
100% Dechlor D	20/0	5	5	5	-	-	8.5	-	-	24.0	-	-	7.3	-	980
100% A	20/0	5	5	5	8.0	-	8.5	24.6	-	23.8	7.8	-	7.4	905	1005
100% B	20/0	5	5	5	-	-	8.5	-	-	23.9	-	-	7.4	-	985
100% C	20/0	5	5	5	-	-	8.5	-	-	23.8	-	-	7.4	-	970
100% D	20/0	5	5	5	-	-	8.5	-	-	23.8	-	-	7.4	-	950

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was22.0-26.0°C.
Incubator #3 temperature range for the test period was 24.0-25.5°C.

LIMS	
Job number:	TLH-2002-06-18-07-01
sample number:	599277

Data Transcription Verification	
date:	10/31/2002
by:	Joshua Ayres
	James Daniels

Total Residual CL2	mg/L	Method
Field:	<0.2	-
Lab:	0.28	Hach
Dechlorinated sample:	0.04	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water (water flea):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water (water flea):	79	123
100% Sample:	83	233

Continued

Table 1. Concluded

Data recorded during the 48-hour acute screening bioassays of a sample of effluent from Port of the Islands, 1200 Union Road, Collier County, Florida, performed from 18 to 20 June 2002.

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Sample Collection Date:	6/17/2002	Time: 1100	# tests:	2	Receiving Water: 35 acre wetland		Marshall Faircloth
Test Beginning Date:	6/18/2002	Time: 1415	Chlorination Type:	dechlorinated			
Test Ending Date:	6/20/2002	Time: 1345			**Page 2 of 2**	**Reviewer:**	David Whiting

Organism: ***Cyprinella leedsi*** Life stage: 11 days

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature[A] 0 hour	24 hour	48 hour	Dissolved Oxygen 0 hour	24 hour	48 hour	Conductivity Uncorrected µmhos/cm 0 hour	48 hour
Control A	0/500	5	5	5	7.8	8.3	8.5	24.7	25.5	23.8	8.2	7.1	7.1	260	275
Control B	0/500	5	5	5	7.9	8.3	8.4	24.7	24.8	23.7	7.8	7.2	7.1	260	280
Control C	0/500	5	5	5	7.9	8.3	8.4	24.9	24.7	24.0	7.9	7.4	7.1	260	280
Control D	0/500	5	5	5	7.9	8.3	8.5	24.8	26.0	26.1	7.8	7.4	7.1	260	300
Dechlor Cntl A	0/500	5	5	5	8.0	8.4	8.5	24.7	26.6	24.6	7.9	7.1	7.0	260	280
Dechlor Cntl B	0/500	5	5	5	8.0	8.3	8.4	24.7	24.8	25.6	7.8	7.0	7.0	260	305
Dechlor Cntl C	0/500	5	5	5	8.0	8.4	8.5	24.7	25.6	24.1	7.9	7.2	7.1	260	280
Dechlor Cntl D	0/500	5	5	5	8.0	8.4	8.5	24.7	24.6	23.9	7.8	7.2	7.2	260	270
100% Dechlor A	500/0	5	5	5	7.9	8.2	8.3	24.5	24.7	23.9	7.9	7.3	7.2	805	930
100% Dechlor B	500/0	5	5	5	7.9	8.2	8.3	24.5	24.7	23.7	7.8	7.3	7.2	880	960
100% Dechlor C	500/0	5	4	0	7.9	8.2	8.3	24.4	25.3	25.2	7.9	7.2	6.9	885	980
100% Dechlor D	500/0	5	5	5	7.9	8.2	8.3	24.4	25.4	25.7	7.8	7.1	6.7	890	1010
100% A	500/0	5	5	5	7.9	8.2	8.3	24.6	25.0	25.6	7.9	7.2	6.8	915	980
100% B	500/0	5	5	5	7.9	8.2	8.3	24.6	24.7	24.0	7.7	7.3	6.8	915	955
100% C	500/0	5	5	5	7.9	8.2	8.3	24.5	25.4	25.6	7.8	7.2	6.9	915	1015
100% D	500/0	5	5	5	7.9	8.2	8.3	24.5	25.9	23.3	7.7	7.1	6.9	910	985

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 22.0-26.0 °C.
Incubator #3 temperature range for the test period was 24.0-25.5°C.

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

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water	135	136
100% Sample:	123	233

Table 2. Results of chemical analyses on the effluent from Port of the Islands sampled on June 17, 2002.

Metals

Aluminum	131	ug/L	A
Arsenic	0.79	ug/L	I
Cadmium	0.0685	ug/L	AI
Calcium	85.15	mg/L	A
Copper	8.2	ug/L	A
Iron	21	ug/L	I
Magnesium	10.75	mg/L	A
Nickel	2.7	ug/L	A
Selenium	1.4	ug/L	I
Silver	0.028	ug/L	AI
Zinc	15.5	ug/L	A

Pesticides and Herbicides

None detected

Nutrients

Ammonia	0.0275	mg N/L	A
Nitrates and Nitrites	2.3	mg N/L	
Total Phosphorous	0.785	mg P/L	A
Total Kjeldahl Nitrogen	0.68	mg N/L	A
Ortho-Phosphate	0.715	mg P/L	A

Base, Neutral, & Acid Extractable Organics

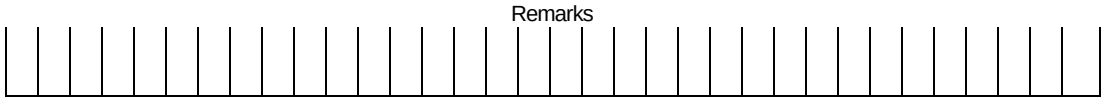
None detected

[A] The reported value is an average of two or more values.
[I] The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

The Bioassay of Port of the Islands effluent sampled on June 17, 2002, NPDES #FL0141704.

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





The Priority Pollutants Analysis for Bioassay of Port of the Islands effluent sampled on June 17, 2002, NPDES #FL0141704.

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