

Bioassays of

Park Manor Estates Wastewater Treatment Facility

Orlando, Orange County, Florida

NPDES #FL002891-01

Sampled 6/17/02

October 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Park Manor Estates Wastewater Treatment Facility, 1527 Park Manor Drive, Orlando, Orange County, Florida, NPDES #FL002891-01, tests performed on 18 to 20 June 2002.

This domestic wastewater treatment plant has a design flow of 0.50 MGD and an annual average flow of 0.333MGD (Jan. 2002). Treatment of the wastewater includes influent screening, flow equalization, aeration, clarification, chemical feed, filtration, chlorination for disinfection, dechlorination with sulfur dioxide, and aerobic stabilization of residuals. After treatment, the effluent is discharged into the Class III freshwaters of the Econlockhatchee River (facility information provided by Phil Kane, FDEP, Orlando).

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 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*. Acute toxicity was not observed for either test species exposed to the 100% sample for 48 hours (Table 1).

Neither ammonia nor total residual chlorine was detected in the bioassay sample in the laboratory; however, total residual chlorine was detected in the field during sampling at a concentration of 0.02 mg/L, and total ammonia was detected in the sample collected and preserved for chemical analysis at a concentration of 0.046 mg/L. Additional samples of effluent were collected from this facility and analyzed for herbicides, nutrients, metals, organic compounds, and pesticides. Several metals, nutrients, and one pesticide 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 during the 48-hour bioassay test.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Park Manor Estates WWTF, 1527 Park Manor Drive, Orlando, Orange County, Florida, NPDES# FL002891-01, performed from 18 to 20 June 2002.

Facility:	**Park Manor Estates WWTF**		**NPDES #**	**FL002891-01**	Facility Type: **WWTF**	**Analysts:**	Jacquelyn Brynda
Location:	1527 Park Manor Drive		Contact/District:	Kane/Cental			Joshua Ayres
County:	Orange		Test type:	static acute screen			Gary Hardie
Sample Collection Date:	6/17/2002	Time: 0855	# tests:	2	Receiving Water: Little Econlockhatchee River		Marshall Faircloth
Test Beginning Date:	6/18/2002	Time: 1415	Chlorination Type:	Chlorinated	Class III Freshwater		
Test Ending Date:	6/20/2002	Time: 1345		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	8.0	-	8.4	24.7	-	23.4	8.0	-	7.6	160	210
Control B	0/20	5	5	4	-	-	8.4	-	-	23.5	-	-	7.5	-	220
Control C	0/20	5	5	5	-	-	8.4	-	-	23.6	-	-	7.5	-	215
Control D	0/20	5	5	5	-	-	8.4	-	-	23.6	-	-	7.5	-	210
100% A	20/0	5	5	5	7.4	-	8.3	24.7	-	23.6	7.7	-	7.5	555	640
100% B	20/0	5	5	5	-	-	8.3	-	-	23.7	-	-	7.5	-	655
100% C	20/0	5	5	5	-	-	8.3	-	-	23.6	-	-	7.5	-	690
100% D	20/0	5	5	5	-	-	8.3	-	-	23.5	-	-	7.5	-	690

[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.

Organism: ***Cyprinella leedsi*** Life stage: 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	7.8	8.3	8.5	24.4	24.8	23.6	8.1	7.4	7.2	245	290
Control B	0/500	5	5	5	7.8	8.3	8.5	24.4	24.6	26.7	7.9	7.4	6.9	250	300
Control C	0/500	5	5	5	7.9	8.3	8.5	24.5	25.3	24.7	7.9	7.3	7.1	255	295
Control D	0/500	5	5	5	7.9	8.3	8.5	24.5	24.7	23.6	7.8	7.3	7.2	255	285
100% A	500/0	5	5	5	7.4	8.0	8.1	24.4	25.9	24.2	7.9	7.1	7.1	550	675
100% B	500/0	5	5	5	7.4	8.0	8.1	24.3	25.4	23.5	7.4	7.0	7.1	595	650
100 % C	500/0	5	5	5	7.4	8.0	8.1	24.4	25.1	24.8	7.5	7.2	6.9	605	670
100% D	500/0	5	5	5	7.4	8.0	8.1	24.4	24.7	23.6	7.3	7.2	7.0	615	660

[B] 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.

LIMS	
Job number:	TLH-2002-06-18-13-01
sample number:	599285

Data Transcription Verification	
date:	9/23/2002
by:	Joshua Ayres
	James Daniels

Total Residual CL2	mg/L	Method
Field:	0.02	-
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):	135	136
Control water (water flea):	79	83
100% Sample:	95	119

Table 2. Results of chemical analyses on the effluent from Park Manor Estates WWTF sampled on June 17, 2002.

Metals

Aluminum	188	ug/L	
Arsenic	1.3	ug/L	I
Cadmium	0.098	ug/L	I
Calcium	37.6	mg/L	
Copper	5.1	ug/L	A
Iron	27	ug/L	I
Lead	0.54	ug/L	I
Magnesium	7.7	mg/L	
Nickel	3.1	ug/L	A

Pesticides and Herbicides

Fonofos	0.2	ug/L	I

Nutrients

Ammonia as Nitrogen	0.041	mg N/L	A
Total Kjeldahl Nitrogen	0.86	mg N/L	
Nitrates and Nitrites	23	mg N/L	
Ortho-phosphate	0.045	mg P/L	
Total Phosphorus	0.086	mg P/L	

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 Park Manor Estates WWTF effluent sampled on June 17, 2002, NPDES #FL002891.

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



Remarks



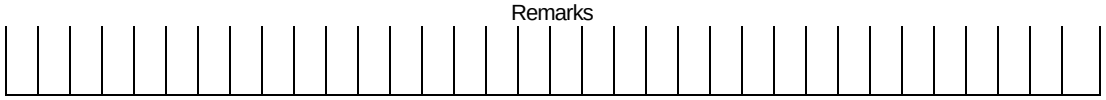
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The Priority Pollutants Analysis for Bioassay of Park Manor Estates WWTF effluent sampled on June 17, 2002, NPDES #FL002891.

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



Remarks



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