# **CHAM** HILL

#### **BIOASSAY REPORT**

ACUTE AND CHRONIC TOXICITY TESTS Conducted June 14 through 21, 1994

> Prepared for Onalaska Landfill Onalaska, Wisconsin

> > Prepared by

CH2M HILL Bioassay Laboratory 15779 West Ryerson Road New Berlin, Wisconsin 53151

July 1994

### **Summary**

CH2M HILL conducted acute and chronic toxicity tests on groundwater samples (influent to the carbon unit and final effluent) provided by the Onalaska Landfill, Onalaska, Wisconsin. Aliquots of the influent and effluent were treated at the laboratory with zeolite (to remove ammonia) and concurrently tested for acute toxicity using the daphnids. The bioassays were conducted from June 14 through 21, 1994, as part of compliance biomonitoring for the State of Wisconsin. Ceriodaphnia dubia, Daphnia magna, and fathead minnows were used as the test organisms. The following is a summary of the test results:

#### **Acute Toxicity**

Test Media	Ceriodaphnia dubia	Daphnia magna	Fathead Minnow
Black River Control	Pass	Pass	Pass
100% Carbon Unit Influent	Pass	Pass	Pass
100% Final Effluent	Pass	Pass	Pass
100% Zeolite Treated Influent	Pass	Pass	~~~
100% Zeolite Treated Effluent	Pass	Pass	utility state value
Laboratory Control	Pass	Pass	Pass

#### **Chronic Toxicity**

	Cerioda	iphnia dubia	Fathead Minnow		
Test Media	Mean % Survival	Mean No. of Offspring	Mean % Survival	Mean Growth (mg)	
Black River Control	70 a	21.5	80	0.315	
3.7% Influent (IWC)	90	24.0	67.5	0.299	
5% Influent	80	20.2	72.5	0.286	
10% Influent	90	27.5	92.5	0.406	
20% Influent	90	25.9	100	0.417	
40% Influent	90	20.3	100	0.453	
80% Influent	100	22.2	97.5	0.382	
IC <sub>25</sub>		> 80%		> 80%	
3.7% Effluent	100	29.0	97.5	0.429	
Laboratory Control	100	26.3	100	0.452	

<sup>&</sup>lt;sup>a</sup>Indicates data did not meet test acceptability criterion.

For compliance purposes, the test results show that:

- The carbon unit influent and final effluent samples were not acutely toxic to *Ceriodaphnia dubia*, *Daphnia magna*, or fathead minnows at 100 percent concentrations using the 50 percent lethality criteria.
- The carbon unit influent and final effluent samples were not chronically toxic to *Ceriodaphnia dubia* or larval fathead minnows at the 3.7 percent IWC or any of the concentrations tested using the 25 percent inhibition analysis for reproduction or biomass.
- Black River water data were acceptable as controls in all the acute tests and the chronic fathead minnow bioassay.
- Black River water data did not meet the survival criterion of 80 percent in the chronic *Ceriodaphnia* bioassay. However, the reproduction criterion was met. All groundwater concentrations had higher survival and growth values than the Black River water. Therefore, because the groundwater concentrations produced similar or better results than the river control, the *Ceriodaphnia* chronic bioassay should be considered a valid test for determining toxicity.
- Laboratory water data met test acceptability criteria in all acute and chronic bioassays.

MKE100147ED.WP5

#### Introduction

This report presents the results of the laboratory acute and chronic toxicity tests conducted by CH2M HILL on groundwater samples provided by the Onalaska Landfill, Onalaska, Wisconsin. The aliquots of the groundwater samples were treated with zeolite and tested for acute toxicity using the daphnids. The bioassays used *Ceriodaphnia dubia*, *Daphnia magna*, and fathead minnows as the test organisms and were performed from June 14 through 21, 1994, as part of compliance biomonitoring for the State of Wisconsin.

#### **Methods**

All laboratory methods, including organism culture, sample handling, test procedures, and data analyses, were in accordance with the recommendations of the U.S. Environmental Protection Agency (EPA) [1, 2, 3, 4], the CH2M HILL Milwaukee Bioassay Laboratory's Standard Operating Procedures, and the Wisconsin Department of Natural Resources (DNR) biomonitoring requirements as specified in the Onalaska Landfill discharge permit.

#### Sample Collection and Handling

Photocopies of the chain-of-custody forms are included in Appendix B. Three 24-hour composite groundwater samples and one receiving water grab sample were used as follows:

Description	Sample No.	Date Collected	Date Tested
Black River	434.01	6/12	6/14-21
Carbon Unit Influent	434.02 <sup>A</sup>	6/11-12	6/14-16
Carbon Unit Influent	434.02 <sup>B</sup>	6/14-15	6/16-18
Carbon Unit Influent	434.02 <sup>C</sup>	6/16-17	6/18-21
Effluent	434.03 <sup>A</sup>	6/11–12	6/14-16
Effluent	434.03 <sup>B</sup>	6/14-15	6/16-18
Effluent	434.03 <sup>C</sup>	6/16–17	6/18-21

All samples were collected by CH2M HILL personnel and delivered on ice to the CH2M HILL Milwaukee Bioassay Laboratory. Upon arrival, samples were logged in and physicochemical characterizations were conducted. Samples not immediately prepared for testing were refrigerated (4°C) for later use. All samples were initially used within 48 hours of collection.

#### **Test Organisms**

All test organisms were cultured at the CH2M HILL Milwaukee Bioassay Laboratory.

#### **Test Procedures**

#### Sample Treatment

An aliquot of the first influent and effluent sample was pumped through a column of clinoptiloite to reduce ammonia levels.

#### **Bioassays**

Bioassay test conditions are summarized in Tables 1 through 5. Additional tests on the zeolite-treated samples were performed to evaluate potential ammonia toxicity.

#### Physicochemical Monitoring

Total alkalinity, hardness, and total ammonia were measured initially on each new sample. Total residual chlorine was measured initially on each effluent sample. Total alkalinity and hardness were measured once in the laboratory control media. Total amonia was also measured on the zeolite treated samples.

Dissolved oxygen (DO), pH, and conductivity were measured initially and daily thereafter in all test treatment renewals. DO and pH were measured in one test chamber or composite of each 24-hour-old test solution.

Bioassay incubator temperature was electronically monitored hourly by thermocouple and data logger, and a 24-hour summary of mean values was recorded.

# **Data Analysis**

Pass/fail criteria were applied to acute toxicity data. A modified EPA mathematical analysis was used to estimate an  $IC_{25}$  (the concentration that is inhibited 25 percent from the control data) on chronic toxicity data. The  $IC_{25}$  value generated is the linear interpolation estimate.

Toxicity was defined according to the following DNR criteria:

### Acute Toxicity

• Less than 50 percent survival of test organisms in 100 percent effluent at test termination (48 hours for *Ceriodaphnia dubia* and *Daphnia magna*, and 96 hours for fathead minnow).

# Table 2 Summary of Test Conditions for the Daphnia Acute Bioassay Conducted for the Onalaska Landfill Onalaska, Wisconsin

June 14 through 16, 1994

1.	Test organism	Daphnia magna (Crustacea: Cladocera).
2.	Test type	Static renewal.
3.	Age of test organisms	Less than 24 hours.
4.	Test chamber size	30 mL
5.	Test solution volume	25 mL
6.	Renewal of test solutions	Daily.
7.	Replicate chambers per treatment	4
8.	Test organisms per chamber	5
9.	Primary control/dilution water	Receiving water: Black River.
10.	Internal control water	Laboratory culture medium.
11.	Test media	Carbon unit influent, final effluent, zeolite- treated influent, zeolite-treated effluent.
12.	Sample concentrations	6.25, 12.5, 25, 50, and 100% influent; 100% effluent; 100% treated influent; 100% treated effluent.
13.	Temperature	20 ± 1°C
14.	Feeding regime	None.
15.	Aeration	None.
16.	Test duration	48 hours.
17.	Sampling scheme	One 24-hour composite influent and effluent sample. Maximum holding time of 48 hours between completion of collection and initial test use. One receiving water grab sample collected within 48 hours of test initiation. Laboratory water used was collected daily.
18.	Effects measured	Survival.
19.	Test acceptability	90% or greater mean survival in the laboratory or

receiving water control.

#### Table 3

#### Summary of Test Conditions for the Fathead Minnow Acute Bioassay Conducted for the Onalaska Landfill Onalaska, Wisconsin June 14 through 18, 1994

	•	
1.	Test organism	Pimephales promelas (Osteiehthyes: Cyprinidae).
2.	Test type	Static renewal.
3.	Age of test organisms	28 days old.
4.	Test chamber size	500 mL
5.	Test solution volume	400 mL
6.	Renewal of test solutions	Daily.
7.	Replicate chambers per treatment	2
8.	Test organisms per chamber	10
9.	Primary control/dilution water	Receiving water: Black River.
10.	Internal control water	Laboratory culture medium.
11.	Test media	Carbon unit influent and final effluent.
12.	Sample concentrations	6.25, 12.5, 25, 50, and 100% influent; 100% effluent.
13.	Temperature	20 ± 1°C
14.	Feeding regime	None.
15.	Aeration	None, unless DO concentration falls below 40% saturation (then, continuous at rate not exceeding 100 bubbles/min).
16.	Test duration	96 hours.
17.	Loading rate	Less than 0.65 g/L
18.	Sampling scheme	Two separate 24-hour composite influent and effluent samples, each used for a 48-hour exposure. Maximum holding time of 48 hours between completion of collection and initial test use for each sample. One grab sample of receiving water collected within 48 hours of test initiation. Laboratory water used was collected daily.
19.	Effects measured	Survival.

90% or greater mean survival in the laboratory or

receiving water control.

20. Test acceptability

#### Table 4

#### Summary of Test Conditions for the Ceriodaphnia Chronic Bioassay Conducted for the Onalaska Landfill Onalaska, Wisconsin

June 14 through 21, 1994

1.	Test organism	Ceriodaphnia dubia (Crustacea: Cladocera).
2.	Test type	Static renewal.
3.	Age of test organisms	Less than 24 hours, all released within an 8-hour period (same generation from even-aged parents).
4.	Test chamber size	30 mL
5.	Test solution volume	15 mL
6.	Renewal of test solutions	Daily.
7.	Replicate chambers per treatment	10
8.	Test organisms per chamber	1
9.	Primary control/dilution water	Receiving water: Black River.
10.	Secondary control water	Laboratory culture medium.
11.	Test media	Carbon unit influent and final effluent.
12.	Sample concentrations	3.7, 5, 10, 20, 40, 80% influent; 3.7% effluent.
13.	Temperature	25 ± 1°C
14.	Feeding regime	0.1 mL each of YCT culture food and algae per test chamber daily.
15.	Aeration	None.
16.	Test duration	7 days.
17.	Sampling scheme	Three 24-hour composite influent and effluent samples, each used a minimum of 48 consecutive exposure hours. Maximum holding time of 48 hours between completion of collection and initial test use. One receiving water grab sample collected within 48 hours of test initiation. Laboratory water used was collected as one batch.
18.	Effects measured	Survival and reproduction.
19.	Test acceptability	Laboratory or receiving water control with 80% or greater mean survival, an average of 15 or more young per surviving female, and at least 60% producing three

broods.

#### Table 5

#### Summary of Test Conditions for the Fathead Minnow Chronic Bioassay Conducted for the Onalaska Landfill Onalaska, Wisconsin June 14 through 21, 1994

1.	Test organism	Pimephales promelas (Osteiehthyes: Cyprinidae).
2.	Test type	Static renewal.
3.	Age of test organisms	Larval, less than 24 hours.
4.	Test chamber size	500 mL
5.	Test solution volume	300 mL
6.	Renewal of test solutions	Daily.
7.	Replicate chambers per treatment	4
8.	Test organisms per chamber	10
9.	Primary control/dilution water	Receiving water: Black River.
10.	Secondary control water	Laboratory culture medium.
11.	Test media	Carbon unit influent and final effluent.
12.	Sample concentrations	3.7, 5, 10, 20, 40, 80% influent; 3.7% effluent.
13.	Temperature	25 ± 1°C
14.	Feeding regime	0.15 mL brine shrimp nauplii (less than 24 hours old) twice daily.
15.	Aeration	None, unless DO concentration falls below 40% saturation (then, continuous at rate not exceeding 100 bubbles/min).
16.	Cleaning	Siphon daily, immediately before test solution renewal.
17.	Test duration	7 days.
18.	Sampling scheme	Three 24-hour composite influent and effluent samples, each used for a minimum of 48 consecutive exposure hours. Maximum holding time of 48 hours between completion of collection and initial test use of each sample. One receiving water grab sample collected within 48 hours of test initiation. Laboratory water used was collected daily.
19.	Effects measured	Survival and growth (biomass).
20.	Test acceptability	Laboratory or receiving water control with 80% or greater mean survival, and surviving fish with at least 0.25 mg average dry weight.

# Chronic Toxicity

• IC<sub>25</sub> value for *Ceriodaphnia dubia* reproduction or fathead minnow biomass less than the IWC (3.7 percent) after a nominal 7-day exposure.

#### **Quality Assurance**

Part of the quality assurance and quality control (QA/QC) program at the CH2M HILL Milwaukee Bioassay Laboratory includes the performance of organisms concurrently tested in laboratory media. Tables 1 through 5 present the test acceptability criteria for laboratory control data. The results of the laboratory control tests are listed in Tables 6 and 7.

In addition, other QA/QC procedures include performing monthly reference toxicant tests using reagent-grade sodium chloride. The results of reference toxicant tests conducted during the past 12 months on the appropriate test organisms are summarized in Appendix C.

#### Results

Photocopies of the laboratory data and computer printouts of the statistical analyses are found in Appendix A. There were no excursions from the protocols and all test conditions were within the limits required by the DNR. The test results are summarized below.

#### **Acute Bioassays**

Table 6 presents the acute bioassay results. No acute toxicity was demonstrated to *Ceriodaphnia dubia, Daphnia magna*, or fathead minnows in the 100 percent influent and effluent concentrations. Black River and laboratory control data were acceptable in all tests.

Table 7
Summary of Results of Chronic Bioassays
Conducted for the Onalaska Landfill
Onalaska, Wisconsin
June 14 through 21, 1994

Cerioda	phnia dubia	Fathead Minnow		
Mean % Survival	Mean No. of Offspring	Mean % Survival	Mean Growth (mg)	
70 <sup>a</sup>	21.5	80	0.315	
90	24.0	67.5	0.299	
80	20.2	72.5	0.286	
90	27.5	92.5	0.406	
90	25.9	100	0.417	
90	20.3	<b>10</b> 0	0.453	
100	22.2	97.5	0.382	
	> 80%		> 80%	
100	29.0	97.5	0.429	
100	26.3	100	0.452	
	Mean % Survival 70 a 90 80 90 90 90 100	Survival         Offspring           70 a         21.5           90         24.0           80         20.2           90         27.5           90         25.9           90         20.3           100         22.2           > 80%           100         29.0	Mean % Survival         Mean No. of Offspring         Mean % Survival           70 a 21.5 80 90 24.0 67.5 80 20.2 72.5 90 27.5 92.5 90 25.9 100 90 25.9 100 100 22.2 97.5         92.5 92.5 92.5 92.5 92.5 92.5 92.5 92.5	

<sup>&</sup>lt;sup>a</sup>Indicates data did not meet test acceptability criterion.

### Physicochemical Data

All physicochemical parameters measured satisfied the bioassay requirements (see Appendix A). Relatively high total ammonia levels were measured in the influent and effluent samples; however, ammonia did not cause observed toxicity.

#### **Conclusions**

The results of the laboratory bioassays conducted on groundwater samples collected by CH2M HILL from the Onalaska Landfill on June 12, 15, and 17, 1994, show:

• The carbon unit influent and final effluent samples were not acutely toxic to *Ceriodaphnia dubia*, *Daphnia magna*, or fathead minnows at 100 percent concentrations using the 50 percent lethality criteria.

- The carbon unit influent and final effluent samples were not chronically toxic to *Ceriodaphnia dubia* or larval fathead minnows at the 3.7 percent IWC or any of the concentrations tested using the 25 percent inhibition analysis for reproduction or biomass.
- Black River water data were acceptable as controls in all the acute tests and the chronic fathead minnow bioassay.
- Black River water data did not meet the survival criterion of 80 percent in the chronic *Ceriodaphnia* bioassay. However, the reproduction criterion was met. All groundwater concentrations had higher survival and growth values than the Black River water. Therefore, because the groundwater concentrations produced similar or better results than the river control, the *Ceriodaphnia* chronic bioassay should be considered a valid test for determining toxicity.
- Laboratory water data met test acceptability criteria in all acute and chronic bioassays.

#### References

- 1. Weber, C. I. (ed.). 1993. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (Fourth Edition). EPA/600/4-90/027F. U.S. EPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. 293 p.
- 2. Denny, J.S. 1987. Guidelines for the Culture of Fathead Minnows, Pimephales promelas, for Use in Toxicity Tests. EPA/600/3-87/001. U.S. EPA, Environmental Research Laboratory, Duluth, Minnesota. 42 p.
- 3. Weber, C. I., et al. 1989. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Second Edition). EPA/600/4-89/001. U.S. EPA, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio. 249 p.
- 4. Weber, C. I., et al. 1989. Supplement to Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Revision 1). EPA/600/4-89/001a. U.S. EPA, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio. 42 p.

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APPENDIX A
LABORATORY DATA SHEETS
AND STATISTICAL ANALYSES

# CH2M HILL MILWAUKEE BIOASSAY LABORATORY

CLIENT: Onalaska L TEST DATE: 6-14-94	
To the best of our knowledge, th	ne laboratory data reported, is true and accurate.
1970 and the State of the Control of	Report and Data:
Reviewed by:	
mry titmenso	Date: 7-19-94
V	Date:
Approved by:  James Stark	Date: 7-19-9 4
RPTQA	

# 48-HOUR ACUTE TEST INITIAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: TSE 142.3 2 CLIENT: On	alaska Landfill
TEST ORGANISM: Cariodophia dubia	LAB MEDIA INO .: Culture media /434. ADL
SAMPLE No.(s): 434.02 A , 434.01	CONTROLIDILUENT: Black River
SAMPLE DESCRIPTION: In fluen+	
TEST START DATE: 6-14-94 TIME: 1310	TEST END DATE: 6-16-94 TIME: 1215
ANALYST(s): I-Cooke	CODE:

# **INITIAL CHEMICAL MEASUREMENT**

		,			y	ļ
TREAT.	TEST		EXPOSURE F	<del>,</del>		
NO.	SOLN	PARAMETER	0	24	COMMENTS	
		DO	8.0	8.0		
1		pH	7.9	8.0		
	LAB	COND	.22	.22		
		COND				
	Black	DO	9.0	9.0		
2	Black	• • • PH • • • •	8.7	8.7		
	RIVER	COND	,16	•/7		
		DO	50	9.0		
3	3-1	рН	9.0 8.6	8.7		
	6.25%	COND	./9	.17		
		1				
		DO	9.0 8.5	9-0 8.7		
4	12.5%	pH				
	16.01.	COND	. 22	128 /		
		DO	9.0	9.0		
5	7/	рН	6.4	8.5		
	25%	COND	. 27	.26		
		500		9.0		
	,	DO	9.0	<del></del>		
6	50%	pH		8.3		
	, .	COND	138	.39		
		DO	9.0	8.9		
7	100%	рН	8.2	8.2		
	/.	COND	-61	,61		
	DATE		6-14			ı
	SAMPLE No.	44		6-15	-	
	DETERMINED	N DV	434-02A	434.02A	-	
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		DO as myr. (	NUMBER OF THE PARTY	•		

Form BLAT04

Revised 11/92

MAKE

# 48-HOUR ACUTE TEST FINAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: 756 142.3 2 (	CLIENT: Onaleske Land C:11
TEST ORGANISM: Cariodaphnia dubia	LAB MEDIA /No.: Cos/trare media /434. Ac
SAMPLE No.(s): 434.02A , 434.01	CONTROLIDILUENT: Black Pive
SAMPLE No.(s): 434.02A , 434.01 SAMPLE DESCRIPTION: Influent	
TEST START DATE: 6-14-941 TIME:	3/0 TEST END DATE: 6-16-94 TIME: 1215
ANALYST(s): J. Cookle	CODE:

# **FINAL MEASUREMENT**

TREAT.	TEST SOLN	PARAMETER	EXPOSURE F	PERIOD (HRS)	COMMENTS
NO.	SOLIV				COMMENTS
	LAB	DO	8.0	8.0	
1		pH	8.2	8.1	
	Black	DO	8.7	8,7	
2	River	рН	85	8.5	
	_	DO	8.8	88	
3	6.25%	рН	8.6	8.4	
		DO	8.7	8.9	
4	12.5%	рН	8.6	8.3	
		DO	8.6	8,7	
5	25%	рН	85	8.7	
		DO	83	8.5	
6	50%	рН	8.5	8,4	
		DO	7.8	83	
7	100%	рН	8,3	8.3	
	DATE		0-15	6.16	
	DETERMINED	BY	M	1 gc	

\*DO as mg/L COND as mmho

MIK.

# 48-HOUR ACUTE TEST CHEMICAL DATA\*

(1-4 TREATMENTS)

PHOJE	CT No.: <u>(১본 /</u>	42,32	CLIENT: Ona	195ke Lan	(+, //			
TEST C	RGANISM: Cerio	Caltum media						
SAMPL	E No.(s): 434.03A	(Effluent)	- restiter	CONTROLIDILUENT: Black River				
SAMPL	E DESCRIPTION:_	Ethent	1 / ApTage	Toflumt & Efflunt TEST END DATE: 6-16-94 TIME: 1215				
	ST(s): J. Cooker		1310		CODE: 11ME: 12D			
ANALT	51(s): <u>J - Copro</u>		UREMENT	CODE.				
TREAT	TEST	His	EXPOSURE PE	,				
NO.	SOLUTION	PARAMETER	0	24	COMMENTS			
110.				,,				
_	Eff/un+	DO	9.6	8.6				
8	100%	рН	8.1	8.2				
		COND	-61	.61				
1 .	Tracted	DO	8.7	8.6				
X	Influent	pН	8.3	8.3				
		COND	,62	.59				
1 .	Treated	DO	8.8	9.0				
X	Eff unt	рН	8.3	8.3				
		COND	.60	.60				
\$ 10 10		DO						
•		pH						
		COND						
	\							
	DATE		6-14-94	6-15-94				
e e e e e e e e e e e e e e e e e e e	DATE SAMPLE No.		6-14-94	6-15-94				
on the section of the			6-14-94 A	6-15-94 A				
A section of the sect	SAMPLE No.		Je	Ja				
The first control of the control of	SAMPLE No. DETERMINED BY		FINAL MEASL	J. JREMENT				
A second of the	SAMPLE No. DETERMINED BY TEST		FINAL MEASL EXPOSURE I	JREMENT PERIOD (HRS)				
A B Manager of the Control of the Co	SAMPLE No. DETERMINED BY TEST SOLUTION	PARAMETER	FINAL MEASL	JREMENT PERIOD (HRS) 48	COMMENTS			
A graph of the control of the contro	SAMPLE No. DETERMINED BY TEST	PARAMETER	FINAL MEASL EXPOSURE I	JREMENT PERIOD (HRS) 48	COMMENTS			
A B shakes and the same of the	SAMPLE No.  DETERMINED BY  TEST SOLUTION  Effluent	PARAMETER DO	FINAL MEASL EXPOSURE I 24	JREMENT PERIOD (HRS) 48 7.8	COMMENTS			
A property of the control of the con	SAMPLE No.  DETERMINED BY  TEST SOLUTION  ESTIMATE  100 /.	PARAMETER DO pH	FINAL MEASL EXPOSURE I 24 8.1 8.4	JREMENT PERIOD (HRS) 48 7.8 8.4	COMMENTS			
A B definition of the same of	SAMPLE No.  DETERMINED BY  TEST SOLUTION  ESTIMATE  100 /.	PARAMETER DO pH	FINAL MEASL EXPOSURE I 24	JREMENT PERIOD (HRS) 48 7.8	COMMENTS			
The production of the control of the	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  To fluent	PARAMETER DO pH	FINAL MEASL EXPOSURE I 24 8.1 8.4	JREMENT PERIOD (HRS) 48 7.8 8.4	COMMENTS			
A property of the second of th	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  To fluent	PARAMETER DO pH DO pH	FINAL MEASL EXPOSURE I 24 8.1 8.4 7.5 8.6	PERIOD (HRS) 48 7.8 8.4 7.9 8.4	COMMENTS			
A Designation of the Control of the	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  Influent Treated	PARAMETER  DO  pH  DO  pH  DO	FINAL MEASL EXPOSURE I 24 8 / 8 . 4 7. 5 8 . 6 7. 9	7.8 8.4 7.9 8.4	COMMENTS			
A Bendaling of the same of the	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  To fluent	PARAMETER  DO  pH  DO  pH	FINAL MEASL EXPOSURE I 24 8.1 8.4 7.5 8.6	PERIOD (HRS) 48 7.8 8.4 7.9 8.4	COMMENTS			
The state of the s	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  Influent Treated	PARAMETER  DO  pH  DO  pH  DO	FINAL MEASL EXPOSURE I 24 8 / 8 . 4 7. 5 8 . 6 7. 9	7.8 8.4 7.9 8.4	COMMENTS			
The state of the s	SAMPLE NO.  DETERMINED BY  TEST SOLUTION  Effluent 100 %  Treated  Influent Treated	PARAMETER  DO pH  DO pH  DO pH  DO pH  DO	FINAL MEASL EXPOSURE I 24 8 / 8 . 4 7. 5 8 . 6 7. 9	7.8 8.4 7.9 8.4	COMMENTS			
The first content of the first	TEST SOLUTION  Efflunt 100 %  Treated  Influnt Efflunt	PARAMETER DO pH DO pH DO pH DO pH	FINAL MEASL EXPOSURE 1 24 8.1 8.4 7.5 8.6 7.4	7.8 8.4 7.9 8.4	COMMENTS			
The state of the s	TEST SOLUTION  Effluent 100 %  Treated  Treated  Effluent	PARAMETER  DO pH  DO pH  DO pH  DO pH  DO pH	FINAL MEASL EXPOSURE I 24  8 .   8 . 4  7. 5  8 . 6  7. 9  8 . 5	7.8 8.4 7.9 8.4	COMMENTS			
The first content of the content of	TEST SOLUTION  Efflunt 100 %  Treated  Influnt Efflunt	PARAMETER  DO pH  DO pH  DO pH  DO pH  DO pH	FINAL MEASL EXPOSURE 1 24 8.1 8.4 7.5 8.6 7.4 8.5	7.8 8.4 7.9 8.4	COMMENTS			

# 48-HOUR ACUTE BIOASSAY SURVIVAL DATA

(4 Reps. 1-7 Treatments)

PROJECT	No.: <u>75E 14</u>	12.32_	CLIENT: <u>Bnala</u>	ska L	and fi	11	
TEST ORG	BANISM: Cario	odopha	ia dubia	AGE: 上	24 H	LOT No.: 340-341	
SAMPLE [	DESCRIPTION:_	In	fluen+				
	No.(s): 434.02						
LAB MEDI	NNO .: Cultu	re me		CONTRO	L'DILUEN	T: Black RIVE	
TEST STA	RT DATE: 6-	14-94	TIME: 1310	TEST END	DATE:_	5-16-94 TIME: 1215	
ANALYST	(s): J. Cookl	<u> </u>			CODE:		
	•		•				_
TREAT.	TEST		FATALITIES PER EXPOSURE	TOTAL	MEAN	0011151150	

TREAT. NO.	TEST SOLN	REP		LITIES POSURE D'(Hrs) 48	TOTAL FATAL.	MEAN SURV.	COMMENTS
1	LAB	A B C D	000	0 0		100%	
2	Black Rive	A B C D	0000	0 00 0	0	100%	
3	6.25%	A B C D	0 0	0000	0	100%	!
4	12.5%	A B C D	0000	0 0 0	0	100%	
5	25%	A B C D	0 0	0 0 0	0 +	100%	
6	50%	A B C D	0 0 0	0 0 0	0	100%	
7	100%	A B C D	0 0	#3 #2 #2	3 2 1	65%	

DATE 6-15 6-14
DETERMINED BY

# 48-HOUR ACUTE BIOASSAY SURVIVAL DATA

(4 Reps. 1-4 Treatments)

SAMPLE I LAB MED TEST STA	PROJECT NO.: TSE 147.32 CLIENT: On 4   Gska Land S. 11  TEST ORGANISM: Ceric daphnia dubis AGE: 4244 LOT No.: 340-341  SAMPLE DESCRIPTION: Effluent Treated Influent Fffluent  SAMPLE No.(s): 434.03A (Effluent)  LAB MEDIANO.: Culture media CONTROLIDILUENT: Black River  TEST START DATE: 6-14-94 TIME: 1310 TEST END DATE: 6-16-94 TIME: 1215  ANALYST(s): T. Cookhi CODE:										
TREAT. NO.											
8	Efflunt 100%	A B C	0 0	0 0 0 0	0	100%					
4	Treated Influent	A B C D	0 0 0	0 0 0	0	100%					
4	Treated Effluent	A B C D	0 0 0	0 0 0	0	100%					

DATE 6-15 6-16
DETERMINED BY

B C

COMMENTS:

### 48-HOUR ACUTE TEST INITIAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: 15E 142.32 CLIENT:	Onglaske conff-11
TEST ORGANISM: Dawhnig magne	LAB MEDIA /No.: Calture media /434. ADL
SAMPLE No.(s): 434.02A , 434.01	CONTROLIDILUENT: Black RIVE
SAMPLE DESCRIPTION: Influent	
TEST START DATE: 6-14-94 TIME: 1300	TEST END DATE: 6-16-94 TIME: /2,30
ANALYST(s): J. Cockle	CODE:

#### **INITIAL CHEMICAL MEASUREMENT**

TDEAT	TEST		EXPOSURE P	EDIOD (UD)	
TREAT. NO.	SOLN	PARAMETER	0	24	COMMENTS
1	LAB	DO pH COND	7.9 7.2	8.0 8.0	
2	Black	DO pH - COND	9.0 8.7 ./6	9.0 8.7 .17	and the second s
3	6.25%	DO pH COND	9.0 8.6 ·/9	9.6 8.7 ·20	
4	12.5%	DO pH COND	9.0 8.5 . 22	9.0 8.5 .26	
5	25%	DO pH COND	9.0 8.4 · 27	9.6 8.5 . 26	
6	50%	DO pH COND	9.0 8.3 . 38	9.6 8.3 -39	
7	100%	DO :pH COND	9.0 8.2 .61	8.9 8.2 .61	
	DATE SAMPLE No.		6-14 434.02 A	6-15 434.02 A	
	DETERMINED	BY	ac	M	

DETERMINED BY

\*DO as mg/L COND as mmho

Form BLAT04

Revised 11/92

# 48-HOUR ACUTE TEST CHEMICAL DATA\* (1-4 TREATMENTS)

PROJE	CT No.: <u>TSE 14</u>	12.32	CLIENT: Ona	laske Landf.	:11
TEST O	RGANISM: Dag	haja mas	<u></u>	LAB MEDIA /No.:	Culture media /434 ADL  ENT: Black River  Efflunt  6-16-94  TIME: 1236
SAMPL	E No.(s): <u>434.63</u> ,	A (Effluen	Paplik.	CONTROLIDILUE	NT: Black RIVE
SAMPL	E DESCRIPTION:_	11 Su TIME	1200	TEST END DATE	6-16-94 TIME: 1230
1E212	TART DATE: <u>6-1</u> ST(s): <u>J · Cook</u>	7-74 IIME.	73.00	TEST END DATE	CODE:
ANALI	31(3). <u> </u>		INITIAL MEAS		0052.
TREAT.	TEST		EXPOSURE PE	ERIOD (HRS)	
NO.	SOLUTION	PARAMETER	0	24	COMMENTS
	FCClust	DO	8.6	8.6	
8	Efflu-+	∙рН	8.1	8.2	
0	100 6	COND	0.61	0.61	
	Tractual	DO	8.7	8.6	
4	Influent	рН	8.3	g.3	
	Influe	COND	0.62	059	
	Treated	DO	8.8	9.0	
*	Treated Efflunt	рН	8,3	9.3	
	E FF 1000.	COND	0.60	0.60	
		DO			
4		рН			
		COND			
	DAŤE		6-14	6-15	
	SAMPLE No.		. 1	,	
	DETERMINED BY		germa	9c/4nus	
			FINAL MEASU	IDEMENT	
TREAT.	TEST	T		PERIOD (HRS)	
NO.	SOLUTION	PARAMETER	24	48	COMMENTS
	Efflunt	DO	8.0	7.6	
8	100:/	}	<del> </del>	2 1/	
	100%	pH	8.4	8.4	
	Trentad	DO	7.4	٥. ٥	
₽	Treated Influent	pН	8.6	8.5	
	Treated Efflunt	DO	7.4	8.1	
	Efflunt	pН	8.6	8.5	
				-	1
	$\mid  \times  \mid$	DO			-
4		pH			
	DATE		6-15	6-16	
	DETERMINED BY	<b>Y</b>	01-	an	

\*DO as mg/L

COND as mmho

# 48-HOUR ACUTE TEST FINAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: 75E 142.3 2 CLIENT: 04	29/25kg Land f. !!
TEST ORGANISM: Daphaia magna	LAB MEDIA /No.: Calture media 1434. ADL
SAMPLE No.(s): 434.02A , 434.0	CONTROLIDILUENT: Black Pru
SAMPLE DESCRIPTION: Influent	
TEST START DATE: 6-14-94 TIME: 1300	TEST END DATE: 6-16-94 TIME: 1230
ANALYST(s): J-Cooph	CODE:

#### **FINAL MEASUREMENT**

				JOHEMEN	
TREAT.	TEST	4		PERIOD (HRS)	
NO.	SOLN	PARAMETER	24	48	COMMENTS
		DO	8-1	8.1	
1	LAB	рН	8.1	81	
	Black	DO	8.8	81	
2	Black River	рН	8.3	8.0	
		DO	8.8	8.2	
3	6.25%	рН	8.4	7.9	
		DO	8.9	812	
4	12.5%	рН	8.3	7.9	
		DO .	8.7	8.0	
5	25%	рН	8.3	8./	
		DO	8.5	7.9	
6	50%	ρН	8.4	8.3	
	100-1	DO	8.1	7.8	
7	100%	рН	8.3	8.3	
	DATE		6-15	6-16	
	DETERMINED	BA	*DO as mo/l	COND as mmho	

\*DO as mg/L COND as mmho

# 48-HOUR ACUTE BIOASSAY SURVIVAL DATA

(4 Reps. 1–7 Treatments)

TEST ORG SAMPLE I SAMPLE I LAB MEDI TEST STA	DESCRIPTION:_ No.(s): <u>434.02</u> IA/No.: <i>Cultur</i>	Info A, 43 ~ m	nagna lumt 4:01 dia /43	4. ADL	AGE: CONTROL TEST END	Z <u>V H</u> JDILUENT	: Black Rive 16-54 TIME: 1230
TREAT. NO.	TEST SOLN	REP	FATAL PER EXP PERIOR 24	OSURE	TOTAL FATAL.	MEAN SURV.	COMMENTS
1	L4B	A B C D	0 0 0	0 0	0	100%	
2	Black Rive	A B C D	0000	0000		1007.	
3	6.25%	A B C D	0 0 0	000		100%	
4	12.5 %	A B C D	0 0 0	0000	0	100%	
5	25%	A B C D	0000	0 0		100%	
6	50%	A B C D	0000	0 0		100%	
7	100%	A B C D	G 0 0	#0 #0 #0		100%	
	DATE DETERMINED	BY	6-15	6-16			en e

# 48-HOUR ACUTE BIOASSAY SURVIVAL DATA

(4 Reps. 1-4 Treatments)

TEST ORG SAMPLE I SAMPLE I LAB MEDI TEST STA	PROJECT No.: 75E 14232 CLIENT: Ona kaska Landfill  TEST ORGANISM: Dephnia magne 14- AGE: 24H LOT No.: 369-370  SAMPLE DESCRIPTION: Effluent, Fruit Influent = Effluent  SAMPLE No.(s): 434.03A (Effluent)  AB MEDIANO:: Culture mid1a/434. ADL CONTROL/DILUENT: Black River  TEST START DATE: 6-14-94 TIME: 1300 TEST END DATE: 6-16-94 TIME: 1236  ANALYST(s): J. Cookle  CODE:										
TREAT. NO.	TEST SOLN	REP		LITIES POSURE D (Hrs) 48	TOTAL FATAL.	MEAN SURV.	COMMENTS				
8	Eff/un+	A B C D	0 0	0 0		100%					
	4 Influent B 0 0 100%										
*	# Eff/unt C 0 0 100%.  D 0 0 0										

DATE 6-15 6-16
DETERMINED BY

В

COMMENTS:

# 96-HOUR ACUTE TEST INITIAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: 15E 142.32	_CLIENT: <u>Onales</u>	Ka Landfill	
TEST ORGANISM: Father	minnow	AB MEDIA /No .: Cultu	we media / 434 AFL
AMPLE No.(s): 434.02 A 434	OZB 4340 CONTROL	DILUENT: Black Co	un
SAMPLE DESCRIPTION: Infl	unt		
TEST START DATE: 6-14-94	_TIME:_/33G	TEST END DATE: 4 - 18	-94 TIME: /2/6
. NALYST(s): J-Cookle		CODE:	

### **INITIAL CHEMICAL MEASUREMENT**

REAT.	TEST SOLN	PARAMETER	EXI 0	POSURE P	ERIOD (HI 48	RS) 72	COMMENTS		
1	OCULIN	DO	7.9	7.9		7.8	SOMMENTS.		
4	10	pH	7:6	7.6	7.7	7.6			
	LAB	COND	. 22	.22	122	.22			
0.美	Black	DO	9.0	9.0	9.0	8.9			
,	River	рН	8.7	8.7		8.7			
	Kiven	COND	-16	-17	./7	.17			
<u> </u>		OO	9.0	9,0	7.0	89			
1	6.25%	pН	8.6	8.7	8.7	8.7			
•	7,	COND	- 19	.17	./8	./8			
		DO	9.0	9,0	9.6	89			
	125%	pH	8.5	8.7	6.6	8.7			
1	1	COND	.22	.20	.23	.22			
	~	DO	9.0	9.6	9,0	9.0			
	25%	pH COND	8.4	8.5	8.5	8.6			
				- 26		90			
	_	DO pH	9.0	9.G 8.3	9.0 8.4	85			
	50%	COND	.38	.39	-38	. 38			
1		DO:	9.0	8.9	9.0	9.0			
	20.7	pH	8.2	8.2	6.3	8,3			
	70%	COND	.61	-61	.61	.61			
	: • • • • • • • • • • • • • • • • • • •		6-14	6-15	6-16	6-17			
	'LE No	).	434.024	434.02A					
	E IINI	ED BY	&	a	m	M			
	*DO as mg/L. COND as mmho								

### 96-HOUR ACUTE TEST CHEMICAL DATA\*

(1-4 TREATMENTS)

TEST ORGANISM: F9thed minow  LAB MEDIA INO.: Calture media /434 AFV  SAMPLE NO.(s): 434.03A, 434.08B  CONTROLIDILUENT: Black River  SAMPLE DESCRIPTION: Effluent  TEST START DATE: 6-14-94 TIME: 1330  ANALYST(s): T. Cooke  INITIAL MEASUREMENT  TREAT. TEST  NO. SOLN PARAMETER 0 24 48 72 COMMENTS  ESTIMATED DO 8.6 8.8 8.9
TEST START DATE: 6-14-14 TIME: 13.30 TEST END DATE: 6-18-78-78- TIME: 12.10  ANALYST(s): T. Cooku CODE:  INITIAL MEASUREMENT  TREAT. TEST SEXPOSURE PERIOD (HRS)  NO. SOLN PARAMETER 0 24 48 72 COMMENTS
INITIAL MEASUREMENT  TREAT. TEST SEXPOSURE PERIOD (HRS)  NO. SOLN PARAMETER 0 24 48 72 COMMENTS
INITIAL MEASUREMENT  TREAT. TEST SEXPOSURE PERIOD (HRS)  NO. SOLN PARAMETER 0 24 48 72 COMMENTS
TREAT. TEST SEXPOSURE PERIOD (HRS)  NO. SOLN PARAMETER 0 24 48 72 COMMENTS
NO. SOLN PARAMETER 0 24 48 72 COMMENTS
FC6/444 DO 51 86 88
E 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0
8   Effluent   DO   8,6   8.8   8.9   pH   8,1   8.2   8.3   8.3   COND   61   66   66   66
0 100% COND -61 -61 .61
DO
2 / pH
COND
DO
3 X pH
COND
DO
4 pH
COND
DATE 6-14 6-15 6-16 6-17
SAMPLE No. 434.03A 434.03A 434.03B 43403B
DETERMINED BY UN UN ON
FINAL MEASUREMENT
TREAT. TEST EXPOSURE PERIOD (HRS)
NO. SOLN PARAMETER 24 48 72 96 COMMENTS
DO
2 pH
DO DO
3 pH
DO
4 pH
DATE 6-15 6-16 1-17 6-18

**DETERMINED BY** 

# 96-HOUR ACUTE TEST FINAL CHEMICAL DATA\*

(1-7 TREATMENTS)

PROJECT No.: TSE 142.32 CLIENT:	Inalaska Landfill
TEST ORGANISM: Fotherd migrow	LAB MEDIA /No.: Culture media/434. AFL
SAMPLE No.(s): 434.02 A, 434.02B, 434.01	CONTROLIDILUENT: Black RIVE
SAMPLE DESCRIPTION: Influent	
TEST START DATE: 6-14-94 TIME: 1330	TEST END DATE: 6 - 18 - 54 TIME: 1210
ANALYST(s): J-Cookle	CODE:

#### **FINAL MEASUREMENT**

FINAL WILAGOTILIVILIA							
TREAT. NO.	TEST SOLN	PARAMETER	EXPOSI 24	JRE PERIO	DD (HRS) 72	96	COMMENTS
		DO	6.9	6.8	6.7	6.9	
1	LAB Black	pH	7.8 7.6	7.8 7.8	7.9	7.8	
2	River	DO pH	85	8.7	7.5	8.0	
3	6.25 %	DO pH	7.4 8.4	7.7 8.7	7.7	7.9	
4	12.5%	DO pH	7.3 8.2	7.7	7,8	8.0	
5	25%	DO pH	7.1	7.5	7.6	7.9	
6	50%	DO pH	7.0	7.4	7.5	7,6	
7	100%	DO pH	8.0	7.2	7.4	7.6	
	DATE DETERMINED	) BY	6-15"	6-16 gr	6-17	6-18	

# 96-HOUR ACUTE BIOASSAY SURVIVAL DATA

(1 – 7 Treatments)

PROJECT No.: TSE 142.32 CLIENT: Ona laska	Land fill
TEST ORGANISM: Fatherd minner	AGE: 28 days LOT No.: 1402
SAMPLE DESCRIPTION: Influent	
SAMPLE No.(s): 434.01, 434.02 A, 434.02 B	
LAB MEDIANO: Culture med: 4/434. AFL	CONTROLIDILUENT: Black RIVE
TEST START DATE: 6-14-94 TIME: 1330	TEST END DATE: 6-18-54 TIME: 1216
ANALYST(s): J. Cookle	CODE:

TREAT. NO.	TEST SOLN	REP	24	FATALI PER EXPO PERIOD 48	SURE	96	TOTAL FATALITIES	MEAN SURVIVAL
1	L4B	A B	0	0	0	0	00	100%
2	Black River	A B	0	0	0	0	0	100%.
3	6.25%	A B	0	0	0	0	0	100%.
4	12.5 %	A B	0	0	0	0	0	100%
5	25 /.	В	0	0	0	0	0	100%
6	50%	В	0	00	0	0	0	100%
7	100%	A B	0	0	0	0	0	100%
	DATE DETERMINED BY	,	6-15	6.16	6-17 Or	6-18		

COMMENTS:

# 96-HOUR ACUTE BIOASSAY SURVIVAL DATA

(1 – 4 Treatments)

PROJECT No.: TSE 142.32 CLIENT: Ona laska	Land fill
	AGE: 28 days LOT No.: 1402
SAMPLE DESCRIPTION: Effluent	
SAMPLE No.(s): 434.03A, 434.03B	
LAB MEDIA/No.: Culture media 1434 AFL	CONTROLIDILUENT: Black River
	TEST END DATE: 6 - 18 - 94 TIME: 12/6
ANALYST(s): J. Cookle	CODE:

TREAT. NO.	TEST SOLN	REP	24	FATALI PER EXPO PERIOD 48	SURE	.96	TOTAL FATALITIES	MEAN SURVIVAL
8	Efflum + 100 %	A B	0	0	0	0	0 0	100%
2		A B						
3		В						
4		A						
	DATE		6-15	6-16	\$6-17	6-18		

COMMENTS:

# CHRONIC TEST INITIAL CHEMICAL DATA\*

PROJECT No.: 755 142.3 2 CLIENT: Onglaske	a Landfill
	LAB MEDIA /No.: Culture med 19/424. CCL
TEST ORGANISM: <u>Ceriodophais</u> dubis SAMPLE NO.(S): 434.024, B.L. U34.01	CONTROLIDILUENT: Black River
SAMPLE DESCRIPTION:	
TEST START DATE: 6-14-94 TIME: 1/45	TEST END DATE: 6-21-94 TIME: 0830
ANALYST(s): -T. Cookk K. Gillis	CODE:

TREAT.	TEST				EXP	OSURE	DAY			
NO.	SOLN	PARAMETER	0	1	2	3	4	5	6	COMMENTS
		DO	7.9	80	ଟିଏ	8.2	7.5	0.8	8.0	
1	L 48	pH COND	7.9 .22	7.9 .22	8.0	8.1	8.0	8.0	8.1	
	A / /		8.2	8.0	80	8.3		8.4	8.4	
2	Black RIJW	DO pH	8.5	8.5	8.7	8.6	7.9	8.6	85	
	RIJW	COND	./7	./7	17	.17	.18	.20	.19	
		DO	8.2	80	80	8.3	7.9	8.4	8.4	
3	3.7%	рН	85	8.5	8.7	8.5	8.4	85	85	
	3,777	COND	.18	.20	.19	.19	.19	.19	.20	
		DO	8.1	8.0	810	8.3	8.0	8.4	84	
4 5 /	5 %	pH	8.5	8.5	8,7	8.5	8.3	8,4	8.4	
		COND	./9	.20	.20	,20	.20	.20	.20	
		DO	8.1	60	8.0	8.3	8.4	8.4	8.4	
5	10%	pH COND	8.4	8.4	122	8.5	8.4	.22	8.4	
3		DO		, ,	8.0	8.3		8.4	8.4	
6	2011	pH	8.3	8.2	8.5	8-4	8.5	8,3	8.4	•
	20%	COND	. 26	.27	127	.26	,27	.27	, 27	
		DO	8.1	80	8,1	8.3	8.4	8.4	8.4	
7	7 1/0.4	рН	8.3	8.2	8.5	8.4	8.3	8.3	8.4	
40%	COND	.36	.37	.36	36	, 35	.36	.36		
	DATE		6-14		6-16	6.17	6-18	6-19	6-20	
	SAMPLE No.		434,02	143421	434.020	434.02A	434.00	434.020	434.020	1

\*DO = DISSOLVED OXYGEN (mg/L)

DETERMINED BY

COND = CONDUCTIVITY (mmho)

# CHRONIC TEST CHEMICAL DATA\* (1-4 TREATMENTS)

PROJECT No .: TSE 142.32 CLIENT: Ong/as	ka Landfill
TEST ORGANISM: Cerlodentia dubia	LAB MEDIA /No.: Culture media, 434.cc
SAMPLE No.(s): 434.02 4,6,6, 434.03 A, B, C	CONTROLIDILUENT: Black RIVIA
SAMPLE DESCRIPTION: Influent Efflue	wt-
TEST START DATE: 6-14-94 TIME: 1/45	TEST END DATE: 6-21-94 TIME: 0830
ANALYST(s): J. Cookly K. Gillis	CODE:

#### INITIAL CHEMICAL MEASUREMENT

TREAT	TEST				EXP(	SURE	DAY			
NO.	SOLN	PARAMETER	0	1	2	3	- 4	5	6	COMMENTS
	<b>8</b> 80%	DO	8,0	8,0	8.0	8.3	8.3	8.4	8.4	
8		рН	8.3	8.2	8.4	8.3	8,2	8.3	8.3	
•	/ 1	COND	.53	.54	,53	.54	.55	,54	.52	
	ESf / Lunt	DO	8.1	8.0	8.6	8.2	8.0	8.4	8,4	
9	**************************************	рН	8.4	84	8.7	8.5	8.3	8.4	8.5	
•	٠/ /-	COND	.21	.20	,22	.21	,25	.23	.23	
	\ .	DO								
3	\ /	рН								
		COND								,
		DO								
4		рН								
		COND								
	DATE		6-14	6.15	616	6-17	6-18	6.19	6.20	
	SAMPLE			4434.021	434.028	434.021	1 1 -	434,020	434.020	
	DETERMI	NED BY	a	10	a	M	Vex	1/2	a	

### FINAL CHEMICAL MEASUREMENT

TREAT	TEST				EXP(					
NO.	SOLN	PARAMETER	1	2	- 3	4	- 5	- 6	7	COMMENTS
g	~ ./	DO	75	8.7	85	7.8	8.0	8.1	8.0	
	80%	pН	6.6	8.6	8.4	8.4	85	8.5	8.4	
9	5.7%.	DO	75	8.7	8.5	7.9	7.9	8.1	8.0	
•	3.7%	рН	8.4	8,6	8.4	8.4	8.3	8.4	8.3	
3		DO								
	\ /	рН								
4	X	DO								
	/ \	рΗ								
	DATE		6-15	6-16	6-17	6-18	6-19	620	6.21	
	DETERMI	NED BY	(A	a	R	IK	a.	a	R	

\*DO = Dissolved Oxygen (mg/L) COND = Conductivity (mmho)

# CHRONIC TEST FINAL CHEMICAL DATA\*

PROJECT No.: TSE 142.32 CLIENT: Ona/as	he Londfill
TEST ORGANISM: Ceriodophnia dubia	LAB MEDIA /No.: Culture madia /434. CCL
	CONTROLIDILUENT: Black River
SAMPLE DESCRIPTION: Influent	
TEST START DATE: 6-14-54 TIME: 1145	TEST END DATE: 6-21-94 TIME: 0830
ANALYST(s): J. Cookle	CODE:

TREAT.	TEST	PARA-			•	JRE DAY			
NO.	SOLN	METER	1	2	3	4	5	6	7
1		DO	7.8	8.0	8.2	7.9	8.0	8.0	8-1
	LAB	pН	8.3	84	8.1	8.1	8,5	8.2	8.1
2	Black	DO	8.0	8.4	8.4	8.	8.0	8./	8.1
	RIVE	рН	8.6	8,7	8.3	8,2	8-1	8.2	8.5
3		DO	8.0	8.7	8.6	8.2	8.1	8.1	811
	3.7%	pH	8.6	8.7	8.3	8,2	8.1	8.0	8./
4		DO	8.1	8.8	8.7	8.2	8.2	8./	8.1
	5 %	рН	816	8,7	85	8,2	8, 2	٦. ك	8./
5		DO	1.8	8.9	8.8	8.2	8.2	8./	8.1
	10 %	рН	8,6	8,7	8.4	812	8.3	8,2	8.1
6		DO	6.8	9.1	8.8	1.8	8-1	8.1	81
	20%	pН	8,6	8,7	8.4	8.2	8.3	8.3	8.2
7	11011	DO	7.9	9.0	8.8	8.0	8.1	8.2	8.0
	40%	рН	8.6	8,6	8.4	8.4	8.4	8.4	8.3
I	DATE		6-15	6-16	6-17	6-18	6-19	6-20	6-21
I	DETERMINED B	Y DO - Discolu	ON CONTROL OF	1 yc	a	And the second	ga	1	I

\*DO = Dissolved Oxygen (mg/L) COND = Conductivity (fimho)
COMMENTS:

# CHRONIC BIOASSAY REPRODUCTION AND SURVIVAL DATA

PROJE	ECT No.: 150	E 14	z,3 z		CLIE	NT:	Onala	ska	Land	£:11								
TEST (	ORGANISM:	Cari	o das	horia	dub.	4.						244		LOT No.: _	534		_	
SAMPL	LE DESCRIP	TION:		Enf/	1	<u> </u>												
	E No.(s): 4																	
	EDIA/No. 🗘						<u> </u>						****	lack Rive				
TEST START DATE: 6-14-94 TIME: 1145										TEST END DATE: 6-21-24 TIME: 0830								
									CODE	E:					_ PAGE	10	<u>ک</u>	
TREAT.	It is a district 2 to 1.					OFFSI	PRING F		PLICATI									
NO.	SOLN	DAY		2	3	4 :	5	6	7	8	9	10		COM	MENTS			
		1	OK		<u> </u>	+===				+								
		2	G	OK	G	6	OK	OK	G	OK -								
,		3	E	G	E -		G	<u> </u>	E	G			1					
	LAB	4	5	16	5	4	14	ط	4	8	4	5						
,	-	5	5-	16	12	8	<u> </u>		8	<del> </del>	E -	0						
		6	10	14	10	E	8	10	10	111	8	9						
•		7	16	174	10	14	10	13	10	E	13	15	SUM	MARY	7			
													TOTAL	MEAN	1			
NO. of Y			31	30	25	26	22	29	22	24	25	29		26.3				
	BROODS	2.4	3	3	3	3	3	3	3	3	3	3	263 30	3				
	FATALITIES		Q	0	Q	0	10	0	0	0	0	0	0	% SURVIVAL	100			
TREAT. NO.	TEST SOLN	DAY		2			PRING P					10		2011	AENTS			
NO.	SOLIN	1	OK -		3	4	3	6	7	8	9	10	-	COM	VEHIO		134+ 314.	: e : (6656)
	vi le	2	OK	40	G -			OK	OK	G	οĸ	An						
	Black Rive	3	OK	177	<u> </u>			- G	G	E	G	1317						
	0	4	4		5	7	6	5	4	4	5	-{-						
7	KIV	5	E		14	10/10	10	E	8	9	11							
2		6	6		E	7	E	13	E -									
İ		7	10		15		14	15	12	13	17							
10000							'				<u> </u>	- 1 T		MARY				ĺ
													TOTAL	MEAN				
NO. 01 Y			20	0	<u>34</u>	15	30	33	24	26	33	0	215	31.5	ļ <del>ļ</del>			
NO. of B			3	0	3	7	3	3	3	3	3	0	<u> 23</u>	2.3				
	FATALITIES		0		<u> </u>	3500 <b>n</b> 2000	0	0	0	0	0		3	% SURVIVAL	70			
EXPOSU DATE	HE UAY		0 6-14	1 / /5	2	3	4 6-18	5 1 /2	6	7								
	INED / FED 8	7	11					-										
	The two balls of the first control of the first			G = GR	AVID I	EYE	D R =	RELEAS	SING YO	XUNG	AD = AE	OULT DE	EAD YD = YO	UNG DEAD				

# CHRONIC BIOASSAY REPRODUCTION AND SURVIVAL DATA

PROJE	ECT No.:/S	E 10	42-32		_ CLIE	NT:	Onal	aska	La	ndil					1	
TEST (	DRGANISM:	Ceri	adas	hoia	dal	hia					42	24H	LOT No.:	534		
SAMPL	E DESCRIP	TION:	0	一工.	flu											
	E No.(s): 4										······································			The second secon		
	EDIA/No.: Co				1434 1	·CL	······································				CON	TROL/D	DILUENT: BIGCK RI			
	START DATE													TIME: 0830	<u> </u>	
	ST(s): -					<u> </u>			CODI	=.	1201	LIND	3A1L. <u>0 31 / 1</u>	PAGE 2	OF_5	
			4		v	NO.			_		600000000000000000000000000000000000000	000000000000000000000000000000000000000		_FAGE	0r	00000000
TREAT.	TEST SOLN	١		1 6	T - 6	F. Comment	PRING F				1 -	1				
NO.	SULN		1		3	4	5	6	7	8	9	10	COMI	MENTS		
		1	OK	T				<b> </b>	+==		-					
		2	<u>G</u> -	+					UR	01	G	6	4			
		3	E-	+	1				OK	G	15.					
3	2   3.7 /	4	4_	4	14_	5	14	4_	40	5	25	5				
ノ	· /,	- 5	8	8	10	10	9	10	14_	10	9	6				
		6	E-	<b>+</b>		<del> </del>	17	E		E-		<u> </u>				
		7	13	16	17	117	G/6	8		8	16	13		_		
	SUMMARY															
NO K	8	1800 1888	12-	T = 3	1 3 7	T = -	T = =	,	1 2	T = 2	T =	T - 17	TOTAL MEAN	1		
NO. of Y			25	28	<del></del>	32	25	22	0	23	30	24	240 24.0	-		
			3	0	0	3	3	3	7	0	2	3	27 2.7 / % SURVIVAL	90		
TREAT.	TEST			<u> </u>	<u> </u>		RING P		PÉICATE		I O	0		1/0	<b>8</b>	
NO.	SOLN	DAY	1	2	3	4	5	6	7	8	9	10	COMN	MENTS		
		1	OK-			-	-	10000000		************					Appropriate programme in the deposition of	v. 0808-08-08-000
		2	6-					40	G	OK	40	G-				
		3	E	1	OK	G	G	770	E	G	1	巨				
11	_	4	٥	5	u	4	4		3	3	<del>                                     </del>	5		€		
4	5 1	5	8	11	1-7-	6	8		9	1		10				
		6	<u>E</u> -			-			E	9						
		7	12	13	17	ما	14		17	11	<del>    -</del>	14				
				112		<u> </u>	1.7.1		<i> </i>	. <i></i>	<u> </u>	,	SUMMARY	ł		
													TOTAL MEAN	į		
NO. of Y	OUNG	- I	2.6	29	24	76	26	0	29	2.3	0	29	202 20.2	İ		
NO of B			3	3	3	3	3	0	3	3	0	3	24 2.4	j		
ADULT F	ATALITIES		0	0	O	O	0	1	0	0	1	0	2 % SURVIVAL	80		1
EXPOSU	RE DAY		D	1	5	3	4	5		7						***************************************
DATE			6-14	6-15	6-16	6-17	6-18	6-19								
DETERM	NED / FED BY		11		a.	Q.	ac	a	a	QC						
			7								AD = AI	OULT DE	FAD YD = YOUNG DEAD			

# CHRONIC BIOASSAY REPRODUCTION AND SURVIVAL DATA

PROJECT No.: TEST ORGANIS SAMPLE DESC	BM: Cer	142.3 10dq	toia.	CLIE	NT: C	nalas	ska	Lan	/ <i>{;!!</i> AGE:		244		LOT No.:	534	7		,	
SAMPLE No.(s): LAB MEDIA/No. TEST START D. ANALYST(s):	27.A, 1 re or 14-54	3,C wdir	- 1434	i cc i			CODI	-			DILUENT: B		TIME:	085	3 <i>0</i> OF			
TREAT. TEST	REAT. TEST OFFSPRING PER REPL										10							
5 10%	1 2 3 4 5 6 7	OK G- 5 8		6 10	6 12 E 19	40	G - E - 5 12 15	3 9	5 13	5 12	4 10			wwents				
			T		1 - 5	, <u> </u>			-3-			TOTAL	MARY MEAN					
NO. of BROODS ADULT FATALITIE	S	29	3 0	3 0	37	00	32	23 3 0	33	3 4	28	275	27.5 2.7 % SURVIV		0	1		
TREAT. TEST NO. SOLN	2000001000000000	1	2	3		PRING P		LICATE 7	8	9	10		CO	MMENTS				
6 20%	1 2 3 4 5 6 7	0K G 5 E 13	62 69 14	ら 三 1 9 1 1 1	OK G AO	6K G 5 10	G 15	0 R G E 4 7	412676	5 5 12 20	5/ 11 E							
												TOTAL	MARY MEAN					
NO. of BROODS ADULT FATALITIE	S	33 3 0	3	3	0	29 3 0	26 3 0	23 3 0	32 3 0	37 3 0	30 3 0	259 27 1	2.5.9 2.7 % SURVIV	AL 9	10			
EXPOSURE DAY DATE DETERMINED / FEI		0 6-14 Js	1 6-15	2 6-16 01	3 b-17 06 - EYE	4 6-18 W	5 6-19 W	6 6-20 A	7 6-21 8C			EAD YD = YO	DUNG DEAD		***************************************			

# J. IRCINIC BIOASSAY REPRODUCTION AND SURVIVAL DATA

PROJECT No.: 13E 142.32 CLIENT: Onglaska Landill TEST ORGANISM: Ceriodophnia dubia AGE: C24H LOT No.: 534																		
										AGE:		244		LOT No.:	534			
SAMPL	SAMPLE DESCRIPTION: In a flunt																	
	SAMPLE No.(s): 434.02 A,R,C  LAB MEDIANO.: Culture media /434.CCL CONTROL/DILUENT: Black River																	
	TART DATE						<u></u>							21-94 T		0826		
	ST(s): <u>J. Co</u>			! IME	: 1190	2			CODE	Ξ.	1551	END	<u>- م)</u> JATE:		PAGE		OF 😤	5
TREAT.		A)LIC	Markarkara		sandana anan				_			×350000×30000000	01 M600000000000000000000000000000000000		PAGE		UF <b>X</b>	
NO.	TEST SOLN	DAY	1	2	3	OFFSI 4	PHING I	PER RE	PLICAT		9	10		COMM	ENTS			
		i	ØK								<del>                                     </del>		Sci		and a second second second second second second second second second second second second second second second	andrianista, i animateri din ere	<del>pilaigia a<u>, is</u> alip<sub>a</sub> adjancy stropi</del> cio gioro	
		2	OK	G	G	OK-				G			Stress	cof (				
		3	G-	E	LE	<u> </u>		10	ORS	E-			]					
>	40%	4	G	3	14	4	5		G	4	14	14						
/	70/	5	5	6	8	6	11		3	6	9	5						
	,,	6:	8	<u>G</u>	E	+==			E-	<del> </del>		<del> </del>						
		7	8	11	11	13	18	<u> </u>	6_	16	14							
	SUMMARY TOTAL MEAN																	
NO. of Y	OUNG		21	20	23	23	34	10	9	26	27	20	203	20.3				i.
NO. of B	ROODS		3	3	3	3	3	O	2	3	3	3	26	2.6				
	ATALITIES		0	O	0	0	0	1	0	Ø	0	0		% SURVIVAL	90			
TREAT.	TEST				·			ER REF		***********	T =							
NO.	SOLN	DAY		2	3	4	S 5	× 6	7	8	9	10		COMME	ENIS			\$ 85 24 28
			OK		OK	00	G	0.4						•				1
0			OK	G E	G -	OK	E	OK-			OK	G						
8	į	- J		3	4	4	3	<u>E</u> -		И	G	6						
	80%	5	5	8	E	E	8	8	5	5	4	E						and the same of th
	00/,	6	7	E	8	7	1/2	6	7	E	4	10						
		7	16	18	9	12	10	8	$\dot{7}$	11	G-/E	15						
Market 1				_L.V	I						- J-		SUA	MARY				
											**:::::::::::::::::::::::::::::::::::		TOTAL	MEAN				
NO. of YO			28	29	21	23	21	22	19	20	8	31	222	22.2				
NO. of Br			3	3	3	3	_3_	3	3	3	2	3	29	2.9	75-	1		
	ATALITIES		_0	<u> ၁</u>	0	0	0	0	0	0	0	0	<u> </u>	% SURVIVAL	00		<del></del>	
EXPOSUE DATE			0	<u> </u>	2	3 6-17	4 6-18	5	6 6-20	7 6-21								
DETERMI	NED / FED BY		6-14	6-15	0-14	a	10	11	11	01								

## HHCMIC ELLASSAY REPRODUCTION AND SURVIVAL DATA

FAUJE TEST ( SAMPL	ECT No.: I DRGANISM: LE DESCRIP	SE /1 Can TION:	12.32 id dge	boria Folia	CLIE olub	NT:	Ona	lask		adf AGE:	:// 	244		LOT No.: _	534		
SAMPL	E No.(s): 4	34.0	3A.B	<u>.</u>													
LAB MI	EDIA/No.:_C	elte	ye'	med	1a 1						CON	TROLI	DILUENT:	Black Rn	/ <b>~</b>	·	 
	START DATE			_TIME	:: <u>//4</u>	15					TEST	END D	DATE: 6-	21-94	TIME: 08	30	
ANALY	'ST(s):	· Co-	kle-						CODI	E:					PAGES	OF	 _
TREAT.	TEST					OFFS	PRING	PER RE	PLICAT	E							
NO.	SOLN	DAY			3	4	5	6	7	8	9	10		COM	MENTS		* 1
	661 1		OK														
	Efflunt		OK-					<del> </del>					1				
		3	G-	E	G-	HE.	E	6		<u> </u>	ノK	G-	]				
9	3.7/	4	5	4	14	14	12	14	5	5	4	4	1				
1 1		5	E	E	E	9	8	E	E			<b>=</b>	1				
		6	10	13	10	E	E	10	13	10	8	19	1				
		7	15	16	15	14	12	1,5	18	117	16	11					
STATE OF STATE			시 : 현다. 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :										TOTAL	MARY MEAN			
NO. of Y	OHNG		30	33	129	27	22	29	36	132	28	24	290	29.0	4		
	ROODS		3	3	1 3	1 2	3	3	32	3	3	3	30	3	1		
ADULT	FATALITIES		0	0	0	0	Ó	0	O	0	O	0	0	% SURVIVAL	100	]	
TREAT.	TEST		830 - 2800			OFFSI	PRING	PER RE	PLICATE	<b>3</b>							
NO.	SOLN	DAY	1	2	3	4	5	6	7	8	9	10		COM	JENTS		
		1	OK.	-/	$\longrightarrow$		<del> </del>			<u> </u>		-					
		2	Ok-	17	<u> </u>	\G	6-/	OA									
		3	G\	/		X	E	(m-			==	8					
		4					<u> </u>		-								
		5		-			ļ	ļ			ļ						
		6			<u> </u>		ļ			ļ	ļ		ı				
		7			1				302000000000000000000000000000000000000						9		
													TOTAL	MARY MEAN			- 1
NO. of Y	OING		885.00008.0 	T	l .	T .	T	l .	T	l	::::::::::::::::::::::::::::::::::::::	l l	IOIAL	MEAN			
NO. of B					<b> </b>		<del> </del>					<u> </u>		<del>                                     </del>	1		
	FATALITIES				<del> </del>		<del> </del>	<u> </u>						% SURVIVAL		1	
	RE DAY		Ū	1	2	3	4	- 5	6	7		i			<del> </del>	<u> </u>	
2 1 2 2 2 2 2									6-20								
	INED / FED 8		a	11	01	a	11	H	Or	a							
		•		G = GF	WVID	E - EYE	ĎŘ-	HELEA	SING YO	OUNG	AD = Al	DULT DE	EAD YD⇒Y	OUNG DEAD			

Form BLCT04

Revised 11/92

#### Inhibition Concentration Calculation (ICX)

CH2M Hill July 1991

Client: ONALASKA LANDFILL

Project Number: TSE142.32 Test Solution: INFLUENT
Test Date: 6/14/94
Test Organism: CERIODAPHNIA DUBIA

Response Measured: REPRODUCTION

Mean Response	Smoothed Mean Response
21,500	23.820
24.000	23.820
20.200	23.820
27.500	23.820
25.900	23.820
20.300	21.250
22.200	21.250
	Response  21.500 24.000 20.200 27.500 25.900 20.300

IC25 (%) Toxic Units

Linear Interpolation Estimate> 80.00

# CHRONIC TEST INITIAL CHEMICAL DATA\*

PROJECT No.: TSE 142.32 CLIENT: Onalasta Landfill

TEST ORGANISM: Fathead minnew LAB MEDIA /No.: Culture media / 434.06.

SAMPLE No.(s): 434.02A/B.C : 434.01 CONTROL/DILUENT: Black River

SAMPLE DESCRIPTION: Influent

TEST START DATE: 6-14-94 TIME: 1200 TEST END DATE: 6-21-94 TIME: 1000

ANALYST(s): I Cookke K. Billis CODE: Red

TREAT.	TEST				EXP(	SURE	DAY			
NO.	SOLN	PARAMETER	0	1	- 2	3	4	. 5	6	COMMENTS
1	LAB	DO .pH COND	7.7 7.8	7.8 7.8 .21	7,9 8,0 ,22	8./ 8./	7.3	7.9	7.9 8.1	
2	Black River	DO pH COND	8,2 8,5 .17	8. <b>B</b> 8.5	8.7 8.7 .17	8.6 8.6	7.9 8.4 .18	<del></del>	8.4 8.5 .19	
3	3.7%	DO pH COND	8.Z 85 ./8	8.5 ·20	8.7 8.7 .19	83 85 .19	7,9 8,4 ,19	8.4 8.5 .19	8.4 8.5 20	
4	5%	DO pH COND	8.1 85	80 85 .20	8.0 8.7 .78	₹.3 8.5 .26	8.0 8.3 .20	8.4 8.4 .26	8.4 8.4 .20	
5	10'/,	DO pH COND	8.4 -22	8.4	8,0 6.L .22	83 85 .22	8.4 8.4 .22	8.4 8.4 .22	8.4 8.4 . ZZ	
6	20%	DO pH COND	8.1 8.3 .26	8,2	8.5 8.5	8.3 8.4 .26	8.5 8.3 .27	8.4 8.3 .27	8.4	
7	40%	DO pH COND	8. <sub>]</sub> 8. <sub>3</sub>	ED E.Z .37	8,1 8,5 134	8,3 8,4 ,36	8.4 83 .35	8.3 .36	F.4 F.4	
	DATE SAMPLE No. DETERMINED	BY	6-14 434.02A			6-17 434.02B		6-19 434.02	6-20 434.02	

<sup>\*</sup>DO = DISSOLVED OXYGEN (mg/L)

COND = CONDUCTIVITY (mmho)

PROJECT NO.: TSE 142.32 CLIENT: Onalaska Land Sill

# CHRONIC TEST CHEMICAL DATA\* (1-4 TREATMENTS)

SAMPLE	No.(s): 43	4.024,8,C ION: In	: 434 Class	C3A,B,		CONTR	OLIDILU	JENT: _	Black	River
EST STA	ART DATE:		_TIME:	1200			ND DAT		21-84	TIME: 1000
MALYSI	(S):	,							Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annua	
REAT.	TEGT		INITIA	CHE		MEAS SURE	DAY	ENT		
		PARAMETER	0	1	2		4	5	6	COMMENTS
		DO	8,0	8.0	8.0	8.3	&.3	8.4	8.4	
8 8	Po/.	pН	8.3		8,4	8.3	8.2		8.3	
***********		COND	<i>(5)</i>	,54	.53	.54	,55	-54	.52	
	Sf/wmt	DO	81	8,0	8,0	8.2	8.0	8.4	8.4	
9 .	3.フ! ト	pH COND	121	8.4	-22	.21	8.3	123	85 . Z3	
		DO	, ,		- 2 &		123	100	ر کی	
3	\	pH								
	\ /	COND								•
	$\lambda$	DO								
4		рН								
		COND		-						·
<b>1</b> -444	AMPLE N		6-14 .02A .03A	6-15 02A	1028	1028	6-18	6-19 -02c -03c	1020	
h-94	ETERMIN		.03A	.03A	03.8	63 R	103C	OC.	135	
liii.			-			7				
TREAT	TEOT		FINAL	CHEN	*************		UREMI	ENI		
NO.	TEST	PARAMETER	1	2	8	OSURE 4		6	7	COMMENTS
000000000000000000000000000000000000000		DO	7.4	7,4	7.6	7.6	75	77	7.8	
8	80%	pН	8.4	8.4	8.3	8.3	8.4	8.3	8.3	
2	Efflunt	DO	7.8	80	8.0		7.8	79	80	
1	3.7%	рН	8.4	84	8.2		<del></del>	8.4	8.4	- -
3	,	DO								
		рН								
4		DO								

16-15 6-16

\*DO = Dissolved Oxygen (mg/L) COND = Conductivity (mmho)

DETERMINED BY

# CHRONIC TEST FINAL CHEMICAL DATA\*

PROJECT No.: TE 142.32 CLIENT: One laska Landfill

TEST ORGANISM: F9+land minnon LAB MEDIA /No.: Culture mid 12/434 CFL

SAMPLE No.(s): 434.024, B, C, 434.01 CONTROL/DILUENT: Black R, Vm

SAMPLE DESCRIPTION: Influent

TEST START DATE: 6-14-94 TIME: 1200 TEST END DATE: 6-21-94 TIME: 1000

ANALYST(s): J. Cookle CODE:

PARA-			·	JRE DAY			
METER	1	2	3	4	5	6	7
DO	7.6	7.2	7.2	1.6	75	7.5	7.6
pН	8.0	7.7	7.9	8.0	8.0	8.1	8.0
DO	7.9	8.1	80	7.9	7.9	8.1	8.0
pН	8.3	85	8.2	8,0	8.3	8.4	8.3
DO	6.0	816	8.0	8,0	8.1	8.3	8.1
рН	8.4	8.6	8,2	8.1	8.3	8.4	१३
DO	8.1	812	8,1	7.9	8.2	8,2	8.2
рН	8.4	8.5	8.3	8.1	8.3	8.4	P.4
DO	8.0	8.2	8,2	7.9	8.1	8.2	8,2
pН	8,3	8.5	8.1	8.1	8.3	8.3	8.4
DO	7.9	8.3	8.1	7.9	8.0	8.1	8.1
pН	8.3	8.4	8.3	8.2	8.3	8.3	8,3
DO	7.7	7.7	8,2	7.7	7.9	29	8.0
рН	8.4	8.3	8.3	8.2	8.3	8.3	8,2
	6.15	6-16	6-17	6-18	6-19	6-20	6-21
	M	p		a	gr	Je	91
	METER  DO pH   METER 1  DO 7.6  pH 8.0  DO 7.9  pH 8.3  DO 8.0  pH 8.4  DO 8.0  pH 8.3  DO 7.9  pH 8.3  DO 7.9  pH 8.3  DO 7.9  pH 8.3	METER 1 2  DO 7.6 7.7  PH 8.0 7.7  DO 7.9 8.1  PH 8.3 8.5  DO 8.0 8.6  PH 8.4 8.6  DO 8.1 8.7  PH 8.3 8.5  DO 8.0 8.2  PH 8.3 8.5  DO 7.9 8.3  PH 8.3 8.4  DO 7.9 8.3  PH 8.3 8.4  DO 7.7 7.7  PH 8.4 8.3	DO 7.6 7.2 7.2  pH 8.0 7.7 7.9  DO 7.9 8.1 8.0  pH 8.3 8.5 8.2  DO 8.0 8.6 8.0  pH 8.4 8.6 8.2  DO 8.1 8.7 8.1  pH 8.4 8.5 8.3  DO 8.0 8.2 8.2  pH 8.3 8.5 8.1  pH 8.3 8.4 8.3  DO 7.7 7.7 8.2  pH 8.4 8.3 8.3	METER 1 2 3 4  DO 7.6 7.2 7.2 7.6  pH 8.0 7.9 7.9 8.0  DO 7.9 8.1 8.0 7.9  pH 8.3 8.5 8.2 8.0  DO 8.0 8.6 8.0 8.0  pH 8.4 8.6 8.2 8.1  DO 8.1 8.2 8.1 7.9  pH 8.3 8.5 8.3 8.1  DO 8.0 8.2 8.2 7.9  pH 8.3 8.5 8.1 8.1  DO 7.9 8.3 8.1 7.9  pH 8.3 8.4 8.3 8.2  DO 7.7 7.7 8.2 7.7  pH 8.4 8.3 8.3 8.2  CO 8.1 6.15 6-16 6-17 6-18	METER 1 2 3 4 5  DO 7.6 7.2 7.2 1.6 75  PH 8.0 7.9 7.9 8.0 8.0  DO 7.9 8.1 8.0 7.9 7.9  PH 8.3 8.5 8.2 8.0 8.3  DO 8.0 8.4 8.6 8.2 8.1 8.3  DO 8.0 8.2 8.2 8.0 8.3  DO 8.0 8.2 8.2 7.9 8.1  PH 8.3 8.5 8.3 8.1 8.3  DO 7.9 8.3 8.1 7.9 8.0  PH 8.3 8.5 8.1 8.1 7.9 8.0  PH 8.3 8.4 8.3 8.2 8.3  DO 7.7 7.7 8.2 7.7 7.9  PH 8.4 8.3 8.3 8.2 8.3	METER 1 2 3 4 5 6  DO 7.6 7.2 7.2 1.6 7.5 7.5  PH 8.0 7.7 7.9 8.0 8.0 8.1  DO 7.9 8.1 8.0 7.9 7.9 8.1  PH 8.3 8.5 8.2 8.0 8.3 8.4  DO 8.0 8.6 8.0 8.1 8.3  PH 8.4 8.6 8.2 8.1 8.3 8.4  DO 8.1 8.2 8.1 7.9 8.2 8.2  PH 8.4 8.5 8.3 8.1 8.3 8.4  DO 8.0 8.2 8.2 7.9 8.1 8.2  PH 8.3 8.5 8.1 8.3 8.4  DO 7.9 8.3 8.1 8.2 8.3 8.3  DO 7.9 8.3 8.1 7.9 8.0 8.1  PH 8.3 8.4 8.3 8.2 8.3 8.3  DO 7.7 7.7 8.2 7.7 7.9 2.9  PH 8.4 8.3 8.3 8.2 8.3 8.3  DO 7.7 7.7 8.2 7.7 7.9 2.9  PH 8.4 8.3 8.3 8.2 8.3 8.3	

**COMMENTS:** 

# CHRONIC BIOASSAY SURVIVAL DATA

	No.: 15E					CLIEN	IT: <u>(</u>	)n9/		Conelt				
	GANISM: <u>Fa</u>				5			···	AGE:	624H	LOT No.: 4	129-1430	2	
	SAMPLE DESCRIPTION: Fuffunt													
SAMPLE	Vo.(s): 4.34	024	4B, C	. 4	34.01									
	NNO.: Cult					<u></u>			CONT	ROL/DILUEN	T: Black	RIVE		
TEST STA	RT DATE: <u>6-/</u>	4-94	TIM	IE:	200				TEST	END DATE:_	0-21-94	TIME:_	1000	
	(s): J. Coo	kh_								**************************************		CODE:		
THEAT.	TEST SOLUTION					FATALI				TOTAL NO	MBER	96	MEAN	
NO.	SCLUTION	REP		2	3	4	5	6		SURVIVORS   D		SURVIVAL	SUHVIVAL	COMMENTS
		A B	0	9	a	Ø	G_	10	0		<u>δ</u>	100		Stringy type growth on the btm. of all test Chambers containing Black River water. More prevailant in lower conc.
1		C	0	8	0	0	G	C	0	10		<del>                                     </del>	100/	the btm. of all test
	LAB	D	0		0	0	0	0	0	10	<u> </u>	<del>                                     </del>	1007.	Chambers containing Rlad
		- and a second second second	-	0		1	Q.	0	P	10	0	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Chambers Containing Black
2	Black	A B	<u>G</u>	<del> </del>	0	0	8	12	+	يي	4	60	,	Kiven water, More
-		C	0	9	0	0	0	0	0	7	<u> </u>	70	80%	prevailant in lower conc.
	RIVE	D	0	0	10	0	0	18	0	10	0	90	00,	
		*****		0	+	<del>                                     </del>			8	7				
3		A B	0	0	8	+	3	0	<del> </del>	6	<u> </u>	60		
, ,	3.7 %	C	0	0	0	12	1	0	0	4	<u>3</u> 3	70	67.5%	
		D	0		2	1	6	0	Ö	7	3	70	1.	
				0		+	3			9	<del></del>	70 90		
4		A B	0	0	0	<del>                                     </del>	12	0	0	6	4			
7	r ·/	C	0	8	G	1	2	12	0	4	6	40	7a.5/	
	5%	D	0	0	O	0	0	0	0	10	0	100	. ,,	
					0	<del></del>		0	Ö			<del></del>		
5		A B	0	0	G	0	O	0	0	10	0	100	_	
	10.7	C	0	3	0		1-1-	0	0	9		90	925/	
	10%	D	$\frac{\partial}{\partial}$	0	0	0	<del>                                     </del>	0	0	9	<del></del>	90	11. 7%	
					0		1	_						
6		A B	0	0	0	0	0	0	0	10	0	100		
		C	0	0	0	0	0	0	0	10	0		100%	
	20 %	0	0	8	0	0	0	0	0	10	0		07.	
					0				-		0			
7		A	0	0_		Ø	0	8	0	10		100	_	
,	110.1	В		0	0	Q		10		10	0		100%	
	40%	C	0	0	0	0	8	0	0	10		<del></del>	1007-	
		U	,0					1/		10	0			
			6-15	6-14	6-17	b-18	1017	6-20						
P	ETERMINED B		W	CH	Ø.	1	(A)	100	a					
	FEEDING	AM	- · · · · · ·	7	1	00	72	17/2-	112					
Form BLCT05	en i i mara kanana adalah mara 🛊	PM	N	#	Y	VC.	1	170	1/7					Revised 11/92
rorm blc108		1 141	1/4	<b>Y</b> Z	7	14/4		Y//V	W/L					ंचराक्यचे १११₹६

JUNIVIVAL TA

\_\_\_\_\_\_\_AGE: 24H LOT No.: 1429 - 1436 1. 1.1. B.C. 434.03A.B.C ABI'- NO. - their media /434, CEL CONTROUDILUENT: Black RIVE EST START DATE: 6-/4-94 TIME: 1200 TEST END DATE: 6 - 21-94 TIME: 1000 NALYST(s): J. Cookfe CODE:\_ TOTAL NUMBER % MEAN SURVIVAL SURVIVAL NUMBER OF FATALITIES PER DAY HELEATING INCOME I ESTIM SOLUTION REP COMMENTS NO. 0 90 0 O 0 A 0 O 8 0 0 0 0 0 10 100 97.5% CO 0 0 0 0 10 0 100 0 O 0 D 0 0 0 0 0 10 100 0 0 0 0 0 0 100 10 3 0 9 O ⁄ O Ö 0 10 100 0 0 0 90 0 10 100 3 B D Α В D 5 В C D A В C D A В C 6-15 6-16 6-17 6-18 6-19 6-20 6-21 DATE DETERMINED BY FEEDING AM Revised 11/92

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# CHRONIC BIOASSAY GROWTH DATA

PROJECT No .: TSF 142.32 CLIENT: Onalaska	Land fill
TEST ORGANISM: Fathcad Minney	AGE: 424h LOT No.: 1479-1430
SAMPLE DESCRIPTION: Influent (to GAC)	
SAMPLE No.(s): 434.01 434.02A.R.C	
LAB MEDIA/NO .: 434 CFL (CLITTURE MCC)	CONTROLIDILUENT: BIACK RIVER
TEST START DATE: 14-94 TIME: 1200	TEST END DATE: 6-21-94 TIME: 1000
ANALYST(s): J. Starl	CODE:

ANALYST(			TIME. TO	CODE:						
TEST	TREAT	TARE	TARE + DRY	TOTAL	Signif, Diff	erence Test	IC28	5 Test		
SOLN	REP	(mg)	WT (mg)	WT (mg)	No. Surv.	Organism Wt.	No. Exposed	Organism Wt.		
	1A	1123.87	1127-27	3.40			10	0.340		
Lab	1B	1101.34	1105.90	4.56				0.456		
Lue	1C	1104-74	1109.47	5.23			1	0.523		
	1D	1101-78	1106.68	4.90			V	0.490		
01/	2A	1088.24	1090.29	2.05			10	0.205		
Black	2B	1099.98	1102.59	2.61				0.261		
Rwer	2C	1098.05		4.73				0.473		
KINEI	2D	1126.80	1130.00	3,20				0.320		
	ЗА	1125.83	1127.29	1.46			lo	0.146		
27.1	3B	1113-16	1116-19	3.03				0.303		
3.7 %	эс	1101-74	1105 - 37	3,58				0.358		
	3D	1116.65	1120-52	3.87			7	6.387		
	4A	1097.64	1100-50	2.86			10	0.286		
5%	4B	1094.21	1096-30	2:15			1	0.215		
J I.	4C	1127.64	1129-37	1.73				0.173		
	4D	1116.94	1121-65	4.71			V	0.471		
	5A	1085-29	1084.50	4.21			10	0.42/		
10/	5B	1108.55	1112-44	3.89			1	0.389		
10 /	5C	1121.09	1125-17	4.08				0.408		
	5D	1099-27	1103-33	4.06			1	0.406		
	6A	1116.72	1121-10	4.38			10	0.438		
201	<b>6</b> B	1100.76	1104-42	3.66				0.366		
20/	6C	1118.26	1122.32	4.06				0.406		
	<b>6</b> D	1111.83	1116 - 39	4.56			V	0.456		
	7A	1131-46	1136-32	4.86			10	0.486		
40%	7B	1094.96		4.30			j	0.430		
707.	7C	1089.31	1093.75	4.44				0.444		
	7D	1130.070	1135 - 23	4.53			V.	0.453		
	COMM	ENTS(S)			Mean 1 =		Mean 1 =	0.452		
		4			Mean 2 ==		Mean 2 ≖	0.315		
					Mean 3 =		Mean 3 =	0.299		
					Mean 4 ==		Mean 4 ==	0.286		
					Mean 5 =		Mean 5 =			
					Mean 6 ==	·····	Mean 6 ==	<del>,</del>		
	Form BLCT				Mean 7 =	-	Mean 7 =	0.453		

## CHRONIC BIOASSAY GROWTH DATA

PROJECT	No.: IS	E142.32	CLIENT:	Dnalask	a Lon	idfill							
TEST ORG	ANISM:	rothiac	Minnou went & E		AGE: LZL	LOT NO	1429-1C	130-					
SAMPLE D	ESCRIP	TION: LIT	ucrut & E	Huint									
SAMPLE N	o.(s):_ <u>\</u>	34.02 A/13	,C; 42108	<u> </u>									
LAB MEDIA	VNo.:ك	11tur /4	RY OFL		CONTROL	DILUENT: P	ach bruch						
TEST STAI	TAD TE	E: 12-14-94	TIME: <u>120</u>		TEST END DATE: 6-21-94 TIME: 1000								
ANALYST(	s): <u> </u>	JOIL			CODE:								
TEST	TREAT	TARE	TARE + DRY	TOTAL	Signif, Diff	erence Test	IC25 Test						
SOLN	REP	(mg)	WT (mg)	WT (mg)	No. Surv.	Organism Wt.	No. Exposed	***************************************					
	8/A	1125.41	1129.07	3.66			10	0.366					
0 ~:/	8/B	1113.31	1117-06	3.75			)	0.375					
80%	R yC	1084-98	1088 - 79	3.81				0.381					
	810	1125.81	1129-87	4.06			V	0.406					
	9 ZA	1107.92	1112-40	4.48			10	0.448					
3.7 %	92A 92B	103.03	1106-93	3.40			1	0.390					
Effluent				3.90				0.390					
1770	g ZD	1131.54	1136.42	4.88			V	0.488					
	ЗА												
	3B												
	3C												
	3D												
	4A												
	4B												
	4C			**************************************									
	4D												
	5A												
	5B												
	5C												
	5D		***************************************										
	6A												
	6B												
	6C				· · · · · · · · · · · · · · · · · · ·								
	6D												
	7A												
	7B				1								
	7C												
	7D												
	СОММ	ENTS:			Mean 1 =		Mean X=	0.382					
					Mean 2 =		Mean 2 =9						
					Mean 3 =		Mean 3 =						
					Mean 4 =	<del></del>	Mean 4 =						
					Mean 5 =		Mean 5 =						
					Mean 6 ==	·	Mean 6 =						
					Mean 7 ==		Mean 7 ==	Ş.					

# Inhibition Concentration Calculation (ICx)

CH2M Hill July 1991

Client: ONALASKA LANDFILL

Project Number: TSE142.32
Test Solution: INFLUENT

Test Date: 6/14/94
Test Organism: FATHEAD MINNOW

Response Measured: GROWTH (mg)

Mean Response	Smoothed Mean Response
0.315	0.365
0.299	0.365
0.286	0.365
0.406	0.365
0.417	0.365
0.453	0.365
0.382	0.365
	Response  0.315 0.299 0.286 0.406 0.417 0.453

IC25 (%) Toxic Units

Linear Interpolation Estimate> 80.00

## **BIOASSAY SAMPLE RECEIPT CHARACTERIZATION**

CLIENT Onalaska Landf:11	PROJECT NO.	750=14232		
DATE SAMPLE NO. REGVD DESCRIPTION	TEMP DO (C) (mg/L) pH	COND (mmho) INITIALS		
6-13-94 B/4ck RIVE  FILTER > DECHLORINATE CONTAINER TYPE  ALIQUOTS HOMOGENIZED > CONTAINER TYPE  APPEARANCE: CLEAR _ CLOUDY _ SOLI  COMMENTS				
DATE RECVD DESCRIPTION  434.024  6-13-94  FILTER MECHLORINATE CONTAINER TYPE ALIQUOTS HOMOGENIZED CONTAINER TYPE APPEARANCE: CLEAR MECHLORINATE COMMENTS	PE (G/P) _ P ODOR	RE (4 C)		
DATE SAMPLE NO. RECVD DESCRIPTION	TEMP DO pH	COND (mmho) INITIALS		
6-13-94	4° 7.7 8.0  USE: IMMEDIATE STO	1 7		
ALIQUOTS HOMOGENIZED _> CONTAINER TY  APPEARANCE : CLEAR _> CLOUDY SOL  COMMENTS	PE (G/P) P ODOR			
DATE SAMPLE NO. RECVD DESCRIPTION	TEMP DO (C) (mg/L) pH	COND (mmho) INITIALS		
6-15-94 434.02B Influent	6° 11.4 8.3			
FILTER DECHLORINATE ALIQUOTS HOMOGENIZED CONTAINER TY APPEARANCE : CLEAR _> CLOUDY SOL COMMENTS				

Form BL42

### **BIOASSAY SAMPLE RECEIPT CHARACTERIZATION**

CLIENT	Onalaska	Landfill		PROJECT	NO.	TSE 14232		
DATE RECVD	<b>*</b>	IMPLE NO. SCRIPTION	TEMP (C)	DO (mg/L)	рН	COND (mmho)	INITIALS	
6-15-94	434. Est/u	ent	46°	/ · /	8.2	-	R	
FILTER _	∠ DECHLORIN		USE: IMM	EDIATE_	STOP	RE (4 C)	×	
ALIQUOT	S HOMOGENIZED	CONTAINER T						
APPEARA	NCE : CLEAR _>	CLOUDY SO	LIDS	COLOR_				
COMMEN								
DATE RECVD		MPLE NO. SCRIPTION	TEMP (C)	DO (mg/L)	ρН	COND (mmho)	INITIALS	
	434.0							
6-17-94	7 7 1 1	unt	5		8.2		It	
		NATE				RE (4 C)	<u> </u>	
ALIQUOT	S HOMOGENIZE	CONTAINER T	YPE (G/P) _	P ODO	R	/ <sub>11</sub>		
APPEARA		CLOUDY SC	LIDS	COLOR_	) ight	7 <u>e 110</u> w		
DATE	<b></b>	AMPLE NO.	TEMP	BC.		COND		
RECVD		SCRIPTION	(C)	(mg/L)	рH	(mmho)	INITIALS	
6-17-94	( C ++/U	en +	5	9.1	8-0		1	
	X DECHLORIN		USE: IMM	_		RE (4 C) _	£_	
1		CONTAINER T						
i		K_ CLOUDY SC	DLIDS	COLOR_	<del> </del>			
COMMEN								
RECVD		AMPLE NO. SCRIPTION	TEMP (C)	DO (mg/L)	На	(mmho)	INITIALS	
	DECHLORII			MEDIATE _		RE (4 C) _		
ALIQUOT	S HOMOGENIZE!	CONTAINER T	YPE (G/P)	ODO	R			
APPEARA	NCE : CLEAR	CLOUDY SC	DLIDS	COLOR_				
COMMEN	ITS							

Form BL42

### SUPPLEMENTAL CHEMICAL DATA SUMMARY

PROJECT NO. TSE 142.32	CLIENT Onalaska Lond fill
TEST DATE 6-14-94	SUMMARIZED BY

LABORATORY CONTROL								
	CONTROL I.D.							
	434, ADL	434. AFL	434. CCL	434 CFL				
TOTAL ALKALINITY mg/L CaCO3	100	98	82	96				
HARDNESS mg/L CaCO3	105	125	100	QC .				

SAMPLE DESCRIPTION	1						
00 8 0.	SAMPLE NO.						
Black River	434.01						
TOTAL ALKALINITY mg/L CaCO3	62						
HARDNESS mg/L CaCO3	65						
TOTAL RESIDUAL CHLORINE mg/L	NA						
TOTAL AMMONIA mg/L	0.03						

SAMPLE DESCRIPTION							
100% Influent	SAMPLE NO.						
	434.02A	434.023	434.02C				
TOTAL ALKALINITY mg/L CaCO3	250	346	348				
HARDNESS mg/L CaCO3	215	195	205				
TOTAL RESIDUAL CHLORINE mg/L	0	0	0				
TOTAL AMMONIA mg/L	10	9.6	13				

SAMPLE DESCRIPTION				
1008 COLO+		SAMPLE	NO.	
100% Effect	434.03 A	434.03 B	434 03C	
TOTAL ALKALINITY mg/L CaCO3	3 <b>9</b> 6	326	342	
HARDNESS mg/L CaCO3	215	185	185/185*	
TOTAL RESIDUAL CHLORINE mg/L	0	0	0	
TOTAL AMMONIA mg/L	]]	9.4	12	

NA = Not Analyzed

<sup>\* =</sup> Duplicate for QA

# TEST TEMPERATURE SUMMARY

	ACUTE TEST TEMPERATURE  ACUTE TEST TEMPERATURE  ADATE										
	6-14-94	6-15	6-16	6-187	6-18						
AVG	20.1	20.0	20.2	20.3	20.3						
MAX											
MIN											
UM. BY:	h.m.	m.m.	h.h.	M.M.	h.m	-					
				<del></del>	TE						
	C-14-94	6-15	CHR(			RATURE	6-20	G-21			
AVG	6-14-94 25.6	6-15 26.5		DA	TE		6-20 25.5	C-21 25.4			
MAX			6-16	DA 6-17	(TE	6-19					
	25.6	26.5	6-16	6-17 25.4	4-18 25.5	6-19 25.6	25.5	25.4			
MAX MIN			6-16	DA 6-17	(TE	6-19					
MAX	25.6	26.5	6-16	6-17 25.4	4-18 25.5	6-19 25.6	25.5	25.4			
MAX MIN	25.6 M.M.	26.5	6-16	6-17 25.4	4-18 25.5	6-19 25.6	25.5	25.4			

FORM BLST04

Revised 7/25/90

APPENDIX B
CHAIN-OF-CUSTODY FORMS

Client Name Onalasi	la l	'and-	કાર	Client	Shipping A	ddress	ing to each gra				NPDES Number Ship Samples to:			
Sample Kit Tra No. of Cooler Total No. of Bo		lo		☐ Fed	X	nt (Check C		Prepared ( Shipped b	y/Date:		CH2M HILL Bioassay Laboratory 15779 W. Ryerson Road New Berlin, WI 53151 Phone: (414) 784-0448 Fax: (414) 784-0353			
Composite Sample Information  Flow Proportional					SAMPLE	Description of Sampling Site  SAMPLES COLLECTEP FROM BLACK RIVER  SLIGHTLY UP-STREAM FROM DISCHARGE  POINT, AT SHORELINE.				Sample Container  Plastic Gloss New W Used  Refrigerant Used For Shipping  Wet Ice Blue Ice Other  Sample(s) Shipped Via				
Initiated: Date Ended: Date Chilled During				No							Bioassays Required  Acute Chronic Other   Other			
Sample Description RIVER WATER	Date 6-10-94	Time	Sampl Comp		No. of Containers	Volume	D.M	Sampled	by (Signature)		Comments	For Lab Use Sample ID No.		
Relinquished B	and Ilile	(Signatu	re)				I	<b>+</b>	Date (13-94	1	Condition of Seal Upon Rec	elpt by Lab		
Received By: (Signature) Date Relinquish					ed By: (Sig	gnature)		Date		By Lab: (Signature)	Date 6-13-94			

Time

Time

CKMHI			CHAIN	OF CU	STODY R	ECORD F	OR NPDE	SCOMP	LIANCE BIOM	ONITORI	ING		
Client Name Onalaska	a Lai	rdf.l		Client !	Shipping Ad	Idre <b>s</b> s					NPDES Number	. 4	
						t Atherican Lagranger	The State of the State of		garajan Araban dari dari dari dari dari dari dari dari	i e e e	Ship Samples to:		
Sample Kit Trac	king Infor	rmation		Methor	d of Shipmer	nt (Check C	)ne)	Prepared	by/Date:		CH2M HILL Bioassay	Laboratory	
	:										15779 W. Ryerson Ro	ad	
No. of Cooler		of _	<u>3</u>	☐ Fed	x 1	□ Pickup		Shipped	by/Date:		New Berlin, WI 53151		
Total No. of Bottles UPS						2 45 4			ing Tilling Tilg Strenger (1912) Strenger (1912)		Phone: (414) 784-0448	}	
	Ana <u>sama a</u>		hada jirtaliyas	99. (A. 17)	i ja ja ja ja ja ja ja ja ja ja ja ja ja		kit er mase tid seis			e erese se ses	Fax: (414) 784-0353	<b>)</b>	
Composite Sam	ple Infom	nation				Description	n of Sampli	ing Site			Sample Container		
Flow Proportion	al 🗌	т	ime inter	vai 🔀							Plastic AGiass D New D	【 Used □	
Samples/Hour		4	Volume	/Sample	· · · · · · · · · · · · · · · · · · ·						Refrigerant Used For Shippir	ıg	
Total Hours	- National Property Services		Total Vo	olume	·						Wet Ice Blue Ice Oth	ıer 🗆	
					!						Sample(s) Shipped Via		
Initiated: Date	<u>6</u>	-11-94	Time	85 20	j:50						UPS D Fed X D Other		
Ended: Date		12-99	Time	20:50	17:50* F_						Bioassays Required		
Chilled During C	ollection		★ £	FFLVEDT ] No							Acute & Chronic & Other	<del>-</del>	
Sample	0110011011	Γ		le Type	No. of						Medio E. Camaria El Carror I	For Lab Use	
Description	Date	Time	Comp	T	Containers	Volume		Sample	d by (Signature)		Comments	Sample ID No.	
INFLUENT #1			1				1 20	III-			24 HR COMPOSITE	434,02A	
EFFLUENT # 1			V		a		()A	7_			20 HR COMPOSITE	434.034	
		<u> </u>					<u> </u>			<u></u>		_	
				<b></b>			<del> </del>						
Relinquished By	and Title	(Signatu	re)		Annual Control Control		Lance and the same and the same		Date 6-13-99	1.	Condition of Seal Upon Receip	ot by Lab	
Received By: (Si	Received By: (Signature)			Relinquish						red By Lab: (Signature)  Date 6 - 13 -94			
• •			Time						Time	4 1 1	s Start	Time 1735	

CH	W	1-	1		
VI.	i i V	11.	H	<u>_</u>	_

### CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client Name	Client S	hipping Ac	dress	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	NPDES Number				
							Ship Samples to:		
Sample Kit Tracking information	Method	of Shipme	nt (Check O	ne) Prepare	d by/Date:		CH2M HILL Bioassay	Laboratory	
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8							15779 W. Ryerson Road		
No. of Cooler of	Fed	x	☐ Pickup Shipped by/Date:			New Berlin, WI 53151			
Total No. of Bottles			Other				Phone: (414) 784-0448 Fax: (414) 784-0353		
Composite Sample Information			Description	of Sampling Site			Sample Container		
Flow Proportional   Time	e interval 💢	,					Plastic Glass New	Used 🗌	
Samples/Hour V	e Interval 💢 olume/Sample	75 m/s					Refrigerant Used For Shippin		
	otal Volume						Wet ice Deliue ice D Oth	er 🗆	
							Sample(s) Shipped Via		
Initiated: Date 6/14/94	Time 9:00.	0'1-					UPS   Fed X   Other	The Velve	
Ended: Date 6/19/04	Time 9:00.	bres					Bloassays Required		
/ '	es 😾 No						Acute Chronic Other	<b>1</b>	
Sample	Sample Type	No. of						For Lab Use	
	Comp Grab	Containers	Volume	Satriple	ed by (Signature)		Comments	Sample ID No.	
Intlust \$15 7.00	<del>~</del>	<del></del>	5-1	141100				434.02B	
ESFlust 6/25 9:00	$\times$	こ	1.55-1					434.03B	
Relinquished By and Title (Signature)	Proj	Eng	<i>Y</i>		Date //5/94	Intect	Condition of Seal Upon Receiption  Other (Describe)	ot by Lab	
Received By: (Signature) Da	Relinquish	ed By: (Sig	nature)		ed By Lab: (Signature) Date G-15-				
Tin	no				Time	Jan	so Stark	Time 8 1700	

C	HA	A	-11	11
	,		- / /	

#### CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client Name			~	Client :	Shipping Ad	ldress					NPDES Number	
Onalash	Ka L	ands	i							1 \$3.55	Ship Samples to:	
Sample Kit Trac	king Info	rmation		Method	of Shipme			Prepared	e jerari sa la		CH2M HILL Bioassay L	.aboratory
	_		_								15779 W. Ryerson Roa	d
No. of Cooler	_3_	of	<u>3</u>	☐ Fed	x j	<b>⊠</b> Pickup		Shipped i	oy/Date:		New Berlin, WI 53151	
Total No. of Bot	tles	3.									Phone: (414) 784-0448	
				······································							Fax: (414) 784-0353	
Composite Sam	ple infom	nation				Description	n of Samplir	ng Site			Sample Container	
Flow Proportion	nal 🗌	Т	ime Inter	val 🛚		INFLUEN	T BEFOR	E CARB	דימט מס		Plastic ★ Glass □ New 🗵	Used 🗌
Samples/Hour			Volume	/Sample	5 GAL			9 C C C C C	See Classer		Refrigerant Used For Shipping	
Total Hours		-	Total Vo	olume	5 6AL	EFFLUENT AFTER CARBON UNIT					Wet ice   Blue ice   Other	
						SAMPLE	COLLECTION	J INTER	UNI: 15 MINU	TES	Sample(s) Shipped Via	
Initiated: Date		6-16-92	Time	12:30	)						UPS   Fed X   Other	
Ended: Date	6	-17-92	Time	12.00							Bioassays Required	
Chilled During C	Collection		Yes 🖸	No							Acule Chronic Other	
Sample			Sampl	е Туре	No. of					······································		For Lab Use
Description	Date	Time	Comp	Grab	Containers	Volume		Sample	by (Signature)		Comments	Sample ID No.
INFLUENT	6-17-94	16:40	\ \ <u>\</u>		11	5 6AL	Lady	25				434.02 C
EFFLUENT	6-17-94	16:40	V		22	15 6AL	5)190					434,030
	<b> </b>											
· · · · · · · · · · · · · · · · · · ·	<del> </del>											
Relinquished By	and Title	(Signatu	re)						Date 6-17-94		Condition of Seal Upon Receipt	by Lab
<u> </u>	SA	h							Time 16' 45	Intact	☐ Other (Describe)	**************************************
Received By: (S	ignature)		Date		Relinquish	ed By: (Sig				1 ( )	By Lab: (Signature)	Date 6-17-94
			Time						Time	you	re Stark	Time 1645

APPENDIX C
REFERENCE TOXICANT DATA

### **Table 1. Reference Toxicant Summary**

Laboratory:

CH2M HILL - Milwaukee, WI

Test Type:

Acute

Organism:

Ceriodaphnia dubia

Age

< 24 Hours

# of Organisms / Conc.:

20

Test Duration:

48 Hours

Toxicant:

Sodium Chloride

Response:

Mean % Survival

Calculation:

LC50

Reporting Period:

		Test	12 Month Control Limits			In or Out	<b>l</b>
	Test	LC50	Mean	Mean	Mean	of	
Test No	Date	(g/L)	LC50	+2 S.D.	-2 S.D.	Control	<b>Action if Out of Control</b>
46	7/27/93	2.32	2.63	3.04	2.22	IN	
47	8/31/93	2.45	2.59	2.99	2.20	IN	
48	9/28/93	2.79	2.59	2.98	2.20	IN	
49	10/27/93	2.44	2.56	2.93	2.19	IN	
50	11/23/93	2.67	2.55	2.88	2.21	IN	
51	12/21/93	2.45	2.51	2.80	2.22	IN	
52	01/18/94	2.21	2.49	2.83	2.15	IN	
53	02/22/94	2.45	2.49	2.83	2.16	IN	
54	03/23/94	2.45	2.47	2.76	2.17	IN	
55	04/13/94	2.45	2.47	2.76	2.17	IN	
56	05/31/94	2.67	2.48	2.80	2.17	IN	
57	06/29/94	2.32	2.47	2.80	2.14	IN	

**Table 2. Reference Toxicant Summary** 

CH2M HILL - Milwaukee, WI

Test Type:

Acute

Organism

Daphnia magna

Age

< 24 Hours

# of Organisms / Conc.:

20

Test Duration:

48 Hours

Toxicant:

Sodium Chloride

Response:

Mean % Survival

Calculation:

LC50

Reporting Period:

		Test	12 Mon	th Contro	l Limits	In or Ou	t
	Test	LC50	Mean	Mean	Mean	of	
Test No	<u>Date</u>	(g/L)	LC50	+2 S.D.	-2 S.D.	Control	Action if Out of Control
44	7/27/93	4.90	5.06	6.21	3.90	IN	
45	8/31/93	4.39	4.95	6.10	3.80	IN	
46	9/28/93	4.90	4.94	6.09	3.79	IN	
47	10/27/93	4.90	4.83	5.65	4.01	IN	
48	11/23/93	4.90°	4.83	5.65	4.01	IN	
49	12/21/93	4.90	4.77	5.40	4.13	IN	
50	1/18/94	4.90	4.77	5.40	4.13	IN	
51	2/22/94	4.90	4.79	5.42	4.16	IN	
52	3/23/94	4.99	4.76	5.31	4.21	IN	
53	4/13/94	4.90	4.76	5.31	4.21	IN	
54	5/31/94	4.99	4.82	5.28	4.35	IN	
55	6/29/94	4.90	4.87	5.18	4.56	IN	

Table 3. Reference Toxicant Summary

CH2M HILL - Milwaukee, WI

Test Type:

Acute

Organism

Pimephales promelas

Age

10 ± 2 Days

# of Organisms / Conc.:

20

**Test Duration:** 

96 Hours

Toxicant:

Sodium Chloride

Response:

Mean % Survival

Calculation:

LC50

Reporting Period:

		Test	12 Month Control Limits		In or Out		
	Test	LC50	Mean	Mean	Mean	of	
Test No	<u>Date</u>	(g/L)	LC50	+2 S.D.	-2 S.D.	Control	Action if Out of Control
44	7/12/93	6.67	7.81	11.02	4.60	iN	
<b>4</b> 5	8/16/93	7.86	7.60	10.36	4.84	IN	
46	9/20/93	6.64	7.45	10.19	4.71	IN	
47	10/11/93	8.80	7.42	10.09	4.76	IN	
48	11/9/93	5.81	7.41	10.10	4.73	IN	
49	12/13/93	5.80	7.24	10.04	4.44	IN	
50	1/18/94	7.87	7.04	9.07	5.00	IN	
51	2/14/94	7.24	6.95	8.84	5.06	IN	
52	3/14/94	6.67	6.88	8.73	5.03	IN	
53	4/18/94	8.31	6.95	8.94	4.95	IN	
54	5/16/94	9.53	7.23	9.56	4.90	IN	
55	6/13/94	6.49	7.26	9.54	4.98	IN	

**Table 4. Reference Toxicant Summary** 

CH2M HILL - Milwaukee

Test Type:

Chronic

Organism:

Ceriodaphnia dubia

Age:

< 24 Hours

# of Organisms / Conc.:

10

**Test Duration:** 

7 days

Toxicant:

Sodium Chloride

Response:

Mean No. of Young per Adult

Calculation:

25% Inhibition Concentration (IC25)

Reporting Period:

July 93 - June 94

						In or Out	
	Test	IC25	Mean	Mean	Mean	of	
Test No	Date	(g/L)	IC25	+2 S.D	-2 S.D.	Control	Action if Out of Control
44	7/9/93	1.07	1.05	1.42	0.69	IN	
45	8/13/93	1.41	1.07	1.48	0.66	IN	
46	9/24/93	1.16	1.08	1.49	0.66	IN	
47	10/22/93	1.04	1.06	1.44	0.67	IN	
48	11/12/93	0.78	1.03	1.43	0.62	IN	
49	12/3/93	1.01	1.01	1.41	0.61	IN	
50	1/7/94	0.71	0.98	1.40	0.56	IN	
51	2/22/94	0.85	0.96	1.37	0.54	IN	
52	4/5/94	1.06	0.99	1.36	0.61	IN	
53	5/4/94	1.27	1.01	1.42	0.60	IN	
54	5/31/94	1.05	1.01	1.42	0.60	IN	
55	6/18/94	1.12	1.04	1.42	0.66	IN	

Test on 3/29/94 failed acceptability criterion for reproduction; Retest 4/5/94 Test on 5/4/94 used for April test requirement

**Table 5. Reference Toxicant Summary** 

CH2M HILL - Milwaukee

Test Type:

Chronic

Organism:

Ceriodaphnia dubia

Age:

< 24 Hours

# of Organisms / Conc.:

10

**Test Duration:** 

7 days

Toxicant:

Sodium Chloride

Response:

Mean 7-day % Survival and No. of Young per Adult

Calculation:

**NOEC and LOEC** 

Reporting Period:

	-	Survival		Reproc	fuction		
	Test	NOEC	LOEC	NOEC	LOEC		
Test No	<u>Date</u>	(g/L)	(g/L)	(g/L)	(g/L)		Comment
44	7/9/ <b>9</b> 3	2.00	4.00	0.00	0.50	+	
45	8/13/93	1.50	2.00	1.50	2.00		
46	9/24/93	1.50	2.00	1.00	1.50		
47	10/27/93	2.00	4.00	0.00	0.50	**	
<b>4</b> 8	11/12/93	2.00	4.00	0.50	1.00		
49	12/3/93	2.00	4.00	0.50	1.00		
50	1/7/94	2.00	4.00	0.50	1.00		
51	2/22/94	2.00	4.00	0.50	1.00		
52	4/5/94	1.00	1.50	1.00	1.50		
53	5/4/94	1.50	2.00	1.00	1.50		
54	5/31/94	2.00	4.00	0.50	1.00		
<b>5</b> 5	6/18/94	2.00	4.00	0.50	1.00		

<sup>+</sup> For reproduction data, only a 12.5% reduction at 0.5 g/L conc.; Sig. diff. test inappropriate.

<sup>\*\*</sup> For reproduction data, 0.5 g/L only 9.6% reduction; 1 g/L 20.1% reduced. Sig. diff. test inappropriate Test on 3/29/94 failed acceptability criterion for reproduction; Retest 4/5/94 Test on 5/4/94 for April test requirement

### **Table 6. Reference Toxicant Summary**

Laboratory:

CH2M HILL - Milwaukee

Test Type:

Chronic

Organism:

Pimephales promelas

Age:

< 24 Hours

# of Organisms / Conc.:

40

Test Duration:

7 days

Toxicant:

Sodium Chloride

Response:

Mean Growth (mg per number of organisms exposed)

Calculation:

25% Inhibition Concentration (IC25)

Reporting Period:

12 Month Control Limits	(IC25)	In or Out
-------------------------	--------	-----------

	Test	IC25	Mean	Mean	Mean	of	
Test No	Date	(g/L)	IC25	+2 S.D.	-2 S.D.	Control	<b>Action if Out of Control</b>
40	7/20/93	0.62	0.49	0.69	0.30	IN	
41	8/25/93	0.60	0.50	0.71	0.30	IN	
42	9/29/93	0.61	0.53	0.72	0.33	IN	
43	10/12/93	0.56	0.53	0.72	0.34	IN	
44	11/22/93	0.53	0.54	0.72	0.35	IN	
45	12/9/93	0.60	0.55	0.73	0.37	IN	
46	1/11/94	0.33	0.53	0.75	0.32	IN	
47	2/7/94	0.51	0.55	0.71	0.39	IN	
48	3/3/94	0.60	0.56	0.72	0.40	IN	
49	4/12/94	0.40	0.54	0.72	0.36	IN	
50	5/16/94	0.59	0.54	0.72	0.36	IN	
51	6/30/94	0.90	0.57	0.85	0.30	OUT	New lab media used - MHRW as diluent.

**Table 7. Reference Toxicant Summary** 

CH2M HILL - Milwaukee

Test Type:

Chronic

Organism:

Pimephales promelas

Age:

< 24 Hours

# of Organisms / Conc.: 40

Test Duration:

7 days

Toxicant:

Sodium Chloride

Response:

Mean % 7 day Survival and Growth (mg)

Calculation:

NOEC and LOEC

Reporting Period:

		Survival		Gro	wth	
	Test	NOEC	LOEC	NOEC	LOEC	
Test No	Date	(g/L)	(g/L)	(g/L)	(g/L)	Comments and Action
40	7/20/93	0.30	1.50	0.30	1.50	
41	8/25/93	0.30	1.50	0.30	1.50	
42	9/29/93	0.30	1.50	0.30	1.50	
43	10/12/93	0.30	1.50	0.30	1.50	
44	11/22/93	0.30	1.50	0.30	1.50	
45	12/9/93	0.30	1.50	0.30	1.50	
46	1/11/94	0.30	1.50	0.30	1.50	
47	2/7/94	0.30	1.50	0.30	1.50	
48	3/3/94	0.30	1.50	0.30	1.50	
49a	4/12/94	0.30	0.60	0.30	0.60	a: Different dilution series used
50	5/16/ <del>9</del> 4	0.30	1.50	0.30	1.50	
51	6/30/94	1.50	3.00	0.30	1.50	