

Bioassays of

Anheuser-Busch Old Sod Farm

Jacksonville, Duval County, Florida

NPDES #FL0041530

Sampled 10/9/00

May 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Anheuser-Busch Old Sod Farm, 11650 North Main Street, Jacksonville, Duval County, Florida, NPDES #FL0041530, tests performed on 10 to 12 October 2000.

The Anheuser-Busch Old Sod Farm is a 350-acre land-application site for brewery liquor. Wastewater is treated by anaerobic digestion and is applied at an average annual rate of 0.7 inches per week. Outfall D001 has an annual average flow of 3.39 MGD. It receives approximately 2.6 MGD from the south borrow pit. The south borrow pit receives water from the north borrow pit and the underdrain. In addition to these wastewaters, the south borrow pit also receives nanofiltration concentrate at a design flow of 1.25 MGD maximum daily.

Stormwater runoff from the site is discharged through Outfalls 002, 003, and 004. Flows from the outfalls vary and are rainfall dependent. Discharge from the South Burrow Pit flows through Outfall D001 to the Little Cedar Creek, a tributary of the Broward River, which is Class III fresh water (facility summary provided by Robert H. Lear, 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 from Anheuser-Busch-Old Sod Farm. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The sample showed no toxicity to either test species by 48 hours (Table 1).

Total residual chlorine was detected at 0.05 mg/L in the sample. Total ammonia was 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 October 9, 2000, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Anheuser-Busch-Old Sod Farm, 11650 North Main Street, Jacksonville, Duval County, Florida, NPDES# FL0041530 performed on 10 to 12, October 2000.

Facility:	**Anheuser-Busch-Old Sod Farm**			**NPDES #**	**FL0041530**	**Facility Type:**	**Sod Farm**
Location:	11650 North Main Street, Jacksonville			Contact/District:	J. Martin/NE District		
County:	Duval			Test type:	static acute screen		
Sample Collection Date:	10/9/00	Time:	1035	# tests:	2	Receiving Water:	Broward River
Test Beginning Date:	10/10/00	Time:	1315	Chlorination Type:	non-chlorinated		
Test Ending Date:	10/12/00	Time:	1300				**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	N/A	N/A
Lab:	0.05	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):	127	123
20% Dilute Mineral Water (cladocerans):	73	79
100% Sample:	156	617

Salinity[C]	(ppt)
Control Water:	<1
100% Sample:	<1

[C] Salinity based on conductivity and temperature measurements.

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

														Conductivity Uncorrected	
	Sample/Diluent	**SURVIVAL # Alive**			**pH**			**Temperature[A]**			**Dissolved Oxygen**			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	-	8.2	24.3	-	24.1	8.0	-	7.6	185	205
Control B	0/20	5	5	5	-	-	8.3	-	-	24.1	-	-	7.6	-	190
Control C	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.7	-	195
Control D	0/20	5	5	5	-	-	8.3	-	-	23.7	-	-	7.7	-	205
100% A	20/0	5	5	5	7.6	-	8.9	24.5	-	24.4	9.1	-	8.7	1450	1520
100% B	20/0	5	5	5	-	-	8.9	-	-	24.4	-	-	8.7	-	1600
100% C	20/0	5	5	5	-	-	8.9	-	-	24.2	-	-	8.8	-	1650
100% D	20/0	5	5	5	-	-	8.8	-	-	24.2	-	-	8.7	-	1690

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.2-25.2°C.
Incubator #2 temperature range for the test period was 23.6-26.0°C.

Organism: ***Cyprinella leedsi*** Age: 13 days

														Conductivity Uncorrected	
	Sample/Diluent	**SURVIVAL # Alive**			**pH**			**Temperature[B]**			**Dissolved Oxygen**			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	8.0	8.2	8.4	24.1	25.8	24.4	8.1	7.4	7.8	255	270
Control B	0/500	5	5	5	8.1	8.2	8.4	23.8	24.1	23.6	8.0	7.6	7.9	250	265
Control C	0/500	5	5	5	8.1	8.3	8.4	23.9	24.3	25.0	8.1	7.7	7.6	250	275
Control D	0/500	5	5	5	8.1	8.3	8.4	24.0	25.7	23.9	8.1	7.4	7.9	255	265
100% A	500/0	5	5	5	7.7	8.2	8.4	24.1	26.6	23.5	8.9	7.1	8.4	1495	1580
100% B	500/0	5	5	5	7.6	8.2	8.4	24.2	23.9	25.0	9.0	7.8	7.6	1520	1575
100% C	500/0	5	5	5	7.7	8.2	8.4	24.2	24.3	24.6	9.1	7.5	8.4	1515	1575
100% D	500/0	5	5	5	7.6	8.3	8.5	24.1	26.6	23.8	9.0	7.1	8.6	1520	1615

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.2-25.2°C.
Incubator #3 temperature range for the test period was 24.0-25.0°C.

Table 2. Results of chemical analyses on the effluent from Anheuser-Busch-Old Sod Farm sampled on October 9, 2000.

Metals

Copper	1.8	µg/L [I]
Lead	0.36	µg/L [I]
Selenium	0.74	µg/L [I]
Calcium	132	mg/L [A]
Iron	128	µg/L [A]
Magnesium	78.1	mg/L [A]
Zinc	14.2	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: Anheuser Busch
County: Duval
Contact / District: J. Martin/P. O'Connor/NE-DIST
NPDES Permit #: FL0041530
LIMS Sample #: 485811 LIMS Job #: TH2000-10-10-4101
sample log 10-16-00
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 2

Remarks:

Sample Collection: Date 10/9/00 Time 1035
Test Beginning: Date 10/10/00 Time 1315
Test Ending: Date 10/12/00 Time 1300
Organism Batch #: 53 Diluent Batch #: DMW#32
Organism Age: 24hrs. SRT toxicant batch #: —
Test organism: C. dubia

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	8.2	—	8.2	24.3	—	24.1	8.0	—	7.6	185	—	205
	B	5	5	5	—	—	8.3	—	—	24.1	—	—	7.6	—	—	190
	C	5	5	5	—	—	8.3	—	—	23.8	—	—	7.7	—	—	195
	D	5	5	5	—	—	8.3	—	—	23.7	—	—	7.7	—	—	205
100%	A	5	5	5	7.6	—	8.9	24.5	—	24.4	9.1	—	8.7	1450	—	1520
	B	5	5	5	—	—	8.9	—	—	24.4	—	—	8.7	—	—	1600
	C	5	5	5	—	—	8.9	—	—	24.2	—	—	8.8	—	—	1650
	D	5	5	5	—	—	8.8	—	—	24.2	—	—	8.7	—	—	1690
measured by:		SG	SG	SG	SG	—		SG	—	SG	SG	—	SG	SG	—	SG
recorded by:		DPH	SG	SG	YMK	—		YMK	—	YMK	YMK	—	YMK	YMK	—	YMK

Investigators' Signatures
Shannon Gerard
Yuri Kabbe
Dulce Parker-Hamilton
Jaime Oyer
S H Wolfe
reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 2 23.6-26°C
Room B246 24.2-25.2°C

	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NA	NA	NA	SG
Lab Total Residual Cl2 (mg/L):		<0.03	0.05	DR100	DPH	SG
Alkalinity (mg/L as $CaCO_3$):		73	156	Hach	JA	SG
Hardness (mg/L as $CaCO_3$):		79	617	Hach	JA	SG
Total ammonia (mg/L as N):		<0.017	<0.017	Denver	DPH	SG
Salinity:		<1	<1	451	JA	DPH

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Anheuser Busch
County: Duval
Contact / District: J. Martin / P. O'Connor / NE-DIST
NPDES Permit #: FL0041550
LIMS Sample #: 485811 LIMS Job #: TH2000-10-10-41-01
sample log 10-16-00
Test Type: ~~Screening~~ | Definitive
~~Static~~ | Static Renewal | Flow-through
Test Number: 1 of 2

Sample Collection: Date 10/9/00 Time 1035
Test Beginning: Date 10/10/00 Time 1315
Test Ending: Date 10/12/00 Time 1300
Organism Batch #: 79 Diluent Batch #: Well
Organism Age: 13days SRT toxicant batch #: —
Test organism: C. dubia

Remarks:
* wrong order, wrong place. 10/12/00 (SG)

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	Cond. 24 h	Cond. 48 h
Control A	F1	5	5	5	8.0	8.2	8.4	24.1	25.8	~~23.7~~	8.1	7.4	~~8.7~~	255	275	270
B	F2	5	5	5	8.1	8.2	8.4	23.8	24.1	~~24.6~~	8.0	7.6	~~8.4~~	250	260	265
C	F3	5	5	5	8.1	8.3	8.4	23.9	24.3	~~25.0~~	8.1	7.7	7.6	250	265	275
D	F4	5	5	5	8.1	8.3	8.4	24.0	25.7	23.9	8.1	7.4	7.9	255	265	265
100% A	F5	5	5	5	7.7	8.2	8.4	24.1	26.6	23.5	8.9	7.1	8.4	1495	1570	1580
B	F6	5	5	5	7.6	8.2	8.4	24.2	23.9	25.0	9.0	7.8	7.6	1520	1540	1575
C	F7	5	5	5	7.7	8.2	8.4	24.2	24.3	24.6	9.1	7.5	8.4	~~1550~~	1550	1575
D	F8	5	5	5	7.6	8.3	8.5	24.1	26.6	23.8	9.0	7.1	8.6	1520	1640	1615
	1															
measured by:		YMK	SG	YMK	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG
recorded by:		DPH	SG	YMK	~~YMK~~	YMK	YMK	~~YMK~~	YMK	YMK	~~YMK~~	YMK	YMK	~~YMK~~	YMK	YMK

Temp: 24.4, 23.6, 25.0
DO: 7.8, 7.9
1515 (SMZ)

Investigators' Signatures

Temperature Range °C
Incubator # 3 24.0-25.0
Room B246 24.2-25.2

* wrong place (SG) 10/10/00

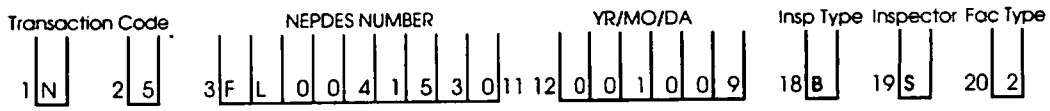
Water Quality Parameters	Salt Water Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			~~NA~~	NA	NA	SG
Lab Total Residual Cl2 (mg/L):	<0.03		<0.05	DR100	DPH	SG
Alkalinity (mg/L as $CaCO_3$):	127		156	Hach	JA	SG
Hardness (mg/L as $CaCO_3$):	123		617	Hach	JA	SG
Total ammonia (mg/L as N):	<0.017		<0.017	Denver	DPH	SG
Salinity:	<1		<1	451	JA	DPH

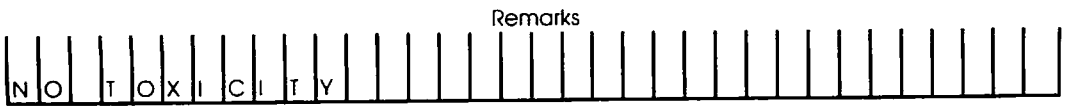
reviewer

form updated 3/3/99

The Bioassay of Anheuser-Busch-Old Sod Farm effluent sampled on October 9, 2000, NPDES #FL0041530.

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

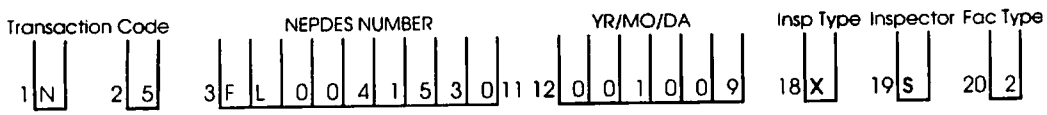


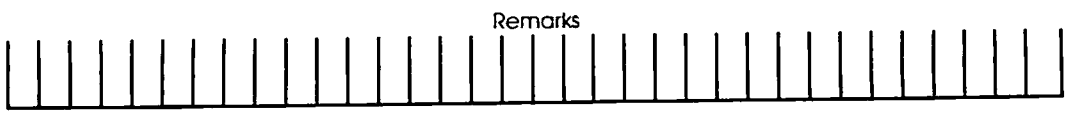


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The Priority Pollutants Analysis for Bioassay of Anheuser-Busch-Old Sod Farm effluent sampled on October 9, 2000, NPDES #FL0041530.

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





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