

Bioassays of

Anheuser Busch-Old Sod Farm

Jacksonville, Duval County, Florida

NPDES #FL0041530

Sampled 2/1/99

April 1999

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Anheuser Busch–Old Sod Farm, 111 Busch Drive, Jacksonville, Duval County, Florida. NPDES #FL0041530, tests performed on 2 to 4 February, 1999.

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 0.78 MGD or 0.7 inches per week. Approximately 60% of the site has an underdrain system that flows to either the South Borrow Pit or the North Borrow Pit (which discharges into the South Borrow Pit). Stormwater runoff from the site is discharged through Outfalls 001, 002, 003, and 004. Flows from the outfalls vary and are rainfall dependent. Outfall 001 is the discharge point for the South Borrow Pit and has an average monthly flow of 0.95 MGD. Average monthly flows for Outfalls 002, 003, and 004 are 0.01 MGD, 0.07 MGD, and 0.05 MGD, respectively. Discharge from the site goes into Little Cedar Creek, a tributary of the Broward River (facility summary provided by Heather Wehry, 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 that was collected from Outfall 001 of this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. Test results did not show toxicity (Table 1).

Total residual chlorine (TRC) was 0.05 mg/L in the laboratory and was not measured in the field. Chlorine is not used in the treatment process; therefore, the TRC result was probably a false positive caused by interference from an unknown constituent of the sample. The total ammonia and unionized ammonia concentrations were 0.088 mg/L and 0.004 mg/L, respectively. 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 February 1, 1999, 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, Jacksonville, Duval County, Florida, NPDES# FL0041530, performed on 2 to 4 February, 1999.

Facility:	**Anheuser Busch–Old Sod Farm**		NPDES #	FL0041530	Facility Type:	Wastewater Treatment	
Location:	111 Busch Drive, Jacksonville		Contact/District:	Heather Wehry/Northeast		Facility	
County:	Duval		Test type:	static acute screen		land application drainage to	
Sample Collection Date:	2/1/99	Time: 1330	# tests:	2	Receiving Water:	Little Cedar Creek to the	
Test Beginning Date:	2/2/99	Time: 1545	Chlorination Type:	not chlorinated		Broward River	
Test Ending Date:	2/4/99	Time: 1440				Page 1 of 1	

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	0.05	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	<0.017	<0.017
Control Water (20% DMW) (cladocerans):	<0.017	<0.017
100% Sample:	0.088	0.004

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	130	135
Control Water (20% DMW) (cladocerans):	79	75
100% Sample:	190	160

Salinity	(ppt)
Control Water (fish):	0
Control Water (20% DMW) (cladocerans):	0
100% Sample:	0

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity 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	-	7.9	24.0	-	24.4	8.1	-	7.7	160	180
Control B	0/20	5	5	5	-	-	7.9	-	-	24.2	-	-	8.0	-	175
Control C	0/20	5	5	5	-	-	8.0	-	-	24.1	-	-	8.0	-	180
Control D	0/20	5	5	5	-	-	8.0	-	-	23.9	-	-	8.0	-	190
100% A	20/0	5	5	5	8.3	-	8.8	24.3	-	23.9	8.1	-	8.6	720	820
100% B	20/0	5	5	5	-	-	8.8	-	-	24.0	-	-	8.6	-	800
100% C	20/0	5	5	5	-	-	8.8	-	-	24.0	-	-	8.6	-	775
100% D	20/0	5	5	5	-	-	8.8	-	-	24.0	-	-	8.7	-	810

[A] Temperature of test incubator #2 and the test room were continuously recorded on strip chart recorders.
Incubator #2 temperature range for the test period was 24.5-25.5°C.
Test room temperature range for the test period was 23.5-25.0°C.

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity 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	7.9	8.2	8.5	24.0	25.4	24.6	7.9	7.5	8.0	240	255
Control B	0/500	5	5	5	7.9	8.2	8.5	24.1	24.9	24.5	7.9	7.4	8.0	245	260
Control C	0/500	5	5	5	7.9	8.2	8.5	24.1	24.9	24.4	7.9	7.5	8.0	245	260
Control D	0/500	5	5	5	7.9	8.3	8.5	24.1	24.7	24.5	7.9	7.5	8.0	245	260
100% A	500/0	5	5	5	7.9	8.5	8.7	24.2	25.6	24.5	7.8	8.0	8.2	740	785
100% B	500/0	5	5	5	7.9	8.5	8.9	24.2	25.1	24.4	7.8	8.0	10.2	775	820
100% C	500/0	5	5	5	7.9	8.5	8.7	24.2	24.8	24.4	7.8	8.0	8.6	770	820
100% D	500/0	5	5	5	7.9	8.5	8.6	24.2	24.7	24.5	7.8	8.0	8.5	770	815

[B] Temperature of test incubator #3 and the test room were continuously recorded on strip chart recorders.
Incubator #3 temperature range for the test period was 25.0-26.5°C.
Test room temperature range for the test period was 23.5-25.0°C.

Table 2. Results of chemical analyses on the sample of effluent from the Anheuser Busch–Old Sod Farm sampled on February 1, 1999.

Metals

Aluminum	188	µg/L[I]
Calcium	16.6	mg/L
Copper	1.8	µg/L
Iron	135	µg/L
Lead	1.04	µg/L
Magnesium	29.3	mg/L

Base, Neutral, & Acid Extractable Organics

None Detected

Pesticides

None Detected

[I] Value reported is less than the practical quantitation limit and greater than or equal to the minimum detection limit.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Anheuser Busch Old Sod farm
County: Duval
Contact / District: H. McHarg / Northeast
NPDES Permit #: FL0041530
LIMS Sample #: 368280 LIMS Job #: TLH-1999-02-02-12
sample log 2/5/99 CW
Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Test Number: 2 of 2

Sample Collection: Date 2/1/99 Time 13:30
Test Beginning: Date 2/2/99 Time 15:00
Test Ending: Date 2/4/99 Time 15:00
Organism Batch #: 6 Diluent Batch #: Well
Organism Age: 11 days SRT toxicant batch #: N/A
Test organism: Cyprinella leedsi

Remarks:

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
CTL A	D1	5	5	5	7.9	8.2	8.5	24.0	25.4	24.6	7.9	7.5	8.0	240	230	255
CTL B	D2	5	5	5	7.9	8.2	8.5	24.1	24.9	24.5	7.9	7.4	8.0	245	250	260
CTL C	D3	5	5	5	7.9	8.2	8.5	24.1	24.9	24.4	7.9	7.5	8.0	245	250	260
CTL D	D4	5	5	5	7.9	8.3	8.5	24.1	24.7	24.5	7.9	7.5	8.0	245	250	260
100% A	D5	5	5	5	7.9	8.5	8.7	24.2	25.6	24.5	7.8	8.0	8.2	740	795	785
100% B	D6	5	5	5	7.9	8.5	8.9	24.2	25.1	24.4	7.8	8.0	10.2	775	800	820
100% C	D7	5	5	5	7.9	8.5	8.7	24.2	24.8	24.4	7.8	8.0	8.6	770	805	820
100% D	D8	5	5	5	7.9	8.5	8.6	24.2	24.7	24.5	7.8	8.0	8.5	770	790	815
measured by:		FW	FW	FW	FW	FW	CH	FW	FW	CH	FW	FW	CH	FW	FW	CH
recorded by:		CH	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW

(R) Reading taken twice. Same reading was obtained both times. FW 2/4/99

Investigators' Signatures

Courtney Head
Jason Weeks
Marshall Fairchild
Dan Wilk

Temperature Ranges
Incubator #3 25.0-26.5°C
Room - 23.5-25.0°C

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			Not measured			MK
Lab Total Residual Cl2 (mg/L):	<0.03	—	0.05	DR-100	FW	FW
Alkalinity (mg/L as $CaCO_3$):	130	—	190	Hach	CH	FW
Hardness (mg/L as $CaCO_3$):	135	—	160	Hach	CH	FW
Total ammonia (mg/L as N):	<0.017	—	0.058	Denver	MF	FW
Salinity:		—	0	YSI	FW	FW

reviewer form updated 5/22/98

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Anheuser Busch Old Sod Farm
County: Duval
Contact / District: H. Wehry / Northeast
NPDES Permit #: FL0041530
LIMS Sample #: 368280 LIMS Job #: TLH-1999-02-02-12
sample log 2/8/99 DW
Test Type: (Screening) I Definitive
(Static) I Static Renewal I Flow-through
Test Number: 1 of 2

Sample Collection: Date 2/1/99 Time 13:30
Test Beginning: Date 2/2/99 Time 15:45
Test Ending: Date 2/6/99 Time 14:40
Organism Batch #: 6 Diluent Batch #: 3
Organism Age: <24hrs SRT toxicant batch #: N/A
Test organism: Ceriodaphnia dubia

Remarks:

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
CTL	A	5	5	5	8.2		7.9	24.0		24.4	8.1		7.7	160		180
CTL	B	5	5	5			7.9			24.2			8.0			175
CTL	C	5	5	5			8.0			24.1			8.0			180
CTL	D	5	5	5			8.0			23.9			8.0			190
100%	A	5	5	5	8.3		8.8	24.3		23.9	8.1		8.6	720		820
100%	B	5	5	5			8.8			24.0			8.6			800
100%	C	5	5	5			8.8			24.0			8.6			775
100%	D	5	5	5			8.8			24.0			8.7			810
measured by:		FW	FW	MF	CH		CH	CH		CH	CH		CH	CH		CH
recorded by:		CH	FW	MF	FW		FW	FW		FW	FW		FW	FW		FW

Investigators' Signatures

Temperature Ranges
Incubator #2 – 24.5-25.5°C
Room – 23.5-25.0°C

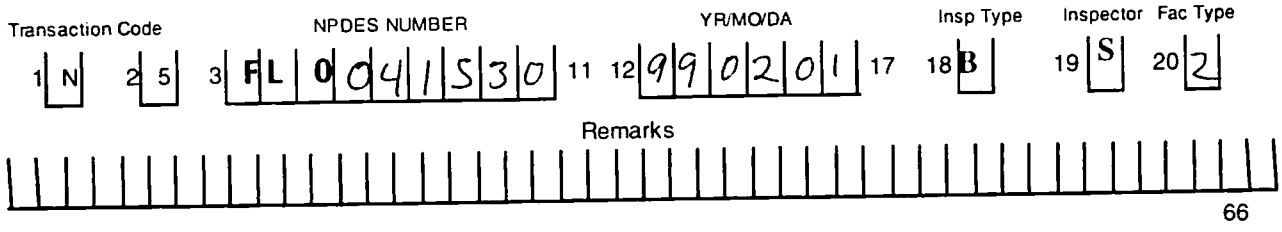
	Salt Water / Well Water	Water Quality Parameters: 20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			NOT MEASURED			MF
Lab Total Residual Cl2 (mg/L):	—	<0.03	0.05	DR-100	CH FW	FW
Alkalinity (mg/L as $CaCO_3$):	—	79	190	Hach	CH	FW
Hardness (mg/L as $CaCO_3$):	—	75	160	Hach	CH	FW
Total ammonia (mg/L as N):	—	<0.017	0.088	Denver	MF	FW
Salinity:	—		0	YSI	FW	FW

reviewer

form updated 5/22/98

The Bioassay of the Anheuser Busch-Old Sod Farm effluent sampled on February 1, 1999, NPDES #FL0041530.

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



The Priority Pollutants Analysis for the Bioassay of the Anheuser Busch-Old Sod Farm effluent sampled on February 1, 1999, NPDES #FL0041530.

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

