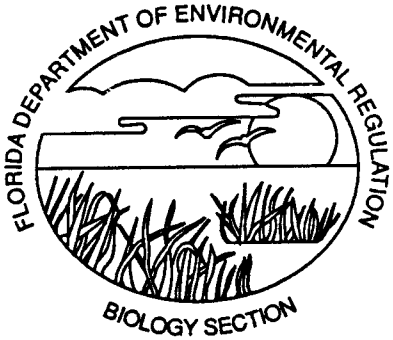


Bioassays of

Bay County Regional Wastewater Treatment Plant Aeration Lagoon

Military Point, Tyndall AFB, Bay County, Florida

NPDES #FL0002631

Sampled 5/22-26/90

August 13, 1990

Biology Section
Division of Administrative and Technical Services

Bioassays of

Bay County Regional Wastewater Treatment Plant Aeration Lagoon

Military Point, Tyndall AFB, Bay County, Florida

NPDES #FL0002631

Sampled 5/22-26/90

Biology Section
Bureau of Laboratories
August 13, 1990

Introduction

Bay County Regional WWTP Aeration Lagoon, Bay County, Florida, NPDES #FL0002631 on 22 to 26 May, 1990.

This facility, a 59-acre aerated lagoon, is located on Tyndall Air Force Base, across St. Andrew Bay from the Southwest Forest/Arizona Chemical Company paper mill complex. The Bay County facility receives approximately 32 MGD of discharge from the paper mill complex for treatment. Pretreatment at the complex includes evaporator waste condensation, primary clarification, and nutrient addition. Domestic discharges from at least three sources, the Millville STP, the Bay County System, and Tyndall AFB, may also be treated at the aeration lagoon. Treatment of these discharges prior to be being pumped to the aerated lagoon may include degritting, primary treatment, and chlorination. After approximately 10-days retention in the aerated lagoon, the recovered water is pumped through a 1,300 ft-long outfall to St. Andrew Bay at a discharge depth of approximately 15 feet. Discharge from the lagoon during the test period was approximately 31 MGD. Additionally, this facility has a designated mixing zone in the bay.

The bioassays performed at this site included 72-hour static tests and 96-hour flow-through tests. Dilution water for these tests was untreated Deer Point Lake water obtained from a pumping station at Arizona Chemical Company.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition, except as noted below.

Results and Discussion

The FDER Biology Section used a mobile laboratory to perform flow-through and acute toxicity bioassays at this facility's aeration lagoon. The bioassay organisms, the fish, *Notropis leedsi*, and the waterfleas, *Daphnia pulex* and *Ceriodaphnia dubia*, were used in the flow-through tests. *C. dubia* and *D. pulex* were also used in the static tests. The effluent was aerated before use because of low dissolved-oxygen levels. Adult *C. dubia* were used because of the dark, sediment-laden sample.

The static tests indicated that the sample was not toxic to *D. pulex* or to *C. dubia*; however, there were several deaths in the tests. The *C. dubia* tests were invalidated due to excessive control mortality. The flow-through tests indicated that the sample was not toxic to the *N. leedsi*. Numerous deaths occurred in both the *C. dubia* and *D. pulex* flow-through tests, and these tests were invalidated because of excessive control mortality. The interim counts of the *C. dubia* and *D. pulex* tests organisms were very inaccurate due to sediments and the very dark color of the sample. We attribute the deaths in the *C. dubia* static tests and the *C. dubia* and the *D. pulex* flow-through tests to causes other than sample toxicity.

Among these causes are clogging of feeding and swimming structures by heavy sediments, test organisms trapped on surface film and possibly container screens, and possible water quality problems in the control water.

There was no measurable total residual chlorine in the samples. No further chemical analyses were performed.

Conclusion

The discharge from this facility was not shown to be toxic on 22 to 26 May, 1990.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Daphnia pulex (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
50.0%	7.5 ml	7.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
80.0%	3.0 ml	12.0 ml	15 ml
90.0%	1.5 ml	13.5 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Table 2. Concentration Series and Volumes Used per Cycle for these Flow-Through Bioassays.

Notropis leedsi (bannerfin shiner)

Ceriodaphnia dubia (water flea)

Daphnia pulex (water flea)

Concentration (Range %)*	Dilution Water (Range ml)**	Sample (Range ml)**
Control	600 ml (590, 600)	0 ml
30.0% (30.0, 30.5)	420 ml (410, 420)	180 ml (178, 180)
50.0% (48.8, 50.0)	300 ml (300, 310)	300 ml (295, 300)
70.0% (69.7, 72.1)	180 ml (170, 183)	420 ml (420, 440)
80.0% (79.4, 80.0)	120 ml (120, 125)	480 ml (470, 487)
90.0% (89.8, 91.0)	60 ml (55, 60)	540 ml (525, 530)
100.0%	0 ml	600 ml (612, 760)

*Range values (percent) are the lowest and highest concentrations calculated from the recorded diluent and effluent premixing chamber discharge volumes.

**Range values (milliliters) are the minimun and maximum discharge volumes recorded from the diluent and effluent premixing chambers.

Table 3, Data recorded during the 96 hour Flow-through bioassay of the Bay County Regional STP Aeration Lagoon, Bay County, Florida, NPDES #FL0002631, on 22 to 26 May, 1990.

Facility:	**Bay County Regional STP Aeration Lagoon**		**NPDES #**	**FL0002631**	Facility Type: **sewage treatment paper mill**
Location:	Military Point, Tyndall Air Force Base		Contact/District:	B. Brazzell / NW	
County:	Bay		Test type:	Flow-through	
Sample Collection Date:	**5/22/90**	Time: 1205	# tests:	3	Receiving Water: St. Andrews Bay
Test Beginning Date:	5/22/90	Time: 1205	Chlorination Type:	**no measureable residual chlorine**	
Test Ending Date:	5/26/90	Time: 1200			**Page 1 of 3**

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	43	30
Control Water (daphnids):	43	30
100% Sample:	157	165

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

Organism: ***Notropis leedsi*** Life stage: 17 days
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity		
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour
Control	10	10	10	8.9	8.3	8.4	7.5	7.5	7.6	26.5	23.0	23.5	98	91	93
Control	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
30%	10	10	10	7.1	7.0	7.2	7.3	7.4	7.4	26.5	23.0	23.5	620	595	580
30%	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
50%	10	10	10	5.4	5.8	5.6	7.4	7.3	7.3	26.6	23.1	23.7	900	840	965
50%	10	9	9	-	-	-	-	-	-	-	-	-	-	-	-
70%	10	10	10	6.2	6.2	5.0	7.4	7.4	7.3	26.8	22.9	23.5	1200	1180	1225
70%	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
80%	10	10	10	3.7	4.3	4.7	7.3	7.3	7.3	26.9	23.3	23.9	1400	1335	1365
80%	10	9	9	-	-	-	-	-	-	-	-	-	-	-	-
90%	10	10	10	3.5	4.2	4.2	7.3	7.3	7.3	27.0	23.4	23.9	1535	1465	1520
90%	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
100%	10	10	10	2.6	3.9	4.2	7.3	7.3	7.3	27.1	23.4	24.0	1700	1605	1660
100%	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-

	SURVIVAL		Dissolved Oxygen		pH		Temperature		Conductivity	
Concentrations		Live at 72 hr	Live at 96 hr	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour
Control		10	10	8.4	7.8	7.6	7.6	24.2	25.2	95	98
Control		10	10	-	-	-	-	-	-	-	-
30%		10	10	7.1	6.9	7.4	7.5	24.5	25.6	610	630
30%		10	10	-	-	-	-	-	-	-	-
50%		10	10	5.8	5.9	7.3	7.4	24.7	25.6	880	840
50%		9	9	-	-	-	-	-	-	-	-
70%		10	10	5.2	4.8	7.3	7.4	24.5	25.4	1245	1270
70%		10	10	-	-	-	-	-	-	-	-
80%		10	10	5.0	4.6	7.3	7.4	24.8	25.8	1370	1430
80%		9	9	-	-	-	-	-	-	-	-
90%		10	10	4.3	4.4	7.3	7.3	24.8	25.7	1535	1430
90%		10	10	-	-	-	-	-	-	-	-
100%		10	10	4.4	4.3	7.3	7.3	24.9	25.9	1690	1600
100%		10	10	-	-	-	-	-	-	-	-

- continued -

Table 3. Continued.

Facility:	Bay County Regional STP Aeration Lagoon	NPDES #	FL0002631	Facility Type:	sewage treatment paper mill
Location:	Military Point, Tyndall Air Force Base	Contact/District:	B. Brazzell / NW		
County:	Bay	Test type:	Flow-through		
Sample Collection Date:	5/22/90 Time: 1205	# tests:	3	Receiving Water:	St. Andrews Bay
Test Beginning Date:	5/22/90 Time: 1205	Chlorination Type:	no measureable residual chlorine		
Test Ending Date:	5/26/90 Time: 1200			Page 2 of 3	

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	43	30
Control Water (daphnids):	43	30
100% Sample:	157	165

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

Organism: ***Ceriodaphnia dubia*** Life stage: <24 hours
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity		
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour
Control	10	10*	9*	8.9	8.3	8.4	7.5	7.5	7.6	26.5	23.0	23.5	98	91	93
Control	10	7*	8*	-	-	-	-	-	-	-	-	-	-	-	-
50.0%	10	7*	5*	5.4	5.8	5.6	7.4	7.3	7.3	26.6	23.1	23.7	900	840	965
50.0%	10	10*	10*	-	-	-	-	-	-	-	-	-	-	-	-
80.0%	10	7*	9*	3.7	4.3	4.7	7.3	7.3	7.3	26.9	23.3	23.9	1400	1335	1365
80.0%	10	5*	10*	-	-	-	-	-	-	-	-	-	-	-	-
100.0%	10	4*	8*	2.6	3.9	4.2	7.3	7.3	7.3	27.1	23.4	24.0	1700	1605	1660
100.0%	10	3*	5*	-	-	-	-	-	-	-	-	-	-	-	-

	SURVIVAL		Dissolved Oxygen		pH		Temperature		Conductivity	
Concentrations	Live at 72 hr	Live at 96 hr	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour
Control	5*	8	8.4	7.8	7.6	7.6	24.2	25.2	95	98
Control	6*	4	-	-	-	-	-	-	-	-
50.0%	2*	5	5.8	5.9	7.3	7.4	24.7	25.6	880	840
50.0%	10*	9	-	-	-	-	-	-	-	-
80.0%	8*	10	5.0	4.6	7.3	7.4	24.8	25.8	1370	1430
80.0%	4*	6	-	-	-	-	-	-	-	-
100.0%	8*	8	4.4	4.3	7.3	7.3	24.9	25.9	1690	1600
100.0%	3*	4	-	-	-	-	-	-	-	-

* unreliable interim counts due to sediments

- continued -

Table 3. Continued.

Facility: **Bay County Regional STP Aeration Lagoon** NPDES # **FL0002631** Facility Type: **sewage treatment paper mill**
Location: Military Point, Tyndall Air Force Base Contact/District: B. Brazzell / NW
County: Bay Test type: Flow-through
Sample Collection Date: **5/22/90** Time: 1205 # tests: 3 Receiving Water: St. Andrews Bay
Test Beginning Date: 5/22/90 Time: 1205 Chlorination Type: **no measureable residual chlorine**
Test Ending Date: 5/26/90 Time: 1200 **Page 3 of 3**

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	37	32
Control Water (daphnids):	37	32
100% Sample:	137	174

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

Organism: ***Daphnia pulex*** Age: < 24 hours
LC50: - Binomial: - Moving Average: - Probit: -

SURVIVAL				Dissolved Oxygen			pH			Temperature			Conductivity		
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour
Control	10	10*	8*	8.9	8.3	8.4	7.5	7.5	7.6	26.5	23.0	23.5	98	91	93
Control	10	10*	7*	-	-	-	-	-	-	-	-	-	-	-	-
30%	10	10*	9*	7.1	7.0	7.2	7.3	7.4	7.4	26.5	23.0	23.5	620	595	580
30%	10	9*	8*	-	-	-	-	-	-	-	-	-	-	-	-
50%	10	9*	9*	5.4	5.8	5.6	7.4	7.3	7.3	26.6	23.1	23.7	900	840	965
50%	10	9*	8*	-	-	-	-	-	-	-	-	-	-	-	-
70%	10	8*	10*	6.2	6.2	5.0	7.4	7.4	7.3	26.8	22.9	23.5	1200	1180	1225
70%	10	7*	7*	-	-	-	-	-	-	-	-	-	-	-	-
80%	10	10*	7*	3.7	4.3	4.7	7.3	7.3	7.3	26.9	23.3	23.9	1400	1335	1365
80%	10	7*	8*	-	-	-	-	-	-	-	-	-	-	-	-
90%	10	9*	*	3.5	4.2	4.2	7.3	7.3	7.3	27.0	23.4	23.9	1535	1465	1520
90%	10	8*	*	-	-	-	-	-	-	-	-	-	-	-	-
100%	10	3*	*	2.6	3.9	4.2	7.3	7.3	7.3	27.1	23.4	24.0	1700	1605	1660
100%	10	4*	*	-	-	-	-	-	-	-	-	-	-	-	-

SURVIVAL			Dissolved Oxygen		pH		Temperature		Conductivity	
Concentrations	Live at 72 hr	Live at 96 hr	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour	72 hour	96 hour
Control	2*	2	8.4	7.8	7.6	7.6	24.2	25.2	95	98
Control	1*	0	-	-	-	-	-	-	-	-
30%	7*	4	7.1	6.9	7.4	7.5	24.5	25.6	610	630
30%	6*	3	-	-	-	-	-	-	-	-
50%	5*	2	5.8	5.9	7.3	7.4	24.7	25.6	880	840
50%	4*	4	-	-	-	-	-	-	-	-
70%	8*	9	5.2	4.8	7.3	7.4	24.5	25.4	1245	1270
70%	*	5	-	-	-	-	-	-	-	-
80%	*	7	5.0	4.6	7.3	7.4	24.8	25.8	1370	1430
80%	*	6	-	-	-	-	-	-	-	-
90%	*	4	4.3	4.4	7.3	7.3	24.8	25.7	1535	1430
90%	*	10	-	-	-	-	-	-	-	-
100%	*	7	4.4	4.3	7.3	7.3	24.9	25.9	1690	1600
100%	*	5	-	-	-	-	-	-	-	-

* unreliable interim counts due to sediments

Table 4. Data recorded during the static definitive bioassay of a sample of discharge from the Bay County Regional STP Aeration Lagoon, Panama City, Bay County, Florida, NPDES #FL0002631, on 23 to 26 May, 1990.

Facility:	**Bay County Regional STP Aeration Lagoon**		**NPDES #**	**FL0002631**	Facility Type: **sewage treatment paper mill**
Location:	Military Point, Tyndall Air Force Base		Contact/District:	B. Brazzell / NW	
County:	Bay		Test type:	static definitive	
Sample Collection Date:	**5/23/90**	Time: 1205	# tests:	2	Receiving Water: St. Andrews Bay
Test Beginning Date:	5/23/90	Time: 1205	Chlorination Type:	**no residual chlorine**	
Test Ending Date:	5/26/90	Time: 1200		**residual chlorine**	**Page 1 of 2**

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	43	30
Control Water (daphnids):	43	30
100% Sample:	157	165

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

Organism: ***Ceriodaphnia dubia*** Life stage: <24 hours
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL				Dissolved Oxygen		pH		Temperature		Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	Live at 72 hr	0 hour	72 hour	0 hour	72 hour	0 hour	72 hour	0 hour	72 hour
Control	5	5	4	3	8.9	6.3	7.5	7.4	26.5	22.8	-	-
Control	5	4	2	2	-	6.3	-	7.4	-	-	-	-
Control	5	4	4	3	-	6.4	-	7.4	-	-	-	-
Control	5	4	4	2	-	6.3	-	7.4	-	-	98	115
30.0%	5	4	4	4	5.4	7.4	7.4	7.8	26.6	22.2	-	-
30.0%	5	5	5	5	-	7.4	-	7.8	-	-	-	-
30.0%	5	5	5	5	-	7.4	-	7.8	-	-	-	-
30.0%	5	5	5	5	-	7.4	-	7.8	-	-	900	625
70.0%	5	4	4	4	3.7	7.4	7.3	8.0	26.9	22.2	-	-
70.0%	5	4	4	4	-	7.4	-	8.0	-	-	-	-
70.0%	5	5	5	5	-	7.4	-	8.0	-	-	-	-
70.0%	5	5	3	3	-	7.4	-	8.0	-	-	1400	1270
100.0%	5	5	4	5	2.6	7.1	7.3	8.2	27.1	22.6	-	-
100.0%	5	5	4	4	-	7.2	-	8.2	-	-	-	-
100.0%	5	5	4	4	-	7.2	-	8.2	-	-	-	-
100.0%	5	5	5	5	-	7.2	-	8.2	-	-	1700	1765

- continued -

Table 4. Continued.

Facility: **Bay County Regional STP Aeration Lagoon** NPDES # **FL0002631** Facility Type: sewage treatment
Location: Military Point, Tyndall Air Force Base Contact/District: B. Brazzell / NW paper mill
County: Bay Test type: static definitive
Sample Collection Date: **5/23/90** Time: 1205 # tests: 2 Receiving Water: St. Andrews Bay
Test Beginning Date: 5/23/90 Time: 1205 Chlorination Type: **no measureable residual chlorine**
Test Ending Date: 5/26/90 Time: 1200 **Page 2 of 2**

Organism: ***Daphnia pulex*** Age: < 24 hours
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL				Dissolved Oxygen		pH		Temperature		Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	Live at 72 hr	0 hour	72 hour	0 hour	72 hour	0 hour	72 hour	0 hour	72 hour
Control	5	5	5	5	8.9	7.9	7.5	7.7	26.5	22.0	-	-
Control	5	5	5	5	-	8.0	-	7.7	-	-	-	-
Control	5	5	5	5	-	8.0	-	7.7	-	-	-	-
Control	5	5	5	4	-	8.0	-	7.7	-	-	98	120
30%	5	5	5	5	7.1	7.6	7.3	7.9	26.5	22.1	-	-
30%	5	5	5	5	-	7.7	-	7.9	-	-	-	-
30%	5	5	5	5	-	7.3	-	7.9	-	-	-	-
30%	5	5	5	5	-	7.6	-	7.9	-	-	620	605
50%	5	5	5	5	5.4	7.9	7.4	8.1	26.6	22.0	-	-
50%	5	5	5	5	-	7.9	-	8.1	-	-	-	-
50%	5	5	5	5	-	7.8	-	8.1	-	-	-	-
50%	5	5	5	5	-	7.9	-	8.1	-	-	900	930
70%	5	5	5	4	6.2	7.6	7.4	8.1	26.8	22.5	-	-
70%	5	5	5	5	-	7.6	-	8.1	-	-	-	-
70%	5	5	5	5	-	7.6	-	8.1	-	-	-	-
70%	5	5	5	5	-	7.6	-	8.1	-	-	1200	1210
80%	5	5	5	5	3.7	7.6	7.3	8.2	26.9	22.2	-	-
80%	5	5	5	5	-	7.6	-	8.2	-	-	-	-
80%	5	5	5	5	-	7.6	-	8.2	-	-	-	-
80%	5	5	5	5	-	7.7	-	8.2	-	-	1400	1430
90%	5	5	5	5	3.5	7.6	7.3	8.1	27.0	22.4	-	-
90%	5	5	5	5	-	7.6	-	8.2	-	-	-	-
90%	5	5	5	4	-	7.6	-	8.2	-	-	-	-
90%	5	5	5	5	-	7.6	-	8.2	-	-	1535	1525
100%	5	5	5	5	2.6	7.7	7.3	8.2	27.1	22.2	-	-
100%	5	5	5	4	-	7.7	-	8.2	-	-	-	-
100%	5	5	5	4	-	7.6	-	8.2	-	-	-	-
100%	5	5	5	5	-	7.7	-	8.2	-	-	1700	1715

Total Residual Cl2	mg/l	Method
Field:	0.0	Hach
Lab:	0.0	Hach
Lab:	-	-

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	37	32
Control Water (daphnids):	37	32
100% Sample:	137	174

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

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Bay County STP Aeration lagoon
Address/City: Military Point, Panama City
County: Bay
Contact/District:
NPDES Permit #: FL0002631 Outfall #: 001

Sample Collection: Date 5/22/90 Time 1205
Test Beginning: Date 5/22/90 Time 1205
Test Ending: Date 5/26/90 Time 1200
Test Organism: Mysidopsis bahia
Life Stage/Age: 17 days

Test Number: 1 of 3 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: fish 1205
DP 1220
CD 1240
* added acetone to 100% effluent before dilution
② increased aeration

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.9	8.2@23°C	13530 22.8°C	21.8°C @22.2
24 hr	7.9	8.7@23°C	13450 22.4°	21.1@21.7
48 hr	7.9	8.8@22°C	13310 21.9	20.8@21.4

~~sal - 0840~~
27°C

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
control	1	10	10	10	8.9	8.3	8.4	7.5	7.5	7.6	26.5	23.0	23.5	98	91	93
control		10	10	10	8											
30%		10	10	10	7.1	7.0	7.2	7.3	7.4	7.4	26.5	23.0	23.5	620	594	580
30%		10	10	10	—											
50%		10	10	10	5.4	5.8	5.6	7.4	7.3	7.3	26.6	23.1	23.7	900	840	965
50%		10	9*	9	—											
70%		10	10	10	6.2	6.2	5.0	7.4	7.4	7.3	26.8	22.9	23.5	1200	1180	1225
70%		10	10	10	—											
80%		10	10	10	3.7	4.3	4.7	7.3	7.3	7.3	26.9	23.3	23.9	1400	1335	1365
80%		10	9*	9	—											
90%		10	10	10	3.5	4.2	4.2	7.3	7.3	7.3	27.0	23.4	23.9	1535	1465	1520
90%		10	10	10	—											
100%		10	10	10	2.6	3.9	4.2	7.3	7.3	7.3	27.1	23.4	24.0	1700	1605	1660
100%		10	10	10	72hr	96hr										
control 1		10	10		8.4	7.8		7.6	7.6		24.2	25.2		95	93	
control 2		10	10													
30%		10	10		7.1	6.9		7.4	7.5		24.5	25.6		610	630	
50%		10	10													
70%		10	10		5.8	5.9		7.3	7.4		24.7	25.6		850	915	
80%		9	9													
90%		10	10		5.2	4.8		7.3	7.4		24.5	25.4		1245	1270	
100%		10	10													
100%		10	10		5.0	4.6		7.3	7.4		24.8	25.3		1430	1430	
100%		9	9													
100%		10	10		4.3	4.4		7.3	7.3		24.8	25.7		1535	1600	
100%		10	10													
100%		10	10		4.4	4.5		7.3	7.3		24.9	25.9		1670	1755	
100%		10	10		mt/mt	mt/mt		mt/mt	mt/mt		mt/mt	mt/mt		mt/mt	mt/mt	
Measured by:		MF	MF	MF	MF	SW	MF	MF	SW	MF	MF	SW	MF	MF	SW	MF
Recorded by:		MF	MF	MF	SW	SW	MF	MF	SW	MF	MF	SW	MF	MF	SW	MF

Investigators' Signatures
Marbell Faircloth
Steve H Wolfe

Reviewer

* No Body, pass missload

Water-quality Parameters

Deer Point / Lec

	Well Water	~~Cond.~~ Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:		~~0.01~~	—		
Alkalinity:		43/57	157	Hach	SHW
Hardness:		30	165	Hach	SHW
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Bay County Regional WWTP
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date _____ Time _____
Test Beginning: Date 5/22/90 Time 1220
Test Ending: Date 5/26/90 Time 1200
Test Organism: Daphnia Pulex
Life Stage/Age: neonates

Test Number: 2 of 3 **Test Type:** Screening | Definitive
Static | Static Renewal | Flow-through

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.0, 7.0	8.7 @ 23°C	1380 @ 23°C	22.5 @ 22.5°C
24 hr	7.0, 7.0	8.4 @ 25°C	1442 @ 25.6°C	24.3 @ 23.0°C
48 hr				

Remarks: INTERIM COUNTS
UNRELIABLE - increasing sediment w/ time
☆ no count til end (too much sediment)
(2) - floaty sediment trapping

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	75	10	10	8												
Control	45	10	10	7												
30	20	10	10	9												
30	11	10	9	5												
50	17	10	9	9												
50	2	10	9	8												
70	33	10	8	10												
70	9	10	7	7												
80	~~125~~ 25	10	10	7												
80	~~27~~ 10	10	7	8												
90	30	10	9	☆												
90	12	10	8	☆												
100	55	10	3	☆												
100	10	10	4	☆		72	96									
CONT	75	2	2													
"	45	1	0													
30	20	7(2)	4													
"	11	6	3													
50	17	5	2													
"	2	6	4													
70	33	☆	9													
"	9	☆	5													
80	125	☆	7													
"	27	☆	6													
90	30	☆	4													
"	12	☆	10													
100	55	☆	7													
"	10	☆	5													
	Measured by:	MF	MFSW													
	Recorded by:	MF	MFSW													

Investigators' Signatures
Marshall Faircloth
Steve Wolfe

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: BAY COUNTY REGIONAL WWTP
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date Time
Test Beginning: Date 5/22/90 Time 1240
Test Ending: Date 5/26/90 Time 1200
Test Organism: Ceriodaphnia dubia
Life Stage/Age: adults

Test Number: 3 of 3 **Test Type:** Screening | (Definitive)
Static | Static Renewal | (Flow-through)

Remarks: interim counts unreliable (dark, sediment-laden sample)

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

* young present

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
CONT	13	10	10	9												
"	88	10	7	8												
50%	130	10	7	5												
"	22	10	10	10												
80%	70	10	7	9												
"	110	10	5	10												
100%	100	10	4	8												
"	6	10	3	5												
		72	96													
CONT	13	5	8													
"	88	6	4													
50%	130	2	5													
"	22	10	9*													
80%	70	8	10*													
"	110	4	6													
100%	100	8	8*													
"	6	3	4													
Measured by:		JMF	SW	SW												
Recorded by:		JMF	SW	SW												

Investigators' Signatures

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Bay County Lagoon (aerated cell) — Sample Collection: Date 5-23-90 Time _____
Address/City: Salisbury Point, Panama City — Test Beginning: Date 5-23-90 Time 1100
County: Bay — Test Ending: Date 5-26-90 Time 1200
Contact/District: _____ — Test Organism: Ceriodaphnia dubia
NPDES Permit #: _____ Outfall #: _____ — Life Stage/Age: M Female / <24 hrs

Test Number: 1 of 2 — Test Type: Screening / Definitive
Static | Static Renewal | Flow-through

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Remarks: Chemistry is located first leaf 1 Flathm (N. Indsl) outfalls via lagoon

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control		5	5	4	3		6.0			7.4			22.3			
Control		5	4	4	2		6.3			7.4						
Control		5	4	4	3		6.4			7.4						
Control		5	4	4	2		6.3			7.4						115
30 %		5	4	4	4		7.4			7.5			22.2			
30 %		5	5	5	5		7.4			7.4						
30 %		5	5	5	5		7.4			7.5						
30 %		5	5	5	5		7.4			7.5						625
70 ~~50~~ %		5	4	4	4		7.4			8.0			22.2			
70 ~~50~~ %		5	4	4	4		7.4			8.0						
70 ~~50~~ %		5	5	5	5		7.4			8.0						
70 ~~50~~ %		5	5	3	3		7.4			8.0						127
30 ~~50~~ %		5	5	5	5		7.1			8.2			22.2			
30 ~~70~~ %		5	5	4	4		7.1			8.2						
30 ~~70~~ %		5	5	4	4		7.2			8.2						
30 ~~70~~ %		5	5	5	5		7.2			8.2						176
30 %																
80 %																
80 %																
50 %																
90 %																
90 %																
70 %																
90 %																
100 %																
100 %																
100 %																
100 %																
Measured by:		SW	MF	MF/SW	MF		MF			HF			MF			MF
Recorded by:		SW	MF	SW/MF	MF		SW			SW			SW			SW

Investigators' Signatures

Marshall Faircloth

Steven L Wolfe

_____

_____

_____

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Bay County aeration lagoon
Address/City: Military Pt., PANAMA CITY
County: BAY
Contact/District:
NPDES Permit #: _____ Outfall #: _____

Sample Collection: Date _____ Time _____
Test Beginning: Date 5-23-90 Time 1120 DT
Test Ending: Date 5-26-90 Time 1215
Test Organism: Daphnia Pulex
Life Stage/Age: neonate

Test Number: 2 of 2 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: Chemistry test 1 of 1 Florida (N. 12851)

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control		5	5	5	5		7.9			7.7			22.0			
Control		5	5	5	5		8.0			7.7						
Control		5	5	5	5		8.0			7.7						120
Control		5	5	5	4		8.0			7.7						
30 %		5	5	5	5		7.6			7.9			22.1			
30 %		5	5	5	5		7.7			7.9						
30 %		5	5	5	5		7.3			7.9						
30 %		5	5	5	5		7.6			7.9						605
50 %		5	5	5	5		7.9			8.1			22.0			
50 %		5	5	5	5		7.9			8.1						
50 %		5	5	5	5		7.8			8.1						
50 %		5	5	5	5		7.9			8.1						930
70 %		5	5	5	4		7.6			8.1			22.5			
70 %		5	5	5	5		7.6			8.1						
70 %		5	5	5	5		7.6			8.1						
70 %		5	5	5	5		7.6			8.1						1210
80 %		5	5	5	5		7.6			8.2			22.1			
80 %		5	5	5	5		7.6			8.2						
80 %		5	5	5	5		7.6			8.2						
80 %		5	5	5	5		7.7			8.2						1430
90 %		5	5	5	5		7.6			8.1			22.4			
90 %		5	5	5	5		7.8			8.2						
90 %		5	5	5	4		7.6			8.2						
90 %		5	5	5	5		7.6			8.2						1625
100 %		5	5	5	5		7.7			8.2			22.4			
100 %		5	5	5	4		7.7			8.2						
100 %		5	5	5	4		7.6			8.2						
100 %		5	5	5	5		7.7			8.2						1715
Measured by:		MF	MF	MF	MF		MF			MF			MF			MF
Recorded by:		MF	MF	MF	MF		SW			SW			SW			SW

Investigators' Signatures

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					