

Bioassays of

Jacksonville International Airport
Wastewater Treatment Facility

Jacksonville, Duval County, Florida

NPDES #FL0023221

Sampled 5/22/95

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February 1996

Biology Section
Division of Administrative and Technical Services
Comprehensive Quality Assurance Plan #870346G

Bioassays of

Jacksonville International Airport Wastewater Treatment Facility

Jacksonville, Duval County, Florida

NPDES #FL0023221

Biology Section
Bureau of Laboratories
February 1996

Introduction

Jacksonville International Airport WWF, Jacksonville, Duval County, Florida, NPDES #FL0023221, tests performed on 23 to 25 May, 1995.

This wastewater treatment facility is located at 2111 Cole Flyer Road in Jacksonville. The facility has a design flow of 0.5 MGD and an average flow of 0.110 MGD (March, 1995, MOR). The wastewater treatment plant consists of two 0.250 MGD contact stabilization wastewater facilities which operate in parallel. Each wastewater facility provides separate contact stabilization, reaeration, clarification, chlorination, and sulfur dioxide dechlorination. Effluent discharges to a common filtration system, which discharges into a polishing pond. Discharge from the polishing pond is to an unnamed tributary to Cedar Creek (facility summary provided by Ha Nguyen, 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 combined effluent from this facility. Two additional 48-hour screening bioassays were performed on aliquots of the sample that were pH-adjusted in the laboratory with 0.1N sodium hydroxide. The pH-adjusted tests were conducted because the initial sample pH (4.6 s.u.) was less than the recommended pH range for the referenced test protocol. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*.

The non-pH adjusted test results showed the sample to be acutely toxic to the *Ceriodaphnia dubia,* producing 100% mortality in 24 hours (Table 1). The non-pH adjusted test did not show toxicity to the *Cyprinella leedsi*. The pH-adjusted test results did not show any significant toxicity. There was 10% mortality in the *Ceriodaphnia dubia* test in both the control and 100% sample. There was no mortality in the pH-adjusted *Cyprinella leedsi* test (Table 1 cont.).

Total residual chlorine of the sample was 0.04 mg/L in the field, and less than 0.03 mg/L in the laboratory. Total ammonia was not detected. 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 May 22, 1995, showed toxicity in the non-pH adjusted sample, but did not show significant toxicity in the aliquot of sample which was pH-adjusted in the laboratory. We attribute the toxicity to the low pH (4.6) of the sample.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Jacksonville International Airport WWF, Jacksonville, Duval County, Florida, NPDES# FL0023221, performed on 23 to 25 May,1995.

Non-pH adjusted test

Facility:	**Jacksonville International Airport WWTP**	**NPDES #**	**FL0023221**	Facility Type:	**Wastewater**
Location:	2111 Cole Flyer Road, Jacksonville	Contact/District:	T. Mckelvey/Northeast		**Facility**
County:	Duval	Test type:	static acute screen		
Sample Collection Date:	**5/22/95** Time: 1445	# tests:	2	Receiving Water:	Unnamed tributary to
Test Beginning Date:	5/23/95 Time: 1430	Chlorination Type:	**Chlorinated**		Cedar Creek
Test Ending Date:	5/25/95 Time: 1500			**Page 1 of 2**	

Total Residual CL2	mg/L	Method
Field:	0.04	-
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	< 0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	120
20% Dilute Mineral Water (cladocerans):	75	80
100% Sample:	5	225

Salinity	(ppt)
Control Water:	0
100% Sample:	0

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

* Test terminated at 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	24 hour
Control A	0/20	5	5	-	8.1	8.0	-	25.6	24.2	-	7.8	8.1	-	180	180
Control B	0/20	5	5	-	-	8.1	-	-	24.1	-	-	8.1	-	-	175
Control C	0/20	5	5	-	-	8.1	-	-	24.0	-	-	8.1	-	-	175
Control D	0/20	5	5	-	-	8.1	-	-	24.1	-	-	8.1	-	-	180
100% A	20/0	5	0	-	4.8	5.1	-	25.7	24.1	-	7.8	8.1	-	895	880
100% B	20/0	5	0	-	-	5.1	-	-	24.0	-	-	8.1	-	-	925
100% C	20/0	5	0	-	-	5.1	-	-	24.0	-	-	8.1	-	-	920
100% D	20/0	5	0	-	-	5.1	-	-	24.1	-	-	8.1	-	-	925

* Test terminated at 24 hours.

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 22.7-24.3°C.

Organism: ***Cyprinella leedsi*** 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	24 hour
Control A	0/500	5	5	5	7.9	8.2	8.2	24.2	23.9	23.6	8.2	7.7	8.2	250	255
Control B	0/500	5	5	5	7.9	8.2	8.2	-	-	23.4	8.2	7.8	8.2	250	245
Control C	0/500	5	5	5	7.9	8.2	8.2	-	-	23.3	8.2	7.8	8.2	245	250
Control D	0/500	5	5	5	7.9	8.2	8.2	-	-	23.2	8.2	7.9	8.3	250	250
100% A	500/0	5	5	5	4.7	4.9	4.8	25.2	23.8	23.6	8.1	7.9	8.2	920	910
100% B	500/0	5	5	5	4.7	5.0	4.8	-	-	23.5	8.1	7.9	8.2	925	905
100% C	500/0	5	5	5	4.6	4.9	4.8	-	-	23.4	8.1	7.8	8.1	925	900
100% D	500/0	5	5	5	4.6	4.9	4.8	-	-	23.3	8.1	7.8	8.2	925	900

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 23.5-24.2°C.

Table 1. Continued. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Jacksonville International Airport WWF, Jacksonville, Duval County, Florida, NPDES# FL0023221, performed on 23 to 25 May,1995.

pH-adjusted test

Facility:	**Jacksonville International Airport WWF**	**NPDES #**	**FL0023221**	Facility Type:	**Wastewater**
Location:	2111 Cole Flyer Road, Jacksonville	Contact/District:	T. McKelvey/Southeast		**Facility**
County:	Duval	Test type:	static acute screen		
Sample Collection Date:	**5/22/95** Time: 1445	# tests:	2	Receiving Water:	Unnamed tributary to
Test Beginning Date:	5/23/95 Time: 1430	Chlorination Type:	**Chlorinated**		Cedar Creek
Test Ending Date:	5/25/95 Time: 1500			**Page 2 of 2**	

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

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	0/20	5	5	5	8.1	-	8.0	25.6	-	24.4	7.8	-	8.0	185	190
Control B	0/20	5	5	5	-	-	8.1	-	-	24.4	-	-	8.0	-	185
Control C	0/20	5	5	3	-	-	8.1	-	-	24.4	-	-	8.0	-	185
Control D	0/20	5	5	5	-	-	8.1	-	-	24.4	-	-	8.0	-	190
100% A	20/0	5	5	4	6.2	-	6.1	25.8	-	24.3	7.7	-	8.1	905	945
100% B	20/0	5	5	5	-	-	6.1	-	-	24.3	-	-	8.0	-	950
100% C	20/0	5	5	5	-	-	6.1	-	-	24.3	-	-	8.0	-	950
100% D	20/0	5	5	4	-	-	6.1	-	-	24.4	-	-	8.1	-	1000

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 22.7-24.3°C.

Organism: ***Cyprinella leedsi*** Age: 11 days

Concentrations	Sample/Diluent Volume(mL)	SURVIVAL # Alive 0 hr	24 hr	48 hr	pH 0 hour	24 hour	48 hour	Temperature[B] 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	7.7	8.2	8.3	25.6	23.8	23.6	8.0	7.8	8.2	255	250
Control B	0/500	5	5	5	7.7	8.2	8.3	-	-	23.5	8.0	7.8	8.2	255	245
Control C	0/500	5	5	5	7.7	8.2	8.3	-	-	23.5	8.0	7.9	8.1	255	245
Control D	0/500	5	5	5	7.7	8.2	8.3	-	-	23.5	8.0	7.9	8.2	255	250
100% A	500/0	5	5	5	6.1	6.0	6.0	25.5	23.7	23.5	8.0	7.3	8.1	945	925
100% B	500/0	5	5	5	6.1	6.0	6.0	-	-	23.4	8.0	7.3	8.0	945	905
100% C	500/0	5	5	5	6.1	6.1	6.0	-	-	23.3	8.0	7.3	7.9	945	915
100% D	500/0	5	5	5	6.1	6.1	6.0	-	-	23.2	8.0	7.4	8.0	940	915

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 23.5-24.2°C.

Total Residual CL2	mg/L	Method
Field:	0.04	-
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	< 0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	120
20% Dilute Mineral Water (cladocerans):	75	80
100% Sample:	5	225

Salinity	(ppt)
Control Water:	0
100% Sample:	0

Table 2. Results of chemical analyses on the effluent from the Jacksonville International Airport Wastewater Facility sampled on May 22, 1995.

Metals

Calcium	55.3	mg/L[A]
Cadmium	0.5	µg/L[I]
Copper	38	µg/L[A]
Iron	53	µg/L[A]
Magnesium	22.0	mg/L[A]
Nickel	4	µg/L[I]
Silver	0.07	µg/L[I]
Zinc	72	µg/ L[A]

Pesticides and Herbicides

none detected

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.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Jacksonville International Airport
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL00
LIMS Sample #: 106802 **LIMS Job #:** 95-May 23 15
sample log 5-30-95

Sample Collection: Date 5/22/95 Time 1445
Test Beginning: Date 5/23/95 Time 1430
Test Ending: Date 5/24/95 Time 1330
Organism Batch #: 27 **Diluent Batch #:** 22
Organism Age: < 24 hours
Test Organism: *Ceriodaphnia dubia*

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through
Test Number: 1 of 4
Remarks: Test Terminated at 24 hrs

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	24.1 @ 24.0	8.2 @ 24.0 °C	100.4 @ 100.0
	4.0 @ 4.0			99.2 @ 100.1 @ 23.9 °C
24 hr	7.0 @ 7.0	24.5 @ 24.4	8.3 @ 24.4 °C	100.0 @ 100.0
	4.0 @ 4.0			100.0 @ 100.1 @ 24.0 °C
48 hr	7.0 @ 7.0	24.2 @ 24.2	8.3 @ 24.6 °C	104 @ 100
	4.0 @ 4.0			99.5 @ 100.1 @ 24.6 °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) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control	A	5	5		8.1	8.0		25.6	24.2		7.8	8.1		180	180	
Control	B	5	5			8.1			24.1			8.1			175	
Control	C	5	5			8.1			24.0			8.1			175	
Control	D	5	5			8.1			24.1			8.1			180	
100 %	A	5	0		4.8	5.7		25.7	24.1		7.8	8.1		395	270	
100 %	B	5	0			5.1			24.0			8.1			235	
100 %	C	5	0			5.1			24.0			8.1			220	
100 %	D	5	0			5.1			24.1			8.1			250	
Recorded by:		TR	MF		JRS	LW		JRS	LW		JRS	LW		JRS	LW	
Measured/Loaded by:		MF	MF		TR	MF		TR	MF		TR	MF		TR	MF	

Investigators' Signatures

Marshall Swindoll for Wendy
Jennifer Sparagana
Robin A. Rader
Reviewer

Water Quality Parameters	Salt Water Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.04 *		Tim McKelvey
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$) :	—	75	5	Hach	TR
Hardness (mg/L as $CaCO_3$) :	—	80	225	Hach	TR
Total ammonia (mg/L as N) :	—	<0.017	<0.017	Orion	JW

* Entry Error 5/31/95 MF — ~~Not Measured~~

Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Jacksonville International Airport
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL00
LIMS Sample #: 106802 **LIMS Job #:** 95-May-23-15
sample log 5 30 95

Sample Collection: Date 5/22/95 Time 1445
Test Beginning: Date 5/23/95 Time 1430
Test Ending: Date 5/25/95 Time 1430
Organism Batch #: 20 **Diluent Batch #:** well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through

Test Number: 2 of 4

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.1 @ 24.0	8.2 @ 24.7 °C	100.4 @ 100.0 992 @ 1001 @ 23.9 °C
24 hr	7.0 @ 7.0 4.0 @ 4.0	24.5 @ 24.4	8.3 @ 24.0 °C	100.0 @ 101.0 1015 @ 1001 @ 24.9 °C
48 hr	7.0 @ 7.0 9.0 @ 7.0 4.0 @ 4.0	24.2 @ 24.2	8.3 @ 24.0 °C	104 @ 100 1008 @ 1001 @ 24.6 °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) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control	888	5	5	5	7.9	8.2	8.2	24.2	23.9	23.6	8.2	7.7	8.2	250	250	255
Control	174	5	5	5	7.9	8.2	8.2			23.4	8.2	7.8	8.2	250	245	245
Control	3	5	5	5	7.9	8.2	8.2			23.3	8.2	7.8	8.2	245	245	250
Control	75	5	5	5	7.9	8.2	8.2			23.2	8.2	7.9	8.3	250	245	250
100%	775	5	5	5	4.7	4.9	4.8	25.2	23.8	23.6	8.1	7.9	8.2	920	900	910
100%	9	5	5	5	4.7	5.0	4.8			23.5	8.1	7.9	8.2	925	900	905
100%	476	5	5	5	4.6	4.9	4.8			23.4	8.1	7.8	8.1	925	890	900
100%	209	5	5	5	4.6	4.9	4.8			23.3	8.1	7.8	8.2	925	900	900
Recorded by:		TR	MF	MF	JAS	LW	JLS	JAS	MF	JLS	JAS	LW	JLS	JAS	LW	JLS
Measured/Loaded by:		LW	MF	JLS	TR	MF	MF	TR	MF	MF	TR	MF	MF	TR	MF	MF

5/25 JAS
Worm was found

Investigators' Signatures

Marbell Faircloth
Jennifer Spurgeon
Robin C. Kader
Joseph M. Smith
Reviewer

form updated 10/05/94

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
	Water Quality Parameters * Cating Error 5/24/95 MF				
Field Total Residual Cl2 (mg/L):			0.04*	~~Hach~~	~~Tim~~ McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR 100	TR
Alkalinity (mg/L as $CaCO_3$):	25	—	5	Hach	TR
Hardness (mg/L as $CaCO_3$):	120	—	225	Hach	TR
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: 57.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Jacksonville International Airport
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL00
LIMS Sample #: 106802 LIMS Job #: 95-May-23-15

Sample Collection: Date 5/22/95 Time 1445
Test Beginning: Date 5/23/95 Time 1430
Test Ending: Date 5/25/95 Time 1430
Organism Batch #: 27 Diluent Batch #: 22
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

Test Type: (Screening) | Definitive
Static | Static Renewal | Flow-through

Test Number: 3 of 4

Remarks: Sample pH 4.6. Increased pH to 6.1 with NaOH to meet pH requirement of test organisms MF incorrect recording 5/24/95

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 7.0 @ 7.0 7.0 @ 7.0	24.1 @ 24.0	8.2 @ 24.9 °C	100.4 @ 100.0 992 @ 1001 @ 23.9 °C
24 hr	7.0 @ 7.0 7.0 @ 7.0 7.0 @ 7.0	24.5 @ 24.4	8.3 @ 24.0 °C	100.0 @ 100.0 1015 @ 1001 @ 24.4 °C
48 hr	7.0 @ 7.0 7.0 @ 7.0 7.0 @ 7.0	24.2 @ 24.2	8.3 @ 24.0 °C	104 @ 100 1005 @ 1001 @ 24.6 °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) Cond. (µmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 48 h
Control	A	5	5	5	8.1		8.0	25.6		24.4	7.8		8.0	185		190
Control	B	5	5	5			8.1			24.4			8.0			185
Control	C	5	5	3			8.1			24.4			8.0			185
Control	D	5	5	5			8.1			24.4			8.0			190
100%	A	5	5	4	6.2		6.1	25.8		24.3	7.7		8.1	905		945
100%	B	5	5	5			6.1			24.3			8.0			950
100%	C	5	5	5			6.1			24.3			8.0			950
100%	D	5	5	4			6.1			24.4			8.1			1000
Recorded by:		TR	MF	MF	JRS		JLS	HS		JLS	TR		JLS	JRS		JLS
Measured/Loaded by:		MF	MF	MF	TR		MF	TR		MF	JRS		MF	TR		MF

Investigators' Signatures

Marshall Faircloth
Jennifer Savage
Steven C. Rader
Joseph Morton
Reviewer

bio weighed by JMF 5/24/95

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.04 *	Marsh	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	—	75	5	Hach	TR
Hardness (mg/L as $CaCO_3$):	—	80	225	Hach	TR
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN

* Entry Error 5/24/95 MF

Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

form updated 10/05/94

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Jacksonville International Airport
County: Duval
Contact / District: Tim McKelvey / NE
NPDES Permit #: FL00
LIMS Sample #: 106802 LIMS Job #: 95-May-23-15

Sample Collection: Date 5/22/95 Time 1445
Test Beginning: Date 5/23/95 Time 1430
Test Ending: Date 5/25/95 Time 1430
Organism Batch #: 20 Diluent Batch #: well
Organism Age: 11 days
Test Organism: Cyprinella leedsi

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Test Number: 4 of 4

Remarks: Sample pH 4.6
Increased pH to 6.1 with NaOH to meet pH requirement of test organisms 5/24/95 incorrect reading

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	24.1 @ 24.0	8.2 @ 24.9 °C	100.4 @ 100.0
	4.0 @ 4.0			992 @ 1001 @ 23.9 °C
24 hr	7.0 @ 7.0	24.5 @ 24.4	8.3 @ 24.0 °C	100.0 @ 101.0
	4.0 @ 4.0			1015 @ 1021 @ 24.9 °C
48 hr	7.0 @ 7.0	24.2 @ 24.2	8.3 @ 24.0 °C	101 @ 100
	9.0 @ 9.0			1005 @ 1001 @ 24.6 °C
	4.0 @ 4.0			

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
Control	287	5	5	5	7.7	8.2	8.3	25.6	23.8	23.6	8.0	7.8	8.2	255	245	250
Control	85	5	5	5	7.7	8.2	8.3			23.5	8.0	7.8	8.2	255	245	245
Control	65	5	5	5	7.7	8.2	8.3			23.5	8.0	7.9	8.1	255	245	245
Control	302	5	5	5	7.7	8.2	8.3			23.5	8.0	7.9	8.2	255	245	250
100%	104	5	5	5	6.1	6.0	6.0	25.5	23.7	23.5	8.0	7.3	8.1	945	915	925
100%	45	5	5	5	6.1	6.0	6.0			23.4	8.0	7.3	8.0	945	915	925
100%	11	5	5	5	6.1	6.1	6.0			23.3	8.0	7.3	7.9	945	910	915
100%	210	5	5	5	6.1	6.1	6.0			23.2	8.0	7.3	8.0	940	910	915
Recorded by:		TR	MF	MF	JKS	LW	JLS	JKS	LW	JLS	JKS	LW	JLS	JKS	LW	JLS
Measured/Loaded by:		LW	MF	JLS	TR	MF	LW	TR	MF	LW	TR	MF	LW	TR	MF	LW

Investigators' Signatures

Marshall Faircloth
Jennifer Sassaman
Robin C. Rader
Joseph Smith
Reviewer

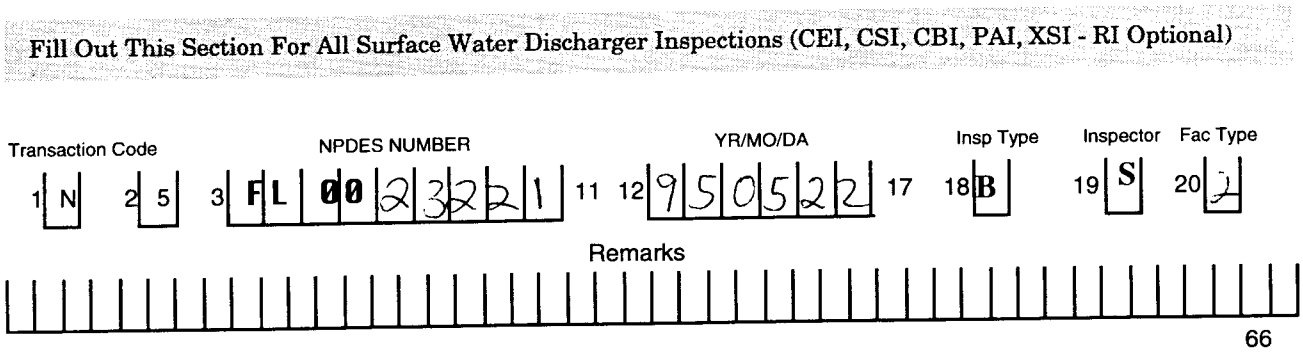
form updated 10/05/94

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.04	Measured	Tim McKelvey
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TR
Alkalinity (mg/L as $CaCO_3$):	12.5	—	5	Hach	TR
Hardness (mg/L as $CaCO_3$):	120	—	225	Hach	TR
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JW

*Conductivity 5/24/95 MF

Ammonia Meter #98136 Ammonia Meter Slope: -57.4 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Jacksonville International Airport WWF effluent sampled on May 22, 1995, NPDES #FL0023221.



The Priority Pollutants Analysis for the Bioassay of the Jacksonville International Airport WWF effluent sampled on May 22, 1995, NPDES #FL0023221.

