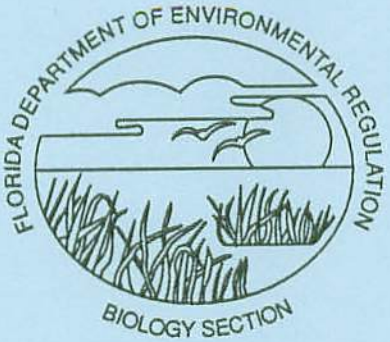


Bioassays of

S-191 Taylor Creek/Nubbin Slough Discharge to Lake Okeechobee

Okeechobee County, Florida

No NPDES Permit

Sampled 9/5 & 8/90

December 18, 1990

Biology Section
Division of Administrative and Technical Services

Bioassays of

S-191 Taylor Creek/Nubbin Slough Discharge to Lake Okeechobee

Okeechobee County, Florida

No NPDES Permit

Biology Section
Bureau of Laboratories
December 18, 1990

Introduction

S-191 facility, Taylor Creek/Nubbin Slough Discharge to Lake Okeechobee, Okeechobee County, Florida on 6 to 12 September, 1990.

The S-191 facility is a culvert type lift gate structure separating the Taylor Creek/Nubbin Slough Canal from Lake Okeechobee. The drainage basin for this canal covers 188 square miles. The average annual discharge from this canal to Lake Okeechobee is 111,327 acre feet.

The Biology Section performed bioassays on two samples of discharge from this facility using methods described by Weber and Peltier in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, 2nd Edition. The samples tested were collected by personnel from the FDER SE District office on 5 and 8 September, 1990

Results and Discussion

The Biology Section performed the Cladoceran survival and reproduction test on samples of discharge from this facility using the bioassay test organism, the water flea, *Ceriodaphnia dubia*. The tests indicated that these samples did not adversely affect the survival or reproduction of the test organisms. Total residual chlorine was not detected in the samples. No further chemical analyses were performed on the samples.

Conclusion

The samples of discharge collected from this facility were not toxic on 5 and 8 September, 1990.

Table 1. Data recorded during the static renewal bioassays performed on samples of discharge from the S-191 facility, No NPDES Permit, Okeechobee County, Florida, on 6 to 12 September, 1990.

Facility:	S-191	Test Beginning Date:	9/6/90	Time: 1400	Facility Type: Agricultural Area
NPDES #	- Outfall # -	Test Ending Date:	9/12/90	Time: 1100	Chlorination Type: not chlorinated
Location:	Taylor Ck. / Nubbin Slough Discharge to Lake Okeechobee				
County:	Okeechobee	Sample "A" Collection Date:	9/5/90	Time: 1145	Receiving Water: Lake Okeechobee
Contact/District:	H. Zebuth	Sample "B" Collection Date:	9/8/90	Time: 1030	
Sample Log #:	99	Sample "C" Collection Date:	-	Time: -	Page 1 of 1

Total Residual Cl2	mg/l
Sample "A" Field:	-
Sample "A" Lab:	<0.02
Sample "B" Field:	-
Sample "B" Lab:	<0.02
Sample "C" Field:	-
Sample "C" Lab:	-

Diluent Batch Use	Days Used
Diluent Batch "A":	2
Diluent Batch "B":	4

NOEC: - LOEC: -

SURVIVAL

Concentrations	# surviving adults	Young/adult
Control	10	27.2
6.00%	10	29.6
12.0%	10	30.8
25%	7	30.1
50%	9	31
100%	10	30.4

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)	Salinity
Diluent Batch "A":	110	122	0
Diluent Batch "B":	110	122	0
Sample "A":	25	25	0
Sample "B":	30	62	0
Sample "C":	-	-	-

		pH	Temp	DO	Cond
Day 0	Control	8.1	23.3	8.5	170.0
New Sample	6.25%	8.0			180.0
	12.5%	7.8			185.0
	25%	7.6			185.0
	50%	7.3			195.0
	100%	6.9	23.2	6.3	205.0
Day 1	Control	8.1	23.0	8.6	175.0
New Sample	6.25%	8			178.0
	12.5%	7.9			181.0
	25%	7.7			184.0
	50%	7.6			192.0
	100%	7.2	24.3	7.7	210.0
Old Sample	Control	8.2		8.3	
	6.25%	8.2		8.3	
	12.5%	8.2		8.4	
	25%	8.1		8.4	
	50%	8		8.4	
	100%	7.9		8.5	
Day 2	Control	7.9	23.2	8.2	180.0
New Sample	6.25%	7.8			183.0
	12.5%	7.7			186.0
	25%	7.5			189.0
	50%	7.3			196.0
	100%	6.7	23.3	7.1	208.0
Old Sample	Control	8		7.7	
	6.25%	7.9		7.8	
	12.5%	7.9		7.8	
	25%	7.9		7.8	
	50%	7.8		7.8	
	100%	7.6		7.6	

* Test terminated on day six

		pH	Temp	DO	Cond
Day 3	Control	8.1	22.1	8.5	337.0
New Sample	6.25%	8.1			334.0
	12.5%	8			320.0
	25%	7.9			306.0
	50%	7.8			276.0
	100%	7.3	22.3	7.9	205.0
Old Sample	Control	8.1		8.3	
	6.25%	8.1		8.2	
	12.5%	8.1		8.2	
	25%	8.1		8.2	
	50%	8.1		8.1	
	100%	8.0		7.8	
Day4	Control	8.1	22.5	8.4	357.0
New Sample	6.25%	8.2			342.0
	12.5%	8.1			331.0
	25%	7.9			317.0
	50%	7.6			284.0
	100%	7.2	23.1	7.1	213.0
Old Sample	Control	8.4		7.9	
	6.25%	8.3		7.8	
	12.5%	8.4		7.9	
	25%	8.3		7.8	
	50%	8.2		7.9	
	100%	8.2		7.9	
Day 5	Control	8.2	22.9	8.0	363.0
New Sample	6.25%	8.4			366.0
	12.5%	8.3			346.0
	25%	8.2			336.0
	50%	7.9			296.0
	100%	7.6	23	7.1	214.0
Old Sample	Control	8.4		7.6	
	6.25%	8.4		7.6	
	12.5%	8.4		7.6	
	25%	8.3		7.4	
	50%	8.2		7.5	
	100%	8.0		7.3	
Day 6 *	Control	8.4		7.8	
Old Sample	6.25%	8.4		7.6	
	12.5%	8.4		7.6	
	25%	8.4		7.6	
	50%	8.3		7.6	
	100%	8.0		7.4	

Sample Source: Lake Okeechobee Taylor Creek
NPDES Permit #: N/A Outfall #:
Log #: 99 Chow Batch #: 2 Algae Batch #: 2

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY CHRONIC BIOASSAY
Ceriodaphnia dubia BENCH SHEET

		Replicate Number												Young
Conc.	Day	1	2	3	4	5	6	7	8	9	10	# Young	# Adults	Adult
Control	1												10	0
	2												10	0
	3	0	5	0	0	0	2	0	0	0	0	12	10	1.2
	4	0	0	5	2	4	7	6	4	3	3	34	10	3.4
	5	10	10	9	8	9	0	9	11	12	11	89	10	8.9
	6	15	15	14	15	12	10	15	15	13	15	139	10	13.9
	7													
	8													
	Total	28	30	28	25	25	19	30	30	28	29	272	10	27.2
6.25%	1												10	0
	2												10	0
	3	1	2	4	0	0	1	0	0	0	0	1	10	1.7
	4	9	0	0	2	1	0	3	4	3	4	26	10	2.6
	5	0	6	11	0	12	10	11	10	10	10	85	10	8.5
	6	19	16	16	15	15	20	20	16	16	12	165	10	16.5
	7													
	8													
	Total	32	27	31	23	28	34	34	30	31	26	296	10	29.6
12.5%	1												10	0
	2												10	0
	3	0	0	0	0	0	3	3	0	0	0	12	10	1.2
	4	0	4	4	3	2	0	0	3	2	4	22	10	2.2
	5	11	13	14	11	10	9	10	12	13	9	111	10	11.1
	6	18	16	18	12	19	20	12	17	17	14	163	10	16.3
	7													
	8													
	Total	35	33	36	26	31	32	25	32	31	27	308	10	30.8
25%	1												10	0
	2									A			9	0
	3	7	0	0	0	0	2	0	0	X	0	9	9	1.0
	4	0	3	2	13	4	6	4	3	X	4	39	9	2.9
	5	10	10	0	0	12	0	14	11	X	12	69	2	8.6
	6	18	15	0	0	17	14	16	13	X	16	109	7**	15.6
	7													
	8													
	Total	35	28	2X	0	33	22	34	27	X	32	211	7	30.1
50%	1												10	
	2												10	
	3	0	0	0	0	0	2	0	0	0	0	8	10	0.8
	4	0	5	3	4	4	5	4	4	3	6	38	10	3.8
	5	11	13	11	14	11	0	12	12	0	11	95	10	9.5
	6	13	15	11	20	12	13	17	16	0	16	133	9***	15.2
	7													
	8													
	Total	35	33	25	38	27	23	33	32	0	33	279	9	31.0
100%	1												10	
	2												10	
	3	5	4	0	0	0	2	0	0	4	0	15	10	1.5
	4	0	0	4	4	4	0	4	3	0	4	23	10	2.3
	5	7	11	12	13	9	7	11	13	0	13	106	10	10.6
	6	13	18	17	16	12	15	14	18	17	13	158	10	15.8
	7													
	8													
	Total	32	33	29	33	25	24	29	34	31	30	304	10	30.4
	Day	0	1	2	3	4	5	6	7	8				
	Counted by:	MF	MF	MF	MF	MF	MF	MF						

Sample Collection
A: Date 9/6/5 Time 1145
B: Date 9/6/90 Time 1030 *
C: Date Time
Begin Test: Date 9/6/90 Time 1400
End Test: Date 9/12/90 Time 1200

Instrument Calibrations:

	Day 0	Day 5
pH	7.7, 9.4	7.7, 9.9
DO	8.5 @ 24°C	8.5 @ 24°C
Cond	1355 @ 24.0°C	1340 @ 24.1
Temp	23.9 @ 23.9°C	24.1 @ 24.1

	Day 1	Day 6
pH	10.1, 9.9	7.7, 9.4
DO	8.7 @ 23°C	8.5 @ 24°C
Cond	1359 @ 23°C	1358 @ 23.8°C
Temp	23°C, 23°C	23.8°C 23.8°C

	Day 2	Day 7
pH	7.7, 9.7	
DO	8.5 @ 24°C	
Cond	1375 @ 24°C	
Temp	23.5°C, 23.5°C	

	Day 3	Day 8
pH	7.7, 9.9	
DO	8.5 @ 24°C	
Cond	1356 @ 24°C	
Temp	23.6 @ 23.6°C	

	Day 4
pH	7.7, 9.9
DO	8.5 @ 24°C
Cond	1375 @ 24°C
Temp	23.7 @ 24.0°C

Remarks: A - spilled on Day 2 count MF
Day 3 pH [illegible]
[illegible]
* Transported to lab 2.3°C
TC2 in cooler,
B Took [illegible] Started on Day 3
C. Day 5 25% Day 3 - [illegible]
** Counting adults only 25.0% note B
*** Counting Adults only 5:20 note B

Investigators' Signatures
[signature]
[signature]
Reviewer

Sample Source: Lake Okeechobee Taylor Creek Nubbin Slough Outlet

NPDES Permit #: N/A Outfall #:

Log #: 99 Start Date: 9/06/90

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY CHRONIC BIOASSAY
Ceriodaphnia dubia CHEMISTRY BENCH SHEET

		New Sample				Old Sample	
	Conc.	pH (SU)	Temp (°C)	DO (mg/l)	Cond (µmhos/cm)	pH (SU)	DO (mg/l)
Day 0 Sample A Meas. by MF Record. by SW	Control	8.1	23.3	8.5	170		
	6.25%	8.0			180		
	12.5%	7.8			185		
	25%	7.6			185		
	50%	7.3			195		
	100%	6.9	23.2	6.3	205		
Day 1 Sample ~~A~~ H Meas. by MF Record. by LB	Control	8.1	23.0	8.4	178	8.2	8.3
	6.25%	8.0			178	8.2	8.3
	12.5%	7.9			181	8.2	8.4
	25%	7.7			182	8.1	8.4
	50%	7.6			192	8.0	8.4
	100%	7.2	23.1	7.1	210	7.9	8.0
Day 2 Sample A Meas. by MF Record. by LB	Control	7.9	23.2	8.2	180	8.0	7.7
	6.25%	7.9			183	7.9	7.8
	12.5%	7.7			186	7.9	7.8
	25%	7.5			189	7.9	7.8
	50%	7.3			196	7.8	7.8
	100%	6.7	23.3	7.1	208	7.6	7.6
Day 3 Sample A Meas. by MF Record. by MF	Control	8.1	22.1	8.5	337	8.1	8.3
	6.25%	8.1			334	8.1	8.2
	12.5%	8.0			320	8.1	8.2
	25%	7.9			306	8.1	8.2
	50%	7.8			276	8.1	8.1
	100%	7.3	22.3	~~8.5~~ 8.4	205	8.0	7.8
Day 4 Sample B Meas. by mf Record. by MF	Control	8.1	22.5	8.4	357	8.4	7.9
	6.25%	8.2			342	8.3	7.8
	12.5%	8.1			331	8.4	7.9
	25%	7.9			317	8.3	7.8
	50%	7.6			284	8.2	7.9
	100%	7.2	23.1	7.1	213	8.2	7.9

		New Sample				Old Sample	
	Conc.	pH (SU)	Temp (°C)	DO (mg/l)	Cond (µmhos/cm)	pH (SU)	DO (mg/l)
Day 5 Sample 1 Meas. by MF Record. by MF	Control	8.2	22.1	8.6	365	8.4	7.6
	6.25%	8.4			366	8.4	7.6
	12.5%	8.3			346	8.4	7.6
	25%	8.2			336	8.3	7.4
	50%	7.9			276	8.2	7.5
	100%	7.6	23.0	7.1	214	8.0	7.3
Day 6 Sample A Meas. by MF Record. by MF	Control					8.4	7.8
	6.25%	Test				8.4	7.6
	12.5%		terminated			8.4	7.6
	25%					8.4	7.6
	50%					8.3	7.6
	100%					8.0	7.4
Day 7 Sample ___ Meas. by ___ Record. by ___	Control						
	6.25%						
	12.5%						
	25%						
	50%						
	100%						
Day 8 Sample ___ Meas. by ___ Record. by ___	Control						
	6.25%						
	12.5%						
	25%						
	50%						
	100%						

Water-quality Parameters

	Field Cl2	Lab Cl2	Alkalinity	Hardness	NH3+NH4
Sample A:	—	<0.02	35	55	
Method	—	Hach	Hach	Hach	meter
Measured by		mf	mf	mf	out of solution

Cl2 blank: <0.02 Ammonia meter slope: mf

Sample B:	—	<0.02	30	60	
Method		Hach	Hach	Hach	meter
Measured by		mf	mf	mf	Lucas

Cl2 blank: <0.02 Ammonia meter slope: _____

Sample C:					
Method					
Measured by					

Cl2 blank: _____ Ammonia meter slope: _____

Remarks: Day 3 pH - meter old meter - new meter wouldn't hold an pH. Day 3 batch 2(c) used.

* check Data Entry for ext. Day 3 pH (acid expld) (for Day 4) ext. Stat had Disk Edited

Investigators' Signatures

Reviewer

Diluent batch # 2B Days Used: mf 0-2

Diluent batch # 2C Days Used: 3-6