

Bioassays of

USN NAS Jacksonville
Wastewater Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0000957

Sampled 9/10/01

December 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Introduction

USN NAS Jacksonville Wastewater Treatment Plant, Highway 17, Jacksonville, Duval County, Florida, NPDES #FL0000957, tests performed on 11 to 13 September 2001.

This wastewater treatment plant has a design flow of 3.00 MGD and an average flow of 0.88 MGD. The wastewater treatment process includes bar screening, grit removal, primary and secondary clarification, aeration, tertiary filtration, chlorination, and dechlorination by sulfur dioxide addition. The residuals are aerobically digested, gravity thickened, and dried on sludge drying beds. The wastewater is discharged into the Class III fresh waters of the St Johns River (facility summary provided by Brian Kelsay, 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 two 48-hour static acute screening toxicity bioassays on a sample of effluent collected 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 acute toxicity to either test species within 48 hours (Table 1).

Total residual chlorine and total ammonia were not detected in the sample in the laboratory. Further chemical analyses were performed on the sample, and several metals were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on September 10, 2001, did not show acute toxicity to either test species within 48 hours.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the USN NAS Jacksonville Wastewater Treatment Plant, Highway 17, Jacksonville, Duval County, Florida, NPDES# FL0000957 performed on 11 to 13 September 2001.

Facility:	**USN NAS Jacksonville WWTP**		**NPDES #**	**FL0000957**	Facility Type:	**Wastewater**	**Analysts:** Della Parker-Hanson
Location:	Highway 17		Contact/District:	J. Lippincott/Northeast		**Treatment Plant**	Marshall Faircloth
County:	Duval		Test type:	static acute screen			Joshua Ayres
Sample Collection Date:	9/10/01	Time: 1235	# tests:	2	Receiving Water:	St. Johns River	
Test Beginning Date:	9/11/01	Time: 1200	Chlorination Type:	Chlorinated			**Reviewer:** David Whiting
Test Ending Date:	9/13/01	Time: 1420		sample collected after dechlorination		**Page 1 of 1**	

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	8.4	-	8.4	24.8	-	25.1	7.9	-	7.7	190	210
Control B	0/20	5	5	5	-	-	8.4	-	-	25.1	-	-	7.6	-	210
Control C	0/20	5	5	5	-	-	8.4	-	-	25.1	-	-	7.6	-	210
Control D	0/20	5	5	5	-	-	8.4	-	-	25.1	-	-	7.6		210
100% A	20/0	5	5	5	7.2	-	8.3	25.0	-	25.2	7.7	-	7.7	735	810
100% B	20/0	5	5	5	-	-	8.3	-	-	25.3	-	-	7.7	-	840
100% C	20/0	5	5	5	-	-	8.3	-	-	25.3	-	-	7.7	-	875
100% D	20/0	5	5	5	-	-	8.3	-	-	25.3	-	-	7.7	-	885

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.0-26.0°C.
Incubator #2 temperature range for the test period was 25.5-27.0°C.

Organism: ***Cyprinella leedsi*** Life stage: 10 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	8.5	8.5	8.5	24.8	24.7	24.1	7.9	7.7	7.3	250	260
Control B	0/500	5	5	5	8.5	8.5	8.5	24.9	24.6	25.0	8.2	7.7	7.2	240	260
Control C	0/500	5	5	5	8.5	8.5	8.5	24.9	24.6	24.1	8.2	7.7	7.5	240	280
Control D	0/500	5	5	5	8.5	8.5	8.5	24.7	24.4	24.2	8.2	7.7	7.6	240	285
100% A	500/0	5	5	5	7.2	8.0	8.1	24.8	24.4	24.8	7.9	7.7	7.3	745	800
100% B	500/0	5	5	5	7.2	8.0	8.1	24.7	24.1	24.4	7.8	7.5	7.2	745	840
100% C	500/0	5	5	5	7.2	8.0	8.1	24.4	24.6	24.2	7.7	7.5	7.5	745	820
100% D	500/0	5	4	4	7.2	8.0	8.1	24.4	24.5	23.8	7.7	7.5	7.5	750	845

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.0-26.0°C.
Incubator #3 temperature range for the test period was 24.0-25.5°C.

Data Transcription Verification	
date:	11/9/01
by:	Joshua Ayres
	Della Parker-Hanson

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
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):	138	135
20% Dilute Mineral Water (cladocerans):	79	91
100% Sample:	77	252

Table 2. Results of chemical analyses on the effluent from USN NAS Jacksonville Wastewater Treatment Plant sampled on September 10, 2001.

Metals

Cadmium	0.38	µg/L	
Calcium	58.7	mg/L	
Copper	3.63	µg/L	
Iron	333	µg/L	
Magnesium	23.6	mg/L	
Nickel	4.3	µg/L	[I]
Zinc	5	µg/L	[I]

Pesticides and Herbicides

None detected

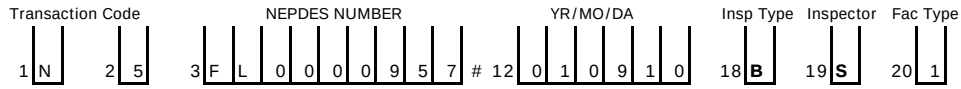
Base, Neutral, & Acid Extractable Organics

None detected

[I] Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

The Bioassay of USN NAS Jacksonville Wastewater Treatment Plant effluent sampled on September 10, 2001, NPDES #FL0000957.

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

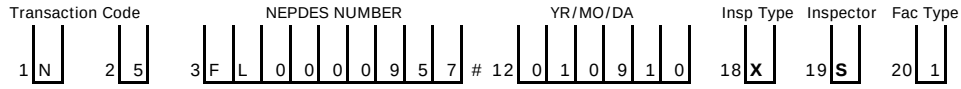


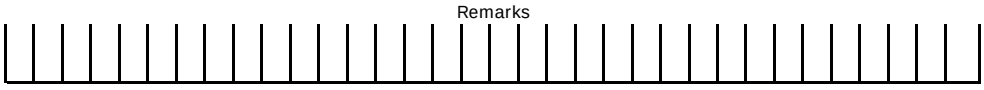


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The Priority Pollutants Analysis for Bioassay of USN NAS Jacksonville Wastewater Treatment Plant effluent sampled on September 10, 2001, NPDES #FL0000957.

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