

Bioassays of

Anderson Peat and Organic Compost Company

Monteverde, Lake County, Florida

NPDES #FL0038865

Sampled 11/3/97

March 1998

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

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Introduction

Anderson Peat and Organic Compost Company, 16100 County Road 455, Monteverde, Lake County, Florida, NPDES #FL0038865, tests performed on 4 to 6 November, 1997.

This industrial wastewater treatment and disposal system treats wastewater generated by the dewatering of sections of the property that will be excavated for peat and organic soil. Wastewater is pumped into drainage ditches which flow into the main drainage canal. From the main drainage canal, wastewater is first pumped into a 35-acre settling pond, then at a maximum rate of 4.2 MGD, into a man-made pond which discharges into Lake Apopka. A 5-acre pond at the facility serves as an emergency holding area during significant storm events (facility summary 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 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 show toxicity (Table 1).

Total residual chlorine and total ammonia were not detected in the sample. 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 November 3, 1997, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Anderson Peat and Organic Compost Company, Montverde, Lake County, Florida, NPDES# FL0038865, performed on 4 to 6 November, 1997.

Facility:	**Anderson Peat and Organic Compost Company**		**NPDES #**	**FL0038865**	Facility Type: Mining
Location:	16100, County Road 455, Montverde		Contact/District:	Dr. Phil Kane/Central	
County:	Lake		Test type:	static acute screen	
Sample Collection Date:	11/3/97	Time: 0945	# tests:	2	Receiving Water: Lake Apopka
Test Beginning Date:	11/4/97	Time: 1400	Chlorination Type:	non-chlorinated	
Test Ending Date:	11/6/97	Time: 1400			Page 1 of 1

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

	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	8.2	-	8.3	24.7	-	24.4	6.9	-	6.7	170	225
Control B	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	6.7	-	185
Control C	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	6.8	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	6.9	-	175
100% A	20/0	5	5	5	7.5	-	8.4	24.1	-	24.3	6.5	-	6.9	430	450
100% B	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.1	-	460
100% C	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.2	-	460
100% D	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.2	-	455

[A] Temperature of test incubator and test room were continously recorded on strip chart recorders.
Incubator temperature range for the test period was 24.8-25.9°C.
Room temperature range for the test period was 23.5-24.5°C.

Organism: ***Cyprinella leedsi*** Age: 12 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected mmhos/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	7.9	8.4	8.4	25.3	24.2	24.8	7.4	7.0	6.8	260	265
Control B	0/500	5	5	5	7.9	8.5	8.4	25.4	24.4	24.9	7.3	7.1	6.8	260	270
Control C	0/500	5	5	5	7.9	8.4	8.4	25.4	24.5	25.0	7.3	7.2	6.9	260	265
Control D	0/500	5	5	5	7.9	8.4	8.4	25.4	24.2	25.3	7.3	7.2	6.9	260	270
100% A	500/0	5	5	5	7.5	8.1	8.2	24.6	24.3	24.5	6.5	7.2	7.1	450	460
100% B	500/0	5	5	5	7.5	8.1	8.3	24.5	24.5	24.4	6.5	7.2	7.1	450	465
100% C	500/0	5	5	5	7.5	8.2	8.3	24.4	24.5	24.4	6.5	7.3	7.4	450	460
100% D	500/0	5	5	5	7.5	8.1	8.3	24.4	24.4	24.6	6.5	7.3	7.2	450	465

[B] Temperature of test incubator and test room were continously recorded on strip chart recorders.
Incubator temperature range for the test period was 24.0-25.0°C.
Room temperature range for the test period was 23.5-24.5°C.

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

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):	125	130
20% Dilute Mineral Water (cladocerans):	65	75
100% Sample:	65	210

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

Table 2. Results of chemical analyses on the effluent from the Anderson Peat and Organic Compost Company Wastewater Treatment System sampled on November 3, 1997.

Metals

Aluminum	187	µg/L[J]
Calcium	59.1	mg/L[A]
Copper	1.1	µg/L[A]
Iron	81	µg/L[A]
Lead	0.4	µg/L[I]
Magnesium	14.6	mg/L[A]
Zinc	38	µg/L[A]

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: Anderson Pest
County: Lake
Contact / District: Dr. Phil Kane / Central
NPDES Permit #: FL0038865
LIMS Sample #: 199069 **LIMS Job #:** 97-NOV-04-11
sample log: 11/4/97 DW

Sample Collection: Date 11/3/97 Time 0945
Test Beginning: Date 11/4/97 Time 1410
Test Ending: Date 11/6/97 Time 1400
Organism Batch #: 84 **Diluent Batch #:** Well
Organism Age: 12 days
Test Organism: Cyprinella lutrensis

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 23.5 -24.5 °C
incubator 24.0 -25.0 °C
Test Number: 2 of 2
Remarks: D = dead, M = missing

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	23.5 @ 23.6	8.3 @ 25.0 °C	1052 @ 103.6 990 @ 1005 @ 24.8 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.5	8.6 @ 23.1 °C	106.9 @ 103.6 993 @ 1005 @ 24.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.1 @ 23.1	8.2 @ 25.2 °C	985 @ 1005 1030 @ 1006 @ 24.7 °C 106.8 @ 103.6 @ 25.0 °C

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
ctrA	61	5	5	5	7.9	8.4	8.4	25.3	24.2	24.8	7.4	7.0	6.8	260	260	265
ctrB	62	5	5	5	7.9	8.5	8.4	25.4	24.4	24.9	7.3	7.1	6.8	260	260	270
ctrC	63	5	5	5	7.9	8.4	8.4	25.4	24.5	25.0	7.3	7.2	6.9	260	255	265
ctrD	64	5	5	5	7.9	8.4	8.4	25.4	24.2	25.3	7.3	7.2	6.9	260	255	270
100%A	65	5	5	5	7.5	8.1	8.2	24.6	24.3	24.5	6.5	7.2	7.1	450	455	460
100%B	66	5	5	5	7.5	8.1	8.3	24.5	24.5	24.4	6.5	7.2	7.1	450	460	465
100%C	67	5	5	5	7.5	8.2	8.3	24.4	24.5	24.4	6.5	7.3	7.4	450	455	460
100%D	68	5	5	5	7.5	8.1	8.3	24.4	24.4	24.6	6.5	7.3	7.2	450	455	465
Measured/Loaded by:		DW	MF	DW	MF	MF	DW	MF	MF	DW	MF	MF	DW	MF	MF	DW
Recorded by:		MF	MF	DW	DW	KJ	MF	DW	KJ	MF	DW	KJ	MF	DW	KJ	MF

Investigators' Signatures

Marshall Fairbotts

Ken Johnson

reviewer

Water Quality Parameters verified by MF	Salt Water (Well Water)	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			not measured		
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR400	MF/KJ
Alkalinity (mg/L as $CaCO_3$)	125		65	Hach	MF
Hardness (mg/L as $CaCO_3$)	130		210	Hach	MF
Total ammonia (mg/L as N)	<0.017		<0.017	Orion	ND

Ammonia Meter #98136 Ammonia Meter Slope: -59.9 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Anderson Pond
County: Lake
Contact / District: Dr. Phil Kane / Central
NPDES Permit #: FL00 38865
LIMS Sample #: 199069 LIMS Job #: 97-NOV-04-11
sample log: 11/27/97 DW
Test Type: ~~Screening~~ / Definitive
Static / Static Renewal / Flow-through
Temperature range: room 23.5-24.5°C
incubator 24.6-25.9°C
Test Number: 1 of 1
Remarks: D = dead, M = missing

Sample Collection: Date 11/3/97 Time 0945
Test Beginning: Date 11/4/97 Time 1420
Test Ending: Date 11/6/97 Time 1400
Organism Batch #: 45 Diluent Batch #: 48
Organism Age: < 24 hours
Test Organism: Ceriodaphnia dubia

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	23.5 @ 23.6	8.3 @ 25.0 °C	1052 @ 103.6 990 @ 1005 @ 24.8 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.5 @ 23.5	8.6 @ 23.1 °C	1069 @ 103.6 993 @ 1005 @ 24.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.1 @ 23.1	8.2 @ 25.2 °C	1065 @ 1036 @ 25.2°C 985 @ 1005 @ 24.7 °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 24 h	UNCORRECTED 48 h
Ctl	A	5	5	5	8.2		8.3	24.7		24.4	6.9		6.7	170		225
Ctl	B	5	5	5			8.3			24.3			6.7			185
Ctl	C	5	5	5			8.3			24.3			6.8			185
Ctl	D	5	5	5			8.3			24.3			6.9			175
100%	A	5	5	5	7.5		8.4	24.1		24.3	6.5		6.9	430		450
100%	B	5	5	5			8.4			24.3			7.1			460
100%	C	5	5	5			8.4			24.3			7.2			460
100%	D	5	5	5			8.4			24.3			7.2			455
Measured/Loaded by:		MC	MF	DW	MF		DW	MF		DW	MF		DW	MF		DW
Recorded by:		DW	MF	DW	DW		MF	DW		MF	DW		MF	DW		MF

Investigators' Signatures

Marshall Faircloth

Ken Johnson

Reviewer

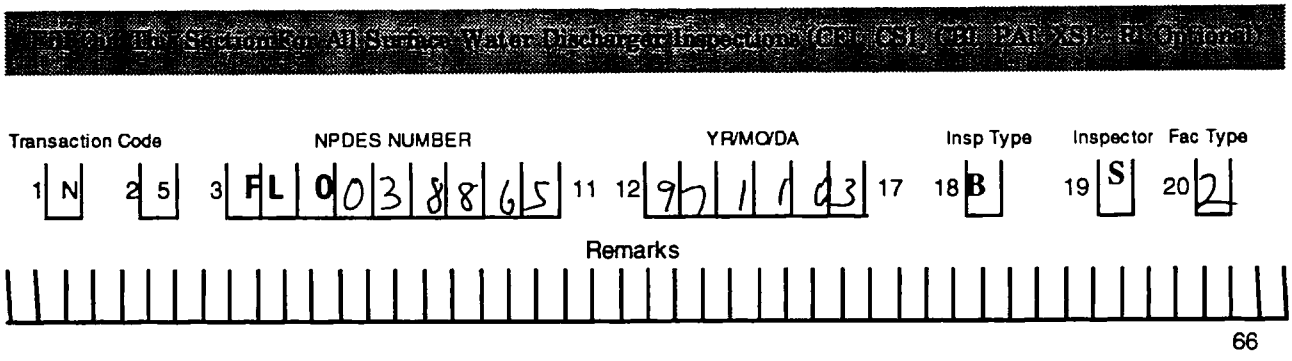
form updated 4/01/96

Water Quality Parameters verified by MF

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR-100	MF/KJ
Alkalinity (mg/L as $CaCO_3$):		65	65	Hach	MF
Hardness (mg/L as $CaCO_3$):		75	210	Hach	MF
Total ammonia (mg/L as N):		<0.017	<0.017	Orion	ND

Ammonia Meter #98136 Ammonia Meter Slope: -59.9 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Anderson Peat and Compost Company effluent sampled on November 3, 1997, NPDES #FL0038865.



The Priority Pollutants Analysis for the Anderson Peat and Compost Company effluent sampled on November 3, 1997, NPDES #FL0038865.

