0069972

SAF-RC-048
100 Area and 300 Area Component of the RCBRA Water Sampling
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jill Thomson	H0-23	_NB 6/14/06_ INITIAL/DATE
Jeanette Duncan	H9-02	_NB 6/14/06_ INITIAL/DATE

COMMENTS:

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JUN 2 2 2006
EDMC

SDG **B1525** **SAF-RC-048**

Rad only X Chem only Rad & Chem

X Complete Partial

Waste Site: Pore Water

RECEIVED
MAR 2006

BIOASSAY REPORT
CHRONIC SCREENING BIOASSAYS
Conducted January 19 through March 3, 2006

Prepared for

ELR CONSULTING, INC.
WASHINGTON HANFORD CLOSURE
RICHLAND, WASHINGTON

Prepared by

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March 9, 2006
Lab I.D Numbers B1525-01 thru 39
SDG NUMBER B1525

CONTENTS

Section	Page
INTRODUCTION	3
METHODS AND MATERIALS	3
TEST METHODS	3
TEST ORGANISMS	3
DILUTION WATER	3
TEST CONCENTRATIONS	3
SAMPLE COLLECTION	4
SAMPLE PREPARATION	6
MONITORING OF BIOASSAYS	6
DATA ANALYSIS	6
RESULTS AND DISCUSSION	7
CHRONIC BIOASSAYS	7
REFERENCE TOXICANT TESTS	9
CERTIFICATION STATEMENT	9

APPENDIX A. RAW DATA SHEETS
APPENDIX B. REFERENCE TOXICANT DATA FORMS
APPENDIX C. CHAIN OF CUSTODY FORMS AND SAMPLE CHECK-IN LIST

INTRODUCTION

CH2M HILL conducted chronic screening bioassay tests using the water flea (*Ceriodaphnia dubia*) on pore water samples provided by ELR Consulting for Washington Closure Hanford, Richland, Washington. The tests were conducted from January 19 through March 3, 2006.

METHODS AND MATERIALS

TEST METHODS

Ceriodaphnia dubia chronic three brood toxicity test method is adapted from *Standard Guide for Conducting Three-Brood, Renewal Toxicity Tests with Ceriodaphnia dubia*, ASTM, designation: E1295-01 (2002); and *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms,* EPA Method 1002.0 "*Ceriodaphnia* Survival and Reproduction Test," EPA-821-R-02-013 (2002).

The *Ceriodaphnia dubia* laboratory control associated with WCH samples J11D6, J116D4, J116D0, J116D2, and J116C9, did not meet test acceptability criteria of 60 percent of the control organisms having a third brood and a minimum average of 15 neonates per surviving adult during the initial test. As a result, a corrective action report was made and the samples listed above were retested.

Additional guidance for test interpretation was provided by: *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (EPA June 2000), EPA 833-R-00-003: and *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*, (EPA July 2000), EPA 821-B-00-004.

TEST ORGANISMS

The *Ceriodaphnia dubia* were obtained from CH2M HILL's in-house cultures. The *Ceriodaphnia dubia* used in the chronic test were less than 24 hours old and within an eight hour age range at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA. The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The specific hardness and alkalinity of the dilution water used with each test is listed in Table 2 below.

TEST CONCENTRATIONS

The concentrations tested in the chronic tests were 100 porewater samples with dilution water alone for the control. For the *Ceriodaphnia* chronic test, 1 organism per chamber with 10 chambers per concentration for a total of 10 organisms per concentration was used.

SAMPLE COLLECTION

All samples were delivered to CH2M HILL's Corvallis Aquatic Toxicology Laboratory by Federal Express. The samples were stored in the dark at 4°C until test solutions were prepared and tested. Chain of custody for sample collection is provided in Appendix C.

The sample identification and collection, receipt, and testing dates are listed in Table 1 below.

Table 1
Sample Collection and Cross-Reference Data

Client I.D	SAMPLE DATE	RECEIPT DATE	LAB SDG I.D.	ANALYSIS DATE
J11114	1-16-2006	1-18-2006	B1525-01	1-19-2006
J11115	1-16-2006	1-18-2006	B1525-02	1-19-2006
J11116	1-17-2006	1-19-2006	B1525-03	1-19-2006
J11117	1-17-2006	1-19-2006	B1525-04	1-19-2006
J11189	1-17-2006	1-19-2006	B1525-05	1-19-2006
J111B0	1-18-2006	1-20-2006	B1525-06	1-25-2006
J11190	1-18-2006	1-20-2006	B1525-07	1-25-2006
J111M0	1-22-2006	1-24-2006	B1525-08	1-25-2006
J111K5	1-19-2006	1-24-2006	B1525-09	1-25-2006
J111L7	1-19-2006	1-24-2006	B1525-10	1-25-2006
J111L8	1-19-2006	1-24-2006	B1525-11	1-25-2006
J111L9	1-22-2006	1-24-2006	B1525-12	1-26-2006
J111W9	1-23-2006	1-25-2006	B1525-13	1-26-2006
J111X3	1-23-2006	1-25-2006	B1525-14	1-26-2006
J111M1	1-24-2006	1-26-2006	B1525-15	1-26-2006
J11200	1-24-2006	1-26-2006	B1525-16	1-26-2006
J111Y9	1-24-2006	1-26-2006	B1525-17	1-27-2006
J111W8	1-25-2006	1-27-2006	B1525-18	1-27-2006
J11222	1-25-2006	1-27-2006	B1525-19	1-27-2006
J11223	1-25-2006	1-27-2006	B1525-20	1-27-2006
J11233	1-29-2006	2-2-2006	B1525-21	2-3-2006
J11251	1-29-2006	2-2-2006	B1525-22	2-3-2006
J116D6	2-2-2006	2-8-2006*	B1525-23	2-24-2006
J116D4	2-2-2006	2-8-2006*	B1525-24	2-24-2006
J116D0	2-3-2006	2-8-2006*	B1525-25	2-24-2006
J116D2	2-3-2006	2-8-2006*	B1525-26	2-24-2006
J116C9	2-3-2006	2-8-2006*	B1525-27	2-24-2006
J116D5	2-3-2006	2-8-2006	B1525-28	2-8-2006
J11256	2-1-2006	2-8-2006	B1525-29	2-8-2006
J112X5	2-1-2006	2-8-2006	B1525-30	2-8-2006
J11253	2-1-2006	2-8-2006	B1525-31	2-8-2006
J116D7	2-2-2006	2-8-2006	B1525-32	2-8-2006
J116D1	2-2-2006	2-8-2006	B1525-33	2-9-2006
J116D3	2-2-2006	2-8-2006	B1525-34	2-9-2006
J11254	2-6-2006	2-9-2006	B1525-35	2-9-2006
J11225	2-6-2006	2-9-2006	B1525-36	2-9-2006
J116D8	2-6-2006	2-9-2006	B1525-37	2-9-2006
J112X6	2-6-2006	2-9-2006	B1525-38	2-9-2006
J11255	2-6-2006	2-9-2006	B1525-39	2-9-2006

* Samples were originally tested on 2-8-2006, however laboratory control did not meet test acceptability criteria and samples were retested.

SAMPLE PREPARATION

Temperature was adjusted on the samples used during these tests prior to each daily renewal.

MONITORING OF BIOASSAYS

Samples were monitored on arrival for hardness, alkalinity, total residual chlorine, ammonia, and temperature.

For the chronic tests, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in the control and all concentrations tested. Conductivity was measured at test initiation. Temperature was monitored continuously throughout the testing period.

Ceriodaphnia dubia survival and neonate production were measured daily in the chronic tests. In accordance with ASTM E1295-01, survival data were determined as the number of 1st generation organisms surviving at day 7. In accordance with ASTM E1295-01 and EPA-821-R-02-013, the collection of reproduction data were complete when 60 percent of the control organisms have produced a third brood (day 6 or day 7). Reproduction data are defined as the total neonates produced in the first three broods by the 1st generation test organism.

DATA ANALYSIS

The effects measured during the *Ceriodaphnia dubia* chronic test included survival and reproduction over the exposure period. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms,* EPA Method 1002.0 "*Ceriodaphnia* Survival and Reproduction Test," EPA-821-R-02-013 (2002), using CETIS version 1.1.1. Fisher Exact test was used to compare the survival data between the control and each sample treatment. Equal variance t Two-Sample test was used to compare the reproduction data between the control and each sample treatment When the assumptions of normality or homogeneity of variance necessary for Equal variance t Two-Sample test could not be met, Unequal variance t Two-Sample test or Wilcoxon Two-Sample Test was used to analyze the data.

RESULTS AND DISCUSSION

CHRONIC BIOASSAYS

Table 2 summarizes the survival and reproduction data, statistical results, and water chemistry data for the *Ceriodaphnia dubia* chronic tests.

Table 2: *Ceriodaphnia dubia* Chronic Test Results for Washington Closure Hanford

F, significantly different from control by use of Fisher's Exact test; E, significantly different from lab control by use of Equal Variance Two-Sample t Test ns indicates a non significant result; ^{S}, indicates significant at alpha (p) = 0.05; --, indicates no statistical test performed.

Lab ID:	Sample Number:	*Ceriodaphnia dubia* Survival Endpoint Percent Survival	Significantly different compared to Lab Control?	*Ceriodaphnia dubia* Reproduction Endpoint Young per female	Significantly different compared to Lab Control?	Total Residual Chlorine (mg/L)	Ammonia (mg/L as NH_3-N)	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
Tests initiated on Jan 19, 2006									
Laboratory Control		100	--	30.6	--	na	na	60	64
B1525-01	J11114	90	ns	23.5	ns	0.00	0.17	70	66
B1525-02	J11115	100	ns	27.6	ns	0.02	0.01	86	78
B1525-03	J11116	100	ns	30.1	ns	0.02	0.63	86	76
B1525-04	J11117	100	ns	28.2	ns	0.02	0.09	70	64
B1525-05	J11189	100	ns	27.3	ns	0.00	0.00	70	64
Tests initiated on Jan 25, 2006									
Laboratory Control		100	--	25.1	--	na	na	80	64
B1525-06	J111B0	100	ns	23.2	ns	0.03	0.09	72	66
B1525-07	J11190	100	ns	23.7	ns	0.00	0.00	72	66
B1525-08	J111M0	80	ns	24.8	ns	0.00	0.03	62	70
B1525-10	J111L7	90	ns	22.4	ns	0.00	0.05	78	68
B1525-11	J111L8	100	ns	24.9	ns	0.00	0.02	78	66
Tests initiated on Jan 25, 2006. (With reduced volume).									
Laboratory Control		100	--	24.3	--	na	na	80	64
B1525-09	J111K5	100	ns	23.5	ns	0.00	0.00	80	68
Tests initiated on Jan 26, 2006									
Laboratory Control		100	--	33.1	--	na	na	92	80
B1525-12	J111L9	100	ns	27.6	E ^{S}	0.00	0.01	104	80
B1525-13	J111W9	100	ns	28.7	ns	0.01	0.00	96	74
B1525-14	J111X3	80	ns	28.2	ns	0.01	0.10	92	68
B1525-15	J111M1	100	ns	31.7	ns	0.00	0.08	130	96
B1525-16	J11200	100	ns	29.9	E ^{S}	0.00	0.06	90	68
Tests initiated on Jan 27, 2006									
Laboratory Control		100	--	35.0	--	na	na	92	80
B1525-17	J111Y9	90	ns	34.8	ns	0.00	0.04	92	68
B1525-18	J111W8	100	ns	32.4	ns	0.00	0.10	88	68
B1525-19	J11222	90	ns	31.8	ns	0.00	0.01	84	70
B1525-20	J11223	90	ns	31.0	ns	0.06	0.08	102	78
Tests initiated on Feb 3, 2006									
Laboratory Control		100	--	32.2	--	na	na	94	64
B1525-21	J11233	100	ns	32.0	ns	0.00	0.05	86	64
B1525-22	J11251	100	ns	31.2	ns	0.00	0.14	70	68
Tests initiated on Feb 8, 2006									
Laboratory Control		100	--	20.5	--	na	na	88	62
B1525-28	J116D5	100	ns	28.2	ns	0.00	0.03	72	68
B1525-29	J11256	100	ns	23.5	ns	0.05	0.03	76	68
B1525-30	J112X5	100	ns	16.6	ns	0.00	0.09	76	66
B1525-31	J11253	90	ns	25.0	ns	0.01	0.04	74	64
B1525-32	J116D7	100	ns	23.6	ns	0.01	0.03	74	66
Tests initiated on Feb 9, 2006									
Laboratory Control		90	--	25.7	--	na	na	88	62
B1525-33	J116D1	100	ns	27.0	ns	0.01	0.03	74	66
B1525-34	J116D3	100	ns	32.9	ns	0.00	0.04	72	68
B1525-35	J11254	100	ns	30.6	ns	0.02	0.00	72	66
B1525-36	J11225	100	ns	32.2	ns	0.05	0.09	74	66
Tests initiated on Feb 9, 2006									
Laboratory Control		100	--	23.3	--	na	na	88	62
B1525-37	J116D8	100	ns	32.7	ns	0.01	0.00	74	64
B1525-38	J112X6	100	ns	25.4	ns	0.02	0.00	72	62
B1525-39	J11255	100	ns	32.0	ns	0.01	0.02	76	66
Tests initiated on Feb 24, 2006									
Laboratory Control		90	--	30.4	--	na	na	96	72
B1525-23	J116D6	100	ns	33.4	ns	0.00	0.00	86	68
B1525-24	J116D4	100	ns	35.6	ns	0.00	0.04	80	70
B1525-25	J116D0	100	ns	33.3	ns	0.00	0.00	72	66
B1525-26	J116D2	100	ns	31.7	ns	0.01	0.00	86	68
B1525-27	J116C9	90	ns	30.6	ns	0.01	0.01	72	66

With the exception of samples J11200 and J11L9, no other samples indicated a statistically significant reduction in survival or reproduction when compared to the laboratory control. The no observed effect concentration (NOEC) and the lowest observed effect concentration (LOEC) were 100 and greater than 100 percent for all samples, respectively.

For the J11200 sample, EPA-821-R-02-013 (section 10.2.8.2.5) states "a test concentration shall not be considered toxic (i.e. significantly different from the control) if the relative difference from the control is less than the lower PMSD bounds [13 percent for *Ceriodaphnia dubia* reproduction]." The reduction at the 100 percent J11200 sample was 9.0 percent and therefore should not be considered statistically significant.

The J11L9 sample indicated a statistically significant reduction in reproduction when compared to the laboratory control. However, the reduction in reproduction for the J11L9 sample was only a 16.6 percent reduction from the laboratory control. This reduction was determined to be statistically significant, however, due to the magnitude of the reduction observed, it is uncertain whether this difference is biologically significant.

The dissolved oxygen levels in the chronic tests remained above 4 mg/L throughout the test period and test temperatures remained at 25±1°C. The tests proceeded without any interruption that could have affected test results.

REFERENCE TOXICANT TESTS

The results of monthly reference toxicant tests (January and February) conducted with sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines. The IC_{25} values, and Control Chart Limits are listed in Table 2 below. The data sheets for the reference toxicant tests are provided in Appendix B.

Table 3
Chronic Reference Toxicant Tests

Species (test)	IC_{25} (g/L)	Control Chart (g/L)
Ceriodaphnia dubia (survival)	1.53	1.03 to 2.02
Ceriodaphnia dubia (reproduction)	0.34	0.27 to 0.82
Ceriodaphnia dubia (survival)	1.38	1.02 to 2.01
Ceriodaphnia dubia (reproduction)	0.69	0.27 to 0.83

CERTIFICATION STATEMENT

I certify that this data package is in compliance with the Statement of Work, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature:

APPENDIX A
RAW DATA SHEETS

CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford — Test Initiation: Date 1-19-06 — Test Termination: Date 1-26-06

Contact: — Technician: Mudcey, OLDHAM, Pittenger, Winn

Test Species/ID: *Ceriodaphnia dubia* / Cd 1282 /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received	Total Residual Chlorine (mg/l) As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525 -01	J1114	1-16-06	1030	0.20	-	0.17	70	66
-02	J1115	1-16-06	1330	0.02	-	0.01	86	78
-03	J1116	1-17-06	0400	0.02	-	0.63	88	76
-04	J1117	1-17-06	1110	0.02	-	0.09	70	64
-05	J1118	1-17-06	1250	0.00	-	0.00	70	64

Test Species Information	ID# Cd 1282	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Amount	YCT daily			
Aeration: Began	None			
Amount	—			
Dilution Water ID#	2586			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2586	80	64	8.6

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on JAN 19, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-05	J11189		0.895295879	1	I	#1	I #1
B1525-01	J11114		0.849127955	2	I	#2	I #2
Lab Control	ReconMH only		0.743952433	3	I	#3	I #3
B1525-03	J11116		0.675557997	4	I	#4	I #4
B1525-02	J11115		0.46786684	5	I	#5	I #5
B1525-04	J11117		0.364559404	6	I	#6	I #6

Test Board Slot Location Information JAN 19, 2006

Board ID: I

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	I# 4	11	I# 2	21	I# 6	31	I# 1	41	I# 5	51	I# 3
rep B	2	I# 4	12	I# 3	22	I# 2	32	I# 1	42	I# 5	52	I# 6
rep C	3	I# 6	13	I# 3	23	I# 4	33	I# 2	43	I# 5	53	I# 1
rep D	4	I# 2	14	I# 4	24	I# 6	34	I# 5	44	I# 3	54	I# 1
rep E	5	I# 4	15	I# 3	25	I# 1	35	I# 6	45	I# 2	55	I# 5
rep F	6	I# 2	16	I# 1	26	I# 3	36	I# 6	46	I# 5	56	I# 4
rep G	7	I# 1	17	I# 2	27	I# 3	37	I# 4	47	I# 6	57	I# 5
rep H	8	I# 6	18	I# 5	28	I# 4	38	I# 2	48	I# 1	58	I# 3
rep I	9	I# 5	19	I# 4	29	I# 3	39	I# 6	49	I# 1	59	I# 2
rep J	10	I# 2	20	I# 5	30	I# 3	40	I# 4	50	I# 1	60	I# 6

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 1-19-2006

Sample Description:

Sample ID#: see cross reference

Ceriodaphnia Lot#: Cd 1882

Statistician: Jm

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
I #1	29	17	16	36	32	33	33	36	29	12	10	273
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
I #2	16	18	35	35	29	35	0/AD	37	16	14	9	235
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		
I #3	19	16	37	37	34	34	29	37	31	32	10	306
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
I #4	16	15	30	32	40	39	33	32	34	0	9/9	271
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? I		
I #5	13	33	37	28	34	36	36	35	11	13	10	276
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
I #6	26	17	30	34	39	25	30	32	32	17	10	282
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

= 30. Average

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: Total live young = day 6 results.
Total alive ~~Adults~~ Jw = day 7 results.

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 1-19-06 Time: 1455

Sample Description: — Test Termination: Date: 1-26-06 Time: 0945

Initial Sample ID #: see cross reference — Ceriodaphnia Lot#: Cd 1882

Technician: Day 1 [illegible] Day 2 [illegible] Day 3 [illegible] Day 4 [illegible] Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1000 Day 2 1730 Day 3 1110 Day 4 1015 Day 5 1040 Day 6 0920 Day 7 0945

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
I #1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	0	4	5	5	6	5	5	2	0	10	38
	4	0	5	0	0	8	0	0	0	0	3	10	16
	5	13	12	12	14	0	11	13	13	11	9	10	108
	6	10	0	0	17	19	16	15	18	16	0	10	111
	7	7*	19	20	0	8*	0	0	0	0	14	10	68
I #2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	4	5	4	5	0/AD	7	0	0	9	25
	4	5	5	0	0	0	0		0	5	4	9	19
	5	11	13	10	12	10	12		13	11	10	9	102
	6	0	0	21	18	15	18		17	0	0	9	89
	7	16	19	0	0	0	0		0	18	16	9	69
I #3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	0	6	6	4	4	3	6	4	4	10	42
	4	0	6	0	0	0	0	0	0	0	0	10	6
	5	14	10	13	11	13	11	10	13	12	13	10	120
	6	0	0	18	20	17	19	16	18	15	15	10	138
	7	18	13	0	0	0	0	0	0	0	0	10	31
I #4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	4	0 ~~7~~4	0 ~~8~~7	0 ~~8~~5	5	5	4	0	10	34
	4	5	3	0	3	3	0	0	0	0	Inj	9/9	14
	5	11	12	9	12	13	14	13	13	12		9/9	109
	6	0	0	17	13	17	20	15	14	18		9/9	114
	7	19	17	0	0	0	0	6*	0	0		9/9	42
I #5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	6	6	0	5	6	4	5	0	0	10	32
	4	2	0	0	0	0	0	0	0	3	4	10	9
	5	11	10	13	11	11	13	12	13	8	9	10	111
	6	0	17	18	17	18	17	20	17	0	0	10	124
	7	13	0	0	16	0	0	0	0	14	17	10	60
I #6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	6	5	2	0	4	5	0	10	22
	4	2	5	6	0	0	0	3	0	1/0	4	10	21
	5	11	12	10	10	13	6	11	10	11	13	10	107
	6	13	0	14	18	21	17	16	18	15	0	10	132
	7	14	16	17	16	9*	0	0	0	0	15	10	87

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

* Young in process of being "extracted"

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 1-19-06 Time: 1455 | Adults Isolated Date: 1-18-06 Time: 0740

Sample Description: see cross reference | Initial Sample ID #: — | Neo's Collected Date: 1-18-06 Time: 1530

Technician: Day 0 [illegible] Day 1 [illegible] Day 2 [illegible] Day 3 [illegible] Day 4 [illegible] Day 5 [illegible] Day 6 DW Day 7 DW

Time: Day 0 1455 Day 1 1000 Day 2 1230 Day 3 1110 Day 4 1020 Day 5 1110 Day 6 0920 Day 7 0945

Percent	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
I #1	8.2	7.9 / 8.0	8.2 / 8.8	8.8 / 8.2 / 8.3	8.2 / 8.2	8.3 / 8.2	8.1 / 8.2	7.9
I #2	8.2	7.9 / 8.0	8.1 / 8.6	8.1 / 8.4	8.2 / 8.2	8.3 / 8.2	8.1 / 8.2	7.9
I #3	8.2	8.0 / 8.0	8.1 / 8.1	8.1 / 8.4	8.2 / 8.2	8.3 / 8.2	8.1 / 8.2	7.9
I #4	8.2	8.0 / 8.0	8.2 / 8.3	8.1 / 8.3	8.2 / 8.2	8.3 / 8.2	8.1 / 8.2	7.9
I #5	8.2	8.0 / 8.0	8.1 / 8.6	8.1 / 8.2	8.2 / 8.2	8.3 / 8.2	8.2 / 8.2	7.9
I #6	8.2	8.0 / 8.0	8.1 / 8.6	8.1 / 8.4	8.2 / 8.2	8.3 / 8.2	8.1 / 8.2	7.9

Percent	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
I #1	7.6	7.8 / 7.7	8.0 / 7.5	7.7 / 7.6	7.6 / 7.3	8.3 / 7.6	7.8 / 7.5	7.8
I #2	7.6	7.8 / 7.6	8.0 / 7.5	7.7 / 7.3	7.6 / 7.3	8.3 / 7.6	7.8 / 7.5	7.8
I #3	7.7	7.8 / 7.6	8.0 / 7.7	7.7 / 7.4	7.7 / 7.4	8.3 / 7.7	7.8 / 7.6	7.7
I #4	7.1	7.9 / 7.6	8.0 / 7.1	7.8 / 7.1	7.7 / 7.1	8.2 / 7.4	7.8 / 7.2	7.8
I #5	7.5	7.9 / 7.6	8.1 / 7.4	7.8 / 7.2	7.7 / 7.3	8.3 / 7.5	7.8 / 7.5	7.8
I #6	7.6	7.9 / 7.6	8.0 / 7.5	7.7 / 7.3	7.6 / 7.3	8.2 / 7.5	7.7 / 7.5	7.7

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
I #1	24.7 / 134	25.4	24.6	25.1	24.0	24.2	25.0	24.7
I #2	24.3 / 70	25.3	25.1	25.3	24.2	24.1	25.3	24.6
I #3	24.6 / 276	25.3	25.2	25.2	25.0	24.2	25.4	24.9
I #4	24.6 / 158	25.4	25.2	25.3	25.0	24.0	25.3	24.7
I #5	24.8 / 190	25.5	25.2	25.3	25.1	24.1	24.8	25.1
I #6	24.9 / 136	25.3	25.2	25.4	25.1	23.9	24.3	24.5

COMMENTS: —

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 26 Jan-06 1:52 PM
Test Link: 19-2057-0887/B152501cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	05-7607-9180	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	19 Jan-06 02:55 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	26 Jan-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Jan-06 02:55 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	12-2253-2197	**Material:**	Unknown	**Client:**	
Sample Date:	16 Jan-06 10:30 AM	**Code:**	B1525-01	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	76h	**Station:**			

Comments: J11114

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
06-8994-9390	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
01-0892-4763	Reproduction	100	> 100	N/A	25.99%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
06-8994-9390	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
01-0892-4763	Reproduction	Control Response	30.6	15 - NL	Yes	Passes acceptability criteria
01-0892-4763	Reproduction	PMSD	0.25989	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.6	16	37	2.3532	7.4416	24.32%
100		10	23.5	0	37	3.9363	12.448	52.97%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	19	16	37	37	34	34	29	37	31	32
100		16	18	35	35	29	35	0	37	16	14

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	19-2057-0887	19-2057-0887	26 Jan-06 1:25 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

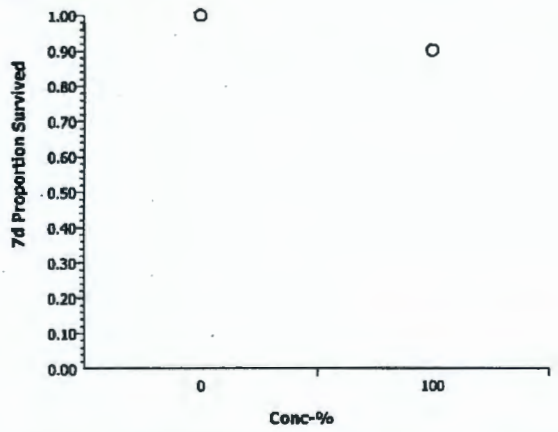
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	19-2057-0887	19-2057-0887	26 Jan-06 1:25 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	25.99%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.79795	6.54109	0.14135	Equal Variances
Distribution	Shapiro-Wilk W	0.94356		0.27970	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	252.05	252.05	1	2.40	0.13899	Non-Significant Effect
Error	1892.9	105.1611	18			
Total	2144.95003	357.21111	19			

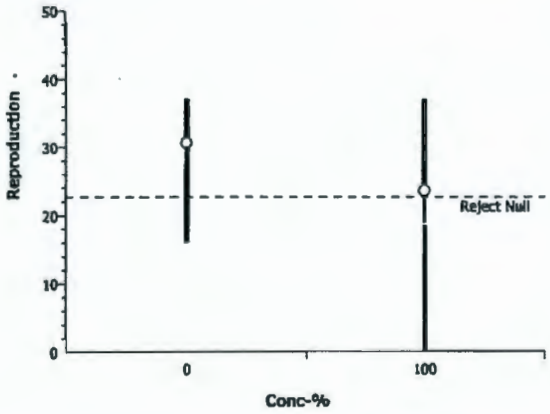
Group Comparisons

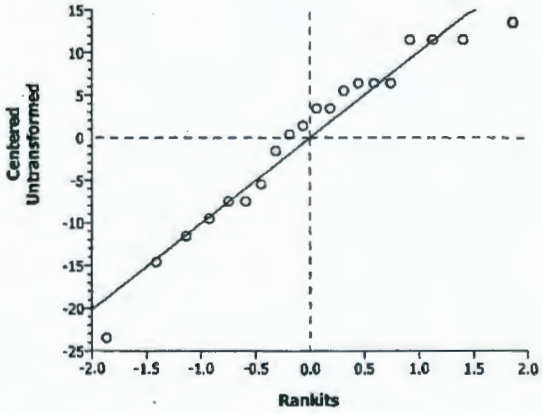
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	1.54816	1.73406	0.0695	7.95257	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.6	16	37	7.4416				
100		10	23.5	0	37	12.448				

Graphics





CETIS Test Summary

Report Date: 26 Jan-06 1:53 PM
Test Link: 07-9491-1480/B152502cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	04-4349-5120	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	19 Jan-06 02:55 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	26 Jan-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Jan-06 02:55 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	07-0126-0722	**Material:**	Unknown	**Client:**	
Sample Date:	16 Jan-06 01:30 PM	**Code:**	B1525-02	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	73h	**Station:**			

Comments: J11115

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-9306-4532	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
01-6425-8147	Reproduction	100	> 100	N/A	23.55%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-9306-4532	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
01-6425-8147	Reproduction	Control Response	30.6	15 - NL	Yes	Passes acceptability criteria
01-6425-8147	Reproduction	PMSD	0.23554	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.6	16	37	2.3532	7.4416	24.32%
100		10	27.6	11	37	3.4260	10.834	39.25%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	19	16	37	37	34	34	29	37	31	32
100		13	33	37	28	34	36	36	35	11	13

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	07-9491-1480	07-9491-1480	26 Jan-06 1:29 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

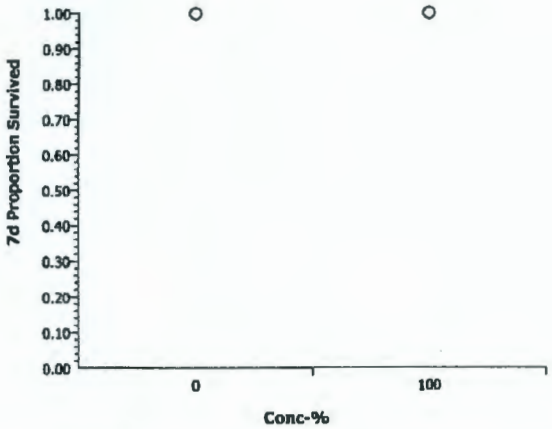
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	07-9491-1480	07-9491-1480	26 Jan-06 1:29 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	23.55%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.11958	6.54109	0.27841	Equal Variances
Distribution	Shapiro-Wilk W	0.80967		0.00121	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	45	45	1	0.52	0.47970	Non-Significant Effect
Error	1554.8	86.37778	18			
Total	1599.80005	131.37778	19			

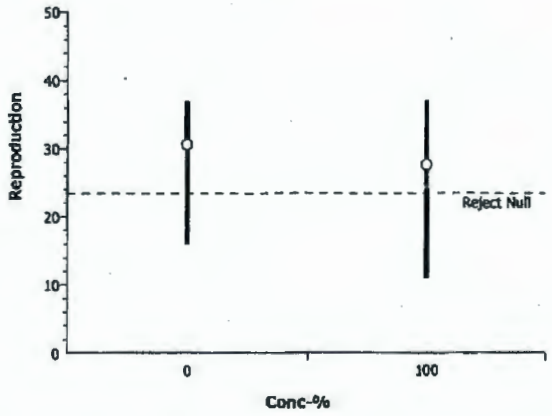
Group Comparisons

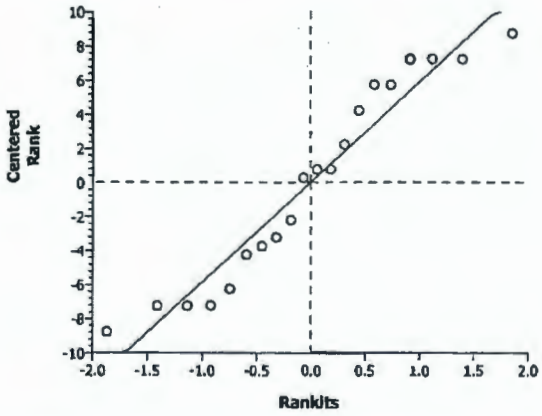
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	97.5		0.2894	0	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.6	16	37	7.4416	11.25	4	18.5	5.6187
100		10	27.6	11	37	10.834	9.75	1	18.5	6.3388

Graphics





CETIS Test Summary

Report Date: 26 Jan-06 1:52 PM
Test Link: 08-0251-4155/B152503cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-4441-7242	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	19 Jan-06 02:55 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	26 Jan-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Jan-06 02:55 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	11-2165-1445	**Material:**	Unknown	**Client:**	
Sample Date:	17 Jan-06 09:00 AM	**Code:**	B1525-03	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	54h	**Station:**			

Comments: J11116

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-8658-6914	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
08-6457-0326	Reproduction	100	> 100	N/A	21.33%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-8658-6914	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
08-6457-0326	Reproduction	Control Response	30.6	15 - NL	Yes	Passes acceptability criteria
08-6457-0326	Reproduction	PMSD	0.21327	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		9	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.6	16	37	2.3532	7.4416	24.32%
100		9	30.111	15	40	2.9695	8.9085	29.59%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	19	16	37	37	34	34	29	37	31	32
100		16	15	30	32	40	39	33	32	34	

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	08-0251-4155	08-0251-4155	26 Jan-06 1:43 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

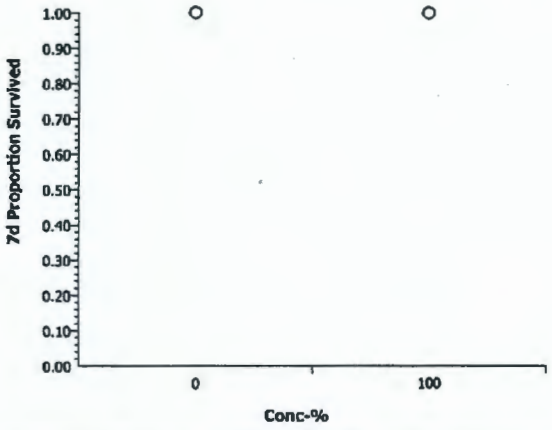
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	0	9

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	08-0251-4155	08-0251-4155	26 Jan-06 1:44 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	21.33%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.43309	6.69330	0.60126	Equal Variances
Distribution	Shapiro-Wilk W	0.83810		0.00432	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.132164	1.132164	1	0.02	0.89784	Non-Significant Effect
Error	1133.289	66.66405	17			
Total	1134.42110	67.796219	18			

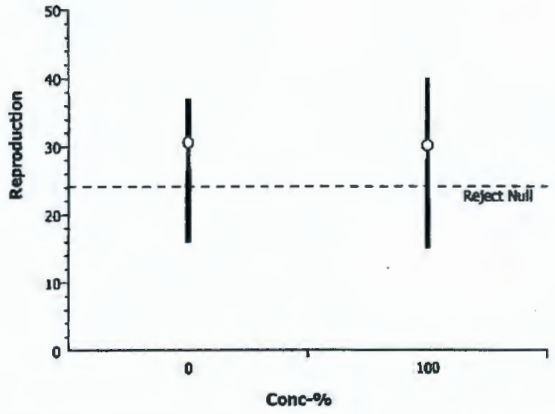
Group Comparisons

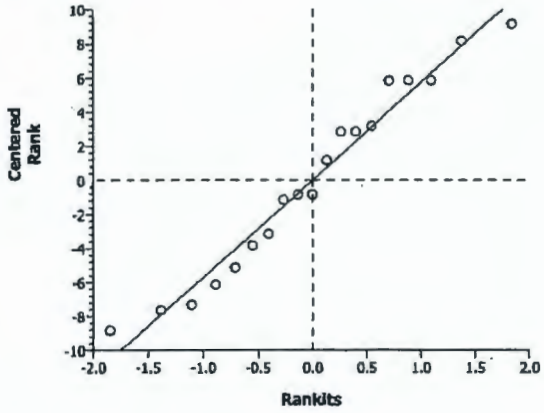
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	88.5		0.4524	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.6	16	37	7.4416	10.15	2.5	16	5.3023
100		9	30.111	15	40	8.9085	9.8333	1	19	6.2249

Graphics





CETIS Test Summary

Report Date: 26 Jan-06 1:52 PM
Test Link: 14-0625-3487/B152504cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-4792-6874	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	19 Jan-06 02:55 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	26 Jan-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Jan-06 02:55 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	04-3939-1215	**Material:**	Unknown	**Client:**	
Sample Date:	17 Jan-06 11:10 AM	**Code:**	B1525-04	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	52h	**Station:**			

Comments: J11117

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-7551-6702	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
10-8792-1179	Reproduction	100	> 100	N/A	18.41%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
09-7551-6702	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
10-8792-1179	Reproduction	Control Response	30.6	15 - NL	Yes	Passes acceptability criteria
10-8792-1179	Reproduction	PMSD	0.18411	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.6	16	37	2.3532	7.4416	24.32%
100		10	28.2	17	39	2.2400	7.0836	25.12%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	19	16	37	37	34	34	29	37	31	32
100		26	17	30	34	39	25	30	32	32	17

 Analyst: Approval:

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	14-0625-3487	14-0625-3487	26 Jan-06 1:49 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

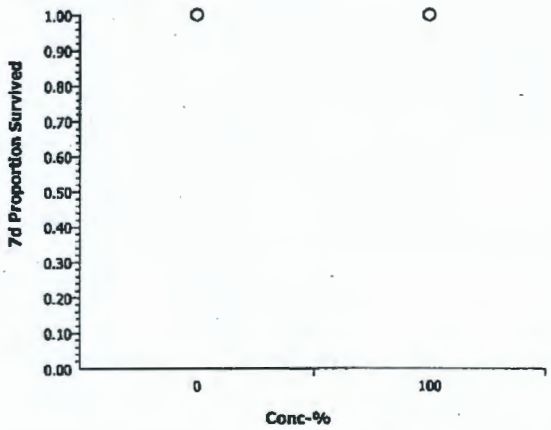
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	14-0625-3487	14-0625-3487	26 Jan-06 1:49 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	18.41%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.10363	6.54109	0.88563	Equal Variances
Distribution	Shapiro-Wilk W	0.89422		0.03218	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	28.8	28.8	1	0.55	0.46961	Non-Significant Effect
Error	950	52.77778	18			
Total	978.799999	81.577778	19			

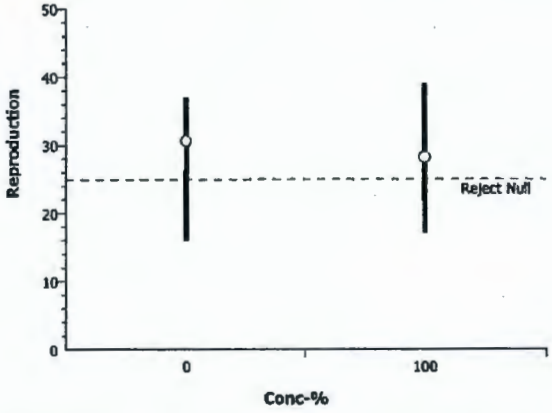
Group Comparisons

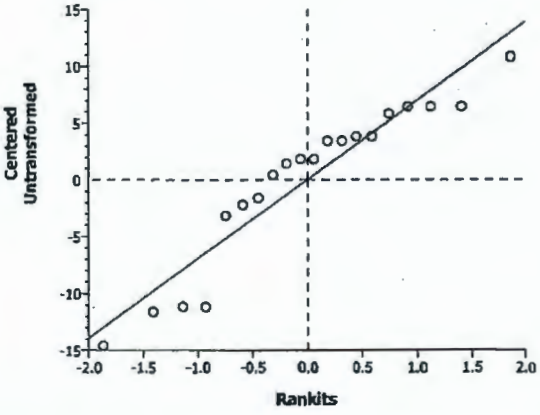
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.73870	1.73406	0.2348	5.63385	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.6	16	37	7.4416				
100		10	28.2	17	39	7.0836				

Graphics





CETIS Test Summary

Report Date: 26 Jan-06 1:52 PM
Test Link: 12-7610-9227/B152505cdc

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Test No:	11-8321-7672	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	19 Jan-06 02:55 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	26 Jan-06 09:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	19 Jan-06 02:55 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	05-7195-5164	**Material:**	Unknown	**Client:**	
Sample Date:	17 Jan-06 12:50 PM	**Code:**	B1525-05	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	50h	**Station:**			

Comments: J11189

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
02-6998-5987	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
11-0057-6268	Reproduction	100	> 100	N/A	20.78%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-6998-5987	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
11-0057-6268	Reproduction	Control Response	30.6	15 - NL	Yes	Passes acceptability criteria
11-0057-6268	Reproduction	PMSD	0.20783	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.6	16	37	2.3532	7.4416	24.32%
100		10	27.3	12	36	2.8129	8.8951	32.58%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	19	16	37	37	34	34	29	37	31	32
100		29	17	16	36	32	33	33	36	29	12

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	12-7610-9227	12-7610-9227	26 Jan-06 1:51 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

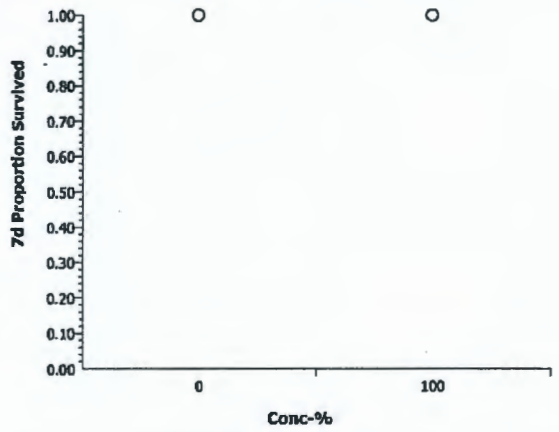
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	12-7610-9227	12-7610-9227	26 Jan-06 1:51 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	20.78%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.42877	6.54109	0.60358	Equal Variances
Distribution	Shapiro-Wilk W	0.83574		0.00310	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	54.45	54.45	1	0.81	0.38010	Non-Significant Effect
Error	1210.5	67.25	18			
Total	1264.95000	121.70000	19			

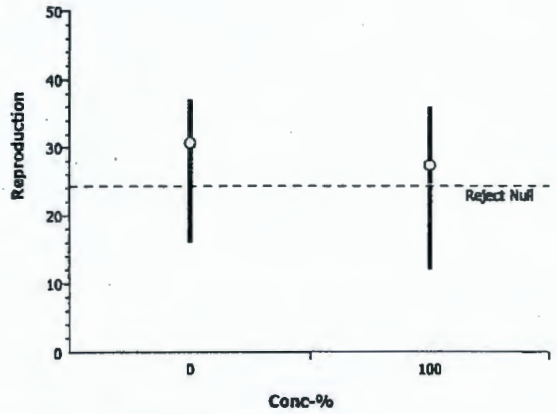
Group Comparisons

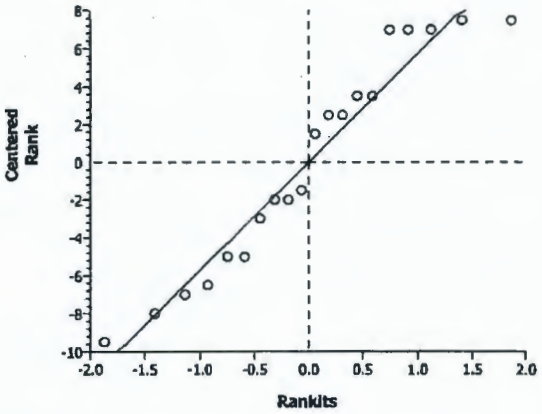
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	90		0.1399	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.6	16	37	7.4416	12	2.5	19	6.1010
100		10	27.3	12	36	8.8951	9	1	16.5	5.5628

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford — Test Initiation: Date 1-25-06 — Test Termination: Date 2-1-06

Contact: — Technician: Winn, Oldham, Mackey

Test Species/ID: *Ceriodaphnia dubia* / Cd 1886 — /

Ceriodaphnia dubia / Cd 1886 — /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received	Total Residual Chlorine (mg/l) As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-06	J111B0	1-18-06	1400	0.03	–	0.09	72	66
B1525-07	J11190	1-18-06	1200	0.00	–	0.00	72	66
B1525-08	J111M0	1-22-06	1300	0.00	–	0.03	82	70
B1525-10	J111L7	1-19-06	~~1200~~ 1230	0.00	–	0.05	78	68
B1525-11	~~J111L8~~ J111L8	1-19-06	~~1230~~ 1400	0.00	–	0.02	78	66
B1525-09	J111K5	1-19-06	1000	0.00	–	0.00	80	68

Test Species Information	ID# Cd 1886	ID# Cd 1886	ID#	ID#
	Chronic	Chronic		
Organism Age at Initiation	< 24 hours within an 8 hour span	< 24 hours within an 8 hour span		
Test Container Size	30 ml	30 ml		
Test Volume	15 ml	10 ml		
Feeding: Type	0.1 ml Algae &	0.1 ml Algae &		
Feeding: Amount	YCT daily	YCT daily		
Aeration: Began	none	none		
Aeration: Amount	–	–		
Dilution Water ID#	2591	2591		
Acclimation Period	<24 hrs	<24 hrs		
Test Location	# 5	# 5		
Organism Source	In-House	In-House		
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2586	80	64	8.6
Recon MH (FHM)	2591	92	80	8.2

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Sample B1525-09 was run at reduced volume (10 ml/rep) A separate control was used.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on _____

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-06	J111B0		0.749620557	1	II	#1	II #1
B1525-11	J111L8		0.541868403	2	II	#2	II #2
B1525-08	J111M0		0.490771455	3	II	#3	II #3
Lab Control	ReconMH only		0.303493773	4	II	#4	II #4
B1525-07	J11190		0.137388031	5	II	#5	II #5
B1525-10	~~J111K5~~ J111L7		0.074270539	6	II	#6	II #6
Lab Control	ReconMH only		0.790803286	1	III	#1	III #1
B1525-09	J111K5		0.396173194	2	III	#2	III #2

* SAME PARENTAGE IN BOTH II & III BOARDS

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 1-25-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1886

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
II #1	21	22	26	33	17	27	29	0	25	32	10	232
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
II #2	22	28	20	29	33	23	29	23	29	13	10	249
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
II #3	28	33	30	19	24	24	25	11	30	24	9	248
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?		
II #4	26	21	25	20	19	27	29	28	27	29	10	251
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
II #5	29	19	28	35	32	26	24	14	24	6	10	237
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
II #6	29	~~32~~ 18	29	30	30	26	13	12	26	11	9	224
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: As per WDOE, Reproduction thru DAY 6, Survival thru Day 7

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 1-25-06 Time: 1130

Sample Description: — Test Termination: Date: 2-1-06 Time: 0930

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1886

Technician: Day 1 DW Day 2 DW Day 3 [illegible] Day 4 [illegible] Day 5 [illegible] Day 6 BM Day 7 DW

Time: Day 1 0950 Day 2 1020 Day 3 1205 Day 4 1410 Day 5 0925 Day 6 1230 Day 7 0930

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
II #1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	4	5	5	5	0	4	4	10	35
	4	0	0	6	10	10	9	8	0	11	0	10	54
	5	0	9	8	4	0	0	0-~~10~~	0	10	12	10	35
	6	17	13	14	15/0	2	13	16	0 F	16	16	10	124
	7	16	0	17	19	8/0	14	18	17	14	0	10	
II #2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	4	6	0	5	0	4	0	10	27
	4	0	7	0	7	11	9	10	11	8	7	10	70
	5	11	0	0	0	0	0	0	0	0	0	10	11
	6	11	17	16	18	16	14	14	12	17	6	10	141
	7	0	19	0	16	19	18	16	19	15	14	10	
II #3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	5	5	4	4	0	0	0	10	31
	4	9	10	11	10	10	0	8	0	0	6	10	64
	5	0	0	0	4	9	0	0	10	12	0	10	35
	6	15	18	15	16	0	20	13	1/0	18	18	10	134
	7	17	15	18	16	15	13	17	0/AD	0	0	9	
II #4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	4	4	4	0	5	0	4	10	29
	4	5	8	9	9	0	6	11	8	9	12	10	77
	5	0	0	0	7	0	0	0	0	0	0	10	7
	6	17	13	12	0	15	17	18	15	18	13	10	138
	7	16	12	14	17	0	16	19	17	12	21	10	
II #5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	4	5	4	4	0	0	0	10	25
	4	6	0	9	11	10	9	7	5	6	0	10	63
	5	0	0	0	0	0	0	0	9	0	0	10	9
	6	19	19	15	20	17	13	13	0	18	6	10	140
	7	23	16	19	18	18	14	17	13	21	0	10	
II #6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	5	4	4	3	4	0	4	5	10	37
	4	8	0	9	9	11	8	9	6	6	0	10	66
	5	0	12	0	0	0	0	AD/0	0	0	0	9	12
	6	17	2/0	15	17	15	15		6	16	6	9	109
	7	13	14	16	21	19	15		17	15	0	9	

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford

Initiated Date: 1-25-06 Time: 1130

Adults Isolated Date: 1-24-06 Time: 0900

Sample Description: see randomization chart

Initial Sample ID #: 2-1-06

Neo's Collected Date: 1-24-06 Time: 1350

Technician: Day 0 DW; Day 1 DW; Day 2 DW; Day 3 [illegible]; Day 4 [illegible]; Day 5 [illegible]; Day 6 [illegible]; Day 7 DW

Time: Day 0 1130; Day 1 0950; Day 2 1020; Day 3 1205; Day 4 1400; Day 5 0925; Day 6 ~~1155~~ 1500; Day 7 0930

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
II #1	8.2	7.9 / 8.2	8.0 / 8.1	8.0 / 8.1	7.9 / 8.1	7.9 / 8.1	8.0 / 8.1	7.9	7.5	7.8 / 7.5	7.9 / 7.5	7.9 / 7.5	7.8 / 7.4	7.7 / 7.4	7.8 / 7.3	7.7	24.9 / 136	24.8	25.2	25.2	25.3	25.6	25.5	24.9
II #2	8.2	7.9 / 8.2	8.0 / 8.1	8.0 / 8.1	7.8 / 8.1	7.9 / 8.0	8.0 / 8.1	7.9	7.4	7.8 / 7.4	7.9 / 7.5	7.9 / 7.6	7.9 / 7.5	7.7 / 7.3	7.8 / 7.4	7.7	25.1 / 129	25.2	25.1	25.2	25.4	25.7	25.5	25.3
II #3	8.2	7.9 / 8.2	8.0 / 8.0	7.9 / 8.0	7.9 / 8.2	7.9 / 8.1	8.0 / 8.0	8.0	7.3	7.7 / 7.4	7.9 / 7.5	7.8 / 7.4	7.7 / 7.5	7.7 / 7.4	7.8 / 7.3	7.8	25.2 / 146	25.0	24.7	25.1	25.2	25.6	25.3	25.1
II #4	8.2	7.9 / 8.1	8.0 / 8.0	7.9 / 8.0	7.9 / 8.1	8.0 / 7.8	8.0 / 7.8	7.9	7.5	7.7 / 7.7	7.9 / 7.7	7.8 / 7.7	7.7 / 7.6	7.8 / 7.5	7.8 / 7.5	7.9	25.1 / 294	24.9	24.6	25.2	25.2	25.6	25.3	24.8
II #5	8.2	7.9 / 8.1	8.0 / 8.0	7.9 / 8.0	7.9 / 8.2	7.9 / 8.0	8.0 / 7.9	7.9	7.3	7.7 / 7.4	7.9 / 7.4	7.8 / 7.4	7.6 / 7.5	7.7 / 7.4	7.8 / 7.4	7.8	25.3 / 146	25.1	24.9	25.0	25.3	25.5	25.0	25.2
II #6	8.2	7.9 / 8.2	8.0 / 8.1	8.0 / 8.0	8.0 / 8.2	7.9 / 8.1	8.1 / 7.9	7.9	7.0	7.7 / 7.4	7.8 / 7.4	7.8 / 7.5	7.7 / 7.3	7.7 / 7.4	7.8 / 7.4	7.7	25.4 / 125	25.1	25.0	25.0	25.2	25.6	25.1	24.7

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

Test Board Slot Location Information Jan 25, 2006

Board ID: II

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	II # 2	11	II # 6	21	II # 4	31	II # 3	41	II # 5	51	II # 1
rep B	2	II # 6	12	II # 5	22	II # 3	32	II # 2	42	II # 4	52	II # 1
rep C	3	II # 2	13	II # 3	23	II # 1	33	II # 5	43	II # 4	53	II # 6
rep D	4	II # 2	14	II # 1	24	II # 6	34	II # 4	44	II # 3	54	II # 5
rep E	5	II # 4	15	II # 6	25	II # 2	35	II # 1	45	II # 3	55	II # 5
rep F	6	II # 4	16	II # 1	26	II # 2	36	II # 6	46	II # 5	56	II # 3
rep G	7	II # 4	17	II # 6	27	II # 3	37	II # 1	47	II # 5	57	II # 2
rep H	8	II # 4	18	II # 2	28	II # 3	38	II # 5	48	II # 1	58	II # 6
rep I	9	II # 3	19	II # 5	29	II # 1	39	II # 6	49	II # 2	59	II # 4
rep J	10	II # 1	20	II # 2	30	II # 3	40	II # 6	50	II # 5	60	II # 4

Board ID: III

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	II # 2	11	II #	21	II # 1	31	II #	41	II #	51	II #
rep B	2	II #	12	II #	22	II # 2	32	II # 1	42	II #	52	II # 2
rep C	3	II #	13	II #	23	II # 1	33	II #	43	II #	53	II # 2
rep D	4	II # 2	14	II #	24	II #	34	II # 1	44	II #	54	II #
rep E	5	II #	15	II # 2	25	II #	35	II #	45	II # 1	55	II #
rep F	6	II # 1	16	II #	26	II #	36	II #	46	II #	56	II # 2
rep G	7	II #	17	II # 1	27	II #	37	II # 2	47	II #	57	II #
rep H	8	II #	18	II # 1	28	II # 2	38	II #	48	II #	58	II #
rep I	9	II # 2	19	II # 1	29	II #	39	II #	49	II #	59	II #
rep J	10	II # 2	20	II #	30	II # 1	40	II #	50	II #	60	II #

CETIS Test Summary

Report Date: 01 Feb-06 4:33 PM
Test Link: 13-2139-5758/B152506cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	16-8289-9893	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:30 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:30 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	08-0170-4778	**Material:**	Unknown	**Client:**	
Sample Date:	18 Jan-06 02:00 PM	**Code:**	B1525-06	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 21h	**Station:**			

Comments: J111B0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-0500-7968	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
09-0003-8273	Reproduction	100	> 100	N/A	22.36%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-0500-7968	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
09-0003-8273	Reproduction	Control Response	25.1	15 - NL	Yes	Passes acceptability criteria
09-0003-8273	Reproduction	PMSD	0.22357	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.1	19	29	1.1874	3.755	14.96%
100		10	23.2	0	33	3.0104	9.5196	41.03%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	21	25	20	19	27	29	28	27	29
100		21	22	26	33	17	27	29	0	25	32

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	13-2139-5758	13-2139-5758	01 Feb-06 4:32 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

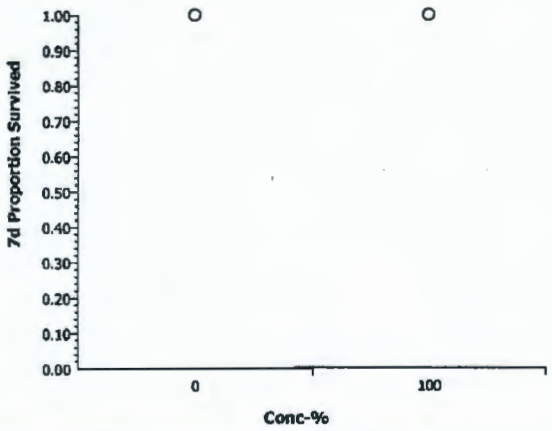
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	13-2139-5758	13-2139-5758	01 Feb-06 4:33 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	22.36%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	6.42711	6.54109	0.01064	Equal Variances
Distribution	Shapiro-Wilk W	0.84265		0.00402	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	18.05	18.05	1	0.34	0.56441	Non-Significant Effect
Error	942.5	52.36111	18			
Total	960.549999	70.41111	19			

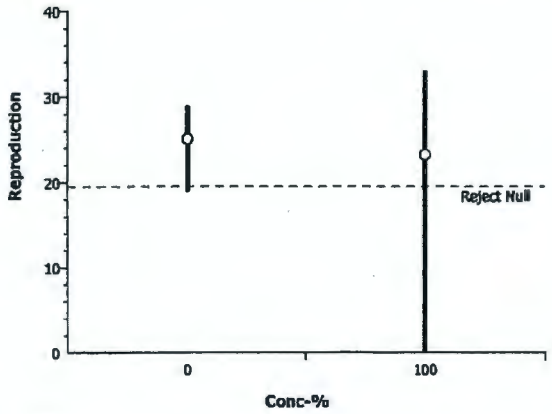
Group Comparisons

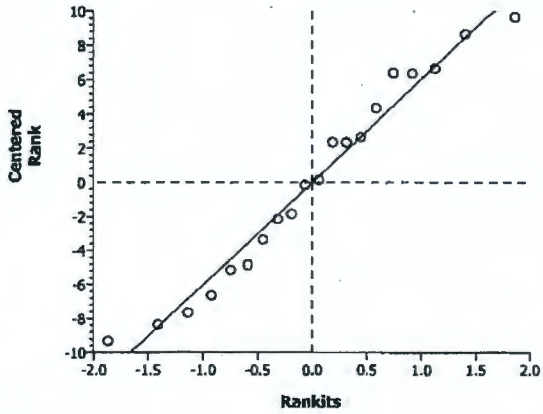
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	103.5		0.4559	0	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.1	19	29	3.755	10.65	3	17	5.2124
100		10	23.2	0	33	9.5196	10.35	1	20	6.7866

Graphics





CETIS Test Summary

Report Date: 01 Feb-06 4:36 PM
Test Link: 04-5380-9319/B152511cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	08-4404-4364	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:30 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:30 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	12-9527-7114	**Material:**	Unknown	**Client:**	
Sample Date:	19 Jan-06 02:00 PM	**Code:**	B1525-11	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	5d 21h	**Station:**			

Comments: J111L8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
02-3365-1347	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
05-3500-8091	Reproduction	100	> 100	N/A	15.17%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-3365-1347	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
05-3500-8091	Reproduction	Control Response	25.1	15 - NL	Yes	Passes acceptability criteria
05-3500-8091	Reproduction	PMSD	0.15168	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.1	19	29	1.1874	3.755	14.96%
100		10	24.9	13	33	1.8466	5.8395	23.45%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	21	25	20	19	27	29	28	27	29
100		22	28	20	29	33	23	29	23	29	13

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	04-5380-9319	04-5380-9319	01 Feb-06 4:35 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

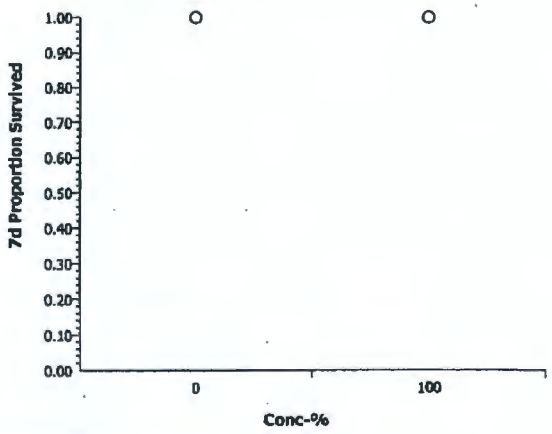
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	04-5380-9319	04-5380-9319	01 Feb-06 4:35 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	15.17%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.41844	6.54109	0.20445	Equal Variances
Distribution	Shapiro-Wilk W	0.93891		0.22868	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.2	0.2	1	0.01	0.92842	Non-Significant Effect
Error	433.8	24.1	18			
Total	433.999988	24.300000	19			

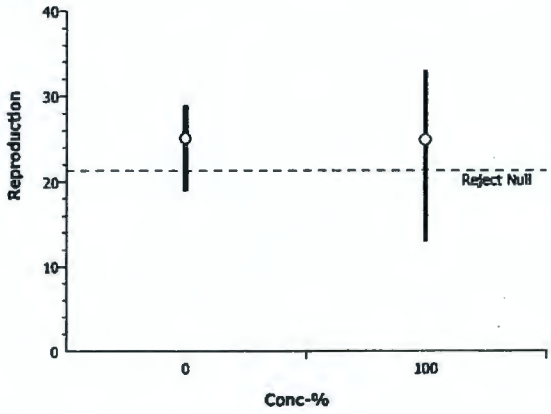
Group Comparisons

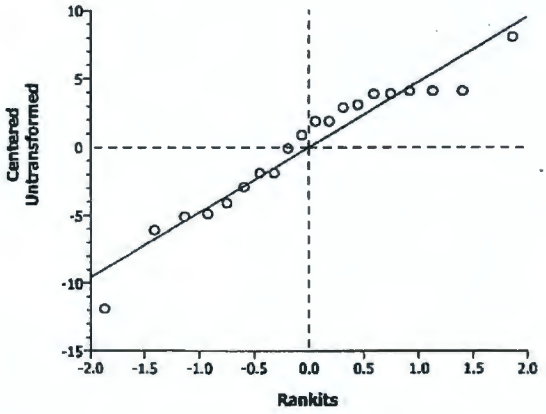
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.0911	1.73406	0.4642	3.80705	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.1	19	29	3.755				
100		10	24.9	13	33	5.8395				

Graphics





CETIS Test Summary

Report Date: 01 Feb-06 4:37 PM
Test Link: 01-0336-8661/B152508cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	10-9436-3216	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:30 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:30 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	09-2398-5942	**Material:**	Unknown	**Client:**	
Sample Date:	22 Jan-06 01:00 PM	**Code:**	B1525-08	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	70h	**Station:**			

Comments: J111M0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-9707-7497	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
18-6336-0202	Reproduction	100	> 100	N/A	16.03%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
09-9707-7497	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
18-6336-0202	Reproduction	Control Response	25.1	15 - NL	Yes	Passes acceptability criteria
18-6336-0202	Reproduction	PMSD	0.16029	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.1	19	29	1.1874	3.755	14.96%
100		10	24.8	11	33	1.9933	6.3034	25.42%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	21	25	20	19	27	29	28	27	29
100		28	33	30	19	24	24	25	11	30	24

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	01-0336-8661	01-0336-8661	01 Feb-06 4:37 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		*100	>100	1	N/A	

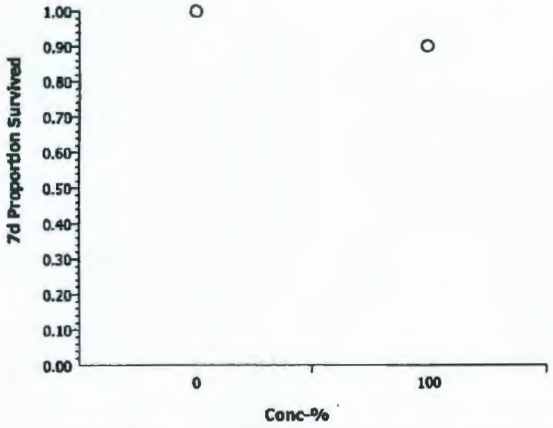
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	01-0336-8661	01-0336-8661	01 Feb-06 4:37 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	16.03%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.81797	6.54109	0.13872	Equal Variances
Distribution	Shapiro-Wilk W	0.93488		0.19163	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.45	0.45	1	0.02	0.89855	Non-Significant Effect
Error	484.5	26.91667	18			
Total	484.95	27.366666	19			

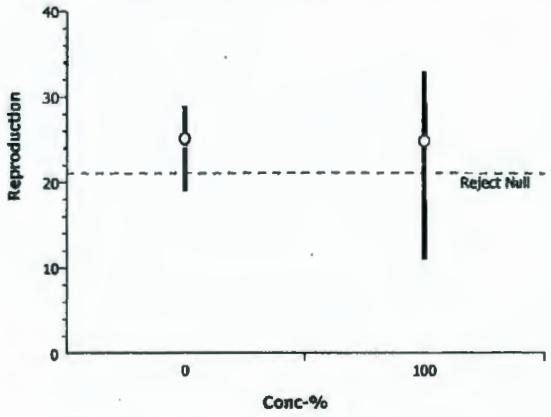
Group Comparisons

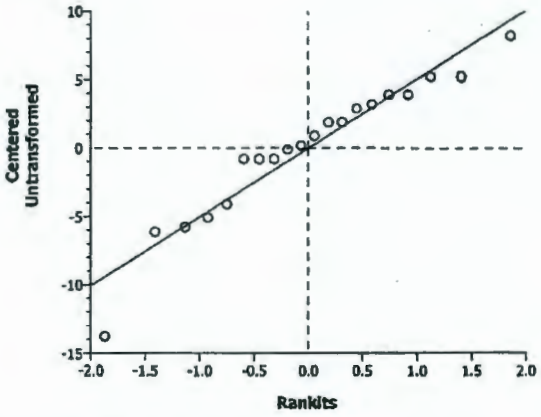
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.1293	1.73406	0.4493	4.02338	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.1	19	29	3.755				
100		10	24.8	11	33	6.3034				

Graphics





CETIS Test Summary

Report Date: 01 Feb-06 4:42 PM
Test Link: 05-9513-6925/B152507cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	05-9838-6528	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:30 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:30 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	09-6681-5542	**Material:**	Unknown	**Client:**	
Sample Date:	18 Jan-06 12:00 PM	**Code:**	B1525-07	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 23h	**Station:**			

Comments: J11190

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
15-3825-6166	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
02-8486-2667	Reproduction	100	> 100	N/A	20.66%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-3825-6166	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
02-8486-2667	Reproduction	Control Response	25.1	15 - NL	Yes	Passes acceptability criteria
02-8486-2667	Reproduction	PMSD	0.20662	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.1	19	29	1.1874	3.755	14.96%
100		10	23.7	6	35	2.7449	8.6801	36.62%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	21	25	20	19	27	29	28	27	29
100		29	19	28	35	32	26	24	14	24	6

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	05-9513-6925	05-9513-6925	01 Feb-06 4:38 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

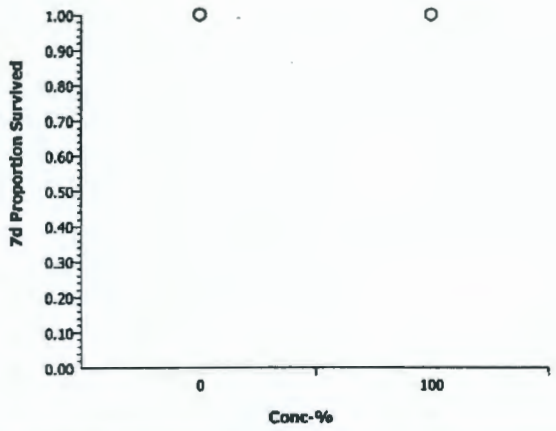
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	05-9513-6925	05-9513-6925	01 Feb-06 4:38 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	20.66%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.34358	6.54109	0.02010	Equal Variances
Distribution	Shapiro-Wilk W	0.93530		0.19520	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	9.8	9.8	1	0.22	0.64532	Non-Significant Effect
Error	805	44.72222	18			
Total	814.800000	54.522222	19			

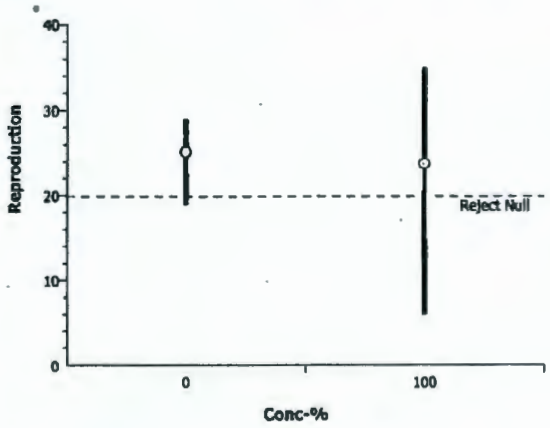
Group Comparisons

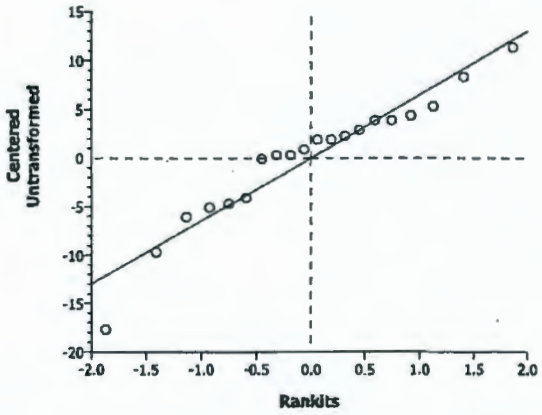
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.46811	1.73406	0.3227	5.18611	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.1	19	29	3.755				
100		10	23.7	6	35	8.6801				

Graphics





CETIS Test Summary

Report Date: 01 Feb-06 4:42 PM
Test Link: 07-9848-8814/B152510cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	14-0916-6991	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:30 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:30 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	04-1866-9640	**Material:**	Unknown	**Client:**	
Sample Date:	19 Jan-06 12:30 PM	**Code:**	B1525-10	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	5d 23h	**Station:**			

Comments: J111L7

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
02-3493-3547	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
00-7670-2657	Reproduction	100	> 100	N/A	19.29%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-3493-3547	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
00-7670-2657	Reproduction	Control Response	25.1	15 - NL	Yes	Passes acceptability criteria
00-7670-2657	Reproduction	PMSD	0.19285	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.1	19	29	1.1874	3.755	14.96%
100		10	22.4	11	30	2.5263	7.9889	35.66%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	21	25	20	19	27	29	28	27	29
100		29	18	29	30	30	26	13	12	26	11

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	07-9848-8814	07-9848-8814	01 Feb-06 4:39 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

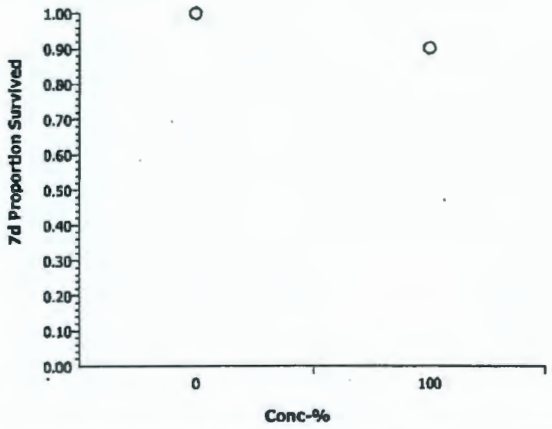
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	07-9848-8814	07-9848-8814	01 Feb-06 4:40 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	19.29%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.52640	6.54109	0.03463	Equal Variances
Distribution	Shapiro-Wilk W	0.91111		0.06691	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	36.45	36.45	1	0.94	0.34624	Non-Significant Effect
Error	701.3	38.96111	18			
Total	737.749989	75.411114	19			

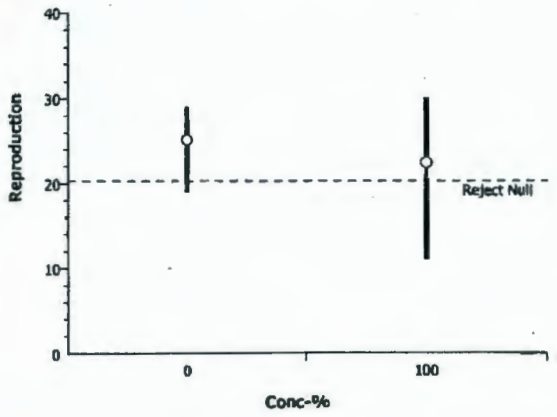
Group Comparisons

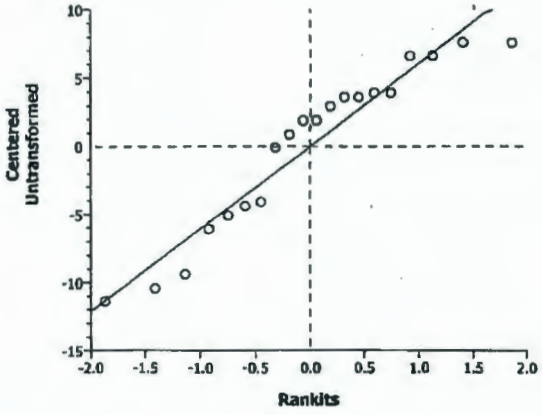
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.96724	1.73406	0.1731	4.84056	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.1	19	29	3.755				
100		10	22.4	11	30	7.9889				

Graphics





CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 1-25-2006

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1886

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
III #1	26	26	27	26	30	27	31	5	33	12	10	243
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
III #2	25	29	27	30	25	19	26	18	26	10	10	235
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: Day 5: All test organisms look very similar - across replicates and between samples. Begin Reproduction thru Day 6. Survival thru day 7

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 1-25-06 Time: 1140

Sample Description: — Test Termination: Date: 2-1-06 Time: 0940

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1886

Technician: Day 1 DW Day 2 DW Day 3 DW Day 4 DW Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1005 Day 2 1030 Day 3 1315 Day 4 1500 Day 5 1100 Day 6 1300 Day 7 0940

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
III #1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	4	4	4	5	0	6	5	10	41
	4	6	7	9	8	11	0	9	0	8	0	10	58
	5	0	0	0	0	0	10	0	2	0	7	10	19
	6	16	14	14	14	15	13	17	3	19	0	10	125
	7	17	19	13	16	16	0	17	11	15	14	10	
III #2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	5	4	5	4	4	0	4	5	10	39
	4	6	0	6	0	5	4	6	5	5	0	10	37
	5	0	9	0	10	0	11	0	0	0	5	10	35
	6	15	16	16	16	15	18	16	13	17	0	10	142
	7	18	0	17	0	17	0	21	18	16	8	10	
	1												
	2												
	3												
	4												
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	5												
	6												
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 1-25-06 Time: | Adults Isolated Date: 1-24-06 Time: 0900

Sample Description: see randomization chart | Initial Sample ID #: | Neo's Colleeted Date: 1-24-06 Time: 1350

Technician: Day 0 DW, Day 1 DW, Day 2 DW, Day 3 [illegible], Day 4 [illegible], Day 5 [illegible], Day 6 DW, Day 7 DW

Time: Day 0 1140, Day 1 1005, Day 2 1030, Day 3 1315, Day 4 1500, Day 5 1200, Day 6 1300, Day 7 0940

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
III #1	8.2	8.0 / 8.1	8.0 / 8.0	8.1 / 8.0	8.1 / 8.0	7.7 / 7.5	7.9 / 7.7	7.8	7.4	7.8 / 7.7	8.0 / 7.7	8.1 / 7.8	8.0 / 7.8	7.9 / 7.4	7.9 / 7.5	7.8	24.7 / 285	24.9	24.6	25.0	25.1	25.0	24.7	24.6
III #2	8.2	8.0 / 8.1	8.0 / 8.0	8.0 / 8.0	8.1 / 8.0	7.7 / 8.1	8.0 / 7.8	7.9	7.1	7.8 / 7.6	7.9 / 7.7	8.0 / 7.7	8.0 / 7.8	7.8 / 7.6	7.8 / 7.5	7.8	24.9 / 127	25.0	24.4	25.0	25.2	25.2	25.1	24.9

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 01 Feb-06 4:41 PM
Test Link: 08-4656-5776/B152509cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	15-5405-3557	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	25 Jan-06 11:40 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	01 Feb-06 09:40 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	25 Jan-06 11:40 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)

Sample No:	04-7670-7519	**Material:**	Unknown	**Client:**	
Sample Date:	19 Jan-06 10:00 AM	**Code:**	B1525-09	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 1h	**Station:**			

Comments: J111K5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-6996-9083	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
16-6467-0616	Reproduction	100	> 100	N/A	24.19%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
09-6996-9083	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
16-6467-0616	Reproduction	Control Response	24.3	15 - NL	Yes	Passes acceptability criteria
16-6467-0616	Reproduction	PMSD	0.24195	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	24.3	5	33	2.7891	8.8198	36.30%
100		10	23.5	10	30	1.9279	6.0964	25.94%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	26	26	27	26	30	27	31	5	33	12
100		25	29	27	30	25	19	26	18	26	10

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	08-4656-5776	08-4656-5776	01 Feb-06 4:41 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

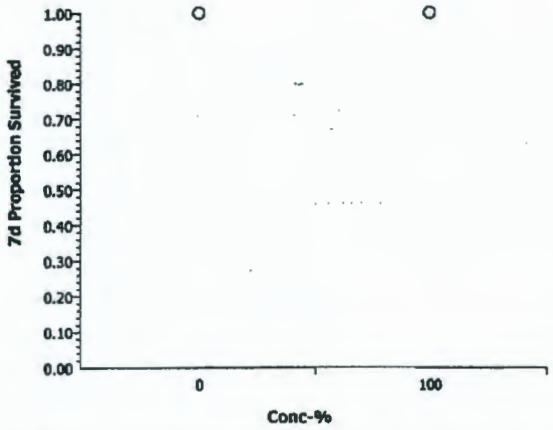
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	08-4656-5776	08-4656-5776	01 Feb-06 4:41 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	24.19%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.09297	6.54109	0.28640	Equal Variances
Distribution	Shapiro-Wilk W	0.81763		0.00160	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	3.2	3.2	1	0.06	0.81613	Non-Significant Effect
Error	1034.6	57.47778	18			
Total	1037.79998	60.677779	19			

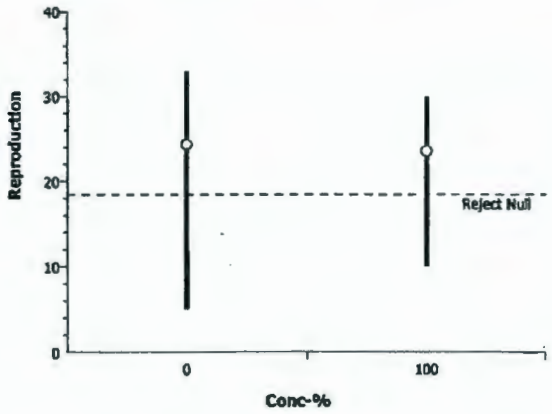
Group Comparisons

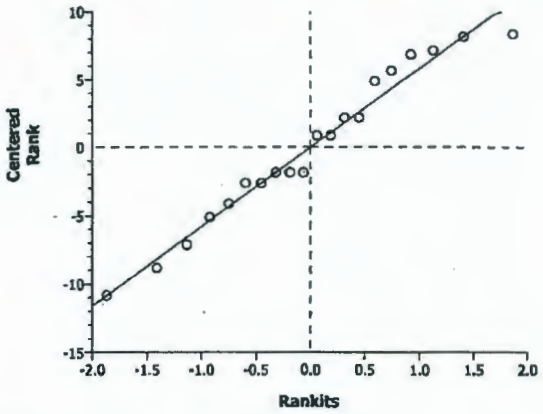
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	91.5		0.1575	3	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	24.3	5	33	8.8198	11.85	1	20	6.3685
100		10	23.5	10	30	6.0964	9.15	2	17.5	5.276

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 1-26-2006 | Test Termination: Date 2-2-06

Contact: | Technician: Winn, Oldham

Test Species/ID: *Ceriodaphnia dubia* / Cd 1887 / / /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received	Total Residual Chlorine (mg/l) As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-12	J111L9	1-22-06	1100	0.00	-	0.01	104	80
B1525-13	J111W9	1-23-06	1430	0.01	-	0.00	96	74
B1525-14	J111X3	1-23-06	1245	0.01	-	0.10	92	68
B1525-15	J111M1	1-24-06	1000	0.00	-	0.08	130	96
B1525-16	J11200	1-24-06	1445	0.00	-	0.06	90	68

Test Species Information	ID# Cd 1887	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Feeding: Amount	YCT daily			
Aeration: Began	none			
Aeration: Amount	—			
Dilution Water ID#	2591			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2591	92	80	8.2

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on Jan. 26, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-14	J111X3		0.413484684	1	IV	#1	IV #1
Lab Control	ReconMH only		0.386573417	2	IV	#2	IV #2
B1525-13	J111W9		0.372662743	3	IV	#3	IV #3
B1525-12	J111L9		0.272358887	4	IV	#4	IV #4
B1525-16	J11200		0.196396177	5	IV	#5	IV #5
B1525-15	J111M1		0.13631207	6	IV	#6	IV #6

Test Board Slot Location Information

Board ID: IV

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	IV # 6	11	IV # 1	21	IV # 4	31	IV # 2	41	IV # 5	51	IV # 3
rep B	2	IV # 2	12	IV # 6	22	IV # 3	32	IV # 1	42	IV # 4	52	IV # 5
rep C	3	IV # 4	13	IV # 1	23	IV # 6	33	IV # 5	43	IV # 2	53	IV # 3
rep D	4	IV # 3	14	IV # 5	24	IV # 1	34	IV # 2	44	IV # 4	54	IV # 6
rep E	5	IV # 5	15	IV # 6	25	IV # 3	35	IV # 2	45	IV # 1	55	IV # 4
rep F	6	IV # 4	16	IV # 5	26	IV # 2	36	IV # 1	46	IV # 6	56	IV # 3
rep G	7	IV # 6	17	IV # 2	27	IV # 5	37	IV # 4	47	IV # 3	57	IV # 1
rep H	8	IV # 6	18	IV # 3	28	IV # 4	38	IV # 2	48	IV # 5	58	IV # 1
rep I	9	IV # 1	19	IV # 6	29	IV # 3	39	IV # 2	49	IV # 5	59	IV # 4
rep J	10	IV # 5	20	IV # 3	30	IV # 2	40	IV # 6	50	IV # 1	60	IV # 4

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 1-26-2006

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1887

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults (day 7)	Total Live Young (day 6)
	A	B	C	D	E	F	G	H	I	J		
IV # 1	34	32	31	33	4/AD	29	30	18/AD	34	37	8	282
	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD? ✓	AD?	AD?		
IV # 2	37	28	30	37	34	33	36	27	35	34	10	331
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IV # 3	16	28	41	21	29	33	31	31	22	35	10	287
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IV # 4	31	28	31	27	28	35	25	30	25	16	10	276
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IV # 5	31	35	30	29	27	33	28	34	29	23	10	299
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IV # 6	27	31	33	35	32	32	29	33	34	31	10	317
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations:

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 1-26-06 Time: 1300

Sample Description: — Test Termination: Date: 2-2-06 Time: 0900

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1887

Technician: Day 1 DW Day 2 AD Day 3 AD Day 4 AD Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1045 Day 2 1340 Day 3 1420 Day 4 1015 Day 5 1130 Day 6 1100 Day 7 0900

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
IV # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	4	4	6	4	5	6	6	10	48
	4	0	0	0	0	AD/0	8	0	0	0	0	@ +09	8
	5	11	10	11	11	↓	0	10	13/AD	11	12	8	89
	6	19	17	16	18	↓	15	16	↓	17	19	8	137
	7	0	0	0	0	↓	18	0	↓	0	0	8	
IV # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	5	6	4	5	6	5	5	10	44
	4	0	0	7	0	0	0	4	6	0	0	10	17
	5	13	11	0	12	10	12	13	0	12	11	10	94
	6	20	17	19	20	18	17	14	15	18	18	10	176
	7	0	0	18	0	0	0	0	11	0	0	10	
IV # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	4	5	4	4	5	5	6	5	10	46
	4	0	0	9	0	0	0	0	0	0	0	10	9
	5	12	10	12	0	8	11	10	11	0	13	10	87
	6	0	14	16	16	17	18	16	15	16	17	10	145
	7	19	0	0	15	0	0	0	17	13	0	10	
IV # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	4	5	4	4	6	4	4	10	44
	4	0	0	12	0	0	0	0	8	0	0	10	20
	5	13	11	0	12	11	14	10	0	11	12	10	94
	6	14	12	15	11	12	17	11	16	10	0	10	118
	7	0	16	17	0	0	0	15	18	16	19	10	
IV # 5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	5	6	5	4	4	4	0	10	41
	4	0	0	0	0	0	0	0	0	0	10	10	10
	5	11	10	11	11	10	12	11	12	10	13	10	111
	6	16	20	15	13	11	16	13	18	15	0	10	137
	7	0	0	16	0	0	0	12	17	0	18	10	
IV # 6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	6	6	4	5	5	6	5	5	10	46
	4	0	4	0	0	0	0	0	0	0	0	10	4
	5	12	11	10	13	11	12	10	12	11	11	10	113
	6	15	12	17	16	17	15	14	15	18	15	10	154
	7	0	0	15	0	0	14	0	0	13	0	10	

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 1-26-06 Time: 1300 | Adults Isolated Date: 1-25-06 Time: 0800

Sample Description: see randomization chart | Initial Sample ID #: 2-2-06 | Neo's Collected Date: 1-25-06 Time: 1600

Technician: Day 0 DW, Day 1 DW, Day 2 [illegible], Day 3 [illegible], Day 4 [illegible], Day 5 ~~DW~~ DW, Day 6 DW, Day 7 DW

Time: Day 0 1300, Day 1 1045, Day 2 1340, Day 3 1420, Day 4 1015, Day 5 1155, Day 6 1100, Day 7 0900

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
IV # 1	8.2	8.0 / 8.1	8.0 / 8.0	8.1 / 8.0	7.9 / 8.1	8.1 / 8.1	8.1 / 8.1	7.9	7.7	8.1 / 7.6	8.0 / 7.6	7.9 / 7.7	7.8 / 7.4	7.7 / 7.4	7.6 / 7.3	7.6	25.4 / 148	24.6	25.1	25.2	25.4	25.3	25.1	25.0
IV # 2	8.1	8.0 / 8.1	7.9 / 8.0	8.0 / 8.0	7.9 / 7.7	8.1 / 8.0	8.1 / 7.9	7.8	7.9	8.1 / 7.6	8.0 / 7.6	7.9 / 7.7	7.8 / 7.5	7.8 / 7.5	7.7 / 7.3	7.6	25.1 / 293	24.7	25.1	25.1	25.6	25.2	25.2	24.9
IV # 3	8.2	8.0 / 8.1	7.9 / 8.0	7.9 / 8.1	8.0 / 7.9	8.1 / 8.1	8.1 / 7.9	7.8	7.6	8.1 / 7.5	8.0 / 7.7	8.2 / 7.9	7.8 / 7.5	7.8 / 7.4	7.7 / 7.3	7.7	25.3 / 166	24.9	25.2	25.1	25.6	24.9	25.4	25.1
IV # 4	8.2	8.0 / 8.1	7.9 / 8.0	7.8 / 8.1	8.0 / 8.1	8.1 / 7.9	8.1 / 7.9	7.9	7.5	8.1 / 7.4	7.9 / 7.6	8.0 / 7.5	7.8 / 7.4	7.8 / 7.4	7.7 / 7.3	7.7	25.4 / 215	24.4	25.2	25.3	25.5	25.3	25.0	25.0
IV # 5	8.2	8.0 / 8.1	8.0 / 8.1	8.1 / 7.8	8.0 / 8.2	8.1 / 8.0	8.1 / 7.9	7.8	7.6	7.9 / 7.5	7.9 / 7.5	7.6 / 7.1	7.8 / 7.4	7.7 / 7.4	7.6 / 7.3	7.7	25.6 / 140	24.6	25.0	25.4	25.5	25.4	25.6	24.8
IV # 6	8.2	8.1 / 8.1	8.0 / 8.1	7.9 / 7.9	7.9 / 8.2	8.1 / 8.1	8.1 / 8.1	7.8	7.4	8.0 / 7.4	7.9 / 7.5	7.8 / 7.1	7.9 / 7.4	7.9 / 7.4	7.8 / 7.4	7.7	25.4 / 251	24.5	25.1	25.2	25.4	24.9	25.4	24.9

Comments:

CETIS Test Summary

Report Date: 02 Feb-06 4:28 PM
Test Link: 19-6765-1582/B152512cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-5747-2989	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	26 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	02 Feb-06 09:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	26 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) IV #4

Sample No:	04-9668-5478	**Material:**	Unknown	**Client:**	
Sample Date:	22 Jan-06 11:00 AM	**Code:**	B1525-12	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	4d 2h	**Station:**			

Comments: J111L9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-5959-1592	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
01-2924-1610	Reproduction	< 100	100	N/A	10.32%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-5959-1592	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
01-2924-1610	Reproduction	Control Response	33.1	15 - NL	Yes	Passes acceptability criteria
01-2924-1610	Reproduction	PMSD	0.10321	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV	
0	Dilution Water	10	33.1	27	37	1.1397	3.6040	10.89%	
100		10	27.6	16	35	1.6069	5.0816	18.41%	16.6% reduction

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	28	30	37	34	33	36	27	35	34
100		31	28	31	27	28	35	25	30	25	16

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	19-6765-1582	19-6765-1582	02 Feb-06 4:23 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

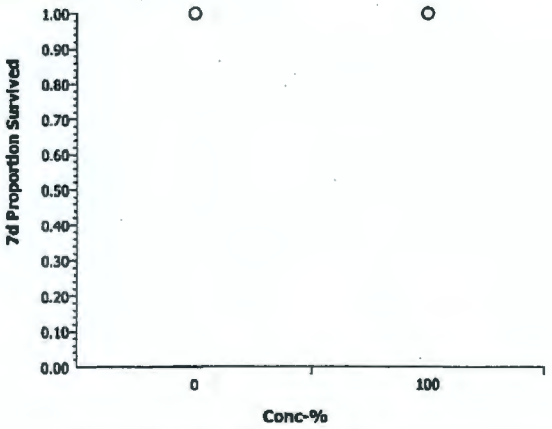
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	19-6765-1582	19-6765-1582	02 Feb-06 4:23 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	10.32%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.98802	6.54109	0.32061	Equal Variances
Distribution	Shapiro-Wilk W	0.93667		0.20729	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	151.25	151.25	1	7.79	0.01205	Significant Effect
Error	349.3	19.40556	18			
Total	500.549988	170.65556	19			

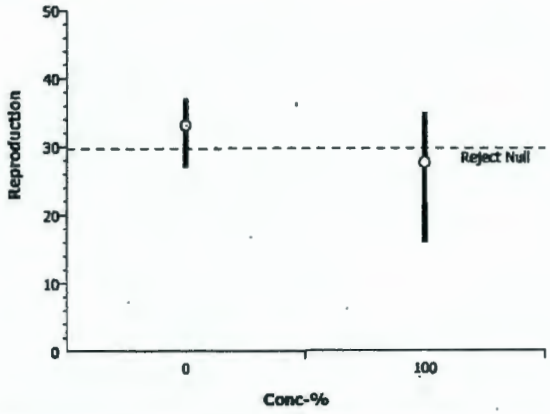
Group Comparisons

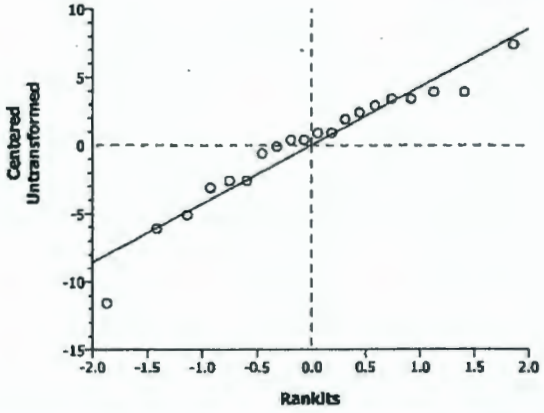
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	2.79180	1.73406	0.0060	3.4162	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	33.1	27	37	3.6040				
100		10	27.6	16	35	5.0816				

Graphics





CETIS Test Summary

Report Date: 02 Feb-06 4:28 PM
Test Link: 03-8147-5832/B152513cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-5227-5337	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	26 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	02 Feb-06 09:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	26 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) IV #3

Sample No:	07-5451-4136	**Material:**	Unknown	**Client:**	
Sample Date:	23 Jan-06 02:30 PM	**Code:**	B1525-13	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	70h	**Station:**			

Comments: J111W9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
02-2469-9406	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
08-4535-2288	Reproduction	100	> 100	N/A	13.56%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-2469-9406	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
08-4535-2288	Reproduction	Control Response	33.1	15 - NL	Yes	Passes acceptability criteria
08-4535-2288	Reproduction	PMSD	0.13560	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	33.1	27	37	1.1397	3.6040	10.89%
100		10	28.7	16	41	2.3240	7.3492	25.61%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	28	30	37	34	33	36	27	35	34
100		16	28	41	21	29	33	31	31	22	35

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-8147-5832	03-8147-5832	02 Feb-06 4:20 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

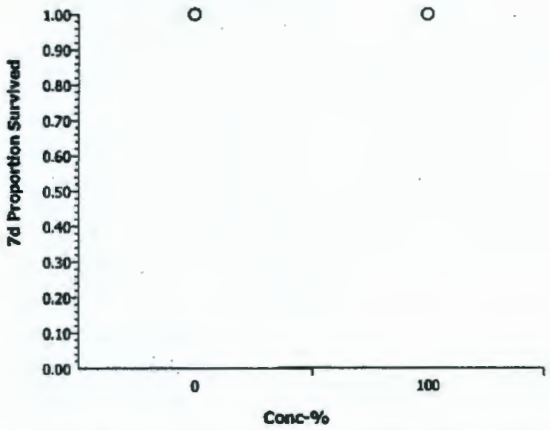
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	03-8147-5832	03-8147-5832	02 Feb-06 4:20 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	13.56%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.15826	6.54109	0.04525	Equal Variances
Distribution	Shapiro-Wilk W	0.96291		0.60355	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	96.8	96.8	1	2.89	0.10637	Non-Significant Effect
Error	603	33.5	18			
Total	699.800003	130.30000	19			

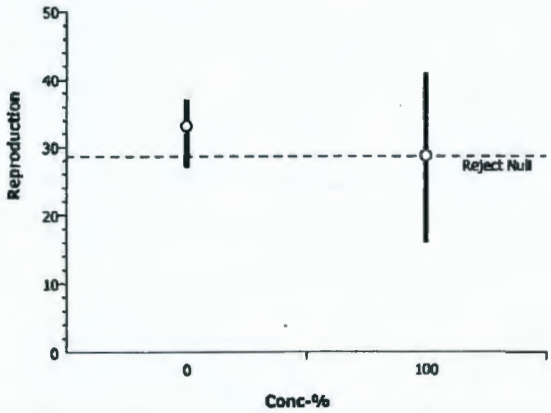
Group Comparisons

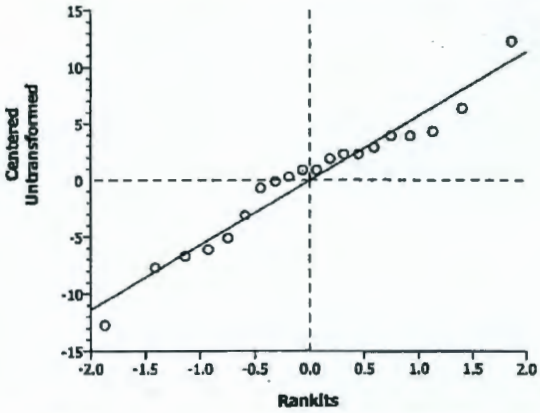
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	1.69987	1.73406	0.0532	4.48851	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	33.1	27	37	3.6040				
100		10	28.7	16	41	7.3492				

Graphics





CETIS Test Summary

Report Date: 02 Feb-06 4:28 PM
Test Link: 07-9137-6849/B152514cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	10-0304-6831	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	26 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	02 Feb-06 09:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	26 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) IV #1

Sample No:	15-0099-6041	**Material:**	Unknown	**Client:**	
Sample Date:	23 Jan-06 12:45 PM	**Code:**	B1525-14	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	72h	**Station:**			

Comments: J111X3

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
15-2441-9491	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
02-2431-4621	Reproduction	100	> 100	N/A	17.47%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-2441-9491	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
02-2431-4621	Reproduction	Control Response	33.1	15 - NL	Yes	Passes acceptability criteria
02-2431-4621	Reproduction	PMSD	0.17467	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	33.1	27	37	1.1397	3.6040	10.89%
100		10	28.2	4	37	3.1333	9.9085	35.14%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	0.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	28	30	37	34	33	36	27	35	34
100		34	32	31	33	4	29	30	18	34	37

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	07-9137-6849	07-9137-6849	02 Feb-06 4:00 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

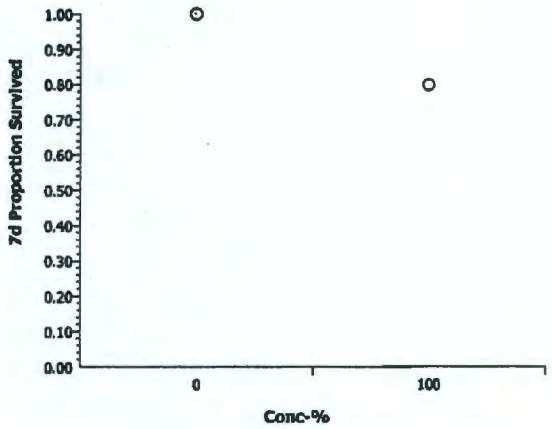
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.23684	0.23684	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		8	2	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	07-9137-6849	07-9137-6849	02 Feb-06 4:00 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	17.47%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.55860	6.54109	0.00595	Unequal Variances
Distribution	Shapiro-Wilk W	0.79019		0.00062	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	120.05	120.05	1	2.16	0.15892	Non-Significant Effect
Error	1000.5	55.58333	18			
Total	1120.55000	175.63334	19			

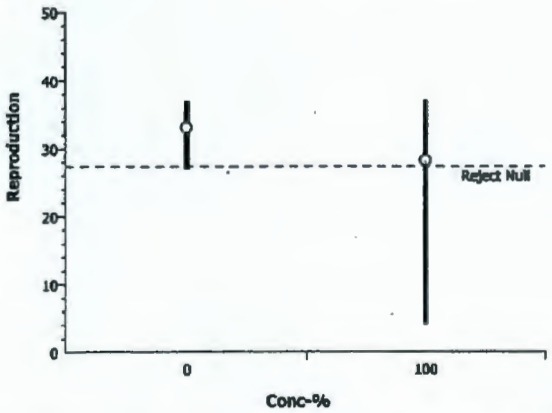
Group Comparisons

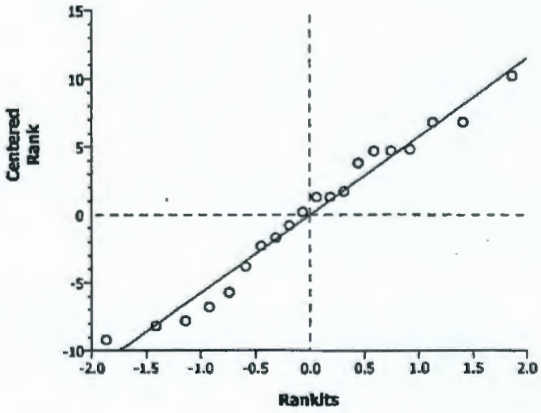
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	88		0.1088	2	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	33.1	27	37	3.6040	12.2	3	19	5.9684
100		10	28.2	4	37	9.9085	8.8	1	19	5.5638

Graphics





CETIS Test Summary

Report Date: 02 Feb-06 4:34 PM
Test Link: 05-9786-0565/B152515cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	02-1048-3360	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	26 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	02 Feb-06 09:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	26 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) IV #6

Sample No:	10-2884-7930	**Material:**	Unknown	**Client:**	
Sample Date:	24 Jan-06 10:00 AM	**Code:**	B1525-15	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	51h	**Station:**			

Comments: J111M1

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-7694-2390	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
09-6282-3920	Reproduction	100	> 100	N/A	7.14%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
09-7694-2390	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
09-6282-3920	Reproduction	Control Response	33.1	15 - NL	Yes	Passes acceptability criteria
09-6282-3920	Reproduction	PMSD	0.07136	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	33.1	27	37	1.1397	3.6040	10.89%
100		10	31.7	27	35	0.7461	2.3594	7.44%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	28	30	37	34	33	36	27	35	34
100		27	31	33	35	32	32	29	33	34	31

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	05-9786-0565	05-9786-0565	02 Feb-06 4:33 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

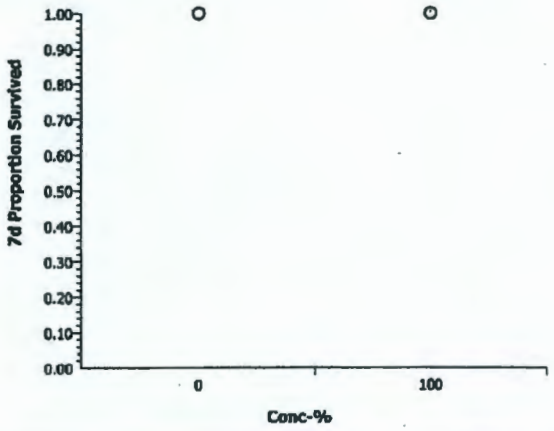
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	05-9786-0565	05-9786-0565	02 Feb-06 4:34 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	7.14%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.33333	6.54109	0.22287	Equal Variances
Distribution	Shapiro-Wilk W	0.92839		0.14378	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	9.8	9.8	1	1.06	0.31768	Non-Significant Effect
Error	167	9.277778	18			
Total	176.800000	19.077778	19			

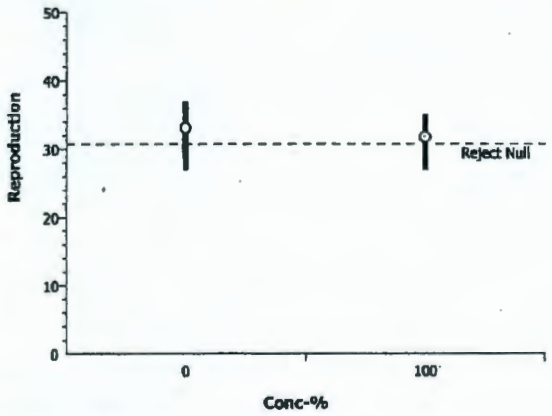
Group Comparisons

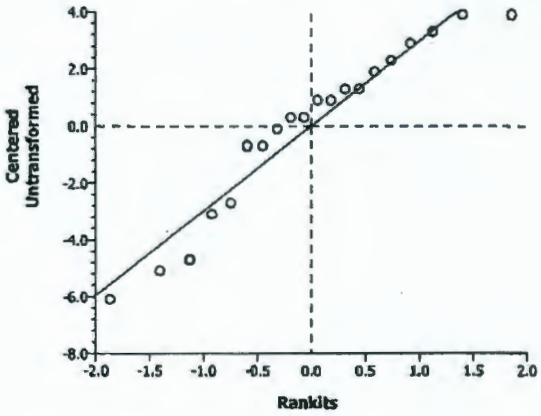
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	1.02776	1.73406	0.1588	2.36212	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	33.1	27	37	3.6040				
100		10	31.7	27	35	2.3594				

Graphics





CETIS Test Summary

Report Date: 02 Feb-06 4:29 PM
Test Link: 14-2337-0815/B152516cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	05-6943-1062	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	26 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	02 Feb-06 09:00 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	26 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) IV #5

Sample No:	13-3130-2574	**Material:**	Unknown	**Client:**	
Sample Date:	24 Jan-06 02:45 PM	**Code:**	B1525-16	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	46h	**Station:**			

Comments: J11200

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-1358-9610	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
05-5401-6395	Reproduction	< 100	100	N/A	8.41%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
03-1358-9610	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
05-5401-6395	Reproduction	Control Response	33.1	15 - NL	Yes	Passes acceptability criteria
05-5401-6395	Reproduction	PMSD	0.08408	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV	
0	Dilution Water	10	33.1	27	37	1.1397	3.6040	10.89%	
100		10	29.9	23	35	1.1299	3.5730	11.95%	9.7% reduction

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	37	28	30	37	34	33	36	27	35	34
100		31	35	30	29	27	33	28	34	29	23

* EPA chronic manual · PMSD for reproduction 13 to 47%

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	14-2337-0815	14-2337-0815	02 Feb-06 4:29 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

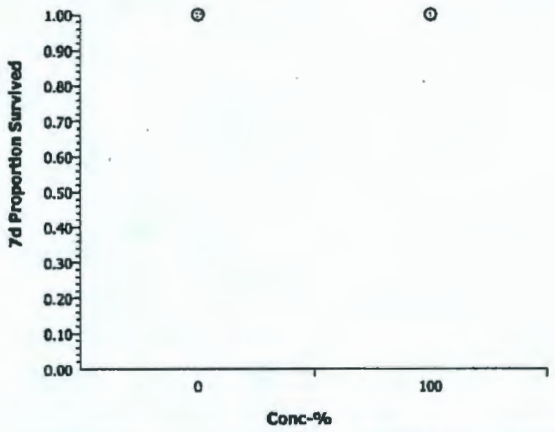
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	14-2337-0815	14-2337-0815	02 Feb-06 4:29 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		<100	100		N/A	8.41%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.01741	6.54109	0.97991	Equal Variances
Distribution	Shapiro-Wilk W	0.95193		0.39737	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	51.2	51.2	1	3.98	0.06153	Non-Significant Effect
Error	231.8	12.87778	18			
Total	283.000004	64.077779	19			

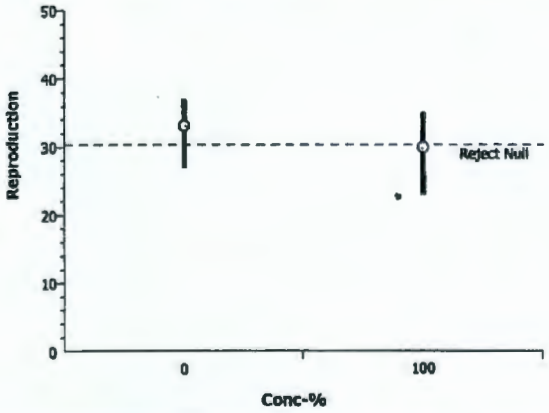
Group Comparisons

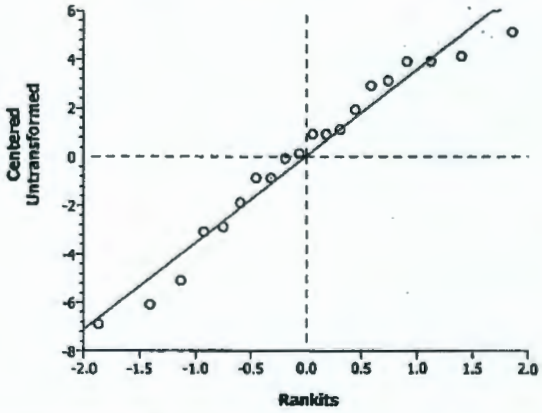
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	1.99395	1.73406	0.0308	2.78292	Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	33.1	27	37	3.6040				
100		10	29.9	23	35	3.5730				

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford — Test Initiation: Date 1-27-06 — Test Termination: Date 2-3-06

Contact: — Technician: Winn, Oldham, Muckey

Test Species/ID: *Ceriodaphnia dubia* / Cd 1888 /

Sample Information								Test Species Information	ID# Cd 1888	ID#	ID#	ID#
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Deschlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$		Chronic			
B1525-17	J111Y9	1-24-06	1630	0.00 / -	0.04	92	68	Organism Age at Initiation	< 24 hours within an 8 hour span			
B1525-18	J111W8	1-25-06	1030	0.00 / -	0.10	88	68	Test Container Size	30 ml			
B1525-19	J11222	1-25-06	1300	0.00 / -	0.01	84	70	Test Volume	15 ml			
B1525-20	J11223	1-25-06	1400	0.06 / -	0.08	102	78	Feeding: Type	0.1 ml Algae &			
				/				Amount	YCT daily			
				/				Aeration: Began	None			
				/				Amount				
				/				Dilution Water ID#	2591			
				/				Acclimation Period	<24 hrs			
				/				Test Location	# 5			
				/				Organism Source	In-House			
				/				Size (mm)	-	-	-	-
				/				Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2591	92	80	8.2

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on Jan 27, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-18	J111W8		0.97892209	1	V	#1	V #1
B1525-19	J11222		0.896835611	2	V	#2	V #2
B1525-20	J11223		0.86497657	3	V	#3	V #3
Lab Control	ReconMH only		0.587692629	4	V	#4	V #4
B1525-17	J111Y9		0.541889911	5	V	#5	V #5
					V	#6	V #6

Test Board Slot Location Information

Board ID: V

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	V # 6	11	V # 1	21	V # 4	31	V # 3	41	V # 2	51	V # 5
rep B	2	V # 2	12	V # 5	22	V # 3	32	V # 4	42	V # 6	52	V # 1
rep C	3	V # 4	13	V # 1	23	V # 2	33	V # 6	43	V # 5	53	V # 3
rep D	4	V # 2	14	V # 5	24	V # 1	34	V # 3	44	V # 6	54	V # 4
rep E	5	V # 6	15	V # 3 ~~5~~	25	V # 2	35	V # 1	45	V # 5	55	V # 4
rep F	6	V # 2	16	V # 3	26	V # 4	36	V # 6	46	V # 5	56	V # 1
rep G	7	V # 1	17	V # 4	27	V # 6	37	V # 3	47	V # 5	57	V # 2
rep H	8	V # 5	18	V # 6	28	V # 1	38	V # 4	48	V # 2	58	V # 3
rep I	9	V # 1	19	V # 3	29	V # 2	39	V # 5	49	V # 6	59	V # 4
rep J	10	V # 6	20	V # 5	30	V # 3	40	V # 2	50	V # 1	60	V # 4

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 1-27-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1888

Statistician:

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults (Day 7)	Total Live Young (Day 6)
	A	B	C	D	E	F	G	H	I	J		
V # 1	18	34	32	33	35	31	35	36	33	37	10	324
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
V # 2	36	37	31	27	37	35	36	16/AD	27	36	9	318
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?		
V # 3	0/AD	37	~~48~~ 30	33	38	35	38	32	32	35	9	~~328~~ 310
	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
V # 4	33	34	38	36	40	36	33	34	33	33	10	350
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
V # 5	38	37	34	38	32	35	36/AD	28	38	32	9	348
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		
~~V # 6~~												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations:

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 1-27-06 Time: 1300

Sample Description: — Test Termination: Date: 2-3-06 Time: 0845

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1888

Technician: Day 1 [illegible] Day 2 [illegible] Day 3 [illegible] Day 4 DW Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1410 Day 2 1445 Day 3 1445 Day 4 1325 Day 5 1140 Day 6 0920 Day 7 0845

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
V # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	6	5	6	5	5	7	6	4	4	10	48
	4	0	10	11	12	11	9	11	12	10	12	10	98
	5	5	0	0	0	0	0	0	0	0	0	10	5
	6	13	18	16	15	19	17	17	18	19	21	10	173
	7	0	0	17	14	18	19	16	19	20	17	10	
V # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	2	6	5	5	5	2	5	10	43
	4	0	11	10	9	12	12	13	11	9	12	10	99
	5	13	0	0	0	0	0	0	0/AD	0	0	9	13
	6	19	21	17	16	19	18	18	↓	16	19	9	163
	7	0	15	18	0	17	15	17	↓	19	18	9	
V # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	AD/0	0	0	0	0	0	0	0	0	0	9	0
	3	↓	6	5	6	5	6	7	8	4	7	9	54
	4	↓	10	11	11	13	11	12	9	11	12	9	100
	5	↓	0	14	0	0	0	0	0	0	0	9	14
	6	↓	21	18	16	20	18	19	15	17	16	9	160 DW
	7	↓	17	0	18	17	22	16	19	19	17	9	
V # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	5	5	6	6	8	7	7	5	2	5	10	56
	4	11	13	12	0	10	11	10	12	8	11	10	98
	5	0	0	0	13	0	0	0	0	0	0	10	13
	6	17	16	20	17	22	18	16	17	23	17	10	183
	7	18	15	18	0	16	0	19	17	19	15	10	
V # 5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	6	6	6	6	4	6	5	4	6	5	10	54
	4	0	11	11	13	11	12	13	9	14	11	10	105
	5	14	0	0	0	0	0	0	0	0	0	10	14
	6	18	20	17	19	17	17	18/AD	15	18	16	9	175
	7	19	11	13	18	15	20	↓	18	16	19	9	
V # 6	1												
	2												
	3												
	4												
	5												
	6												
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 1-27-06 Time: 1300 | Adults Isolated Date: 1-26-06 Time: 0845

Sample Description: see randomization chart | Initial Sample ID #: — | Neo's Collected Date: 1-26-06 Time: 1330

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	[illegible]	[illegible]	[illegible]	DW	DW	DW	DW
Time	1300	1410	1445	1205	1325	1140	0920	0910

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
V # 1	8.1	8.3 / 8.1	8.2 / 8.1	7.7 / 7.7	8.0 / 8.0	8.0 / 8.1	7.7 / 7.8	7.5	7.8	7.4 / 7.8	7.6 / 7.9	7.8 / 7.5	7.9 / 7.5	7.8 / 7.3	7.7 / 7.4	7.7	24.3 / 218	25.2	25.1	24.6	24.9	25.2	24.7	24.9
V # 2	8.2	8.1 / 8.2	8.1 / 8.0	7.7 / 7.7	8.0 / 8.0	8.0 / 8.1	7.7 / 7.7	7.5	7.7	7.7 / 7.7	7.7 / 8.1	7.8 / 7.4	7.8 / 7.5	7.7 / 7.3	7.6 / 7.4	7.7	24.7 / 154	25.2	25.0	24.6	24.4	24.7	24.4	25.5
V # 3	8.2	8.1 / 8.1	8.0 / 8.3	7.7 / 7.8	8.0 / 7.9	8.0 / 8.1	7.7 / 7.7	7.5	7.6	8.0 / 7.6	7.9 / 8.0	7.8 / 7.4	7.9 / 7.5	7.8 / 7.3	7.7 / 7.4	7.7	24.6 / 143	25.0	25.1	24.4	24.7	25.0	24.5	25.1
V # 4	8.1	8.0 / 8.1	7.6 / 8.1	7.7 / 7.6	8.0 / 7.6	8.0 / 8.0	7.6 / 7.5	7.5	7.9	8.0 / 7.9	7.9 / 8.0	7.8 / 7.7	7.9 / 7.6	7.8 / 7.4	7.6 / 7.4	7.7	24.6 / 311	25.1	25.1	24.6	24.5	24.8	25.0	25.4
V # 5	8.1	8.0 / 8.1	7.7 / 8.0	7.8 / 7.7	8.0 / 7.8	8.1 / 8.0	7.5 / 7.5	7.5	7.7	8.1 / 7.9	8.0 / 8.0	7.8 / 7.7	7.8 / 7.6	7.7 / 7.4	7.6 / 7.5	7.8	24.4 / 158	[illegible] 25.1	25.1	24.3	24.4	25.1	24.7	25.6
V # 6																								

Comments:

CETIS Test Summary

Report Date: 03 Feb-06 4:05 PM
Test Link: 09-8307-0809/B152517cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	16-1780-3230	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 19h
Start Date:	27 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Feb-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	27 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) V #5

Sample No:	03-0276-8606	**Material:**	Unknown	**Client:**	
Sample Date:	24 Jan-06 04:30 PM	**Code:**	B1525-17	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	68h	**Station:**			

Comments: J111Y9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-4239-1398	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
08-7643-7159	Reproduction	100	> 100	N/A	6.47%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-4239-1398	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
08-7643-7159	Reproduction	Control Response	35	15 - NL	Yes	Passes acceptability criteria
08-7643-7159	Reproduction	PMSD	0.06472	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	35	33	40	0.7746	2.4495	7.00%
100		10	34.8	28	38	1.052	3.3267	9.56%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	34	38	36	40	36	33	34	33	33
100		38	37	34	38	32	35	36	28	38	32

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-8307-0809	09-8307-0809	03 Feb-06 4:04 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

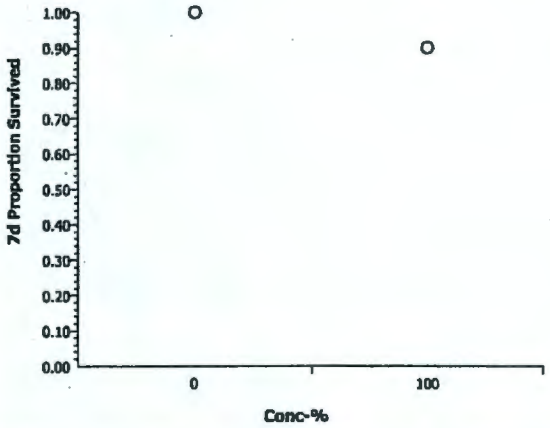
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	09-8307-0809	09-8307-0809	03 Feb-06 4:05 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	6.47%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.84444	6.54109	0.37533	Equal Variances
Distribution	Shapiro-Wilk W	0.95375		0.42768	Normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.2	0.2	1	0.02	0.88003	Non-Significant Effect
Error	153.6	8.533334	18			
Total	153.800006	8.7333338	19			

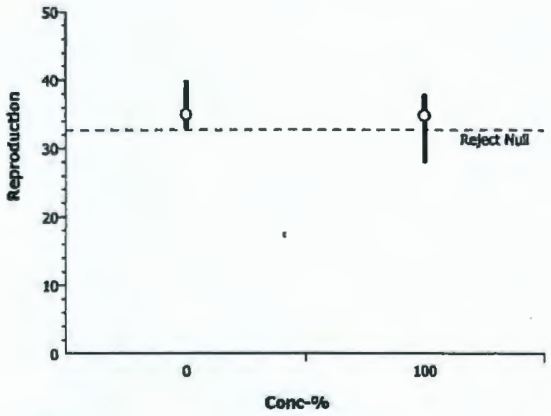
Group Comparisons

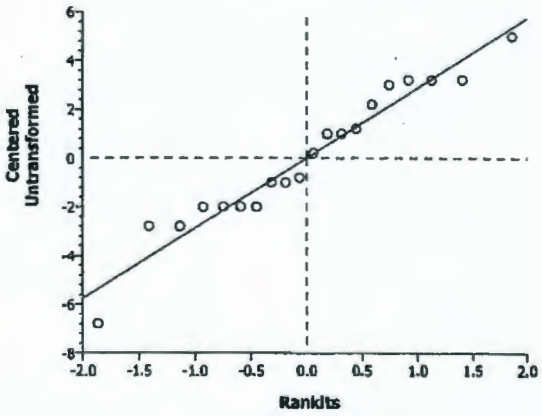
Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.15309	1.73406	0.4400	2.26537	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	35	33	40	2.4495				
100		10	34.8	28	38	3.3267				

Graphics





CETIS Test Summary

Report Date: 03 Feb-06 3:59 PM
Test Link: 18-9300-0849/B152518cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	09-5109-2976	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 19h
Start Date:	27 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Feb-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	27 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) V #1

Sample No:	09-1377-4735	**Material:**	Unknown	**Client:**	
Sample Date:	25 Jan-06 10:30 AM	**Code:**	B1525-18	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	50h	**Station:**			

Comments: J111W8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-2959-4217	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
00-9657-2905	Reproduction	100	> 100	N/A	9.26%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-2959-4217	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
00-9657-2905	Reproduction	Control Response	35	15 - NL	Yes	Passes acceptability criteria
00-9657-2905	Reproduction	PMSD	0.09260	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	35	33	40	0.7746	2.4495	7.00%
100		10	32.4	18	37	1.701	5.379	16.60%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	34	38	36	40	36	33	34	33	33
100		18	34	32	33	35	31	35	36	33	37

 Analyst: B Approval: _____

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	18-9300-0849	18-9300-0849	03 Feb-06 3:58 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

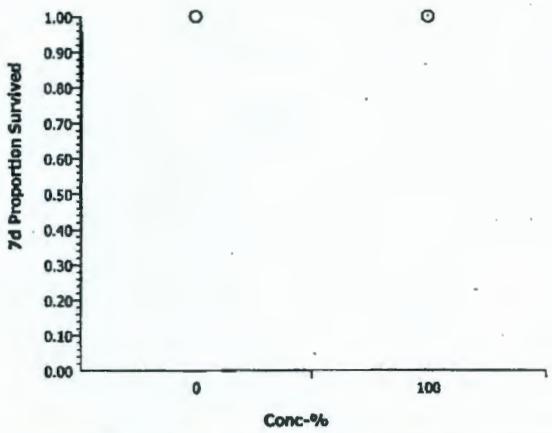
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	18-9300-0849	18-9300-0849	03 Feb-06 3:59 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	9.26%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.82222	6.54109	0.02823	Equal Variances
Distribution	Shapiro-Wilk W	0.76967		0.00032	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	33.8	33.8	1	1.94	0.18116	Non-Significant Effect
Error	314.4	17.46667	18			
Total	348.199993	51.266666	19			

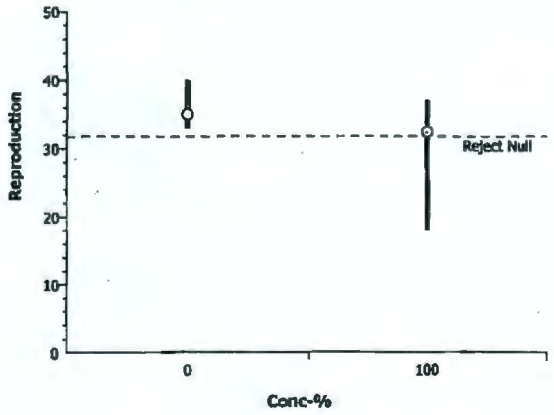
Group Comparisons

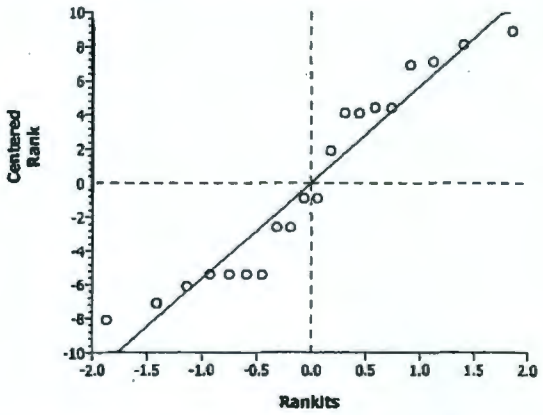
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	91		0.1575	4	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	35	33	40	2.4495	11.9	6.5	20	5.4559
100		10	32.4	18	37	5.379	9.1	1	18	6.1092

Graphics





CETIS Test Summary

Report Date: 03 Feb-06 4:00 PM
Test Link: 14-3251-0837/B152519cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	10-9264-8103	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 19h
Start Date:	27 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Feb-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	27 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) V #2

Sample No:	17-1285-5983	**Material:**	Unknown	**Client:**	
Sample Date:	25 Jan-06 01:00 PM	**Code:**	B1525-19	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	48h	**Station:**			

Comments: J11222

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-6180-9324	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
13-9682-1650	Reproduction	100	> 100	N/A	11.29%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
03-6180-9324	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
13-9682-1650	Reproduction	Control Response	35	15 - NL	Yes	Passes acceptability criteria
13-9682-1650	Reproduction	PMSD	0.11293	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	35	33	40	0.7746	2.4495	7.00%
100		10	31.8	16	37	2.1437	6.7791	21.32%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	34	38	36	40	36	33	34	33	33
100		36	37	31	27	37	35	36	16	27	36

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	14-3251-0837	14-3251-0837	03 Feb-06 4:00 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

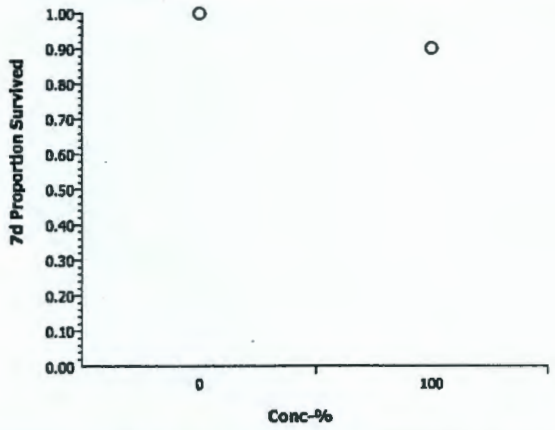
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	14-3251-0837	14-3251-0837	03 Feb-06 4:00 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	11.29%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.65926	6.54109	0.00567	Unequal Variances
Distribution	Shapiro-Wilk W	0.83432		0.00294	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	51.2	51.2	1	1.97	0.17737	Non-Significant Effect
Error	467.6	25.97778	18			
Total	518.800007	77.177778	19			

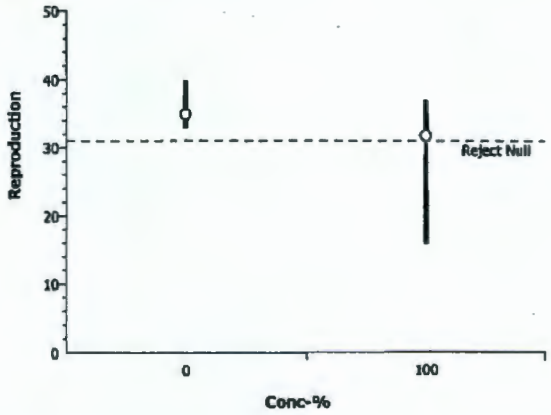
Group Comparisons

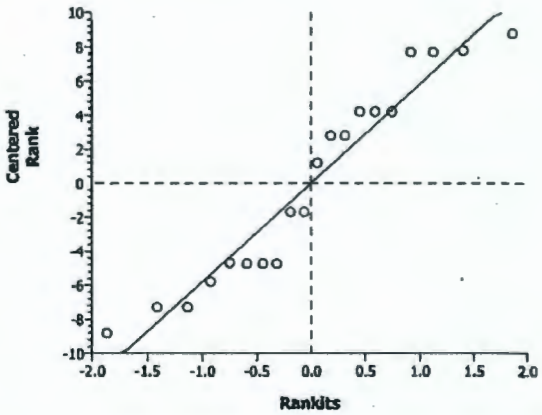
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	98		0.3153	2	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	35	33	40	2.4495	11.2	6.5	20	5.2504
100		10	31.8	16	37	6.7791	9.8	1	17.5	6.5879

Graphics





CETIS Test Summary

Report Date: 03 Feb-06 4:03 PM
Test Link: 04-6128-6096/B152520cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	11-9377-6464	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 19h
Start Date:	27 Jan-06 01:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Feb-06 08:45 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	27 Jan-06 01:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) V #3

Sample No:	03-8029-1159	**Material:**	Unknown	**Client:**	
Sample Date:	25 Jan-06 02:00 PM	**Code:**	B1525-20	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	47h	**Station:**			

Comments: J11223

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
14-3008-2878	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
00-4061-4385	Reproduction	100	> 100	N/A	18.00%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
14-3008-2878	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
00-4061-4385	Reproduction	Control Response	35	15 - NL	Yes	Passes acceptability criteria
00-4061-4385	Reproduction	PMSD	0.18000	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	35	33	40	0.7746	2.4495	7.00%
100		10	31	0	38	3.5496	11.225	36.21%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	34	38	36	40	36	33	34	33	33
100		0	37	30	33	38	35	38	32	32	35

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	04-6128-6096	04-6128-6096	03 Feb-06 4:03 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

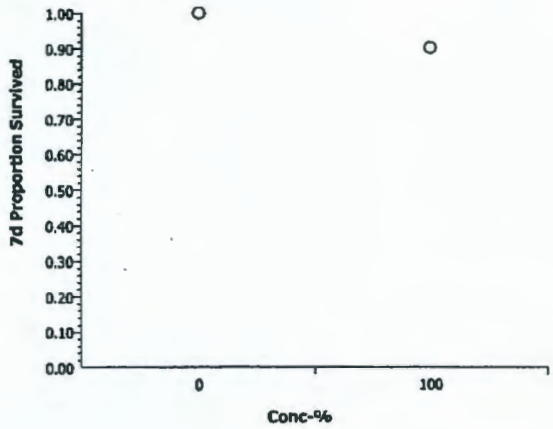
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.50000	0.50000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	04-6128-6096	04-6128-6096	03 Feb-06 4:03 PM	CETISv1.1.1

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	18.00%

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	21.00000	6.54109	0.00011	Unequal Variances
Distribution	Shapiro-Wilk W	0.59948		0.00000	Non-normal Distribution

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	80	80	1	1.21	0.28542	Non-Significant Effect
Error	1188	66	18			
Total	1268	146	19			

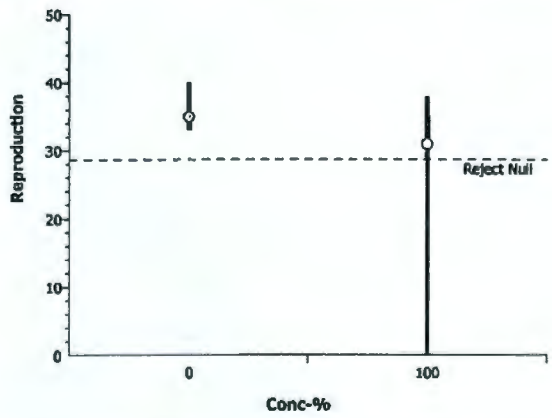
Group Comparisons

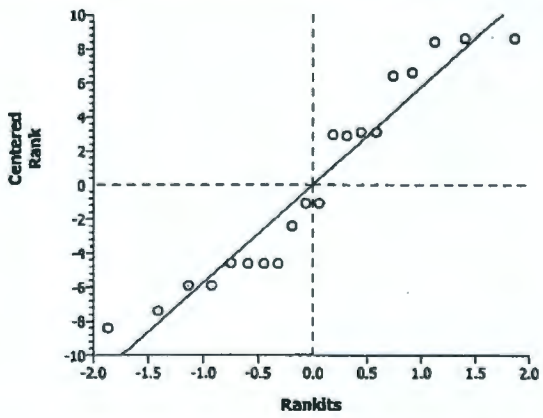
Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	94		0.2179	1	Non-Significant Effect

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	35	33	40	2.4495	11.6	7	20	4.8922
100		10	31	0	38	11.225	9.4	1	18	6.761

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-3-06 | Test Termination: Date 2-10-06

Contact: | Technician: Stevenson, Oldham, Mulkey, Winn

Test Species/ID: *Ceriodaphnia dubia* / Cd 1892 | /

/ | /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-21	J11233	1-29-06	1415	0.001 -	0.05	86	~~70~~ 64
B1525-22	J11251	1-29-06	1630	0.001 -	0.14	70	68
				/			
				/			
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				/			
				/			
				/			

Test Species Information	ID# Cd 1892	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Feeding: Amount	YCT daily			
Aeration: Began	None			
Aeration: Amount	—			
Dilution Water ID#	2594, ~~2595~~ MS			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2594	94	64	8.4
Recon MH	~~2595~~ MS			~~8.4~~ MS

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on _____

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-22	J11251		0.325578402	1	VI	#1	VI #1
Lab Control	ReconMH only		0.260264991	2	VI	#2	VI #2
B1525-21	J11233		0.041960681	3	VI	#3	VI #3
					VI	#4	VI #4
					VI	#5	VI #5
					VI	#6	VI #6

Test Board Slot Location Information

Board ID: VI

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	VI # 6	11	VI # 1	21	VI # 4	31	VI # 3	41	VI # 2	51	VI # 5
rep B	2	VI # 2	12	VI # 5	22	VI # 3	32	VI # 4	42	VI # 6	52	VI # 1
rep C	3	VI # 4	13	VI # 1	23	VI # 2	33	VI # 6	43	VI # 5	53	VI # 3
rep D	4	VI # 2	14	VI # 5	24	VI # 1	34	VI # 3	44	VI # 6	54	VI # 4
rep E	5	VI # 6	15	VI # 3	25	VI # 2	35	VI # 1	45	VI # 5	55	VI # 4
rep F	6	VI # 2	16	VI # 3	26	VI # 4	36	VI # 6	46	VI # 5	56	VI # 1
rep G	7	VI # 1	17	VI # 4	27	VI # 6	37	VI # 3	47	VI # 5	57	VI # 2
rep H	8	VI # 5	18	VI # 6	28	VI # 1	38	VI # 4	48	VI # 2	58	VI # 3
rep I	9	VI # 1	19	VI # 3	29	VI # 2	39	VI # 5	49	VI # 6	59	VI # 4
rep J	10	VI # 6	20	VI # 5	30	VI # 3	40	VI # 2	50	VI # 1	60	VI # 4

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 2-3-04

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1892

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate (day 6)										# Alive Adults (day 7)	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
VI # 1	32	23	30	34	33	29	30	33	33	35	10	312
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VI # 2	30	35	32	34	28	31	34	28	36	34	10	322
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VI # 3	29	31	30	33	26	37	29	35	34	36	10	320
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VI # 4												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VI # 5												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VI # 6												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations:

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-3-06 Time: 1400

Sample Description: — Test Termination: Date: 2-10-06 Time: 1010

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1892

Technician: Day 1 [illegible] Day 2 [illegible] Day 3 [illegible] Day 4 DW Day 5 DW Day 6 [illegible] Day 7 DW

Time: Day 1 1240 Day 2 1530 Day 3 1420 Day 4 1035 Day 5 1010 Day 6 1345 Day 7 1010

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
VI # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	4	3	5	6	4	4	4	5	5	10	43
	4	0	0	0	0	0	0	0	0	0	0	10	0
	5	13	11	12	11	13	10	12	10	14	11	10	117
	6	16	8	15	18	14	15	14	19	14	19	10	182
	7	0	0	0	0	0	0	0	0	0	0	10	0
VI # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	4	5	3	3	4	3	0	4	10	34
	4	0	0	0	0	0	0	0	0	6	0	10	6
	5	11	12	11	14	10	12	13	11	14	12	10	120
	6	15	19	17	15	15	16	17	14	16	18	10	162
	7	0	0	0	18	0	0	0	0	0	0	10	18
VI # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	18	0
	3	4	5	3	4	4	6	3	5	6	6	10	46
	4	0	0	0	0	11	0	0	0	0	0	10	11
	5	12	12	10	12	0	14	11	15	12	12	10	110
	6	13	14	17	17	11	17	15	15	16	18	10	153
	7	0	0	0	0	0	0	0	0	0	0	10	0
VI # 4	1												
	2												
	3												
	4												
	5												
	6												
	7												
VI # 5	1												
	2												
	3												
	4												
	5												
	6												
	7												
VI # 6	1												
	2												
	3												
	4												
	5												
	6												
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford

Initiated Date: 2-3-06 Time: 1400

Adults Isolated Date: 2-3-06 Time: 1115

Sample Description: see randomization chart

Initial Sample ID #: 8/525-21 & 22

Neo's Collected Date: 2-2-06 Time: 1630

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	MS	[illegible]	1530	[illegible]	DW	DW	[illegible]	DW
Time	1400	1240	[illegible]	1355	1035	1010	1500	1010

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
VI # 1	7.3 / ~~6.7~~	8.0 / 8.1	7.4 / 7.8	7.3 / 7.3	8.0 / 8.2	8.0 / 8.1	7.5 / 6.9	7.8	7.7	8.0 / 7.6	7.9 / 7.7	7.4 / 7.4	7.9 / 7.6	7.8 / 7.5	8.0 / 7.6	7.9	25.0 / 100	25.1	25.4	24.3	25.1	25.6	24.1	24.8
VI # 2	7.6 / ~~6.8~~	8.0 / 7.9	7.4 / 7.8	7.4 / 7.3	8.0 / 8.1	8.0 / 8.1	7.6 / 6.9	7.7	7.6	8.0 / 7.6	7.7 / 7.7	7.4 / 7.4	7.9 / 7.6	7.9 / 7.6	8.0 / 7.6	7.9	25.0 / 290	25.1	25.2	24.2	25.1	25.2	24.2	24.6
VI # 3	7.4	8.1 / 7.6	7.7 / 7.6	7.3 / 7.8	8.0 / 8.2	7.9 / 8.1	7.6 / 7.1	7.7	7.7	8.0 / 7.6	8.0 / 7.7	7.6 / 7.5	7.8 / 7.6	7.9 / 7.5	8.1 / 7.7	7.9	25.1 / 120	25.0	25.1	24.6	25.3	25.5	24.2	24.5
VI # 4																								
VI # 5																								
VI # 6																								

Comments:

-100-

CETIS Test Summary

Report Date: 15 Feb-06 9:06 AM
Test Link: 08-5021-5921/B152521cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	09-7408-2027	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	03 Feb-06 02:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	10 Feb-06 10:10 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	03 Feb-06 02:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods) VI #3

Sample No:	08-2222-1599	**Code:**	B1525-21	**Client:**	
Sample Date:	29 Jan-06 02:15 PM	**Material:**	Unknown	**Project:**	
Receive Date:	15 Feb-06 09:01 AM	**Source:**	Hanford		
Sample Age:	4d 23h	**Station:**			

Comments: J11233

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-3618-9700	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
16-2779-3014	Reproduction	100	> 100	N/A	7.78%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-3618-9700	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
16-2779-3014	Reproduction	Control Response	32.2	15 - NL	Yes	Passes acceptability criteria
16-2779-3014	Reproduction	PMSD	0.07775	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	32.2	28	36	0.9043	2.8597	8.88%
100		10	32	26	37	1.1255	3.5590	11.12%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	30	35	32	34	28	31	34	28	36	34
100		29	31	30	33	26	37	29	35	34	36

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	08-5021-5921	08-5021-5921	15 Feb-06 9:06 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

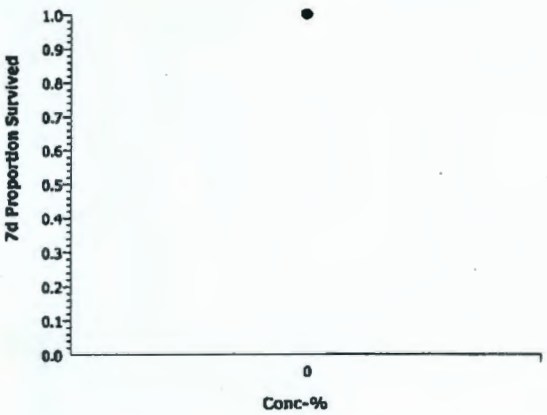
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	08-5021-5921	08-5021-5921	15 Feb-06 9:06 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	7.78%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.13853	1.73406	0.4457	2.50357	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.2	0.2	1	0.02	0.89136	Non-Significant Effect
Error	187.6	10.42222	18			
Total	187.800006	10.622222	19			

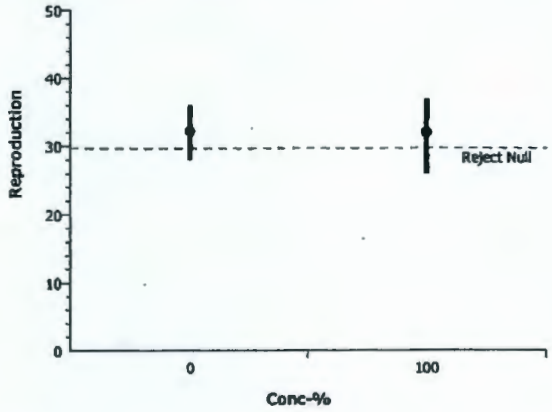
ANOVA Assumptions

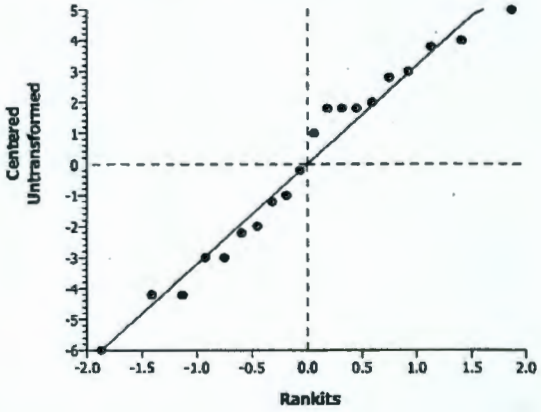
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.54891	6.54109	0.52482	Equal Variances
Distribution	Shapiro-Wilk W	0.95920		0.52808	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	32.2	28	36	2.8597				
100		10	32	26	37	3.5590				

Graphics





CETIS Test Summary

Report Date: 15 Feb-06 9:08 AM
Test Link: 18-4378-3396/B152522cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	03-5749-2917	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 20h
Start Date:	03 Feb-06 02:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	10 Feb-06 10:10 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	03 Feb-06 02:00 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through day 6 (60%+ of control organisms with 3 broods)
VI #1

Sample No:	13-2670-8497	**Code:**	B1525-22	**Client:**	
Sample Date:	29 Jan-06 04:30 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	4d 21h	**Station:**			

Comments: J11251

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-7655-9707	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
05-0947-5465	Reproduction	100	> 100	N/A	7.64%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-7655-9707	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
05-0947-5465	Reproduction	Control Response	32.2	15 - NL	Yes	Passes acceptability criteria
05-0947-5465	Reproduction	PMSD	0.07641	0.13 - 0.47	Yes	Fails acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	32.2	28	36	0.9043	2.8597	8.88%
100		10	31.2	23	35	1.0934	3.4577	11.08%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	30	35	32	34	28	31	34	28	36	34
100		32	23	30	34	33	29	30	33	33	35

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	18-4378-3396	18-4378-3396	15 Feb-06 9:07 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

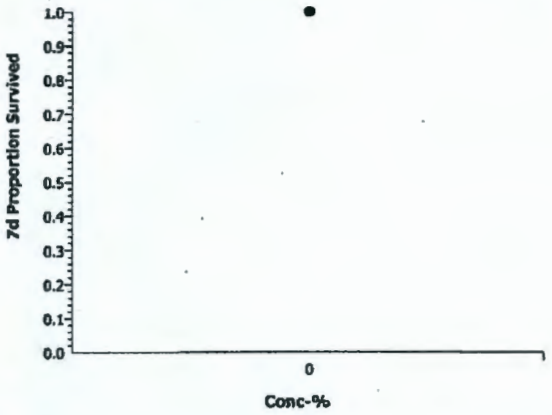
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	18-4378-3396	18-4378-3396	15 Feb-06 9:08 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	7.64%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.70476	1.73406	0.2450	2.4605	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	5	5	1	0.50	0.48998	Non-Significant Effect
Error	181.2	10.06667	18			
Total	186.199997	15.066667	19			

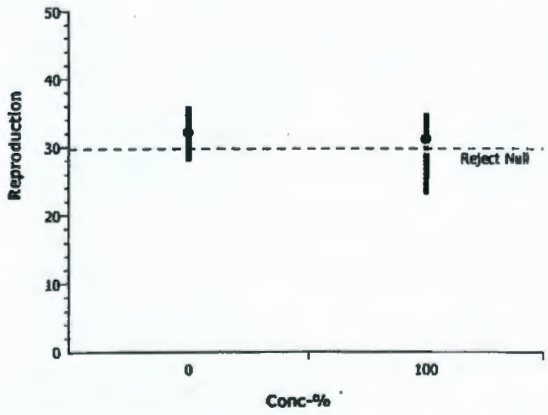
ANOVA Assumptions

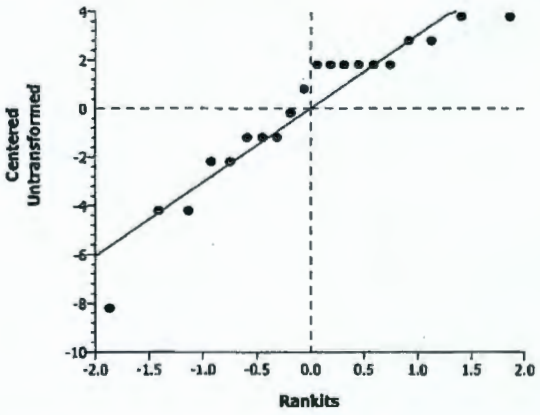
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.46196	6.54109	0.58062	Equal Variances
Distribution	Shapiro-Wilk W	0.90106		0.04317	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	32.2	28	36	2.8597				
100		10	31.2	23	35	3.4577				

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-24-06 | Test Termination: Date 3-3-06

Contact: | Technician: Winn, Stanaway, Oldham

Test Species/ID: *Ceriodaphnia dubia* / Cd 1902 | /

/ | /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-23	J116D6	2-2-06	1615	0.00 / -	0.00	56	68
B1525-24	J116D4	2-2-06	1745	0.00 / -	0.04	80	70
B1525-25	J116D0	2-3-06	1815	0.00 / -	0.00	72	66
B1525-26	J116D2	2-3-06	1720	0.01 / -	0.00	86	68
B1525-27	J116C9	2-3-06	1630	0.01 / -	0.01	72	66
				/			
				/			
				/			
				/			
				/			
				/			
				/			

Test Species Information	ID# Cd 1902	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Feeding: Amount	YCT daily			
Aeration: Began	None			
Aeration: Amount	—			
Dilution Water ID#	2602			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2602	96	72	8.5

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on 2-24-06

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-26	J116D2		0.842478977	1	VII	#1	VII #1
Lab Control	ReconMH only		0.827479814	2	VII	#2	VII #2
B1525-24	J116D4		0.756145243	3	VII	#3	VII #3
B1525-25	J116D0		0.655412518	4	VII	#4	VII #4
B1525-27	J116C9		0.370081119	5	VII	#5	VII #5
B1525-23	J116D6		0.264983913	6	VII	#6	VII #6

Test Board Slot Location Information

Board ID: VII

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	VII #3	11	VII #1	21	VII #2	31	VII #6	41	VII #4	51	VII #5
rep B	2	VII #1	12	VII #3	22	VII #4	32	VII #2	42	VII #6	52	VII #5
rep C	3	VII #4	13	VII #1	23	VII #5	33	VII #6	43	VII #3	53	VII #2
rep D	4	VII #2	14	VII #1	24	VII #5	34	VII #4	44	VII #3	54	VII #6
rep E	5	VII #3	15	VII #5	25	VII #6	35	VII #1	45	VII #2	55	VII #4
rep F	6	VII #2	16	VII #6	26	VII #4	36	VII #5	46	VII #3	56	VII #1
rep G	7	VII #2	17	VII #1	27	VII #3	37	VII #5	47	VII #4	57	VII #6
rep H	8	VII #3	18	VII #5	28	VII #1	38	VII #2	48	VII #4	58	VII #6
rep I	9	VII #4	19	VII #5	29	VII #3	39	VII #2	49	VII #1	59	VII #6
rep J	10	VII #2	20	VII #6	30	VII #4	40	VII #3	50	VII #5	60	VII #1

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 2-24-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1902

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
VII # 1	30	17	34	38	32	28	38	31	35	34	10	317
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 2	38	35	31	38	32	5/AD	34	35	26	30	9	304
	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?	AD?		
VII # 3	39	34	43	37	38	39	28	33	32	33	10	356
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 4	34	32	37	29	34	29	37	31	35	35	10	333
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 5	20/AD	31	32	31	30	29	28	32	37	36	9	306
	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 6	12	39	36	35	29	40	35	35	38	35	10	334
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination
(for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations:

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-24-06 Time: 1115

Sample Description: — Test Termination: Date: 3-3-06 Time: 0915

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1902

Technician: Day 1 MS Day 2 MS Day 3 [illegible] Day 4 DW Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1200 Day 2 0900 Day 3 1050 Day 4 0845 Day 5 0900 Day 6 1000 Day 7 0915

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
VII #1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	6	4	6	5	6	5	7	5	10	48
~~#REF!~~	4	0	5	0	0	10	9	0	10	9	0	10	43
	5	12	0	10	15	0	0	15	0	0	11	10	63
	6	14	12	18	19	16	14	17	16	19	0	10	145
	7	0	0	0	0	15	17	0	19	18	18	10	
VII #2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	0	0	6	5	5	6	6	5	10	38
~~#REF!~~	4	6	8	5	6	0	0/AD	0	10	0	0	9	35
	5	0	0	9	14	10	↓	12	0	11	10	9	66
	6	14	22	0	0	16		17	19	9	15	9	112
	7	18	16	17	18	21		0	18	0	0	9	108
VII #3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	6	6	5	6	0	5	4	4	4	10	40
~~#REF!~~	4	8	0	0	0	0	6	8	0	0	0	10	22
	5	13	11	16	13	14	0	0	12	13	11	10	103
	6	0	17	21	19	18	16	15	17	15	18	10	156
	7	18	0	17	15	0	17	18	0	16	0	10	
VII #4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	5	4	5	4	4	5	5	6	10	38
~~#REF!~~	4	6	5	0	10	0	8	0	9	0	0	10	38
	5	11	13	14	0	13	0	12	0	11	13	10	87
	6	0	0	18	15	16	17	21	17	19	16	10	139
	7	17	14	0	18	0	21	16	18	0	0	10	
VII #5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	5	4	5	0	5	4	5	10	36
~~#REF!~~	4	5	0	0	8	8	10	5	10	0	0	10	46
	5	15	11	13	0	0	0	12	0	14	14	10	79
	6	0/AD	16	15	18	18	14	0	17	0	0	9 ~~10~~ DW	98
	7	↓	0	16	17	15	18	11	16	19	17	9	
VII #6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	5	4	4	4	5	6	0	10	36
~~#REF!~~	4	0	0	0	0	10	0	0	0	0	6	10	16
	5	0	12	14	13	0	14	13	14	13	12	10	105
	6	0	23	18	17	15	22	18	16	19	0	10	148
	7	12	0	0	0	17	0	0	0	0	17	10	

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 2-24-06 Time: 1115 | Adults Isolated Date: 2-23-06 Time: 0800

Sample Description: see randomization chart | Initial Sample ID #: B1525 | Neo's Collected Date: 2-23-06 Time: 1330

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	MS	MS	RO	DW	DW	DW	DW
Time	1115	1200	0900	1130	0845	0900	1000	0915

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7
VII #1 ~~#REF!~~	8.3	7.6 / 8.3	7.8 / 8.0	7.1 / 8.1	8.0 / 8.3	8.0 / 8.1	8.1 / 8.3	8.0
VII #2 ~~#REF!~~	8.1	7.7 / 8.2	7.8 / 8.1	7.3 / 7.5	8.0 / 8.2	8.0 / 8.1	8.1 / 8.2	8.0
VII #3 ~~#REF!~~	8.2	7.8 / 8.2	7.8 / 8.2	7.3 / 8.0	8.0 / 8.2	8.0 / 8.1	8.1 / 8.3	8.0
VII #4 ~~#REF!~~	8.3	7.8 / 8.3 ~~8.4~~	7.7 / 8.2	7.3 / 8.2	8.0 / 8.3	8.0 / 8.2	8.1 / 8.3	8.0
VII #5 ~~#REF!~~	8.3	7.6 / 8.2	7.8 / 8.2	7.4 / 8.3	8.0 / 8.3	8.0 / 8.1	8.1 / 8.3	8.0
VII #6 ~~#REF!~~	8.3	8.0 / 8.1	7.8 / 8.2	7.7 / 8.1	8.0 / 8.3	8.0 / 8.1	8.1 / 8.3	8.0

Percent	pH Day 0	1	2	3	4	5	6	7
VII #1 ~~#REF!~~	7.2	7.7 / 7.6	7.8 / 7.6	7.7 / 7.4	7.6 / 7.4	7.7 / 7.5	7.9 / 7.6	7.8
VII #2 ~~#REF!~~	7.7	7.7 / 7.6	7.8 / 7.6	7.7 / 7.6	7.6 / 7.6	7.6 / 7.6	7.8 / 7.7	7.8
VII #3 ~~#REF!~~	7.3	7.7 / 7.4	7.8 / 7.4	7.7 / 7.4	7.6 / 7.5	7.7 / 7.5	7.8 / 7.6	7.7
VII #4 ~~#REF!~~	7.2	7.7 / 7.3	7.8 / 7.4	7.7 / 7.3	7.6 / 7.4	7.7 / 7.5	7.8 / 7.5	7.7
VII #5 ~~#REF!~~	7.3	7.7 / 7.4	7.8 / 7.5	7.6 / 7.4	7.6 / 7.4	7.7 / 7.5	7.8 / 7.6	7.7
VII #6 ~~#REF!~~	7.2	7.7 / 7.4	7.8 / 7.5	7.7 / 7.4	7.6 / 7.4	7.7 / 7.5	7.8 / 7.5	7.7

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
VII #1 ~~#REF!~~	25.4 / 176	25.1	25.1	25.6	25.9	25.2	24.7	25.2
VII #2 ~~#REF!~~	25.1 / 268	25.3	25.4	25.4	25.6	24.9	25.1	24.9
VII #3 ~~#REF!~~	25.5 / 139	25.4	25.1	25.4	25.7	25.2	24.9	24.7
VII #4 ~~#REF!~~	25.6 / 126	25.5	25.2	25.5	25.8	25.3	24.8	25.0
VII #5 ~~#REF!~~	25.4 / 145	25.1	25.1	25.5	25.9	25.1	25.0	25.1
VII #6 ~~#REF!~~	25.7 / 128	25.3	25.2	25.4	25.4	25.0	24.8	24.9

Comments:

CETIS Test Summary

Report Date: 06 Mar-06 10:49 AM
Test Link: 05-7324-4751/B152523cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	12-0822-7284	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	24 Feb-06 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Mar-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	24 Feb-06 11:15 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VII #6

Sample No:	14-5252-4894	**Code:**	B1525-23	**Client:**	
Sample Date:	02 Feb-06 04:15 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 19h	**Station:**			

Comments: J116D6

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
02-2033-8319	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
10-1760-9575	Reproduction	100	> 100	N/A	22.73%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-2033-8319	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
10-1760-9575	Reproduction	Control Response	30.4	15 - NL	Yes	Passes acceptability criteria
10-1760-9575	Reproduction	PMSD	0.22728	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.4	5	38	3.0521	9.6517	31.75%
100		10	33.4	12	40	2.5612	8.0994	24.25%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	38	35	31	38	32	5	34	35	26	30
100		12	39	36	35	29	40	35	35	38	35

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	05-7324-4751	05-7324-4751	06 Mar-06 10:49 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

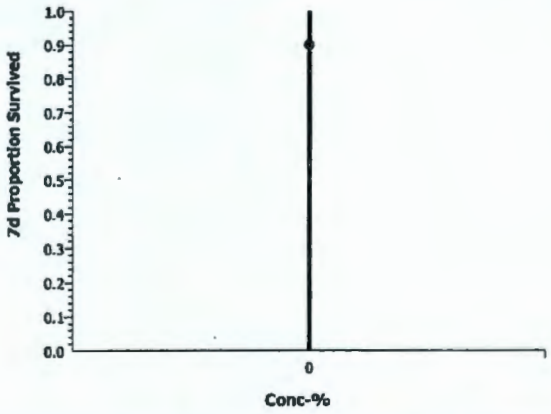
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	05-7324-4751	05-7324-4751	06 Mar-06 10:49 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	22.73%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	123		0.9048	2	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	45	45	1	0.57	0.46122	Non-Significant Effect
Error	1428.8	79.37778	18			
Total	1473.80005	124.37778	19			

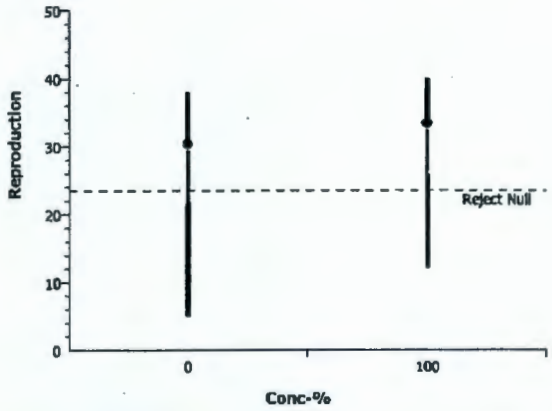
ANOVA Assumptions

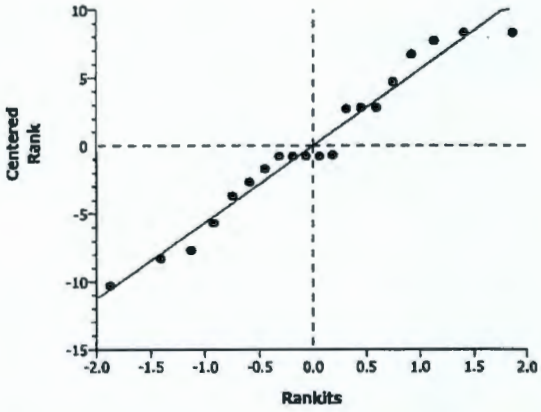
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.42005	6.54109	0.60977	Equal Variances
Distribution	Shapiro-Wilk W	0.70392		0.00004	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.4	5	38	9.6517	8.7	1	17	5.4732
100		10	33.4	12	40	8.0994	12.3	2	20	5.8793

Graphics





CETIS Test Summary

Report Date: 06 Mar-06 10:41 AM
Test Link: 06-6309-3129/B152524cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	10-2857-2231	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	24 Feb-06 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Mar-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	24 Feb-06 11:15 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods VII #3

Sample No:	02-0090-4823	**Code:**	B1525-24	**Client:**	
Sample Date:	02 Feb-06 05:45 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	21d 17h	**Station:**			

Comments: 17:45

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-5223-8762	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
11-4286-3995	Reproduction	100	> 100	N/A	19.12%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-5223-8762	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
11-4286-3995	Reproduction	Control Response	30.4	15 - NL	Yes	Passes acceptability criteria
11-4286-3995	Reproduction	PMSD	0.19116	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.4	5	38	3.0521	9.6517	31.75%
100		10	35.6	28	43	1.3840	4.3767	12.29%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	38	35	31	38	32	5	34	35	26	30
100		39	34	43	37	38	39	28	33	32	33

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	06-6309-3129	06-6309-3129	06 Mar-06 10:40 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

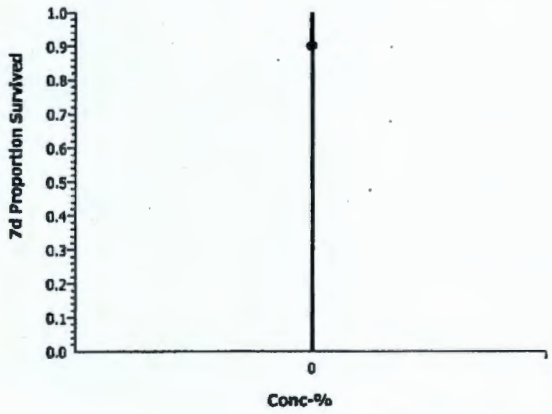
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	06-6309-3129	06-6309-3129	06 Mar-06 10:41 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	19.12%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	124		0.9173	0	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	135.2	135.2	1	2.41	0.13815	Non-Significant Effect
Error	1010.8	56.15556	18			
Total	1145.99998	191.35555	19			

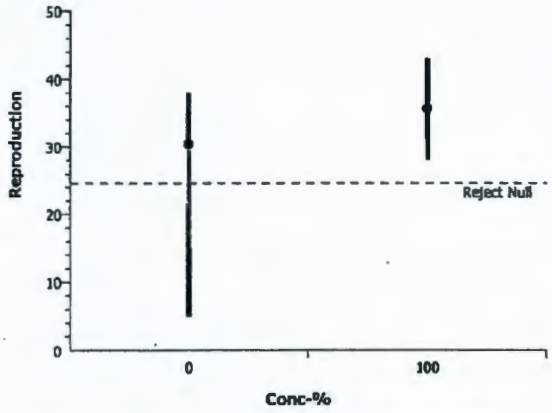
ANOVA Assumptions

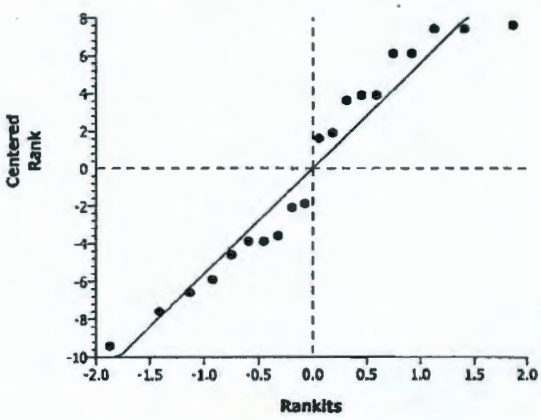
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.86311	6.54109	0.02746	Equal Variances
Distribution	Shapiro-Wilk W	0.78319		0.00049	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.4	5	38	9.6517	8.6	1	16	5.6115
100		10	35.6	28	43	4.3767	12.4	3	20	5.8205

Graphics





CETIS Test Summary

Report Date: 06 Mar-06 10:46 AM
Test Link: 07-9770-0895/B152525cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	14-1206-9047	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	24 Feb-06 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Mar-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	24 Feb-06 11:15 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VII #4

Sample No:	01-8907-7443	**Code:**	B1525-25	**Client:**	
Sample Date:	03 Feb-06 06:15 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	20d 17h	**Station:**			

Comments: J116D0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-1562-9441	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
02-5024-5340	Reproduction	100	> 100	N/A	18.20%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-1562-9441	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
02-5024-5340	Reproduction	Control Response	30.4	15 - NL	Yes	Passes acceptability criteria
02-5024-5340	Reproduction	PMSD	0.18203	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.4	5	38	3.0521	9.6517	31.75%
100		10	33.3	29	37	0.9315	2.9458	8.85%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	38	35	31	38	32	5	34	35	26	30
100		34	32	37	29	34	29	37	31	35	35

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	07-9770-0895	07-9770-0895	06 Mar-06 10:45 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

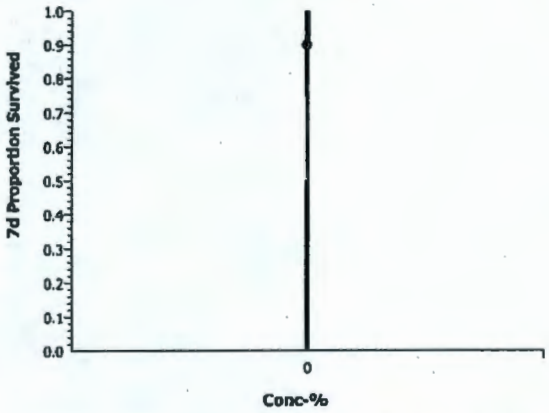
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	07-9770-0895	07-9770-0895	06 Mar-06 10:46 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	18.20%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	108		0.5733	3	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	42.05	42.05	1	0.83	0.37548	Non-Significant Effect
Error	916.5	50.91667	18			
Total	958.549999	92.966667	19			

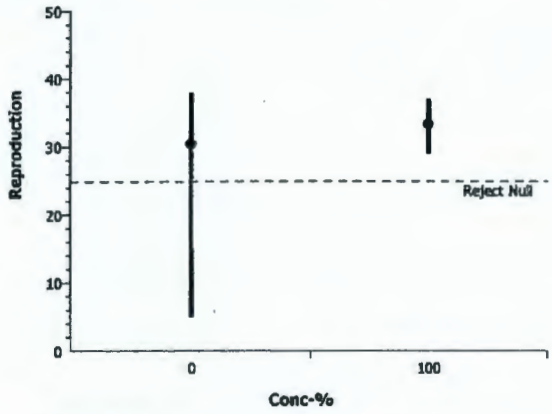
ANOVA Assumptions

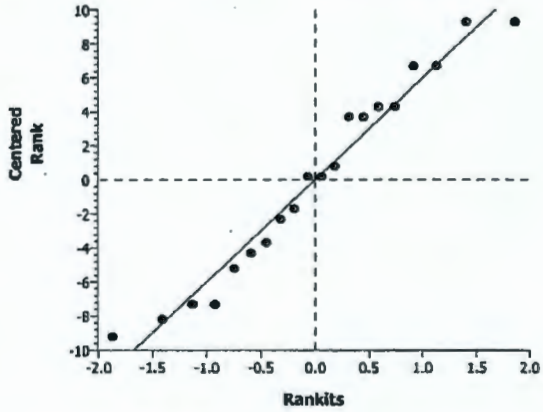
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	10.73495	6.54109	0.00158	Unequal Variances
Distribution	Shapiro-Wilk W	0.72800		0.00009	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.4	5	38	9.6517	10.2	1	19.5	6.7173
100		10	33.3	29	37	2.9458	10.8	3.5	17.5	5.2451

Graphics





CETIS Test Summary

Report Date: 06 Mar-06 10:52 AM
Test Link: 09-3197-9427/B152526cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	06-9796-4324	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	24 Feb-06 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Mar-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	24 Feb-06 11:15 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VII #1

Sample No:	05-9731-8604	**Code:**	B1525-26	**Client:**	
Sample Date:	03 Feb-06 05:20 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	20d 17h	**Station:**			

Comments: J116D2

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
16-0863-3129	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
08-7138-5477	Reproduction	100	> 100	N/A	20.59%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
16-0863-3129	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
08-7138-5477	Reproduction	Control Response	30.4	15 - NL	Yes	Passes acceptability criteria
08-7138-5477	Reproduction	PMSD	0.20589	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.4	5	38	3.0521	9.6517	31.75%
100		10	31.7	17	38	1.9267	6.0928	19.22%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	38	35	31	38	32	5	34	35	26	30
100		30	17	34	38	32	28	38	31	35	34

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-3197-9427	09-3197-9427	06 Mar-06 10:38 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

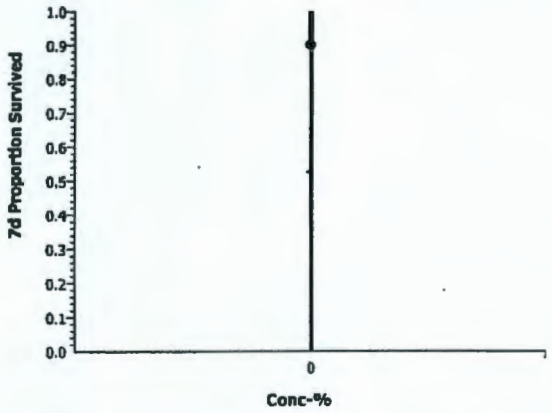
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	09-3197-9427	09-3197-9427	06 Mar-06 10:38 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	20.59%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	104.5		0.4853	3	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	8.45	8.45	1	0.13	0.72291	Non-Significant Effect
Error	1172.5	65.13889	18			
Total	1180.95	73.588885	19			

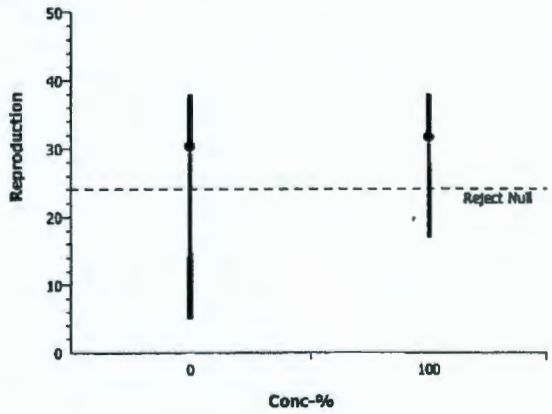
ANOVA Assumptions

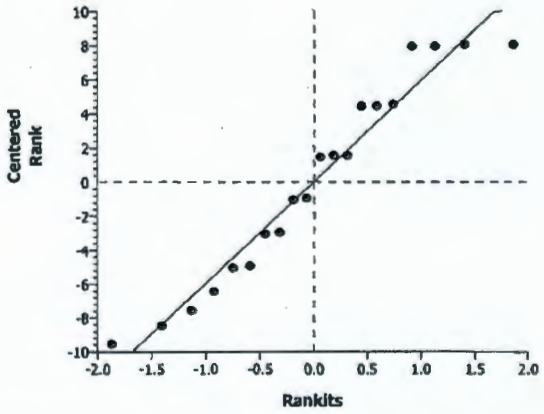
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.50943	6.54109	0.18670	Equal Variances
Distribution	Shapiro-Wilk W	0.77203		0.00034	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.4	5	38	9.6517	10.55	1	18.5	6.2559
100		10	31.7	17	38	6.0928	10.45	2	18.5	5.7949

Graphics





CETIS Test Summary

Report Date: 06 Mar-06 10:47 AM
Test Link: 06-5111-0575/B152527cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	07-8940-7389	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 22h
Start Date:	24 Feb-06 11:15 AM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	03 Mar-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	24 Feb-06 11:15 AM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VII #5

Sample No:	11-8645-2947	**Code:**	B1525-27	**Client:**	
Sample Date:	03 Feb-06 04:30 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	20d 18h	**Station:**			

Comments: J116C9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-2009-3304	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
07-7590-8620	Reproduction	100	> 100	N/A	19.34%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-2009-3304	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
07-7590-8620	Reproduction	Control Response	30.4	15 - NL	Yes	Passes acceptability criteria
07-7590-8620	Reproduction	PMSD	0.19342	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	30.4	5	38	3.0521	9.6517	31.75%
100		10	30.6	20	37	1.4772	4.6714	15.27%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000
100		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	38	35	31	38	32	5	34	35	26	30
100		20	31	32	31	30	29	28	32	37	36

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	06-5111-0575	06-5111-0575	06 Mar-06 10:47 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

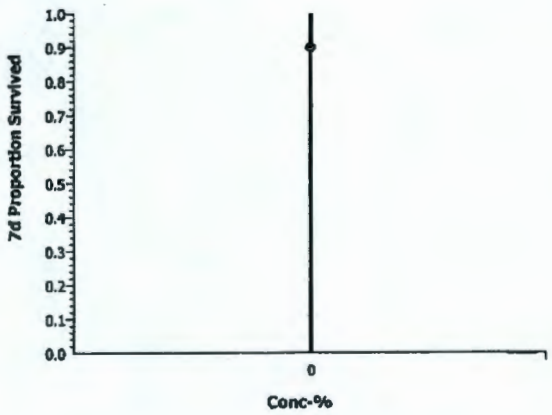
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	0.76316	0.76316	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		9	1	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	06-5111-0575	06-5111-0575	06 Mar-06 10:47 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	19.34%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	94.5		0.2179	2	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.2	0.2	1	0.00	0.95362	Non-Significant Effect
Error	1034.8	57.48889	18			
Total	1035.00005	57.688888	19			

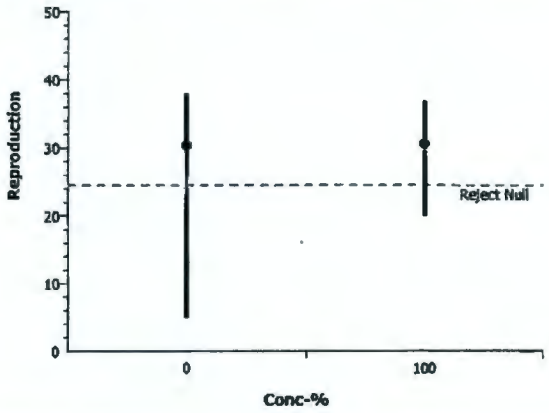
ANOVA Assumptions

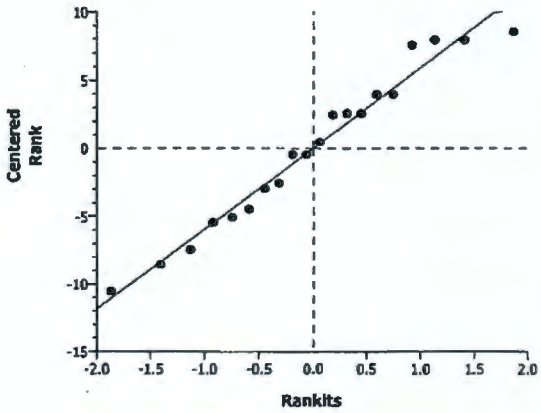
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.26884	6.54109	0.04169	Equal Variances
Distribution	Shapiro-Wilk W	0.76793		0.00030	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	30.4	5	38	9.6517	11.55	1	19.5	6.4998
100		10	30.6	20	37	4.6714	9.45	2	18	5.3461

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-8-06 | Test Termination: Date 2-15-06

Contact: | Technician: Winn, Mackey, Pitzenger

Test Species/ID: *Ceriodaphnia dubia* / Cd 1895 | /

/ | /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-28	J116D5	2-3-06	1530	0.00 / -	0.03	72	68
B1525-29	J11256	2-1-06	1900	0.05 / -	0.03	76	68
B1525-30	J112X5	2-1-06	1445	0.00 / -	0.09	76	66
B1525-31	J11253	2-1-06	1615	0.01 / -	0.04	74	64
B1525-32	J116D7	2-2-06	1700	0.01 / -	0.03	74	66
				/			
				/			
				/			
				/			
				/			
				/			
				/			
				/			

Test Species Information	ID# Cd 1895	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type / Amount	0.1 ml Algae & YCT daily			
Aeration: Began	none			
Amount	—			
Dilution Water ID#	2596			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2596	88	62	7.9

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on Feb 8, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-31	J11253		0.827563629	1	VIII	#1	VIII #1
B1525-32	J116D7		0.717060177	2	VIII	#2	VIII #2
B1525-30	J112X5		0.586417845	3	VIII	#3	VIII #3
B1525-28	J116D5		0.571335496	4	VIII	#4	VIII #4
Lab Control	ReconMH only		0.336535388	5	VIII	#5	VIII #5
B1525-29	J11256		0.149882526	6	VIII	#6	VIII #6

Test Board Slot Location Information

Board ID: VIII

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	VIII # 4	11	VIII # 2	21	VIII # 6	31	VIII # 1	41	VIII # 5	51	VIII #3
rep B	2	VIII #1	12	VIII # 3	22	VIII # 5	32	VIII # 2	42	VIII #4	52	VIII #6
rep C	3	VIII # 2	13	VIII # 3	23	VIII # 4	33	VIII # 1	43	VIII #5	53	VIII # 6
rep D	4	VIII # 3	14	VIII # 5	24	VIII # 4	34	VIII # 2	44	VIII # 1	54	VIII # 6
rep E	5	VIII # 6	15	VIII # 2	25	VIII # 5	35	VIII # 4	45	VIII # 3	55	VIII # 1
rep F	6	VIII # 4	16	VIII # 5	26	VIII # 1	36	VIII # 3	46	VIII # 6	56	VIII # 2
rep G	7	VIII # 4	17	VIII # 2	27	VIII # 5	37	VIII # 3	47	VIII # 1	57	VIII # 6
rep H	8	VIII # 1	18	VIII # 6	28	VIII # 4	38	VIII # 5	48	VIII # 2	58	VIII # 3
rep I	9	VIII # 3	19	VIII # 5	29	VIII # 2	39	VIII # 6	49	VIII # 1	59	VIII #4
rep J	10	VIII # 2	20	VIII # 6	30	VIII #3	40	VIII #5	50	VIII # 4	60	VIII # 1

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 2-8-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1895

Statistician: Dm

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
VIII # 1	26	27	28	32	0	21	30	30	32	24	9	250
	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?	AD?	AD?		
VIII # 2	22	28	26	24	15	32	2	28	31	28	10	236
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VIII # 3	27	31	28	3	6	4	5	31	21	10	10	166
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VIII # 4	30	35	24	25	27	27	31	29	28	26	10	282
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VIII # 5	33	5	29	3	26	20	3	28	31	27	10	205
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VIII # 6	25	27	18	3	33	25	30	28	28	18	10	235
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: 1st 3 broods only. Dm

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-8-06 Time: 1545

Sample Description: — Test Termination: Date: 2-15-06 Time: 0825

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1895

Technician: Day 1 [illegible] Day 2 DW Day 3 [illegible] Day 4 [illegible] Day 5 [illegible] Day 6 [illegible] Day 7 DW

Time: Day 1 1030 Day 2 1100 Day 3 1105 Day 4 1115 Day 5 0950 Day 6 1220 Day 7 0825

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
VIII # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	2	4	4	0	3	4	5	5	0	10	30
	4	0	0	10	0	0 AD	0	0	0	0	4	9	14
	5	10	9	0	12		7	11	11	12	12	9	84
	6	13	16	14	16		11	15	14	15	8	9	122
	7	0	0	14	0		0	17	0	0	0	9	31
VIII # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	3	4	3	4	5	2	2	4	0	10	30
	4	0	0	0	0	11	0	0	0	0	4	10	15
	5	9	11	10	11	0	12	0 AY	9	14	10	10	86
	6	0	0	12	0	0	15	0	17	13	14	10	71
	7	10	14	0	10	0	0	0	16	18	0	10	68
VIII # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	5	3	6	4	5	4	5	2	10	37
	4	3	0	9	0	0	0	0	0	4	0	10	16
	5	12	11	0	0 AY	0	0 AY	0 AY	12	0	0 AY	10	35
	6	12	17	14	0	0 AY	0	0	15	0	0	10	58
	7	0	0	17	0	0	0	0	19	12	8	10	56
VIII # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	4	3	4	4	4	4	4	2	4	10	36
	4	0	0	8	11	10	0	0	0	0	0	10	29
	5	11	14	0	0	0	9	10	10	12	11	10	77
	6	16	17	13	10	13	14	17	15	14	11	10	140
	7	0	0	18	15	17	13	0	0	0	0	10	63
VIII # 5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	3	3	4	3	5	4	3	10	39
	4	0	0	0	0	9	9	0	7	0	0	10	25
	5	14	0 AY	8	0 AY	0	0	0	4/0	12	10	10	48
	6	15	0	16	0	14	7	0	0	0	14	10	66
	7	0	0	14	0	16	14	0	12	15	0	10	71
VIII # 6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	2	3	5	4	4	4	4	0	10	33
	4	0	0	0	0	12	0	0	0	0	2	10	14
	5	9	12	6	0 AY	0	10	12	12	11	6	10	78
	6	12	12	10	0 AY	16	11	14	12	13	10	10	~~200~~ 110
	7	0	0	0	0	18	15	19	14	0	0	10	66

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford
Initiated Date: 2-8-06 Time: 1545
Adults Isolated Date: 2-7-06 Time: 0845
Sample Description: see randomization chart
Initial Sample ID #: —
Neo's Collected Date: 2-7-06 Time: 1500

Technician: Day 0 DW; Day 1 Bm; Day 2 DW; Day 3 Bm; Day 4 (TP); Day 5 Bm; Day 6 Bm; Day 7 DW

Time: Day 0 1545; Day 1 1455; Day 2 1100; Day 3 1255; Day 4 1130; Day 5 1100; Day 6 1220; Day 7 0825

Percent	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
VIII # 1	8.0	7.4 / 7.1	8.0 / 8.1	7.3 / 7.7	7.9 / 8.1	7.3 / 7.6	7.9 / 7.6	8.0
VIII # 2	8.0	7.4 / 7.2	7.9 / 8.0	7.6 / 7.7	8.0 / 7.8	7.4 / 7.6	7.9 / 7.6	8.0
VIII # 3	8.0	7.6 / 7.2	7.9 / 8.0	7.8 / 7.7	8.0 / 8.0	7.3 / 7.5	7.9 / 7.6	8.0
VIII # 4	8.0	7.5 / 7.2	7.9 / 8.0	7.9 / 7.8	7.9 / 8.1	7.4 / 7.6	7.9 / 7.6	8.0
VIII # 5	8.0	7.4 / 7.2	7.9 / 7.9	7.9 / 7.7	7.9 / 8.0	7.4 / 7.5	7.9 / 7.6	8.0
VIII # 6	8.1	7.6 / 7.2	8.0 / 8.0	8.0 / 7.7	7.9 / 8.2	7.4 / 7.6	7.9 / 7.6	8.0

Percent	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
VIII # 1	7.5	7.3 / 7.7	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.8 / 7.5	7.9
VIII # 2	7.5	7.8 / 7.7	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.7 / 7.6	7.8 / 7.5	7.8
VIII # 3	7.5	7.8 / 7.6	7.8 / 7.5	7.8 / 7.6	7.8 / 7.6	7.7 / 7.6	7.7 / 7.5	7.8
VIII # 4	7.5	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.7 / 7.6	7.8 / 7.6	7.8
VIII # 5	7.6	7.8 / 7.7	7.8 / 7.7	7.8 / 7.7	7.8 / 7.7	7.7 / 7.7	7.8 / 7.6	7.8
VIII # 6	7.5	7.8 / 7.7	7.8 / 7.6	7.8 / 7.7	7.8 / 7.7	7.3 / 7.6	7.8 / 7.6	7.7

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
VIII # 1	25.4 / 138	25.2	25.2	25.5	25.5	24.8	25.2	24.7
VIII # 2	25.1 / 138	25.1	25.5	25.3	24.9	24.7	25.0	24.8
VIII # 3	25.1 / 131	25.2	25.3	25.2	25.7	24.8	24.9	25.1
VIII # 4	25.2 / 130	25.4	25.0	24.8	25.4	24.9	24.9	24.8
VIII # 5	24.9 / 272	24.7	25.0	24.7	25.8	24.8	25.1	24.6
VIII # 6	25.1 / 142	25.9	24.9	24.8	25.4	24.6	25.0	24.9

Comments:

CETIS Test Summary

Report Date: 15 Feb-06 2;13 PM
Test Link: 08-5484-2625/B152528cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	15-8453-3721	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 16h
Start Date:	08 Feb-06 03:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Feb-06 08:25 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Feb-06 03:45 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VIII #4

Sample No:	05-3268-2711	**Code:**	B1525-28	**Client:**	
Sample Date:	03 Feb-06 03:30 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	5d 0h	**Station:**			

Comments: J116D5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-0523-6667	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
18-1371-8151	Reproduction	100	> 100	N/A	33.53%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-0523-6667	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
18-1371-8151	Reproduction	Control Response	20.5	15 - NL	Yes	Passes acceptability criteria
18-1371-8151	Reproduction	PMSD	0.3353	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	20.5	3	33	3.8304	12.113	59.09%
100		10	28.2	24	35	1.0198	3.2249	11.44%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	5	29	3	26	20	3	28	31	27
100		30	35	24	25	27	27	31	29	28	26

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	08-5484-2625	08-5484-2625	15 Feb-06 2:10 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

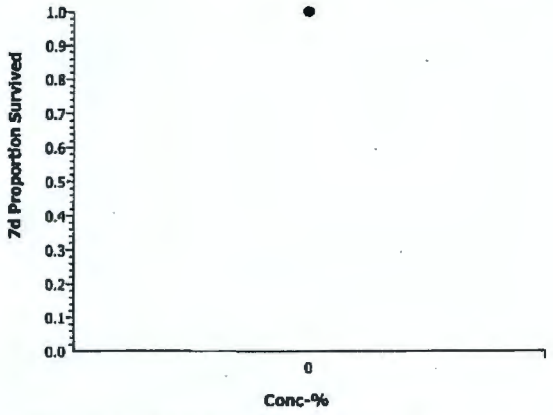
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	08-5484-2625	08-5484-2625	15 Feb-06 2:13 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	33.53%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-1.9425	1.73406	0.9661	6.87359	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	296.45	296.45	1	3.77	0.06788	Non-Significant Effect
Error	1414.1	78.56111	18			
Total	1710.54999	375.01112	19			

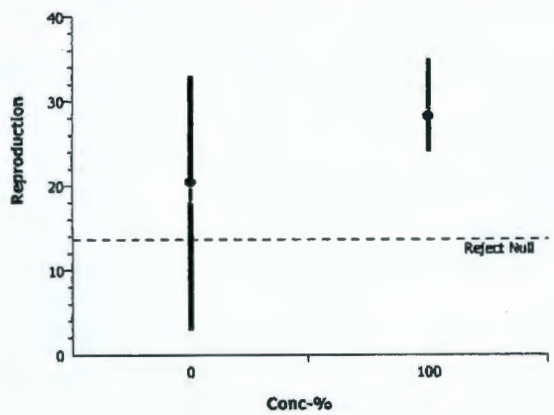
ANOVA Assumptions

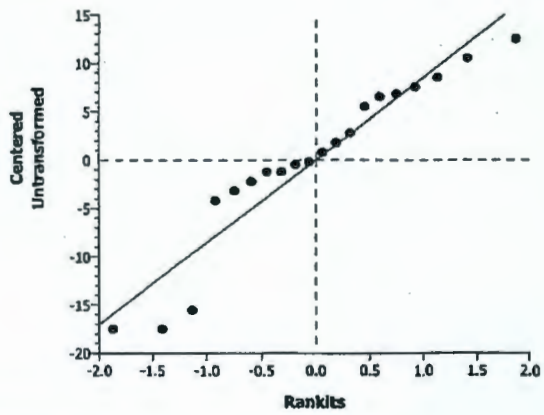
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	14.10791	6.54109	0.00054	Unequal Variances
Distribution	Shapiro-Wilk W	0.90167		0.04432	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	20.5	3	33	12.113				
100		10	28.2	24	35	3.2249				

Graphics





CETIS Test Summary

Report Date: 15 Feb-06 2:21 PM
Test Link: 03-9367-6585/B152529cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	06-6557-8768	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 16h
Start Date:	08 Feb-06 03:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Feb-06 08:25 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Feb-06 03:45 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VIII #6

Sample No:	12-0145-3707	**Code:**	B1525-29	**Client:**	
Sample Date:	01 Feb-06 07:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 20h	**Station:**			

Comments: J11256

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-4391-6294	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
10-5036-4750	Reproduction	100	> 100	N/A	39.79%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-4391-6294	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
10-5036-4750	Reproduction	Control Response	20.5	15 - NL	Yes	Passes acceptability criteria
10-5036-4750	Reproduction	PMSD	0.39786	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	20.5	3	33	3.8304	12.113	59.09%
100		10	23.5	3	33	2.7295	8.6313	36.73%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	5	29	3	26	20	3	28	31	27
100		25	27	18	3	33	25	30	28	28	18

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-9367-6585	03-9367-6585	15 Feb-06 2:14 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

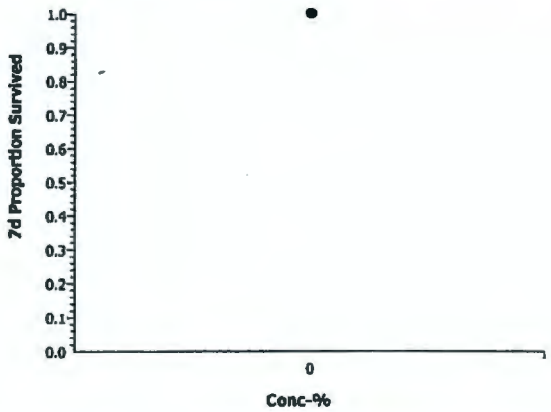
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	03-9367-6585	03-9367-6585	15 Feb-06 2:14 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	39.79%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	106		0.5147	1	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	45	45	1	0.41	0.53161	Non-Significant Effect
Error	1991	110.6111	18			
Total	2036	155.61111	19			

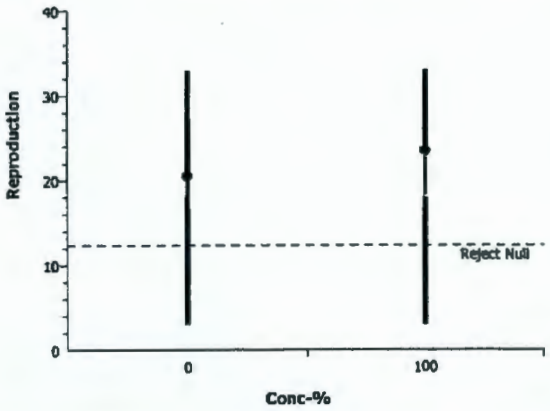
ANOVA Assumptions

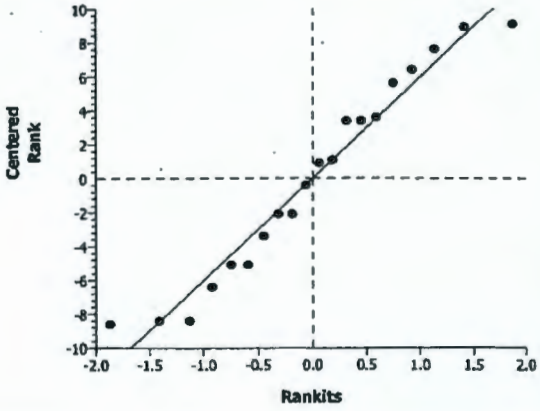
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.96943	6.54109	0.32715	Equal Variances
Distribution	Shapiro-Wilk W	0.86351		0.00905	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	20.5	3	33	12.113	10.4	2	19.5	6.4970
100		10	23.5	3	33	8.6313	10.6	2	19.5	5.5668

Graphics





CETIS Test Summary

Report Date: 15 Feb-06 2:21 PM
Test Link: 10-4035-7438/B152530cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	03-8693-3048	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 16h
Start Date:	08 Feb-06 03:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Feb-06 08:25 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Feb-06 03:45 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods VIII #3

Sample No:	13-9738-0210	**Code:**	B1525-30	**Client:**	
Sample Date:	01 Feb-06 02:45 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	7d 1h	**Station:**			

Comments: J112X5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-6683-5277	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
02-8896-9971	Reproduction	100	> 100	N/A	45.70%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-6683-5277	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
02-8896-9971	Reproduction	Control Response	20.5	15 - NL	Yes	Passes acceptability criteria
02-8896-9971	Reproduction	PMSD	0.457	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	20.5	3	33	3.8304	12.113	59.09%
100		10	16.6	3	31	3.8099	12.048	72.58%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	5	29	3	26	20	3	28	31	27
100		27	31	28	3	6	4	5	31	21	10

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	10-4035-7438	10-4035-7438	15 Feb-06 2:17 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

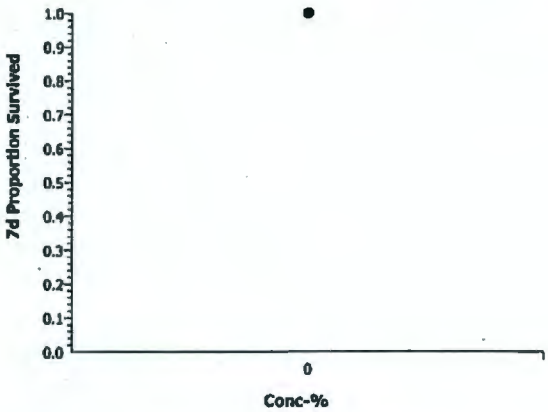
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M HILL

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	10-4035-7438	10-4035-7438	15 Feb-06 2:17 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	45.70%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.72188	1.73406	0.2398	9.36840	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	76.05	76.05	1	0.52	0.47964	Non-Significant Effect
Error	2626.9	145.9389	18			
Total	2702.94991	221.98889	19			

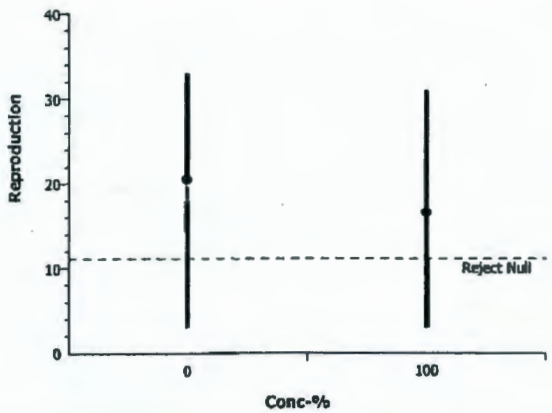
ANOVA Assumptions

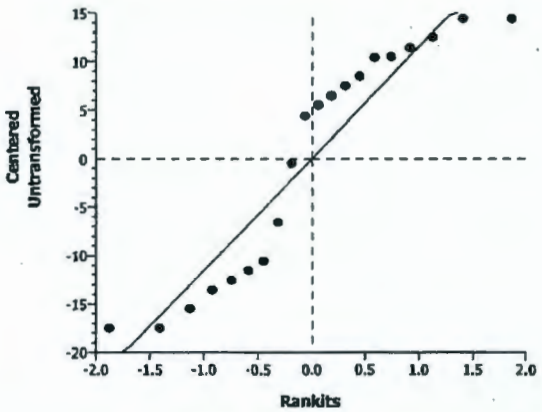
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.01079	6.54109	0.98750	Equal Variances
Distribution	Shapiro-Wilk W	0.87050		0.01199	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	20.5	3	33	12.113				
100		10	16.6	3	31	12.048				

Graphics





CETIS Test Summary

Report Date: 15 Feb-06 2:25 PM
Test Link: 17-7592-4710/B152531cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	17-9322-6929	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 16h
Start Date:	08 Feb-06 03:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Feb-06 08:25 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Feb-06 03:45 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VIII #1

Sample No:	15-4103-4322	**Code:**	B1525-31	**Client:**	
Sample Date:	01 Feb-06 04:15 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 23h	**Station:**			

Comments: J11253

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
15-7306-5859	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
04-3144-3277	Reproduction	100	> 100	N/A	41.10%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
15-7306-5859	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
04-3144-3277	Reproduction	Control Response	20.5	15 - NL	Yes	Passes acceptability criteria
04-3144-3277	Reproduction	PMSD	0.41098	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	20.5	3	33	3.8304	12.113	59.09%
100		10	25	0	32	2.9889	9.4516	37.81%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	5	29	3	26	20	3	28	31	27
100		26	27	28	32	0	21	30	30	32	24

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	17-7592-4710	17-7592-4710	15 Feb-06 2:25 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

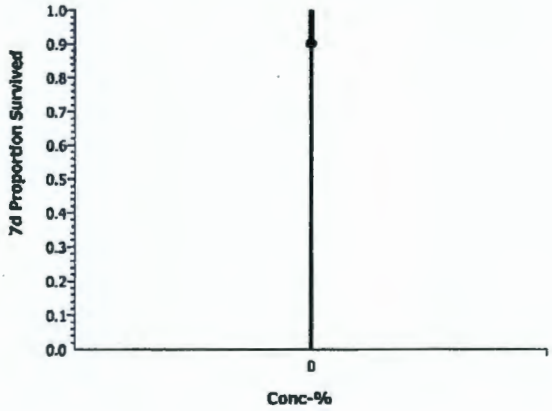
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	17-7592-4710	17-7592-4710	15 Feb-06 2:19 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	41.10%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	113.5		0.7106	0	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	101.25	101.25	1	0.86	0.36659	Non-Significant Effect
Error	2124.5	118.0278	18			
Total	2225.75	219.27778	19			

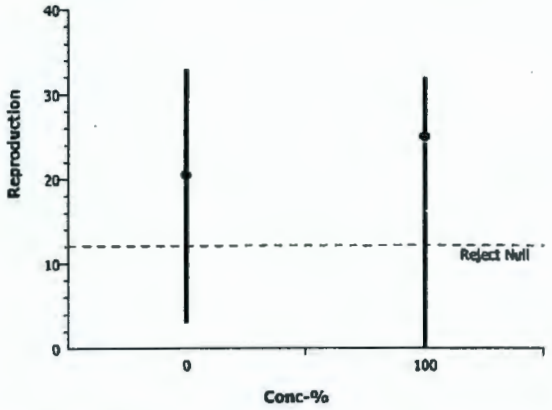
ANOVA Assumptions

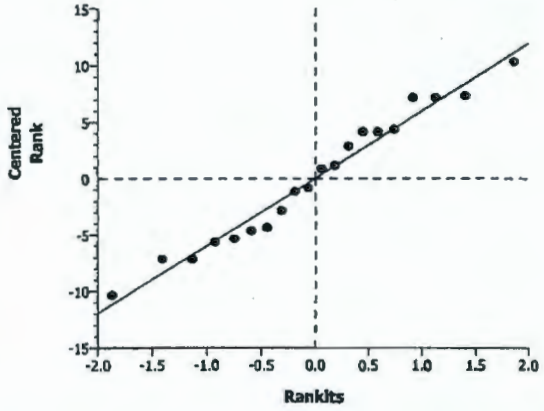
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.64241	6.54109	0.47131	Equal Variances
Distribution	Shapiro-Wilk W	0.84254		0.00401	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	20.5	3	33	12.113	9.65	2.5	20	6.2006
100		10	25	0	32	9.4516	11.35	1	18.5	5.7882

Graphics





CETIS Test Summary

Report Date: 15 Feb-06 2:23 PM
Test Link: 03-5918-2074/B152532cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	09-7713-0348	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 16h
Start Date:	08 Feb-06 03:45 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	15 Feb-06 08:25 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	08 Feb-06 03:45 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
VIII #2

Sample No:	14-2297-6598	**Code:**	B1525-32	**Client:**	
Sample Date:	02 Feb-06 05:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	5d 22h	**Station:**			

Comments: J116D7

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-0981-4861	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
01-7674-8865	Reproduction	100	> 100	N/A	40.40%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-0981-4861	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
01-7674-8865	Reproduction	Control Response	20.5	15 - NL	Yes	Passes acceptability criteria
01-7674-8865	Reproduction	PMSD	0.40399	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	20.5	3	33	3.8304	12.113	59.09%
100		10	23.6	2	32	2.8527	9.021	38.22%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	33	5	29	3	26	20	3	28	31	27
100		22	28	26	24	15	32	2	28	31	28

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	03-5918-2074	03-5918-2074	15 Feb-06 2:22 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

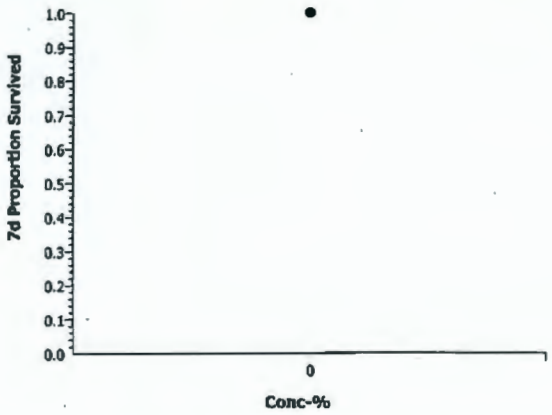
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	03-5918-2074	03-5918-2074	15 Feb-06 2:22 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	40.40%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	107.5		0.5441	1	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	48.05	48.05	1	0.42	0.52448	Non-Significant Effect
Error	2052.9	114.05	18			
Total	2100.94990	162.10000	19			

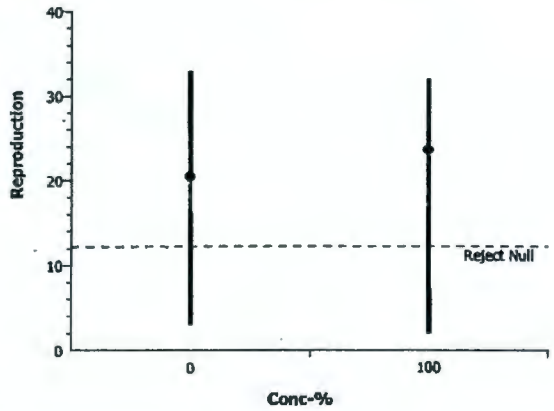
ANOVA Assumptions

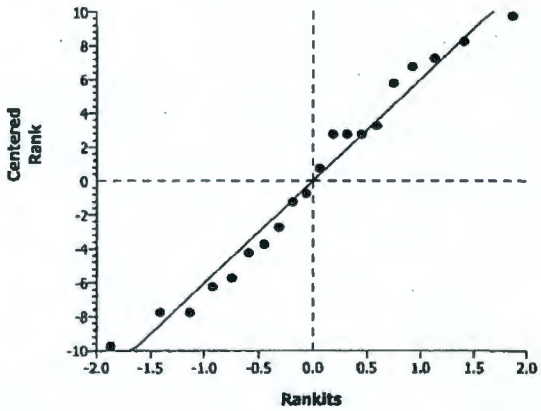
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.80298	6.54109	0.39307	Equal Variances
Distribution	Shapiro-Wilk W	0.85323		0.00604	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	20.5	3	33	12.113	10.25	2.5	20	6.4085
100		10	23.6	2	32	9.021	10.75	1	19	5.6532

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-9-06 | Test Termination: Date 2-16-06

Contact: | Technician: Mackey, Winn,

Test Species/ID: *Ceriodaphnia dubia* / Cd 1996 / / /

Sample Information							
Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-37	J116D8	2-6-06	1800	0.01 / -	0.00	74	64
B1525-38	J112X6	2-6-06	1600	0.02 / -	0.00	72	62
B1525-39	J11255	2-6-06	1830	0.01 / -	0.02	76	66
				/			
				/			
				/			
				/			
				/			
				/			
				/			
				/			
				/			
				/			

Test Species Information	ID# Cd 1996	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Feeding: Amount	YCT daily			
Aeration: Began	none			
Aeration: Amount	—			
Dilution Water ID#	2596			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2596	85	62	7.9

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on Feb 9, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
Lab Control	ReconMH only		0.735503298	1	X	#1	X #1
B1525-39	J11255		0.423497871	2	X	#2	X #2
B1525-37	J116D8		0.368148545	3	X	#3	X #3
B1525-38	J112X6		0.029790513	4	X	#4	X #4
					X	#5	X #5
					X	#6	X #6

Test Board Slot Location Information

Board ID: X

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	X# 2	11	X# 5	21	X# 1	31	X# 4	41	X# 6	51	X# 3
rep B	2	X# 5	12	X# 4	22	X# 6	32	X# 1	42	X# 3	52	X# 2
rep C	3	X# 4	13	X# 3	23	X# 1	33	X# 6	43	X# 5	53	X# 2
rep D	4	X# 2	14	X# 6	24	X# 4	34	X# 1	44	X# 5	54	X# 3
rep E	5	X# 6	15	X# 2	25	X# 5	35	X# 3	45	X# 1	55	X# 4
rep F	6	X# 1	16	X# 6	26	X# 3	36	X# 4	46	X# 5	56	X# 2
rep G	7	X# 3	17	X# 1	27	X# 4	37	X# 2	47	X# 5	57	X# 6
rep H	8	X# 3	18	X# 1	28	X# 2	38	X# 5	48	X# 6	58	X# 4
rep I	9	X# 2	19	X# 1	29	X# 4	39	X# 5	49	X# 6	59	X# 3
rep J	10	X# 2	20	X# 4	30	X# 1	40	X# 6	50	X# 5	60	X# 3

CH2M HILL

Ceriodaphnia dubia

Survival and Reproduction X

Test Data Summary

Client: Hanford

Test Start Date: 2-9-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1596

Statistician: Bm

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
X # 1	29	24 ~~35~~	33	21	3	13	32	23 ~~34~~	26 ~~42~~	29	10	233 ~~271~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
X # 2	17	32	33	34	34	35	37	33	34	31	10	320
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
X # 3	32	31	34 ~~49~~	38	34	24 ~~42~~	29	31	36	38	10	327 ~~360~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
X # 4	25	29	35	34 ~~51~~	29	26 ~~40~~	0	18	29	29	10	254 ~~285~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
X # 5												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
X # 6												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: # 4th brood details removed Bm

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-9-06 Time: 1440

Sample Description: — Test Termination: Date: 2-16-06 Time: 0930

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1846

Technician: Day 1 Bw Day 2 Bw Day 3 Bw Day 4 Bw Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1100 Day 2 1135 Day 3 1205 Day 4 1250 Day 5 1300 Day 6 1130 Day 7 0930

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
X # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	3	4	0/3	4	0	4	4	4	10	30
	4	4	0	0	0	0	0	0	0	0	0	10	4
	5	0	7	0	6	0	0	5	8	10	10	10	46
	6	11	13	14	0	0	9	14	11	12	15	10	99
	7	14	11	16	11	0	0	13	11	16	0	10	92
X # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	5	4	5	3	5	4	4	4	10	39
	4	5	0	0	0	0	0	0	0	0	0	10	5
	5	0	12	11	12	13	11	12	13	11	11	10	106
	6	12	15	17	0	16	21	20	16	19	16	10	152
	7	0	0	0	18	0	0	0	0	0	0	10	18
X # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	6	6	5	3	5	4	5	5	10	44
	4	4	0	9	0	0	6	0	0	0	0	10	19
	5	11	9	0	11	12	0	8	13	14	12	10	90
	6	0	17	19	21	17	15	16	14	17	0	10	136
	7	17	0	15	0	0	18	0	0	0	21	10	71
X # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	6	5	4	3	0	0	6	5	10	33
	4	6	0	0	0	0	0	0	3	0	0	10	9
	5	8	8	13	11	11	8	0	7	9	11	10	86
	6	11	17	16	18	14	15	0	0	14	13	10	118
	7	0	0	0	17	0	14	0	8	0	0	10	39
X # 5	1												
	2												
	3												
	4												
	5												
	6												
	7												
X # 6	1												
	2												
	3												
	4												
	5												
	6												
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 2-9-06 Time: 1440 | Adults Isolated Date: 2-8-06 Time: 0820

Sample Description: see randomization chart | Initial Sample ID #: — | Neo's Collected Date: 2-8-06 Time: 1510

Technician: Day 0 Bm, Day 1 DW, Day 2 Bm, Day 3 TP, Day 4 Bm, Day 5 DW, X DW, Day 7 DW

Time: Day 0 1510, Day 1 1410, Day 2 1300, Day 3 1215, Day 4 1105, Day 5 1300, Day 6 1130, Day 7 0930

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7	pH Day 0	1	2	3	4	5	6	7	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
X # 1	7.0	8.0 / 8.1	7.8 / 7.4	7.9 / 7.9	7.6 / 7.1	7.8 / 7.8	7.2 / 7.0	7.7	7.6	7.7 / 7.7	7.8 / 7.7	7.8 / 7.7	7.8 / 7.6	7.9 / 7.7	7.8 / 7.8	7.8	25.1 / 276	24.0	25.1	25.8	25.3	25.2	25.3	24.9
X # 2	7.0	8.0 / 8.0	7.7 / 7.5	7.8 / 7.9	7.2 / 7.3	7.8 / 7.8	7.2 / 7.0	7.7	7.7	7.7 / 7.7	7.8 / 7.7	7.8 / 7.6	7.8 / 7.6	7.8 / 7.7	7.8 / 7.6	7.7	25.2 / 144	24.1	24.6	26.0	25.7	24.9	24.9	25.2
X # 3	7.1	8.0 / 8.0	7.8 / 7.6	8.0 / 8.0	7.3 / 7.4	7.9 / 7.8	7.2 / 7.0	7.7	7.6	7.7 / 7.7	7.8 / 7.7	7.8 / 7.6	7.8 / 7.5	7.8 / 7.7	7.8 / 7.6	7.7	25.2 / 124	24.5	25.0	25.6	25.6	25.3	25.2	24.7
X # 4	7.5	8.0 / 7.9	7.6 / 7.6	7.9 / 8.0	7.3 / 7.4	7.9 / 7.8	7.2 / 7.0	7.7	7.7	7.7 / 7.6	7.8 / 7.7	7.8 / 7.6	7.7 / 7.5	7.8 / 7.7	7.7 / 7.5	7.7	25.2 / 140	24.2	25.0	26.0	26.6	25.0	24.9	25.0
X # 5																								
X # 6																								

Comments:

CETIS Test Summary

Report Date: 16 Feb-06 2:04 PM
Test Link: 09-3942-6696/B152537cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-8312-6234	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:40 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:40 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods X #3

Sample No:	11-6963-5787	**Code:**	B1525-37	**Client:**	
Sample Date:	06 Feb-06 06:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	69h	**Station:**			

Comments: J116D8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-1475-4596	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
12-7410-8100	Reproduction	100	> 100	N/A	23.95%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
03-1475-4596	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
12-7410-8100	Reproduction	Control Response	23.3	15 - NL	Yes	Passes acceptability criteria
12-7410-8100	Reproduction	PMSD	0.23952	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	23.3	3	33	2.9176	9.2262	39.60%
100		10	32.7	24	38	1.3585	4.296	13.14%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	29	24	33	21	3	13	32	23	26	29
100		32	31	34	38	34	24	29	31	36	38

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	09-3942-6696	09-3942-6696	16 Feb-06 2:04 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

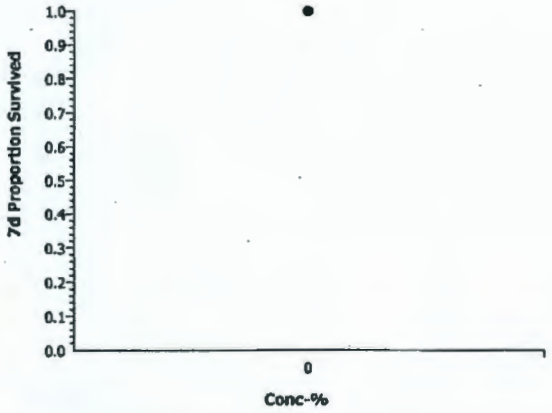
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	09-3942-6696	09-3942-6696	16 Feb-06 2:04 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	23.95%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-2.9208	1.73406	0.9954	5.58082	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	441.8	441.8	1	8.53	0.00913	Significant Effect
Error	932.2	51.78889	18			
Total	1374	493.58887	19			

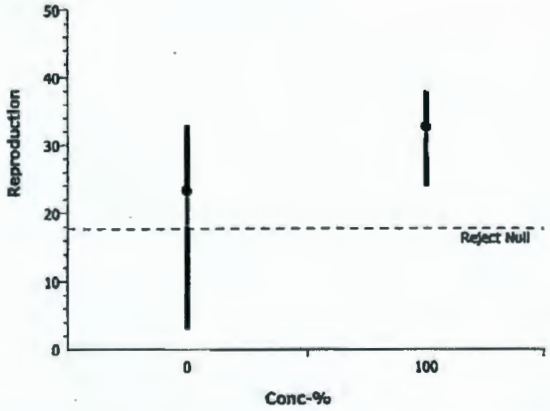
ANOVA Assumptions

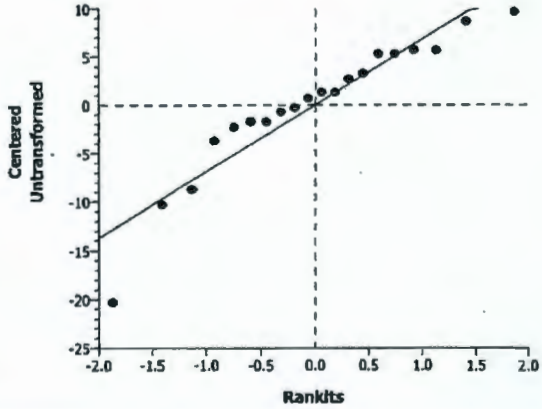
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	4.61228	6.54109	0.03261	Equal Variances
Distribution	Shapiro-Wilk W	0.90194		0.04485	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	23.3	3	33	9.2262				
100		10	32.7	24	38	4.296				

Graphics





CETIS Test Summary

Report Date: 16 Feb-06 2:05 PM
Test Link: 12-5344-7818/B152538cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	08-8672-4893	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:40 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:40 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods X #4

Sample No:	16-4463-9267	**Code:**	B1525-38	**Client:**	
Sample Date:	06 Feb-06 04:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	71h	**Station:**			

Comments: J112X6

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-0053-7412	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
11-5080-5805	Reproduction	100	> 100	N/A	32.20%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-0053-7412	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
11-5080-5805	Reproduction	Control Response	23.3	15 - NL	Yes	Passes acceptability criteria
11-5080-5805	Reproduction	PMSD	0.32198	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	23.3	3	33	2.9176	9.2262	39.60%
100		10	25.4	0	35	3.1944	10.102	39.77%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	29	24	33	21	3	13	32	23	26	29
100		25	29	35	34	29	26	0	18	29	29

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	12-5344-7818	12-5344-7818	16 Feb-06 2:05 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

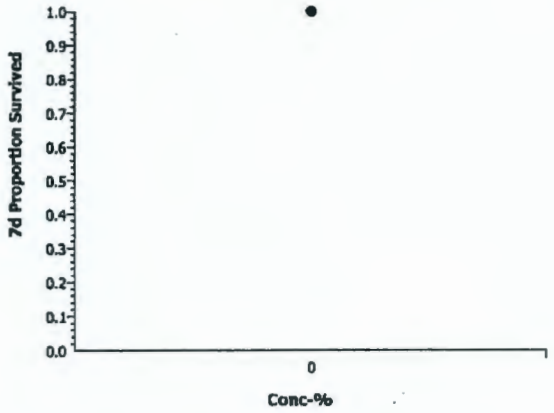
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	12-5344-7818	12-5344-7818	16 Feb-06 2:05 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	32.20%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	115.5		0.7594	2	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	22.05	22.05	1	0.24	0.63324	Non-Significant Effect
Error	1684.5	93.58334	18			
Total	1706.55	115.63334	19			

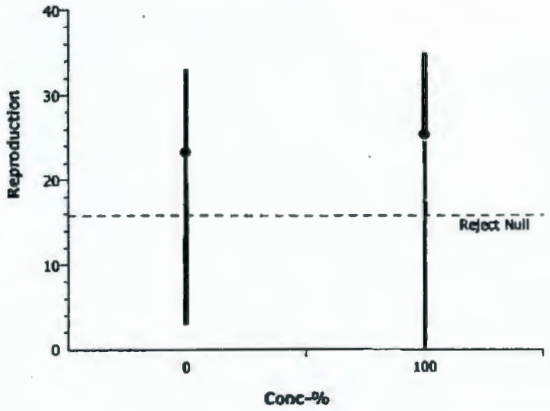
ANOVA Assumptions

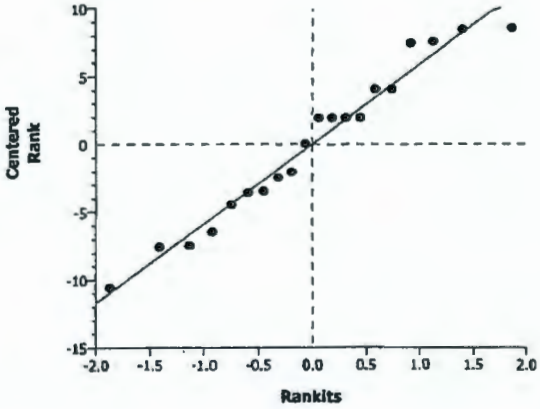
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.19880	6.54109	0.79150	Equal Variances
Distribution	Shapiro-Wilk W	0.82747		0.00229	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	23.3	3	33	9.2262	9.45	2	18	5.7516
100		10	25.4	0	35	10.102	11.55	1	20	6.0298

Graphics





CETIS Test Summary

Report Date: 16 Feb-06 2:02 PM
Test Link: 12-8534-9228/B152539cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	13-9897-1668	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:40 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:30 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:40 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods X #2

Sample No:	15-0957-3923	**Code:**	B1525-39	**Client:**	
Sample Date:	06 Feb-06 06:30 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	68h	**Station:**			

Comments: J11255

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-0499-5118	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
11-9505-6016	Reproduction	100	> 100	N/A	25.30%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
10-0499-5118	7d Proportion Survived	Control Response	1	0.8 - NL	Yes	Passes acceptability criteria
11-9505-6016	Reproduction	Control Response	23.3	15 - NL	Yes	Passes acceptability criteria
11-9505-6016	Reproduction	PMSD	0.25300	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	23.3	3	33	2.9176	9.2262	39.60%
100		10	32	17	37	1.7448	5.5176	17.24%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	29	24	33	21	3	13	32	23	26	29
100		17	32	33	34	34	35	37	33	34	31

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	12-8534-9228	12-8534-9228	16 Feb-06 2:01 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

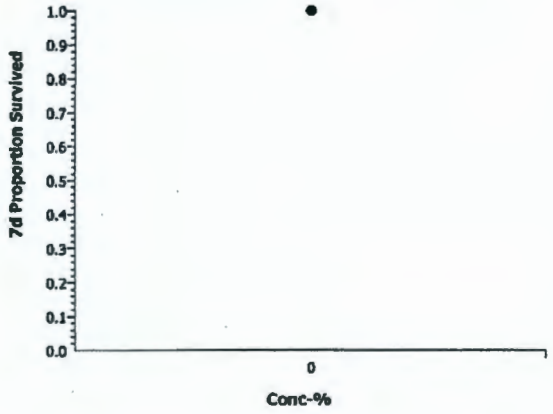
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	10	0	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	12-8534-9228	12-8534-9228	16 Feb-06 2:02 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Wilcoxon Rank Sum Two-Sample	C > T	Rank		100	>100	1	N/A	25.30%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		100	142.5		0.9981	1	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	378.45	378.45	1	6.55	0.01972	Significant Effect
Error	1040.1	57.78333	18			
Total	1418.54999	436.23335	19			

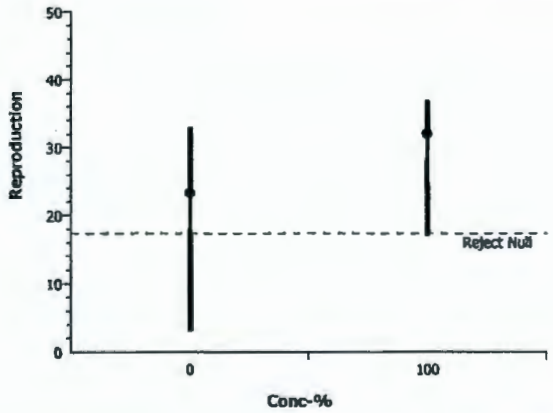
ANOVA Assumptions

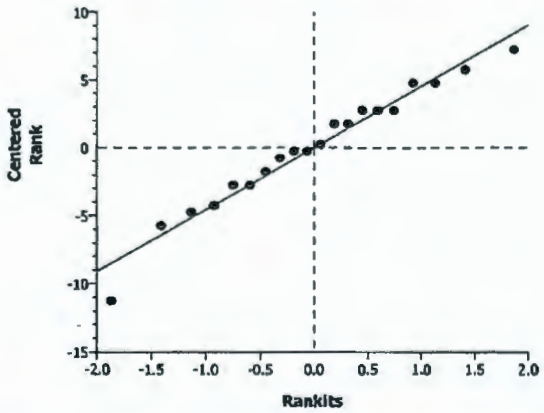
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.79599	6.54109	0.14161	Equal Variances
Distribution	Shapiro-Wilk W	0.83438		0.00295	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	23.3	3	33	9.2262	6.75	1	14	4.0569
100		10	32	17	37	5.5176	14.25	3	20	5.0621

Graphics





CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-9-06 | Test Termination: Date 2-16-06

Contact: | Technician: Muckey, Winn,

Test Species/ID: *Ceriodaphnia dubia* / Cd 1896 / / / /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received	Total Residual Chlorine (mg/l) As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-33	J116D1	2-2-06	1700	0.01	-	0.03	74	66
B1525-34	J116D3	2-2-06	1545	0.00	-	0.04	72	68
B1525-35	J11254	2-6-06	1700	0.02	-	0.00	72	66
B1525-36	J11225	2-6-06	1530	0.05	-	0.09	74	66

Test Species Information		ID# Cd 1896	ID#	ID#	ID#
		Chronic			
Organism Age at Initiation		< 24 hours within an 8 hour span			
Test Container Size		30 ml			
Test Volume		15 ml			
Feeding:	Type	0.1 ml Algae &			
	Amount	YCT daily			
Aeration:	Began	none			
	Amount	—			
Dilution Water ID#		2596			
Acclimation Period		<24 hrs			
Test Location		# 5			
Organism Source		In-House			
Size (mm)		-	-	-	-
Loading Rate		-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2596	88	62	7.9

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

Randomization chart for *Ceriodaphnia* tests initiated on Feb 9, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-33	J116D1		0.801042195	1	IX	#1	IX #1
B1525-35	J11254		0.690495712	2	IX	#2	IX #2
B1525-34	J116D3		0.543730242	3	IX	#3	IX #3
Lab Control	ReconMH only		0.48576859	4	IX	#4	IX #4
B1525-36	J11225		0.463585529	5	IX	#5	IX #5
					IX	#6	IX #6

Test Board Slot Location Information

Board ID: IX

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	IX # 2	11	IX # 6	21	IX # 5	31	IX # 3	41	IX # 1	51	IX # 4
rep B	2	IX # 5	12	IX # 3	22	IX # 1	32	IX # 2	42	IX # 6	52	IX # 4
rep C	3	IX # 4	13	IX # 2	23	IX # 6	33	IX # 1	43	IX # 5	53	IX # 3
rep D	4	IX # 4	14	IX # 6	24	IX # 3	34	IX # 5	44	IX # 2	54	IX # 4
rep E	5	IX # 4	15	IX # 2	25	IX # 5	35	IX # 6	45	IX # 3	55	IX # 1
rep F	6	IX # 1	16	IX # 6	26	IX # 4	36	IX # 2	46	IX # 5	56	IX # 3
rep G	7	IX # 3	17	IX # 4	27	IX # 6	37	IX # 1	47	IX # 2	57	IX # 5
rep H	8	IX # 3	18	IX # 1	28	IX # 5	38	IX # 6	48	IX # 2	58	IX # 4
rep I	9	IX # 4	19	IX # 1	29	IX # 2	39	IX # 5	49	IX # 3	59	IX # 6
rep J	10	IX # 3	20	IX # 5	30	IX # 1	40	IX # 2	50	IX # 6	60	IX # 4

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 2-9-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1856

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
IX # 1	39	21	20	27	33	29	27	27 ~~43~~	23	24	10	270 ~~286~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IX # 2	29	29	35	32	29	29 ~~44~~	31	29 ~~49~~	32	32	10	306 ~~342~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IX # 3	41	33	36	30	31	29	33	35	35	26	10	329
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IX # 4	31	31	5/AD	28	18	11	35 ~~51~~	29 ~~45~~	34	35	9	257 ~~289~~
	AD?	AD?	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IX # 5	33	33	37	31	32	33	34	29 ~~40~~	33	28	10	322 ~~334~~
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
IX # 6												
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations: * 4th broods removed from totals. [illegible]

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-9-06 Time: 1430

Sample Description: — Test Termination: Date: 2-16-06 Time: 0915

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1696

Technician: Day 1 Bm Day 2 Bm Day 3 Bm Day 4 Bm Day 5 DW Day 6 DW Day 7 DW

Time: Day 1 1035 Day 2 1125 Day 3 1145 Day 4 1035 Day 5 1020 Day 6 1100 Day 7 0915

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
IX # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	5	5	4	5	5	6	6	3	10	44
	4	7	0	8	0	0	0	0	7	0	0	10	22
	5	10	10	0	9	8	9	10	0	11	10	10	77
	6	0	6	7	13	21	15	12	14	6	11	10	105
	7	22	0	0	0	0	0	0	16	0	0	10	38
IX # 2	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	6	5	5	4	5	5	5	4	3	10	42
	4	3	8	5	0	0	7	0	7	0	0	10	25
	5	9	0	11	10	10	0	12	0	13	11	10	76
	6	0	15	19	17	15	16	14	17	15	18	10	146
	7	17	0	0	0	0	16	0	20	0	0	10	53
IX # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	7	4	3	4	4	4	6	2	10	38
	4	6	10	0	0	0	0	0	0	0	0	10	16
	5	13	0	11	11	10	10	12	12	10	7	10	96
	6	0	19	18	15	18	15	17	19	19	0	10	140
	7	22	0	0	0	0	0	0	0	0	17	10	39
IX # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	5	3	3	3	4	5	4	4	10	35
	4	7	0	0	0	0	5	0	8	0	0	10	20
	5	0	10	0/AD	11	6	3	9	0	13	10	9	62
	6	11	0	↓	14	9	0	22	16	17	0	9	89
	7	13	17	↓	0	0	0	16	16	0	21	9	83
IX # 5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	4	5	6	5	5	6	2	10	47
	4	0	0	0	0	0	0	0	8	0	0	10	8
	5	11	12	14	11	12	11	8	0	11	8	10	98
	6	0	0	18	16	15	16	21	15	16	0	10	117
	7	18	16	0	0	0	0	0	12	0	18	10	64
IX # 6	1												
	2												
	3												
	4												
	5												
	6												
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 2-9-06 Time: 1430 | Adults Isolated Date: 2-8-06 Time: 0820

Sample Description: see randomization chart | Initial Sample ID #: — 85825-33-36 | Neo's Collected Date: 2-8-06 Time: 1520

Technician: Day 0 Bm, Day 1 DW, Day 2 Bm, Day 3 (TH), Day 4 Bm, Day 5 DW, Day 6 DW, Day 7 DW

Time: Day 0 1510, Day 1 1130, Day 2 1265, Day 3 1200, Day 4 1100, Day 5 1020, Day 6 1100, Day 7 0915

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7
IX # 1	7.3	8.0 / 8.1	7.7 / 7.8	7.9 / 8.1	7.2 / 7.3	8.0 / 7.7	7.2 / 7.0	7.8
IX # 2	7.2	8.0 / 8.1	7.9 / 7.7	7.9 / 8.1	7.2 / 7.4	8.0 / 7.9	7.2 / 7.0	7.8
IX # 3	7.2	8.0 / 8.1	7.7 / 7.7	8.0 / 8.0	7.2 / 7.4	8.0 / 7.9	7.2 / 7.0	7.8
IX # 4	7.2	8.0 / 8.1	7.9 / 7.6	7.9 / 7.9	7.3 / 7.2	8.0 / 7.8	7.2 / 7.1	7.9
IX # 5	7.3	8.0 / 8.1	7.8 / 7.6	7.9 / 8.0	7.3 / 7.4	8.0 / 7.8	7.2 / 7.0	7.8
IX # 6								

Percent	pH Day 0	1	2	3	4	5	6	7
IX # 1	7.7	7.7 / 7.6	7.8 / 7.6	7.7 / 7.6	7.8 / 7.5	7.7 / 7.6	7.8 / 7.7	7.7
IX # 2	7.6	7.7 / 7.7	7.8 / 7.6	7.7 / 7.6	7.8 / 7.5	7.8 / 7.6	7.8 / 7.7	7.7
IX # 3	7.7	7.7 / 7.7	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.8 / 7.6	7.7 / 7.7	7.7
IX # 4	7.8	7.8 / 7.6	7.8 / 7.7	7.8 / 7.7	7.8 / 7.7	7.8 / 7.6	7.8 / 7.8	7.7
IX # 5	7.7	7.7 / 7.7	7.8 / 7.7	7.8 / 7.7	7.8 / 7.6	7.8 / 7.7	7.8 / 7.6	7.7
IX # 6								

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
IX # 1	25.2 / 138	24.0	26.0	24.7	26.0	25.4	25.3	25.1
IX # 2	25.2 / 149	24.1	25.8	24.8	26.0	25.1	25.3	24.8
IX # 3	25.2 / 140	24.0	24.5	24.4	24.8	25.3	25.2	25.2
IX # 4	25.2 / 272	24.1	25.3	24.8	25.7	24.9	25.0	25.1
IX # 5	25.2 / 143	24.0	25.9	24.6	24.9	24.6	25.0	24.9
IX # 6								

Comments:

CETIS Test Summary

Report Date: 16 Feb-06 1:47 PM
Test Link: 04-2826-5724/B152533cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	14-9943-0349	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:30 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods IX #1

Sample No:	11-4181-7351	**Code:**	B1525-33	**Client:**	
Sample Date:	02 Feb-06 05:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 21h	**Station:**			

Comments: J116D1

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
07-4412-5707	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
17-6250-9779	Reproduction	100	> 100	N/A	25.76%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
07-4412-5707	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
17-6250-9779	Reproduction	Control Response	25.7	15 - NL	Yes	Passes acceptability criteria
17-6250-9779	Reproduction	PMSD	0.25763	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.7	5	35	3.3634	10.636	41.38%
100		10	27	20	39	1.8074	5.7155	21.17%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	31	31	5	28	18	11	35	29	34	35
100		39	21	20	27	33	29	27	27	23	24

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	04-2826-5724	04-2826-5724	16 Feb-06 1:41 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

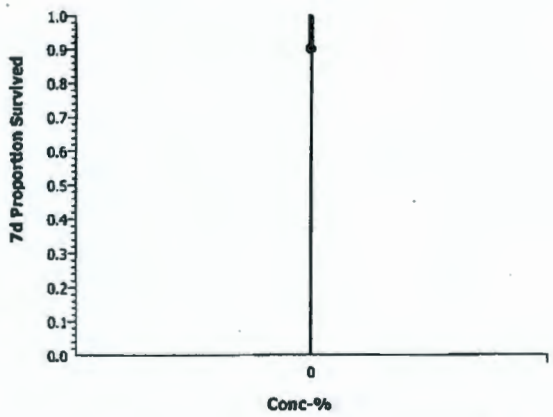
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	04-2826-5724	04-2826-5724	16 Feb-06 1:47 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	25.76%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-0.3405	1.73406	0.6313	6.62106	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	8.45	8.45	1	0.12	0.73744	Non-Significant Effect
Error	1312.1	72.89445	18			
Total	1320.54998	81.344447	19			

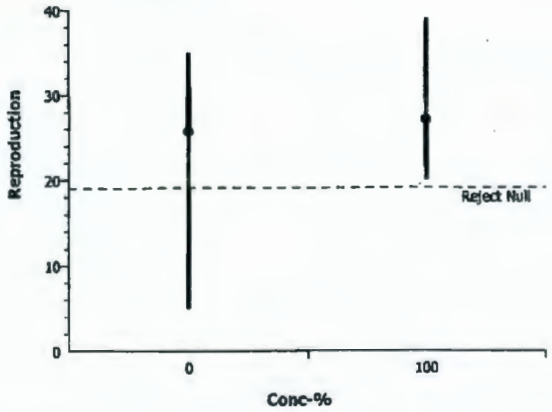
ANOVA Assumptions

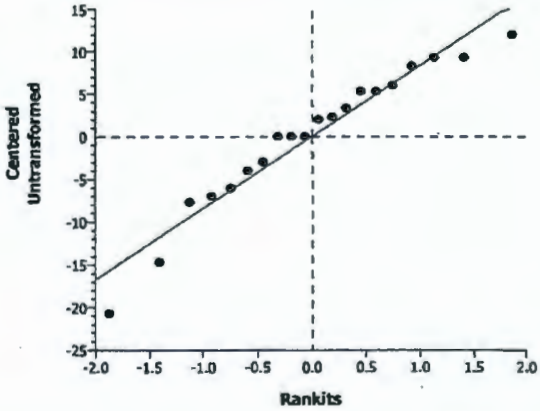
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.46293	6.54109	0.07839	Equal Variances
Distribution	Shapiro-Wilk W	0.94449		0.29103	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.7	5	35	10.636				
100		10	27	20	39	5.7155				

Graphics





CETIS Test Summary

Report Date: 16 Feb-06 1:56 PM
Test Link: 16-4051-0490/B152534cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	03-4503-8864	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:30 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
IX #3

Sample No:	15-9470-8371	**Code:**	B1525-34	**Client:**	
Sample Date:	02 Feb-06 03:45 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	6d 22h	**Station:**			

Comments: J116D3

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
17-7835-5459	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
01-7303-2566	Reproduction	100	> 100	N/A	24.40%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
17-7835-5459	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
01-7303-2566	Reproduction	Control Response	25.7	15 - NL	Yes	Passes acceptability criteria
01-7303-2566	Reproduction	PMSD	0.24401	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.7	5	35	3.3634	10.636	41.38%
100		10	32.9	26	41	1.3287	4.2019	12.77%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	31	31	5	28	18	11	35	29	34	35
100		41	33	36	30	31	29	33	35	35	26

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	16-4051-0490	16-4051-0490	16 Feb-06 1:56 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

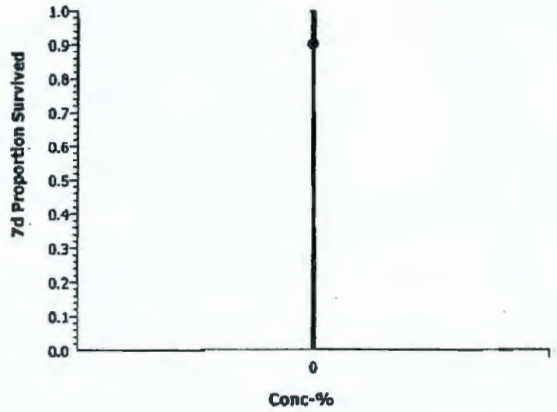
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	16-4051-0490	16-4051-0490	16 Feb-06 1:56 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	24.40%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-1.991	1.73406	0.9691	6.27093	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	259.2	259.2	1	3.96	0.06189	Non-Significant Effect
Error	1177	65.38889	18			
Total	1436.20001	324.5889	19			

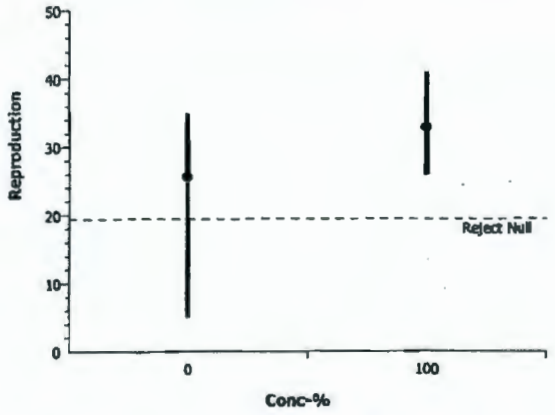
ANOVA Assumptions

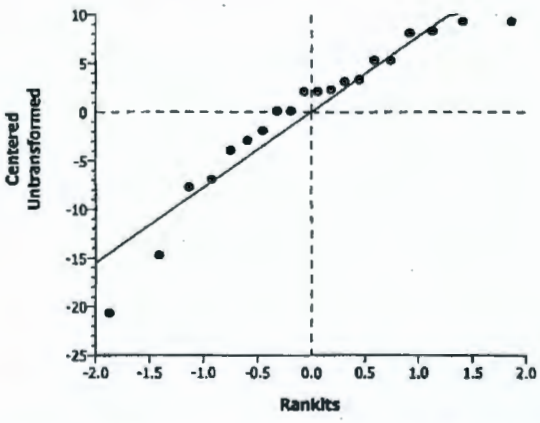
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	6.40717	6.54109	0.01076	Equal Variances
Distribution	Shapiro-Wilk W	0.90402		0.04908	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.7	5	35	10.636				
100		10	32.9	26	41	4.2019				

Graphics





CETIS Test Summary

Report Date: 16 Feb-06 1:52 PM
Test Link: 05-2158-5714/B152535cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	18-8996-2914	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:30 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
IX #2

Sample No:	08-2325-6191	**Code:**	B1525-35	**Client:**	
Sample Date:	06 Feb-06 05:00 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	69h	**Station:**			

Comments: J11254

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-9893-1812	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
10-5779-8260	Reproduction	100	> 100	N/A	23.16%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-9893-1812	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
10-5779-8260	Reproduction	Control Response	25.7	15 - NL	Yes	Passes acceptability criteria
10-5779-8260	Reproduction	PMSD	0.23161	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.7	5	35	3.3634	10.636	41.38%
100		10	30.6	28	35	0.6864	2.1705	7.09%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	31	31	5	28	18	11	35	29	34	35
100		29	29	35	32	29	28	31	29	32	32

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	05-2158-5714	05-2158-5714	16 Feb-06 1:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

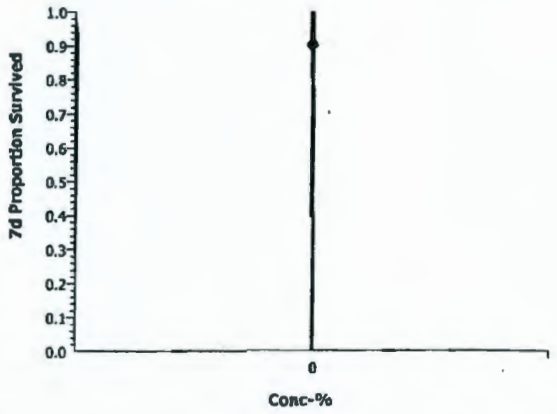
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	05-2158-5714	05-2158-5714	16 Feb-06 1:52 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	23.16%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-1.4275	1.73406	0.9147	5.9525	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	120.05	120.05	1	2.04	0.17057	Non-Significant Effect
Error	1060.5	58.91667	18			
Total	1180.55000	178.96667	19			

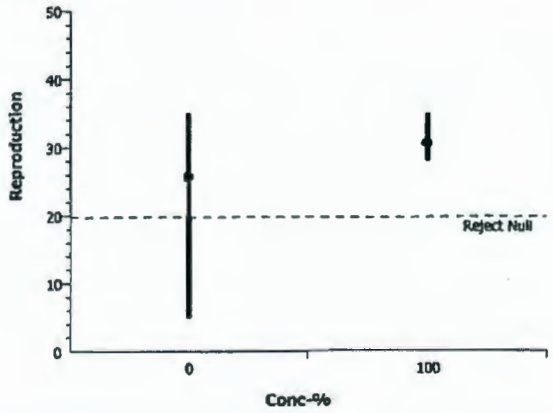
ANOVA Assumptions

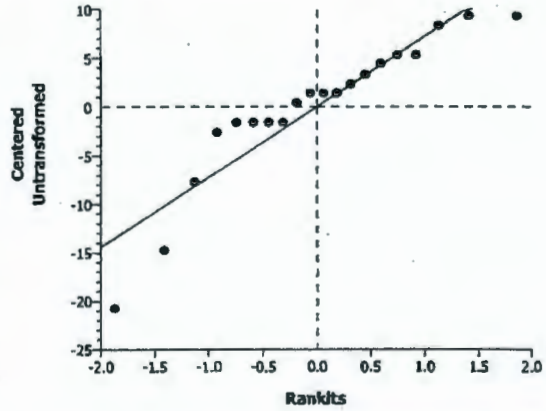
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	24.01179	6.54109	0.00006	Unequal Variances
Distribution	Shapiro-Wilk W	0.87383		0.01373	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.7	5	35	10.636				
100		10	30.6	28	35	2.1705				

Graphics





CETIS Test Summary

Report Date: 16 Feb-06 1:59 PM
Test Link: 11-6451-3210/B152536cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	07-5305-0491	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	6d 18h
Start Date:	09 Feb-06 02:30 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	16 Feb-06 09:15 AM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	09 Feb-06 02:30 PM	**Brine:**			

Comments: Survival data through day 7 data. Reproduction data through 3 broods
IX #5

Sample No:	10-6429-4660	**Code:**	B1525-36	**Client:**	
Sample Date:	06 Feb-06 03:30 PM	**Material:**	Unknown	**Project:**	
Receive Date:		**Source:**	Hanford		
Sample Age:	71h	**Station:**			

Comments: J11225

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-9138-9586	7d Proportion Survived	100	> 100	N/A	N/A	Fisher Exact
08-8767-9478	Reproduction	100	> 100	N/A	23.41%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
13-9138-9586	7d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria
08-8767-9478	Reproduction	Control Response	25.7	15 - NL	Yes	Passes acceptability criteria
08-8767-9478	Reproduction	PMSD	0.23413	0.13 - 0.47	Yes	Passes acceptability criteria

7d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
100		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	25.7	5	35	3.3634	10.636	41.38%
100		10	32.2	28	37	0.8537	2.6998	8.38%

7d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
100		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	31	31	5	28	18	11	35	29	34	35
100		33	33	37	31	32	33	34	28	33	28

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
7d Proportion Survived	Comparison	11-6451-3210	11-6451-3210	16 Feb-06 1:58 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Fisher Exact	C > T	Untransformed		100	>100	1	N/A	

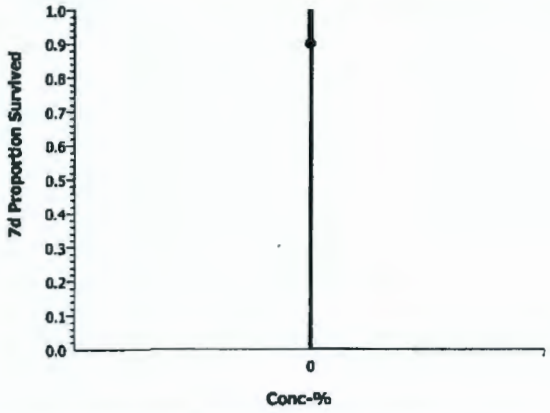
Group Comparisons

Control	vs	Conc-%	Statistic	P-Value	Decision(0.05)
Dilution Water		100	1.00000	1.00000	Non-Significant Effect

Data Summary

Conc-%	Control Type	Non-Responders	Responders	Total Observed
0	Dilution Water	9	1	10
100		10	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Comparison	11-6451-3210	11-6451-3210	16 Feb-06 1:58 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Untransformed		100	>100	1	N/A	23.41%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-1.8732	1.73406	0.9613	6.01725	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	211.25	211.25	1	3.51	0.07738	Non-Significant Effect
Error	1083.7	60.20555	18			
Total	1294.94995	271.45555	19			

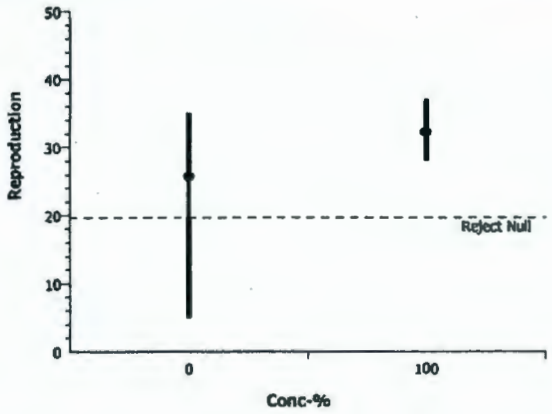
ANOVA Assumptions

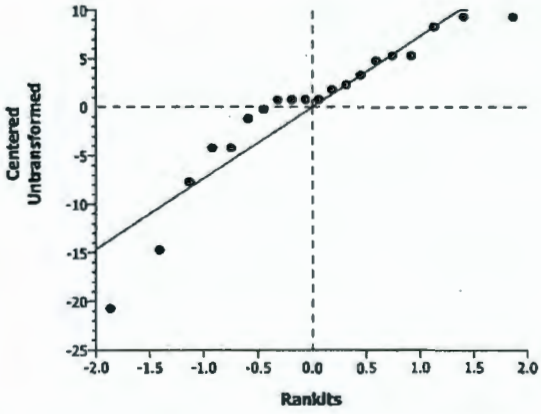
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	15.51982	6.54109	0.00037	Unequal Variances
Distribution	Shapiro-Wilk W	0.88108		0.01851	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	10	25.7	5	35	10.636				
100		10	32.2	28	37	2.6998				

Graphics





CORRECTIVE ACTION REPORT

Originator: Brett Mudkey

Date: 2-15-2006

Subject (for example, test method, instrument, sample nos.):

Washington Closure Hanford Cd chronic test initiated on 2-8-06 (31525-23 -> 27)

Condition/Situation:

☐ : Sample not delivered on Saturday: Lab ID Number(s): B

Was sample marked for Saturday Delivery? (Yes / No)

☐ : Reftox not in Cusum range: LC50/IC25 = _____, Cusum Range = _____ to _____

☐ : Temperature Deviation:

☒: Other: Control did not meet TAC for reproduction. Only 3 of 10 organisms had produced 3 broods (TAC is 60% minimum)

Recommended Action (s) (mark all that apply): ☐-Contact Regulatory Agency, ☒-Contact Client, ☐-Continue test(s), ☐-Discontinue test(s), ☒-Repeat test(s), ☐-Check for procedural errors, ☐-Document in test report, ☐-Other:

Contact Rich Weiss - Technical Interface & discuss.

Approved by Department Manager/Designate:

Date: 2/16/06

Action Taken/Results: Contacted Rich Weiss & the samples will be tested again tomorrow or early next week. A memo will be sent out explaining the TAC & associated samples.

Ceriodaphnia dubia Control Test Acceptability Failure

TO: Rich Weiss/WCH

COPIES: Emmett Richards/ELR
Brett Muckey/CH2M HILL
Jeff Schut/CH2M HILL

FROM: Mike Stanaway/CH2M HILL

DATE: February 16, 2006

As discussed in our telephone conversation, the *Ceriodaphnia dubia* laboratory control associated with WCH samples J11D6, J116D4, J116D0, J116D2, and J116C9, did not meet test acceptability criteria of 60 percent of the control organisms having a third brood and a minimum average of 15 neonates per surviving adult. As a corrective action the above samples will be retested tomorrow or early next week.

Below is a summary of the survival and reproduction for the samples.

Table 1
Ceriodaphnia dubia
Chronic Results

Concentration (%)	Percent Survival	Ave. No. Young Per Adult
Control	100	12.4[a]
J116D2	100	29.4
J116D4	100	29.4
J116D0	100	29.2
J116C9	100	30.6
J116D6	100	31.2

[a] Control did not meet minimum TAC (ave. of 15 young per adult) for reproduction

The raw data for these tests will be included in the final report but the actual numbers will not be used in the summary table unless requested.

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CH2M HILL *TOXICITY TEST ORGANISM AND WATER QUALITY DATA*

Client: Hanford | Test Initiation: Date 2-8-06 | Test Termination: Date

Contact: | Technician: Winn, Muckey

Test Species/ID: *Ceriodaphnia dubia* / Cd 1895 / /

Sample ID Number	Field ID	Collected Date	Collected Time	Total Residual Chlorine (mg/l) As Received / As Dechlor.	Ammonia NH_3-N mg/l	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$
B1525-23	J116D6	2-2-06	1615	0.00 / -	0.00	86	68
B1525-24	J116D4	2-2-06	1745	0.00 / -	0.04	80	70
B1525-25	J116D0	2-3-06	1815	0.00 / -	0.00	72	66
B1525-26	J116D2	2-3-06	1720	0.01 / -	0.00	86	66
B1525-27	J116C9	2-3-06	1630	0.01 / -	0.01	72	66
				/			
				/			
				/			
				/			
				/			
				/			
				/			

Test Species Information	ID# Cd 1895	ID#	ID#	ID#
	Chronic			
Organism Age at Initiation	< 24 hours within an 8 hour span			
Test Container Size	30 ml			
Test Volume	15 ml			
Feeding: Type	0.1 ml Algae &			
Feeding: Amount	YCT daily			
Aeration: Began	None			
Aeration: Amount	—			
Dilution Water ID#	2596			
Acclimation Period	<24 hrs			
Test Location	# 5			
Organism Source	In-House			
Size (mm)	-	-	-	-
Loading Rate	-	-	-	-

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Initial pH
Recon MH (FHM)	2596	88	62	7.9

Comments: ☑ Indicates the following action was taken, (☐ Indicates action not taken):

☐ Sample(s) filtered through 60 µm mesh prior to use.

* LAB CONTROL DID NOT MEET TAC. ONLY 40% OF ORGANISMS HAND 3+ BROODS

Water Quality Meters Used/ID#

Dissolved Oxygen #2 pH #3 Conductivity #2

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CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Hanford — Test Initiation: Date: 2-8-06 Time: 1600

Sample Description: — Test Termination: Date: 2-15-06 Time: 0755

Initial Sample ID #: see randomization chart — Ceriodaphnia Lot#: Cd 1895

Technician: Day 1 Bm Day 2 DW Day 3 Bm Day 4 Bm Day 5 Bm Day 6 DW Day 7 Bm

Time: Day 1 1005 Day 2 1110 Day 3 1035 Day 4 1015 Day 5 0920 Day 6 0945 Day 7 0755

Percent	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
VII # 1	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	5	4	4	5	5	6	4	5	0	10	41
	4	0	0	9	0	12	0	0	0	0	3	10	24
	5	10	11	0	10	0	12	9	11	12	11	10	86
	6	13	11	15	15	13	15	17	14	17	13	10	143
	7												
VII # 2 Lab Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	3	4	3	3	4	4	4	3	3	10	34
	4	0	0	0	0	9	0	0	0	0	0	10	9
	5	0	0	9	0	0	11	11	11	0	0	10	42
	6	0	0	17	0	16	0	6	0	0	0	10	39
	7	0	0		0					0	0		
VII # 3	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	4	5	3	5	4	5	5	5	5	10	44
	4	0	0	0	0	10	0	8	0	0	0	10	18
	5	10	10	9	6	0	9	0	12	11	10	10	77
	6	14	16	15	17	16	15	17	14	16	15	10	155
	7												
VII # 4	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	4	4	4	5	5	4	3	10	43
	4	0	0	0	0	0	0	0	0	0	0	10	0
	5	11	10	3	9	11	9	9	10	8	10	10	90
	6	14	15	18	15	17	14	16	16	19	15	10	159
	7												
VII # 5	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	5	3	3	6	6	4	4	4	10	44
	4	10	0	7	0	10	0	0	0	0	0	10	27
	5	0	13	0	11	0	10	11	13	10	10	10	78
	6	17	13	18	14	17	15	16	14	18	15	10	157
	7												
VII # 6	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	5	4	4	4	4	4	4	4	10	40
	4	0	0	0	0	10	0	0	0	0	0	10	10
	5	13	9	13	12	0	8	10	12	11	10	10	97
	6	15	17	14	16	18	17	14	18	17	19	10	165
	7												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)

"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first. % CONTROL CAN NOT MEET TAC. TEST ENDED. Bm

Randomization chart for *Ceriodaphnia* tests initiated on Feb 8, 2006

Lab ID:	Field ID	Alternate ID	Random number	Random position	Board ID	Postion on Board	Sample Number
B1525-26	J116D2		0.842478977	1	VII	#1	VII #1
Lab Control	ReconMH only		0.827479814	2	VII	#2	VII #2
B1525-24	J116D4		0.756145243	3	VII	#3	VII #3
B1525-25	J116D0		0.655412518	4	VII	#4	VII #4
B1525-27	J116C9		0.370081119	5	VII	#5	VII #5
B1525-23	J116D6		0.264983913	6	VII	#6	VII #6

Test Board Slot Location Information

Board ID: VII

	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #	Slot #	Sample #
rep A	1	VII # 2	11	VII # 6	21	VII # 4	31	VII # 3	41	VII # 5	51	VII # 1
rep B	2	VII # 6	12	VII # 5	22	VII # 3	32	VII # 2	42	VII # 4	52	VII # 1
rep C	3	VII # 2	13	VII # 3	23	VII # 1	33	VII # 5	43	VII # 4	53	VII # 6
rep D	4	VII # 2	14	VII # 1	24	VII # 6	34	VII # 4	44	VII # 3	54	VII # 5
rep E	5	VII # 4	15	VII # 6	25	VII # 2	35	VII # 1	45	VII # 3	55	VII # 5
rep F	6	VII # 4	16	VII # 1	26	VII # 2	36	VII # 6	46	VII # 5	56	VII # 3
rep G	7	VII # 4	17	VII # 6	27	VII # 3	37	VII # 1	47	VII # 5	57	VII # 2
rep H	8	VII # 4	18	VII # 2	28	VII # 3	38	VII # 5	48	VII # 1	58	VII # 6
rep I	9	VII # 3	19	VII # 5	29	VII # 1	39	VII # 6	49	VII # 2	59	VII # 4
rep J	10	VII # 1	20	VII # 2	30	VII # 3	40	VII # 6	50	VII # 5	60	VII # 4

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CERIODAPHNIA WATER QUALITY DATA

Client: Hanford | Initiated Date: 2-8-06 Time: 1600 | Adults Isolated Date: 2-7-06 Time: 0845

Sample Description: see randomization chart | Initial Sample ID #: 2-15-06 | Neo's Collected Date: 2-7-06 Time: 1500

Technician: Day 0 DW; Day 1 Bm; Day 2 DW; Day 3 Bm; Day 4 TP; Day 5 Bm; Day 6 DW; Day 7

Time: Day 0 1600; Day 1 1455; Day 2 1110; Day 3 1250; Day 4 1100; Day 5; Day 6 0945; Day 7

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7
VII # 1	8.0	7.4 / 7.2	7.9 / 8.1	7.6 / 7.3	7.7 / 8.0	7.3 / 7.4	7.9 / 8.0	
VII # 2	8.0	7.3 / 7.1	7.9 / 7.9	7.6 / 7.7	7.7 / 8.0	7.4 / 7.3	7.9 / 8.0	
VII # 3	8.1	7.4 / 7.2	7.8 / 8.1	7.6 / 7.8	7.7 / 8.1	7.4 / 7.6	7.9 / 8.0	
VII # 4	8.1	7.4 / 7.4	7.9 / 8.2	7.6 / 7.9	7.8 / 8.0	7.3 / 7.7	7.8 / 8.0	
VII # 5	8.1	7.4 / 7.3	7.9 / 8.1	7.6 / 7.9	7.9 / 8.0	7.4 / 7.6	7.9 / 7.9	
VII # 6	8.1	7.5 / 7.2	7.9 / 8.2	7.6 / 7.9	7.8 / 8.0	7.4 / 7.6	7.9 / 8.0	

Percent	pH Day 0	1	2	3	4	5	6	7
VII # 1	7.3	7.7 / 7.6	7.8 / 7.5	7.7 / 7.5	7.7 / 7.4	7.7 / 7.4	7.8 / 7.6	
VII # 2	7.6	7.7 / 7.7	7.8 / 7.6	7.7 / 7.6	7.7 / 7.7	7.7 / 7.7	7.8 / 7.7	
VII # 3	7.5	7.7 / 7.7	7.8 / 7.5	7.7 / 7.6	7.7 / 7.6	7.7 / 7.6	7.8 / 7.7	
VII # 4	7.5	7.7 / 7.7	7.8 / 7.5	7.7 / 7.5	7.7 / 7.6	7.7 / 7.6	7.7 / 7.6	
VII # 5	7.5	7.7 / 7.7	7.8 / 7.5	8.2 / 7.6	7.7 / 7.6	7.7 / 7.6	7.7 / 7.6	
VII # 6	7.5	7.7 / 7.6	7.8 / 7.5	7.7 / 7.6	7.7 / 7.7	7.7 / 7.6	7.8 / 7.7	

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
VII # 1	25.6 / 172	24.4	25.8	25.7	25.0	25.8	24.6	
VII # 2	25.3 / 274	24.4	26.0	25.9	24.9	25.7	24.4	
VII # 3	25.2 / 141	24.4	24.9	25.9	24.9	25.7	24.7	
VII # 4	25.7 / 114	24.2	25.7	24.7	24.9	25.3	24.4	
VII # 5	25.5 / 125	24.2	26.1	25.4	24.6	25.4	24.24	
VII # 6	25.3 / 141	24.4	25.4	24.8	24.6	25.1	24.5	

Comments:

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Hanford

Test Start Date: 2-8-06

Sample Description:

Sample ID#: see randomization chart

Ceriodaphnia Lot#: Cd 1695

Statistician:

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
VII # 1 J1/6D2	26	27	28	29	30	32	32	29	34	27	10	294
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 2 Lab Control	3	3	30	3	28	15	21	15	3	3	10	124
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 3 J1/6D4	27	30	29	26	31	28	30	31	32	30	10	294
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 4 J1/6D0	29	30	26	28	32	27	30	31	31	28	10	292
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 5 J1/6C9	31	31	30	28	30	31	33	31	32	29	10	306
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
VII # 6 J1/6D6	32	28	32	32	32	29	28	34	32	33	10	312
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Observations:

APPENDIX B
REFERENCE TOXICANT DATA SHEETS

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC - January
Test Start Date: 1-10-2006
Sample Description: 50 g/L NaCl 18032-04
Sample ID#: B —
Ceriodaphnia Lot#: Cd 1879
Statistician: Bm

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	34	34	26	27	17	29	34	33	30	13	10	277
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.25 g/L	26	31	29	29	21	30	26	0	18	17	9	227
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?		
0.50 g/L	4	24	22	19	17	23	24	10	15	16	9	174
	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
1.0 g/L	11	11	10	14	17	17	20	4	11	12	9	127
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?		
1.5 g/L	17	7	0	17	0	4	7	5	9	4	8	70
	AD?	AD?	AD? ✓	AD?	AD? ✓	AD?	AD?	AD?	AD?	AD?		
2.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.53	1.03 to 2.02
Reproduction	0.34	0.27 to 0.82

Task Manager: Doug Winn
Project Manager: [signature]
QA Officer: [signature]

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC - January Test Initiation: Date: 1-10-06 Time: 1045

Sample Description: 18032-04 NaCl 50 g/L Test Termination: Date: 1-16-06 Time: 1100

Initial Sample ID #: B Ceriodaphnia Lot#: Cd 1879

Technician: Day 1 DW Day 2 DW Day 3 [illegible] Day 4 MS Day 5 MS Day 6 [illegible] Day 7 ____

Time: Day 1 0900 Day 2 0950 Day 3 1300 Day 4 1130 Day 5 1300 Day 6 1100 Day 7 ____

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	4	5	0	4	0	4	5	0	10	30
	4	0	0	0	0	5	0	5	0	0	4	10	14
	5	14	13	10	9	0	13	12	13	11	9	10	~103 104
	6	10	17	12	13	12	12	17	10	14	0	10	~114 129
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0/AD	0	0	9	0
	3	4	4	0	5	4	4	4	↓	0	0	9	25
	4	0	0	3	0	0	0	0	↓	4	4	9	11
	5	10	12	14	13	9	13	11	↓	14	13	9	109
	6	12	15	12	11	8	13	11	↓	0	0	9	82
	7								↓				
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	0	5	4	0	5	0	4	0	10	26
	4	0 AD	0	3	0	0	0	0	2	0	3	9	8
	5	↓	9	10	8	11	10	11	8	11	13	9	91
	6	↓	11	9	10	2/0	13	8	0	0	0	9	49
	7	↓											
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	4	4	0	4	0	0	0	10	20
	4	0	4	0	0	0	3	0	4	4	3	10	~25.3
	5	7	7	10	8	10	8	11	0 AD	7	9	9	73
	6	0	0	0	2/0	3	6	5	↓	0	0	9	16
	7												
1.5 g/L	1	0	0	0/AD	0	0/AD	0	0	0	0	0	8	0
	2	0	0	↓	0	↓	0	0	0	0	0	8	0
	3	0	0	↓	4	↓	4	0	0	0	4	8	12
	4	3	0	↓	0	↓	0	0	0	0	0	8	3
	5	8	7	↓	8	↓	0	7	5	9	0	8	44
	6	0	0	↓	5	↓	0	0	0	0	0	8	11
	7			↓		↓							
2.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0/AD	0	0/AD	2	0
	2	↓	↓	↓	↓	↓	↓	0/AD	↓	0/AD	↓	0	0
	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	4	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	5	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	6	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: QA / QC - January
Initiated Date: 1-10-06 Time: 1045
Adults Isolated Date: 1-9-06 Time: 1400
Sample Description: NaCl (50 g/L stock) 1B032-04
Reagent Log #: 1B032-04
Neo's Collected Date: 1-9-06 Time: 2110

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	CB	MS	MS	BW	
Time	1045	0900	0950	1300	1130	1300	1455	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	8.1	8.0 / 8.1	8.0 / 8.1	8.0 / 8.0	8.0 / 8.0	8.0 / 8.0	8.3	
0.25 g/L	8.1	8.0 / 8.1	8.0 / 8.1	8.0 / 7.9	8.0 / 7.9	7.7 / 7.9	8.3	
0.50 g/L	8.1	8.0 / 8.1	8.0 / 8.1	8.0 / 7.9	8.0 / 7.9	7.8 / 7.9	8.3	
1.0 g/L	8.1	8.0 / 8.1	8.0 / 8.1	8.0 / 7.9	8.0 / 7.9	7.8 / 7.9	8.3	
1.5 g/L	8.1	8.0 / 8.1	8.0 / 8.1	8.0 / 7.9	8.0 / 7.9	7.8 / 7.9	8.3	
2.0 g/L	8.1	8.0 / 8.1	8.0 / 8.1					
4.0 g/L	8.1	8.0 / –						

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.8	7.8 / 8.1	7.9 / 7.9	7.9 / 7.9	7.9 / 7.9	7.9 / 7.9	7.9	
0.25 g/L	7.8	7.8 / 8.0	7.9 / 7.8	7.9 / 7.8	7.9 / 7.8	7.9 / 7.8	7.8	
0.50 g/L	7.8	7.8 / 7.9	7.9 / 7.8	7.9 / 7.7	7.9 / 7.7	7.9 / 7.7	7.8	
1.0 g/L	7.8	7.9 / 7.8	7.9 / 7.7	7.8 / 7.7	7.7 / 7.6	7.8 / 7.6	7.8	
1.5 g/L	7.8	7.9 / 7.8	7.9 / 7.7	7.8 / 7.6	7.7 / 7.5	7.8 / 7.5	7.8	
2.0 g/L	7.8	8.0 / 7.8	7.9 / 7.7					
4.0 g/L	7.8	8.0 / –						

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	25.2 / 275	25.0 / 271	24.9 / 274	25.1 / 275	24.7 / 270	24.9 / 280	24.2	
0.25 g/L	25.0 / 721	24.8 / 718	24.7 / 712	25.1 / 750	24.9 / 740	24.7 / 670	24.0	
0.50 g/L	25.0 / 1145	24.7 / 1156	24.5 / 1150	25.0 / 1210	24.8 / 1160	25.1 / 1170	24.2	
1.0 g/L	25.1 / 1984	25.1 / 2000	24.5 / 1990	24.9 / 1970	24.4 / 2000	24.3 / 1900	24.3	
1.5 g/L	24.8 / 2820	25.0 / 2830	24.4 / 2890	24.9 / 2720	24.7 / 2870	24.6 / 2820	24.2	
2.0 g/L	25.2 / 3650	25.0 / 3660	24.7 / 3710	25.1				
4.0 g/L	25.1 / 6800	24.9 / –		23.7				

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 16 Jan-06 11:23 AM
Test Link: 19-7576-5047/rcdc1879

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

est No:	15-8357-6022	Test Type:	Reproduction-Survival (7d)	Duration:	6d 0h
Start Date:	10 Jan-06 10:45 AM	Protocol:	EPA/821/R-02-013 (2002)	Species:	Ceriodaphnia dubia
Ending Date:	16 Jan-06 11:00 AM	Dil Water:		Source:	In-House Culture
Setup Date:	10 Jan-06 10:45 AM	Brine:			

Sample No:	03-3607-6959	Material:	Sodium chloride	Client:	
Sample Date:	01 Dec-05	Code:	1B032-04	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	40d 10h	Station:			

Comments: 50 g/L

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
05-7581-2732	6d Proportion Survived	25	1.53125	1	1.605263	Linear Interpolation
07-9133-8972	Reproduction	25	0.3408019	0.1595982	0.5771428	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
07-9133-8972	Reproduction	Control Response	27.7	15 - NL	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
0.5		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
.5		10	0.80000	0.00000	1.00000	0.13333	0.42164	52.70%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	27.7	13	34	2.3288	7.3643	26.59%
0.25		10	22.7	0	31	2.9741	9.4051	41.43%
0.5		10	17.4	4	24	2.0667	6.5354	37.56%
1		10	12.7	4	20	1.4302	4.5228	35.61%
1.5		10	7	0	17	1.8974	6	85.71%
2		10	0	0	0	0	0	0.00%
4		10	0	0	0	0	0	0.00%

CETIS Test Summary

Report Date: 16 Jan-06 11:23 AM
Test Link: 19-7576-5047/rcdc1879

6d Proportion Survived Detail

'onc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
0.5		0.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000
1.5		1.00000	1.00000	0.00000	1.00000	0.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Reproduction Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	34	34	26	27	17	29	34	33	30	13
0.25		26	31	29	29	21	30	26	0	18	17
0.5		4	24	22	19	17	23	24	10	15	16
1		11	11	10	14	17	17	20	4	11	12
1.5		17	7	0	17	0	4	7	5	9	4
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	19-7576-5047	19-7576-5047	16 Jan-06 11:23 AM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

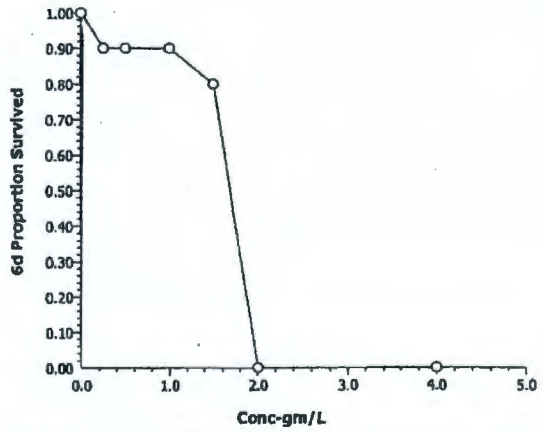
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.53125	1	1.605263

Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
0.5		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1.5		10	0.80000	0.00000	1.00000	0.08607	0.42164	8	10
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

.ndpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	19-7576-5047	19-7576-5047	16 Jan-06 11:23 AM	CETISv1.1.1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

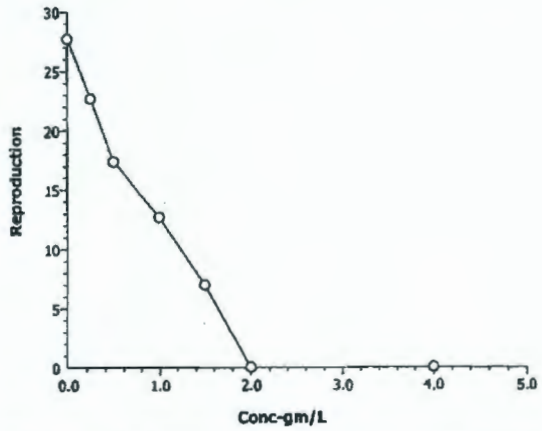
Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.3408019	0.1595982	0.5771428

Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	27.7	13	34	1.50324	7.36433
0.25		10	22.7	0	31	1.91980	9.40508
0.5		10	17.4	4	24	1.33403	6.53537
1		10	12.7	4	20	0.92321	4.52278
1.5		10	7	0	17	1.22474	6
2		10	0	0	0	0	0
4		10	0	0	0	0	0

Graphics



CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC - Feb.

Test Start Date: 2-14-2006

Sample Description: 50 g/L NaCl Stock

Sample ID#: 1B034-01

Ceriodaphnia Lot#: Cd 1897

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	16	14	24	23	26	27	28	26	9	24	10	217
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.25 g/L	17	26	24	16	26	27	19	24	15	19	10	213
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
0.50 g/L	12	20	23	19	17	20	23	20	19	25	10	198
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
1.0 g/L	8	8	7	18	22	6	5	13	10	9	9	106
	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?	AD?		
1.5 g/L	5	2	9	5	@ 26	@ 30	@ 23	@ 52	5	12	7	49
	AD?	AD? ✓	AD?	AD?	AD? ✓	AD? ✓	AD?	AD?	AD?	AD?		
2.0 g/L	0	0	0	0	0	0	0	0	0	0	1	0
	AD?	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	1.38	1.02 to 2.01
Reproduction	0.69	0.27 to 0.83

Task Manager: [signature]

Project Manager: [signature]

QA Officer: [signature]

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: QA / QC – Feb. Test Initiation: Date: 2-14-06 Time: 1400

Sample Description: 50 g/L NaCl Stock Test Termination: Date: 2-20-06 Time: 1345

Initial Sample ID #: 1B034-01 Ceriodaphnia Lot#: Cd 1897

Technician: Day 1 DW Day 2 DW Day 3 DW Day 4 [illegible] Day 5 [illegible] Day 6 [illegible] Day 7 ____

Time: Day 1 0835 Day 2 1000 Day 3 0930 Day 4 1800 Day 5 1730 Day 6 1345 Day 7 ____

Concentration (g/L)	Day	Daily Number of Live Young for each Replicate										No. Live Adults	Daily Total Live Young
		A	B	C	D	E	F	G	H	I	J		
Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	5	0	4	5	5	4	5	4	10	36
	4	6	0	7	4	10	10	8	5	4	0	10	54
	5	10	10	0	9	12	12	0	0	0	11	10	64
	6	0	0	12	10	0	0	15	17	0	9	10	63
	7												
0.25 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	0	5	4	0	4	4	5	10	30
	4	7	9	0	4	6	0	6	4	0	5	10	41
	5	10	0	8	12	0	9	13	0	0	9	10	61
	6	0	13	12	0	15	14	0	16	11	0	10	81
	7												
0.50 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	4	4	4	5	4	5	4	5	10	38
	4	4	6	6	5	3	6	6	3	0	0	10	39
	5	8	0	0	0	10	0	0	0	5	10	10	33
	6	0	11	13	10	0	9	13	12	10	10	10	88
	7												
1.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	4	4	4	4	5	4	4	5	10	38
	4	0	0	3	0	3	2	0	2	2	0	10	12
	5	8	4	0	5	4	0	0	0	4	4	10	29
	6	0	0	0	9	11	0	AD/0	7	0	0	9	27
	7							4					
1.5 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	2	2	3	4	0	3	2	0	3	10	19
	4	0	0	3	2	2	0 AD	0	0	0	0	9	7
	5	5	0 AD	4	0	0	↓	0	0	5	3	8	~~M 3~~ 17
	6	0	↓	0	0	AD/0	↓	0	0	0	6	7	6
	7					4							
2.0 g/L	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0/AD	0/AD	0	0	0/AD	0/AD	6	0
	3	0	0/AD	0/AD	0/AD	↓	↓	0/AD	0	↓	↓	2	0
	4	0	↓	↓	↓	↓	↓	↓	0	↓	↓	2	0
	5	0	↓	↓	↓	↓	↓	↓	0 AD	↓	↓	1	0
	6	0	↓	↓	↓	↓	↓	↓	↓	↓	↓	1	0
	7		↓	↓	↓	↓	↓	↓	↓	↓	↓		
4.0 g/L	1	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0/AD	0	0
	2												
	3												

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing.

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: QA/QC - February
Initiated Date: 2-14-06 Time: 1400
Adults Isolated Date: 2-13-06 Time: 1100
Sample Description: NaCl (50 g/L stock)
Reagent Log #: 1B 034-01
Neo's Collected Date: 2-13-06 Time: 1430

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	DW	MN	MN	[illegible]	
Time	1400	0835	1000	0930	1820	1830	1345	

Percent or Concentration	Dissolved Oxygen (mg/l) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.6	7.2 / 7.0	7.9 / 8.0	7.5 / 8.0	7.6 / 7.9	7.5 / 7.4	7.9	
0.25 g/L	7.6	7.2 / 7.0	7.9 / 8.0	7.5 / 7.9	7.6 / 7.6	7.8 / 7.4	7.9	
0.50 g/L	7.6	7.2 / 7.0	7.9 / 8.0	7.4 / 7.6	7.3 / 7.6	7.8 / 7.4	7.8	
1.0 g/L	7.5	7.2 / 7.0	7.9 / 8.0	7.5 / 7.6	7.4 / 7.6	7.7 / 7.4	7.6	
1.5 g/L	7.5	7.2 / 7.0	7.9 / 8.0	7.5 / 7.6	7.4 / 7.6	7.7 / 7.4	7.7	
2.0 g/L	7.5	7.2 / 7.0	7.9 / 8.0	7.5 / 7.5	7.4 / 7.6	7.7 / 7.4	7.7	
4.0 g/L	7.5	7.2 / –	– / –	– / –	– / –	– / –	– / –	–

Percent or Concentration	pH Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	7.6	7.9 / 8.1	7.8 / 7.8	7.8 / 7.7	7.8 / 7.8	8.0 / 7.8	7.8	
0.25 g/L	7.6	7.8 / 8.0	7.8 / 7.7	7.8 / 7.7	7.8 / 7.8	7.9 / 7.8	7.8	
0.50 g/L	7.7	7.8 / 8.0	7.8 / 7.7	7.8 / 7.4	7.8 / 7.7	7.9 / 7.8	7.8	
1.0 g/L	7.7	7.8 / 8.0	7.8 / 7.7	7.8 / 7.4	7.8 / 7.7	7.8 / 7.8	7.8	
1.5 g/L	7.7	7.8 / 8.0	7.8 / 7.7	7.8 / 7.6	7.6 / 7.7	7.9 / 7.7	7.9	
2.0 g/L	7.8	7.8 / 8.0	7.8 / 7.7	7.8 / 7.7	7.8 / 7.7	7.9 / 7.7	7.9	
4.0 g/L	7.9	7.9 / –	– / –	– / –	– / –	– / –	– / –	–

Percent or Concentration	Temperature (C) / Conductivity (µmhos/cm) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	26.1 / 282	24.4 / 287	25.0 / 294	25.1 / 286	24.1 / 284	24.7 / 305 / 312	24.7 / 327	
0.25 g/L	25.8 / 704	24.5 / 700	24.8 / 705	24.7 / 695	24.2 / 712	24.6 / 621 / 833	24.7 / 831	
0.50 g/L	26.0 / 1128	24.1 / 1111	24.6 / 1121	24.7 / 1113	24.3 / 1115	24.3 / 828 / 1240	24.6 / 1292	
1.0 g/L	26.0 / 1967	24.2 / 1921	24.7 / 1919	24.6 / 1914	24.4 / 1960	24.2 / 1967 / 2200	24.6 / 2200	
1.5 g/L	25.9 / 2780	24.6 / 2710	24.5 / 2750	25.0 / 2690	24.3 / 2700	24.1 / 2730 / 2710	24.5 / 3210	
2.0 g/L	26.1 / 3580	24.1 / 3270	24.8 / 3510	24.5 / 3490	24.4 / 3590	24.4 / 3510 / 4200	24.4 / 4110	
4.0 g/L	25.7 / 6590	24.4 / –	– / –	– / –	– / –	– / –	– / –	–

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Test Summary

Report Date: 22 Feb-06 9:24 AM
Test Link: 07-6139-5431/rcdc1897

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Test No:	12-3980-1930	**Test Type:**	Reproduction-Survival (7d)	**Duration:**	5d 23h
Start Date:	14 Feb-06 02:00 PM	**Protocol:**	EPA/821/R-02-013 (2002)	**Species:**	Ceriodaphnia dubia
Ending Date:	20 Feb-06 01:45 PM	**Dil Water:**		**Source:**	In-House Culture
Setup Date:	14 Feb-06 02:00 PM	**Brine:**			

Sample No:	09-1556-5970	**Code:**	1B034-01	**Client:**	
Sample Date:	24 Jan-06	**Material:**	Sodium chloride	**Project:**	
Receive Date:		**Source:**	Reference Toxicant		
Sample Age:	21d 14h	**Station:**			

Comments: 50 g/L Stock

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-gm/L	95% LCL	95% UCL	Method
03-3828-1131	6d Proportion Survived	25	1.375	0.9166667	1.605263	Linear Interpolation
12-8462-5023	Reproduction	25	0.6915761	0.4727823	0.8577236	Linear Interpolation

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
12-8462-5023	Reproduction	Control Response	21.7	15 - NL	Yes	Passes acceptability criteria

6d Proportion Survived Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%
1		10	0.90000	0.00000	1.00000	0.10000	0.31623	35.14%
1.5		10	0.70000	0.00000	1.00000	0.15275	0.48305	69.01%
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%

Reproduction Summary

Conc-gm/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	10	21.7	9	28	2.0279	6.4127	29.55%
0.25		10	21.3	15	27	1.4457	4.5717	21.46%
0.5		10	19.8	12	25	1.1431	3.6148	18.26%
1		10	10.6	5	22	1.7397	5.5015	51.90%
1.5		10	4.9	0	12	1.1200	3.5418	72.28%
2		10	0	0	0	0	0	0.00%
4		10	0	0	0	0	0	0.00%

CETIS Test Summary

Report Date: 22 Feb-06 9:24 AM
Test Link: 07-6139-5431/rcdc1897

6d Proportion Survived Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1.5		1.00000	0.00000	1.00000	1.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Reproduction Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	16	14	24	23	26	27	28	26	9	24
0.25		17	26	24	16	26	27	19	24	15	19
0.5		12	20	23	19	17	20	23	20	19	25
1		8	8	7	18	22	6	5	13	10	9
1.5		5	2	9	5	6	0	3	2	5	12
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
6d Proportion Survived	Linear Interpolation	07-6139-5431	07-6139-5431	22 Feb-06 9:23 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	1.375	0.9166667	1.605263

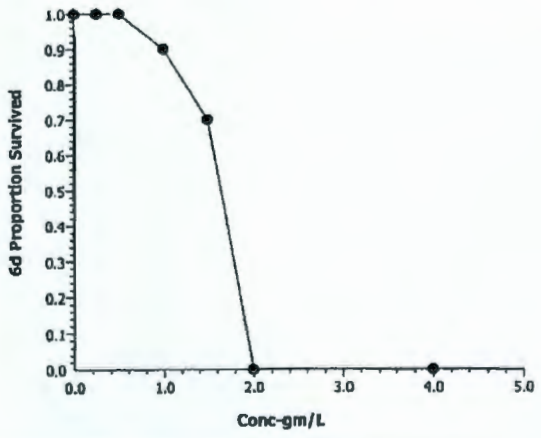
Data Summary

			Calculated Variate(A/B)						
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.25		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
0.5		10	1.00000	1.00000	1.00000	0.00000	0.00000	10	10
1		10	0.90000	0.00000	1.00000	0.06455	0.31623	9	10
1.5		10	0.70000	0.00000	1.00000	0.09860	0.48305	7	10
2		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10
4		10	0.00000	0.00000	0.00000	0.00000	0.00000	0	10

Data Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.25		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.5		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1		1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.00000	1.00000	1.00000	1.00000
1.5		1.00000	0.00000	1.00000	1.00000	0.00000	0.00000	1.00000	1.00000	1.00000	1.00000
2		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Graphics



CETIS Analysis Detail

Ceriodaphnia 7-d Survival and Reproduction Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Reproduction	Linear Interpolation	07-6139-5431	07-6139-5431	22 Feb-06 9:24 AM	CETISv1.1.2

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7055475	280	Yes	Two-Point Interpolation

Point Estimates

% Effect	Conc-gm/L	95% LCL	95% UCL
25	0.6915761	0.4727823	0.8577236

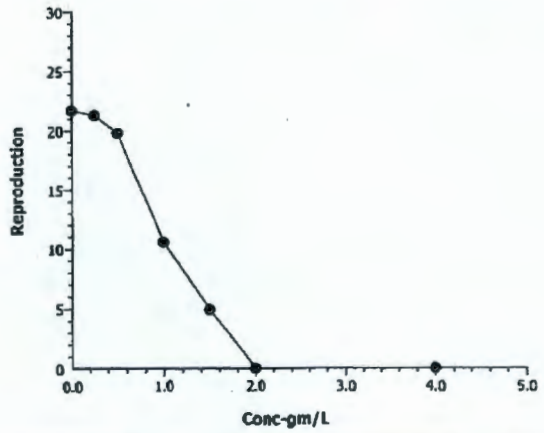
Data Summary

			Calculated Variate				
Conc-gm/	Control Type	Count	Mean	Minimum	Maximum	SE	SD
0	Dilution Water	10	21.7	9	28	1.30898	6.41266
0.25		10	21.3	15	27	0.93318	4.57165
0.5		10	19.8	12	25	0.73786	3.61478
1		10	10.6	5	22	1.12299	5.50151
1.5		10	4.9	0	12	0.72297	3.54181
2		10	0	0	0	0	0
4		10	0	0	0	0	0

Data Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	16	14	24	23	26	27	28	26	9	24
0.25		17	26	24	16	26	27	19	24	15	19
0.5		12	20	23	19	17	20	23	20	19	25
1		8	8	7	18	22	6	5	13	10	9
1.5		5	2	9	5	6	0	3	2	5	12
2		0	0	0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0	0	0

Graphics



APPENDIX C
CHAIN OF CUSTODY

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-93	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: 300-1	SAF No.: RC-048	
Ice Chest No.: AFS-04-039	Field Logbook No.: EL-~~1692~~ 1547 RZS 1-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11114	WATER	01-16-06	1030	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / [illegible]	01-16-06 1535	RZ Steffler R.Z. Steffler	1535 1-16-06
RZ Steffler R.Z. Steffler	1130 1-16-06	3728 / 3B	1-16-06 1630
3728 / 3B	1-16-06 1040	RZ Steffler R.Z. Steffler	1040 1-17-06
RZ Steffler R.Z. Steffler with	1200 1-17-06	Fed Ex	
Fed Ex		Bruce Mahaney [illegible]	1/17/06 1100

SPECIAL INSTRUCTIONS

7.8°C on arrival B1525-01 Cl_2 = 0.00 mg/L
COC seals on cooler intact

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-94	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: 300-2	SAF No.: RC-048	
Ice Chest No.: AFS-04-039	Field Logbook No.: EL ~~1592~~ 1597 R25 1-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11115	WATER	01-16-06	1330	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / [signature]	01-16-06 / 1535	RZ Stoffler R.Z. Stoffler	1535 1-16-06
RZ Stoffler R.Z. Stoffler	1630 1-16-06	3728 / 3B	1630 1-16-06
3728 / 3B	1-17-06 1040	RZ Stoffler R.Z. Stoffler	1040 1-17-06
RZ Stoffler R.Z. Stoffler	1200 1-17-06	Fed Ex	
Fed Ex		Bill Mulkey [signature]	1-18-06 1100

SPECIAL INSTRUCTIONS

7.5 in on arrival
arrived on water intact
B1525: ~~01~~ 02 Br
Cl_2 = 0.02 mg/L
Report Limit: 0.05

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-95	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-1 Pond Water	SAF No.: RC-048	
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-15927 01-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11116	WATER	01-17-06	0900	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / B. Tiller	01-17-06 / 1615	EAS LOCKED STORAGE B. Tiller	01-17-06 / 1615
B. Tiller / B. Tiller / EAS STORAGE	01-18-06 / 0715	R2 Steffler R.J. Steffler	1-18-06 0715
R2 Steffler R.J. Steffler	1300 1-18-06	Fed Ex	
Fed Ex		[illegible]	1-19-06 1400

SPECIAL INSTRUCTIONS

COC's intact on arrival 3625-03 9.0°C (water with ice)

Chlorine = 0.02 mg/L Cl_2

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-96	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-2 PORE WATER	SAF No.: RC-048	
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-15977 01-19-06 B Tiller	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11117	WATER	01-17-06	1110	X	X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: B. Tiller / B Tiller — Date/Time: 01-17-06 / 1615	Received By/Stored In: EAS LOCKED STORAGE / B Tiller — Date/Time: 01-17-06 / 1615		S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From: B. Tiller / EAS STORAGE — Date/Time: 01-18-06 / 0715	Received By/Stored In: RZ Steffler / R.Z. Steffler — Date/Time: 0715 1-18-06		
Relinquished By/Removed From: RZ Steffler / R.Z. Steffler — Date/Time: 1300 1-18-06	Received By/Stored In: Fed Ex — Date/Time:		
Relinquished By/Removed From: Fed Ex — Date/Time:	Received By/Stored In: [signature] — Date/Time: 1-19-06 1400	COC seals intact on arrival (cooler and vial) B1525-04 10.0° C Chlorine = 0.02 mg/L Cl_2	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-128	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-3, PORE WATER	SAF No.: RC-048	
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-1592-7 11706	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: N/A A060151		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE

< DOT Limits

Special Handling and/or Storage

~~COOL 4C~~ None

RZS 1-18-06

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No.	Matrix *	Sample Date	Sample Time									
J11189	WATER	01-17-06	1250	X	X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: B. Tiller / B Tiller	Date/Time: 01-17-06 / 1615	Received By/Stored In: B Tiller EAS LOCKED STORAGE	Date/Time: 01-17-06 / 1615
Relinquished By/Removed From: B. Tiller / B Tiller EAS STORAGE	Date/Time: 01-18-06 / 0715	Received By/Stored In: RZ Steffler RZ Steffler	Date/Time: 0715 1-18-06
Relinquished By/Removed From: RZ Steffler RZ Steffler	Date/Time: 1300 WH 1-18-06	Received By/Stored In: Fed. Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In: [illegible]	Date/Time: 1-19-06 1400
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

→ COC's intact on cooler Tote B1525-05 10.0°C

Chlorine = ~~0.07~~ → 0.00 mg/L Cl2

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-139	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-4, PORE WATER VERTICAL	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-056	Field Logbook No. EL-1597 JEB 1-18-06 COA BESRAS6520	Method of Shipment FED EX	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111B0	WATER	1-18-06	1400	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Bernhard	1-18-06 1800	EAG Locked Storage	1-18-06 1800
B. Tiller / EAG Storage	01-19-06 0700	R2 Steffler	1-19-06 0700
R2 Steffler	1-19-06 1400	Fed Ex	
Fed Ex		Brett Mackey	1-20-06 1520

SPECIAL INSTRUCTIONS

B1525-06

COC seals intact 10.7°C on arrival, Cl_2: 0.03

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-129	Page 1 of 1

Collector: Bernhard	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-4, PORE WATER	SAF No.: RC-048	
Ice Chest No.: AFS-04-056	Field Logbook No.: EL-1592-7 AP 11704	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: N/A A060151	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE

Special Handling and/or Storage

~~COOL 4C~~ None
RZS
1-19-06

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11190	WATER	1-18-06	1200	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James R. Bernhard	1-18-06 1800	EAS Locked Storage	1-18-06 1800
Bernhard / EAS storage	01/19/06 0700	RZ Steffler R.Z. Steffler	1-19-06 0700
RZ Steffler R.Z. Steffler	1400 WCH 1-19-06	Fed Ex	
Fed Ex		Brett Mulkey	1-20-06 0520

SPECIAL INSTRUCTIONS

B1525-07 Cl_2: 0.00 on arrival

COC seals intact, 10.7°C on arrival

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 17JAN06
ActWgt: 45 LB
System#: 5851986/INET2300
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

SAMPLE RECEIVING
CH2MHILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT **WED**

Deliver By: 18JAN06

TRK# 7907 8090 3317 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label: Your shipment is complete

1. Use the 'Print' feature from your browser to send this page to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

B1525-01,02

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

CLS 1027[illegible]/16

Ship Date: 18JAN06
ActWgt: 74 LB
System#: 5851986/INET2300
Account#: S *********

REF: BESRAS6520

[redacted]

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

CH2M HILL SAMPLE RECIEVING
APPLIED SCIENCE LABORATORY
2300 NW. WALNUT BLVD.

CORVALLIS, OR 97339

PRIORITY OVERNIGHT

THU
Deliver By:
19JAN06

TRK# 7924 9148 5430 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

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B 1525-03,04,05

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 19JAN06
ActWgt: 41 LB
System#: 5851986/INET2300
Account#: S *********

REF: BESRAS6520

[redacted]

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

SAMPLE RECEIVING
APPLIED SCIENCE LABORATORY CH2M HIL
2300 NW. WALNUT BLVD
A060151
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

FRI
Deliver By:
20JAN06

TRK# 7913 4348 5152 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label: Your shipment is complete

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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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B1525-06,07

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) A060151

PART I - TO BE COMPLETED BY ORIGINATOR

Department

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing Fed Ex ☒ Prepaid ☐ Collect

Shipped to CH2M HILL
Company Applied Science Laboratory
Address 2300 NW Walnut Blvd
City Corvallis OR 97339 State Zip Code
Country Attn Sample Receiving
541-752-4271

Off-site Custodian

On-site Custodian HID

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	41 lbs	Cooler # AFS-04-056 Saf# RC-048 Fed Ex # 7913-4348-5152	2 Samples

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☐ Other (Please specify) cubitainers cushioned w/ foam peanuts ~~Soil~~ Water inside ~~double poly bags inside 5 gallon~~ plastic buckets

DEC

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A	N/A	N/A

Location of and Contact for Property (Name/Phone No./Bldg./Area)
David St John / 372-9144 or 531-0621 / 3728 Bldg / 300-Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1-19-06	BESRAS6520	NA

Originated By	Date	Authorized By	Date
RZ Steffler	1-19-06		

Property Representative Signature	Date	Property Management Approval	Date
R.Z. Steffler	1-19-06		

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
Tom Fan	1/19/06

A-6003-091 (03/01)

BMI-06-07

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-161	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-9, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
Sample No. / Matrix * / Sample Date / Sample Time											
J111M0 / WATER / 1-22-06 / 1300	X	X									

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Kenkel	1-22-06 1600	EAS Storage (Locked)	1-22-06 1600
EAS Tolmedo Storage	1-23-06 0730	R2 Stoffler	1-23-06 0730
R2 Stoffler	1-23-06 1520	Fed Ex	
FED EX	1-24-06	Doug Winn	1-24-06 1230

SPECIAL INSTRUCTIONS

B1525-08
Received @ 13.0°C
Received by Federal Express
Chlorine = 0.00 mg/L Cl_2

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-145	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-5, PORE WATER, FULL QC		SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597 7 6/1/2006	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: **21 Days**

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111K5	WATER	1-19-06	1000	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Bernhard	1-19-06 1630	FAS LOCKED STORAGE	1/19/06 1630
FAS LOCKED STORAGE	01-23-06 0730	RZ Steffler	1-23-06 0730
RZ Steffler	1-23-06 1500	Fed Ex	
FED EX	1-24-06	Doug Winn	1-24-06 1230

SPECIAL INSTRUCTIONS

B1525-09

Received @ 12.7°C

Received by Federal Express

Chlorine = 0.00 mg/L Cl2

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-152	Page 1 of 1
Collector: TILLER, B Bernhard	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-6, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: AFS-04-051	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111L7	WATER	1-19-06	1230	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: John M James E. Bernhard	1-19-06 1630	Received By/Stored In: EAS LOCKED STORAGE	1/19/06 1650
Relinquished By/Removed From: EAS LOCKED STORAGE	01-23-06 0730	Received By/Stored In: RZ Stiffler R.J. Stiffler	1-23-06/0730
Relinquished By/Removed From: RZ Stiffler R.J. Stiffler	1-23-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FED EX	1-24-06	Received By/Stored In: Doug Winn	1-24-06/1230
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-10
Received @ 13.1°C
Received by Federal Express
Chlorine = 0.00 mg/L Cl2

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
Vs=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-159	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-7, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity, Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
Sample No. / Matrix * / Sample Date / Sample Time											
J111L8 / WATER / 1-19-06 / 1400	X	X									

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: James E. Bernhard	1-19-06 1630	Received By/Stored In: EAS LOCKED STORAGE	1/19/06 1630
Relinquished By/Removed From: EAS LOCKED STORAGE	01-23-06/0730	Received By/Stored In: R2 Steffler R.J. Steffler	1-23-06/0730
Relinquished By/Removed From: R2 Steffler R.J. Steffler	1500 1-23-06	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FED EX	1-24-06	Received By/Stored In: Doug Winn	1-24-06/1230
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-11
Received @ 12.7°C
Received by Federal Express
Chlorine = 0.00 mg/L Cl_2

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-160	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-8, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 7N

Data Turnaround 21 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111L9	WATER	1-22-06	1100	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From James E. Bernhard	1-22-06 1600	Received By/Stored In EAS Locked Storage	1-22-06 1600
Relinquished By/Removed From EAS LOCKED STORAGE	01-23-06 0730	Received By/Stored In RZ Stoffler R.J. Stoffler	1-23-06 0730
Relinquished By/Removed From RZ Stoffler R.J. Stoffler	1-23-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX	1-24-06	Received By/Stored In Doug Winn	1-24-06 1230
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-12

Received @ 12.7°C

Received by Federal Express

Chlorine = 0.00 mg/L Cl_2

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx Express

CLS0 L2206/14/10

Ship Date: 23JAN06
ActWgt: 97 LB
System#: 5851986/INET2400
Account#: S *********

REF: BESRAS6520

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

APPLIED SCIENCE LABORATORY
CH2M HILL
2300 NORTHWEST WALNUT BLVD.
SAMPLE RECEIVING
CORVALLIS, OR 97330

PRIORITY OVERNIGHT

TUE
Deliver By:
24JAN06

TRK# 7907 8708 1984 FORM 0201

PDX AA

97330 -OR-US

86 CVOA

Shipping Label: Your shipment is complete

1. Use the 'Print' feature from your browser to send this page to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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B1525-08 through -12

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
WCH		A060151

PART I - TO BE COMPLETED BY ORIGINATOR

Department

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing Fed Ex ☒ Prepaid ☐ Collect

Shipped to CH2M HILL
Company Applied Science Laboratory
Address 2300 NW Walnut Blvd
City Corvallis OR 97339 State Zip Code
Country Attn Sample Receiving
541-752-4271

Off-site Custodian

On-site Custodian HID

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	97 lb.	Cooler # AFS-04-051 SAF # RC-048 Fed Ex # 7907-8708-1984	5 samples

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☐ Other (Please specify) cubitainers w/ foam peanuts as cushioning
~~Soil~~ Water inside ~~double poly bags inside 5-gallon plastic buckets~~

~~DEC~~

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A	N/A	N/A

Location of and Contact for Property (Name/Phone No./Bldg./Area)
David St John / 372-9144 or 531-0621 / 3728 Bldg / 300-Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1-23-06	BESRAS 6520	NA

Originated By	Date	Authorized By	Date
RZ Steffler	1-23-06		

Property Representative Signature	Date	Property Management Approval	Date
R.J. Steffler	1-23-06		

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
Tom Fair	1-23-06

B1525-08→12 Received by Doug Winn 1-24-06 @ 1730

A-6003(091 (03/01)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-205	Page 1 of 1
Collector TILLER, B Bernhard	Company Contact JOAN KESSNER / Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N / Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-12, PORE WATER	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-030	Field Logbook No. EL-1597 / COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL IC~~ RZS 1-24-06

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Termogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111W9	WATER	1-23-06	1430	X	X								

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From James E. Bernhard / Date/Time 1700 1-23-06	Received By/Stored In EAS Locked Storage / Date/Time 1700 1-23-06	
Relinquished By/Removed From EAS LOCKED STORAGE / Date/Time 01-24-06/0700	Received By/Stored In RZ Steffler / Date/Time 0700 1-24-06	
Relinquished By/Removed From RZ Steffler / Date/Time 1500 1-24-06	Received By/Stored In Fed EX / Date/Time	
Relinquished By/Removed From FED EX / Date/Time 1-25-06	Received By/Stored In Doug Winn / Date/Time 1-25-06 / 1320	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	

SPECIAL INSTRUCTIONS

B1525-13

Temp. upon arrival @ lab = 10.1 °C

Received from Federal Express.

Chlorine = 0.01 mg/L Cl_2

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
Aw=Air
DS=Drum Solids
DL=Drum Liquids
Ts=Tissue
Wi=Wipe
Li=Liquid
Ve=Vegetation
Xo=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BH-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-206	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-13, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-030	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ None
RZS
1-24-06

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubin ASTM E1295	Water Frog Embryo Teratogeneais ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111X3	WATER	1-23-06	1245	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From James E. Bernhard	1700 1-23-06	Received By/Stored In EAS Locked Storage	1700 1-23-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 01-24-06/0700	Received By/Stored In RZ Stoffler R.Z. Stoffler	Date/Time 1-24-06/0700
Relinquished By/Removed From RZ Stoffler R.Z. Stoffler	Date/Time 1500 WCH 1-24-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FED EX	Date/Time 1-25-06	Received By/Stored In Doug Winn	Date/Time 1-25-06/1320
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

B1525-14

Temp. upon arrival @ lab = 10.2 °C

Received from Federal Express

Chlorine = 0.01 mg/L Cl_2

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 24JAN06
ActWgt: 44 LB
System#: 5851986/INET2400
Account#: S *********

REF: BESRAS6520

Delivery Address Bar Code

SHIP TO: (541)768-3160 BILL THIRD PARTY

MIKE STANAWAY/ BRET MUCKEY
APPLIED SCIENCE LAB.CH2M HILL
2300 NORTHWEST WALNUT BLVD.
A060151
CORVALLIS, OR 97330

PRIORITY OVERNIGHT

WED
Deliver By:
25JAN06

TRK# 7926 3940 5249 FORM 0201

PDX AA

97330 -OR-US

86 CVOA

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3. Place label in shipping pouch and affix it to your ship

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in additional billing charges, along with the cancella

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claim in excess of $100 per package, whether the result of los
additional charge, document your actual loss and file a timely
loss, including intrinsic value of the package, loss of sales, inc
consequential, or special is limited to the greater of $100 or th
extraordinary value is $500, e.g. jewelry, precious metals, neg
limits, see current FedEx Service Guide.

: and could result

be responsible for any
igher value, pay an
r from FedEx for any
incidental,
um for items of
filed within strict time

TO: DATA CHEM
960 WEST LEVOY DRIVE
SALT LAKE CITY, UT. 84123

ATTN: KEVIN GRIFFITHS
(801) 904-4302

FROM: Washington Closure Hanford
3728 Building/300 Area
Richland, WA. 99352

B525-B,14

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-162	Page 1 of 1

Collector TILLER, B Curre + /HELGESON	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-10, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-02-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J111M1 / WATER / 1-24-06 / 1000	X	X										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: B. HELGESON	1-24-06 1100	Received By/Stored In: EAS LOCKED STORAGE	1-24-06 1100
Relinquished By/Removed From: EAS LOCKED STORAGE	01-25-06/0700	Received By/Stored In: RZ Stiffler	0700 1-25-06
Relinquished By/Removed From: RZ Stiffler	1500 1-25-06	Received By/Stored In: Fed EX	
Relinquished By/Removed From: Fed Ex		Received By/Stored In: BRETT Mulkey	1052 1-26-06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-15 cvc seeds intact on arrival Bv

7.6°C on arrival Cl_2 = 0.00 mg/L

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-219	Page 1 of 1

Collector TILLER, B Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-16, PORE WATER		SAF No. RC-048
Ice Chest No. ERC-02-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLAC~~ None

RZS 1-25-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11200	WATER	1-24-06	1745	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Rob Curet	1-24-06 1830	EAS LOCKED STORAGE	1-24-06 1830
EAS LOCKED STORAGE	01-25-06 0700	RZ Stoffler	1-25-06 0700
RZ Stoffler	1-25-06 1520	Fed Ex	
Fed Ex		Dzett Mulcy	1-26-06 1055

SPECIAL INSTRUCTIONS

B1525-16 COC seals intact on arrival

7.6°C on arrival Cl_2: 0.00 mg/L

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, Wi=Wipe, L=Liquid, Ve=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-218	Page 1 of 1

Collector TILLER, B Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-14, PORE WATER		SAF No. RC-048
Ice Chest No. ERC-02-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 7N

Air Quality ☐

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLER~~ None

RZS 1-25-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J111Y9	WATER	1-24-06	1630	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Rob Curet	1-24-06 1830	EAS LOCKED STORAGE	1-24-06 1830
EAS LOCKED STORAGE	01-25-06 0700	RZ Stettler	0700 1-25-06
RZ Stettler	1500 WCH 1-25-06	Fed EX	
Fed Ex		Brett Mackey	1056 1-26-06

SPECIAL INSTRUCTIONS

B1525-17 COC seals intact on arrival

7.6°C on arrival Cl_2: 0.00 mg/l

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 25JAN06
ActWgt: 76 LB
System#: 5851986/INET2400
Account#: S *********

REF: BESRAS6520

[redacted]

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

SAMPLE RECEIVING
APPLIED SCIENCE LABORATORY
2300 NW. WALNUT BLVD

CORVALLIS, OR 97339

PRIORITY OVERNIGHT

THU
Deliver By:
26JAN06

TRK# 7913 4991 9911 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

Shipping Label: Your shipment is complete

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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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B 1525 - 15, 16, 17

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-204	Page 1 of 1
Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER; Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N; Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-11, PORE WATER	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597; COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RES 1-26-06

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111W8	WATER	1-25-06	1030	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1-25-06 1630	EAS LOCKED STORAGE	1-25-06 1630
EAS LOCKED STORAGE	01-26-06 0915	RZ Steffler R.J. Steffler	1-26-06 0715
RZ Steffler R.J. Steffler with	1500 1-26-06	Fed EX	
Fed Ex		BRETT Murray	1130 1-27-06

SPECIAL INSTRUCTIONS

B1525-18 4.8°C on arrival

O_2 = 0.00

COC seals intact @ CW

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Li=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-236	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 1, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 7N

Air Quality ☐

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLIE~~ RZS 1-26-06

None

Preservation	None	None										
Type of Container	Canister	Canister										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11222	WATER	1-25-06	1300	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1-25-06 1630	Received By/Stored In EAS LOCKED STORAGE	1-25-06 1630
Relinquished By/Removed From EAS LOCKED STORAGE	01-26-06 0715	Received By/Stored In RZ Steffler	0715 1-26-06
Relinquished By/Removed From RZ Steffler	1500 1-26-06	Received By/Stored In Fed EX	
Relinquished By/Removed From Fed Ex		Received By/Stored In Brett Mahney	1130 1-27-06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-19, 8.8°C on arrival

Cl_2 = 0.00

COC seals intact @ CWS

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-237	Page 1 of 1

Collector TILLER, B **JAMES BERNHARD**	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 2, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	Data Turnaround 21 Days
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL~~ RES 1-26-06

None

Preservation	None	None										
Type of Container	Canister	Canister										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J11223 / WATER / 1-25-06 / 1400	X	X										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1-25-06 1630	Received By/Stored In EAS LOCKED STORAGE	1-25-06 1630
Relinquished By/Removed From EAS LOCKED STORAGE	1-26-06/0715	Received By/Stored In RZ Steffler	1-26-06 0715
Relinquished By/Removed From RZ Steffler	1-26-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In Brett Mulkey	1-27-06 1130
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-20, 8.8°C on arrival

Cl_2: 0.06

COC seals intact to CVO

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 26JAN06
ActWgt: 87 LB
System#: 5851986/INET2400
Account#: S *********

REF: BESRAS6520

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

MIKE STANAWAY/ BRET MUCKEY
APPLIED SCIENCE LABORATORY
2300 NORTHWEST WALNUT BLVD.
CH2M HILL A060151
CORVALLIS, OR 97330

PRIORITY OVERNIGHT

FRI
Deliver By:
27JAN06

TRK# 7913 5183 5753 FORM 0201

PDX AA

97330 -OR-US

86 CVOA

Shipping Label: Your shipment is complete

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BLS25 - 18, 19, 20

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-245	Page 1 of 1
Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER / Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N / Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 4, PORE WATER	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-035	Field Logbook No. EL-1597 / COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL IC~~ RZS 1-30-06

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11233	WATER	1-29-06	1415	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1-29-06 2000	EAS LOCKED STORAGE	1-29-06 2000
Relinquished By/Removed From EAS LOCKED STORAGE	01-30-06 0710	Received By/Stored In RZ Stoffler R.Z. Stoffler	1-30-06 0710
Relinquished By/Removed From RZ Stoffler R.Z. Stoffler	1-30-06 1500	Received By/Stored In Fed EX	
Relinquished By/Removed From Fed EX		Received By/Stored In ACLC	2/1/06 09:00
Relinquished By/Removed From ACLC	2/1/06 15:00	Received By/Stored In Fed EX	
Relinquished By/Removed From Fed Ex		Received By/Stored In Brett Mulkey	2-2-06 1105

SPECIAL INSTRUCTIONS

SAMPLES from HANFORD (1-30-06) to DATACHEM LABS, CINCINNATI, OH (2-1-06) via Fed Ex

SHIPPED from DATACHEM (2-1-06) to CH2M HILL (2-2-06) via Fed Ex

B1525-21 COC seals intact on 2-2-06 15.1°C

Cl_2 = 0.20 mg/L

Matrix *

S=Soil
SD=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wt=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-264	Page 1 of 1

Collector TILLER, B **JAMES BERNHARD**	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 5, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-035	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 1-30-06

None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11251	WATER	1-29-06	1630	X	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	1-29-06 2000	[signature] EAS LOCKED STORAGE	1-29-06 2000
EAS LOCKED STORAGE [signature]	01-30-06 0710	RZ Steffler [signature]	1-30-06 0710
RZ Steffler [signature]	1-30-06 1500	Fed Ex	
Fed Ex [signature]		[signature] BCL	2/1/06 09:00
[signature] BCL	2/1/06 15:00	Fed Ex	
Fed Ex		[signature] Fed Ex Bill Mulvey	2-2-06 1105

SPECIAL INSTRUCTIONS

SHIPPED from HANFORD (1-30-06) to DATACHEM LABS (2-1-06) via Fed Ex

SHIPPED from DATACHEM (2-1-06) to CH2M Hill (2-2-06) via Fed Ex

B1525-22 COL seals intact on 2-2-06 15.1°C

Cl_2: 0.00 mg/L

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (513)733-5336
Edward Slick
DATACHEM LABORATORIES
4368 GLENDALE-MILFORD RD

CINCINNATI, OH 45242

FedEx Express

CLS0122bb/14/18

Ship Date: 01FEB06
ActWgt: 53 LB
System#: 5634838/INET2400
Account#: S *********

REF: WCH

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

Liz Tepper
CH2M Hill Laboratory
2300 NW Walnut BLVD

Corvallis, OR 97330

PRIORITY OVERNIGHT **THU**

Deliver By: 02FEB06

TRK# 7926 4755 8092 FORM 0201

PDX AA

97330 -OR-US

XH CVOA

[redacted]

Shipping Label: Your shipment is complete

1. Use the 'Print' feature from your browser to send this page to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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DL525-21
-22

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-317	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-4, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. ERC-03-102	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: **21 Days**

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J116D6	WATER	2-2-06	1615	X	X								

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-2-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-2-06
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-06-06	Received By/Stored In RZ Stoffler R.J. Stoffl Date/Time 0745 2-6-06
Relinquished By/Removed From RZ Stoffler R.J. Stoffl Date/Time 2-6-06/1000	Received By/Stored In 3728/34 Date/Time 2-6-06/1000
Relinquished By/Removed From 3728/34 Date/Time 2-7-06/0820	Received By/Stored In RZ Stoffler R.J. Stoffl Date/Time 0820 2-7-06
Relinquished By/Removed From RZ Stoffler R.J. Stoffl Date/Time 1500 WCH 2-7-06	Received By/Stored In Fed Ex Date/Time
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Mulkey Date/Time 1400 2-8-06

SPECIAL INSTRUCTIONS

COC seals intact on arrival B1525-23

11.0 Arrival temp

Chlorine: 0.00

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-315	Page 1 of 1
Collector: TILLER, B JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: Sr-9, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-03-102	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ R25
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
Sample No. / Matrix * / Sample Date / Sample Time											
J116D4 / WATER / 2-2-06 / 1745	X	X									

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: JAMES BERNHARD; Date/Time: 2-2-06 2100	Received By/Stored In: EAS LOCKED STORAGE; Date/Time: 2-2-06 2100
Relinquished By/Removed From: EAS LOCKED STORAGE; Date/Time: 02-06-06 0745	Received By/Stored In: RZ Steffler R.J. Steffler; Date/Time: 2-6-06 0745
Relinquished By/Removed From: RZ Steffler R.J. Steffler; Date/Time: 2-6-06 1000	Received By/Stored In: 3728, 3A; Date/Time: 2-6-06 1000
Relinquished By/Removed From: 3728/3A; Date/Time: 2-7-06 0820	Received By/Stored In: RZ Steffler R.J. Steffler; Date/Time: 2-7-06 0820
Relinquished By/Removed From: RZ Steffler R.J. Steffler; Date/Time: 2-7-06 1500	Received By/Stored In: Fed Ex; Date/Time:
Relinquished By/Removed From: Fed Ex; Date/Time:	Received By/Stored In: Brett Mulkey; Date/Time: 2-8-06 1400

SPECIAL INSTRUCTIONS

B1525-24
COC seals intact.
Arrival temp: 9.6°C
Chlorine: 0.00

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
Tu=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-311	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-1, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-03-102	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL IC~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J116D0 / WATER / 2-3-06 / 1815	X	X										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From JAMES BERNHARD	Date/Time 2100 2-3-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 2100 2-3-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745 02-06-06	Received By/Stored In RZ Steffler R.Z. Steffler	Date/Time 0745 2-6-06
Relinquished By/Removed From RZ Steffler R.Z. Steffler	Date/Time 1000 2-6-06	Received By/Stored In 3728 Ref 3A,	Date/Time 1000 2-6-06
Relinquished By/Removed From 3728, 3A	Date/Time 0820 2-7-06	Received By/Stored In RZ Steffler R.Z. Steffler	Date/Time 0820 2-7-06
Relinquished By/Removed From RZ Steffler R.Z. Steffler	Date/Time 1500 2-7-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Brett Mulkey	Date/Time 1400 2-8-06

SPECIAL INSTRUCTIONS

B1525-25
coc seals intact on arrival
10.1°C Temp on arrival
Chlorine: 0.00

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

CLS# 1228/14/11

Ship Date: 07FEB06
ActWgt: 80 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

WED
Deliver By:
08FEB06

TRK# 7918 5423 9170 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

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B1525-23, 24, 25

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-313	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-10, PORE WATER	SAF No. RC-048	
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL IC~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J116D2	WATER	2-3-06	1720	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2-3-06 2100	EAS LOCKED STORAGE	2-3-06 2100
EAS LOCKED STORAGE	02-04-06 0745	RZ Stoffler R.J. Stoffl	2-6-06 0745
RZ Stoffler R.J. Stoffl	2-6-06 1000	3728 / 3C	2-6-06 1000
3728 / 3C	2-7-06 0835	RZ Stoffler R.J. Stoffl	2-7-06 0835
RZ Stoffler R.J. Stoffl	2-7-06 1500	Fed Ex	
Fed Ex		[illegible]	Brett McKay 2-8-06 1410

SPECIAL INSTRUCTIONS

B1525-26
COC seals intact
12.2°C Temp on arrival
chlorine: 0.01

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-310	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Air Quality ☐	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-6, PORE WATER		SAF No. RC-048		
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLIC~~ RZS
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodophnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J116C9	WATER	2-3-06	1630	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2-3-06 2100	EAS LOCKED STORAGE	2-3-06 2100
EAS LOCKED STORAGE	02-04-06 0745	RZ Stoffler	2-6-06 0745
RZ Stoffler	2-6-06 1000	3728/3A	2-6-06 1000
3728/3A	2-7-06 0835	RZ Stoffler	2-7-06 0835
RZ Stoffler	2-7-06 1500	Fed Ex	
Fed Ex		[illegible] BESST Mudley	2-7-06 1400

SPECIAL INSTRUCTIONS

B1525-27

COC seals intact

9.2°C Temp on arrival

Chlorine: 0.01

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
W/=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-316	Page 1 of 1
Collector: TILLER, B JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: Sr-6, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-99-027	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ R25 2-7-06
None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
Sample No. / Matrix * / Sample Date / Sample Time											
J116D5 / WATER / 2-3-06 / 1530	X	X									

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: JAMES BERNHARD; Date/Time: 2100 2-3-06	Received By/Stored In: EAS LOCKED STORAGE; Date/Time: 2100 2-3-06	31525-28
Relinquished By/Removed From: EAS LOCKED STORAGE; Date/Time: 0745 02-06-06	Received By/Stored In: R2 Steffler R.J. Steffler; Date/Time: 0745 2-6-06	11.0°C Temp on arrival
Relinquished By/Removed From: R2 Steffler R.J. Steffler; Date/Time: 1000 2-6-06	Received By/Stored In: 3728 / 3A; Date/Time: 2-6-06 / 1000	chlorine: 0100
Relinquished By/Removed From: 3728 / 3A; Date/Time: 2-7-06 0835	Received By/Stored In: R2 Steffler R.J. Steffler; Date/Time: 0835 2-7-06	
Relinquished By/Removed From: R2 Steffler R.J. Steffler; Date/Time: 1500 2-7-06	Received By/Stored In: Fed Ex; Date/Time:	
Relinquished By/Removed From: Fed Ex; Date/Time:	Received By/Stored In: Bert Mulvey; Date/Time: 1410 2-8-06	

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, Ti=Tissue, Wi=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BH-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 07FEB06
ActWgt: 78 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

WED
Deliver By:
08FEB06

TRK# 7918 5423 9181 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

[redacted]

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B1525-26,27,28

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-269	Page 1 of 1
Collector: TILLER, B ~~JAMES BERNHARD~~	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: Cr 10, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: TNU-052	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439								
J11256	WATER	02-01-06	1900	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2030 02-01-06	EAS LOCKED STORAGE	2030 02-01-06
EAS LOCKED STORAGE	2030 1200 02-01-06	[illegible]	1200 02-02-06
[illegible]	02/02/06 1400	3728 Ref 2C	02/02/06 1400
3728 / 2C	2-7-06 0900	RZ Stiffler	0900 2-7-06
RZ Stiffler	1500 2-7-06	Fed Ex	
Fed Ex		[illegible] Bizett Markey	1405 2-7-06

SPECIAL INSTRUCTIONS

B1525-29

COC seals intact on arrival

9.6°C

Chlorine: 0.05

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-292	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr-6 PORE WATER FULL QC		SAF No. RC-048	Air Quality ☐	
Ice Chest No. TNU-052	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ R25
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J112X5	WATER	02-01-06	1445	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2030 02-01-06	EAS LOCKED STORAGE	2030 02-01-06
EAS LOCKED STORAGE	1200 02-02-06	David Stockwell	1200 02-02-06
David Stockwell	02/02/06 1400	3728 RCF 2C	02/02/06 1400
3728/2C	2-7-06 0900	RZ Stoffler R.J. Stoffl	0900 2-7-06
RZ Stoffler R.J. Stoffl	1500 WH 2-7-06	Fed Ex	
Fed Ex		Brett Mackey	1445 2-7-06

SPECIAL INSTRUCTIONS

B1525-30

COC seals intact on arrival

9.2°C

Chloride: 0.00

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-266	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 7, PORE WATER		SAF No. RC-048
Ice Chest No. TNU-052	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 7N

Data Turnaround 21 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLIC~~ RTS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11253	WATER	2-1-06	1615	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2130 2-1-06	EAS LOCKED STORAGE	2130 2-1-06
EAS LOCKED STORAGE	1200 02-02-06	John Wall	1200 02-02-06
	02/02/06 1400	3728 RCF 2C	02/02/06 1400
3728/2C 2-7-06	0900	RZ Stiffler	0900 2-7-06
RZ Stiffler	1500 2-7-06	Fed Ex	
Fed Ex		Brett Mulkey	1415 2-7-06

SPECIAL INSTRUCTIONS

B1525-31
COC seals intact on arrival
9.0°C
chlorine: 0.01

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

CLS9 12384/14/18

Ship Date: 07FEB06
ActWgt: 85 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

WED
Deliver By:
08FEB06

TRK# 7918 5423 9207 FORM 0201

PDX AA

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B1525-29, 30, 31

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-318	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Air Quality ☐	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-7, PORE WATER		SAF No. RC-048		
Ice Chest No. ERC-99-046	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
Sample No. / Matrix * / Sample Date / Sample Time											
J116D7 / WATER / 2-2-06 / 1700	X	X									

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2-2-06 2100	EAS LOCKED STORAGE	2-2-06 2100
EAS LOCKED STORAGE	02-06-06 0745	RZ Steffler RJ Steffler	2-6-06 0745
RZ Steffler RJ Steffler	2-6-06	3728/3C	2-6-06 1000
3728/3C	2-7-06 / 0845	RZ Steffler RJ Steffler	2-7-06 0845
RZ Steffler RJ Steffler	2-7-06 1500	Fed Ex	
Fed Ex		Brett Mudrey	2-8-06 1430

SPECIAL INSTRUCTIONS

B1525-32
COC seals intact on arrival
9.9°C
Chlorine: 0.01

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Vi=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-312	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-2 PORE WATER		SAF No. RC-048
Ice Chest No. ERC-99-046	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 2-7-06
None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J116D1 / WATER / 2-2-06 / 1500	X	X										

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD, Date/Time 2100 2-2-06	Received By/Stored In EAS LOCKED STORAGE, Date/Time 2100 2-2-06	B1525-33
Relinquished By/Removed From EAS LOCKED STORAGE, Date/Time 0745 2-6-06	Received By/Stored In RZ Stoffler R.Z. Stoffler, Date/Time 0745 2-6-06	COC seals intact on arrival
Relinquished By/Removed From RZ Stoffler R.Z. Stoffler, Date/Time 2-6-06 / 1000	Received By/Stored In 3728 / 3C, Date/Time 2-6-06 / 1000	9.8°C
Relinquished By/Removed From 3728 / 3C, Date/Time 2-7-06 / 0845	Received By/Stored In RZ Stoffler R.Z. Stoffler, Date/Time 0845 2-7-06	Chlorine: 0.01
Relinquished By/Removed From RZ Stoffler R.Z. Stoffler, Date/Time 1500 2-7-06	Received By/Stored In Fed Ex, Date/Time	
Relinquished By/Removed From Fed Ex, Date/Time	Received By/Stored In [illegible] Bryant Mulkey, Date/Time 1415 2-8-06	

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-314	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-3 , PORE WATER		SAF No. RC-048
Ice Chest No. ERC-99-046	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

Price Code 7N

Air Quality ☐

Data Turnaround 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 2-7-06
NONE

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J116D3	WATER	2-2-06	1545	X	X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-2-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-2-06	B1525-34
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-06-06	Received By/Stored In RZ Steffler Date/Time 0745 2-6-06	COC seals intact on arrival
Relinquished By/Removed From RZ Steffler Date/Time 2-6-06 / 1000	Received By/Stored In 3728 / 3C Date/Time 2-6-06 / 1000	~~18.0°C~~ 10.0°C
Relinquished By/Removed From 3728 / 3C Date/Time 2-7-06 / 0845	Received By/Stored In RZ Steffler Date/Time 0845 2-7-06	Chlorine: 0.0
Relinquished By/Removed From RZ Steffler Date/Time 1500 2-7-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Scott Modkey Date/Time 1105 2-8-06	

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

Ship Date: 07FEB06
ActWgt: 73 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

Delivery Address Bar Code

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT **WED**

Deliver By: 08FEB06

TRK# 7918 5423 9192 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

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B1525-32,33,34

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-267	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 8, PORE WATER		SAF No. RC-048
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLIC~~ None RZS 2-8-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11254	WATER	2-6-06	1700	X	X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-6-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-6-06	B1525-35 COC seals intact on arrival 16.4°C, Cl_2 = 0.02 mg/L
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0700 02-08-06	Received By/Stored In RZ Steffler Date/Time 0700 2-8-06	
Relinquished By/Removed From RZ Steffler Date/Time 1500 WCH 2-8-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Mulkey Date/Time 1040 2-9-06	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-239	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Air Quality ☐	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 3, PORE WATER		SAF No. RC-048		
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
1None 2-8-06

Preservation	None	None										
Type of Container	Canister	Canister										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11225	WATER	2-6-06	1530	X	X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-6-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-6-06	B1525-36 COC seals intact on arrival 16.6°C, Cl_2 = 0.05 mg/L
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 02-07-06 0700	Received By/Stored In RZ Steffler Date/Time 0700 2-8-06	
Relinquished By/Removed From RZ Steffler Date/Time 1500 2-8-06	Received By/Stored In Fed EX Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Muckey Date/Time 1040 2-9-06	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

Matrix *
S=Soil
SB=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-319	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location 2-6-06 Cr-8, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS 2-8-06

None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM B1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J116D8	WATER	2-6-06	1800	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	Date/Time 2100 2-6-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 2100 2-6-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 02-08-06 0700	Received By/Stored In RZ Steffler	Date/Time 0700 2-8-06
Relinquished By/Removed From RZ Steffler	Date/Time 1500 WCH 2-8-06	Received By/Stored In Fed EX	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Brent Mulkey	Date/Time 1010 2-9-06
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

B1525-37 O&C seeds intact on arrival

16.4°C, Cl_2 = 0.01

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

CLS 12240/14/18

Ship Date: 08FEB06
ActWgt: 80 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

MIKE STANAWAY/ BRET MUCKEY
APPLIED SCIENCE LABORATORY
2300 NORTHWEST WALNUT BLVD.
CH2M HILL A060151
CORVALLIS, OR 97330

PRIORITY OVERNIGHT

THU
Deliver By:
09FEB06

TRK# 7903 1497 9445 FORM 0201

PDX AA

97330 -OR-US

86 CVOA

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31525 - 35, 36, 37

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-293	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-8, PORE WATER FULL QC		SAF No. RC-048	Air Quality ☐	
Ice Chest No. SML-584	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-8-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J112X6	WATER	2-6-06	1600	X	X								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2-6-06 2100	EAS LOCKED STORAGE	2-6-06 2100
EAS LOCKED STORAGE	02-08-06 0700	RZ Stoffler R.Z. Stoffler	2-8-06 0700
RZ Stoffler R.Z. Stoffler	2-8-06 1500 WCH	Fed Ex	
Fed Ex		Brett Mulkey	2-9-06 1010

SPECIAL INSTRUCTIONS

B1525-38 CoC seals intact on arrival
16.6°C, Cl_2 = 0.02 mg/L

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-268	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 9, PORE WATER		SAF No. RC-048
Ice Chest No. SML-584	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLIC~~ KZS 2-8-06
None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J11255 / WATER / 2-6-06 / 1830	X	X										

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: JAMES BERNHARD, Date/Time 2-6-06 2100	Received By/Stored In: EAS LOCKED STORAGE, Date/Time 2-6-06 2100	B1525-39 COC seals intact on arrival
Relinquished By/Removed From: EAS LOCKED STORAGE, Date/Time 02-08-06 0700	Received By/Stored In: RZ Stoffler, Date/Time 2-8-06 0700	16.8°C, Cl_2 = 0.01 mg/L
Relinquished By/Removed From: RZ Stoffler, Date/Time 2-8-06 1500	Received By/Stored In: Fed Ex, Date/Time	
Relinquished By/Removed From: Fed Ex, Date/Time	Received By/Stored In: Brett Morley, Date/Time 2-9-06 1045	
Relinquished By/Removed From, Date/Time	Received By/Stored In, Date/Time	
Relinquished By/Removed From, Date/Time	Received By/Stored In, Date/Time	

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
2355 STEVENS DR BLDG 1162

RICHLAND, WA 99352

FedEx. Express

CL8012288/14/18

Ship Date: 08FEB06
ActWgt: 57 LB
System#: 5851986/INET2400
Account#: S *********

REF: A060151

[redacted]

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

MIKE STANAWAY/ BRET MUCKEY
APPLIED SCIENCE LABORATORY
2300 NORTHWEST WALNUT BLVD.
CH2M HILL A060151
CORVALLIS, OR 97330

PRIORITY OVERNIGHT

THU
Deliver By:
09FEB06

TRK# 7903 1497 9434 FORM 0201

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[redacted]

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B 1525-38,39

ELR Consulting, Inc.
PROJECT MANAGEMENT, ENGINEERING, & TECHNICAL SERVICES

March 20, 2006

RECEIVED
MAR 2006

Ms. Joan Kessner
Subcontract Technical Representative
Washington Closure Hanford LLC
3070 George Washington Way
Richland, WA 99354

Dear Ms. Kessner:

AMPHIBIAN BIOASSAY REPORT – CONTRACT NUMBER 0000X-SC-G0553

The accompanying *Amphibian bioassay Report – Frog Embryo Teratogenesis Assay – Xenopus (FETAX)* was conducted from January 25 through February 19, 2006. The report describes test methods, source and handling of test organisms, sample collection, sample preparation, sample monitoring, and data analysis.

Statistical analysis indicated that the frequencies of malformation for all pore water samples tested were not significantly different from the corresponding laboratory controls.

The invoice for the generation of this report will be sent separately. Should you have any questions, please feel free to call me at (509) 531-8774.

Sincerely yours,

Emmett L. Richards
President

SDG: B1525
SAF: RC-048

AMPHIBIAN BIOASSAY REPORT

FROG EMBRYO TERATOGENESIS ASSAY – *XENOPUS* (FETAX)

Conducted January 25 through February 19, 2006

Prepared for

ELR CONSULTING, INC.
WASHINGTON CLOSURE HANFORD
RICHLAND, WASHINGTON

Prepared by

FORT ENVIRONMENTAL LABORATORIES, INC.
515 S. Duncan Street
Stillwater, Oklahoma 74074

March 10, 2006
SDG 00105

TABLE OF CONTENTS

Section **Page**

AMPHIBIAN BIOASSAY REPORT 1

TABLE OF CONTENTS 2

LIST OF TABLES 2

APPENDICES 2

INTRODUCTION 3

METHODS AND MATERIALS 3
- TEST METHODS 3
- TEST ORGANISMS 3
- SAMPLE COLLECTION 3
- SAMPLE PREPARATION 4
- SAMPLE MONITORING 4
- DATA ANALYSIS 4

QUALITY ASSURANCE / QUALITY CONTROL 4

RESULTS AND DISCUSSION 4
- LABORATORY CONTROLS AND REFERENCES 4
- PORE WATER SAMPLES 5

REFERENCES 6

LIST OF TABLES

Table 1. Summary of Test Conditions for FETAX Screens 7
Table 2. Chronological Timelines for WHC Sample Collection, Receipt, and Testing 8
Table 3. Results of FETAX Screens on WHC Pore Water Samples 9
Table 4. Results of FETAX Screens on WHC Pore Water Samples 10

APPENDICES

Appendix A. Chain of Custody Forms 11
Appendix B. General Water Chemistry 51
Appendix C. Raw and Statistical Data 59

INTRODUCTION

As a component of an ecological hazard assessment battery, Frog Embryo Teratogenesis Assay – *Xenopus* (FETAX) was chosen as a biomonitoring test to evaluate potentially adverse effects of pore water on the amphibian, *Xenopus laevis*. Fort Environmental Laboratories (FEL) was contracted to conduct FETAX screening on 39 pore water samples from Washington Closure Hanford (WCH), Richland, Washington. The methods used and the results and conclusions derived from the FETAX tests are presented in this report.

METHODS AND MATERIALS

TEST METHODS

The 96-hour whole embryo assay was performed in accordance with ASTM E1439-98 (Reapproved 2004), *Standard Guide for Conducting the Frog Embryo Teratogenesis Assay – Xenopus (FETAX)* (1) with minor modification. The aqueous field samples were tested in replicates of 4, using test vessels containing 25 embryos and 200 mL of each test sample. Embryos were cultured at 23±3°C. All dishes were renewed every 24-hours of the 4-day test by removing dead embryos and spent water, and adding back fresh sample. A summary of test conditions for FETAX is presented in Table 1. At the end of the 4 days of exposure (larvae reaching developmental stage 46 [2]), larvae were preserved in 3% formalin, and the numbers of live, malformed larvae determined using a dissecting microscope. FETAX solution water was used as the laboratory control for the bioassay. FETAX solution is purified water of uniform quality, which has been ionically balanced to provide satisfactory survival without affecting test results (1). Two concentrations (2,500 mg/L and 5.5 mg/L) of the chemical 6-aminonicotinamide (6-AN) were used as positive controls for embryo-lethality and malformation endpoints, respectively. The FETAX endpoints included: mortality, malformation, and growth inhibition.

TEST ORGANISMS

The *Xenopus laevis* (South African clawed frog) larvae used for the FETAX screens were obtained from in-house cultures originally purchased from *Xenopus* I (Dexter, MI.). Adult care and breeding were conducted in accordance with modified standard guidelines (1). To induce breeding, adult female and male breeding stock were injected with human chorionic gonadotropin (hCG). Essentially, 4 to 6 h prior to breeding, female and male specimens were injected with approximately 800 and 600 IU, respectively, of hCG dissolved in 0.9% sterile saline solution. Fertilized egg collection was performed as described in ASTM E1439-98 (1) and the *Atlas of Abnormalities: A Guide for the Performance of FETAX* (3).

SAMPLE COLLECTION

Thirty-nine pore water samples were collected by WCH personnel, shipped via commercial carrier by CH2M Hill, and received at FEL on January 24 through February 10, 2006. Copies of the sample chains of custody are provided in Appendix A. Samples were recorded in the

laboratory check-in log book and laboratory tracking numbers 00105-001 through 00105-039 were assigned. Samples measured from 3 to 10°C upon receipt and were stored at 4°C ± 1°C throughout the holding period. The chronological timelines for sample collection, receipt, and testing are presented in Table 2.

SAMPLE PREPARATION

FETAX screens were conducted using 100% sample volumes without dilution. Sample temperatures were adjusted to 23°C ± 3°C prior to each test setup and daily renewal.

SAMPLE MONITORING

General water chemistry (pH, dissolved oxygen [DO], hardness, conductivity, alkalinity, ammonia-nitrogen, and residual oxidants) was initially performed and temperature, pH, and DO were measured daily throughout the FETAX screens (Appendix B).

DATA ANALYSIS

Mortality and malformation frequencies were determined for each sample tested. Head-to-tail lengths of the surviving larvae were measured as an index of growth (sample growth over control growth, expressed as a percentage) using a personal computer, digital camera, and SigmaScanPro® 5.0 image analysis software (SPSS®, Inc., Chicago, IL). Kruskal-Wallis (K-W) ANOVA or ANOVA with multiple comparison tests (Dunn's Method or Bonferroni t-test [$P < 0.05$]), as appropriate, were performed on the FETAX screens to determine if statistically significant differences existed between the FETAX solution control and each of the pore water samples at 100% concentrations. All statistical calculations were performed using SigmaStat® 2.03 statistical software (SPSS® Inc., Chicago, IL). The raw data, including organism scoring and malformation, growth measurements and statistics, and mortality and malformation statistics, from the FETAX screens are presented in Appendix C.

QUALITY ASSURANCE / QUALITY CONTROL

All data, documents, and final report generated for the WCH Project have been reviewed and meet the criteria set forth in the FEL Quality Management Program (QMP). Specifically, the goals of FEL are to ensure the accuracy and precision of laboratory operations, reports, and written work generated at this facility.

RESULTS AND DISCUSSION

LABORATORY CONTROLS AND REFERENCES

A total of 5 FETAX tests performed over a 21-day period were required to screen the 39 pore water samples. The results of the FETAX screens conducted on the laboratory control (FETAX solution water) and reference samples are presented in Table 3. The frequencies of mortality and

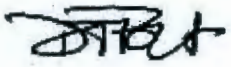
malformation for the laboratory controls ranged from 0.0% to 3.0% and 0.0% to 2.1%, respectively. These results were within the acceptable limits (≤10.0%) for mortality and malformation as outlined in ASTM E1439-98 (1). The 6-AN positive reference samples produced acceptable results with 100.0% mortality induced by 2,500 mg/L and a range of 46.0% to 56.0% malformation induced by 5.5 mg/L.

PORE WATER SAMPLES

The results of the 5 FETAX screens conducted on the 39 pore water samples are presented in Table 4. The frequencies of mortality ranged from 0.0% to 4.0% with the exception of samples J11254 and J116D8, which induced 7.0% and 8.0% mortality, respectively, and were significantly greater than the laboratory controls (ANOVA with Bonferroni t-test, $P < 0.05$). The frequencies of malformation for the pore water samples tested ranged from 0.0% to 7.1% and were not significantly different from the laboratory controls (ANOVA or K-W ANOVA, with Dunn's Method, $P < 0.05$, as appropriate). The % mean growth of the test organisms exposed to each of the pore water samples, calculated by dividing the mean sample length (cm) by the mean laboratory control length, ranged from 95.6% to 101.6% of the corresponding laboratory controls. Of these, 10 samples (J11115 [96.3%], J11116 [97.6%], J11251 [96.8%], J116D6 [96.3%], J116C9 [96.4%], J116D0 [94.8%], J11253 [98.2%], J11256 [96.1%], J116D1 [97.2%], and J116D8 [95.6%], were determined to be significantly less than the controls (K-W ANOVA with Dunn's Method, $P < 0.05$).

Statistical analysis indicated that the frequencies of malformation for all pore water samples tested were not significantly different from the corresponding laboratory controls. The frequencies of mortality were not significantly greater than the corresponding controls, with the exception of samples J11254 and J116D8. However, since the frequency of mortality induced by either sample was < 10%, the biological significance of these results are likely to be nominal. Larval growth rates of 10 of the 39 samples screened were significantly less than the corresponding controls. This does not necessarily indicate a substantial biological effect, since, in each case, the statistical difference from the control was < 5.0%. Thus, based on the statistical analysis, it cannot be assumed that these findings are biologically significant, and the likelihood of direct ecological effects is questionable. If you have any questions concerning this report, please do not hesitate to contact me at 405-624-6771, or by e-mail at djfort@fortlabs.com.

I certify that this data package is in compliance with the Statement of Work (SOW), both technically and for completeness, for other than the conditions detailed above. The Laboratory Director or designee, as verified by the following signature, has authorized release of the data contained in this data package.



Douglas J. Fort, Ph.D.
President

REFERENCES

1. Standard Guide for Conducting the Frog Embryo Teratogenesis Assay - *Xenopus* (FETAX). American Society for Testing and Materials (ASTM), E 1439-98, 1998 (Reapproved 2004).

2. Nieuwkoop, P.D. and Faber, J. Normal Tables of *Xenopus laevis* (Daudin). Garland Publishing, London, 1994.

3. Bantle, J.A., Dumont, J.N., Finch, R.A., and Linder, G., Fort, D.J., *Atlas of abnormalities: a guide for the performance of FETAX*, 2nd Ed., Oklahoma State Publications Department, 1998.

Table 1
Summary of Test Conditions for WCH FETAX Screens

Test Parameter	Test Condition
Test type:	Static renewal
Renewal frequency	Daily
Temperature:	23°C ± 3°C
Light quality:	Ambient laboratory
Light intensity:	50 to 100 foot-candles (ambient levels)
Photoperiod:	12 h light, 12 h. dark
Test chamber size:	500 mL chamber
Test water volume:	200 mL
Larval mortality counts:	Daily
Overlying water type:	Site water
Age of organisms:	Small cell blastula (Stage 8-10)
Number of organisms per vessel:	25
Number of replicate test vessels per concentration:	4
Feeding:	None
Laboratory control water:	FETAX solution (reconstituted laboratory water)
Sample test concentrations:	100%
Dilution factor:	None
Test duration:	96 h
Overlying water quality:	Temperature, pH and dissolved oxygen daily
Effects measured (endpoints):	Mortality, malformation, growth (length)
Test validation:	90% survival and less than or equal to 10 percent malformation in control

Table 2
Chronological Timelines for WCH Sample Collection, Receipt, and Testing

WCH Field Sample No.	FEL Lab No.	Sample Date	FEL Receipt Date	Test Initiation Date	Test Termination Date
J11114	00105-001	1/16/06	1/24/06	1/25/06	1/29/06
J11115	00105-002	1/16/06	1/24/06	1/25/06	1/29/06
J11116	00105-003	1/17/06	1/24/06	1/25/06	1/29/06
J11117	00105-004	1/17/06	1/24/06	1/25/06	1/29/06
J11189	00105-005	1/17/06	1/24/06	1/25/06	1/29/06
J11190	00105-006	1/18/06	1/24/06	1/25/06	1/29/06
J111B0	00105-007	1/18/06	1/24/06	1/25/06	1/29/06
J111L7	00105-008	1/19/06	1/25/06	1/25/06	1/29/06
J111L8	00105-009	1/19/06	1/25/06	1/25/06	1/29/06
J111L9	00105-010	1/22/06	1/25/06	1/25/06	1/29/06
J111M0	00105-011	1/22/06	1/25/06	1/25/06	1/29/06
J111K5	00105-012	1/19/06	1/27/06	2/2/06	2/6/06
J111W9	00105-013	1/23/06	1/27/06	2/2/06	2/6/06
J111X3	00105-014	1/23/06	1/27/06	2/2/06	2/6/06
J111M1	00105-015	1/24/06	1/27/06	2/2/06	2/6/06
J111Y9	00105-016	1/24/06	1/27/06	2/3/06	2/7/06
J11200	00105-017	1/24/06	1/27/06	2/3/06	2/7/06
J111W8	00105-018	1/25/06	1/31/06	2/3/06	2/7/06
J11222	00105-019	1/25/06	1/31/06	2/3/06	2/7/06
J11223	00105-020	1/25/06	1/31/06	2/3/06	2/7/06
J11233	00105-021	1/29/06	2/3/06	2/3/06	2/7/06
J11251	00105-022	1/29/06	2/3/06	2/3/06	2/7/06
J116D6	00105-023	2/2/06	2/9/06	2/15/06	2/19/06
J116D4	00105-024	2/2/06	2/9/06	2/15/06	2/19/06
J116D5	00105-025	2/3/06	2/9/06	2/15/06	2/19/06
J116C9	00105-026	2/3/06	2/9/06	2/15/06	2/19/06
J116D2	00105-027	2/3/06	2/9/06	2/15/06	2/19/06
J116D0	00105-028	2/3/06	2/9/06	2/15/06	2/19/06
J112X5	00105-029	2/1/06	2/10/06	2/10/06	2/14/06
J11253	00105-030	2/1/06	2/10/06	2/10/06	2/14/06
J11256	00105-031	2/1/06	2/10/06	2/10/06	2/14/06
J116D1	00105-032	2/2/06	2/10/06	2/10/06	2/14/06
J116D3	00105-033	2/2/06	2/10/06	2/15/06	2/19/06
J116D7	00105-034	2/2/06	2/10/06	2/15/06	2/19/06
J11225	00105-035	2/6/06	2/10/06	2/15/06	2/19/06
J112X6	00105-036	2/6/06	2/10/06	2/15/06	2/19/06
J11254	00105-037	2/6/06	2/10/06	2/15/06	2/19/06
J116D8	00105-038	2/6/06	2/10/06	2/15/06	2/19/06
J11255	00105-039	2/6/06	2/10/06	2/15/06	2/19/06

Table 3
Results of WCH FETAX Screens on
Laboratory Control and Reference Samples

Sample ID	Test Initiation Date	Mean Mortality (%)	Mean Malformations (%)
FETAX Solution Control	1/25/06	0.0	0.0
6-AN Reference (2,500 mg/L)		100.0	-
6-AN Reference (5.5 mg/L)		0.0	56.0
FETAX Solution Control	2/2/06	2.0	1.0
6-AN Reference (2,500 mg/L)		100.0	-
6-AN Reference (5.5 mg/L)		4.0	47.9
FETAX Solution Control	2/3/06	0.0	2.0
6-AN Reference (2,500 mg/L)		100.0	-
6-AN Reference (5.5 mg/L)		0.0	54.0
FETAX Solution Control	2/10/06	3.0	2.1
6-AN Reference (2,500 mg/L)		100.0	-
6-AN Reference (5.5 mg/L)		0.0	50.0
FETAX Solution Control	2/15/06	0.0	0.0
6-AN Reference (2,500 mg/L)		100.0	-
6-AN Reference (5.5 mg/L)		0.0	46.0

Table 4
Results of FETAX Screens on WCH Pore Water Samples

WCH Field Sample No.	Mean Mortality (%)	Mean Malformation (%)	Mean Growth[1] (%)	Mortality Significantly Different From Control[2]	Malformation Significantly Different From Control[2]	Growth Significantly Different From Control[2]
J11114	0.0	0.0	100.3	No	No	No
J11115	0.0	2.0	96.3	No	No	Yes (P≤0.001)
J11116	2.0	3.1	97.6	No	No	Yes (P≤0.001)
J11117	1.0	4.0	98.9	No	No	No
J11189	0.0	3.0	99.4	No	No	No
J11190	1.0	2.0	99.4	No	No	No
J111B0	2.0	5.1	98.8	No	No	No
J111L7	4.0	3.1	96.9	No	No	No
J111L8	3.0	4.1	97.5	No	No	No
J111L9	1.0	0.0	97.2	No	No	No
J111M0	3.0	1.0	98.0	No	No	No
J111K5	0.0	0.0	99.2	No	No	No
J111W9	0.0	0.0	101.5	No	No	No
J111X3	0.0	3.0	101.6	No	No	No
J111M1	0.0	4.0	101.4	No	No	No
J111Y9	0.0	4.0	98.5	No	No	No
J11200	1.0	6.1	97.8	No	No	No
J111W8	1.0	2.0	97.7	No	No	No
J11222	1.0	0.0	98.8	No	No	No
J11223	1.0	0.0	99.6	No	No	No
J11233	1.0	2.0	98.5	No	No	No
J11251	1.0	3.0	96.8	No	No	Yes (P=0.03)
J116D6	2.0	0.0	96.3	No	No	Yes (P≤0.001)
J116D4	3.0	1.0	97.2	No	No	No
J116D5	0.0	0.0	97.9	No	No	No
J116C9	2.0	2.0	96.4	No	No	Yes (P≤0.001)
J116D2	2.0	2.0	96.9	No	No	No
J116D0	3.0	1.0	94.8	No	No	Yes (P≤0.001)
J112X5	3.0	5.2	99.2	No	No	No
J11253	2.0	3.1	98.2	No	No	Yes (P≤0.001)
J11256	3.0	6.2	96.1	No	No	Yes (P≤0.001)
J116D1	1.0	7.1	97.2	No	No	Yes (P≤0.001)
J116D3	4.0	0.0	98.0	No	No	No
J116D7	1.0	1.0	98.6	No	No	No
J11225	3.0	2.1	98.6	No	No	No
J112X6	2.0	2.0	97.8	No	No	No
J11254	7.0	0.0	98.8	Yes (P=0.01)	No	No
J116D8	8.0	2.2	95.6	Yes (P=0.005)	No	Yes (P≤0.001)
J11255	3.0	3.1	97.6	No	No	No

[1] Mean sample length (cm) divided by mean laboratory control length (cm), expressed as % growth.
[2] Results based on statistical analysis using K-W ANOVA or ANOVA with Dunn's Method (non-parametric data, P<0.05) or Bonferroni t-test (parametric data, P<0.05), respectively, as appropriate.

Appendix A

Chain of Custody Forms

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-93	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: 300-1	SAF No.: RC-048	
Ice Chest No.: AFS-04-039	Field Logbook No.: EL-~~1592~~ 1597 RZS 1-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11114	WATER	01-16-06	1030	X	X								

4°C FEL

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller	01-16-06 1535	RZ Steffler	1-16-06 1535
RZ Steffler	1-16-06 1630	3728/3B	1-16-06 1630
3728/3B	1-17-06 1040	RZ Steffler	1-17-06 1040
RZ Steffler	1-17-06 1200	Fed Ex	
Fed Ex		Bergt Mulvey	1/23/06 1100
Bergt Mulvey	1-23-06 1400	Fed Ex	

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO #: CH2M05-00105-001
4°C on arrival to FEL.

7.8°C on arrival B1525-01 Cl_2 = 0.00 mg/L
COC seals on cooler intact

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist		Date/Time: 1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-94	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: 300-2	SAF No.: RC-048	
Ice Chest No.: AFS-04-039	Field Logbook No.: EL ~~1592~~ 1597 RZS 1-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J11115	WATER	01-16-06	1330	X	X									4°C FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
G. Tiller / [signature]	01-16-06 1535	RZ Steffler R.Z. Steffler	1535 1-16-06
RZ Steffler R.Z. Steffler	1630 1-16-06	3728/3B 1-16-06	1630
3728/3B 1-17-06	1040	RZ Steffler R.Z. Steffler	1040 1-17-06
RZ Steffler R.Z. Steffler	1200 1-17-06	Fed Ex	
Fed Ex		Brett Mulkey [signature]	1-18-06 1100
Brett Mulkey [signature]	1-23-06 1400	Fed Ex	

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO #: CH2M05-00105-002

4°C on arrival to FEL

7.8°C on arrival

B1525-01 Cl_2 = 0.02 mg/L

Report Limit: 0.05

collect on water intake

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: [signature]	Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-95	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-1 Pond Water	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-15927 01-17-06	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

SAMPLE ANALYSIS													
Preservation				None	None								
Type of Container				Cubitainer	Cubitainer								
No. of Container(s)				1	0								
Volume				2gal	2gal								
				Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439								
Sample No.	Matrix *	Sample Date	Sample Time										
J11116	WATER	01-17-06	0900	X	X								

4°C FEL

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / B. Tiller	01-17-06 / 1615	EAS LOCKED STORAGE / B. Tiller	01-17-06 / 1615
B. Tiller / EAS STORAGE	01-18-06 / 0715	RZ Steffler / R.Z. Steffler	1-18-06 0715
RZ Steffler / R.Z. Steffler with	1300 1-18-06	Fed Ex	
Fed Ex		[illegible]	1-19-06 1400
[illegible] / Brett Mulkey	1400 1-23-06	Fed Ex	

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO #: CH2M05-00105-003
4°C on arrival to FEL

COC's intact on arrival B1525-03 9.2°C
(water and cubes)

Chlorine = 0.02 mg/L Cl_2

Matrix *
S=Soil
SE=Sediment
SO=Solid
SJ=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/24/06 1000	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-96	Page 1 of 1
Collector: Tiller	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-2 PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-15927 01-17-06 B Tiller; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11117	WATER	01-17-06	1110	X	X								

4°C FEL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / B Tiller	01-17-06 1615	EAS LOCKED STORAGE / B Tiller	01-17-06 1615
B. Tiller / B M / EAS STORAGE	01-18-06 0715	R2 Steffler / R.J. Steffl	01-18-06 0715
R2 Steffler / R.J. Steffl	1-18-06 1300 WCH	Fed Ex	
Fed Ex		[illegible] / [illegible]	1-19-06 1400
[illegible] / [illegible] / Brett Mackey	1-23-06 1400	FEL Fx	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO#: CH2M05-00105-004

4°C on arrival to FEL

COC seals intact on arrival (cooler and other) B1525-04 1.0.06

Chlorine = 0.02 mg/L Cl_2

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Gary D Anderson Jr	Project Scientist	1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-128	Page 1 of 1

Collector: Tiller	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality: ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-3, PORE WATER	SAF No.: RC-048	
Ice Chest No.: ERC-03-105	Field Logbook No.: EL-1592-7 11706	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: N/A A060151		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE

< DOT Limits

Special Handling and/or Storage

~~COOL 4C~~ KZS 1-18-06

None

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J11189	WATER	01-17-06	1250	X	X									

3°C FEL

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / B. Tiller	01-17-06 / 1615	B. Tiller EAS LOCKED STORAGE	01-17-06 / 1615
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
B. Tiller / B. Tiller EAS STORAGE	01-18-06 / 0715	RZ Steffler R.Z. Steffler	0715 1-18-06
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RZ Steffler R.Z. Steffler	1300 with 1-18-06	Fed. Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED Ex		[illegible]	1-19-06 1400
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible] Brett Mulkey	1400 1-23-06	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO#: CH2M05-00105-005

3°C on arrival to FEL.

→ COC's intact on cooler tote B1525-05 10.0°C

Chlorine ~~0.07~~ → 0.00 mg/L Cl2

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-129	Page 1 of 1

Collector: Bernhard	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-4, PORE WATER	SAF No.: RC-048	
Ice Chest No.: AFS-04-056	Field Logbook No.: EL-1592-7 AB 11701	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: N/A A060151	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE

Special Handling and/or Storage

~~COOL 4C~~ None
RZS
1-19-06

Preservation	None	None
Type of Container	P/G	P/G
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J11190	WATER	1-18-06	1200	X	X

4°C FEL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Bernhard	1-18-06 1800	EAS Locked Storage	1-18-06 1800
B. Tills / EAS STORAGE	01-19-06 0700	RZ Steffler R.Z. Steffler	1-19-06 0700
RZ Steffler R.Z. Steffler	1400 1-19-06	Fed Ex	
Fed Ex		Brett Markley	1-20-06 1520
Brett Markley	1400 1-23-06	Fed Ex	

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO#: CH2M05-00105-006
4°C on arrival to FEL.

B1525-07

cooler seals intact, 10.7°C on arrival

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-139	Page 1 of 1
Collector TILLER, B Bernhard	Company Contact JOAN KESSNER; Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N; Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-4, PORE WATER VERTICAL	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-056	Field Logbook No. EL-15927 JEB 1-18-06; COA BESRAS6520	Method of Shipment FED EX	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									

SAMPLE ANALYSIS				Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439								
Sample No.	Matrix *	Sample Date	Sample Time										
J111B0	WATER	1-18-06	1400	X	X								

3°C FEL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Bernhard	1-18-06 1500	EAS Locked Storage	1-18-06 1800
B. Tiller / EAS Storage	01-19-06 0700	RZ Steffler R.Z. Steffler	1-19-06 0700
RZ Steffler R.Z. Steffler	1400 1-19-06	Fed Ex	
Fed Ex		Brett Mulkey	1-20-06 1520
Brett Mulkey	1-23-06 1400	Fed Ex	

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO#: CH2M05-00105-007

3°C on arrival to FEL.

B1525-06

COC seals intact 10.7°C on arrival, Cl_2: 0.03

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Gary D Andersen Jr	Project Scientist	1/24/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-152	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-6, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time											
J111L7	WATER	1-19-06	1230	X	X									9°C FEL

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
James E. Bernhard	1-19-06 1630	EAS LOCKED STORAGE	1/19/06 1650
EAS LOCKED STORAGE	01-23-06 0730	RZ Steffler	1-23-06 / 0730
RZ Steffler	1-23-06 1500	Fed Ex	
FED EX	1-24-06	Doug Winn	1-24-06/1230
Brett Mackey	1-24-06 1315		

SPECIAL INSTRUCTIONS

B1525-10
Received @ 13.1°C
Received by Federal Express

9°C on arrival to FEL.
FEL CLIENT/PROJECT-WO #: CH2MØ5-00105-008

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title Project Scientist	Date/Time 1/25/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-159	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-7, PORE WATER	SAF No. RC-048	
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time											
J111L8	WATER	1-19-06	1400	X	X									109 FEL

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: James E. Bernhard	1-19-06 1630	Received By/Stored In: EAS LOCKED STORAGE	1/19/06 1630
Relinquished By/Removed From: EAS LOCKED STORAGE	01-23-06 0730	Received By/Stored In: R2 Stiffler R.J. Stiffler	1-23-06 0730
Relinquished By/Removed From: R2 Stiffler R.J. Stiffler	1500 1-23-06	Received By/Stored In: Fed EX	
Relinquished By/Removed From: FED EX	1-24-06	Received By/Stored In: Doug Winn	1-24-06 1230
Relinquished By/Removed From: Brett Mulkey	1315 1-24-06	Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-11
Received @ 12.7°C
Received by Federal Express

10°C on arrival to FEL.
FEL CLIENT/PROJECT-WO #: CH2MØ5-00105-009

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/25/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-160	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-8, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111L9	WATER	1-22-06	1100	X	X								

10°C FEL

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From James E. Bernhard Date/Time 1-22-06 1600	Received By/Stored In EAS Locked Storage Date/Time 1-22-06 1600	
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 01-23-06 0730	Received By/Stored In RZ Stoffler R.J. Stoffler Date/Time 1-23-06 0730	
Relinquished By/Removed From RZ Stoffler R.J. Stoffler Date/Time WCH 1500 1-23-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From FED EX Date/Time 1-24-06	Received By/Stored In Doug Winn Date/Time 1-24-06 1230	
Relinquished By/Removed From Brett Mulvey Date/Time 0305 1-24-06	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

SPECIAL INSTRUCTIONS

B1525-12

Received @ 12.7°C

Received by Federal Express

10°C on arrival to FEL.

FEL CLIENT/PROJECT-WO#: CH2M05-00105-010

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title Project Scientist	Date/Time 1/25/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

21

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-161	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-9, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-051	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
J111M0	WATER	1-22-06	1300	X	X									

99
FEL

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From James E. Bernhard	Date/Time 1-22-06 1600	Received By/Stored In EAS Storage (Locked)	Date/Time 1-22-06 1600
Relinquished By/Removed From EAS Locked Storage	Date/Time 01-23-06/0730	Received By/Stored In R2 Stiffler R.J. Stiffler	Date/Time 1-23-06/0730
Relinquished By/Removed From R2 Stiffler R.J. Stiffler	Date/Time 1500 wet 1-23-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FED EX	Date/Time 1-24-06	Received By/Stored In Doug Winn	Date/Time 1-24-06/1230
Relinquished By/Removed From Brett Mulkey	Date/Time 1305 1-24-06	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

B1525-08
Received @ 13.0°C
Received by Federal Express

9°C on arrival to FEL.
FEL CLIENT/PROJECT-WO#: CH2M05-00105-011

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title Project Scientist	Date/Time 1/25/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

22

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-145	Page 1 of 1
Collector TILLER, B Bernhard	Company Contact JOAN KESSNER / Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N / Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location U-5, PORE WATER, FULL QC	SAF No. RC-048	Air Quality ☐
Ice Chest No. AFS-04-051	Field Logbook No. EL-159 7 8/8/1506 / COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
J111K5	WATER	1-19-06	1000	X	X									3°C PE

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From James E. Bernhard	1-19-06 1630	Received By/Stored In EAS Locked Storage	1/19/06 1630
Relinquished By/Removed From EAS Locked Storage	01-23-06 0730	Received By/Stored In R2 Steffler R.J. Steffler	1-23-06 0730
Relinquished By/Removed From R2 Steffler R.J. Steffler	1500 1-23-06	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX	1-24-06	Received By/Stored In Doug Winn	1-24-06 1230
Relinquished By/Removed From Brett Mulkey	1220 1-26-06	Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-09
Received @ 12.7°C
Received by Federal Express
Chlorine = 0.00 mg/L Cl2

FEL CLIENT/PROJECT+WO#: CH2M05-00105-012

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Gary D Anderson Jr	PROJECT SCIENTIST	1/27/06 1030
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-205	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-12, PORE WATER		SAF No. RC-048
Ice Chest No. AFS-04-030	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS 1-24-06

None

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J111W9	WATER	1-23-06	1430	X	X									40 EE

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From [signature] Date/Time 1700 1-23-06 James E. Bernhard	Received By/Stored In [signature] Date/Time 1700 EAS Locked Storage 1-23-06	B1525-13	S=Soil SE=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE M Tiller Date/Time 01-24-06/0700	Received By/Stored In RZ Steffler R.Z. Steffler Date/Time 0700 1-24-06	Temp. upon arrival @ lab = 10.1 °C	
Relinquished By/Removed From RZ Steffler R.Z. Steffler Date/Time 1500 1-24-06	Received By/Stored In Fed EX Date/Time	Received from Federal Express.	
Relinquished By/Removed From FED EX Date/Time 1-25-06	Received By/Stored In Doug Winn Date/Time 1-25-06 / 1320	Chlorine = 0.01 mg/L Cl_2	
Relinquished By/Removed From [signature] Brett Mulley Date/Time 1220 1-26-06	Received By/Stored In Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	FCL CLIENT/PROJECT-WO #: CH2M05-00105-013	

LABORATORY SECTION	Received By [signature] Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 1/27/06 1030
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-206	Page 1 of 1

Collector TILLER, B Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-13, PORE WATER	SAF No. RC-048	
Ice Chest No. AFS-04-030	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ None
RZS
1-24-06

Preservation	None	None									
Type of Container	P/G	P/G									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J111X3	WATER	1-23-06	1245	X	X								

4°C
FEI

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From James E. Bimbel	Date/Time 1700 1-23-06	Received By/Stored In EAS Locked Storage	Date/Time 1700 1-23-06
Relinquished By/Removed From EAS Locked Storage R Fish	Date/Time 01-24-06/0700	Received By/Stored In RZ Steffler R.Z. Steffler	Date/Time 1-24-06/0700
Relinquished By/Removed From RZ Steffler R.Z. Steffler with	Date/Time 1500 1-24-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FED EX	Date/Time 1-25-06	Received By/Stored In Doug Winn	Date/Time 1-25-06/1320
Relinquished By/Removed From Robert Markey	Date/Time 1220 1-26-06	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

B1525-14

Temp. upon arrival @ lab = 10.2 °C

Received from Federal Express

Chlorine = 0.01 mg/L Cl_2

FEL CLIENT/PROJECT-WO #: CH2MØ5-00105-014

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 1/27/06 1030
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-162	Page 1 of 1
Collector: TILLER, B Curt + Helgeson	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: U-10, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-02-101	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

None

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J111M1	WATER	1-24-06	1000	X	X									4°C FE

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: B. HELGESON By HG; Date/Time: 1-24-06 1100	Received By/Stored In: EAS LOCKED STORAGE By HG; Date/Time: 1-24-06 1100	B1525-15 cw seals intact on arrival 3w 7.6°C warmed Cl2 = 0.00 mg/L	S=Soil; SE=Sediment; SO=Solid; SI=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other
Relinquished By/Removed From: EAS LOCKED STORAGE; Date/Time: 01-25-06/0700	Received By/Stored In: RZ Stiffler R.Z. Stiffler; Date/Time: 0700 1-25-06		
Relinquished By/Removed From: RZ Stiffler R.Z. Stiffler; Date/Time: 1500 1-25-06	Received By/Stored In: Fed Ex; Date/Time:		
Relinquished By/Removed From: Fed Ex; Date/Time:	Received By/Stored In: BRETT Mulkey; Date/Time: 1053 1-26-06		
Relinquished By/Removed From: BRETT Mulkey; Date/Time: 1220 1-26-06	Received By/Stored In:		
Relinquished By/Removed From:	Received By/Stored In:	FEL CLIENT/PROJECT-WO#: CH2MØ5-00105-015	

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: PROJECT SCIENTIST	Date/Time: 1/27/06 1030
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-218	Page 1 of 1

Collector TILLER, B Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-14, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. ERC-02-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ None

RZS 1-25-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J111Y9	WATER	1-24-06	1630	X	X									3 ea FE

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From Rob Curet Date/Time 1-24-06 1830	Received By/Stored In Rob Curet EAS LOCKED STORAGE Date/Time 1-24-06 1830	B1525-17 COC seals intact on arrival Temp 7.6°C on arrival Cl2: 0.00 mg/L
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 01-25-06 0700	Received By/Stored In RZ Steffler Date/Time 0700 1-25-06	
Relinquished By/Removed From RZ Steffler Date/Time 1500 1-25-06	Received By/Stored In Fed EX Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Muckey Date/Time 1055 1-26-06	
Relinquished By/Removed From Brett Muckey Date/Time 1220 1-26-06	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

FEL CLIENT/PROJECT-WO#: CH2M05-00105-016

Matrix *: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 1/27/06 1030
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

27

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-219	Page 1 of 1

Collector TILLER, B Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location REF-16, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-02-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ None

RZS
1-25-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11200	WATER	1-24-06	1845	X	X								4
													Fr

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From Rob Curet Date/Time Rob Curet 1-24-06 1830	Received By/Stored In Rob Curet Date/Time EAS LOCKED STORAGE 1-24-06 1830	B1525-16 COC seals intact on arrival BW 7.6°C on arrival Cl_2: 0.00 mg/L	S=Soil SE=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 01-25-06 0700	Received By/Stored In Date/Time 0700 RZ Stiffler 1-25-06		
Relinquished By/Removed From Date/Time 1500 RZ Stiffler WCH 1-25-06	Received By/Stored In Date/Time Fed Ex		
Relinquished By/Removed From Date/Time Fed Ex	Received By/Stored In Date/Time 1015 Brett Mulkey 1-26-06		
Relinquished By/Removed From Date/Time 1220 Brett Mulkey 1-26-06	Received By/Stored In Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	FCL CLIENT/PROJECT-WO#: CH2M05-00105-017	

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 1/27/06 1030	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-204	Page 1 of 1

Collector: TILLER, B — JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 7N	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: REF-11, PORE WATER	SAF No.: RC-048	
Ice Chest No.: AFS-04-049	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 1-26-06

None

Preservation	None	None										
Type of Container	P/G	P/G										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J111W8	WATER	1-25-06	1030	X	X									39 FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: JAMES BERNHARD — Date/Time: 1-25-06 1630	Received By/Stored In: EAS LOCKED STORAGE — Date/Time: 1-25-06 1630	B1525-18 0.0°C on arrival
Relinquished By/Removed From: EAS LOCKED STORAGE — Date/Time: 01-26-06 0715	Received By/Stored In: RZ Steffler — Date/Time: 1-26-06 0715	Cl_2 = 0.00
Relinquished By/Removed From: RZ Steffler — Date/Time: 1500 1-26-06	Received By/Stored In: Fed EX — Date/Time:	COC seals intact @ CVO
Relinquished By/Removed From: Fed Ex — Date/Time:	Received By/Stored In: BRETT Mackey — Date/Time: 1130 1-27-06	
Relinquished By/Removed From: BRETT Mackey — Date/Time: 1420 1-30-06	Received By/Stored In: — Date/Time:	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	FEL CLIENT/PROJECT-WO#: CH2MØ5-00105-018

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, Wi=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: Project Scientist	Date/Time: 1/31/06 1330
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-236	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 1, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 1-26-06

None

Preservation	None	None										
Type of Container	Canister	Canister										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J11222 / WATER / 1-25-06 / 1300	X	X										

3°C FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 1-25-06 1630	Received By/Stored In EAS LOCKED STORAGE Date/Time 1-25-06 1630	B 1525-19, 8.3°C on arrival
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 01-26-06 0715	Received By/Stored In RZ Steffler Date/Time 0715 1-26-06	Cl_2 = 0.00
Relinquished By/Removed From RZ Steffler Date/Time 1500 1-26-06	Received By/Stored In Fed Ex Date/Time	COC seals intact @ CWS
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Mackey Date/Time 1130 1-27-06	
Relinquished By/Removed From Brett Mackey Date/Time 1420 1-30-06	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	FEL CLIENT/PROJECT-WO#: CH2M05-00105-019

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title Project Scientist	Date/Time 1/31/06 1330
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-237	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 2, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-049	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RCS 1-26-06

None

Preservation	None	None										
Type of Container	Canister	Canister										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J11223	WATER	1-25-06	1400	X	X									3° FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 1-25-06 1630	Received By/Stored In EAS LOCKED STORAGE Date/Time 1-25-06 1630	B1525-20, 8.8°C on arrival
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 1-26-06/0715	Received By/Stored In RZ Steffler Date/Time 1-26-06 0715	Cl_2 = 0.06
Relinquished By/Removed From RZ Steffler Date/Time 1500 1-26-06	Received By/Stored In Fed Ex Date/Time	coc seals intact to CVO
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Markey Date/Time 1130 1-27-06	
Relinquished By/Removed From Brett Markey Date/Time 1-30-06	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	FEL CLIENT/PROJECT-WO#: CH2M05-00105-020

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title Project Scientist	Date/Time 1/31/06 1330
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-245	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 4, PORE WATER	SAF No. RC-048	
Ice Chest No. AFS-04-035	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 1-30-06

None

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J11233	WATER	1-29-06	1415	X	X

4. FE

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1-29-06 2000	EAS LOCKED STORAGE	1-29-06 2000
EAS LOCKED STORAGE	01-30-06 0710	R2 Steffler R.J. Steffler	1-30-06 0710
R2 Steffler R.J. Steffler	1-30-06 1500	Fed EX	
Fed EX		ACLC	2/1/06 09:00
ACLC	2/1/06 15:00	Fed EX	
Fed Ex		Brett Mulkey	2-2-06 1105

SPECIAL INSTRUCTIONS

SAMPLES from HANFORD (1-30-06) to DATACHEM LABS (2-1-06), CINCINNATI, OH via Fed Ex

SHIPPED from DATACHEM (2-1-06) to CH2M HILL (2-2-06) via Fed Ex

3.1525-21 COC seals intact on 2-2-06 15:10

FEL CLIENT/PROJECT-WO#: CH2MØ5-00105-021

Relinquished Brett Mulkey 2-2-06 1140 To Fed Ex

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Gary D Anderson Jr	Title Project Scientist	Date/Time 2/3/06 0930
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-264	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 5, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. AFS-04-035	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 1-30-06

None

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J11251	WATER	1-29-06	1630	X	X

4° FEL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	1-29-06 2000	[signature] EAS LOCKED STORAGE	1-29-06 2000
EAS LOCKED STORAGE [signature]	01-30-06 0710	RZ Steffler [signature]	0710 1-30-06
RZ Steffler [signature]	1500 WCH 1-30-06	Fed Ex	
Fed Ex		[signature] RCLC	2/1/06 09:00
[signature] RCLC	2/1/06 15:00	Fed Ex	
Fed Ex		[signature] Brett Mulvey	1105 2-2-06

SPECIAL INSTRUCTIONS

SHIPPED from HANFORD (1-30-06) to DATACHEM LABS (2-1-06) via Fed Ex

SHIPPED from DATACHEM (2-1-06) to CH2M Hill (2-2-06) via Fed Ex

B1525-22 COC seals intact on 2-2-06 15.1°C

FEL CLIENT/PROJECT-WO#: CH2M05-00105-022

Relinquished Brett Mulvey 2-2-06 1140 to FedEx

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By [signature] Gary D Anderson Jr	Title Project Scientist	Date/Time 2/3/06 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-317	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-4, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-03-102	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J116D6	WATER	2-2-06	1615	X	X								

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-2-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-2-06
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-06-06	Received By/Stored In RZ Stiffler Date/Time 0745 2-6-06
Relinquished By/Removed From RZ Stiffler Date/Time 2-6-06/1000	Received By/Stored In 3728/3A Date/Time 2-6-06/1000
Relinquished By/Removed From 3728/3A 2-7-06 Date/Time 0820	Received By/Stored In RZ Stiffler Date/Time 0820 2-7-06
Relinquished By/Removed From RZ Stiffler Date/Time 1500 WCH 2-7-06	Received By/Stored In Fed Ex Date/Time
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In BRETT Mulkey Date/Time 1400 2-8-06

SPECIAL INSTRUCTIONS

COC seals intact on arrival B1525-23

11.0

Chlorine: 0.00

FEL CLIENT/PROJECT-WO#: CH2M05-00105-023

Relinquished BRETT Mulkey 2-8-06 1500

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/8/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-315	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-9 , PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-03-102	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J116D4	WATER	2-2-06	1745	X	X									49
														96

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From JAMES BERNHARD Date/Time 2-2-06 2100	Received By/Stored In EAS LOCKED STORAGE Date/Time 2-2-06 2100	B1525-24 COC seals intact. Arrival temp: 9.6°C Chlorine: 0.00 FEL CLIENT/PROJECT-WO#: CH2M05-00105-024	S=Soil SE=Sediment SO=Solid SI=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 02-06-06 0745	Received By/Stored In RZ Stiffler Date/Time 2-6-06 0745		
Relinquished By/Removed From RZ Stiffler Date/Time 2-6-06/1000	Received By/Stored In 3728, 3A Date/Time 2-6-06 1000		
Relinquished By/Removed From 3728/3A Date/Time 2-7-06 0820	Received By/Stored In RZ Stiffler Date/Time 2-7-06 0820		
Relinquished By/Removed From RZ Stiffler Date/Time 2-7-06 1500	Received By/Stored In Fed Ex Date/Time		
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In BRETT Mulkey Date/Time 2-8-06 1400	relinquished BRETT Mulkey 2-8-06 1500	

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/9/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-316	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-5, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ None RZS 2-7-06

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J116D5	WATER	2-3-06	1530	X	X

5-8 FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-3-06	EAS LOCKED STORAGE	2100 2-3-06
EAS LOCKED STORAGE	0745 02-06-06	RZ Steffler R.J. Steffler	0745 2-6-06
RZ Steffler R.J. Steffler	1000 2-6-06	3728 13A	2-6-06 1000
3728 13A	2-7-06 0835	RZ Steffler R.J. Steffler	0835 2-7-06
RZ Steffler R.J. Steffler	1500 2-7-06	Fed Ex	
Fed Ex		Brett Mackey	1410 2-8-06

SPECIAL INSTRUCTIONS

31525-28

11.0°C

chlorine: 0100

FEL CLIENT/PROJECT-WO#: CH2M05-00105-025

Relinquished Brett Mackey 2-8-06 1500

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/9/06 1000	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-310	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-6, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ R25 2-7-06
None

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J116C9	WATER	2-3-06	1630	X	X									4° FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-3-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-3-06	FEL CLIENT/PROJECT-WO #: CH2M05-00105-026 B1525-27	S=Soil SE=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe L=Liquid Va=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-06-06	Received By/Stored In R2 Stoffler Date/Time 0745 2-6-06	COC seals intact	
Relinquished By/Removed From R2 Stoffler Date/Time 1000 2-6-06	Received By/Stored In 3728/3A Date/Time 2-6-06 / 1000	9.2°C	
Relinquished By/Removed From 3728/3A 2-7-06 Date/Time 0835	Received By/Stored In R2 Stoffler Date/Time 0835 2-7-06	Chlorine: 0.01	
Relinquished By/Removed From R2 Stoffler Date/Time 1500 2-7-06	Received By/Stored In Fed Ex Date/Time	Relinquished Brett Mulvey 2-8-06 1500	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Brett Mulvey Date/Time 8 14.0 2-8-06		

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/9/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-313	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-10, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-99-027	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
iVone 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J116D2	WATER	2-3-06	1720	X	X									4°C FEL

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From JAMES BERNHARD	Date/Time 2100 2-3-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 2100 2-3-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745 02-06-06	Received By/Stored In RZ Steffler R.J. Steffler	Date/Time 0745 2-6-06
Relinquished By/Removed From RZ Steffler R.J. Steffler	Date/Time 1000 2-6-06	Received By/Stored In 3728 / 3C	Date/Time 2-6-06 1000
Relinquished By/Removed From 3728 / 3C 2-7-06	Date/Time 0835	Received By/Stored In RZ Steffler R.J. Steffler	Date/Time 0835 2-7-06
Relinquished By/Removed From RZ Steffler R.J. Steffler	Date/Time 1500 2-7-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In BRETT Mulkey	Date/Time 1410 2-8-06

SPECIAL INSTRUCTIONS

B1525-26

COC seals intact

FEL CLIENT/PROJECT-WO #: CH2M05-00105-027

12.2°C

Chlorine: 0.01

Relinquished BRETT Mulkey 2-8-06 1500

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Gary D Anderson Jr	PROJECT SCIENTIST	2/9/06 1000

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-311	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-1, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. ERC-03-102	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLER~~ None RZS 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										
Sample No. / Matrix * / Sample Date / Sample Time												
J116D0 / WATER / 2-3-06 / 1815	X	X										

49 FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-3-06	EAS LOCKED STORAGE	2100 2-3-06
EAS LOCKED STORAGE	02-06-06 0745	RZ Steffler R.J. Steffler	0745 2-6-06
RZ Steffler R.J. Steffler	2-6-06 1000	3728 RZ 3A	2-6-06 1000
3728, 3A	2-7-06 0820	RZ Steffler R.J. Steffler	0820 2-7-06
RZ Steffler R.J. Steffler	1500 WCH 2-7-06	Fed Ex	
Fed Ex		Brett Mulkey	1400 2-8-06

SPECIAL INSTRUCTIONS

B1525-25

coc seals intact on arrival

FEL CLIENT/PROJECT-WO#: CH2M05-00105-028

10.1 °C

Chlorine: 0.00

relinquished Brett Mulkey 2-8-06 1500

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST		Date/Time 2/9/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-292	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr-6 PORE WATER FULL QC		SAF No. RC-048	Air Quality ☐	
Ice Chest No. TNU-052	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ R25
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time											
J112X5	WATER	02-01-06	1445	X	X									50 FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From JAMES BERNHARD Date/Time 02-01-06 2030	Received By/Stored In EAS LOCKED STORAGE Date/Time 02-01-06 2030	B1525-30	S=Soil SS=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 02-02-06 1200	Received By/Stored In Date/Time 02-02-06 1200	COC seals intact on arrival	
Relinquished By/Removed From Date/Time 02/02/06 1400	Received By/Stored In 3728 Rm 2C Date/Time 02/02/06 1400	9.2°C	
Relinquished By/Removed From 3728/2C 2-7-06 Date/Time 0900	Received By/Stored In RZ Stoffler Date/Time 2-7-06 0900	Chlorine: 0.00	
Relinquished By/Removed From RZ Stoffler Date/Time 2-7-06 1500	Received By/Stored In Fed Ex Date/Time	FEL CLIENT/PROJECT-WO#: CH2M05-00105-029	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In BRETT Markey Date/Time 2-7-06 1445	Relinquished BRETT Markey 2-8-06 800	

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-266	Page 1 of 1

Collector: TILLER, B — JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N	Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: Cr 7, PORE WATER		SAF No.: RC-048	Air Quality ☐	
Ice Chest No.: TNU-052	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT		
Shipped To: CH2MHILL	Offsite Property No.: A060151		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOLAC~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J11253	WATER	2-1-06	1615	X	X									5 @ FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2130 2-1-06	EAS LOCKED STORAGE	2130 2-1-06
EAS LOCKED STORAGE	1200 02-02-06	Donald St John	1200 02-02-06
Donald St John	02/02/06 1400	3728 RCE 2C	02/02/06 1400
3728/2C	2-7-06 0900	RZ Steffler	0900 2-7-06
RZ Steffler	1500 2-7-06	Fed Ex	
Fed Ex		Brett Mulkey	1415 2-7-06

SPECIAL INSTRUCTIONS

FEL CLIENT/PROJECT-WO#: CH2M05-00105-030
B1525-31

COC seals intact on arrival

9.0°C

chlorine: 0.01

Relinquished Brett Mulkey 2-9-06 1500

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: PROJECT SCIENTIST	Date/Time: 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-269	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 10, PORE WATER		SAF No. RC-048	Air Quality ☐
Ice Chest No. TNU-052	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-7-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									
J11256	WATER	02-01-06	1900	X	X									

04
FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2030 02-01-06	EAS LOCKED STORAGE	2030 02-01-06
EAS LOCKED STORAGE	1200 02-01-06	David Bryson / wck	1200 02-02-06
David Bryson	02/02/06 1400	3728 Ref 2C	02/02/06 1400
3728 / 2C	2-7-06 0900	RZ Stoffler	0900 2-7-06
RZ Stoffler	1500 2-7-06	Fed Ex	
Fed Ex		BRETT Markey	1415 2-7-06

SPECIAL INSTRUCTIONS

B1525-29

COC seals intact on arrival

FEL CLIENT/PROJECT-WO #: CH2MØ5-00105-031

9.6°C

Chlorine: 0.05

Relinquished BRETT Markey 2-8-06 1500

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title		Date/Time
	Gary D Anderson Jr	PROJECT SCIENTIST		2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-312	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr- 2 PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-99-046	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS 2-3-06
None

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J116D1	WATER	2-2-06	1500	X	X

5 FEI

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-2-06	EAS LOCKED STORAGE	2100 2-2-06
EAS LOCKED STORAGE	0745 2-6-06	RZ Steffler R.J. Steffler	0745 2-6-06
RZ Steffler R.J. Steffler	2-6-06 / 1000	3728 / 3C	2-6-06 / 1000
3728 / 3C	2-7-06 / 0845	RZ Steffler R.J. Steffler	0845 2-7-06
RZ Steffler R.J. Steffler	1500 2-7-06	Fed Ex	
Fed Ex		Brett Mulkey	1415 2-8-06

SPECIAL INSTRUCTIONS

B1525-33

COC seals intact on arrival

FEL CLIENT/PROJECT-WO#: CH2M05-00105-032

Relinquished Brett Mulkey 2-2-06 1500

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-314	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-3 , PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-99-046	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS 2-7-06
NONE

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time											
J116D3	WATER	2-2-06	1545	X	X									69
														FEL

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 2100 2-2-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 2100 2-2-06	B1525-34
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 0745 02-06-06	Received By/Stored In RZ Steffler Date/Time 0745 2-6-06	COC seals intact on arrival
Relinquished By/Removed From RZ Steffler Date/Time 2-6-06 / 1000	Received By/Stored In 3728 / 3C Date/Time 2-6-06 / 1000	
Relinquished By/Removed From 3728 / 3C Date/Time 2-7-06 / 0845	Received By/Stored In RZ Steffler Date/Time 0845 2-7-06	FEL CLIENT/PROJECT-WO #: CH2M05-00105-033
Relinquished By/Removed From RZ Steffler Date/Time 1500 2-7-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Fed Ex Date/Time	Received By/Stored In Date/Time M.S 2-8-06	Relinquished 2-8-06 1500

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D. Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-318	Page 1 of 1
Collector: TILLER, B JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 7N; Data Turnaround: 21 Days
Project Designation: 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location: Sr-7, PORE WATER	SAF No.: RC-048	Air Quality ☐
Ice Chest No.: ERC-99-046	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHILL	Offsite Property No.: A060151	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-7-06

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J116D7	WATER	2-2-06	1700	X	X								

6a
FEL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-2-06	EAS LOCKED STORAGE	2100 2-2-06
EAS LOCKED STORAGE	0745 02-06-06	RZ Steffler R.Z. Steffler	0745 2-6-06
RZ Steffler R.Z. Steffler	2-6-06	3728/3C 2-6-06	1000
3728/3C 2-7-06	0845	RZ Steffler R.Z. Steffler	0845 2-7-06
RZ Steffler R.Z. Steffler	1500 2-7-06	Fed Ex	
Fed Ex		Brett Markey	1420 2-8-06

SPECIAL INSTRUCTIONS

B1525-32
COC seals intact on arrival

FEL CLIENT/PROJECT-WO#: CH2MØ5-00105-034

Relinquished Brett Markey 2-8-06 1500

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Gary D Anderson Jr	PROJECT SCIENTIST	2/10/06 1000

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-239	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 3, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-8-06

Preservation	None	None									
Type of Container	Canister	Canister									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J11225	WATER	2-6-06	1530	X	X								

8°C
FEL

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-6-06	EAS LOCKED STORAGE	2100 2-6-06
EAS LOCKED STORAGE	0700 02-08-06	RZ Steffler	0700 2-8-06
RZ Steffler	1500 with 2-8-06	Fed EX	
Fed Ex		Brett Mulkey	1040 2-9-06
Brett Mulkey	1175 2-9-06		

SPECIAL INSTRUCTIONS

B1525-36 COC seals intact on arrival
16.6 °C, Cl_2 = 0.05 mg/L

FEL CLIENT/PROJECT-WO#: CH2M05-00105-035

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: PROJECT SCIENTIST	Date/Time: 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-293	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Sr-8, PORE WATER FULL QC		SAF No. RC-048	Air Quality ☐	
Ice Chest No. SML-584	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-8-06

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J112X6	WATER	2-6-06	1600	X	X

9°C
FE

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-6-06	EAS LOCKED STORAGE	2100 2-6-06
EAS LOCKED STORAGE	0700 02-08-06	RZ Stiffler	0700 2-8-06
RZ Stiffler	1500 WCH 2-8-06	Fed Ex	
Fed Ex		Brett Mulkey	1040 2-9-06
Brett Mulkey	1145 2-9-06		

SPECIAL INSTRUCTIONS

B1525.38 CoC seals intact on arrival
16.6°C, Cl_2 = 0.02 mg/L

FEL CLIENT/PROJECT-WO # CH2M05-00105-036

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By: Gary D Anderson Jr	Title: PROJECT SCIENTIST	Date/Time: 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-267	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N	Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 8, PORE WATER		SAF No. RC-048	Air Quality ☐	
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-8-06

Preservation	None	None
Type of Container	Cubitainer	Cubitainer
No. of Container(s)	1	0
Volume	2gal	2gal

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439
J11254	WATER	2-6-06	1700	X	X

90% FEL

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	2100 2-6-06	EAS LOCKED STORAGE	2100 2-6-06
Relinquished By/Removed From EAS LOCKED STORAGE	0700 02-08-06	RZ Steffler	0700 2-8-06
Relinquished By/Removed From RZ Steffler	1500 WCH 2-8-06	Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In DRETT Mulkey	1040 2-9-06
Relinquished By/Removed From DRETT Mulkey	1145 2-9-06	Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

B1525-35 COC seals intact on arrival
16.4°C. Cl_2 = 0.02 mg/L

FEL CLIENT/PROJECT-WO#: CH2M05-00105-037

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-319	Page 1 of 1
Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER / Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 7N / Data Turnaround 21 Days
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location C-8r-8, PORE WATER	SAF No. RC-048	Air Quality ☐
Ice Chest No. ERC-03-101	Field Logbook No. EL-1597 / COA BESRAS6520	Method of Shipment GROUND TRANSPORT	
Shipped To CH2MHILL	Offsite Property No. A060151	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ RZS 2-8-06

None

Preservation	None	None									
Type of Container	Cubitainer	Cubitainer									
No. of Container(s)	1	0									
Volume	2gal	2gal									
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439									

Sample No.	Matrix *	Sample Date	Sample Time										
J116D8	WATER	2-6-06	1800	X	X								

CHAIN OF POSSESSION / **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	2100 2-6-06	EAS LOCKED STORAGE	2100 2-6-06
EAS LOCKED STORAGE	0700 02-08-06	RZ Steffler	0700 2-8-06
RZ Steffler	1500 WCH 2-8-06	Fed Ex	
Fed Ex		Brett Mulkey	1040 2-9-06
Brett Mulkey	1145 2-9-06		

SPECIAL INSTRUCTIONS

B1525-37 QC seals intact on arrival

16.4°C, Cl_2 = 0.01

FEL CLIENT/PROJECT-WO#:CH2M05-00105-038

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-048-268	Page 1 of 1

Collector TILLER, B JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 7N	Data Turnaround 21 Days	Air Quality ☐	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa	Sampling Location Cr 9, PORE WATER		SAF No. RC-048
Ice Chest No. SML-584	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHILL	Offsite Property No. A060151		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE < DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ RZS
None 2-8-06

Preservation	None	None										
Type of Container	Cubitainer	Cubitainer										
No. of Container(s)	1	0										
Volume	2gal	2gal										
SAMPLE ANALYSIS	Water Toxicity Ceriodaphnia dubia ASTM E1295	Water Frog Embryo Teratogenesis ASTM E1439										

Sample No.	Matrix *	Sample Date	Sample Time										
J11255	WATER	2-6-06	1830	X	X								9R FEL

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From JAMES BERNHARD	Date/Time 2100 2-6-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 2100 2-6-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0700 02-08-06	Received By/Stored In RZ Stoffler	Date/Time 0700 2-8-06
Relinquished By/Removed From RZ Stoffler	Date/Time 1500 2-8-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Scott Mulkey	Date/Time 1045 2-9-06
Relinquished By/Removed From Scott Mulkey	Date/Time 1145 2-9-06	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

B1535-39 COC seals intact on arrival

16.8°C, Cl_2 = 0.01 mg/L

FEL CLIENT/PROJECT-WO#: CH2M05-00105-039

Matrix *
S=Soil
SE=Sediment
SO=Solid
SJ=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By Gary D Anderson Jr	Title PROJECT SCIENTIST	Date/Time 2/10/06 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix B

General Water Chemistry

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
01/24/06	BB	-	FETAX Solution Ctl	21.6	7.8	7.1	1553	102	52	<0.06	0.01
		001	Pore Water-J11114	26.0	6.7	8.7	144	70	58	<0.06	0.02
		002	Pore Water-J11115	25.9	7.1	8.6	200	80	76	<0.06	0.03
		003	Pore Water-J11116	26.0	6.9	8.3	164	82	70	0.66	0.03
		004	Pore Water-J11117	26.0	7.3	8.4	145	71	62	<0.06	0.03
		005	Pore Water-J11189	25.9	7.2	8.6	144	76	60	<0.06	<0.01
		006	Pore Water-J11190	24.9	7.3	8.7	143	68	60	<0.06	<0.01
		007	Pore Water-J111B0	25.6	7.3	8.6	144	70	58	<0.06	0.01
01/25/06	GA/BB	-	FETAX Solution Ctl	22.8	7.8	5.6					
		001	Pore Water-J11114	21.5	6.7	9.7					
		002	Pore Water-J11115	21.3	7.0	9.8					
		003	Pore Water-J11116	21.3	6.9	9.8					
		004	Pore Water-J11117	21.1	7.1	9.6					
		005	Pore Water-J11189	21.2	7.2	9.8					
		006	Pore Water-J11190	21.2	7.2	9.9					
		007	Pore Water-J111B0	21.4	7.2	9.8					
		008	Pore Water-J111L7	21.3	7.2	10.3	138	70	58	<0.06	0.02
		009	Pore Water-J111L8	21.5	7.2	10.3	144	68	58	<0.06	0.01
		010	Pore Water-J111L9	21.6	7.2	10.5	218	78	62	<0.06	<0.01
		011	Pore Water-J111M0	21.6	7.3	10.4	146	94	56	<0.06	0.04
01/26/06	GA/BB	-	FETAX Solution Ctl	23.1	7.7	7.2					
		001	Pore Water-J11114	24.8	7.0	10.4					
		002	Pore Water-J11115	24.9	7.1	10.3					
		003	Pore Water-J11116	24.8	7.1	10.4					
		004	Pore Water-J11117	25.1	7.2	10.1					
		005	Pore Water-J11189	24.8	7.1	10.3					
		006	Pore Water-J11190	24.8	7.2	10.2					
		007	Pore Water-J111B0	25.0	7.2	10.5					
		008	Pore Water-J111L7	25.2	7.2	9.9					
		009	Pore Water-J111L8	25.1	7.2	10.2					
		010	Pore Water-J111L9	25.0	7.2	10.3					
		011	Pore Water-J111M0	24.9	7.2	10.6					

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
01/27/06	GA/BB	-	FETAX Solution Ctl	23.2	7.4	7.0					
		001	Pore Water-J11114	22.9	6.9	10.1					
		002	Pore Water-J11115	23.4	7.2	10.0					
		003	Pore Water-J11116	22.8	7.1	10.3					
		004	Pore Water-J11117	22.9	7.2	10.3					
		005	Pore Water-J11189	22.8	7.3	10.1					
		006	Pore Water-J11190	22.7	7.2	9.9					
		007	Pore Water-J111B0	22.9	7.3	10.5					
		008	Pore Water-J111L7	22.9	7.3	9.6					
		009	Pore Water-J111L8	22.8	7.2	9.9					
		010	Pore Water-J111L9	23.1	7.1	10.4					
		011	Pore Water-J111M0	22.6	7.2	10.1					
01/28/06	GA/BB	-	FETAX Solution Ctl	23.5	7.3	7.1					
		001	Pore Water-J11114	24.1	7.0	9.8					
		002	Pore Water-J11115	24.2	7.1	10.1					
		003	Pore Water-J11116	23.9	7.0	10.2					
		004	Pore Water-J11117	24.0	7.2	9.9					
		005	Pore Water-J11189	24.0	7.2	10.6					
		006	Pore Water-J11190	23.8	7.1	9.8					
		007	Pore Water-J111B0	24.2	7.3	10.3					
		008	Pore Water-J111L7	23.7	7.3	9.5					
		009	Pore Water-J111L8	23.9	7.2	10.1					
		010	Pore Water-J111L9	23.9	7.2	10.1					
		011	Pore Water-J111M0	24.0	7.3	9.9					
01/30/06	GA/BB	-	FETAX Solution Ctl	23.2	7.0	7.4	1561	106	54	<0.06	0.01
		012	Pore Water-J111K5	24.3	7.0	10.1	158	70	58	<0.06	0.02
		013	Pore Water-J111W9	23.4	7.0	9.5	140	84	64	<0.06	0.01
		014	Pore Water-J111X3	24.6	7.0	9.9	250	70	56	<0.06	0.01
		015	Pore Water-J111M1	24.6	7.2	9.9	150	117	88	<0.06	<0.01
		016	Pore Water-J111Y9	23.8	7.3	10.3	138	74	56	<0.06	0.01
		017	Pore Water-J11200	23.3	7.3	10.0	250	70	58	<0.06	0.01
02/01/06	GA/BB	018	Pore Water-J111W8	22.0	7.1	11.4	163	70	56	<0.06	0.02
		019	Pore Water-J11222	21.6	7.1	11.6	147	80	62	<0.06	0.03
		020	Pore Water-J11223	22.1	6.9	11.2	159	73	64	0.08	0.16

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
02/02/06	BB	-	FETAX Solution Ctl	22.0	7.0	7.5					
		012	Pore Water-J111K5	23.5	7.1	9.9					
		013	Pore Water-J111W9	23.3	7.2	9.8					
		014	Pore Water-J111X3	23.2	7.1	10.1					
		015	Pore Water-J111M1	23.3	7.1	10.0					
02/03/06	GA/BB	-	FETAX Solution Ctl	21.3	7.2	8.7					
		012	Pore Water-J111K5	21.1	7.3	9.2					
		013	Pore Water-J111W9	21.0	7.3	8.9					
		014	Pore Water-J111X3	21.1	7.3	9.0					
		015	Pore Water-J111M1	21.2	7.3	9.4					
		016	Pore Water-J111Y9	21.3	7.2	9.2					
		017	Pore Water-J11200	20.9	7.3	9.8					
		018	Pore Water-J111W8	21.1	7.3	9.4					
		019	Pore Water-J11222	21.3	7.3	9.6					
		020	Pore Water-J11223	21.2	7.3	9.3					
		021	Pore Water-J11233	22.0	7.4	10.2	139	72	84	<0.06	0.01
		022	Pore Water-J11251	22.0	7.4	10.0	136	70	56	<0.06	0.03
02/04/06	BB	-	FETAX Solution Ctl	23.1	7.1	7.8					
		012	Pore Water-J111K5	24.4	7.1	9.8					
		013	Pore Water-J111W9	24.2	7.0	9.6					
		014	Pore Water-J111X3	23.8	7.2	10.2					
		015	Pore Water-J111M1	24.0	7.1	10.0					
		016	Pore Water-J111Y9	23.8	7.0	10.1					
		017	Pore Water-J11200	24.3	6.9	9.7					
		018	Pore Water-J111W8	24.4	6.9	10.8					
		019	Pore Water-J11222	23.5	7.1	10.9					
		020	Pore Water-J11223	23.7	7.3	11.1					
		021	Pore Water-J11233	24.2	7.4	10.3					
		022	Pore Water-J11251	23.8	7.3	9.6					

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
02/05/06	BB	-	FETAX Solution Ctl	21.8	7.0	7.3					
		012	Pore Water-J111K5	23.8	7.1	9.5					
		013	Pore Water-J111W9	23.6	7.1	9.7					
		014	Pore Water-J111X3	23.5	7.3	9.6					
		015	Pore Water-J111M1	23.5	7.2	10.1					
		016	Pore Water-J111Y9	23.7	7.2	10.1					
		017	Pore Water-J11200	23.5	7.0	9.9					
		018	Pore Water-J111W8	23.3	7.3	10.6					
		019	Pore Water-J11222	23.5	7.0	10.4					
		020	Pore Water-J11223	23.5	7.1	9.9					
		021	Pore Water-J11233	23.4	6.9	9.6					
		022	Pore Water-J11251	23.6	7.1	9.7					
02/06/06	GA	-	FETAX Solution Ctl	21.0	7.1	7.7					
		016	Pore Water-J111Y9	22.8	7.2	10.1					
		017	Pore Water-J11200	22.4	7.2	9.8					
		018	Pore Water-J111W8	22.7	7.0	9.5					
		019	Pore Water-J11222	23.0	7.1	9.9					
		020	Pore Water-J11223	22.8	7.3	10.2					
		021	Pore Water-J11233	22.5	7.0	10.3					
		022	Pore Water-J11251	22.9	7.1	9.9					
02/10/06	BB	-	FETAX Solution Ctl	21.9	7.4	7.8	1577	104	56	<0.06	<0.01
		023	Pore Water-J116D6	22.9	7.6	9.7	140	70	68	<0.06	<0.01
		024	Pore Water-J116D4	23.0	7.6	9.6	139	78	60	<0.06	<0.01
		025	Pore Water-J116D5	23.1	7.7	10.0	138	70	60	<0.06	0.02
		026	Pore Water-J116C9	23.3	7.7	10.5	139	70	60	<0.06	0.03
		027	Pore Water-J116D2	22.3	7.6	9.8	170	72	60	<0.06	0.01
		028	Pore Water-J116D0	22.5	7.6	9.6	138	82	58	<0.06	0.01
		029	Pore Water-J112X5	22.5	7.4	10.2	134	66	60	<0.06	<0.01
		030	Pore Water-J11253	22.8	7.5	10.5	134	84	54	<0.06	<0.01
		031	Pore Water-J11256	22.8	7.6	9.9	135	72	60	<0.06	0.17
		032	Pore Water-J116D1	22.1	7.6	9.5	136	68	58	<0.06	0.02
		033	Pore Water-J116D3	23.2	7.7	10.3	140	66	56	<0.06	<0.01
		034	Pore Water-J116D7	23.2	7.6	9.4	140	64	56	<0.06	0.15
		035	Pore Water-J11225	23.1	7.8	10.7	139	68	48	<0.06	0.08
		036	Pore Water-J112X6	23.4	7.9	9.9	139	72	58	<0.06	<0.01

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
		037	Pore Water-J11254	23.2	7.9	10.4	135	72	60	<0.06	0.01
		038	Pore Water-J116D8	23.4	7.9	10.2	139	70	58	<0.06	0.03
		039	Pore Water-J11255	23.9	7.9	10.1	140	59	62	<0.06	0.10
02/11/06	BB	-	FETAX Solution Ctl	23.4	7.0	7.9					
		029	Pore Water-J112X5	22.9	7.5	10.3					
		030	Pore Water-J11253	22.7	7.5	10.2					
		031	Pore Water-J11256	23.1	7.5	10.1					
		032	Pore Water-J116D1	23.0	7.6	9.7					
02/12/06	BB	-	FETAX Solution Ctl	21.3	6.9	8.9					
		029	Pore Water-J112X5	21.1	7.0	9.6					
		030	Pore Water-J11253	21.2	7.1	9.8					
		031	Pore Water-J11256	21.5	7.2	9.8					
		032	Pore Water-J116D1	21.4	7.2	10.4					
02/13/06	BB	-	FETAX Solution Ctl	21.0	7.0	8.1					
		029	Pore Water-J112X5	22.0	7.2	9.9					
		030	Pore Water-J11253	22.3	7.2	9.6					
		031	Pore Water-J11256	22.5	7.1	9.7					
		032	Pore Water-J116D1	22.4	7.2	10.1					
02/15/06	BB	-	FETAX Solution Ctl	22.7	7.2	7.3					
		023	Pore Water-J116D6	22.3	7.0	10.1					
		024	Pore Water-J116D4	22.5	6.8	9.9					
		025	Pore Water-J116D5	22.6	7.0	9.7					
		026	Pore Water-J116C9	22.6	6.9	10.2					
		027	Pore Water-J116D2	22.4	6.7	10.1					
		028	Pore Water-J116D0	22.7	6.9	9.8					
		033	Pore Water-J116D3	22.4	6.8	9.9					
		034	Pore Water-J116D7	22.7	6.7	9.7					
		035	Pore Water-J11225	22.5	6.8	10.2					
		036	Pore Water-J112X6	22.8	7.2	10.2					
		037	Pore Water-J11254	22.7	6.7	10.1					
		038	Pore Water-J116D8	22.6	6.8	10.0					
		039	Pore Water-J11255	22.6	7.2	10.0					

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
02/16/06	BB	-	FETAX Solution Ctl	21.8	7.1	7.9					
		023	Pore Water-J116D6	22.7	7.8	8.1					
		024	Pore Water-J116D4	22.9	7.6	8.4					
		025	Pore Water-J116D5	23.1	7.8	8.7					
		026	Pore Water-J116C9	23.4	7.8	8.7					
		027	Pore Water-J116D2	23.1	7.7	8.5					
		028	Pore Water-J116D0	23.2	7.8	8.3					
		033	Pore Water-J116D3	22.9	7.8	8.2					
		034	Pore Water-J116D7	23.4	7.8	8.5					
		035	Pore Water-J11225	23.6	7.8	8.4					
		036	Pore Water-J112X6	23.3	7.9	8.7					
		037	Pore Water-J11254	23.3	7.9	8.6					
		038	Pore Water-J116D8	23.5	7.9	8.6					
		039	Pore Water-J11255	23.1	7.8	8.8					
02/17/06	BB	-	FETAX Solution Ctl	21.2	7.2	7.6					
		023	Pore Water-J116D6	23.7	7.7	8.4					
		024	Pore Water-J116D4	24.1	7.7	8.6					
		025	Pore Water-J116D5	23.9	7.7	8.5					
		026	Pore Water-J116C9	23.9	7.8	8.4					
		027	Pore Water-J116D2	24.0	7.7	8.7					
		028	Pore Water-J116D0	23.7	7.7	8.3					
		033	Pore Water-J116D3	24.1	7.8	8.5					
		034	Pore Water-J116D7	24.0	7.7	8.2					
		035	Pore Water-J11225	23.8	7.8	8.9					
		036	Pore Water-J112X6	23.9	7.8	8.3					
		037	Pore Water-J11254	24.1	7.9	8.4					
		038	Pore Water-J116D8	24.0	7.9	8.0					
		039	Pore Water-J11255	23.7	7.7	8.2					
02/18/06	BB	-	FETAX Solution Ctl	20.6	7.0	7.4					
		023	Pore Water-J116D6	23.1	7.7	8.5					
		024	Pore Water-J116D4	23.0	7.7	8.8					
		025	Pore Water-J116D5	22.8	7.7	8.9					
		026	Pore Water-J116C9	23.2	7.8	8.3					
		027	Pore Water-J116D2	22.9	7.7	8.7					
		028	Pore Water-J116D0	23.3	7.7	8.5					
		033	Pore Water-J116D3	23.0	7.6	8.2					

CH2M05-00105
Washington Closure Hanford
FORT ENVIRONMENTAL LABORATORIES

GENERAL WATER CHEMISTRY

Analysis Date	Tech Initials	FEL No.	Sample ID	Temp (C)	pH (su)	DO (mg/L)	Conduct. (µS/cm)	Hardness (mg/L)	Alkalinity (mg/L)	NH_3-N (mg/L)	Residual Oxidants (mg/L)
		034	Pore Water-J116D7	23.0	7.9	8.9					
		035	Pore Water-J11225	22.7	7.9	8.4					
		036	Pore Water-J112X6	22.9	7.9	8.7					
		037	Pore Water-J11254	23.1	7.9	8.7					
		038	Pore Water-J116D8	23.2	7.7	8.5					
		039	Pore Water-J11255	22.8	7.7	8.6					

Appendix C

Raw and Statistical Data

FETAX SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	01/25/06
Test Material:	Controls	FEL Sample No.:	001-011	Test End Date:	01/29/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/31/06

	Sample ID/Concentration *(unit)*															
Malformation:	FETAX Ctl												5.5mg/L 6AN		2500mg/L 6AN	
Stunted																
Edema																
Blister																
Head/Facial													15	13		
Jaw																
Mouth													15	13		
Eye													4	2		
Brain																
Cardiac																
Gut													15	13		
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	0	0									15	13	-	-
Total Survived	25	25	25	25									25	25	0	0
Total Tested	25	25	25	25									25	25	25	25
% Mortality	0.0	0.0	0.0	0.0									0.0	0.0	100.0	100.0
% Malformed	0.0	0.0	0.0	0.0									60.0	52.0	-	-
Avg % Mortality	0.0												0.0		100.0	
SEM (Mortality)	0.0												0.00		0.00	
Avg % Malformed	0.0												56.0		-	
SEM (Malformed)	0.0												4.00		-	

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
FETAX Ctl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
5.5mg/L 6AN	1	15	0	0	0	15	0	15	4	0	0	15	0	0	0	0	0	0	0	0	0
	2	13	0	0	0	13	0	13	2	0	0	13	0	0	0	0	0	0	0	0	0
Total Survived	50																				
Total Malformed		28	0	0	0	28	0	28	5	0	0	28	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	56.00	0.00	56.00	12.00	0.00	0.00	56.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	2.53	na	2.53	11.79	na	na	2.53	na	na	na	na	na	na	na	na	na
2500mg/L 6AN	1	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	01/25/06
Test Material:	Pore Water	FEL Sample No.:	001-011	Test End Date:	01/29/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/31/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J11114				J11115				J11116				J11117			
Stunted													1			
Edema																
Blister																
Head/Facial						2					3		1	2	1	
Jaw																
Mouth						1					3		1	2	1	
Eye											1					
Brain																
Cardiac																
Gut											2		1	2	1	
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	0	0	0	2	0	0	0	0	3	0	1	2	1	0
Total Survived	25	25	25	25	25	25	25	25	25	25	23	25	24	25	25	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	4.0	0.0	0.0	0.0
% Malformed	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	13.0	0.0	4.2	8.0	4.0	0.0
Avg % Mortality	0.0				0.0				2.0				1.0			
SEM (Mortality)	0.0				0.0				2.0				1.0			
Avg % Malformed	0.0				2.0				3.1				4.0			
SEM (Malformed)	0.0				2.0				3.3				1.6			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J11114	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J11115	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		2	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	50.00	na	50.00	na	na	na	na	na	na	na	na	na	na	na	na	na
J11116	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	3	0	0	0	3	0	3	1	0	0	2	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		3	0	0	0	3	0	3	1	0	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	3.06	0.00	3.06	1.02	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	2.25	0.00	2.25	0.25	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.75	0.00	0.75	0.25	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	49.00	na	49.00	49.00	na	na	49.00	na	na	na	na	na	na	na	na	na
J11117	1	1	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	2	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		4	1	0	0	4	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0
% Malformed			1.01	0.00	0.00	4.04	0.00	4.04	0.00	0.00	0.00	4.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.25	0.00	0.00	0.67	0.00	0.67	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.25	0.00	0.00	0.41	0.00	0.41	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			49.50	na	na	20.21	na	20.21	na	na	na	20.21	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	01/25/06
Test Material:	Pore Water	FEL Sample No.:	001-011	Test End Date:	01/29/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/31/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J11189				J11190				J111B0				J111L7			
Stunted																
Edema									1			2		2		1
Blister																
Head/Facial		2	1			2			1	1		3		2		1
Jaw																
Mouth		2	1			1			1	1		2		2		1
Eye																
Brain										1		1		2		1
Cardiac														2		1
Gut		2				2						2				
Hemorrhage																
Tail/Myotome						1										
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	2	1	0	0	2	0	0	1	1	0	3	0	2	0	1
Total Survived	25	25	25	25	25	24	25	25	25	24	24	25	23	23	25	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	4.0	0.0	8.0	8.0	0.0	0.0
% Malformed	0.0	8.0	4.0	0.0	0.0	8.3	0.0	0.0	4.0	4.2	0.0	12.0	0.0	8.7	0.0	4.0
Avg % Mortality	0.0				1.0				2.0				4.0			
SEM (Mortality)	0.0				1.0				1.2				2.3			
Avg % Malformed	3.0				2.0				5.1				3.1			
SEM (Malformed)	1.9				2.1				2.5				2.1			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J11189	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		3	0	0	0	3	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.92	0.00	0.92	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.48	0.00	0.48	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	31.91	na	31.91	na	na	na	50.00	na	na	na	na	na	na	na	na	na
J11190	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	0	0	0	2	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		2	0	0	0	2	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.02	0.00	1.01	0.00	0.00	0.00	2.02	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	1.00	0.00	0.25	0.00	0.00	0.00	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	49.50	na	49.50	na	na	na	49.50	na	49.50	na	na	na	na	na	na	na
J111B0	1	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	3	0	2	0	3	0	2	0	1	0	2	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		5	0	3	0	5	0	4	0	2	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	3.06	0.00	5.10	0.00	4.08	0.00	2.04	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.92	0.00	1.58	0.00	0.67	0.00	0.33	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.48	0.00	0.63	0.00	0.41	0.00	0.29	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	31.28	na	24.66	na	20.00	na	28.29	na	49.00	na	na	na	na	na	na	na	na	na
J111L7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	0	2	0	2	0	2	0	2	2	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	1	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0
Total Survived	96																				
Total Malformed		3	0	3	0	3	0	3	0	3	3	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	3.13	0.00	3.13	0.00	3.13	0.00	3.13	3.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.92	0.00	0.92	0.00	0.92	0.00	0.92	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.48	0.00	0.48	0.00	0.48	0.00	0.48	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	30.64	na	30.64	na	30.64	na	30.64	30.64	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	01/25/06
Test Material:	Pore Water	FEL Sample No.:	001-011	Test End Date:	01/29/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/31/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J111L8				J111L9				J111M0							
Stunted																
Edema		2														
Blister																
Head/Facial		3		1								1				
Jaw																
Mouth		2		1								1				
Eye		2		1								1				
Brain		1														
Cardiac																
Gut		1														
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	3	0	1	0	0	0	0	0	0	0	1				
Total Survived	25	24	24	24	25	24	25	25	24	24	24	25				
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25				
% Mortality	0.0	4.0	4.0	4.0	0.0	4.0	0.0	0.0	4.0	4.0	4.0	0.0				
% Malformed	0.0	12.5	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0				
Avg % Mortality	3.0				1.0				3.0							
SEM (Mortality)	1.0				1.0				1.0							
Avg % Malformed	4.1				0.0				1.0							
SEM (Malformed)	2.9				0.0				1.0							

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J111L8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	3	0	2	0	3	0	2	2	1	0	1	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		4	0	2	0	4	0	3	3	1	0	1	0	0	0	0	0	0	0	0	0
% Malformed			0.00	2.06	0.00	4.12	0.00	3.09	3.09	1.03	0.00	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	1.00	0.00	2.00	0.00	0.92	0.92	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.50	0.00	0.71	0.00	0.48	0.48	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	48.50	na	34.29	na	30.96	30.96	48.50	na	48.50	na	na	na	na	na	na	na	na	na
J111L9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J111M0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	1.03	0.00	1.03	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	48.50	na	48.50	48.50	na	na	na	na	na	na	na	na	na	na	na	na

FIGURE 1
CH2M05-00105 (001-011)
FETAX Screen with *X. laevis*
FETAX Solution Control

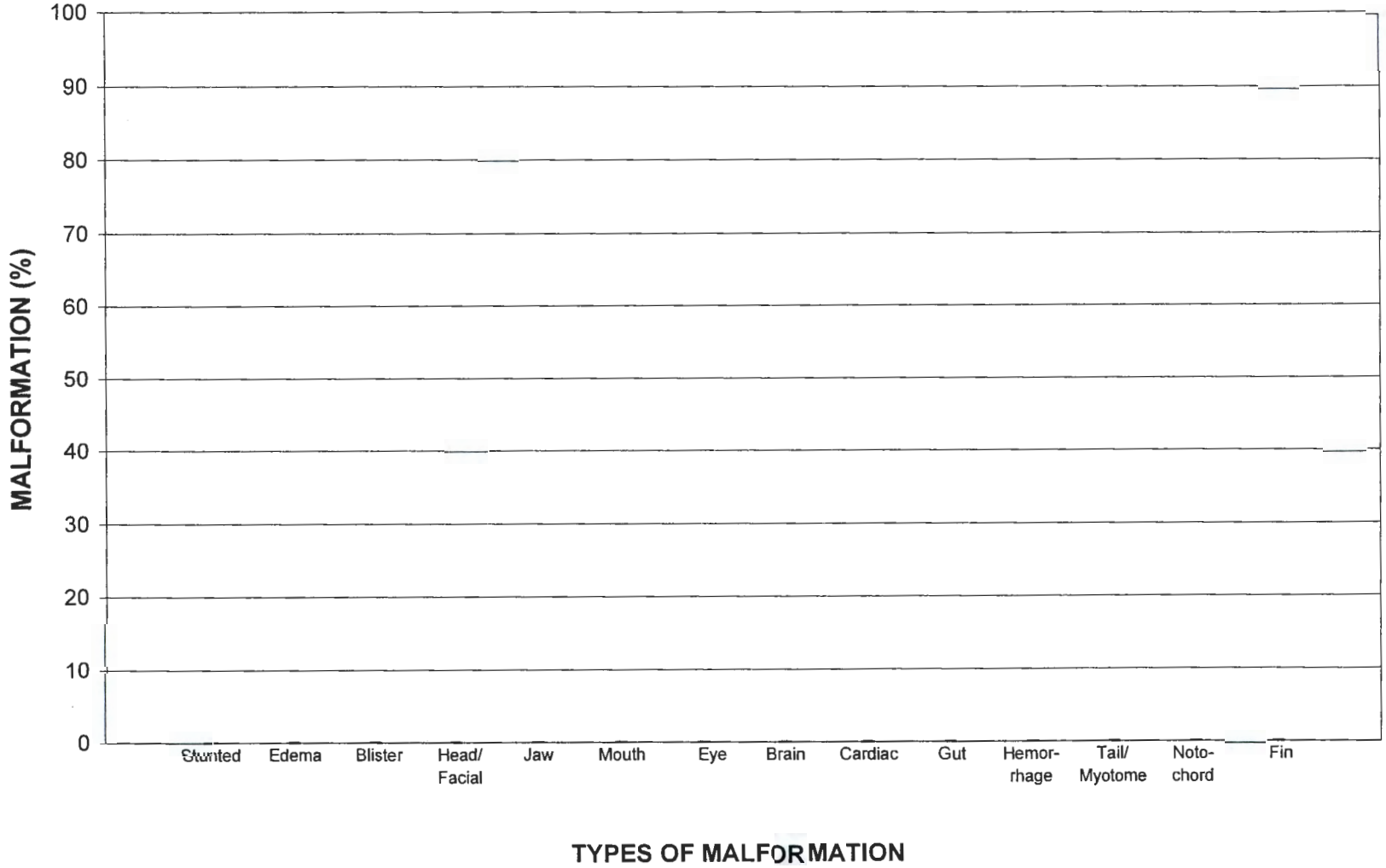


FIGURE 2
CH2M05-00105
FETAX Screen with *X. laevis*
J11114

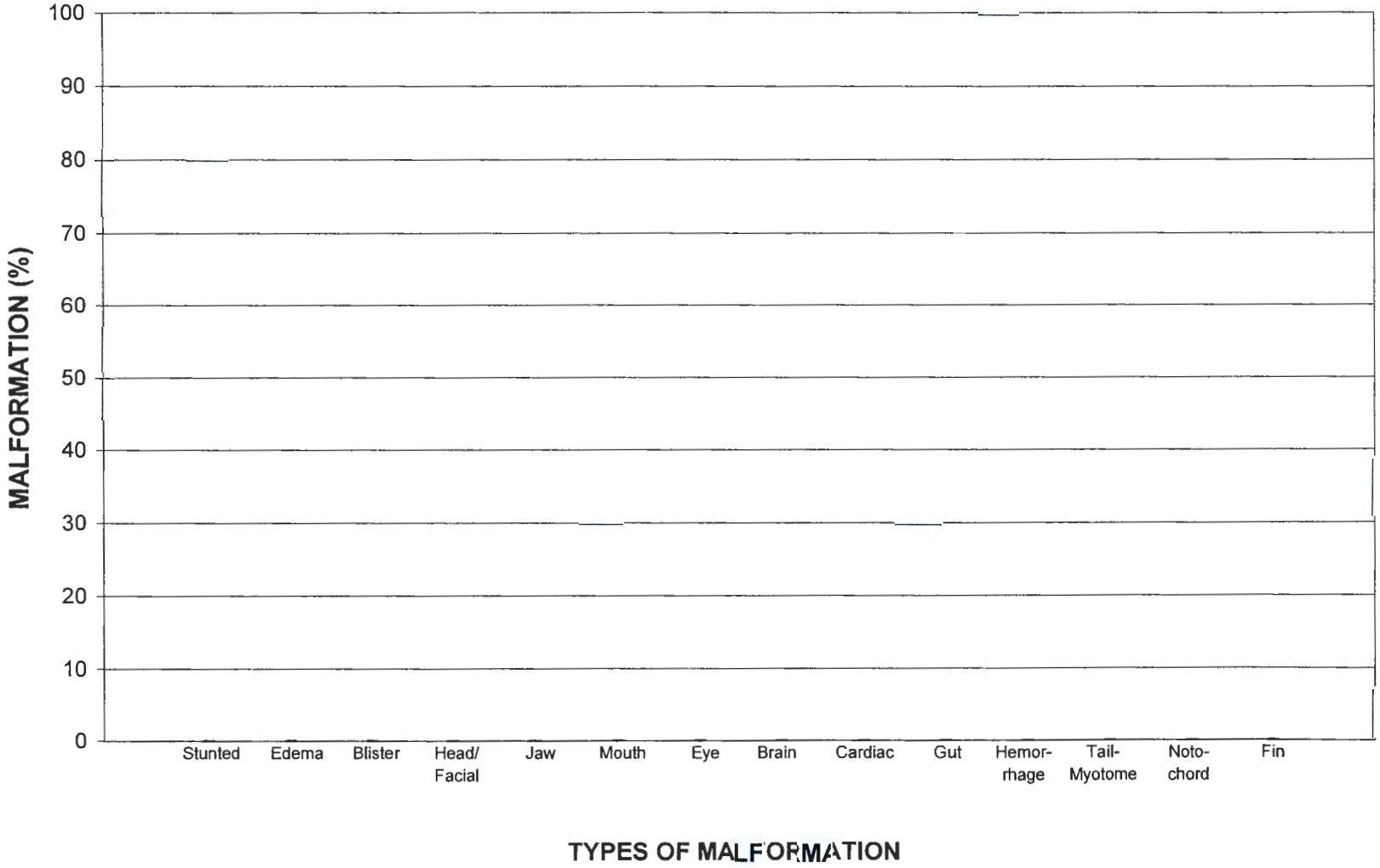


FIGURE 3
CH2M05-00105
FETAX Screen with *X. laevis*
J11115

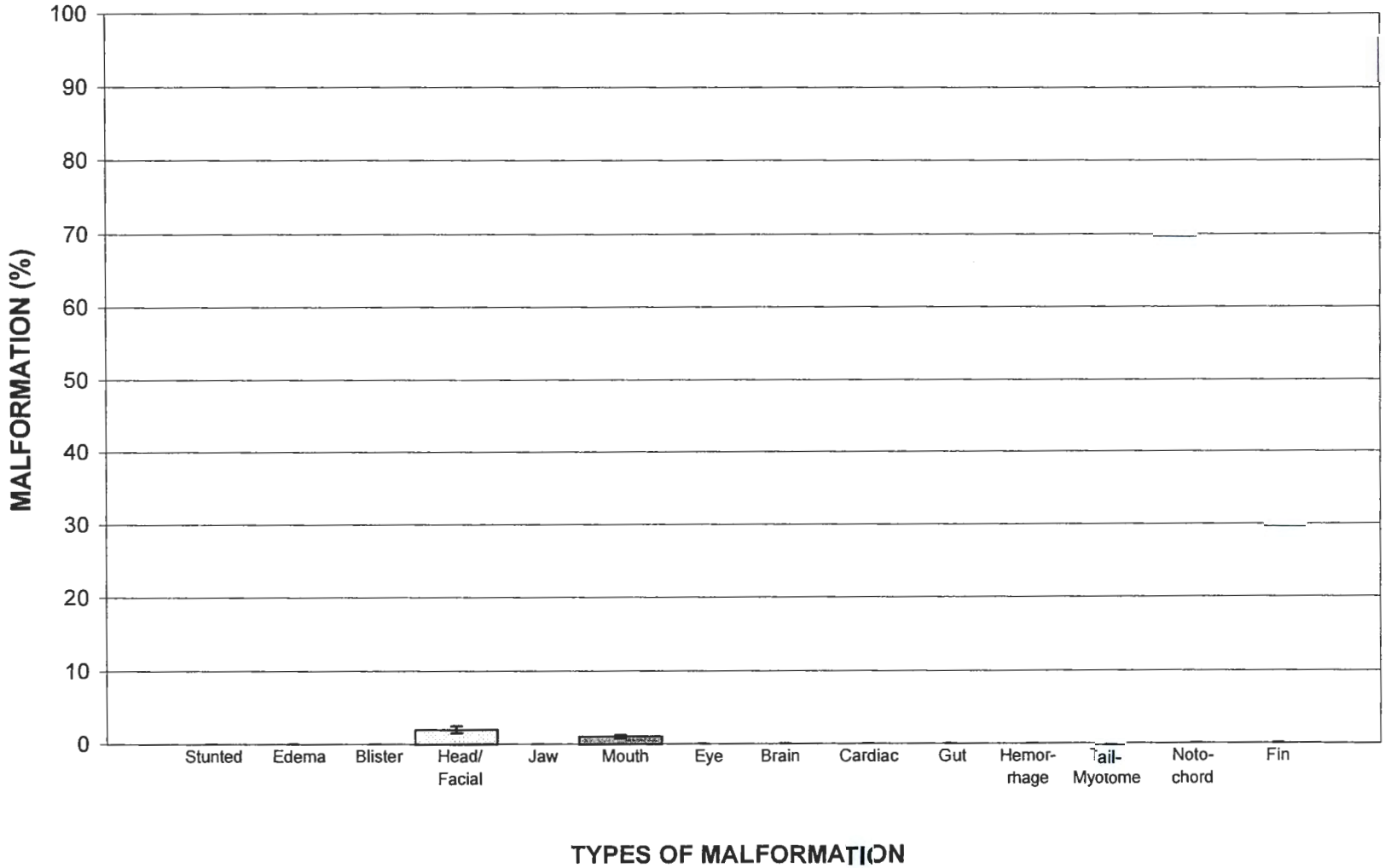


FIGURE 4
CH2M05-00105
FETAX Screen with *X. laevis*
J11116

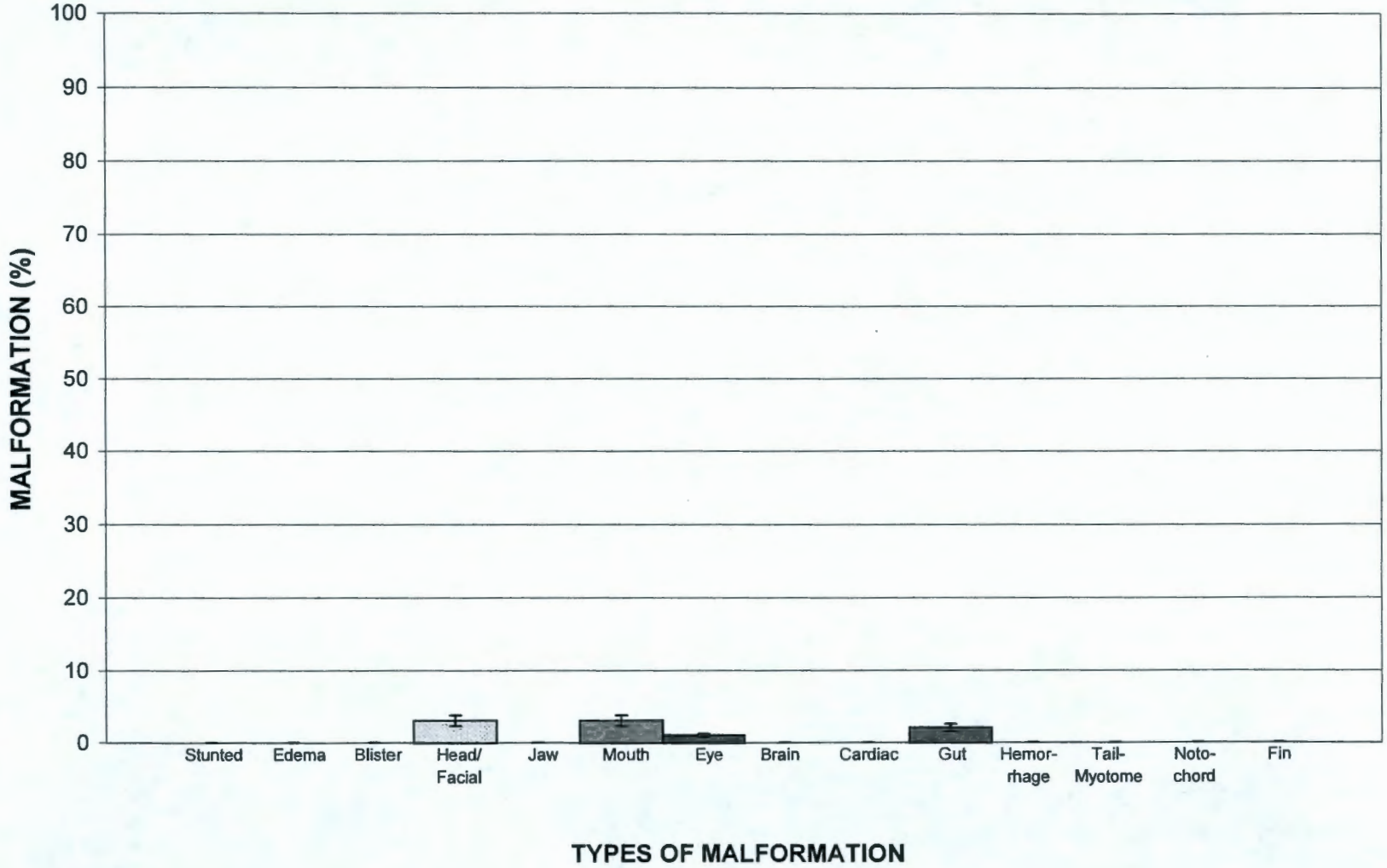


FIGURE 5
CH2M05-00105
FETAX Screen with *X. laevis*
J11117

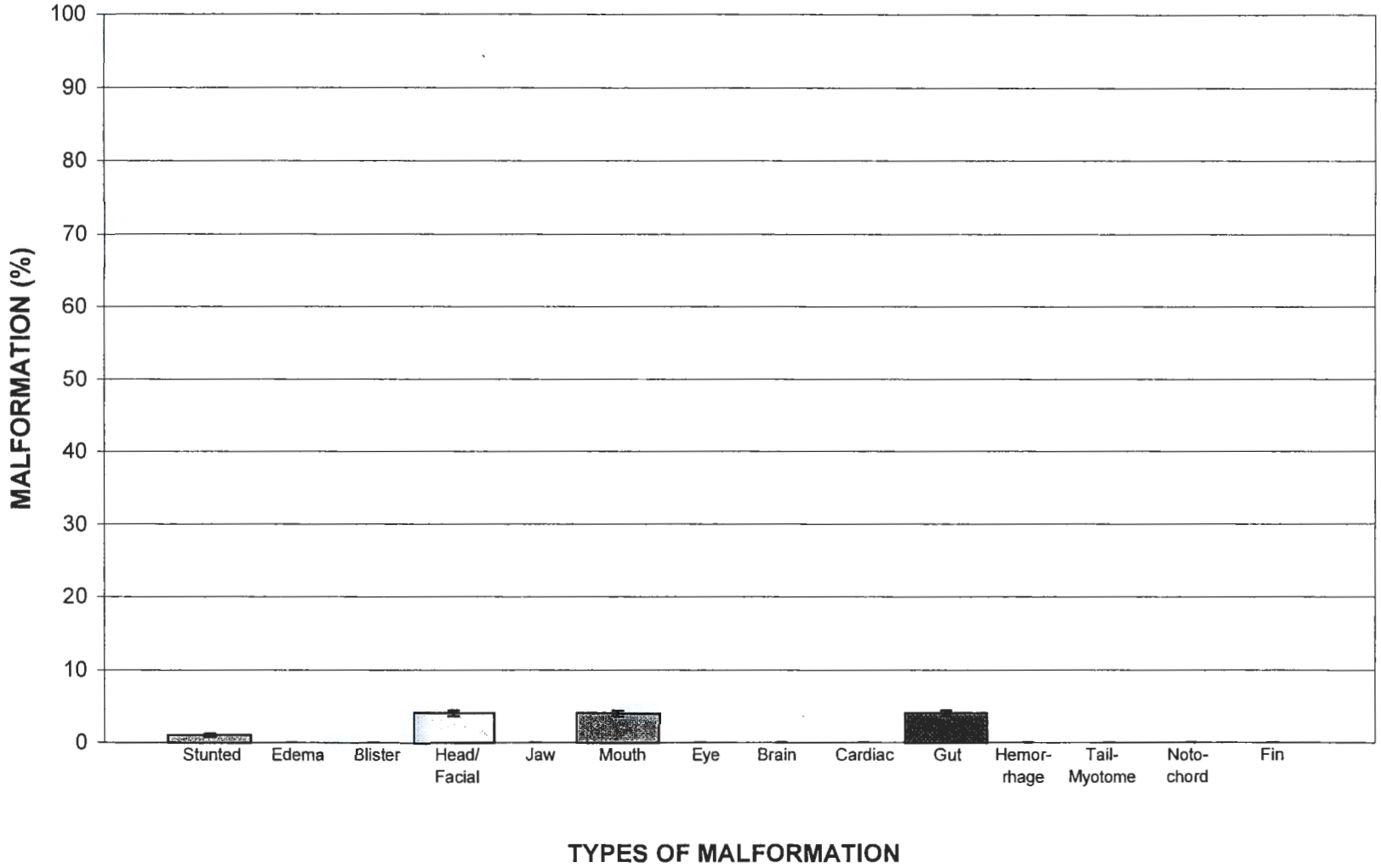


FIGURE 6
CH2M05-00105
FETAX Screen with *X. laevis*
J11189

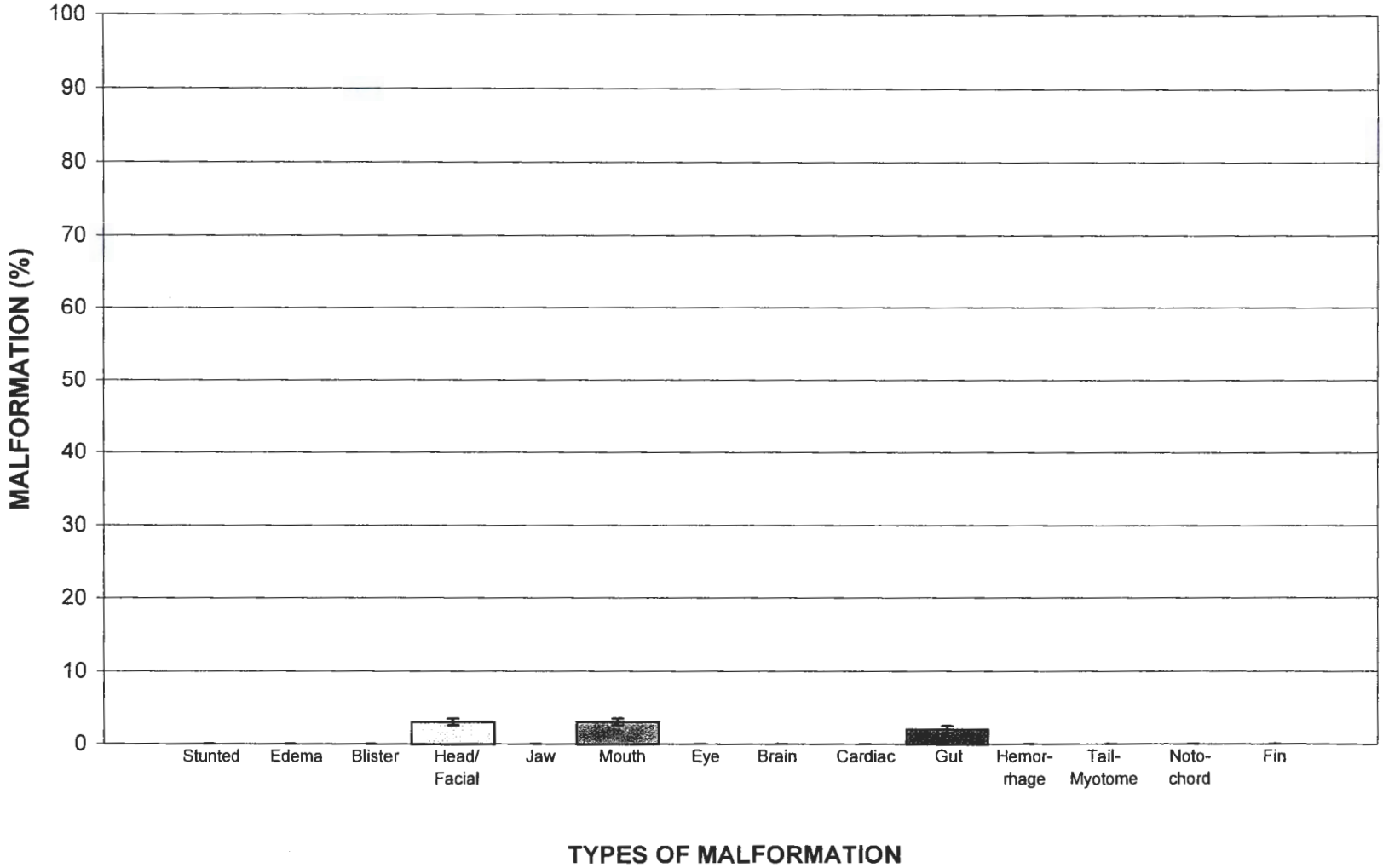


FIGURE 7
CH2M05-00105
FETAX Screen with *X. laevis*
J11190

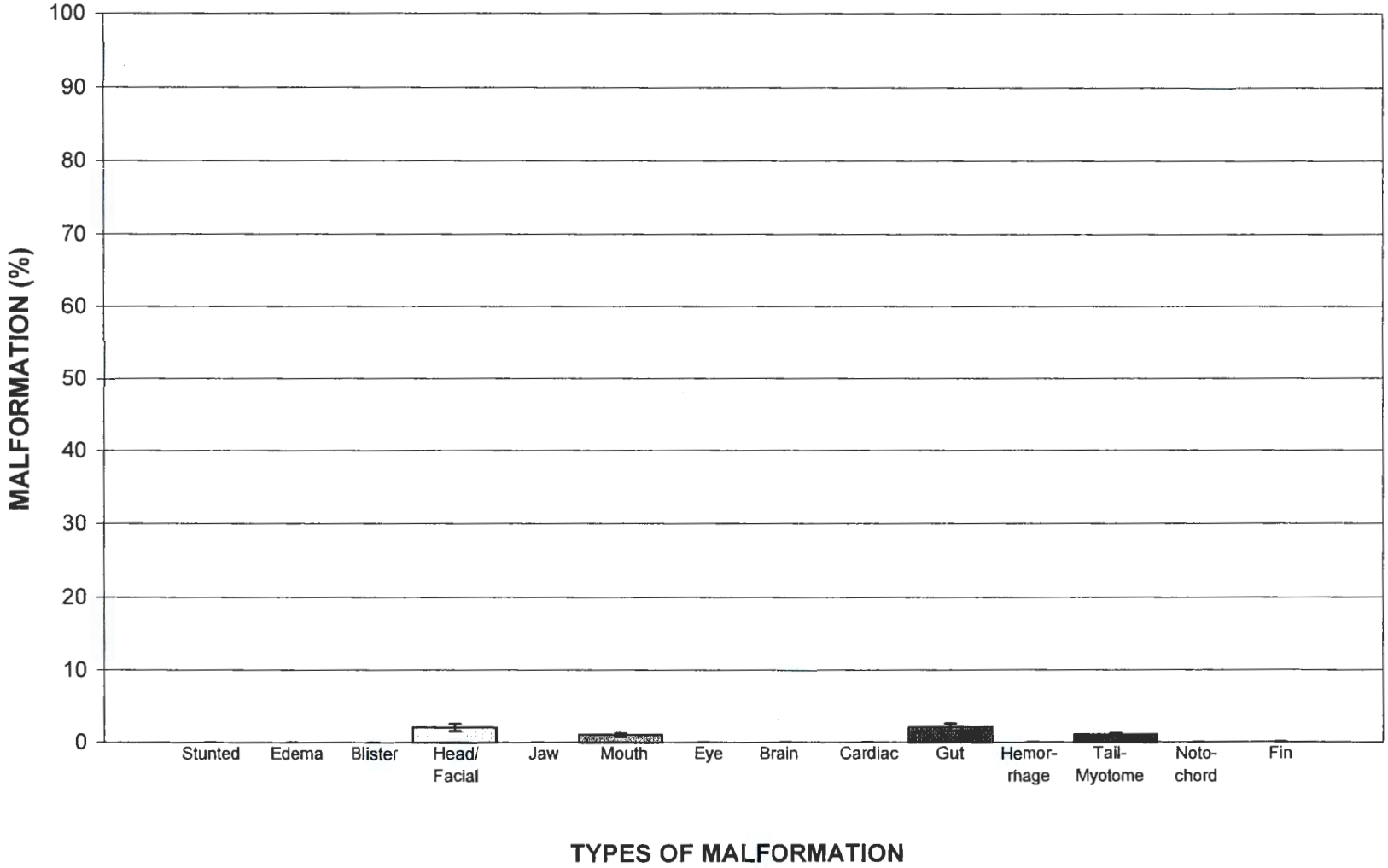


FIGURE 8
CH2M05-00105
FETAX Screen with *X. laevis*
J111B0

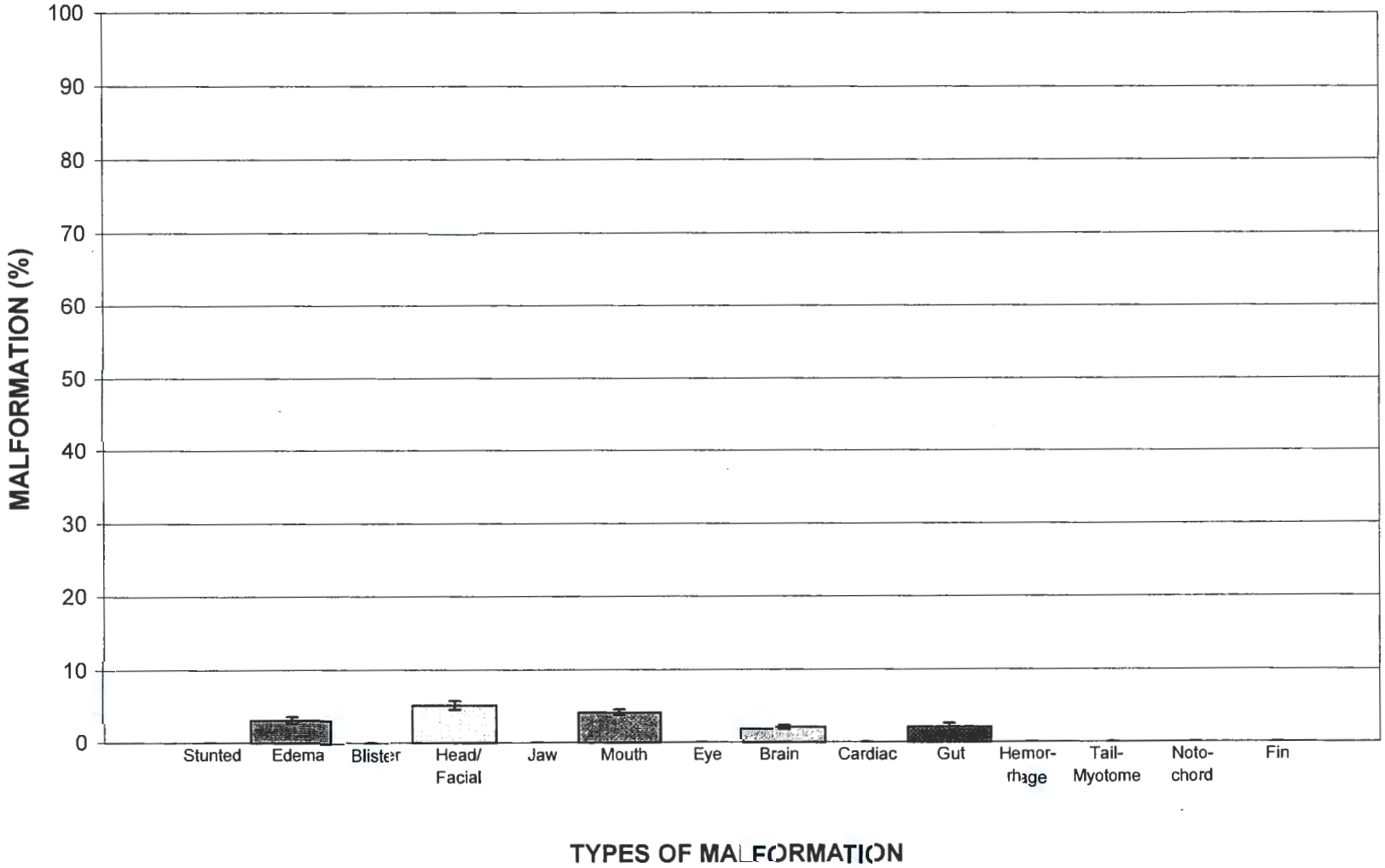


FIGURE 9
CH2M05-00105
FETAX Screen with *X. laevis*
J111L7

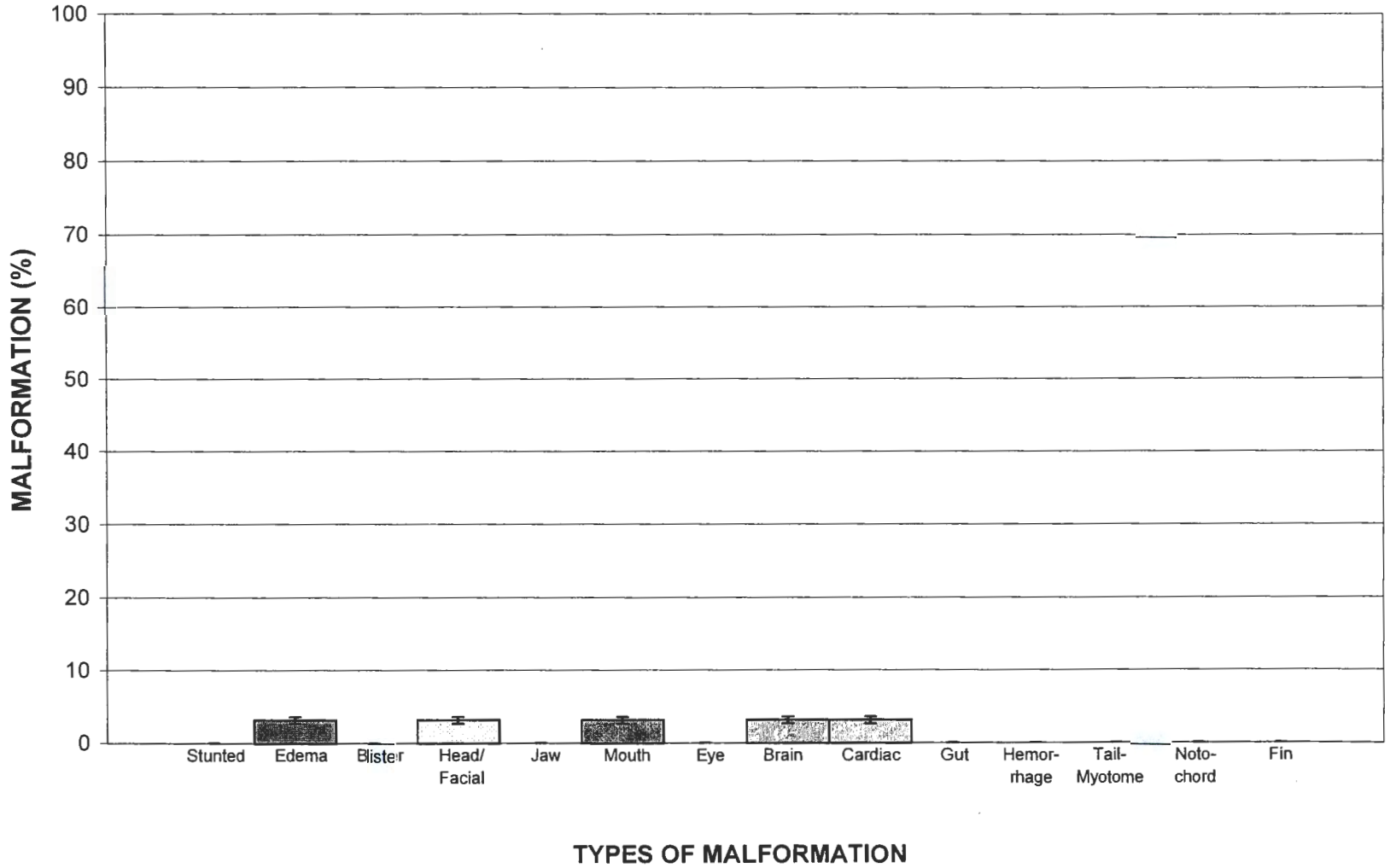


FIGURE 10
CH2M05-00105
FETAX Screen with *X. laevis*
J111L8

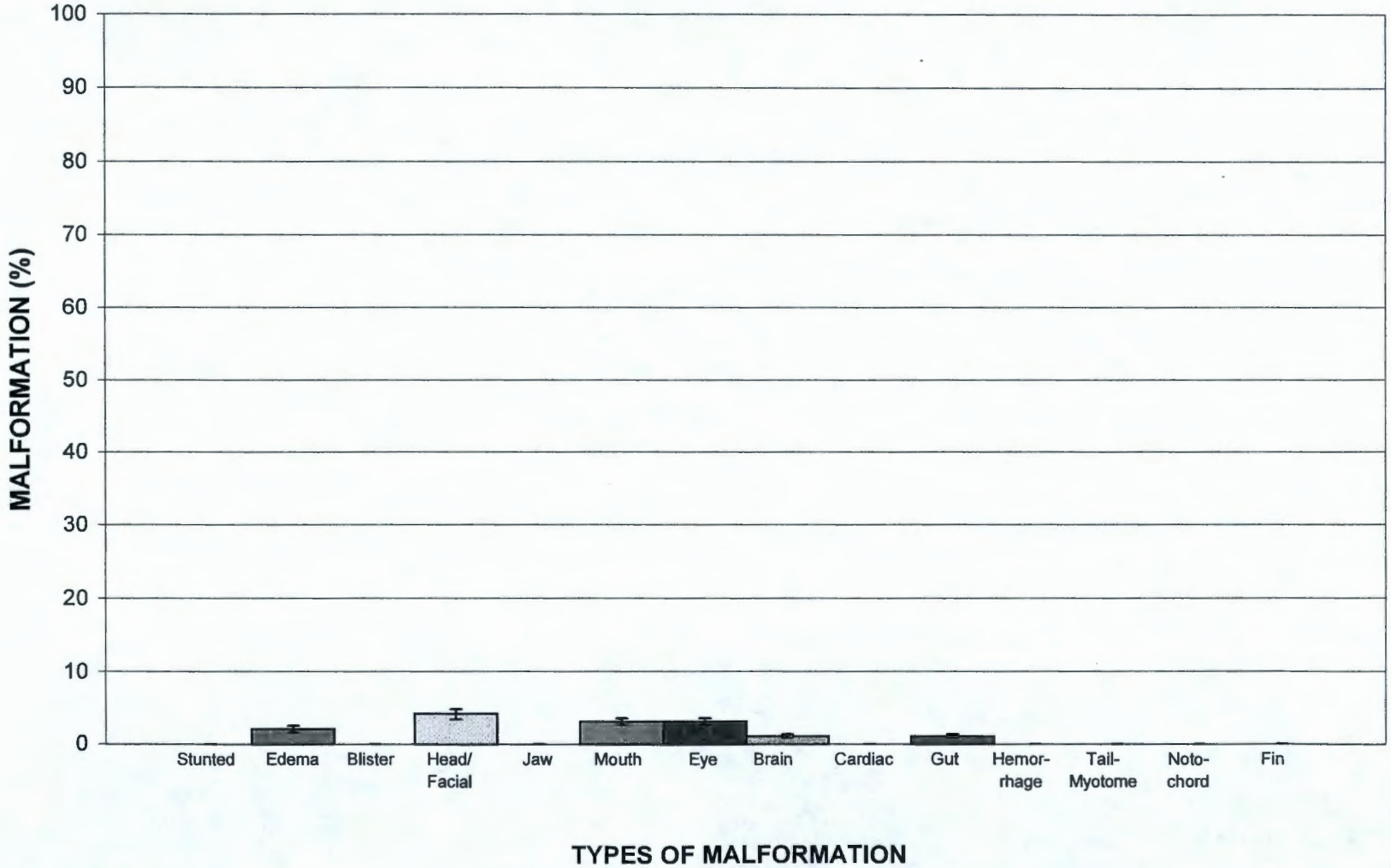


FIGURE 11
CH2M05-00105
FETAX Screen with *X. laevis*
J111L9

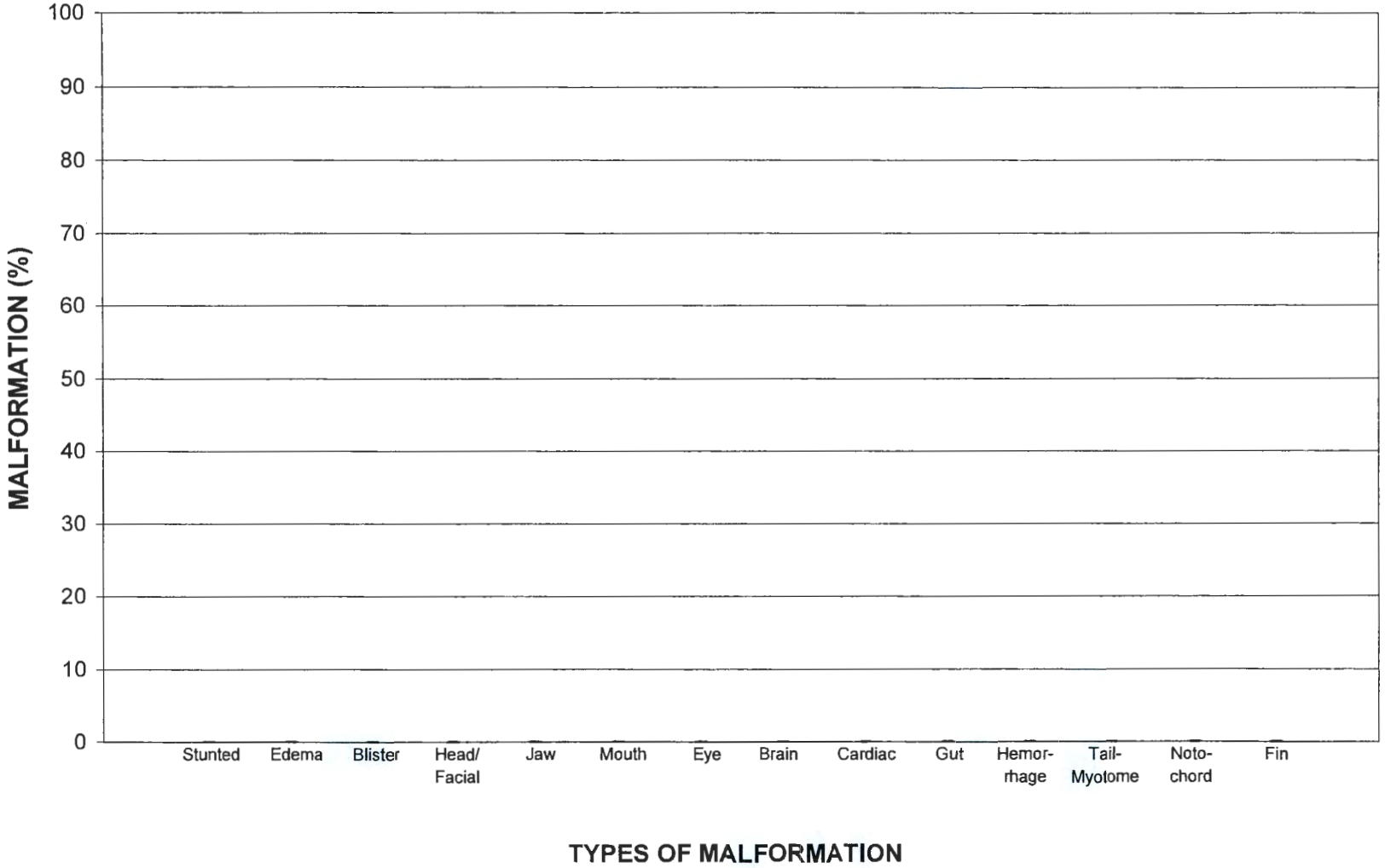


FIGURE 12
CH2M05-00105
FETAX Screen with *X. laevis*
J111M0

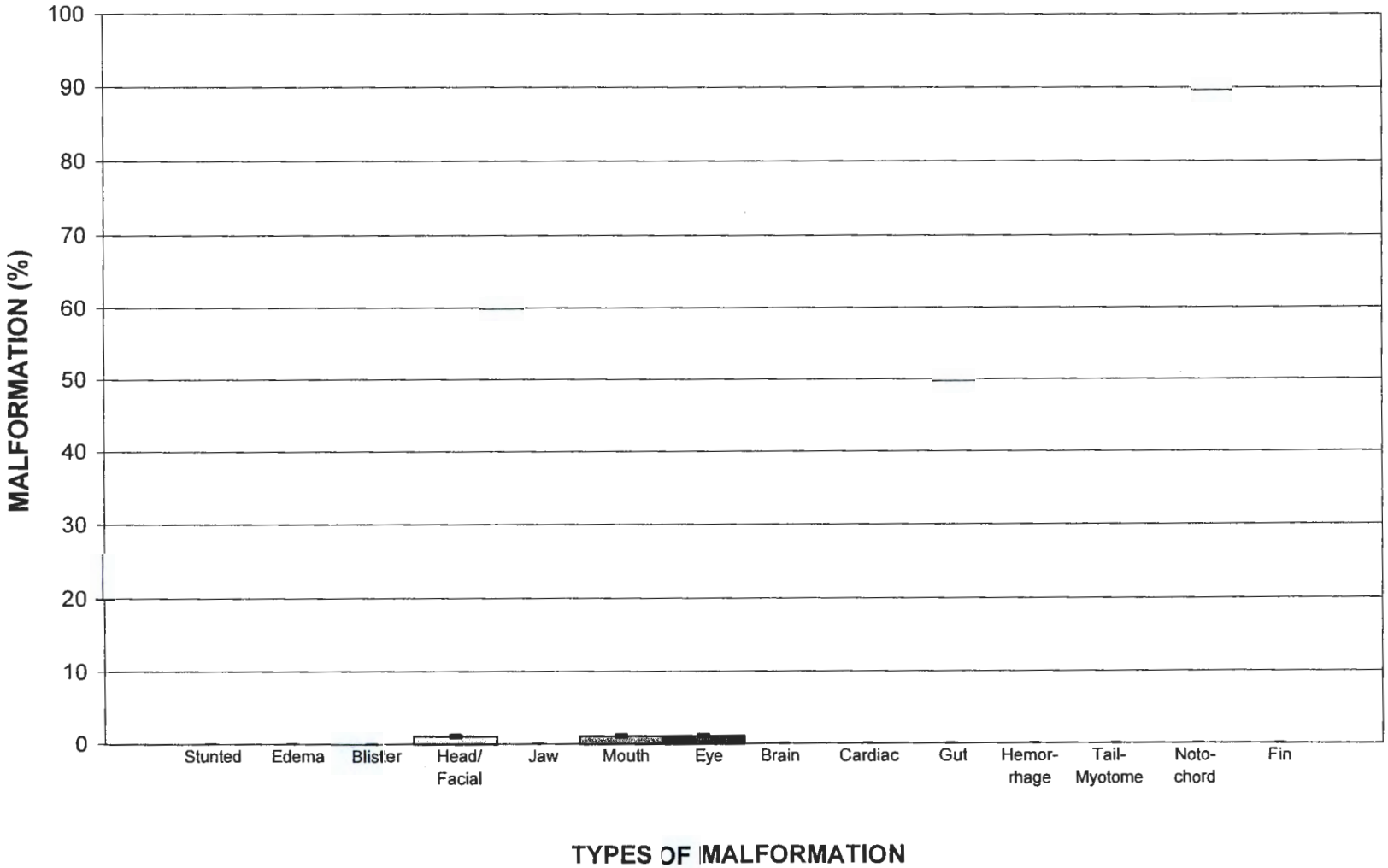


FIGURE 13
CH2M05-00105
FETAX Screen with *X. laevis*

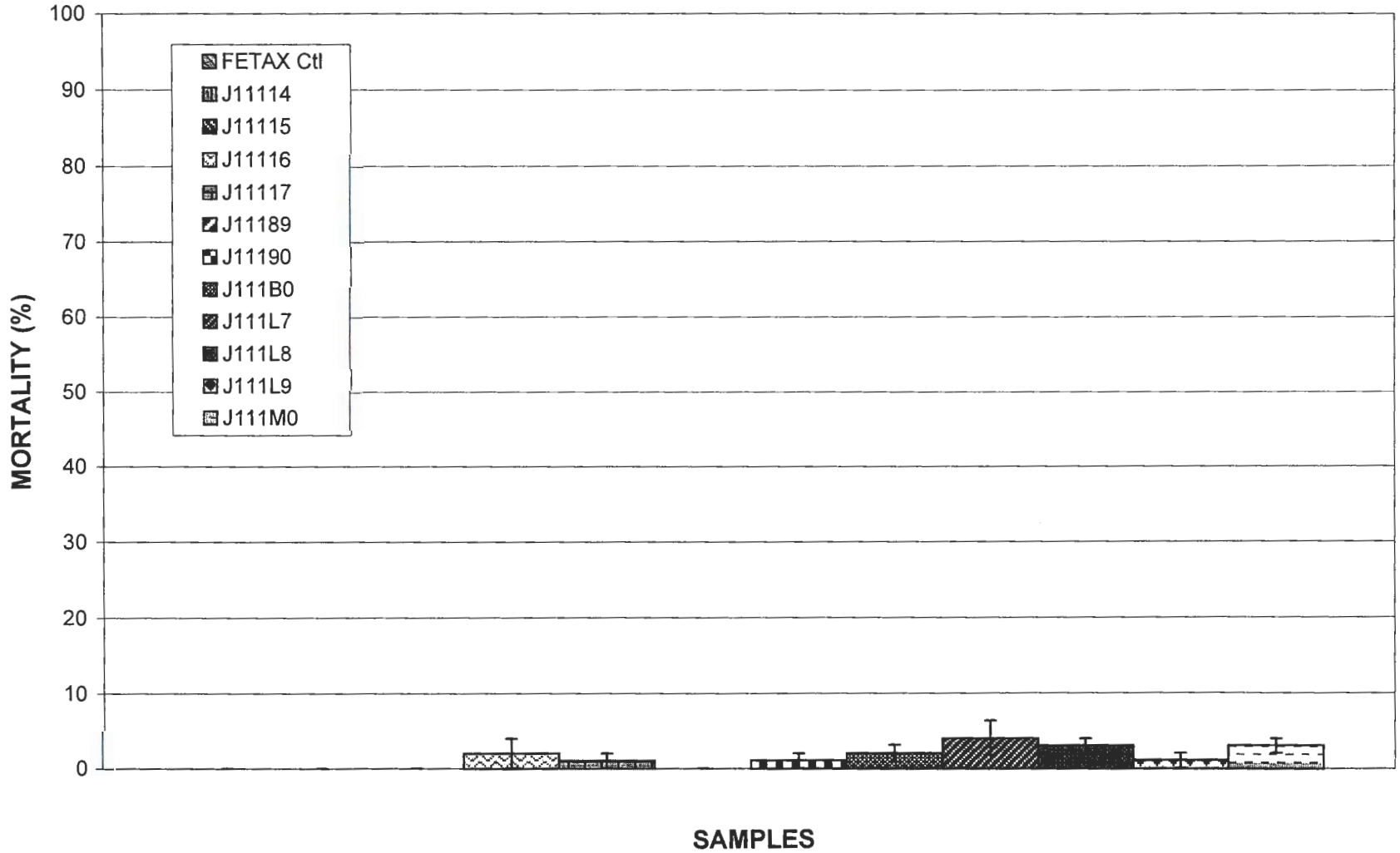
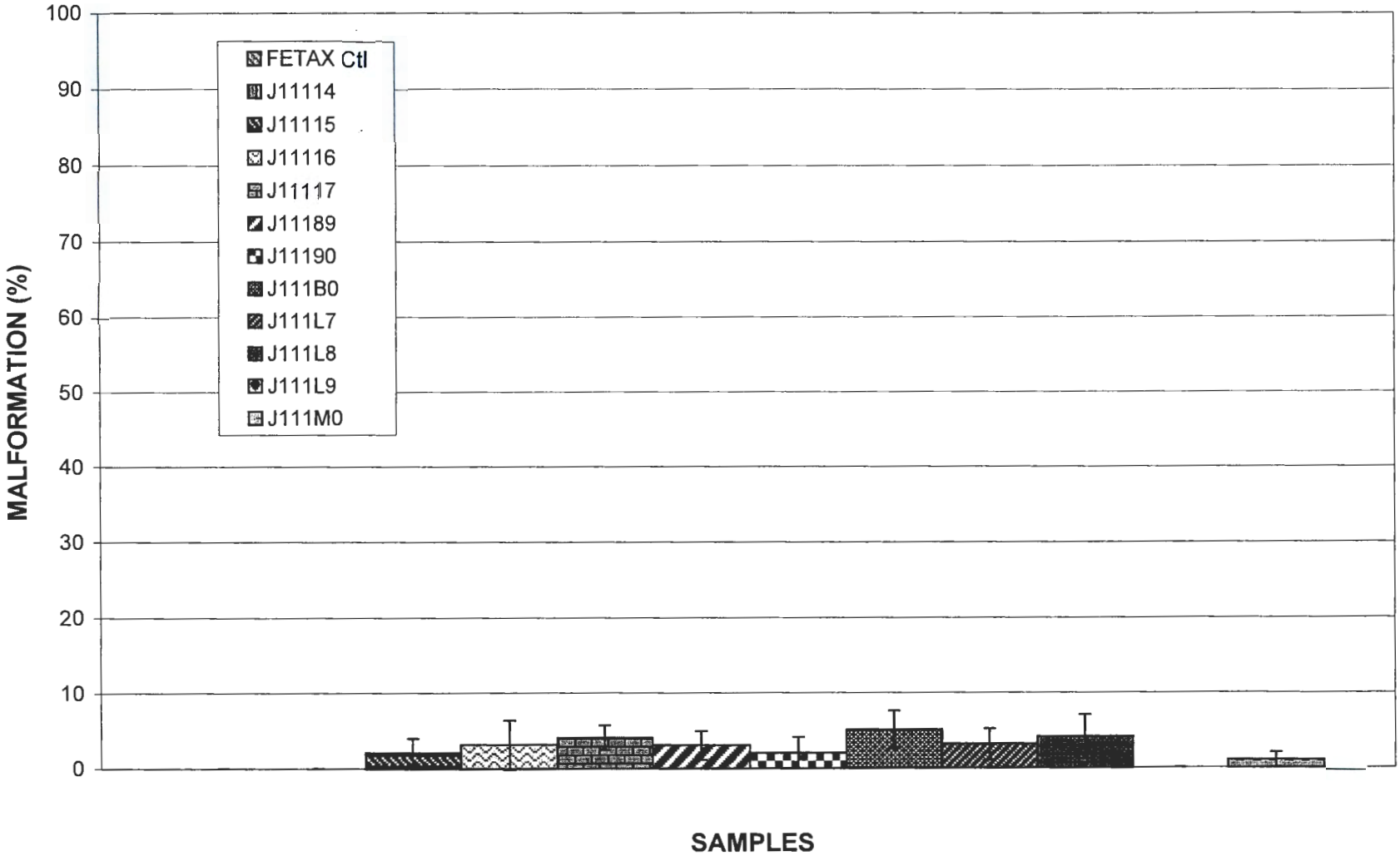


FIGURE 14
CH2M05-00105
FETAX Screen with *X. laevis*



FETAX SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/02/06
Test Material:	Controls	FEL Sample No.:	012-015	Test End Date:	02/06/02
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/10/06

	Sample ID/Concentration *(unit)*															
Malformation:	FETAX Ctl												5.5mg/L 6AN		2500mg/L 6AN	
Stunted																
Edema																
Blister																
Head/Facial	1												13	10		
Jaw																
Mouth	1												13	10		
Eye													3	2		
Brain																
Cardiac																
Gut													13	10		
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																
Total Malformed	1	0	0	0									13	10	-	-
Total Survived	25	25	24	24									24	24	0	0
Total Tested	25	25	25	25									25	25	25	25
% Mortality	0.0	0.0	4.0	4.0									4.0	4.0	100.0	100.0
% Malformed	4.0	0.0	0.0	0.0									54.2	41.7	-	-
Avg % Mortality	2.0												4.0		100.0	
SEM (Mortality)	1.2												0.00		0.00	
Avg % Malformed	1.0												47.9		-	
SEM (Malformed)	1.0												6.25		-	

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
FETAX Ctl	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	1.02	0.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	49.00	na	49.00	na	na	na	na	na	na	na	na	na	na	na	na	na
5.5mg/L 6AN	1	13	0	0	0	13	0	13	3	0	0	13	0	0	0	0	0	0	0	0	0
	2	10	0	0	0	10	0	10	2	0	0	10	0	0	0	0	0	0	0	0	0
Total Survived	48																				
Total Malformed		23	0	0	0	23	0	23	5	0	0	23	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	47.92	0.00	47.92	10.42	0.00	0.00	47.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	4.50	0.00	4.50	0.50	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	1.50	0.00	1.50	0.50	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	4.43	na	4.43	6.79	na	na	4.43	na	na	na	na	na	na	na	na	na
2500mg/L 6AN	1	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/02/06
Test Material:	Pore Water	FEL Sample No.:	012-015	Test End Date:	02/06/02
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/10/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J111K5				J111W9				J111X3				J111M1			
Stunted																
Edema																
Blister																
Head/Facial									2			1	2	1		1
Jaw																
Mouth									1			1	2	1		1
Eye																
Brain													1			
Cardiac													1			
Gut									2			1	2	1		1
Hemorrhage													2			
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	0	0	0	0	0	0	2	0	0	1	2	1	0	1
Total Survived	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Malformed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	4.0	8.0	4.0	0.0	4.0
Avg % Mortality	0.0				0.0				0.0				0.0			
SEM (Mortality)	0.0				0.0				0.0				0.0			
Avg % Malformed	0.0				0.0				3.0				4.0			
SEM (Malformed)	0.0				0.0				1.9				1.6			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J111K5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J111W9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J111X3	1	2	0	0	0	2	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		3	0	0	0	3	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	3.00	0.00	2.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.92	0.00	0.33	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.48	0.00	0.29	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	31.91	na	28.87	na	na	na	31.91	na	na	na	na	na	na	na	na	na
J111M1	1	2	0	0	0	2	0	2	0	1	1	2	2	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		4	0	0	0	4	0	4	0	1	1	4	2	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	4.00	0.00	4.00	0.00	1.00	1.00	4.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.67	0.00	0.67	0.00	0.25	0.25	0.67	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.41	0.00	0.41	0.00	0.25	0.25	0.41	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	20.41	na	20.41	na	50.00	50.00	20.41	50.00	na	na	na	na	na	na	na	na

FIGURE 1
CH2M05-00105 (012-015)
FETAX Screen with *X. laevis*
FETAX Solution Control

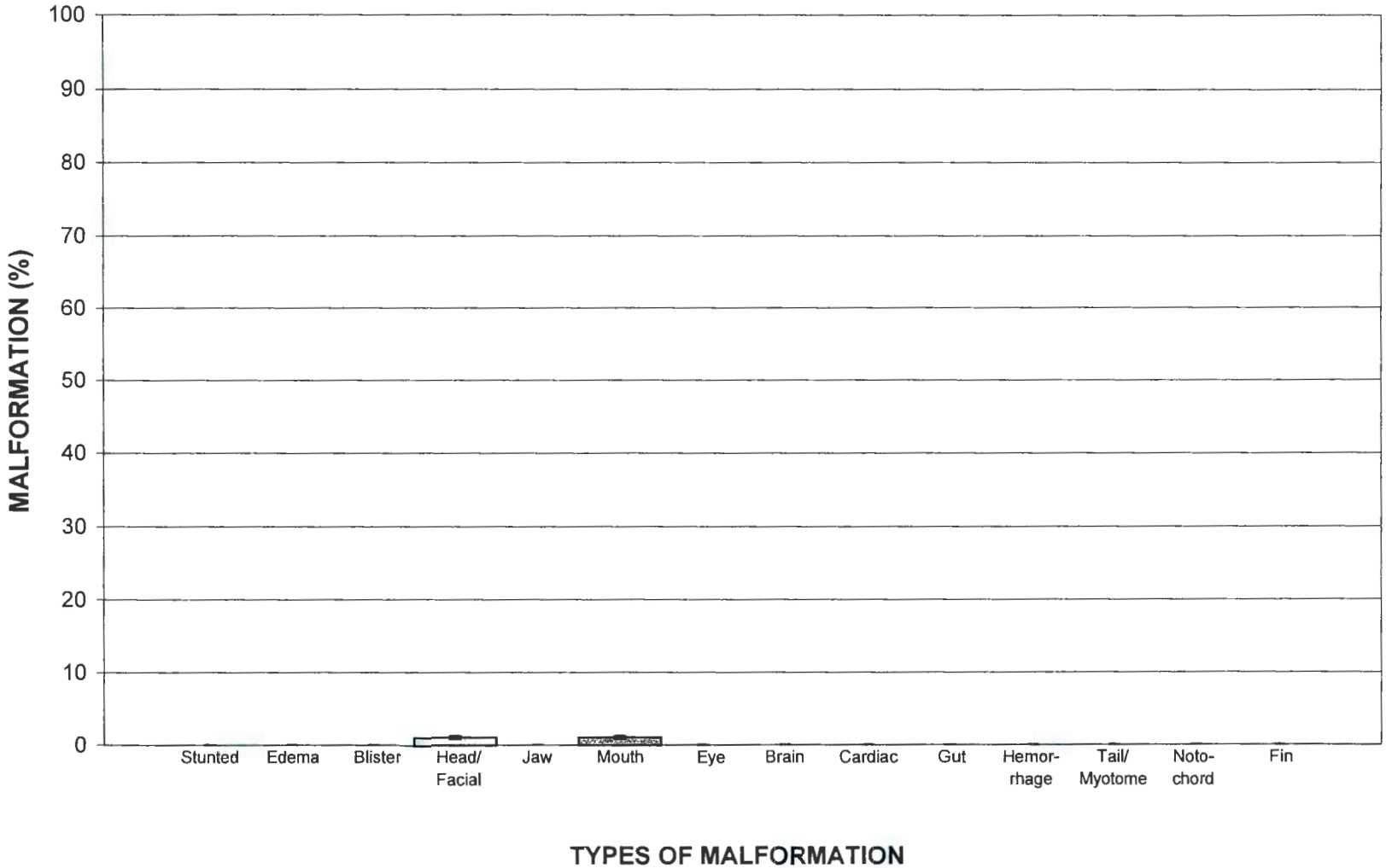


FIGURE 2
CH2M05-00105
FETAX Screen with *X. laevis*
J11114

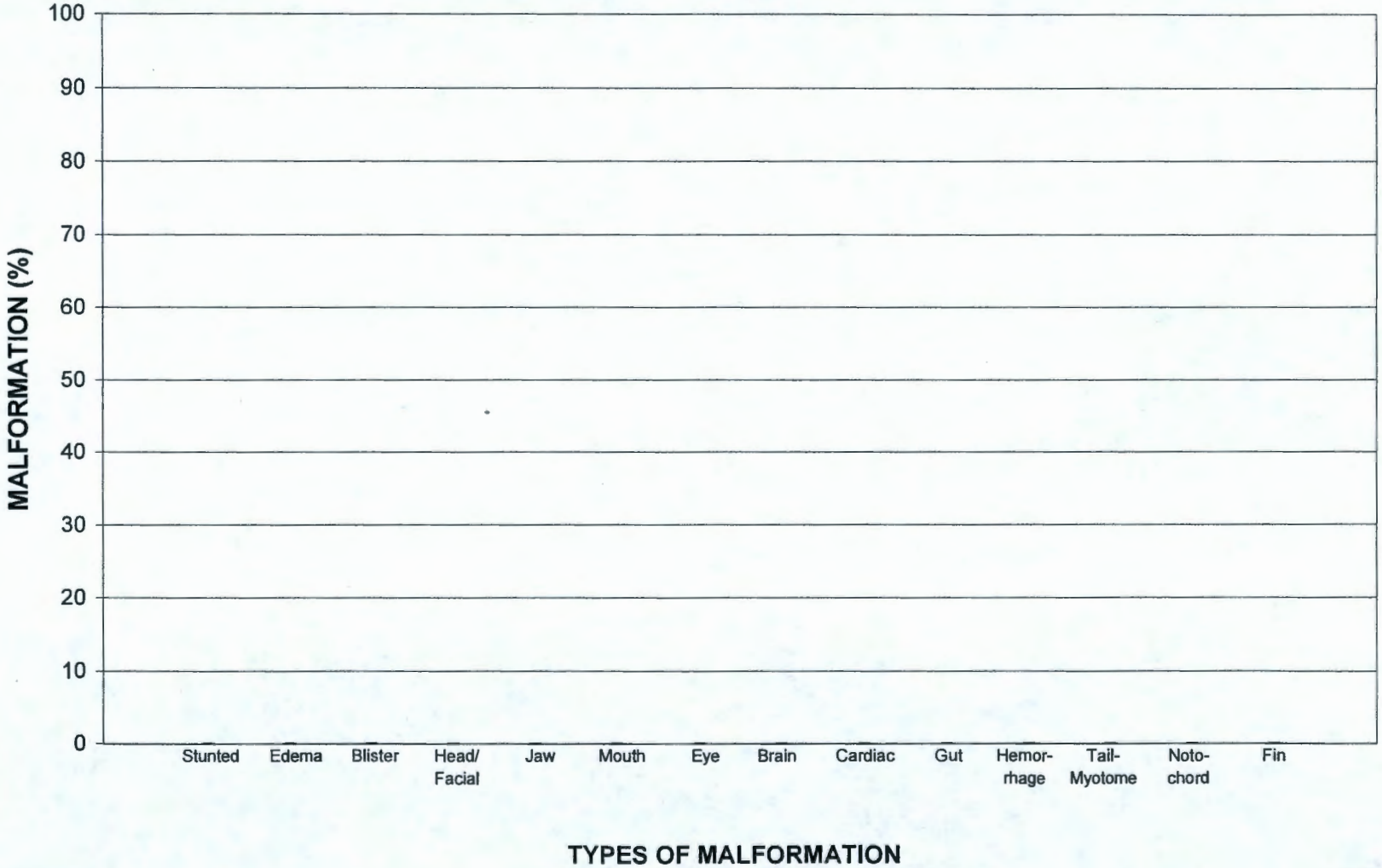


FIGURE 3
CH2M05-00105
FETAX Screen with *X. laevis*
J11115

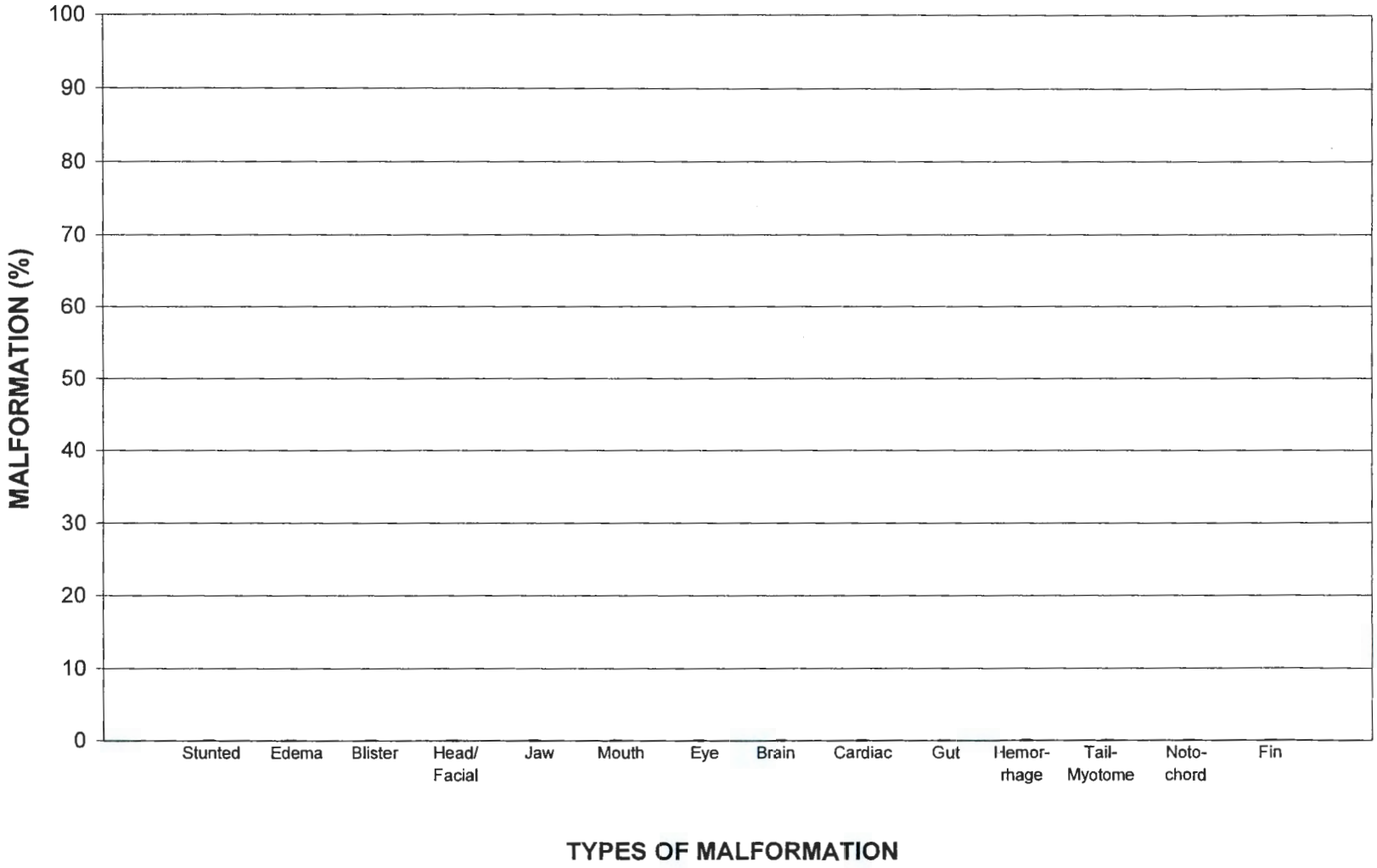


FIGURE 4
CH2M05-00105
FETAX Screen with *X. laevis*
J11116

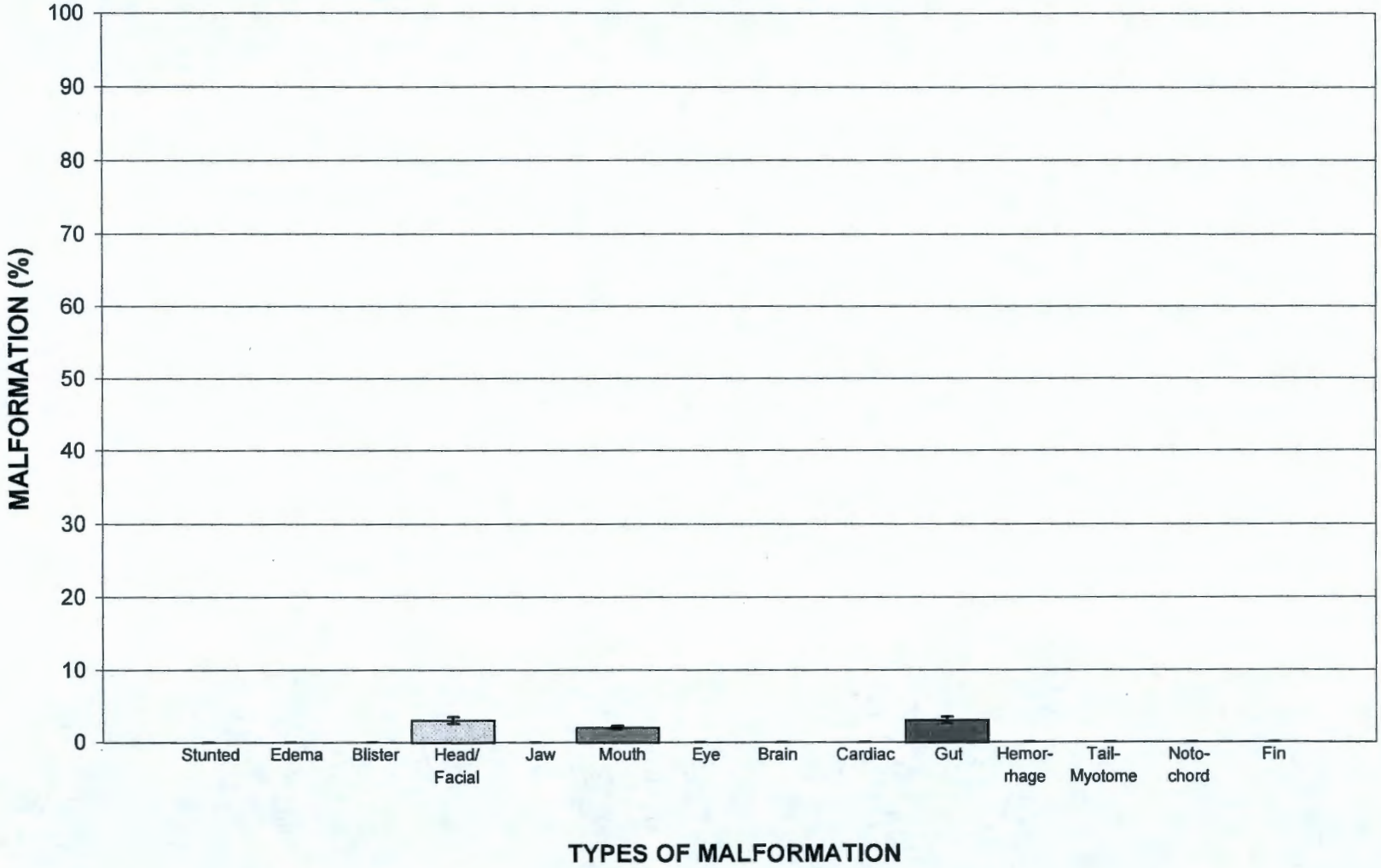


FIGURE 5
CH2M05-00105
FETAX Screen with *X. laevis*
J11117

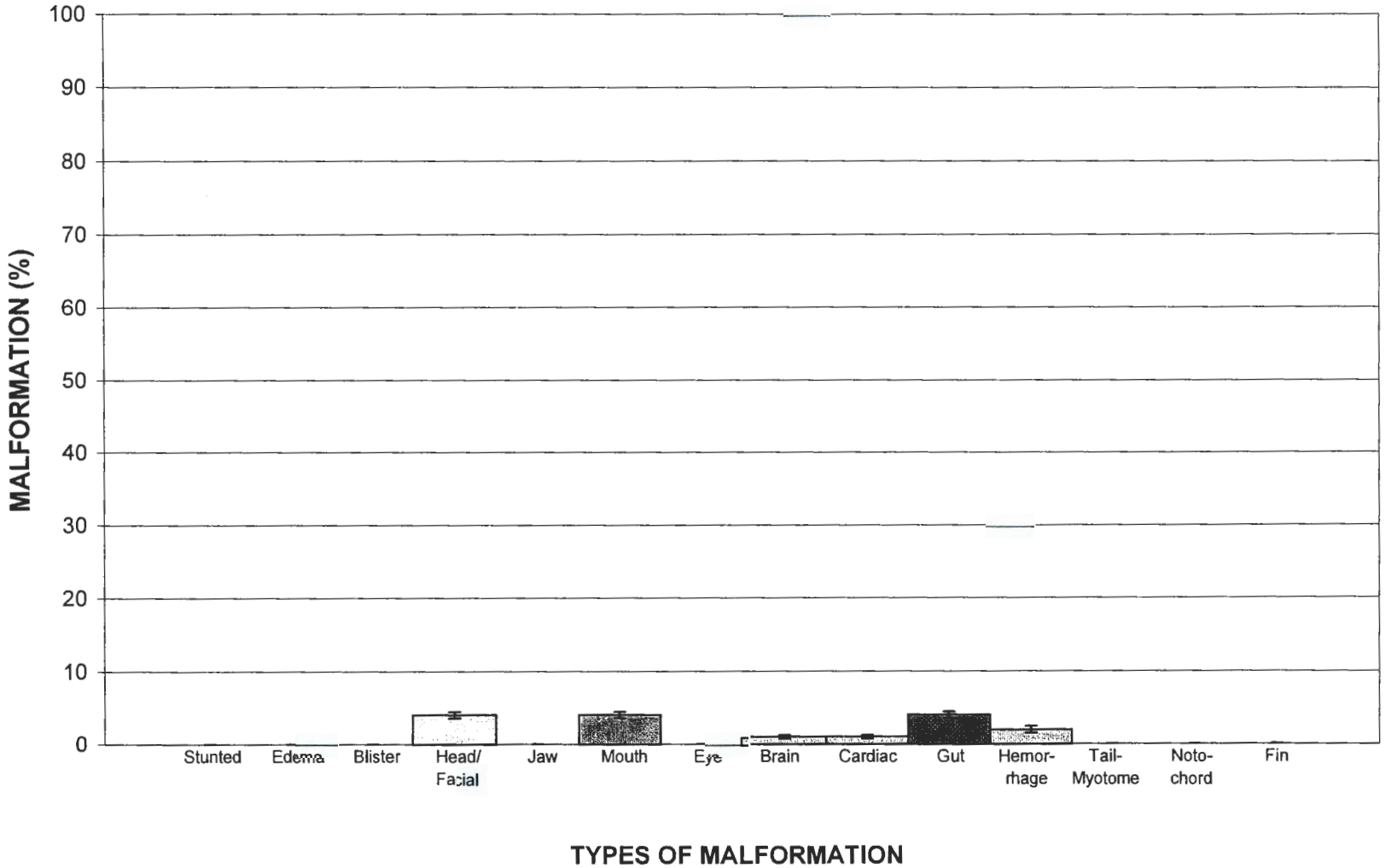


FIGURE 6
CH2M05-00105
FETAX Screen with *X. laevis*

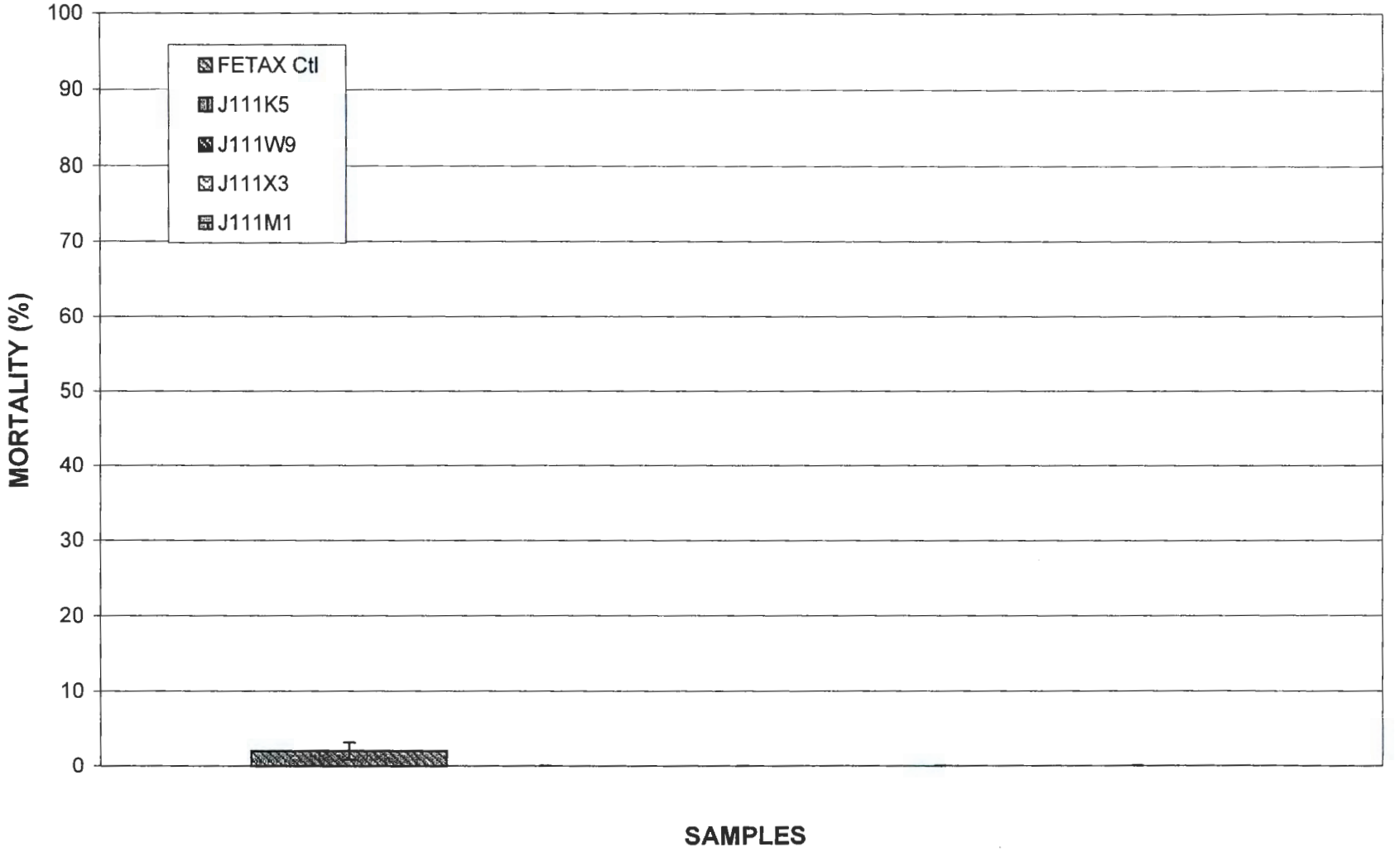
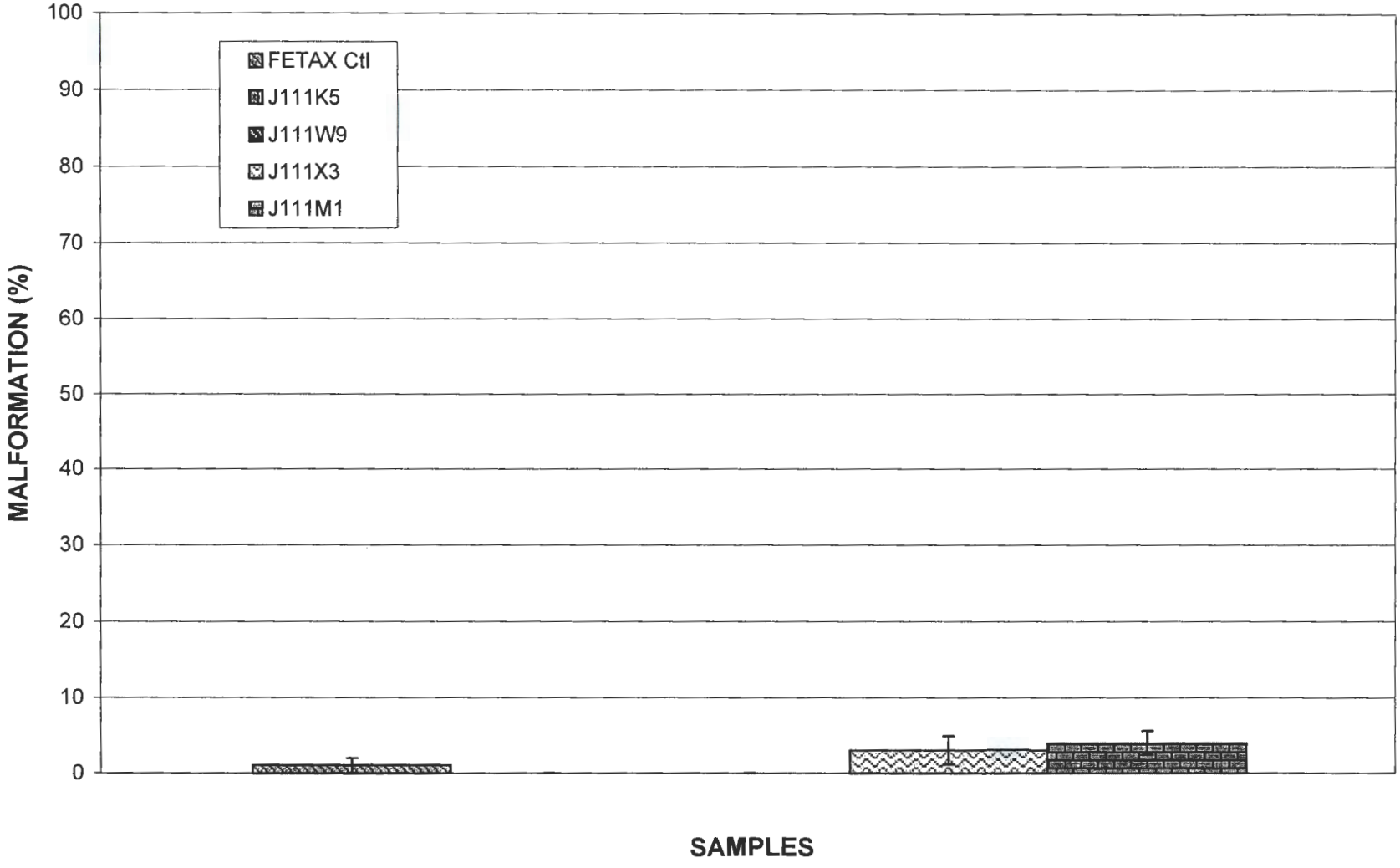


FIGURE 7
CH2M05-00105
FETAX Screen with *X. laevis*



FETAX SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/03/06
Test Material:	Controls	FEL Sample No.:	016-022	Test End Date:	02/07/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/12/06

Malformation:	Sample ID/Concentration *(unit)*															
	FETAX Ctl												5.5mg/L 6AN		2500mg/L 6AN	
Stunted																
Edema																
Blister																
Head/Facial		1	1										13	14		
Jaw																
Mouth		1	1										13	14		
Eye													3	4		
Brain																
Cardiac																
Gut													13	14		
Hemorrhage																
Tail/Myotome		1											1	2		
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	1	1	0									13	14	-	-
Total Survived	25	25	25	25									25	25	0	0
Total Tested	25	25	25	25									25	25	25	25
% Mortality	0.0	0.0	0.0	0.0									0.0	0.0	100.0	100.0
% Malformed	0.0	4.0	4.0	0.0									52.0	56.0	-	-
Avg % Mortality	0.0												0.0		100.0	
SEM (Mortality)	0.0												0.00		0.00	
Avg % Malformed	2.0												54.0		-	
SEM (Malformed)	1.2												2.00		-	

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
FETAX Ctl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		2	0	0	0	2	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	28.87	na	28.87	na	na	na	na	na	50.00	na	na	na	na	na	na	na
5.5mg/L 6AN	1	13	0	0	0	13	0	13	3	0	0	13	0	1	0	0	0	0	0	0	0
	2	14	0	0	0	14	0	14	4	0	0	14	0	2	0	0	0	0	0	0	0
Total Survived	50																				
Total Malformed		27	0	0	0	27	0	27	7	0	0	27	0	3	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	54.00	0.00	54.00	14.00	0.00	0.00	54.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	1.31	na	1.31	5.05	na	na	1.31	na	11.79	na	na	na	na	na	na	na
2500mg/L 6AN	1	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/03/06
Test Material:	Pore Water	FEL Sample No.:	016-022	Test End Date:	02/07/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/12/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J111Y9				J11200				J111W8				J11222			
Stunted																
Edema					1	1		1								
Blister																
Head/Facial	2		1	1	2	2	1	1	1	1						
Jaw																
Mouth	1		1	1	1	1	1	1	1	1						
Eye	1		1													
Brain																
Cardiac																
Gut	1			1	1	2	1	1								
Hemorrhage									1							
Tail/Myotome						1	1									
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	2	0	1	1	2	2	1	1	1	1	0	0	0	0	0	0
Total Survived	25	25	25	25	25	25	25	24	25	25	25	24	24	25	25	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0	0.0
% Malformed	8.0	0.0	4.0	4.0	8.0	8.0	4.0	4.2	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Avg % Mortality	0.0				1.0				1.0				1.0			
SEM (Mortality)	0.0				1.0				1.0				1.0			
Avg % Malformed	4.0				6.1				2.0				0.0			
SEM (Malformed)	1.6				1.1				1.2				0.0			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J111Y9	1	2	0	0	0	2	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		4	0	0	0	4	0	3	2	0	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	4.00	0.00	3.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.67	0.00	0.25	0.33	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.41	0.00	0.25	0.29	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	20.41	na	16.67	28.87	na	na	28.87	na	na	na	na	na	na	na	na	na
J11200	1	2	0	1	0	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	2	0	1	0	2	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0
	4	1	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		6	0	3	0	6	0	4	0	0	0	5	0	2	0	0	0	0	0	0	0
% Malformed			0.00	3.03	0.00	6.06	0.00	4.04	0.00	0.00	0.00	5.05	0.00	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	16.50	na	9.53	na	0.00	na	na	na	9.90	na	28.58	na	na	na	na	na	na	na
J111W8	1	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		2	0	0	0	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.02	0.00	2.02	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	28.58	na	28.58	na	na	na	na	49.50	na	na	na	na	na	na	na	na
J11222	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/03/06
Test Material:	Pore Water	FEL Sample No.:	016-022	Test End Date:	02/07/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/12/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J11223				J11233				J11251							
Stunted																
Edema					1											
Blister																
Head/Facial					1	1			1		1	1				
Jaw																
Mouth					1	1			1		1	1				
Eye									1		1					
Brain																
Cardiac																
Gut																
Hemorrhage					1											
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	0	0	1	1	0	0	1	0	1	1				
Total Survived	25	24	25	25	25	25	25	24	25	25	25	24				
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25				
% Mortality	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0				
% Malformed	0.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	4.0	4.2				
Avg % Mortality	1.0				1.0				1.0							
SEM (Mortality)	1.0				1.0				1.0							
Avg % Malformed	0.0				2.0				3.0							
SEM (Malformed)	0.0				1.2				1.0							

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor- rhage	Tail/ Myotome	Noto- chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J11223	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J11233	1	1	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		2	0	1	0	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
% Malformed			0.00	1.01	0.00	2.02	0.00	2.02	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.50	na	28.58	na	28.58	na	na	na	na	49.50	na	na	na	na	na	na	na	na
J11251	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		3	0	0	0	3	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	3.03	0.00	3.03	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.25	0.00	0.25	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.25	0.00	0.25	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	16.50	na	16.50	28.58	na	na	na	na	na	na	na	na	na	na	na	na
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

FIGURE 1
CH2M05-00105 (016-022)
FETAX Screen with *X. laevis*
FETAX Solution Control

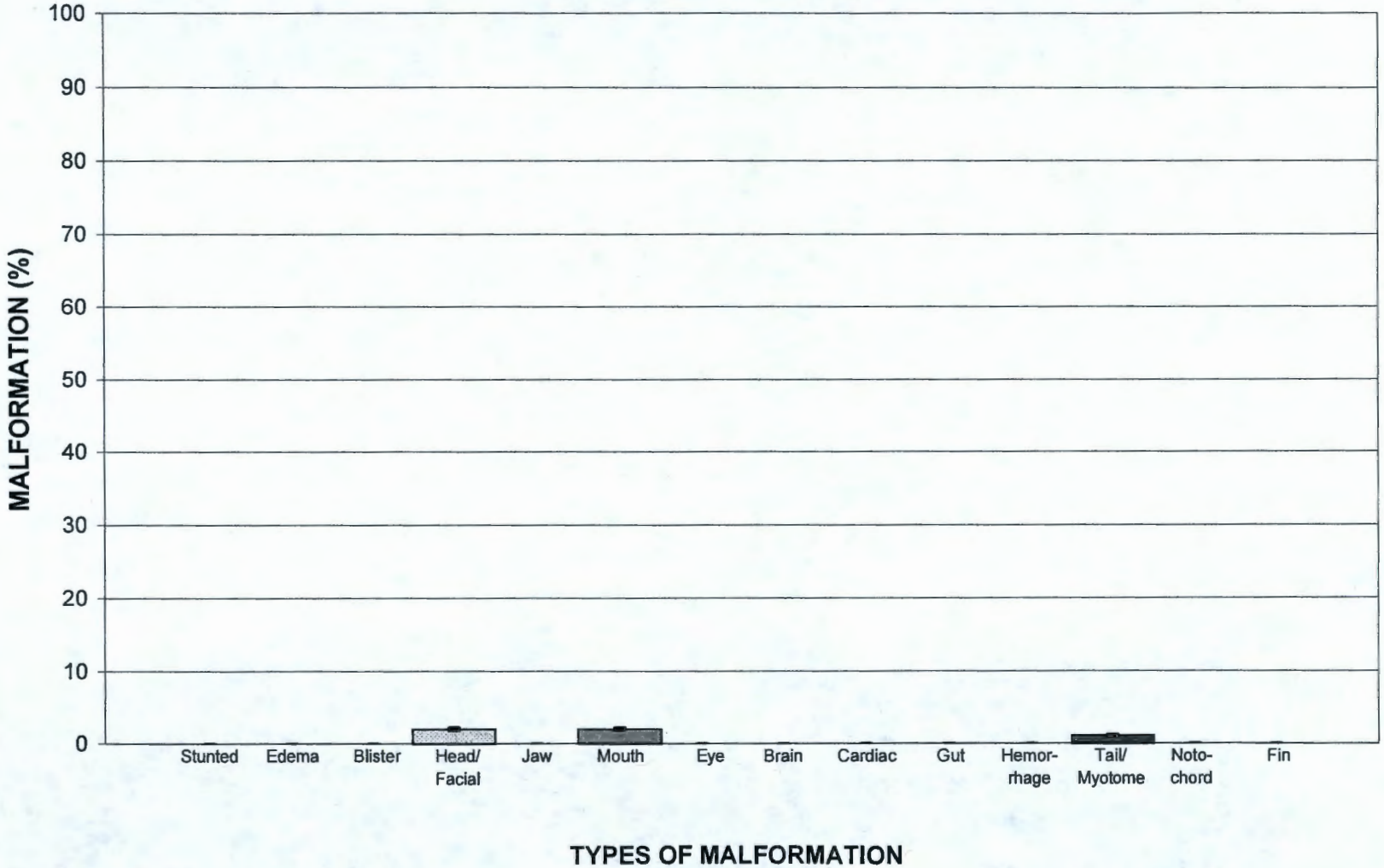


FIGURE 2
CH2M05-00105
FETAX Screen with *X. laevis*
J111Y9

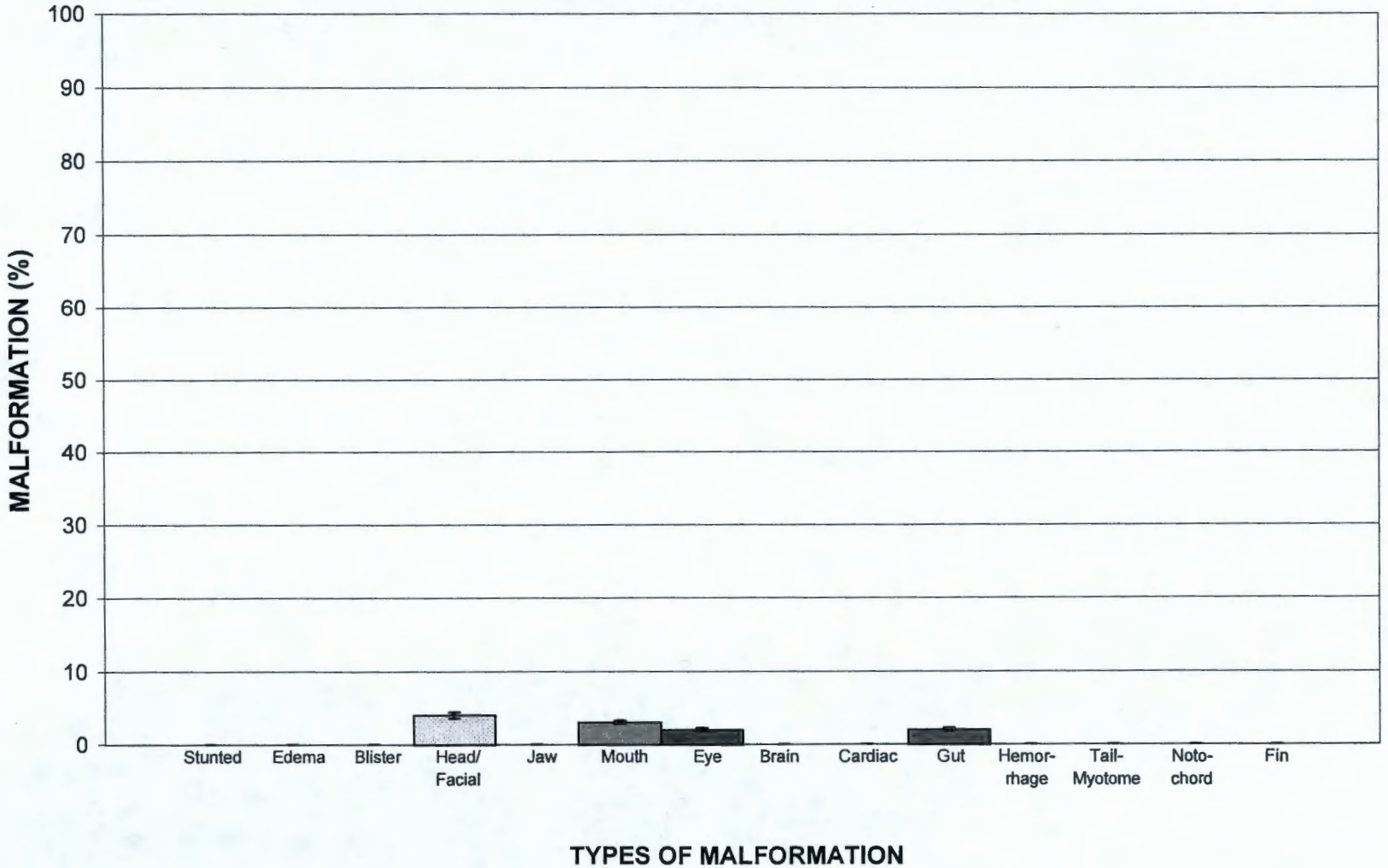


FIGURE 3
CH2M05-00105
FETAX Screen with *X. laevis*
J11200

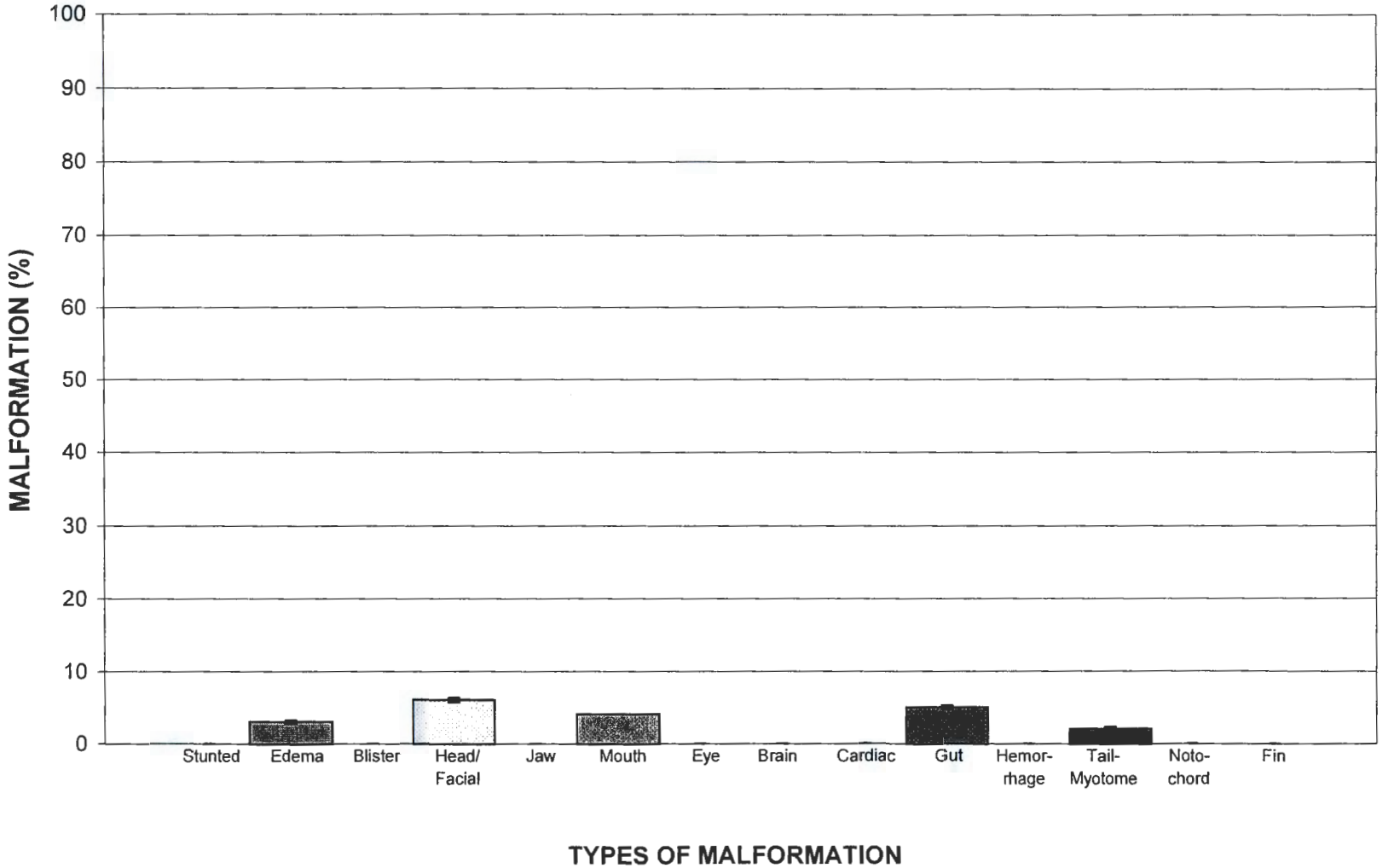


FIGURE 4
CH2M05-00105
FETAX Screen with *X. laevis*
J111W8

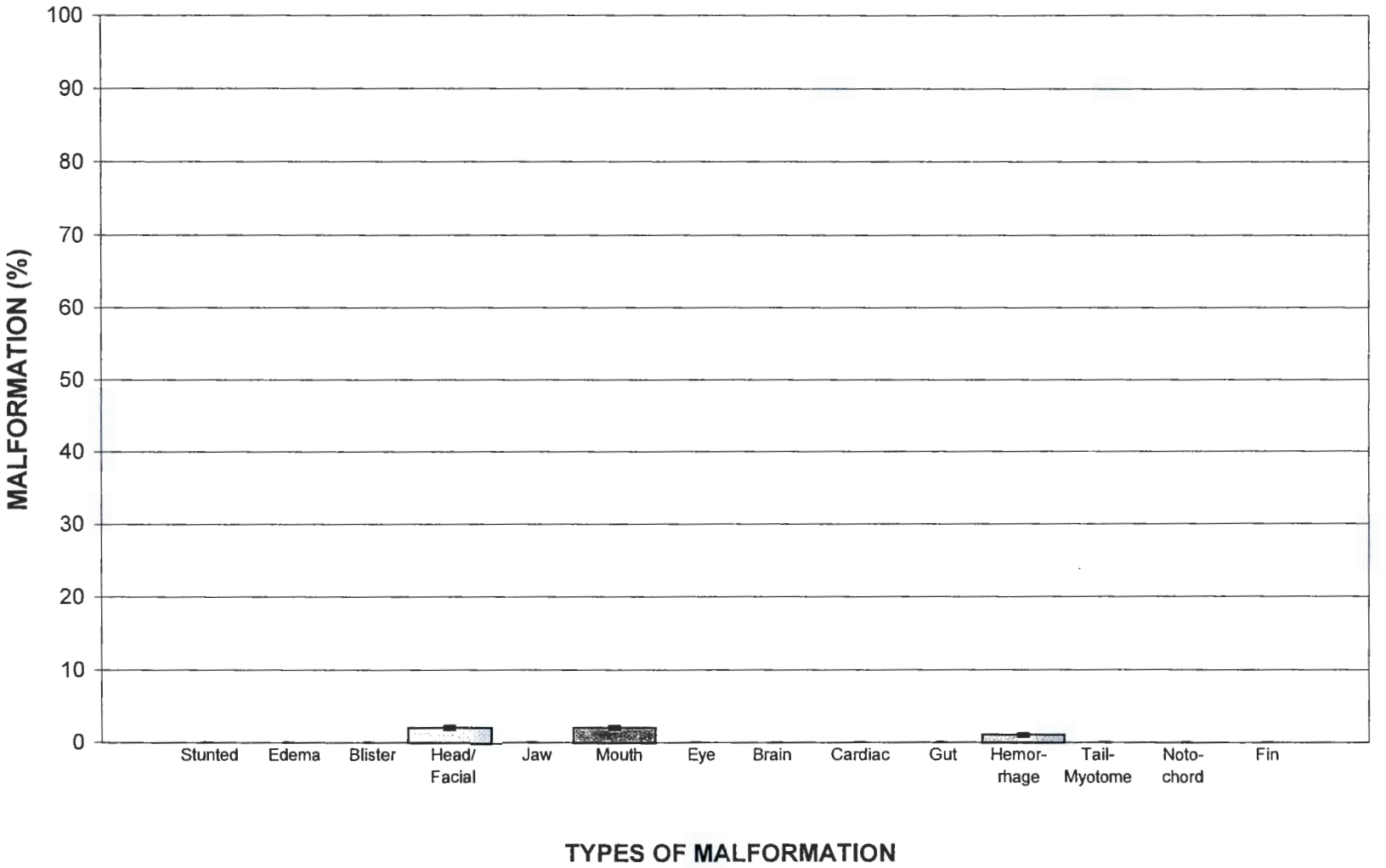


FIGURE 5
CH2M05-00105
FETAX Screen with *X. laevis*
J11222

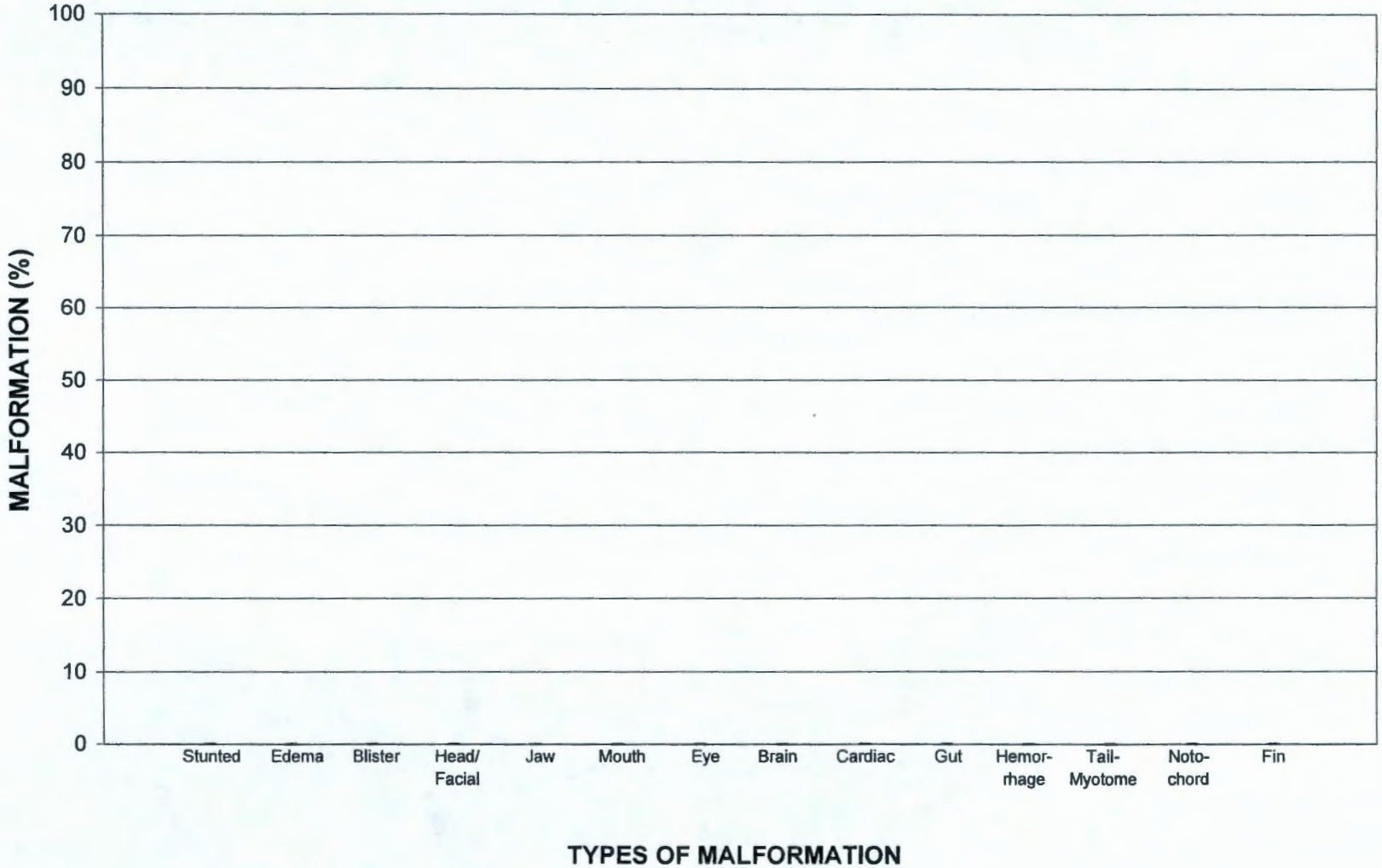


FIGURE 6
CH2M05-00105
FETAX Screen with *X. laevis*
J11223

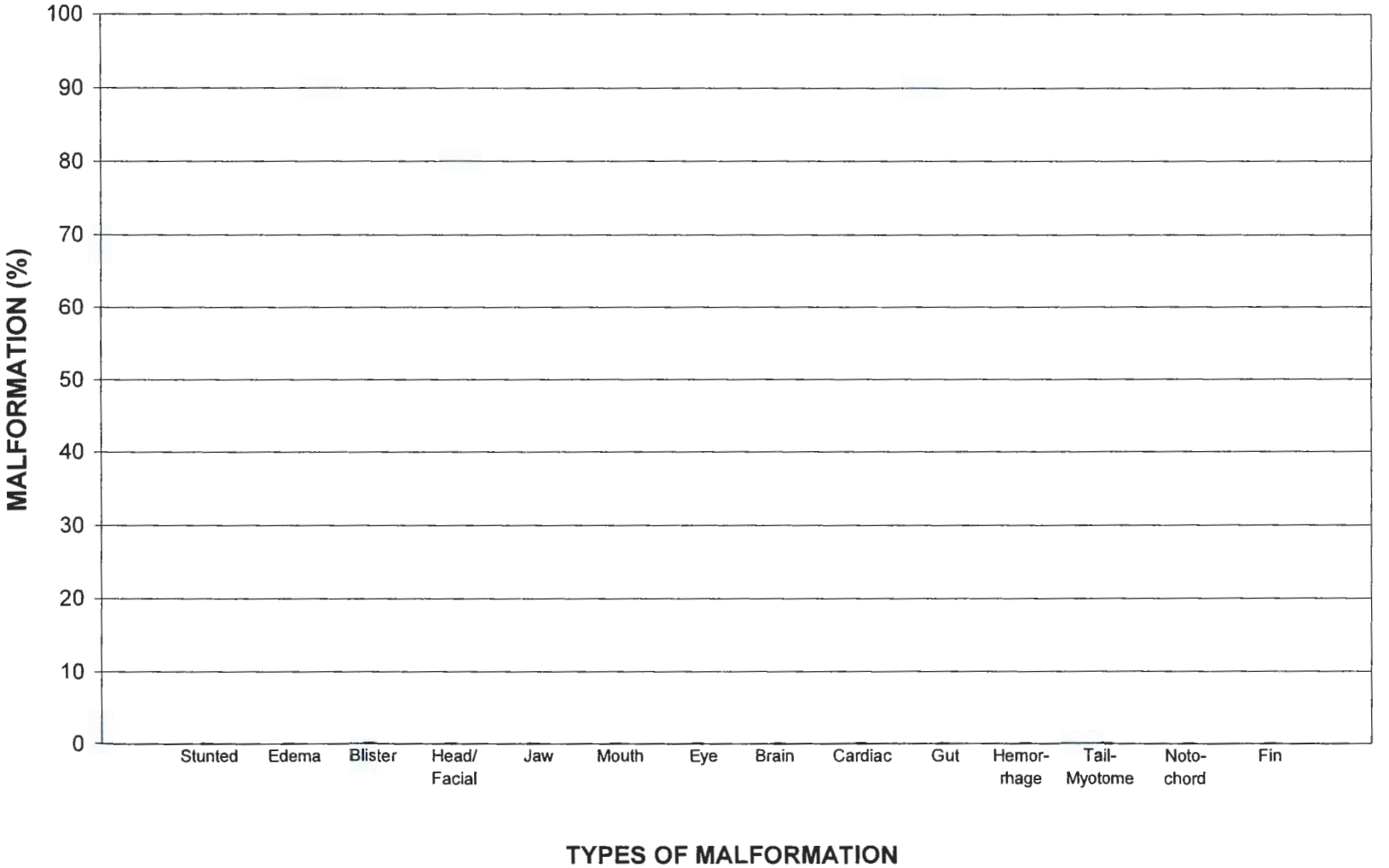


FIGURE 7
CH2M05-00105
FETAX Screen with *X. laevis*
J11233

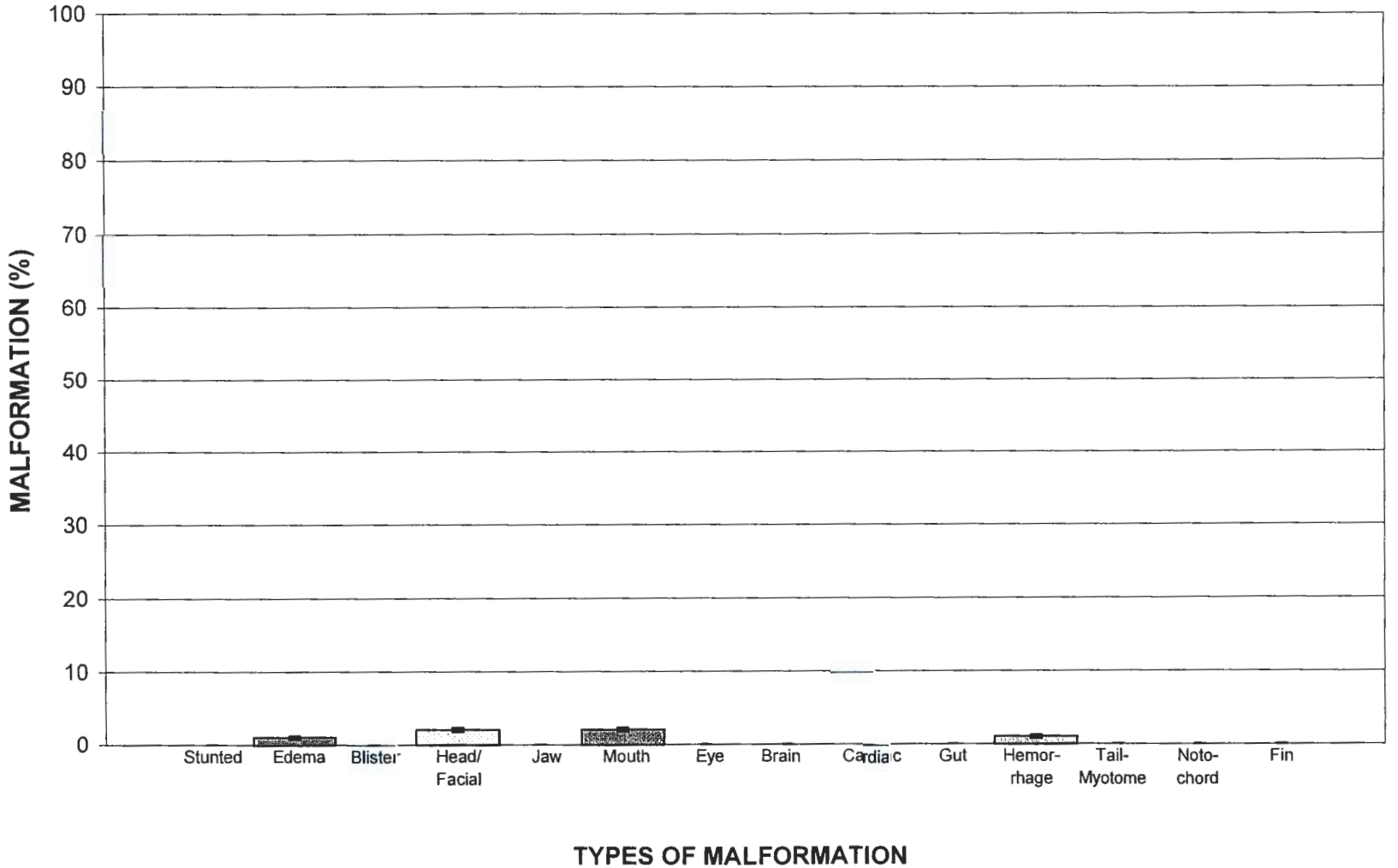


FIGURE 8
CH2M05-00105
FETAX Screen with *X. laevis*
J11251

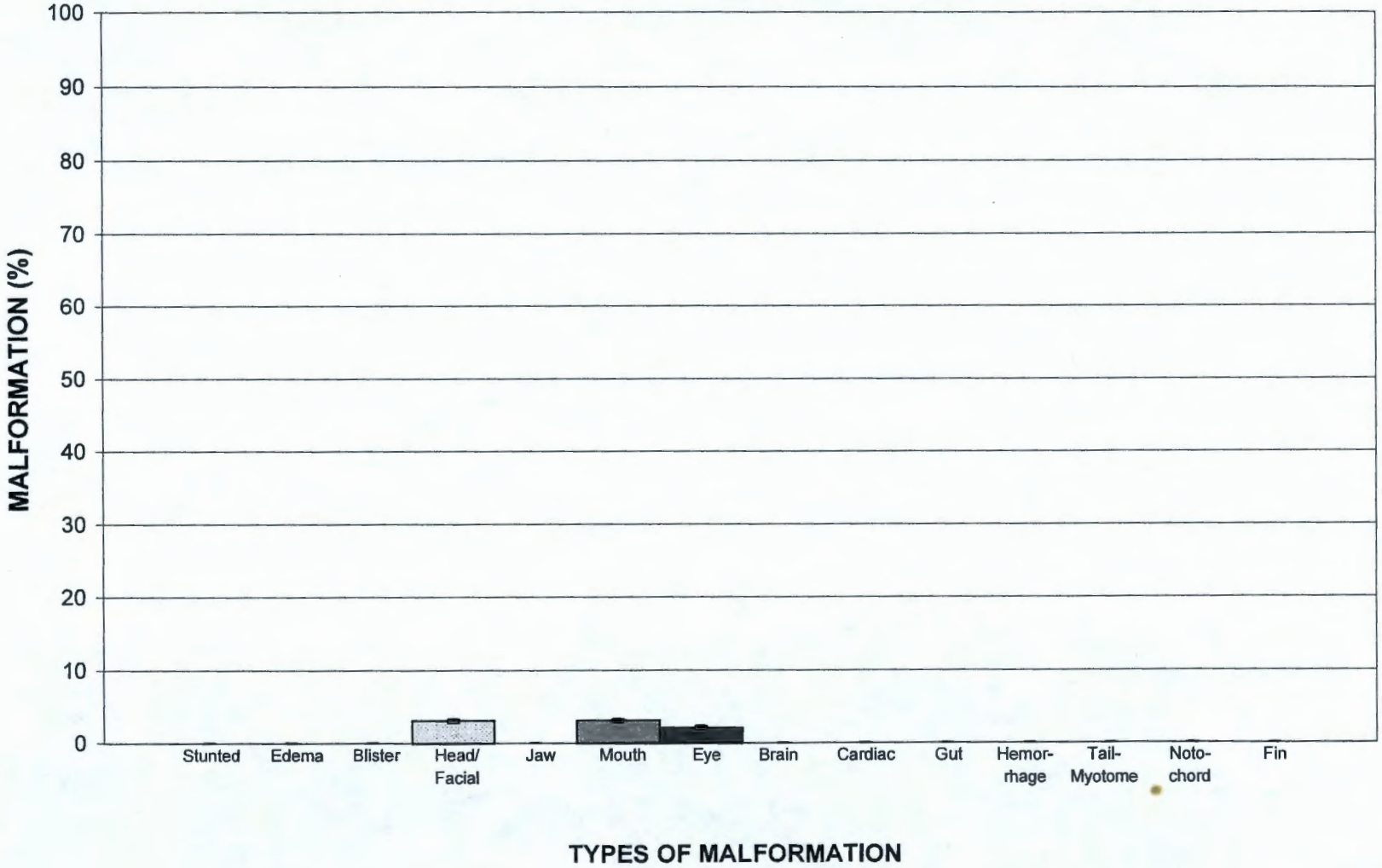


FIGURE 9
CH2M05-00105
FETAX Screen with *X. laevis*

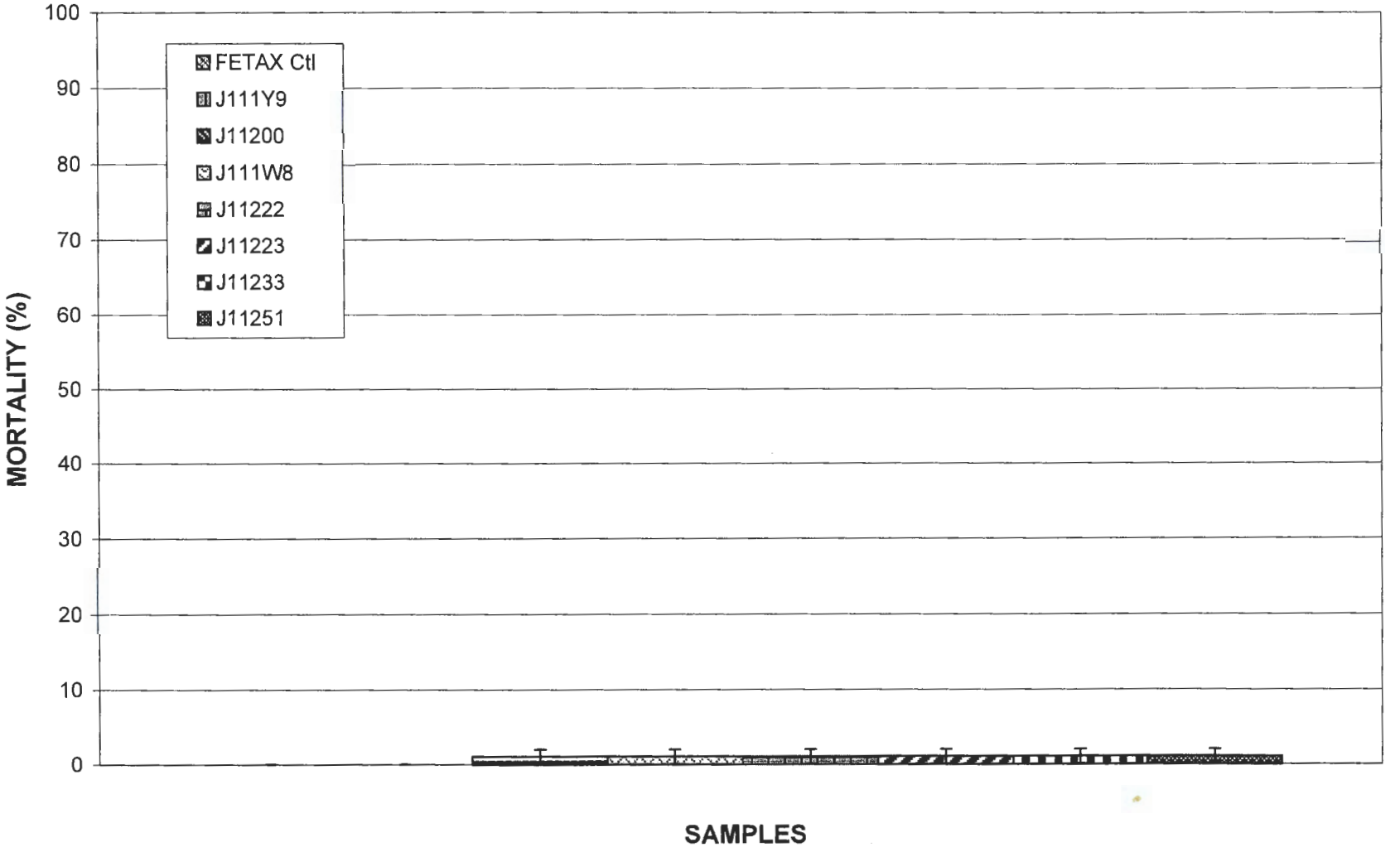
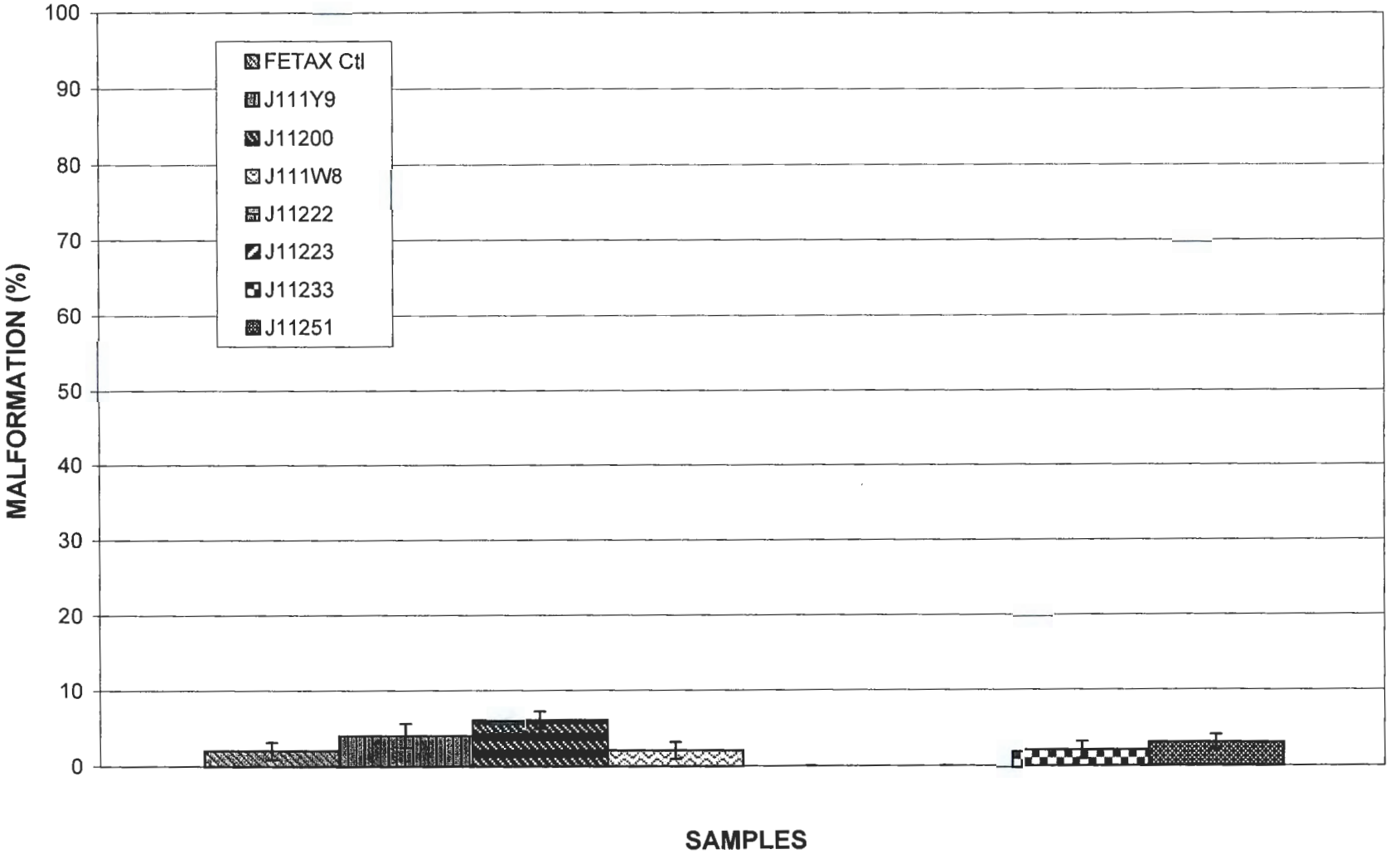


FIGURE 10
CH2M05-00105
FETAX Screen with *X. laevis*



FETAX SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/10/06
Test Material:	Controls	FEL Sample No.:	029-032	Test End Date:	02/14/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/17/06

Malformation:	Sample ID/Concentration *(unit)*															
	FETAX Ctl												5.5mg/L 6AN		2500mg/L 6AN	
Stunted																
Edema																
Blister																
Head/Facial			1	1									12	12		
Jaw																
Mouth			1	1									13	12		
Eye				1									1	3		
Brain				1												
Cardiac																
Gut			1	1									13	12		
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	1	1									13	12	-	-
Total Survived	23	25	24	25									25	25	0	0
Total Tested	25	25	25	25									25	25	25	25
% Mortality	8.0	0.0	4.0	0.0									0.0	0.0	100.0	100.0
% Malformed	0.0	0.0	4.2	4.0									52.0	48.0	-	-
Avg % Mortality	3.0												0.0		100.0	
SEM (Mortality)	1.9												0.00		0.00	
Avg % Malformed	2.1												50.0		-	
SEM (Malformed)	1.2												2.00		-	

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
FETAX Ctl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		2	0	0	0	2	0	2	1	1	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.06	0.00	2.06	1.03	1.03	0.00	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.33	0.00	0.33	0.25	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.29	0.00	0.29	0.25	0.25	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	28.00	na	28.00	48.50	48.50	na	28.00	na	na	na	na	na	na	na	na	na
5.5mg/L 6AN	1	13	0	0	0	12	0	13	1	0	0	13	0	0	0	0	0	0	0	0	0
	2	12	0	0	0	12	0	12	3	0	0	12	0	0	0	0	0	0	0	0	0
Total Survived	50																				
Total Malformed		25	0	0	0	24	0	25	4	0	0	25	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	48.00	0.00	50.00	8.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.50	2.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	0.00	na	1.41	17.68	na	na	1.41	na	na	na	na	na	na	na	na	na
2500mg/L 6AN	1	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/10/06
Test Material:	Pore Water	FEL Sample No.:	029-032	Test End Date:	02/14/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	02/17/06

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J112X5				J11253				J11256				J116D1			
Stunted																
Edema				2								2	2			
Blister																
Head/Facial	1	1	1	2	1	1	1		1	1	1	3	3	1	2	1
Jaw																
Mouth			1	2	1	1	1		1	1	1	3	3	1	2	
Eye	1	1	1									1	2		1	1
Brain				1								1				
Cardiac																
Gut		1	1	2	1	1	1		1	1	1	2	3	1	2	
Hemorrhage												1				
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	1	1	1	2	1	1	1	0	1	1	1	3	3	1	2	1
Total Survived	25	24	24	24	25	25	23	25	25	23	25	24	25	25	24	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	4.0	4.0	4.0	0.0	0.0	8.0	0.0	0.0	8.0	0.0	4.0	0.0	0.0	4.0	0.0
% Malformed	4.0	4.2	4.2	8.3	4.0	4.0	4.3	0.0	4.0	4.3	4.0	12.5	12.0	4.0	8.3	4.0
Avg % Mortality	3.0				2.0				3.0				1.0			
SEM (Mortality)	1.0				2.0				1.9				1.0			
Avg % Malformed	5.2				3.1				6.2				7.1			
SEM (Malformed)	1.1				1.0				2.1				1.9			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J112X5	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
	4	2	0	2	0	2	0	2	0	1	0	2	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		5	0	2	0	5	0	3	3	1	0	4	0	0	0	0	0	0	0	0	0
% Malformed			0.00	2.06	0.00	5.15	0.00	3.09	3.09	1.03	0.00	4.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	1.00	0.00	0.25	0.00	0.92	0.25	0.25	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.50	0.00	0.25	0.00	0.48	0.25	0.25	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	48.50	na	9.70	na	30.96	16.17	48.50	na	19.80	na	na	na	na	na	na	na	na	na
J11253	1	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		3	0	0	0	3	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	3.06	0.00	3.06	0.00	0.00	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	16.33	na	16.33	na	na	na	16.33	na	na	na	na	na	na	na	na	na
J11256	1	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	3	0	2	0	3	0	3	1	1	0	2	1	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		6	0	2	0	6	0	6	1	1	0	5	1	0	0	0	0	0	0	0	0
% Malformed			0.00	2.06	0.00	6.19	0.00	6.19	1.03	1.03	0.00	5.15	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	1.00	0.00	1.00	0.00	1.00	0.25	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.50	0.00	0.50	0.00	0.50	0.25	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	48.50	na	16.17	na	16.17	48.50	48.50	na	9.70	48.50	na	na	na	na	na	na	na	na
J116D1	1	3	0	2	0	3	0	3	2	0	0	3	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	2	0	0	0	2	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0
	4	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		7	0	2	0	7	0	6	4	0	0	6	0	0	0	0	0	0	0	0	0
% Malformed			0.00	2.02	0.00	7.07	0.00	6.06	4.04	0.00	0.00	6.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	1.00	0.00	0.92	0.00	1.67	0.67	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.50	0.00	0.48	0.00	0.65	0.41	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.50	na	13.54	na	21.30	20.21	na	na	21.30	na	na	na	na	na	na	na	na	na

FIGURE 1
CH2M05-00105 (029-032)
FETAX Screen with *X. laevis*
FETAX Solution Control

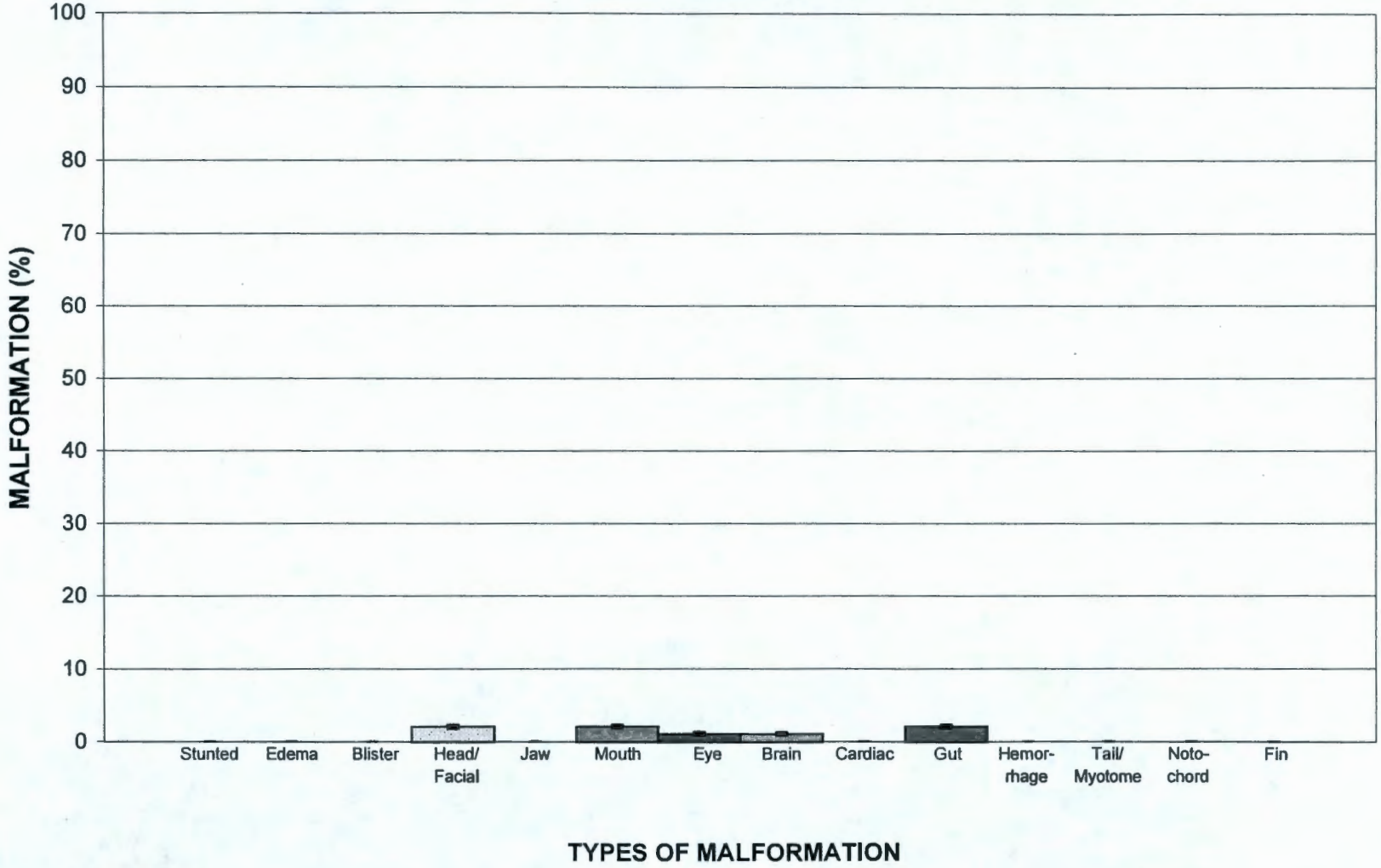


FIGURE 2
CH2M05-00105
FETAX Screen with *X. laevis*
J112X5

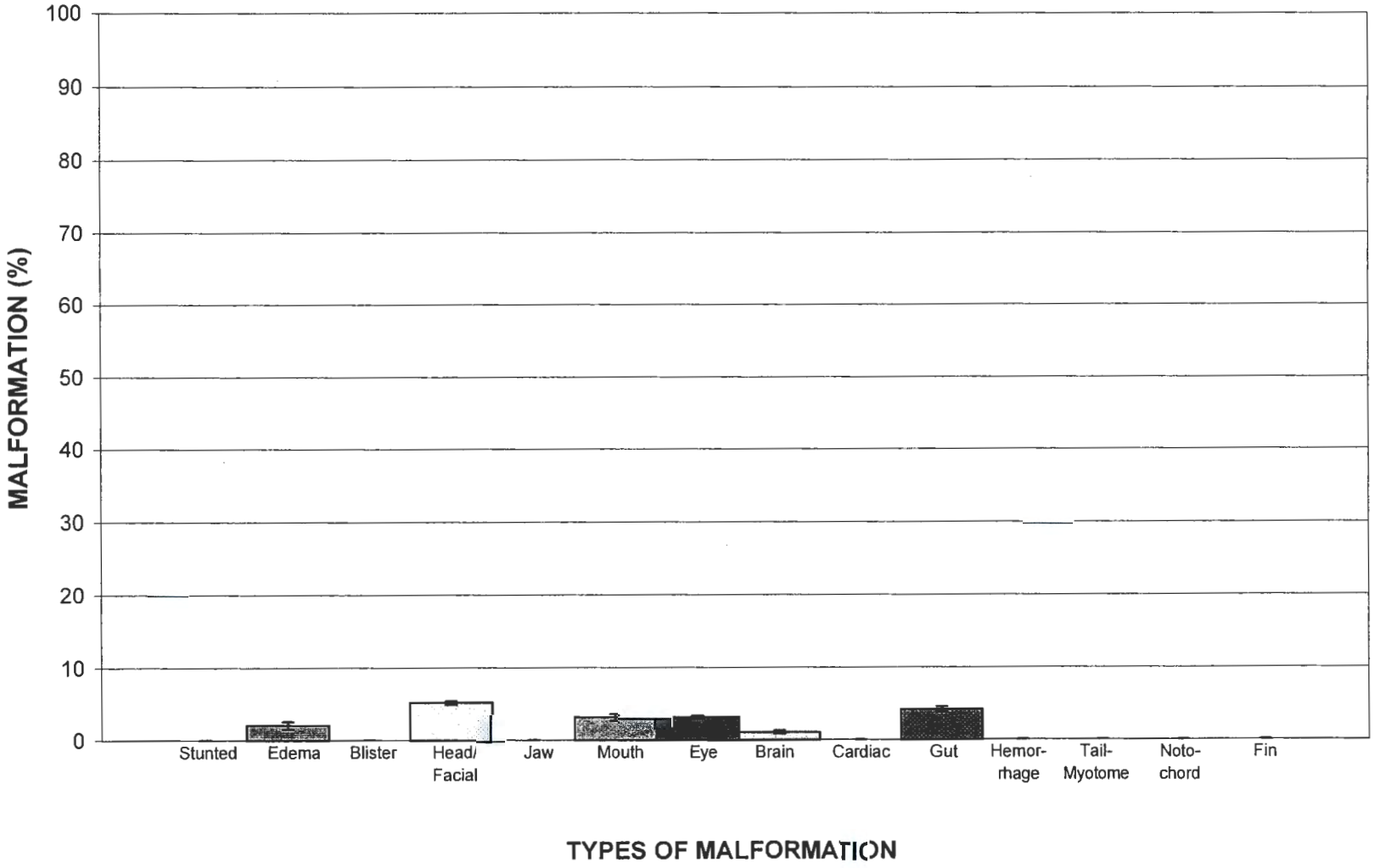


FIGURE 3
CH2M05-00105
FETAX Screen with *X. laevis*
J11253

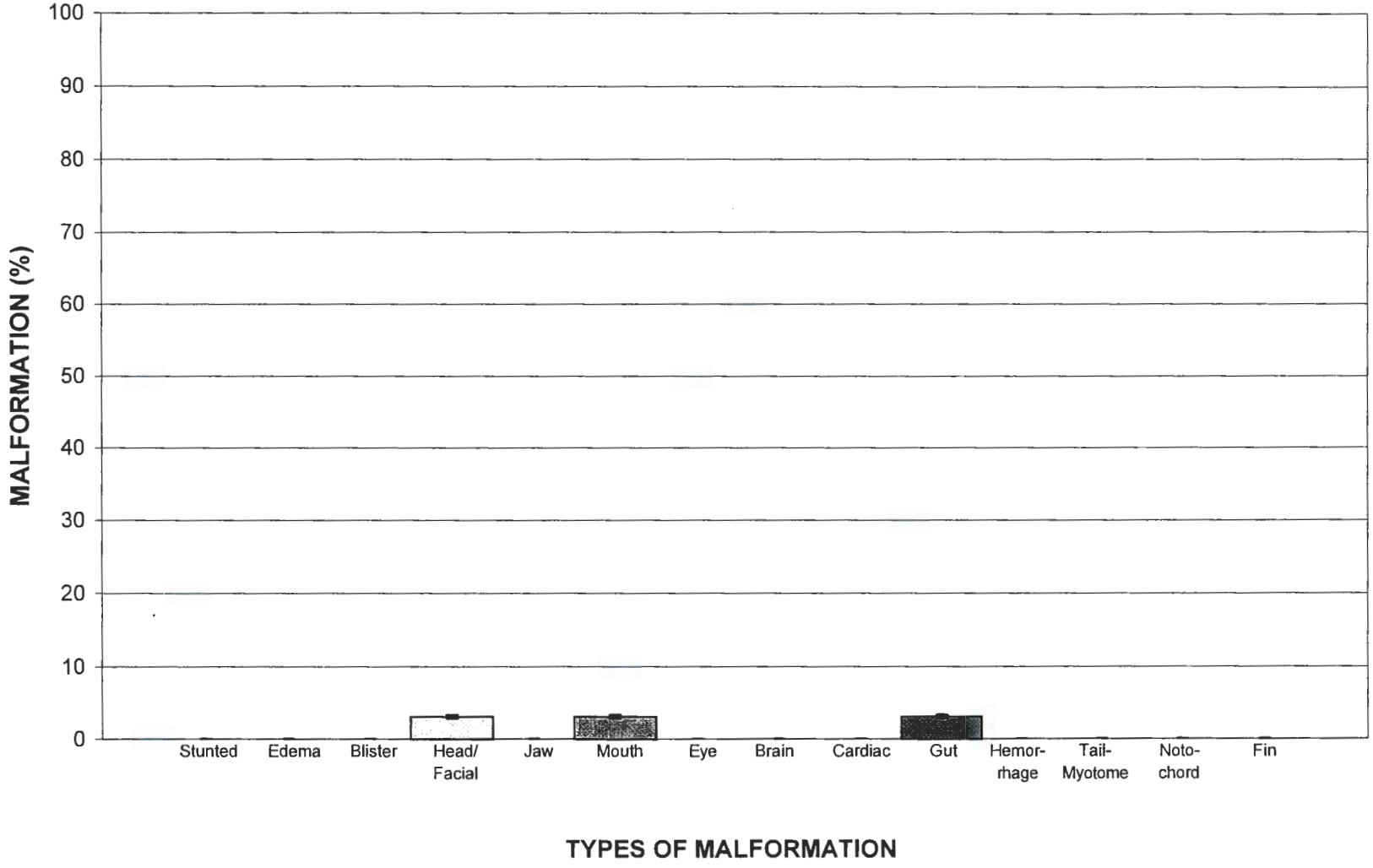


FIGURE 4
CH2M05-00105
FETAX Screen with *X. laevis*
J11256

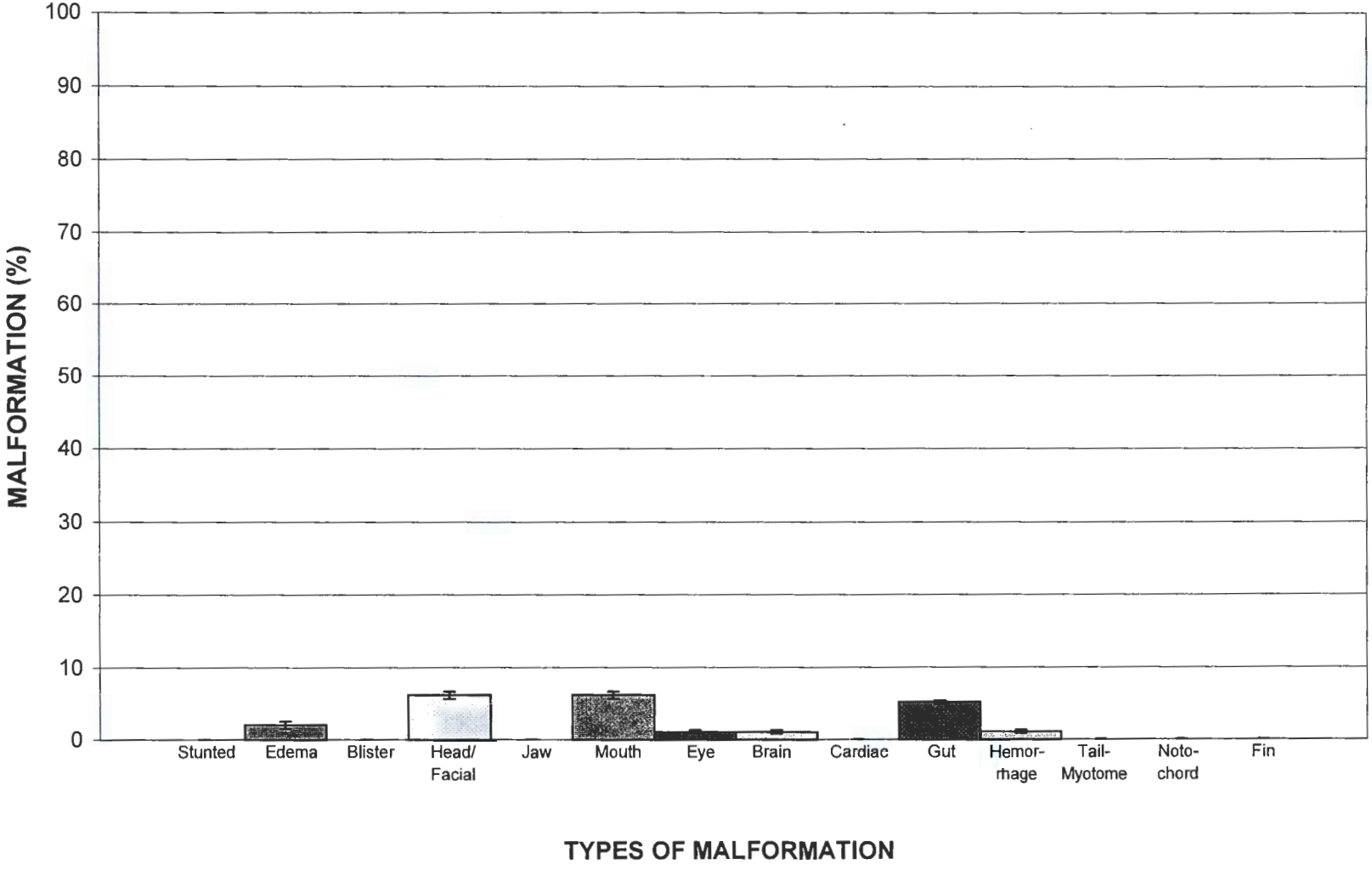


FIGURE 5
CH2M05-00105
FETAX Screen with *X. laevis*
J116D1

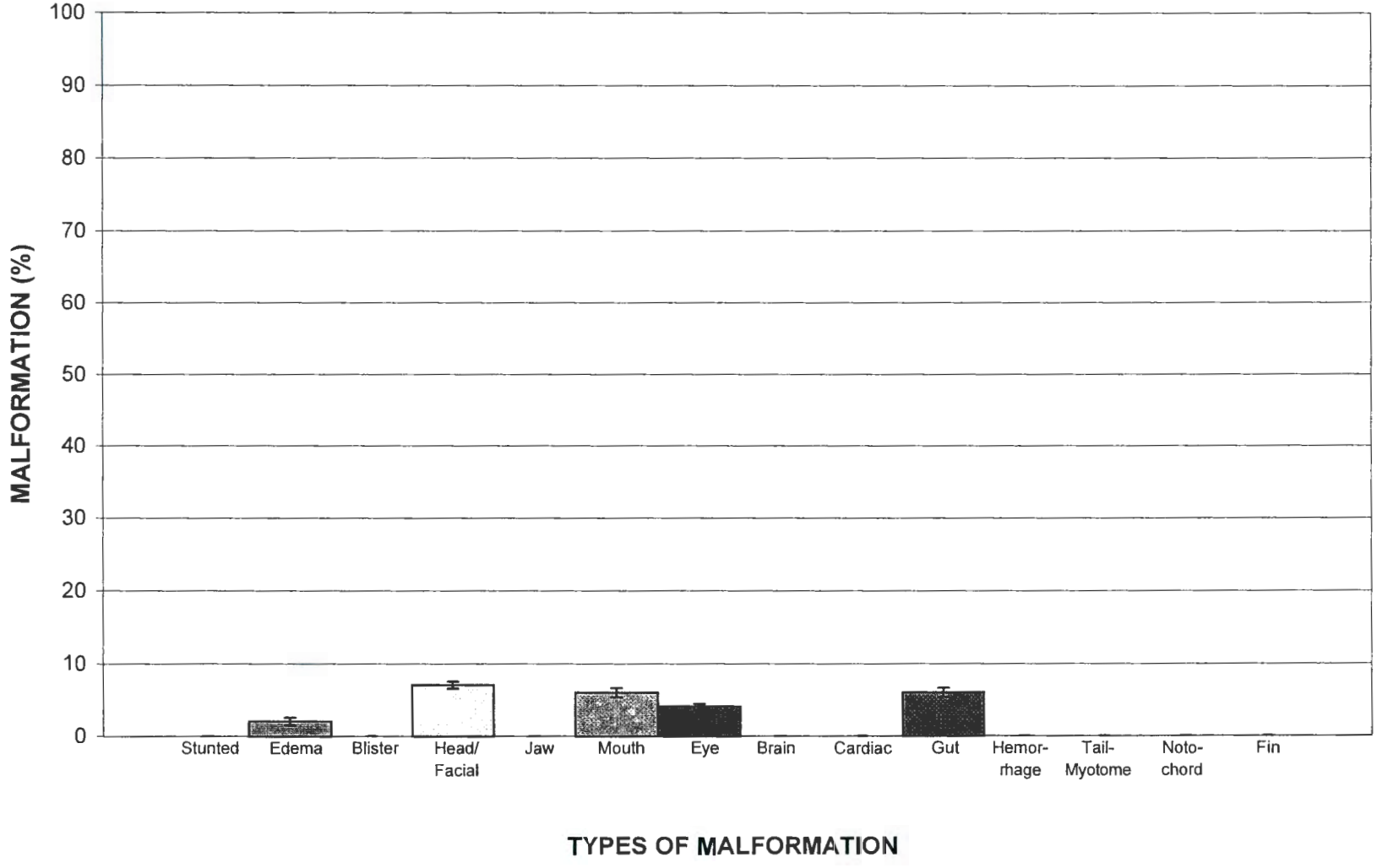


FIGURE 6
CH2M05-00105
FETAX Screen with *X. laevis*

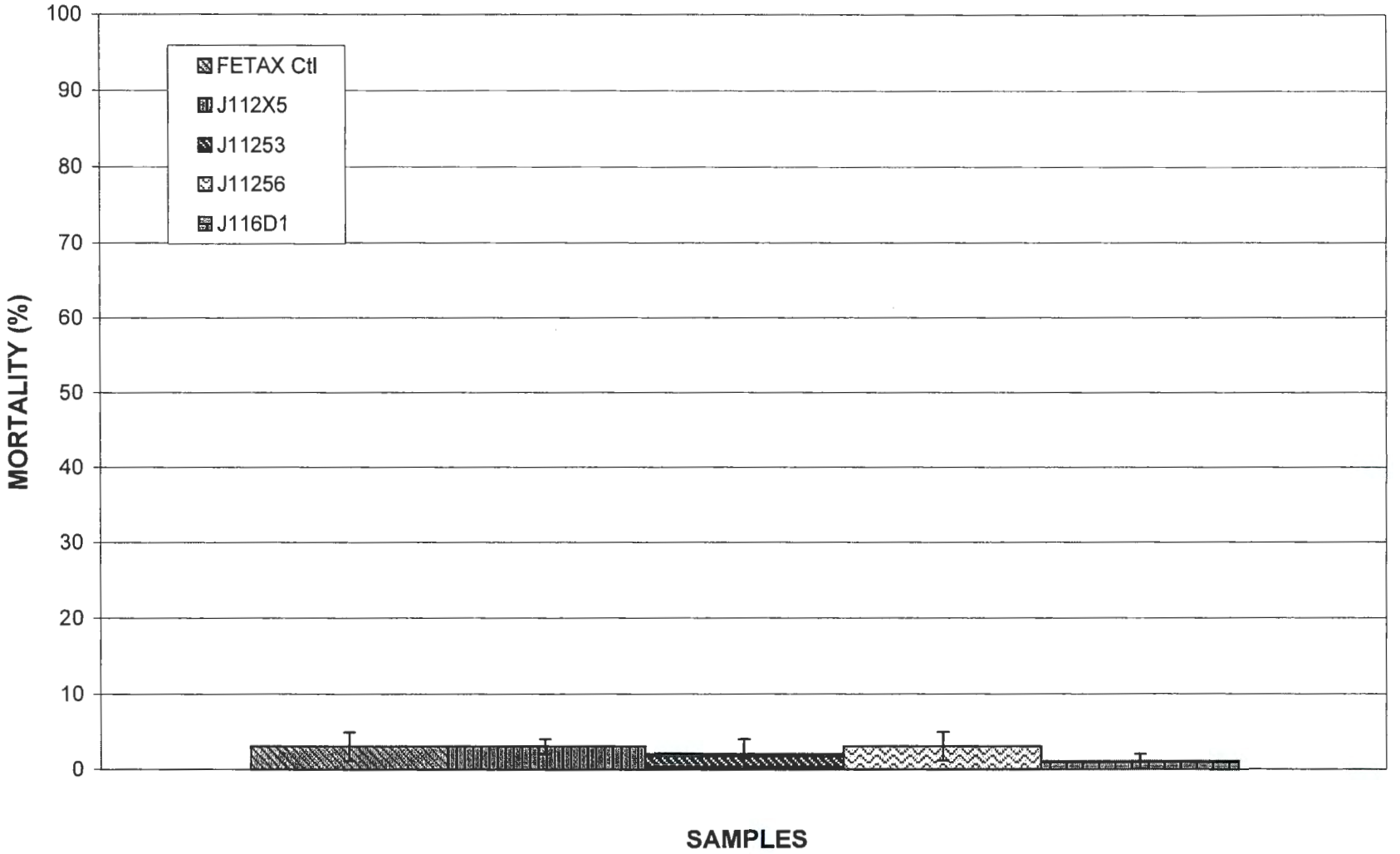
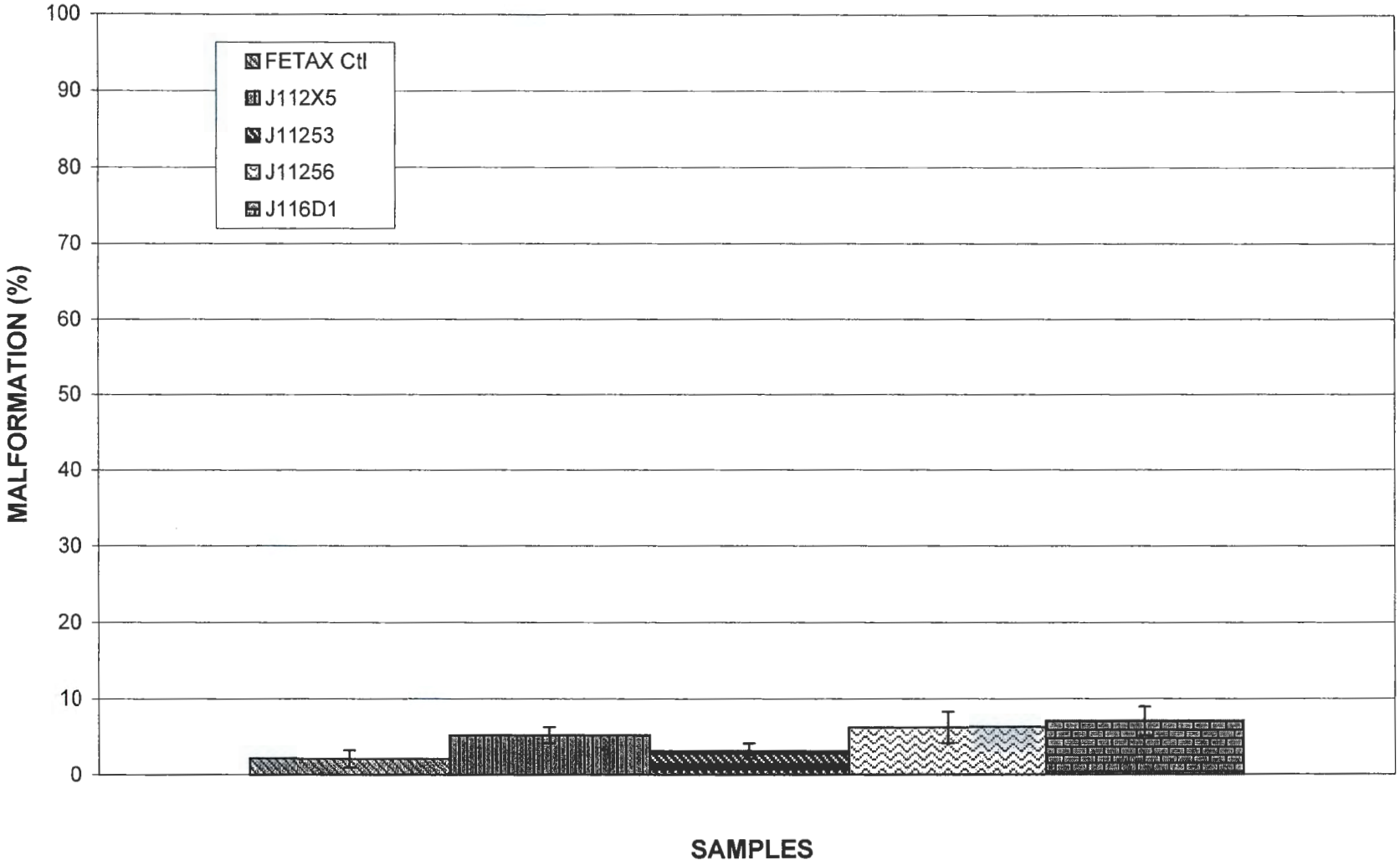


FIGURE 7
CH2M05-00105
FETAX Screen with *X. laevis*



FETAX SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/15/06
Test Material:	Controls	FEL Sample No.:	023-028, 033-039	Test End Date:	02/19/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/00/00

	Sample ID/Concentration *(unit)*															
Malformation:	FETAX Ctl												5.5mg/L 6AN		2500mg/L 6AN	
Stunted																
Edema																
Blister																
Head/Facial													12	11		
Jaw																
Mouth													12	11		
Eye													3	2		
Brain																
Cardiac																
Gut													12	11		
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																
Total Malformed	0	0	0	0									12	11	-	-
Total Survived	25	25	25	25									25	25	0	0
Total Tested	25	25	25	25									25	25	25	25
% Mortality	0.0	0.0	0.0	0.0									0.0	0.0	100.0	100.0
% Malformed	0.0	0.0	0.0	0.0									48.0	44.0	-	-
Avg % Mortality	0.0												0.0		100.0	
SEM (Mortality)	0.0												0.00		0.00	
Avg % Malformed	0.0												46.0		-	
SEM (Malformed)	0.0												2.00		-	

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor- rhage	Tail/ Myotome	Noto- chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
FETAX Ctl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
5.5mg/L 6AN	1	12	0	0	0	12	0	12	3	0	0	12	0	0	0	0	0	0	0	0	0
	2	11	0	0	0	11	0	11	2	0	0	11	0	0	0	0	0	0	0	0	0
Total Survived	50																				
Total Malformed		23	0	0	0	23	0	23	5	0	0	23	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	46.00	0.00	46.00	10.00	0.00	0.00	46.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	1.54	na	1.54	7.07	na	na	1.54	na	na	na	na	na	na	na	na	na
2500mg/L 6AN	1	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	0																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/15/06
Test Material:	Pore Water	FEL Sample No.:	023-028, 033-039	Test End Date:	02/19/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/00/00

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J116D6				J116D4				J116D5				J116C9			
Stunted																
Edema								1								1
Blister																
Head/Facial								1						1		1
Jaw																
Mouth								1						1		1
Eye								1								1
Brain																
Cardiac																
Gut								1						1		1
Hemorrhage																
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
Total Survived	25	24	25	24	25	24	23	25	25	25	25	25	25	24	25	24
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	4.0	0.0	4.0	0.0	4.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	4.0
% Malformed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	4.2
Avg % Mortality	2.0				3.0				0.0				2.0			
SEM (Mortality)	1.2				1.9				0.0				1.2			
Avg % Malformed	0.0				1.0				0.0				2.0			
SEM (Malformed)	0.0				1.0				0.0				1.2			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																	
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J116D6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J116D4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
% Malformed			0.00	1.03	0.00	1.03	0.00	1.03	1.03	0.00	0.00	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	48.50	na	48.50	na	48.50	48.50	na	na	48.50	na	na	na	na	na	na	na	na	na
J116D5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	100																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J116C9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		2	0	1	0	2	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	1.02	0.00	2.04	0.00	2.04	1.02	0.00	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.33	0.00	0.33	0.25	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.29	0.00	0.29	0.25	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.00	na	28.29	na	28.29	49.00	na	na	28.29	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/15/06
Test Material:	Pore Water	FEL Sample No.:	023-028, 033-039	Test End Date:	02/19/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/00/00

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J116D2				J116D0				J116D3				J116D7			
Stunted																
Edema	2												1			
Blister																
Head/Facial	2				1								1			
Jaw																
Mouth	1				1								1			
Eye	2				1								1			
Brain					1								1			
Cardiac																
Gut	2				1								1			
Hemorrhage	1												1			
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	2	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Total Survived	23	25	25	25	25	25	23	24	24	24	24	24	25	24	25	25
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	8.0	0.0	0.0	0.0	0.0	0.0	8.0	4.0	4.0	4.0	4.0	4.0	0.0	4.0	0.0	0.0
% Malformed	8.7	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
Avg % Mortality	2.0				3.0				4.0				1.0			
SEM (Mortality)	2.0				1.9				0.0				1.0			
Avg % Malformed	2.0				1.0				0.0				1.0			
SEM (Malformed)	2.2				1.0				0.0				1.0			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J116D2	1	2	0	2	0	2	0	1	2	0	0	2	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		2	0	2	0	2	0	1	2	0	0	2	1	0	0	0	0	0	0	0	0
% Malformed			0.00	2.04	0.00	2.04	0.00	1.02	2.04	0.00	0.00	2.04	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	1.00	0.00	1.00	0.00	0.25	1.00	0.00	0.00	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.50	0.00	0.50	0.00	0.25	0.50	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.00	na	49.00	na	49.00	49.00	na	na	49.00	49.00	na	na	na	na	na	na	na	na
J116D0	1	1	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		1	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	1.03	0.00	1.03	1.03	1.03	0.00	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	48.50	na	48.50	48.50	48.50	na	48.50	na	na	na	na	na	na	na	na	na
J116D3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	96																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J116D7	1	1	0	1	0	1	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	99																				
Total Malformed		1	0	1	0	1	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0
% Malformed			0.00	1.01	0.00	1.01	0.00	1.01	1.01	1.01	0.00	1.01	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.50	na	49.50	na	49.50	49.50	49.50	na	49.50	49.50	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/15/06
Test Material:	Pore Water	FEL Sample No.:	023-028, 033-039	Test End Date:	02/19/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/00/00

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J11225				J112X6				J11254				J116D8			
Stunted																
Edema	1				1											
Blister																
Head/Facial	2				1	1							1		1	
Jaw																
Mouth	2				1	1							1		1	
Eye	1				1	1							1		1	
Brain					1								1		1	
Cardiac																
Gut	2				1	1							1		1	
Hemorrhage	1															
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	2	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0
Total Survived	25	23	25	24	25	24	25	24	24	23	23	23	23	23	24	22
Total Tested	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
% Mortality	0.0	8.0	0.0	4.0	0.0	4.0	0.0	4.0	4.0	8.0	8.0	8.0	8.0	8.0	4.0	12.0
% Malformed	8.0	0.0	0.0	0.0	4.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	4.2	0.0
Avg % Mortality	3.0				2.0				7.0				8.0			
SEM (Mortality)	1.9				1.2				1.0				1.6			
Avg % Malformed	2.1				2.0				0.0				2.2			
SEM (Malformed)	2.0				1.2				0.0				1.2			

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor- rhage	Tail/ Myotome	Noto- chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J11225	1	2	0	1	0	2	0	2	1	0	0	2	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		2	0	1	0	2	0	2	1	0	0	2	1	0	0	0	0	0	0	0	0
% Malformed			0.00	1.03	0.00	2.06	0.00	2.06	1.03	0.00	0.00	2.06	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	1.00	0.00	1.00	0.25	0.00	0.00	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.50	0.00	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	48.50	na	48.50	na	48.50	48.50	na	na	48.50	48.50	na	na	na	na	na	na	na	na
J112X6	1	1	0	1	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	98																				
Total Malformed		2	0	1	0	2	0	2	2	1	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	1.02	0.00	2.04	0.00	2.04	2.04	1.02	0.00	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.25	0.00	0.33	0.00	0.33	0.33	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.25	0.00	0.29	0.00	0.29	0.29	0.25	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	49.00	na	28.29	na	28.29	28.29	49.00	na	28.29	na	na	na	na	na	na	na	na	na
J11254	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	93																				
Total Malformed		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
J116D8	1	1	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	1	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	92																				
Total Malformed		2	0	0	0	2	0	2	2	2	0	2	0	0	0	0	0	0	0	0	0
% Malformed			0.00	0.00	0.00	2.17	0.00	2.17	2.17	2.17	0.00	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.00	0.00	0.33	0.00	0.33	0.33	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.00	0.00	0.29	0.00	0.29	0.29	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	na	na	26.56	na	26.56	26.56	26.56	na	26.56	na	na	na	na	na	na	na	na	na

SCORE SHEET / MALFORMATION DATA
FORT ENVIRONMENTAL LABORATORIES

Investigator:	DF	Client/Project-WO No.:	CH2M05-00105	Test Start Date:	02/15/06
Test Material:	Pore Water	FEL Sample No.:	023-028, 033-039	Test End Date:	02/19/06
Test Type:	FETAX Screen with X. laevis			Test Score Date:	01/00/00

	Sample No./Sample ID/Concentration *(unit)*															
Malformation:	J11255															
Stunted																
Edema	1		1													
Blister																
Head/Facial	1	1	1													
Jaw																
Mouth	1	1	1													
Eye	1		1													
Brain		1														
Cardiac																
Gut	1	1	1													
Hemorrhage	1		1													
Tail/Myotome																
Notochord																
Fin																
Other:																
Other:																
Other:																
Other:																
Other:																

Total Malformed	1	1	1	0												
Total Survived	24	24	25	24												
Total Tested	25	25	25	25												
% Mortality	4.0	4.0	0.0	4.0												
% Malformed	4.2	4.2	4.0	0.0												
Avg % Mortality	3.0															
SEM (Mortality)	1.0															
Avg % Malformed	3.1															
SEM (Malformed)	1.0															

MALFORMATION DATA

CH2M05-00105
FETAX Screen with X. laevis

SAMPLE ID	REPLICATE NUMBER	NUMBER MALFORMED	TYPE OF MALFORMATION/DELTS OBSERVED																		
			Stunted	Edema	Blister	Head/ Facial	Jaw	Mouth	Eye	Brain	Cardiac	Gut	Hemor-rhage	Tail/ Myotome	Noto-chord	Fin	Other (specify)	Other (specify)	Other (specify)	Other (specify)	Other (specify)
J11255	1	1	0	1	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
	2	1	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
	3	1	0	1	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survived	97																				
Total Malformed		3	0	2	0	3	0	3	2	1	0	3	2	0	0	0	0	0	0	0	0
% Malformed			0.00	2.06	0.00	3.09	0.00	3.09	2.06	1.03	0.00	3.09	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Var (S2)			0.00	0.33	0.00	0.25	0.00	0.25	0.33	0.25	0.00	0.25	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEM			0.00	0.29	0.00	0.25	0.00	0.25	0.29	0.25	0.00	0.25	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV (%)			na	28.00	na	16.17	na	16.17	28.00	48.50	na	16.17	28.00	na	na	na	na	na	na	na	na

FIGURE 1
CH2M05-00105 (023-028, 033-039)
FETAX Screen with *X. laevis*
FETAX Solution Control

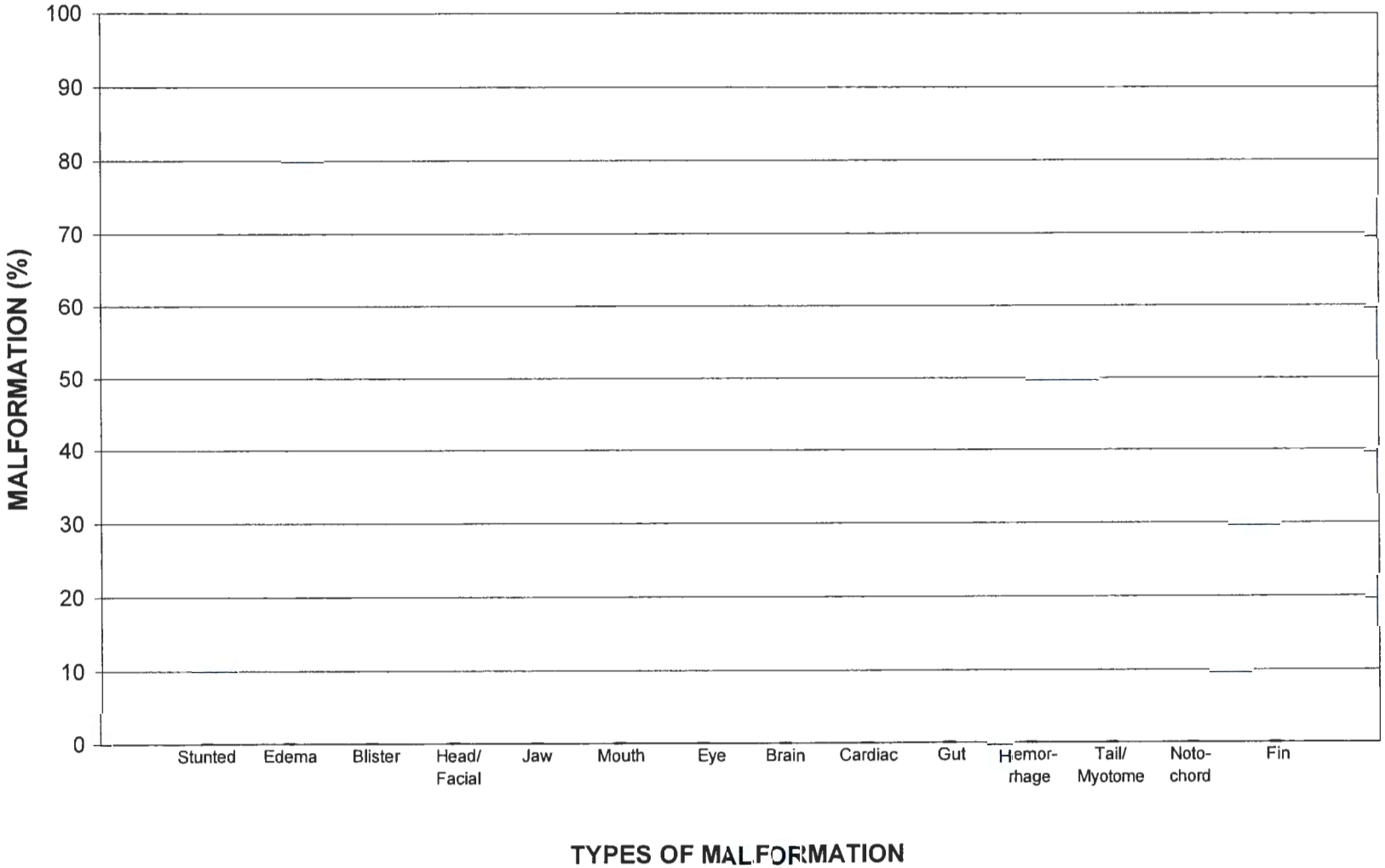


FIGURE 2
CH2M05-00105
FETAX Screen with *X. laevis*
J116D6

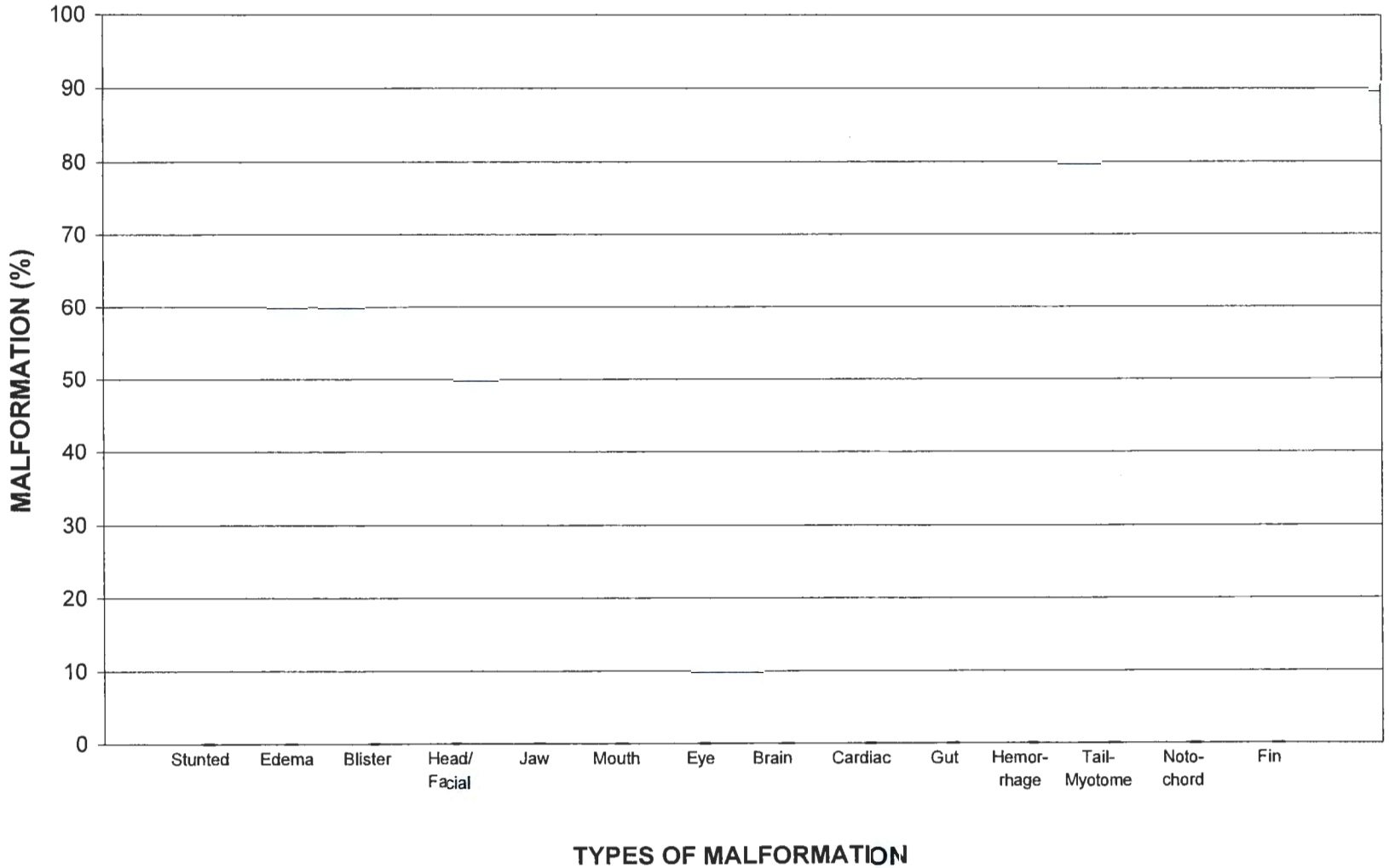


FIGURE 3
CH2M05-00105
FETAX Screen with *X. laevis*
J116D4

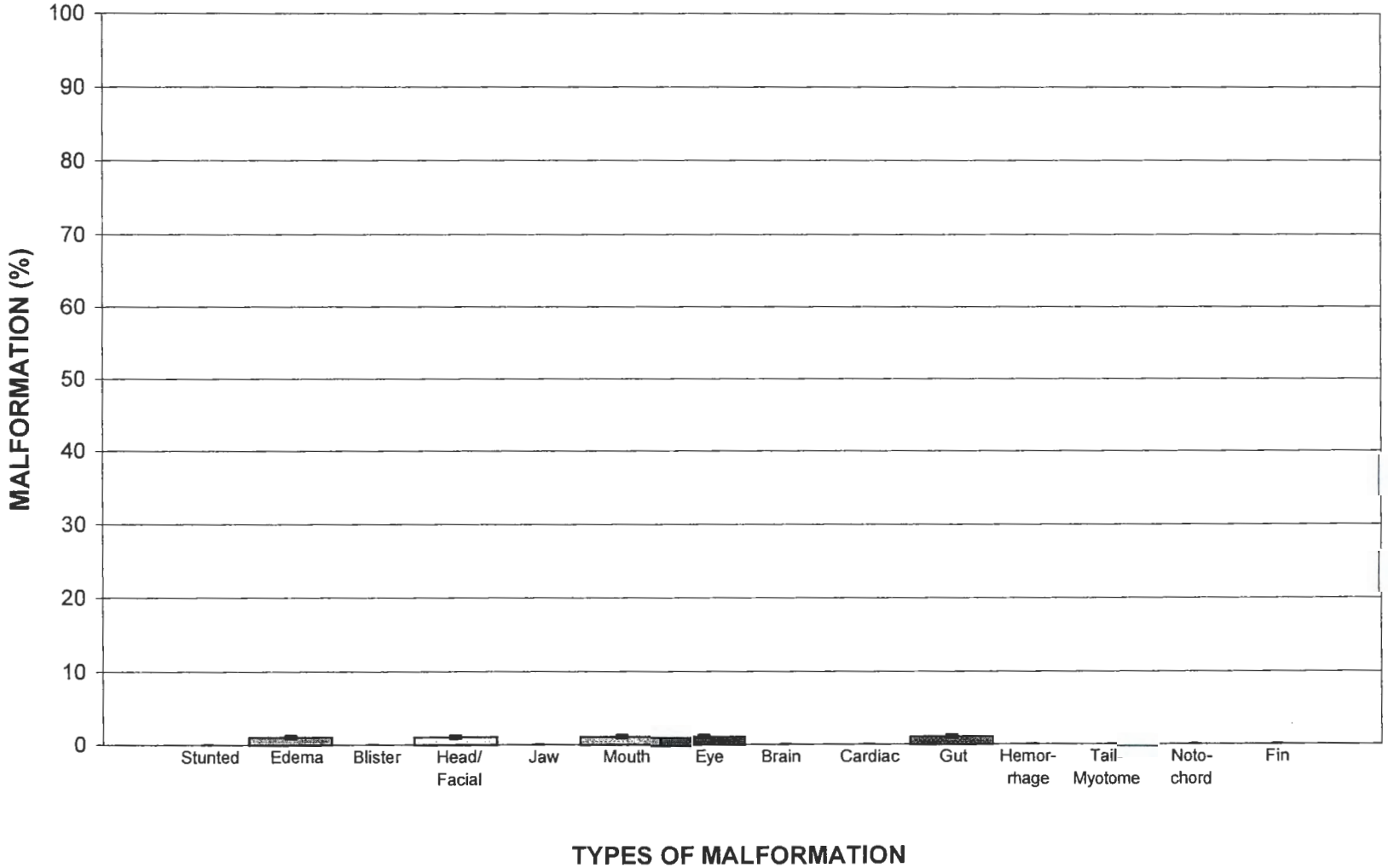


FIGURE 4
CH2M05-00105
FETAX Screen with *X. laevis*
J116D5

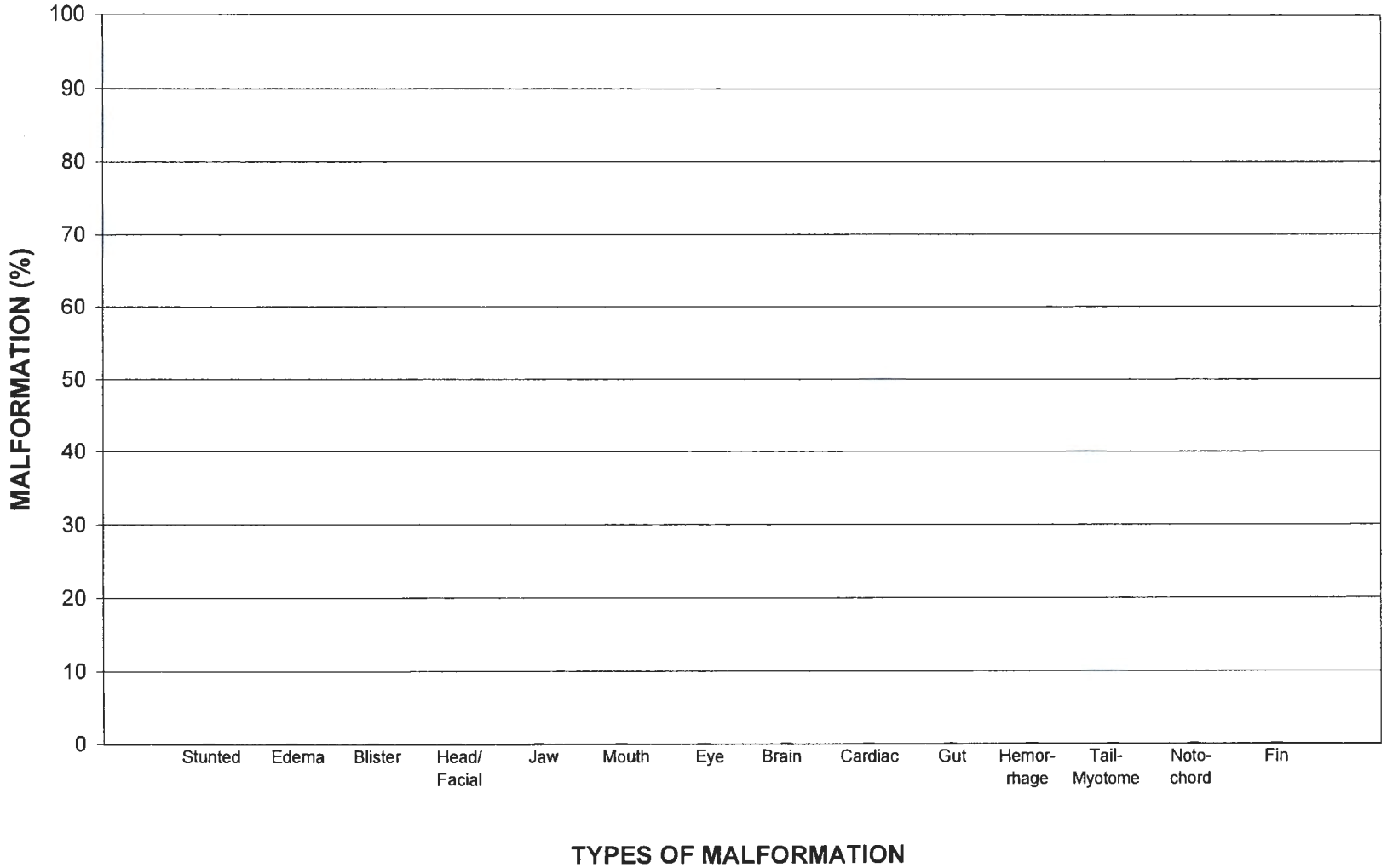


FIGURE 5
CH2M05-00105
FETAX Screen with *X. laevis*
J116C9

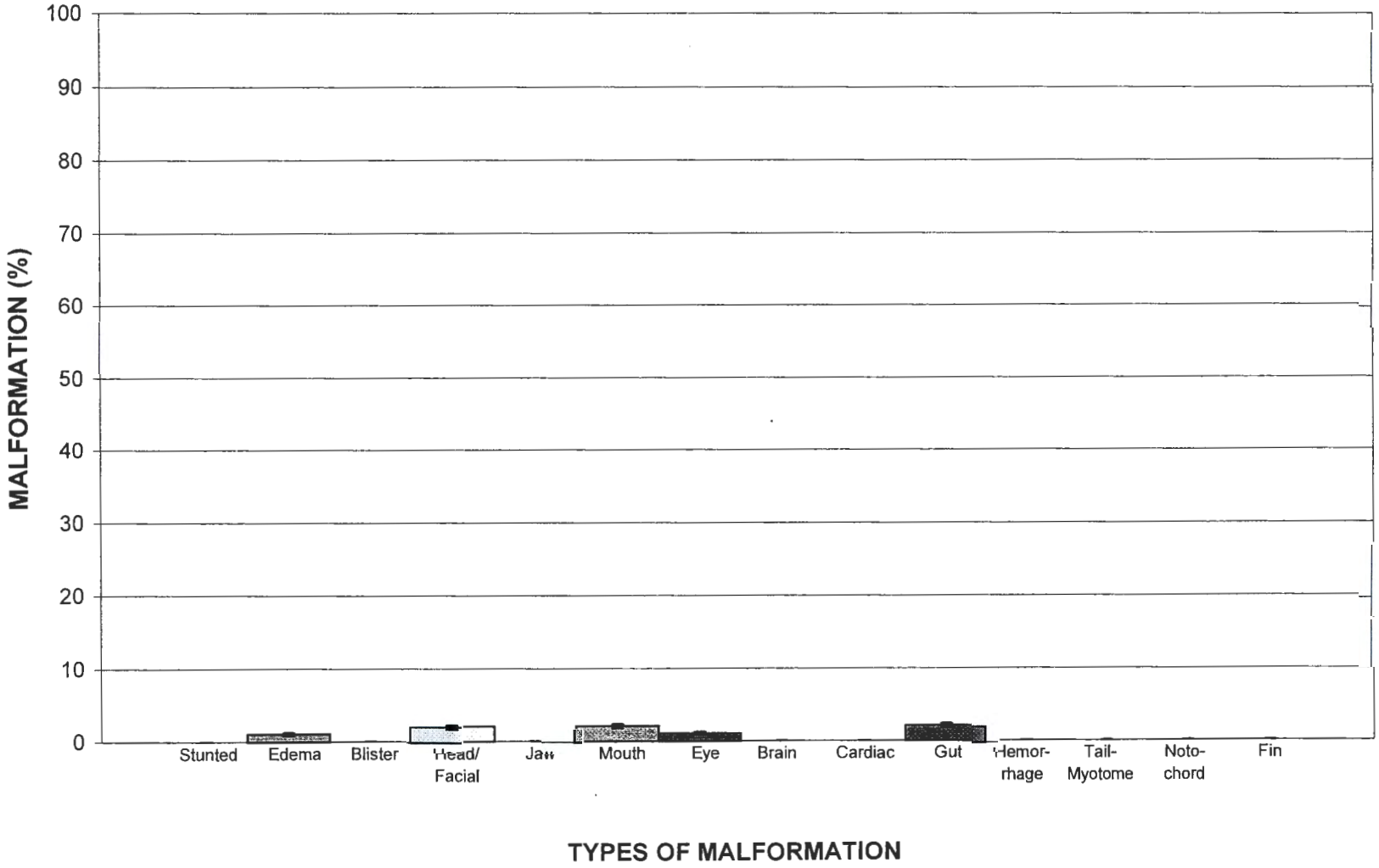


FIGURE 6
CH2M05-00105
FETAX Screen with *X. laevis*
J116D2

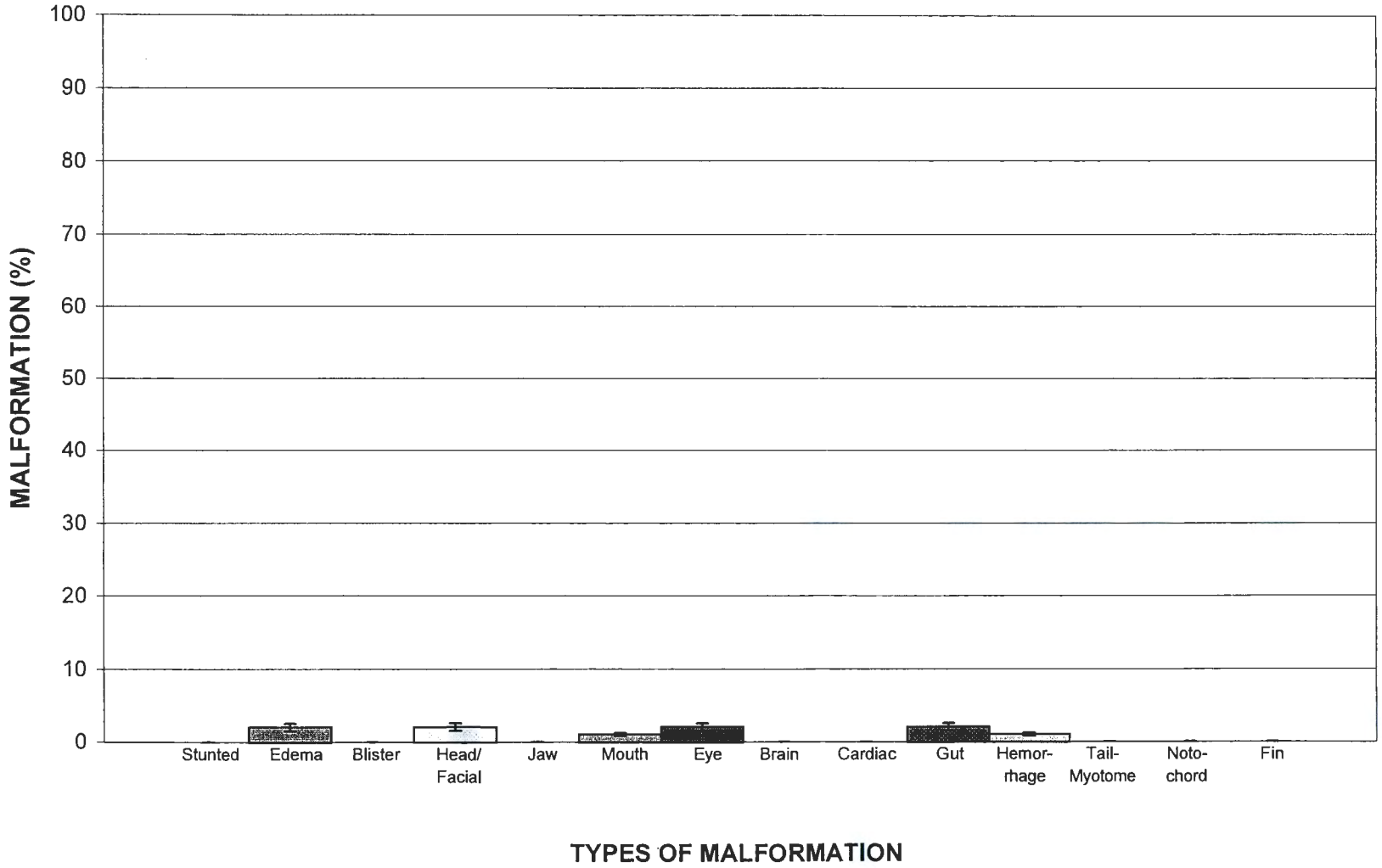


FIGURE 7
CH2M05-00105
FETAX Screen with *X. laevis*
J116D0

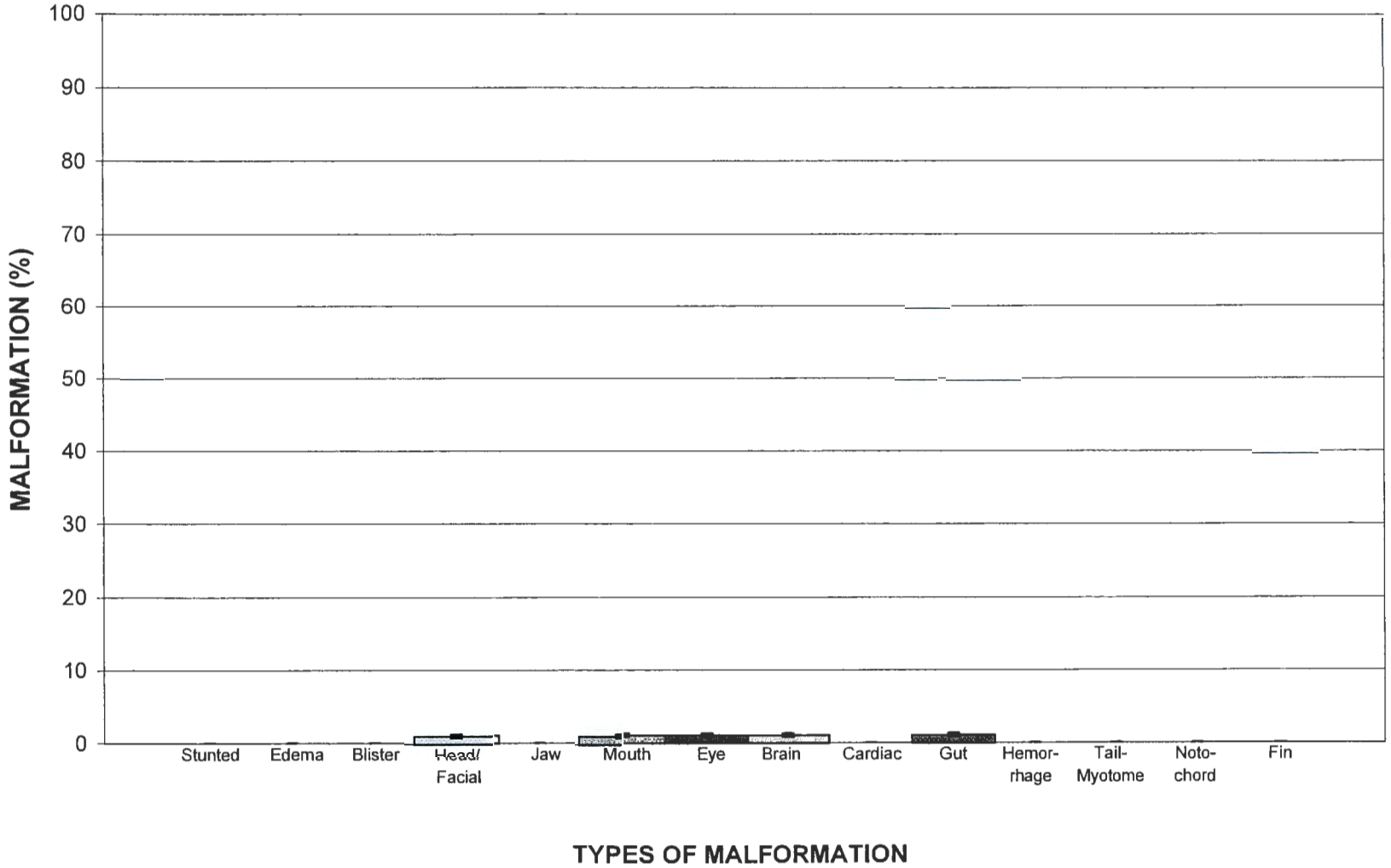


FIGURE 8
CH2M05-00105
FETAX Screen with *X. laevis*
J116D3

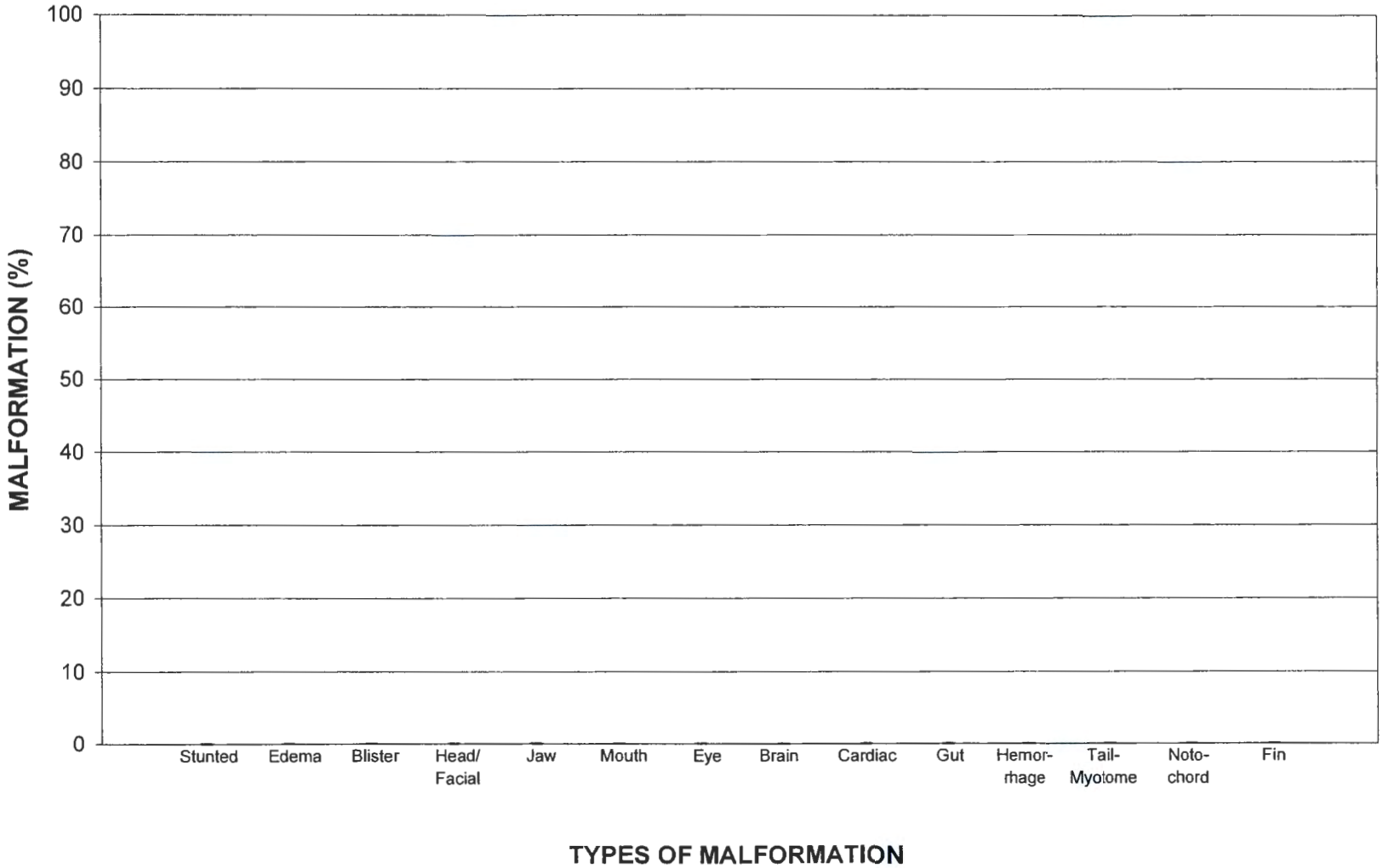


FIGURE 9
CH2M05-00105
FETAX Screen with *X. laevis*
J116D7

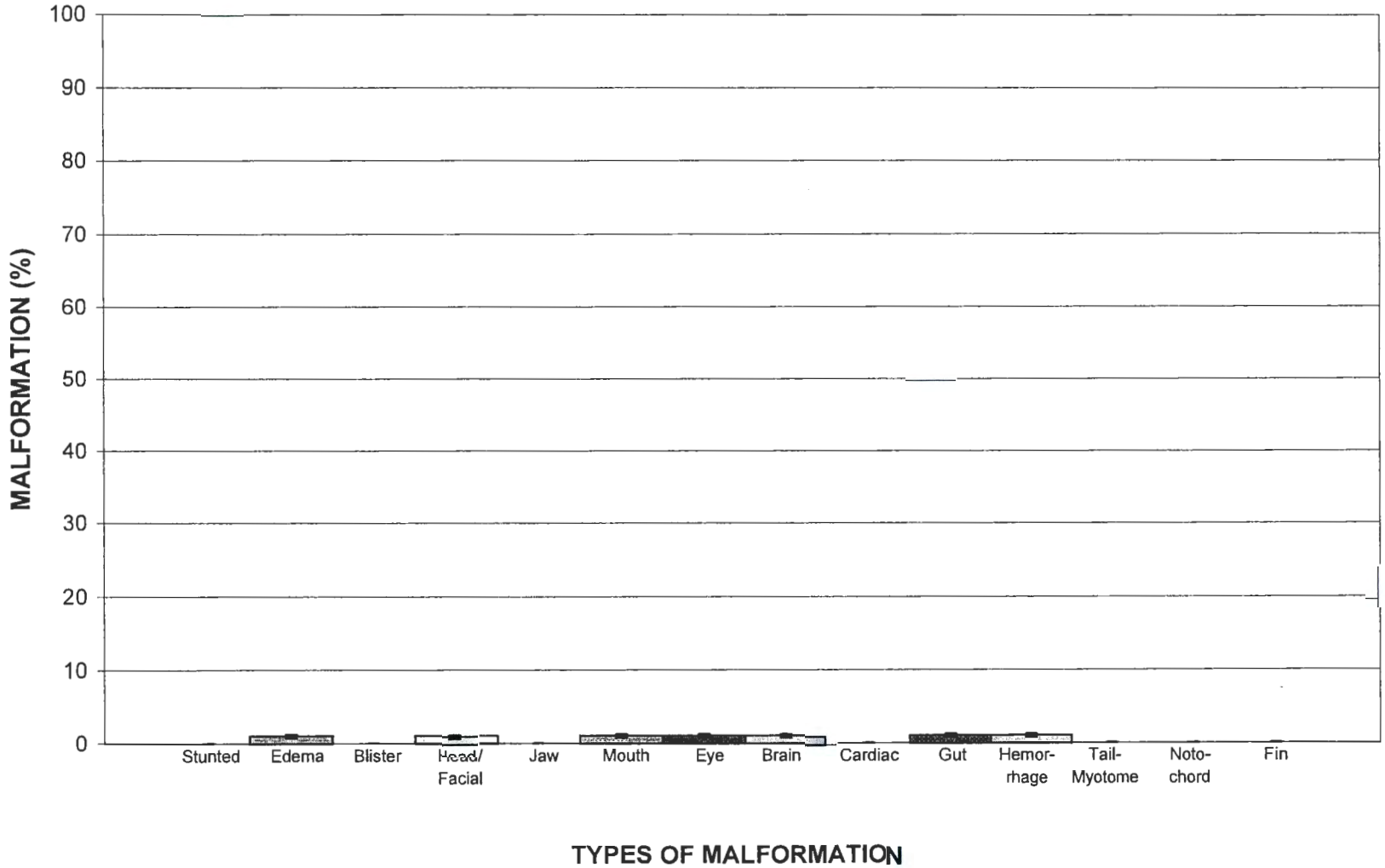


FIGURE 10
CH2M05-00105
FETAX Screen with *X. laevis*
J11225

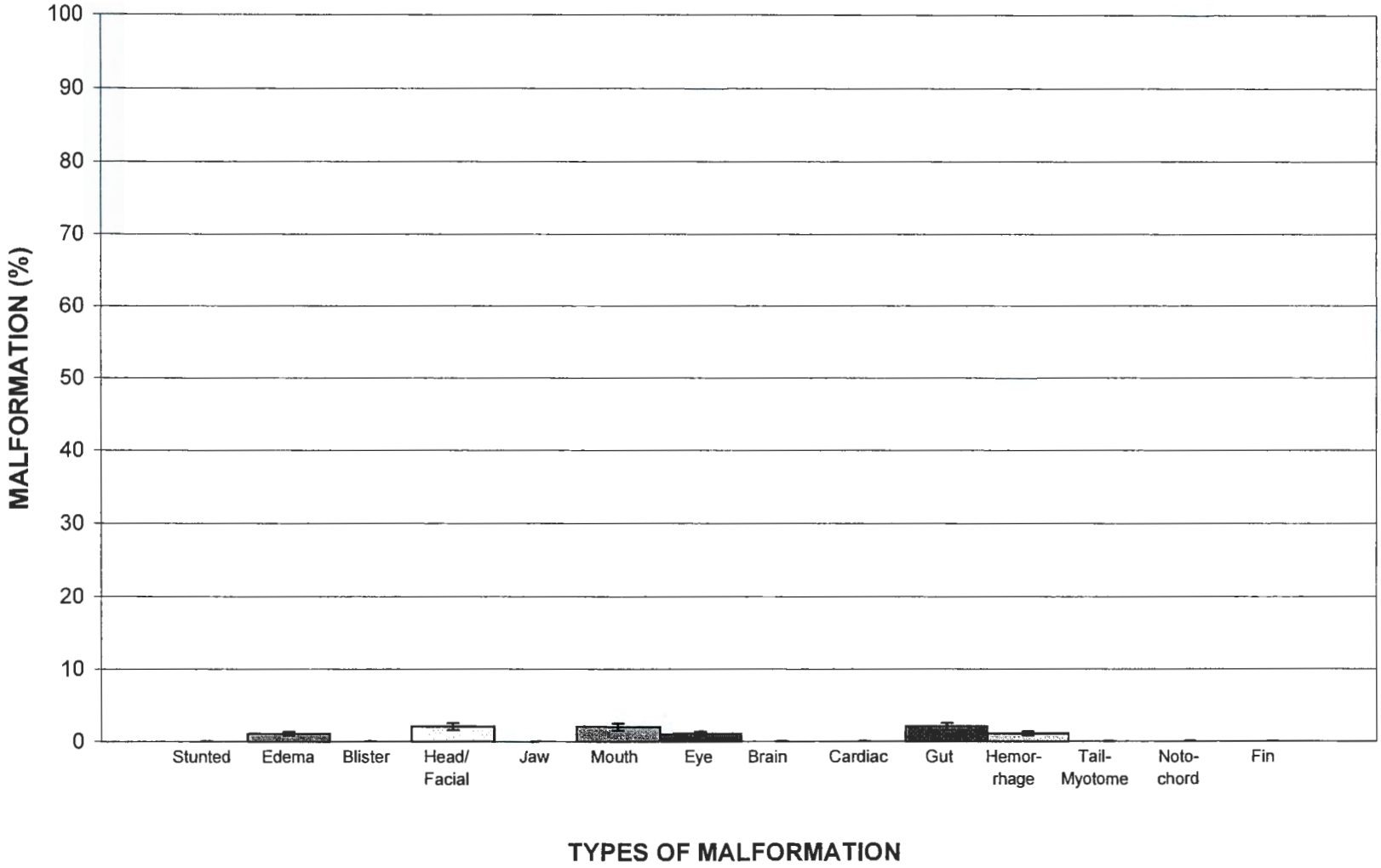


FIGURE 11
CH2M05-00105
FETAX Screen with *X. laevis*
J112X6

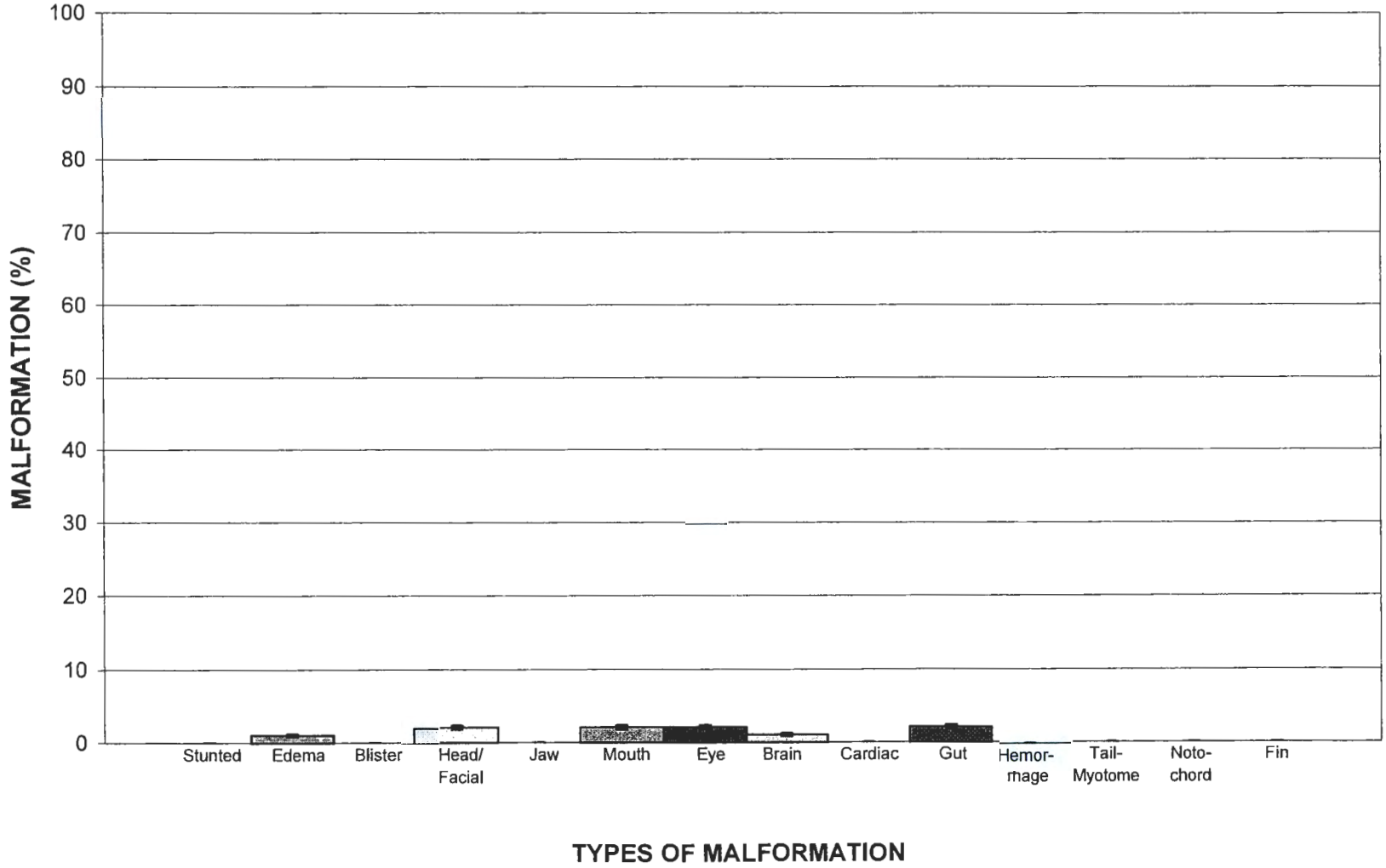


FIGURE 12
CH2M05-00105
FETAX Screen with *X. laevis*
J11254

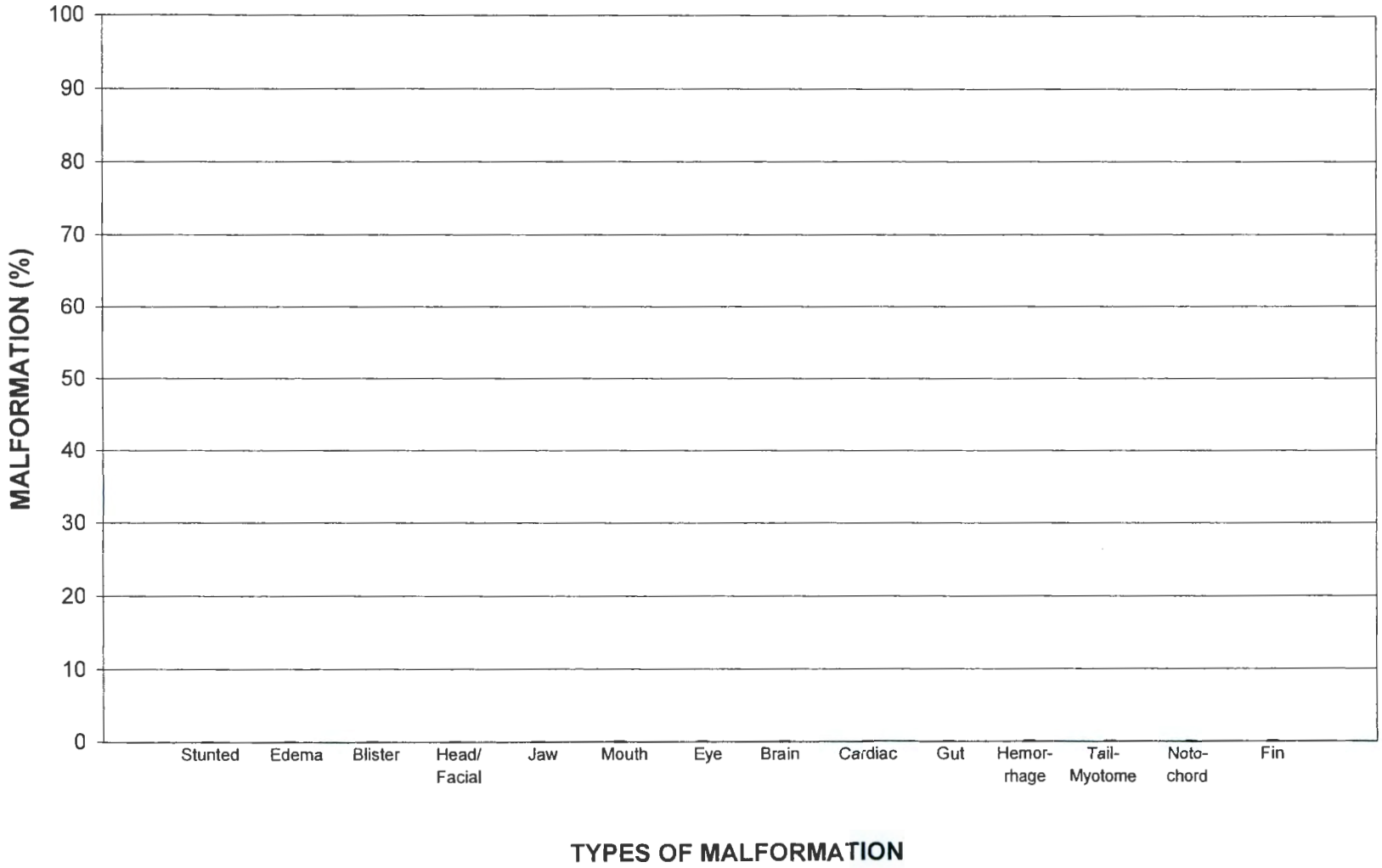


FIGURE 13
CH2M05-00105
FETAX Screen with *X. laevis*
J116D8

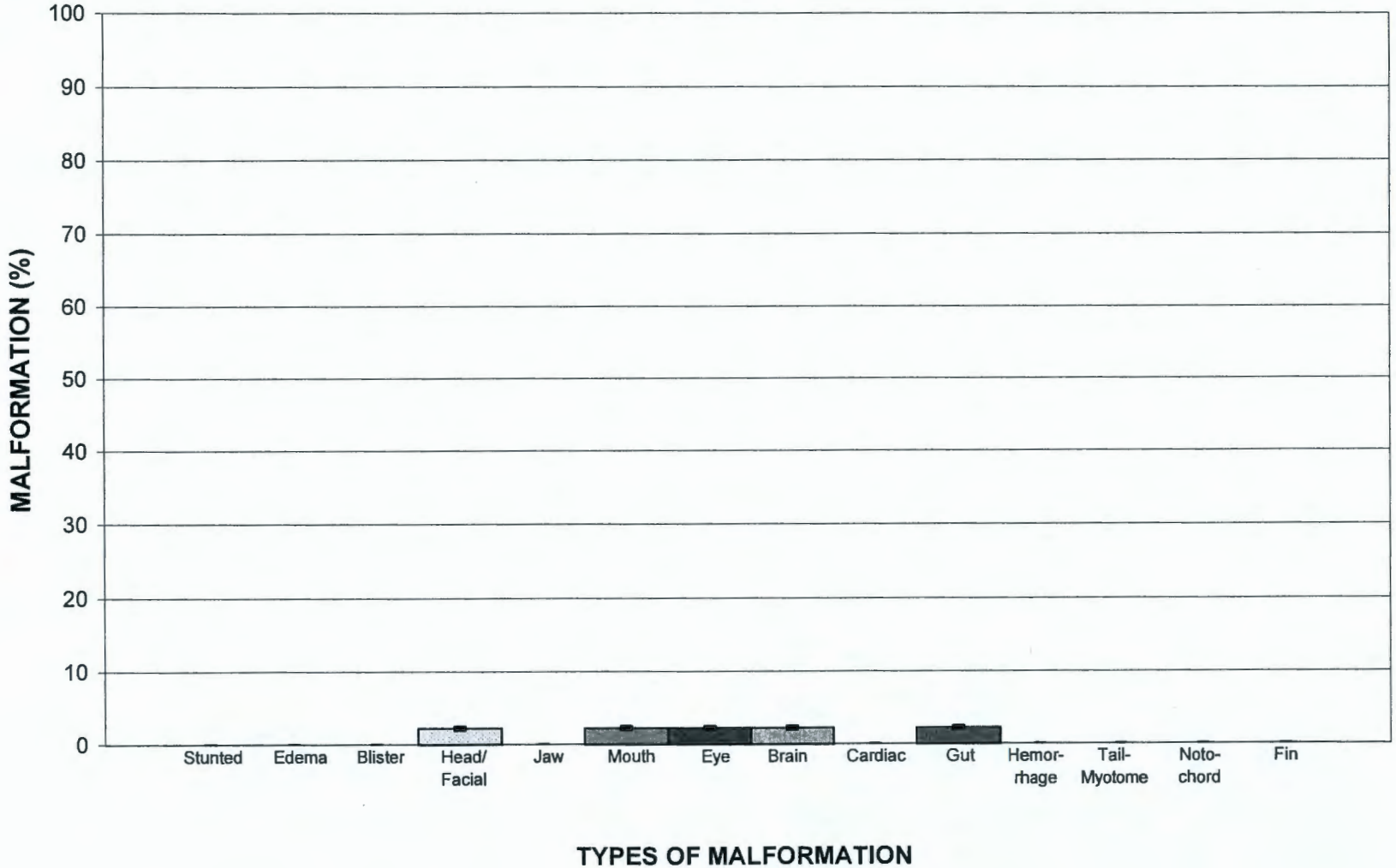


FIGURE 14
CH2M05-00105
FETAX Screen with *X. laevis*
J11255

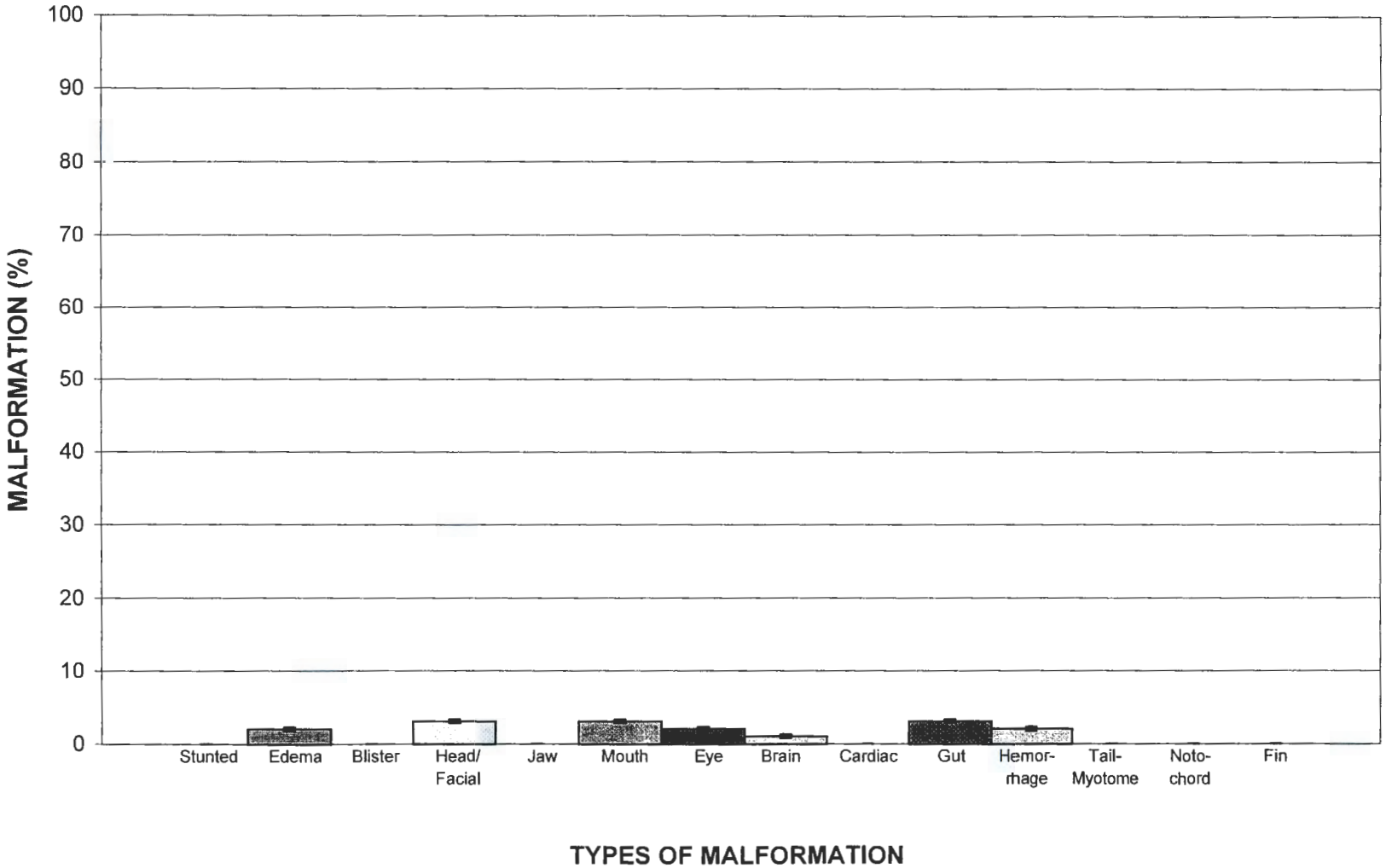


FIGURE 15
CH2M00105
FETAX Screen with *X. laevis*

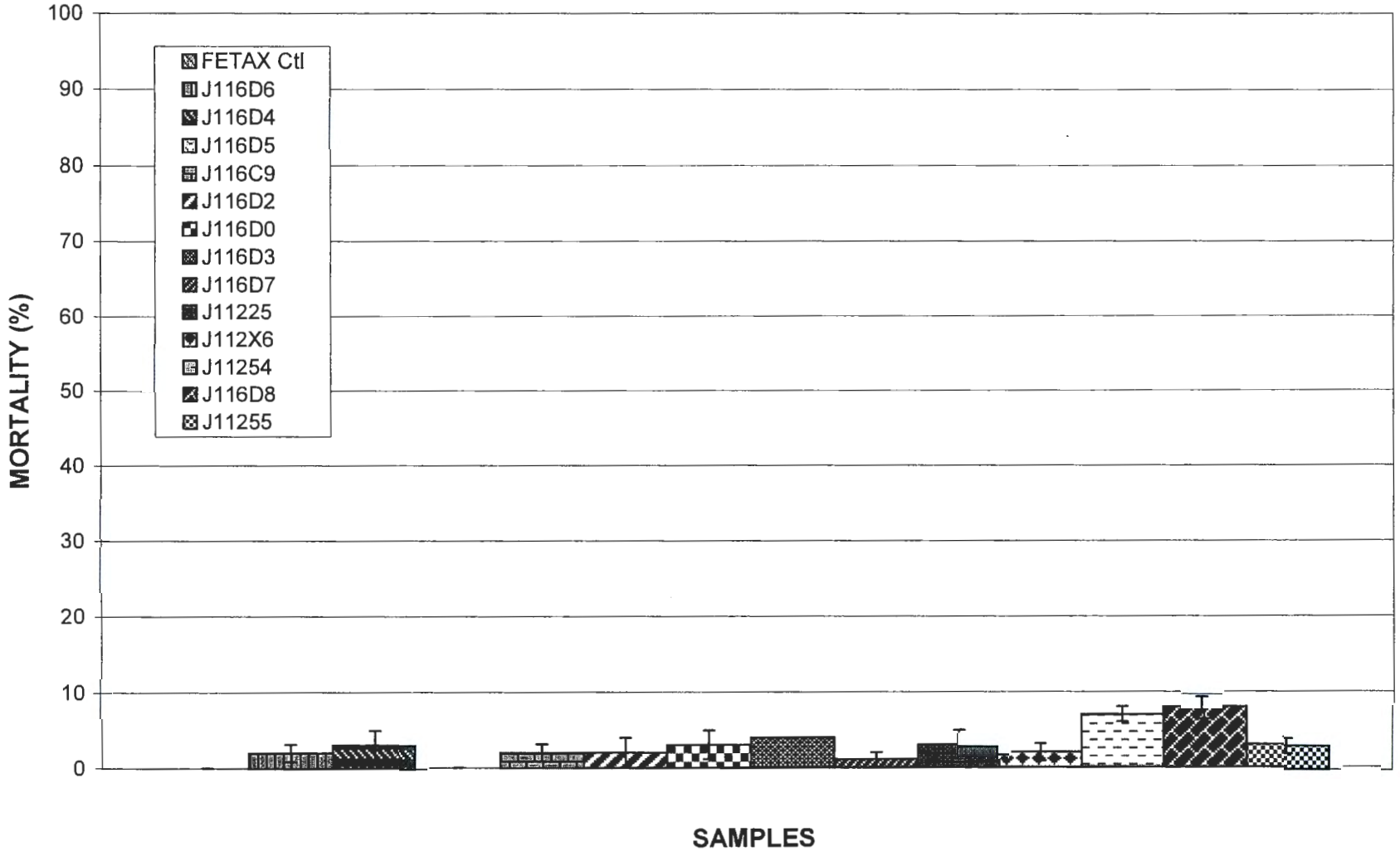
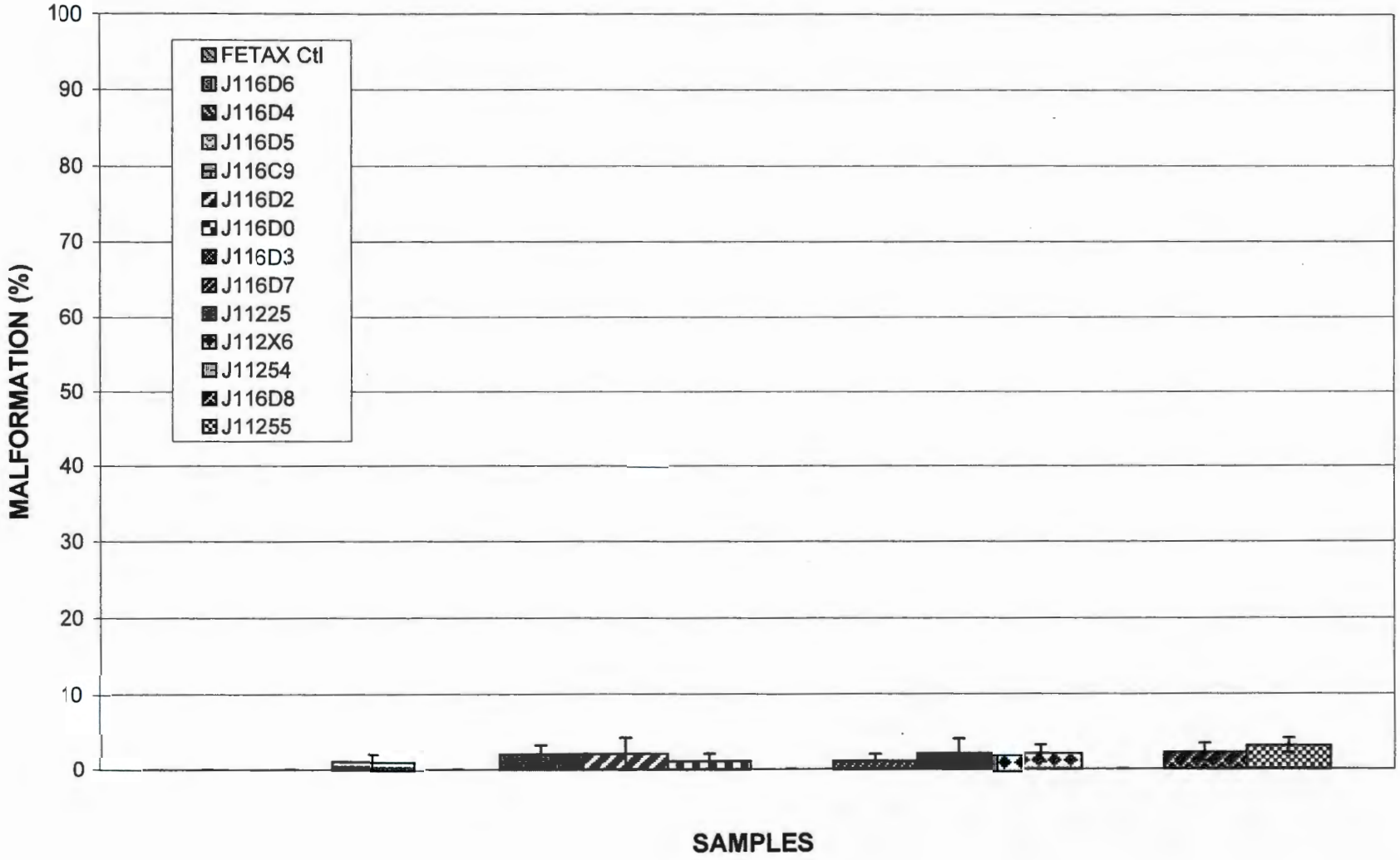


FIGURE 16
CH2M00105
FETAX Screen with *X. laevis*



CH2M05-00105_001-011_Pore Water_Growth Data											
FX Ctl	J11114	J11115	J11116	J11117	J11189	J11190	J111B0	J111L7	J111L8	J111L9	J111M0
0.858	1.005	0.874	0.861	0.815	1.030	0.921	0.911	1.008	0.946	0.974	0.882
0.871	0.894	0.984	0.961	0.951	0.968	0.929	0.876	0.951	0.969	0.898	0.999
0.979	0.843	0.948	1.002	0.990	0.993	1.003	0.980	0.974	1.025	0.895	0.971
1.005	0.836	0.902	0.941	0.378	0.956	0.986	0.891	0.988	0.971	0.887	0.974
0.909	0.919	0.839	0.932	0.935	0.886	0.994	0.943	0.909	0.843	0.980	0.896
0.934	0.852	0.817	0.986	0.980	0.930	0.928	0.933	0.962	0.951	0.843	0.958
0.979	0.947	0.986	0.815	1.000	0.965	0.912	1.005	1.031	0.906	0.871	0.946
0.890	1.015	0.981	0.921	0.952	0.840	0.874	0.911	0.913	0.973	0.889	0.961
0.909	0.890	0.944	0.935	0.953	1.015	0.880	1.090	0.943	0.947	0.917	0.993
0.910	0.921	0.911	0.908	0.971	0.912	1.008	0.884	0.930	0.987	0.876	0.877
0.919	0.962	0.954	0.878	0.948	0.862	1.051	0.894	0.992	0.866	0.889	0.891
0.934	0.956	0.993	0.823	0.930	0.944	1.045	0.781	0.921	0.903	0.938	0.952
0.991	0.942	0.951	0.952	0.993	0.949	0.903	0.926	0.920	0.961	0.965	0.934
0.979	0.912	0.846	0.868	0.872	0.945	0.895	0.951	0.933	1.021	0.892	0.917
0.941	1.013	0.941	0.926	0.953	0.899	0.921	0.595	0.940	0.956	0.914	0.937
0.988	0.960	0.967	0.931	0.983	0.916	0.886	0.883	0.974	0.919	0.981	0.856
1.037	0.871	0.951	0.906	0.992	0.948	0.946	0.913	0.941	0.987	0.872	0.944
0.979	0.980	0.994	0.906	0.873	0.988	0.887	0.947	0.934	0.936	0.941	0.843
0.886	0.896	0.866	0.926	0.862	0.964	0.964	0.980	0.932	0.973	1.043	0.914
1.061	0.910	0.932	0.840	0.980	0.907	0.957	0.970	0.937	0.926	1.016	0.983
0.879	0.874	0.939	0.827	1.000	0.917	0.939	0.959	0.992	0.959	0.965	0.965
1.058	0.804	0.965	0.965	0.868	0.917	0.922	1.009	0.934	0.962	0.930	0.939
1.041	0.838	0.967	0.899	0.981	0.982	0.939	0.917	0.973	0.904	0.968	0.942
0.969	0.952	0.911	0.971	0.890	0.972	0.868	0.984	0.863	0.965	1.002	0.912
1.107	0.899	0.931	0.789	0.994	0.913	0.947	1.000	0.855	0.956	0.945	0.967
0.857	0.968	0.879	0.963	0.763	0.870	0.731	0.928	0.827	0.873	0.915	0.973
0.909	0.868	0.912	0.959	0.985	0.912	0.933	0.894	0.900	0.891	0.934	1.031
0.952	0.944	0.834	0.946	0.822	0.895	0.941	1.034	0.870	1.037	0.975	0.965
0.934	0.846	0.949	1.012	0.827	0.875	0.970	0.891	0.922	0.990	0.889	0.968
0.870	1.044	0.896	1.018	0.924	0.942	1.008	0.890	0.853	0.873	0.884	0.911
0.956	0.989	0.936	0.952	1.006	0.912	0.909	0.958	0.913	0.948	0.918	0.977
1.009	0.962	0.948	0.983	0.988	0.957	0.961	0.974	0.939	0.992	0.961	0.932
0.891	0.979	0.892	0.952	0.898	0.776	1.011	0.882	0.943	0.931	0.938	0.839
0.936	0.990	0.945	0.917	0.917	0.911	0.947	0.752	0.861	0.830	0.949	0.934
0.860	0.962	0.905	0.993	0.896	0.909	0.886	0.928	0.979	0.864	0.906	0.934
0.769	0.891	0.852	0.973	0.948	0.959	0.921	0.882	0.985	0.992	0.813	0.964
0.934	0.880	0.916	1.028	1.001	0.971	0.948	0.975	0.849	0.877	0.965	0.973
0.701	0.916	0.909	0.886	0.918	0.908	0.976	0.981	0.876	0.883	1.049	0.959
0.828	0.953	0.886	0.909	0.944	0.924	0.956	1.068	0.888	0.983	0.957	0.959
0.912	0.917	0.939	1.012	0.889	0.961	1.000	0.852	0.958	0.979	0.022	0.993
0.948	0.948	0.971	0.911	0.871	0.967	0.863	1.016	0.891	0.922	0.596	0.891
0.847	1.034	0.920	0.978	0.961	0.945	0.953	0.909	0.909	0.987	0.963	0.849
0.894	1.012	0.926	0.942	0.934	0.996	0.931	0.968	0.844	0.940	0.915	0.961
1.009	0.873	0.898	0.897	0.951	0.978	0.959	0.955	0.707	0.814	0.917	0.849
0.871	1.009	0.891	0.894	1.008	0.858	0.983	0.977	0.939	0.974	0.915	1.007
0.852	0.886	0.969	0.890	1.054	0.891	1.015	0.937	0.917	0.899	0.879	1.019
0.926	0.915	1.012	0.986	0.868	0.948	0.935	0.917	0.980	0.791	0.906	0.911
0.997	0.845	0.927	0.954	1.009	0.870	0.989	0.961	0.615	0.956	0.883	0.917
0.794	0.991	0.860	0.878	0.983	0.896	0.969	0.966	0.840	0.459	0.958	0.978
0.561	0.954	0.894	1.003	0.930	1.001	0.949	0.923	0.948	0.870	0.837	0.918
1.016	1.004	0.954	0.862	1.030	0.966	0.981	1.001	0.967	0.944	0.887	0.952
0.889	0.982	0.872	0.899	0.975	1.028	0.830	0.978	0.971	0.861	0.825	0.872
0.992	0.980	0.978	0.922	1.013	0.921	0.952	0.975	0.966	0.936	0.876	0.891
0.936	0.934	0.831	0.933	0.974	0.940	0.883	0.932	1.005	0.954	0.952	0.987
1.065	0.951	0.874	0.887	0.958	0.935	0.989	0.955	0.666	0.854	0.993	0.877
1.049	0.918	0.921	0.836	0.961	1.004	0.917	0.945	0.968	0.897	0.901	0.877
1.041	1.043	0.929	0.911	0.987	0.935	0.908	0.941	0.948	0.963	1.021	0.971
0.989	0.953	0.796	0.960	0.956	0.952	0.909	0.949	0.906	0.959	1.008	0.903
1.001	1.005	0.843	0.744	0.727	0.902	0.973	0.956	0.980	0.957	0.903	0.992
0.952	0.990	0.947	0.939	0.867	0.917	0.955	0.965	0.924	0.938	0.931	0.937
0.947	0.858	0.880	0.901	1.021	0.981	0.923	0.926	0.970	0.903	0.939	0.942
0.926	1.050	0.980	0.865	0.981	0.925	0.874	0.933	0.924	0.961	0.948	1.019
0.891	0.975	0.922	0.900	0.934	0.975	0.934	1.010	0.874	0.924	0.900	0.906
0.927	0.961	0.951	0.878	0.947	1.000	0.957	0.968	0.944	0.973	0.940	0.883

CH2M05-00105_001-011_Pore Water_Growth Data											
FX Ctl	J11114	J11115	J11116	J11117	J11189	J11190	J111B0	J111L7	J111L8	J111L9	J111M0
0.881	0.968	0.901	0.862	0.967	0.935	0.962	0.873	0.924	0.819	0.931	0.981
0.931	1.065	0.881	0.955	0.993	0.933	0.939	1.005	0.951	0.871	0.936	0.906
1.072	0.978	1.084	0.958	0.796	0.951	0.970	0.967	0.934	0.902	1.051	0.835
1.000	0.970	0.993	0.932	0.987	0.957	0.874	0.992	0.926	0.859	0.954	0.968
1.084	0.964	0.939	0.882	0.882	0.952	0.895	0.950	0.824	0.935	0.903	0.984
0.970	0.936	0.927	0.868	0.961	1.039	0.968	0.991	0.918	0.934	0.897	0.975
0.952	1.063	0.933	0.970	0.945	0.996	1.013	0.872	0.977	0.908	0.930	0.979
0.874	0.988	0.780	0.899	0.971	0.936	0.939	1.002	0.952	0.954	0.959	0.938
1.026	0.969	0.895	0.952	0.948	0.935	0.954	0.965	0.952	0.787	0.968	0.872
0.967	0.999	0.846	0.947	0.940	0.973	0.976	1.008	1.010	0.940	1.032	0.633
0.899	0.997	0.894	0.965	0.925	0.930	0.921	0.944	0.524	0.892	0.917	0.907
1.000	0.980	0.949	0.828	0.868	0.957	0.921	0.854	0.970	0.885	0.980	0.919
1.047	0.939	0.901	0.967	0.903	0.905	0.924	1.043	0.963	0.942	0.871	0.818
0.953	1.040	0.890	1.002	1.017	1.022	0.933	0.921	0.916	0.893	1.003	0.910
0.873	0.961	0.780	0.970	0.937	1.021	0.940	0.930	0.931	0.967	0.925	0.874
0.952	1.010	0.890	0.933	0.895	0.939	0.910	0.953	0.887	0.913	0.944	0.978
0.851	0.967	0.812	0.941	0.968	0.937	0.899	0.951	0.892	0.954	0.951	0.939
0.987	0.922	0.873	0.915	0.928	0.934	0.913	0.961	0.968	0.864	0.814	0.946
1.047	0.925	0.891	0.930	0.932	0.911	0.935	0.953	1.008	0.922	0.687	1.030
0.982	0.980	0.892	0.917	0.965	0.877	0.975	0.928	0.936	0.883	1.010	0.908
0.923	0.905	0.757	0.929	0.984	0.993	1.013	0.913	0.913	0.932	0.968	0.868
0.954	0.919	1.056	0.918	0.955	0.901	0.941	0.812	0.986	0.905	0.925	0.894
0.991	0.988	0.941	0.948	1.006	0.972	0.949	0.961	1.021	0.963	0.929	0.975
0.988	0.951	0.952	0.968	0.865	0.923	1.012	0.930	0.808	0.966	1.030	0.877
1.031	0.940	0.921	0.906	0.908	1.016	0.927	0.873	0.964	0.975	0.842	0.890
0.905	0.932	0.894	0.958	0.965	0.939	0.989	0.839	0.904	0.987	0.979	0.868
1.023	0.979	1.022	0.906	0.928	0.920	0.854	0.934	0.844	0.930	0.934	0.880
1.030	0.976	0.903	0.959	0.925	0.913	1.068	1.002	0.969	0.933	0.808	0.828
1.023	1.039	0.997	0.999	0.924	0.971	0.850	0.850	0.915	0.933	0.981	0.902
0.993	0.942	0.899	0.895	0.948	0.908	0.950	0.859	0.855	0.931	0.998	0.915
1.030	0.936	0.891	0.943	1.003	0.989	0.931	1.010	0.962	0.894	0.956	0.971
0.992	0.984	1.060	0.925	1.041	0.927	0.925	0.887	0.798	1.005	1.007	0.959
0.961	1.008	0.584	0.861	1.000	0.919	0.925	0.860		0.898	0.894	0.956
0.980	0.931	0.860	0.941	0.987	0.980	0.983	0.905			1.002	
0.958	0.894	0.800		0.917	0.991	0.931				1.003	
0.941	0.937	0.909			0.913						

Descriptive Statistics:

Data source: CH2M05-00105_001-011_PoreWater_Growth

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean	% Growth
FX Ctl	100	0	0.947	0.0809	0.00809	0.0161	-
J11114	100	0	0.95	0.0551	0.00551	0.0109	100.32
J11115	100	0	0.912	0.0678	0.00678	0.0135	96.30
J11116	98	0	0.924	0.0521	0.00526	0.0104	97.57
J11117	99	0	0.937	0.0817	0.00821	0.0163	98.94
J11189	100	0	0.941	0.0447	0.00447	0.00887	99.37
J11190	99	0	0.941	0.0496	0.00499	0.0099	99.37
J111B0	98	0	0.936	0.0664	0.00671	0.0133	98.84
J111L7	96	0	0.918	0.0792	0.00809	0.0161	96.94
J111L8	97	0	0.923	0.0692	0.00702	0.0139	97.47
J111L9	99	0	0.92	0.114	0.0114	0.0227	97.15
J111M0	97	0	0.928	0.0573	0.00581	0.0115	97.99

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.546	1.107	0.561	0.952	0.902	0.998
J11114	0.261	1.065	0.804	0.954	0.916	0.986
J11115	0.499	1.084	0.584	0.914	0.883	0.95
J11116	0.284	1.028	0.744	0.93	0.897	0.959
J11117	0.675	1.054	0.378	0.951	0.917	0.985
J11189	0.263	1.039	0.776	0.939	0.912	0.972
J11190	0.338	1.068	0.731	0.939	0.918	0.97
J111B0	0.495	1.09	0.595	0.944	0.905	0.975
J111L7	0.507	1.031	0.524	0.934	0.896	0.967
J111L8	0.578	1.037	0.459	0.935	0.893	0.963
J111L9	1.029	1.051	0.0221	0.934	0.894	0.968
J111M0	0.398	1.031	0.633	0.937	0.891	0.971

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	-1.342	4.716	0.0666	0.325	94.723	90.372
J11114	-0.281	-0.189	0.0573	0.543	94.954	90.464
J11115	-1.085	4.961	0.111	0.004	91.231	83.686
J11116	-0.637	0.803	0.0577	0.546	90.59	84.003
J11117	-3.628	21.841	0.163	<0.001	92.757	87.561
J11189	-0.334	1.029	0.0597	0.483	94.141	88.823
J11190	-0.573	2.635	0.0886	0.053	93.144	87.877
J111B0	-1.56	6.628	0.0941	0.032	91.682	86.199
J111L7	-2.409	8.279	0.173	<0.001	88.116	81.476
J111L8	-3.32	20.344	0.118	0.002	89.568	83.165
J111L9	-5.393	40.328	0.232	<0.001	91.081	85.06
J111M0	-1.482	6.019	0.0856	0.077	90.057	83.926

One Way Analysis of Variance

Data source: CH2M05-00105_001-011_PoreWater_Growth

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
FX Ctl	100	0	0.952	0.902	0.998
J11114	100	0	0.954	0.916	0.986
J11115	100	0	0.914	0.883	0.95
J11116	98	0	0.93	0.897	0.959
J11117	99	0	0.951	0.917	0.985
J11189	100	0	0.939	0.912	0.972
J11190	99	0	0.939	0.918	0.97
J111B0	98	0	0.944	0.905	0.975
J111L7	96	0	0.934	0.896	0.967
J111L8	97	0	0.935	0.893	0.963
J111L9	99	0	0.934	0.894	0.968
J111M0	97	0	0.937	0.891	0.971

H = 40.877 with 11 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

Multiple Comparisons versus Control Group (**Dunn's Method**) :

Comparison	Diff of Ranks	Q	P<0.05
J11115 vs FX Ctl	212.145	4.391	Yes
J11116 vs FX Ctl	149.979	3.088	Yes
J111L7 vs FX Ctl	132.425	2.713	No
J111L8 vs FX Ctl	129.55	2.661	Do Not Test
J111M0 vs FX Ctl	114.318	2.348	Do Not Test
J111L9 vs FX Ctl	110.414	2.279	Do Not Test
J111B0 vs FX Ctl	65.106	1.341	Do Not Test
J11190 vs FX Ctl	54.767	1.131	Do Not Test
J11189 vs FX Ctl	53.19	1.101	Do Not Test
J11117 vs FX Ctl	20.474	0.423	Do Not Test
J11114 vs FX Ctl	5.625	0.116	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Descriptive Statistics:

Data source: CH2M05-00105_001-011_PoreWater_Mortality

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0	0	0	0
J11114	4	0	0	0	0	0
J11115	4	0	0	0	0	0
J11116	4	0	0.02	0.04	0.02	0.0636
J11117	4	0	0.01	0.02	0.01	0.0318
J11189	4	0	0	0	0	0
J11190	4	0	0.01	0.02	0.01	0.0318
J111B0	4	0	0.02	0.0231	0.0115	0.0367
J111L7	4	0	0.04	0.0462	0.0231	0.0735
J111L8	4	0	0.03	0.02	0.01	0.0318
J111L9	4	0	0.01	0.02	0.01	0.0318
J111M0	4	0	0.03	0.02	0.01	0.0318

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0	0	0	0	0	0
J11114	0	0	0	0	0	0
J11115	0	0	0	0	0	0
J11116	0.08	0.08	0	0	0	0.04
J11117	0.04	0.04	0	0	0	0.02
J11189	0	0	0	0	0	0
J11190	0.04	0.04	0	0	0	0.02
J111B0	0.04	0.04	0	0.02	0	0.04
J111L7	0.08	0.08	0	0.04	0	0.08
J111L8	0.04	0.04	0	0.04	0.02	0.04
J111L9	0.04	0.04	0	0	0	0.02
J111M0	0.04	0.04	0	0.04	0.02	0.04

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0	<0.001	0	0
J11114	0	-6	0	<0.001	0	0
J11115	0	-6	0	<0.001	0	0
J11116	2	4	0.441	0.006	0.08	0.0064
J11117	2	4	0.441	0.006	0.04	0.0016
J11189	0	-6	0	<0.001	0	0
J11190	2	4	0.441	0.006	0.04	0.0016
J111B0	0	-6	0.307	0.203	0.08	0.0032
J111L7	0	-6	0.307	0.203	0.16	0.0128
J111L8	-2	4	0.441	0.006	0.12	0.0048
J111L9	2	4	0.441	0.006	0.04	0.0016
J111M0	-2	4	0.441	0.006	0.12	0.0048

One Way Analysis of Variance

Data source: CH2M05-00105_001-011_PoreWater_Mortality

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
asinsqrtFX Ctl	4	0	0	0	0
asinsqrtJ11114	4	0	0	0	0
asinsqrtJ11115	4	0	0	0	0
asinsqrtJ11116	4	0	0	0	0.143
asinsqrtJ11117	4	0	0	0	0.101
asinsqrtJ11189	4	0	0	0	0
asinsqrtJ11190	4	0	0	0	0.101
asinsqrtJ111B0	4	0	0.101	0	0.201
asinsqrtJ111L7	4	0	0.143	0	0.287
asinsqrtJ111L8	4	0	0.201	0.101	0.201
asinsqrtJ111L9	4	0	0	0	0.101
asinsqrtJ111M0	4	0	0.201	0.101	0.201

H = 15.323 with 11 degrees of freedom. (P = 0.168)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.168)

Descriptive Statistics:

Data source: CH2M05-00105_001-011_PoreWater_Malformation

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0	0	0	0
J11114	4	0	0	0	0	0
J11115	4	0	0.02	0.04	0.02	0.0636
J11116	4	0	0.02	0.04	0.02	0.0636
J11117	4	0	0.01	0.02	0.01	0.0318
J11189	4	0	0.03	0.0383	0.0191	0.0609
J11190	4	0	0.0208	0.0415	0.0208	0.066
J111B0	4	0	0.0505	0.0502	0.0251	0.0799
J111L7	4	0	0.0318	0.0414	0.0207	0.0658
J111L8	4	0	0.0418	0.0589	0.0295	0.0938
J111L9	4	0	0	0	0	0
J111M0	4	0	0.01	0.02	0.01	0.0318

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0	0	0	0	0	0
J11114	0	0	0	0	0	0
J11115	0.08	0.08	0	0	0	0.04
J11116	0.08	0.08	0	0	0	0.04
J11117	0.04	0.04	0	0	0	0.02
J11189	0.08	0.08	0	0.02	0	0.06
J11190	0.083	0.083	0	0	0	0.0415
J111B0	0.12	0.12	0	0.041	0.02	0.081
J111L7	0.087	0.087	0	0.02	0	0.0635
J111L8	0.125	0.125	0	0.021	0	0.0835
J111L9	0	0	0	0	0	0
J111M0	0.04	0.04	0	0	0	0.02

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0	<0.001	0	0
J11114	0	-6	0	<0.001	0	0
J11115	2	4	0.441	0.006	0.08	0.0064
J11116	2	4	0.441	0.006	0.08	0.0064
J11117	2	4	0.441	0.006	0.04	0.0016
J11189	0.855	-1.289	0.283	0.289	0.12	0.008
J11190	2	4	0.441	0.006	0.083	0.00689
J111B0	1.08	2.157	0.317	0.17	0.202	0.0178
J111L7	0.99	-0.59	0.279	0.308	0.127	0.00917
J111L8	1.406	1.46	0.261	0.385	0.167	0.0174
J111L9	0	-6	0	<0.001	0	0
J111M0	2	4	0.441	0.006	0.04	0.0016

One Way Analysis of Variance

Data source: CH2M05-00105_001-011_PoreWater_Malformation

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
asinsqrtFX Ctl	4	0	0	0	0
asinsqrtJ11114	4	0	0	0	0
asinsqrtJ11115	4	0	0	0	0.143
asinsqrtJ11116	4	0	0	0	0.143
asinsqrtJ11117	4	0	0	0	0.101
asinsqrtJ11189	4	0	0.101	0	0.244
asinsqrtJ11190	4	0	0	0	0.146
asinsqrtJ111B0	4	0	0.204	0.101	0.28
asinsqrtJ111L7	4	0	0.101	0	0.25
asinsqrtJ111L8	4	0	0.103	0	0.284
asinsqrtJ111L9	4	0	0	0	0
asinsqrtJ111M0	4	0	0	0	0.101

H = 11.468 with 11 degrees of freedom. (P = 0.405)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.405)

CH2M05-00105_012-015_Pore Water_Growth Data				
FX Ctl	J111K5	J111W9	J111X3	J111M1
0.960926	0.9354757	0.9391224	0.9730581	0.960924121
0.937443	0.9100444	1.0797219	1.0214014	1.028915683
0.946912	0.8718523	1.0110097	0.8736644	0.812236788
0.951052	0.9722714	0.9486349	0.9306643	0.945672512
0.999194	1.0159427	0.9116127	0.9371647	0.999948983
0.878788	0.9059992	1.0435375	0.9723239	0.911836483
0.859536	0.7954185	0.9907747	0.9476126	0.856682382
0.988946	1.0599806	0.9907747	1.0255883	0.959755436
0.955814	0.9587982	0.9037441	1.0221504	0.998570553
0.91868	1.0382443	0.971379	0.9442148	0.993037696
0.878788	0.94335	0.9934486	0.9849391	0.959755436
0.962992	0.9498173	0.8951228	0.9774522	0.893653979
0.921231	1.006306	0.9922668	0.9080802	0.942430197
0.936348	0.8949518	0.9830727	1.0028528	1.034503223
0.99468	0.9554936	0.9324715	1.0366215	1.044123976
0.96172	0.9764078	1.0642554	1.0225994	0.967853888
0.96429	0.9499784	0.9609241	0.9765122	0.986801999
0.894392	1.0077245	0.931979	1.0167458	1.070945276
0.832093	0.8490258	0.8816278	0.8771028	0.878130415
0.920123	0.94335	0.9940646	1.0226493	1.042901778
0.921427	0.9546924	0.9848355	0.9684862	1.01584227
0.86309	0.9660073	0.9404794	1.0191514	0.840814294
0.858645	0.7879435	0.9409133	1.0273775	0.962356476
0.901766	0.974368	0.9656904	0.8912961	0.95879818
0.96975	0.9634691	0.9885582	0.870857	0.884990925
0.942269	0.94335	0.8816278	0.9234003	0.964739009
0.8671	0.9860262	0.9415637	0.9754145	0.932726403
0.949817	0.9115567	0.8755892	0.958266	0.902095182
0.954698	0.7958673	0.9899505	0.9660073	1.011362848
0.930281	0.8715597	1.020402	1.0449054	0.935911869
0.853341	0.8811648	0.944647	0.9139042	0.94286315
0.945511	0.9100444	0.9548527	1.0241448	0.99380799
1.009697	0.9329091	0.953195	0.8801221	1.095482371
0.931267	0.8104133	0.959968	0.9525526	0.997139056
0.935305	1.1104222	0.9948341	0.8360073	0.955333436
0.865687	0.8820328	0.9469125	0.8685107	0.932143192
1.022949	0.9497098	0.9715891	0.9576802	1.000459031
0.868691	0.8408143	0.964739	0.9289635	0.945942204
0.939357	0.7499957	0.8816278	0.8147452	1.003310508
0.961374	0.9174142	0.9359119	0.9637867	0.964051326
0.960074	0.9373824	0.9510518	0.9489037	0.925331918
0.907125	1.0229486	0.9553334	1.031095	0.95752035
0.828344	1.0540926	0.8703297	0.971379	0.876928254
0.969907	0.8285292	0.9682228	1.0028528	1.014636283
0.931267	0.8801221	0.9372192	0.9562408	0.880422585
0.981131	0.7785645	0.9071809	0.9717991	0.933892875
0.905134	0.9219074	0.9940133	0.9411301	0.984990925
0.914685	0.8320927	0.9134017	0.7923983	0.987318839
1.012371	0.9772434	1.0033105	0.9218521	0.981046793
0.931322	0.8487253	0.8630307	0.8769283	0.968696875

CH2M05-00105_012-015_Pore Water_Growth Data				
FX Ctl	J111K5	J111W9	J111X3	J111M1
0.922073	0.9417262	0.9171917	0.9967809	0.941726224
0.907125	0.8797742	0.9701178	1.0119176	0.914685367
0.964898	0.9693286	1.0416292	0.9775043	0.902167865
0.914351	0.9729009	0.9332918	0.998826	0.952927387
0.879547	1.0411883	1.0411883	1.0251903	0.989795913
0.825692	0.9324715	0.8209207	0.9623565	0.903461809
0.757576	0.9138484	0.9152429	0.9441608	0.964262973
0.970118	1.0186507	0.9017097	0.986802	0.976077631
0.894623	0.8514259	1.0166455	0.964739	0.929512491
1.031095	0.8582887	1.000408	0.9576802	0.9210216
0.979416	0.9587982	0.9134017	0.9174142	0.735711424
0.920205	0.7879435	0.8861298	0.9285241	0.979850045
0.907293	0.9981107	0.9118365	0.8752396	0.918525677
1.000459	0.9587982	1.0343059	0.8251357	0.849686499
0.973582	0.9758329	0.9385246	0.9922668	0.849025802
0.968275	0.9989792	0.9338929	0.9648976	0.871852349
0.973582	0.9222394	0.9532485	0.9926266	0.995039221
0.935912	0.9332918	0.9705384	0.931979	0.971484044
0.992215	0.9251114	1.0501651	0.8734308	0.997139056
0.9786	0.9723239	1.0085847	1.0135799	0.931595741
0.965288	1.0463203	0.9674321	1.0210018	0.933291791
0.753863	0.944809	0.8645072	0.9839027	1.04162917
1.017197	0.9609241	0.9899505	0.9510518	0.955974026
0.979476	0.902784	0.8581698	0.9810988	0.962356476
0.976669	0.8857843	0.800023	1.0085847	1.004936291
0.895408	0.9413469	0.9428631	0.9785476	0.980422585
0.633062	0.939774	0.888085	0.9350939	0.96553188
0.95183	0.9372192	0.9684862	1.031095	0.971799068
0.963031	0.859536	0.9615079	0.8875104	0.963045369
1.011817	0.8871079	0.9640513	1.0517184	0.61822803
0.979121	0.8298212	0.9432418	1.0831185	0.980630699
1.005748	0.9236213	1.0085847	0.982917	0.96600729
0.989332	0.9192474	0.8942104	0.9961153	0.960924121
0.856876	0.9686969	0.9840064	0.979798	1.093338111
0.893526	0.9787561	0.8989899	0.8447489	0.978547572
0.966746	0.8557887	0.9787561	1.0024966	0.966746353
0.923676	0.969697	0.9356938	0.8329506	0.689389314
0.955333	0.923345	0.9158559	0.7856742	0.981462712
0.908161	0.9810468	0.8081439	0.9515345	1.071373911
0.978756	0.9525526	0.9476126	0.9532485	0.849266115
0.994065	0.8507066	0.9660073	0.6738214	0.868745594
0.969342	0.9899505	0.920024	0.9519633	1.009949484
0.922073	0.9807868	0.9572006	1.0509906	0.988558152
0.971852	0.9116127	0.9394482	1.0040729	0.890838083
1.01825	0.9389594	0.8715597	0.7902709	0.818431188
0.927149	0.9587982	0.9409133	0.8856691	0.855013364
0.961508	0.776202	0.8715597	0.708008	0.941726224
0.885959	0.9441608	0.9538371	0.9971391	0.950622584
0.980631	0.8290216	0.9491188	0.8824954	0.930170863
	0.9037441	0.955974	0.8687456	0.9948854

Descriptive Statistics:

Data source: CH2M05-00105_012-015_PoreWater_Growth

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean	% Growth
FX Ctl	99	0	0.934	0.0617	0.0062	0.0123	-
J111K5	100	0	0.927	0.0693	0.00693	0.0137	99.25
J111W9	100	0	0.948	0.0532	0.00532	0.0105	101.50
J111X3	100	0	0.949	0.0735	0.00735	0.0146	101.61
J111M1	100	0	0.947	0.074	0.0074	0.0147	101.39

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.398	1.031	0.633	0.946	0.907	0.973
J111K5	0.36	1.11	0.75	0.938	0.882	0.971
J111W9	0.28	1.08	0.8	0.95	0.914	0.984
J111X3	0.409	1.083	0.674	0.964	0.916	1.001
J111M1	0.477	1.095	0.618	0.961	0.92	0.989

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	-1.696	5.401	0.101	0.014	92.43	86.668
J111K5	-0.303	0.1	0.0935	0.031	92.665	86.343
J111W9	-0.228	0.388	0.0898	0.046	94.825	90.198
J111X3	-1.195	1.911	0.125	<0.001	94.87	90.538
J111M1	-1.472	4.566	0.136	<0.001	94.719	90.259

One Way Analysis of Variance

Data source: CH2M05-00105_012-015_PoreWater_Growth

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
FX Ctl	99	0	0.946	0.907	0.973
J111K5	100	0	0.938	0.882	0.971
J111W9	100	0	0.95	0.914	0.984
J111X3	100	0	0.964	0.916	1.001
J111M1	100	0	0.961	0.92	0.989

H = 13.333 with 4 degrees of freedom. (P = 0.010)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.010)

Multiple Comparisons versus Control Group (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
J111X3 vs FX Ctl	45.754	2.238	No
J111M1 vs FX Ctl	37.069	1.813	Do Not Test
J111W9 vs FX Ctl	24.269	1.187	Do Not Test
J111K5 vs FX Ctl	17.751	0.868	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Descriptive Statistics:

Data source: CH2M05-00105_012-015_PoreWater_Mortality

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0.02	0.0231	0.0115	0.0367
J111K5	4	0	0	0	0	0
J111W9	4	0	0	0	0	0
J111X3	4	0	0.0123	0.0148	0.00742	0.0236
J111M1	4	0	0.014	0.0189	0.00945	0.0301

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.04	0.04	0	0.02	0	0.04
J111K5	0	0	0	0	0	0
J111W9	0	0	0	0	0	0
J111X3	0.03	0.03	0	0.0095	0	0.0245
J111M1	0.04	0.04	0	0.008	0	0.028

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0.307	0.203	0.08	0.0032
J111K5	0	-6	0	<0.001	0	0
J111W9	0	-6	0	<0.001	0	0
J111X3	0.453	-3.442	0.295	0.242	0.049	0.00126
J111M1	1.194	0.436	0.271	0.342	0.056	0.00186

One Way Analysis of Variance

Data source: CH2M05-00105_012-015_PoreWater_Mortality

Normality Test: **Passed** (P = 0.035)

Equal Variance Test: **Failed** (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
asinsqrtFX Ctl	4	0	0.101	0	0.201
asinsqrtJ111K5	4	0	0	0	0
asinsqrtJ111W9	4	0	0	0	0
asinsqrtJ111X3	4	0	0.0691	0	0.156
asinsqrtJ111M1	4	0	0.0634	0	0.164

H = 5.388 with 4 degrees of freedom. (P = 0.250)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.250)

Descriptive Statistics:

Data source: CH2M05-00105_012-015_PoreWater_Malformation

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0.01	0.02	0.01	0.0318
J111K5	4	0	0	0	0	0
J111W9	4	0	0	0	0	0
J111X3	4	0	0.03	0.0383	0.0191	0.0609
J111M1	4	0	0.04	0.0327	0.0163	0.052

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.04	0.04	0	0	0	0.02
J111K5	0	0	0	0	0	0
J111W9	0	0	0	0	0	0
J111X3	0.08	0.08	0	0.02	0	0.06
J111M1	0.08	0.08	0	0.04	0.02	0.06

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	2	4	0.441	0.006	0.04	0.0016
J111K5	0	-6	0	<0.001	0	0
J111W9	0	-6	0	<0.001	0	0
J111X3	0.855	-1.289	0.283	0.289	0.12	0.008
J111M1	0	1.5	0.25	0.432	0.16	0.0096

One Way Analysis of Variance

Data source: CH2M05-00105_012-015_PoreWater_Malformation

Normality Test: **Passed** (P = 0.035)

Equal Variance Test: **Passed** (P = 0.084)

Group Name	N	Missing	Mean	Std Dev	SEM
asinsqrt(-FX Ct	4	0	0.0503	0.101	0.0503
asinsqrt(-J111K	4	0	0	0	0
asinsqrt(-J111W	4	0	0	0	0
asinsqrt(-J111X	4	0	0.122	15%	7%
asinsqrt(-J111M	4	0	0.172	0.122	0.0609

Source of Variation	DF	SS	MS	F	P
Between Groups	4	0.0935	0.0234	2.538	0.083
Residual	15	0.138	0.00921		
Total	19	0.232			

The differences in the mean values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.083).

Power of performed test with alpha = 0.050: 0.358

The power of the performed test (0.358) is below the desired power of 0.800.
You should interpret the negative findings cautiously.

CH2M05-00105_016-022_Pore Water_Growth Data							
FX Ctl	J111Y9	J11200	J111W8	J11222	J11223	J11233	J11251
0.777401	0.8317421	0.5993985	0.6896663	0.9320088	0.880743	0.9255175	0.84117637
0.846289	0.8333905	0.6866749	0.6200582	0.8549893	0.7861785	0.7881711	0.77966761
0.808008	0.738935	0.8724677	0.8814106	0.571348	0.8220207	0.829086	0.71684809
0.66344	0.8117604	0.8551613	0.7715788	0.8724677	0.8270142	0.7309318	0.85981018
0.850621	0.7051285	0.7831802	0.9432479	0.9703475	0.9407504	0.9227064	0.83456596
0.453504	0.7270995	0.8476774	0.9173255	0.6447058	0.8471569	0.8613861	0.72622261
0.851543	0.8865119	0.834566	0.8476774	0.8403602	0.8464623	0.9230782	0.79115045
0.871343	0.8715121	0.8568219	0.7842434	0.7715788	0.886733	0.721958	0.76031611
0.811942	0.7139705	0.7869263	0.8744878	0.7706253	0.711357	0.9311669	0.77966761
0.77215	0.4146612	0.9230782	0.8543011	0.6653583	0.6959628	0.8542437	0.79658373
0.816036	0.8679052	0.7982433	0.8164566	0.718419	0.6951877	0.8241645	0.97129881
0.881689	0.8979931	0.8831328	0.8319189	0.813871	0.9111601	0.8795736	0.90506098
0.832449	0.8953145	0.7991025	0.9269463	0.8905389	0.7852428	0.9204194	0.89897501
0.840244	0.8473883	0.742046	0.4371038	0.8501601	0.7909026	0.9102451	0.85309541
0.855963	0.8252937	0.8555051	0.7965222	0.8060647	0.8112168	0.8935061	0.81031
0.585834	0.86434	0.8147739	0.814834	0.8401269	0.8831883	0.9969073	0.83644324
0.826243	0.747246	0.6447818	0.9241396	0.8265993	0.8634322	0.8830218	0.71841901
0.826243	0.7007355	0.8317421	0.880743	0.7813632	0.9031092	0.5712622	0.88345524
0.826243	0.7930687	0.8660961	0.666021	0.8622961	0.8572794	0.8060647	0.73933286
0.865983	0.7456701	0.7589611	0.7951056	0.8704992	0.8205287	0.9031635	0.79615289
0.916577	0.8319189	0.7422442	0.8369119	0.6675647	0.8402435	0.8699359	0.74468347
0.8247	0.8332141	0.8041165	0.8831883	1.0140663	0.7902206	0.8611585	0.83544646
0.87723	0.6996155	0.7902206	0.6951877	0.7581857	0.8223188	0.8645668	0.84321333
0.845941	0.7806728	0.6618869	0.8866777	0.8310346	0.8744878	0.9208453	0.63621084
0.861898	0.6767528	0.7634042	0.8102495	0.8347421	0.7388686	0.6325795	0.74580157
0.923768	0.8545879	0.7069335	0.7302609	0.8962447	0.8097654	0.5462619	0.82184182
1.019802	0.8035067	0.880743	0.7372748	0.71294	0.6937055	0.9893562	0.85240567
0.823451	0.8478509	0.9424682	0.7928833	0.8913641	0.8551613	0.7807356	0.83509437
0.794859	0.7507145	0.7664799	0.7982433	0.8347421	0.7980591	0.8898231	0.80661173
0.857508	0.8068548	0.8622961	0.8814106	0.8109751	0.7911504	0.7881711	0.69877426
0.869316	0.8068548	0.6941999	0.8419917	0.6435644	0.9029464	0.8910891	0.83884236
0.009901	0.8366776	0.931009	0.6873883	0.7648795	0.9521438	0.8953145	0.80515202
0.714821	0.928848	0.8167567	0.7007355	0.735944	0.8431552	0.8401269	0.86993595
0.71294	0.9029464	0.845941	0.8924632	0.6583228	0.7657121	0.8022246	0.7685235
0.862296	0.8333905	0.8499295	0.7552061	0.899738	0.8448394	0.832861	0.78860625
0.821484	0.9309037	0.8858482	0.827192	0.6669035	0.8355051	0.8650202	0.90338057
0.754882	0.735944	0.8760558	0.7049199	0.7031794	0.8425155	0.8160362	0.88612479
0.740724	0.6645475	0.8265993	0.7425743	0.8075834	0.934687	0.5699738	0.8214839
0.699055	0.9035976	0.708803	0.7765811	0.7233824	0.8721868	0.6355942	0.79633756
0.826955	0.889217	0.6767528	0.7514323	0.7295223	0.8411764	0.6042849	0.81561551
0.818016	0.8856822	0.6916534	0.6677849	0.6883859	0.7926359	0.8191536	0.74855676
0.889823	0.852923	0.8058822	0.8260654	0.9018057	0.9019144	0.7728482	0.67631807
0.827192	0.8751602	0.6794273	0.8119416	0.6786332	0.8119416	0.8354465	0.80222463
0.914328	0.735944	0.6883859	0.8685827	0.8121226	0.6546644	0.8977201	0.77468525
0.689453	0.7540369	0.8255906	0.8924632	0.8439106	0.7926978	0.8118812	0.83262559
0.962843	0.8543011	0.8965728	0.718419	0.832861	0.8910891	0.845941	0.81405167
0.823927	0.8822443	0.845941	0.7675662	0.7896622	0.7181461	0.849064	0.83191887
0.906792	0.7483603	0.7767073	0.834566	0.7884198	0.7872377	0.8597344	0.84594096
0.878514	0.8763355	0.7590257	0.7264925	0.8060647	0.704085	0.9101374	0.70157441
0.819154	0.6953992	0.889217	0.7664799	0.8520031	0.9550735	0.8405935	0.72222955

CH2M05-00105_016-022_Pore Water_Growth Data							
FX Ctl	J111Y9	J11200	J111W8	J11222	J11223	J11233	J11251
0.97438	0.8513124	0.9301136	0.7540369	0.9173255	0.8602473	0.8186149	0.88118812
0.90148	0.8543011	0.8847409	0.8416424	0.8545879	1.0140663	0.731937	0.67921081
0.876336	0.7300596	0.7142451	0.869316	0.8822443	0.7859291	0.7336092	0.84594096
0.961212	0.5885054	0.7905927	0.7886062	0.8713434	0.8289678	0.7007355	0.82034946
0.862353	0.8448394	0.8597344	0.6794273	0.7926978	0.8080081	0.7980591	0.80204131
0.852923	0.7918935	0.8204092	0.8430389	0.9180199	0.8223188	0.7660321	0.79805911
0.802041	0.8422828	0.9188204	0.8780677	0.8726924	0.9311669	0.8375559	0.64872266
0.907711	0.8552186	0.8431552	0.8616137	0.9111063	0.81031	0.8132083	0.84012687
0.91116	0.9053859	0.7012949	0.8448394	0.8294406	0.8167567	0.6792108	0.79824334
0.89772	0.7806728	0.6857463	0.8019191	0.8650202	0.8430389	0.8517154	0.75877034
0.868131	0.8485443	0.6802924	0.8567647	0.8551613	0.3991217	0.8369119	0.81031
0.651437	0.7672469	0.71294	0.805943	0.9269463	0.8117604	0.8542437	0.86433999
0.752084	0.8709495	0.7556603	0.8416424	0.8748801	0.9193004	0.8227359	0.88584817
0.877398	0.7372748	0.7153423	0.8122433	0.8517154	0.9193004	0.7608317	0.84059348
0.876503	0.8444332	0.865983	0.8517154	0.8905389	0.9357876	0.8347421	0.86502022
0.768523	0.771134	0.799777	0.7593485	0.8310346	0.8265993	0.8618412	0.83032657
0.761347	0.9255175	0.8695415	0.8505636	0.9101374	0.9068464	0.7146567	0.73294081
0.748557	0.8855715	0.8431552	0.8194527	0.9077108	0.7982433	0.8820776	0.83644324
0.799777	0.8495257	0.8524057	0.86434	0.869316	0.8870094	0.8369119	0.77329205
0.956919	0.8419917	0.6436405	0.8265993	0.8485443	0.6563094	0.8289678	0.82659927
0.901806	0.6231334	0.6604784	0.868244	0.7921411	0.9269463	0.8289678	0.81465356
0.667785	0.8694851	0.8818553	0.7251419	0.9170049	0.8913091	0.7926359	0.85384028
0.91994	0.9171652	0.721958	0.7687786	0.9331125	0.9053859	0.8117604	0.89378031
0.818914	0.876671	0.8093416	0.6202953	0.9468784	0.7057538	0.738935	0.72338235
0.497519	0.8597914	0.8748801	0.5163725	0.794859	0.666021	0.8049694	0.71294004
0.802957	0.9704991	0.6916534	0.8659264	0.8780677	0.8740954	0.6618129	0.80496937
0.749669	0.9317984	0.8554478	0.972618	0.774875	0.7829298	0.6529401	0.66417861
0.822319	0.8623529	0.9036518	0.921271	0.9180199	0.8919688	0.6930693	0.63767296
0.808978	0.7572154	0.7980591	0.9271049	0.8709495	0.9090058	0.7897242	1.04501187
0.919727	0.5861687	0.8625234	0.8575081	0.6141807	0.7608317	0.8473883	0.87094953
0.788358	0.8767269	0.9044651	0.8241645	0.8122433	0.8818553	0.8582508	0.75306126
0.892463	0.8545879	0.7829298	0.8706118	0.2788144	0.6385947	0.7715788	0.76179739
0.734811	0.8650202	0.8935061	0.6722473	0.7324725	0.6739222	0.8713434	0.71486246
0.98424	0.8597914	0.5194954	0.9616201	0.9001737	0.9593748	0.8645668	0.58625233
0.970348	0.6990548	0.7332751	0.8510821	0.8911441	0.8563641	0.7410546	0.65271484
0.899248	0.880743	0.8333905	0.9521438	0.8019191	0.8697669	0.7844309	0.75273575
0.832861	0.7705617	0.7923267	0.8554478	0.6339727	0.5971044	0.7148625	0.66954416
0.852751	0.8718495	0.8873961	0.6819475	0.8795736	0.8847409	0.8119416	0.75403694
0.893561	0.8424573	0.8751602	0.6927864	0.85137	0.8331552	0.9048985	0.83697046
0.882133	0.9399685	0.8722991	0.577322	0.8510821	0.6420393	0.9113752	0.73414356
0.697932	0.7137646	0.8675098	0.8990295	0.7902206	0.5671289	0.9064139	0.76724688
0.819453	0.8905389	0.889217	0.7869263	0.7956602	0.9139531	0.889217	0.80204131
0.884741	0.5502849	0.8545879	0.8825776	0.7921411	0.7468524	0.7920792	0.85750806
0.898375	0.6930693	0.7287156	0.8722991	0.8679052	0.6097756	0.7425743	0.8073406
0.871793	0.8990295	0.8953145	0.7527358	0.7634042	0.814834	0.735944	0.85458795
0.752736	0.7689698	0.7388686	0.9144356	0.87723	0.7527358	0.8093416	0.67443114
0.831035	0.7262226	0.8020413	0.6003789	0.8706118	0.8918589	0.7530613	0.84582507
0.833802	0.8793506	0.9153999	0.8721868	0.6831683	0.86434	0.7201226	0.80155226
0.812605	0.8220207	0.7980591	0.724398	0.5616576	0.8439106	0.5354779	0.71128812
0.885848	0.6747944						

Descriptive Statistics:

Data source: CH2M05-00105_016-022_PoreWater_Growth

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean	% Growth
FX Ctl	100	0	0.821	0.123	0.0123	0.0244	-
J111Y9	100	0	0.809	0.0934	0.00934	0.0185	98.54
J11200	99	0	0.803	0.0848	0.00852	0.0169	97.81
J111W8	99	0	0.802	0.0965	0.0097	0.0192	97.69
J11222	99	0	0.811	0.105	0.0105	0.0209	98.78
J11223	99	0	0.818	0.0978	0.00983	0.0195	99.63
J11233	99	0	0.809	0.0928	0.00933	0.0185	98.54
J11251	99	0	0.795	0.0753	0.00756	0.015	96.83

Column	Range	Max	Min	Median	25%	75%
FX Ctl	1.01	1.02	0.0099	0.833	0.797	0.883
J111Y9	0.556	0.97	0.415	0.842	0.748	0.874
J11200	0.423	0.942	0.519	0.817	0.74	0.869
J111W8	0.536	0.973	0.437	0.824	75%	87%
J11222	0.735	1.014	0.279	0.835	0.771	0.877
J11223	0.615	1.014	0.399	0.833	0.786	0.886
J11233	0.461	0.997	0.535	0.829	0.762	0.869
J11251	0.459	1.045	0.586	0.805	0.746	0.841

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	-3.402	19.148	0.182	<0.001	82.088	68.881
J111Y9	-1.295	2.567	0.165	<0.001	80.918	66.341
J11200	-0.695	0.0732	0.118	0.002	79.463	64.485
J111W8	-1.038	1.624	0.0986	0.019	79.426	64.634
J11222	-1.729	5.902	0.132	<0.001	80.288	66.185
J11223	-1.244	2.726	0.139	<0.001	80.962	67.147
J11233	-0.906	0.868	0.108	0.007	80.12	65.686
J11251	-0.126	0.804	0.104	0.01	78.66	63.055

One Way Analysis of Variance

Data source: CH2M05-00105_016-022_PoreWater_Growth

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
FX Ctl	100	0	0.833	0.797	0.883
J111Y9	100	0	0.842	0.748	0.874
J11200	99	0	0.817	0.74	0.869
J111W8	99	0	0.824	0.752	0.869
J11222	99	0	0.835	0.771	0.877
J11223	99	0	0.833	0.786	0.886
J11233	99	0	0.829	0.762	0.869
J11251	99	0	0.805	0.746	0.841

H = 15.498 with 7 degrees of freedom. (P = 0.030)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.030)

Multiple Comparisons versus Control Group (**Dunn's Method**) :

Comparison	Diff of Ranks	Q	P<0.05
J11251 vs FX Ctl	113.236	3.482	Yes
J11200 vs FX Ctl	67.963	2.09	No
J111W8 vs FX Ctl	63.059	1.939	Do Not Test
J11233 vs FX Ctl	47.604	1.464	Do Not Test
J111Y9 vs FX Ctl	40.345	1.244	Do Not Test
J11222 vs FX Ctl	32.63	1.003	Do Not Test
J11223 vs FX Ctl	20.968	0.645	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Descriptive Statistics:

Data source: CH2M05-00105_016-022_PoreWater_Mortality

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0	0	0	0
J111Y9	4	0	0	0	0	0
J11200	4	0	0.01	0.02	0.01	0.0318
J111W8	4	0	0.01	0.02	0.01	0.0318
J11222	4	0	0.01	0.02	0.01	0.0318
J11223	4	0	0.01	0.02	0.01	0.0318
J11233	4	0	0.01	0.02	0.01	0.0318
J11251	4	0	0.01	0.02	0.01	0.0318

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0	0	0	0	0	0
J111Y9	0	0	0	0	0	0
J11200	0.04	0.04	0	0	0	0.02
J111W8	0.04	0.04	0	0	0%	2%
J11222	0.04	0.04	0	0	0	0.02
J11223	0.04	0.04	0	0	0	0.02
J11233	0.04	0.04	0	0	0	0.02
J11251	0.04	0.04	0	0	0	0.02

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0	<0.001	0	0
J111Y9	0	-6	0	<0.001	0	0
J11200	2	4	0.441	0.006	0.04	0.0016
J111W8	2	4	0.441	0.006	0.04	0.0016
J11222	2	4	0.441	0.006	0.04	0.0016
J11223	2	4	0.441	0.006	0.04	0.0016
J11233	2	4	0.441	0.006	0.04	0.0016
J11251	2	4	0.441	0.006	0.04	0.0016

One Way Analysis of Variance

Data source: CH2M05-00105_016-022_PoreWater_Mortality

Normality Test: Failed (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
asinsqrtFX Ctl	4	0	0	0	0
asinsqrtJ111Y9	4	0	0	0	0
asinsqrtJ11200	4	0	0	0	0.101
asinsqrtJ111W8	4	0	0	0	0.101
asinsqrtJ11222	4	0	0	0	0.101
asinsqrtJ11223	4	0	0	0	0.101
asinsqrtJ11233	4	0	0	0	0.101
asinsqrtJ11251	4	0	0	0	0.101

H = 2.385 with 7 degrees of freedom. (P = 0.936)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.936)

Descriptive Statistics:

Data source: CH2M05-00105_016-022_PoreWater_Malformation

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0.02	0.0231	0.0115	0.0367
J111Y9	4	0	0.04	0.0327	0.0163	0.052
J11200	4	0	0.0605	0.0225	0.0113	0.0359
J111W8	4	0	0.02	0.0231	0.0115	0.0367
J11222	4	0	0	0	0	0
J11223	4	0	0	0	0	0
J11233	4	0	0.02	0.0231	0.0115	0.0367
J11251	4	0	0.0305	0.0204	0.0102	0.0324

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.04	0.04	0	0.02	0%	4%
J111Y9	0.08	0.08	0	0.04	0.02	0.06
J11200	0.04	0.08	0.04	0.061	0.041	0.08
J111W8	0.04	0.04	0	0.02	0	0.04
J11222	0	0	0	0	0	0
J11223	0	0	0	0	0	0
J11233	0.04	0.04	0	0.02	0	0.04
J11251	0.042	0.042	0	0.04	0.02	0.041

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0.307	0.203	0.08	0.0032
J111Y9	0	1.5	0.25	0.432	0.16	0.0096
J11200	-0.00682	-5.961	0.307	0.203	0.242	0.0162
J111W8	0	-6	0.307	0.203	0.08	0.0032
J11222	0	-6	0	<0.001	0	0
J11223	0	-6	0	<0.001	0	0
J11233	0	-6	0.307	0.203	0.08	0.0032
J11251	-1.987	3.959	0.43	0.01	0.122	0.00496

One Way Analysis of Variance

Data source: CH2M05-00105_016-022_PoreWater_Malformation

Normality Test: **Failed** (P = 0.006)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
asinsqrtFX Ctl	4	0	0.101	0	0.201
asinsqrtJ111Y9	4	0	0.201	0.101	0.244
asinsqrtJ11200	4	0	0.247	0.204	0.287
asinsqrtJ111W8	4	0	0.101	0	0.201
asinsqrtJ11222	4	0	0	0	0
asinsqrtJ11223	4	0	0	0	0
asinsqrtJ11233	4	0	0.101	0	0.201
asinsqrtJ11251	4	0	0.201	0.101	0.204

H = 16.404 with 7 degrees of freedom. (P = 0.022)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.022)

Multiple Comparisons versus Control Group (**Dunn's Method**) :

Comparison	**Diff of Ranks**	**Q**	**P<0.05**
asinsqrtJ11200 vs asinsqrtFX Ctl	12.875	1.941	No
asinsqrtJ11222 vs asinsqrtFX Ctl	6.75	1.018	Do Not Test
asinsqrtJ11223 vs asinsqrtFX Ctl	6.75	1.018	Do Not Test
asinsqrtJ111Y9 vs asinsqrtFX Ctl	5.625	0.848	Do Not Test
asinsqrtJ11251 vs asinsqrtFX Ctl	5	0.754	Do Not Test
asinsqrtJ111W8 vs asinsqrtFX Ctl	0	0	Do Not Test
asinsqrtJ11233 vs asinsqrtFX Ctl	0	0	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

CH2M05-00105_029-032_Pore Water_Growth Data				
FX Ctl	J112X5	J11253	J11256	J116D1
0.891	0.944	0.841	0.969	0.842
0.856	0.874	1.007	0.854	0.771
0.981	0.860	0.913	0.606	0.886
0.583	0.919	1.034	0.824	0.823
0.896	0.940	0.877	0.851	0.841
0.940	0.988	0.904	0.834	0.774
0.972	0.941	0.826	0.877	0.951
0.861	0.836	0.872	0.804	0.988
0.931	0.911	0.832	0.899	0.916
0.830	0.931	0.735	0.775	0.876
0.822	0.974	0.921	0.827	0.837
0.955	0.942	0.844	0.938	0.715
0.915	0.920	0.863	0.937	0.953
0.930	0.935	0.876	1.060	0.831
0.983	0.896	0.920	0.881	0.853
0.938	0.817	0.957	0.864	0.896
0.935	0.913	0.988	0.890	0.900
0.828	0.856	0.886	0.926	0.783
0.878	0.934	0.900	0.903	0.857
0.389	0.968	0.868	0.863	0.936
0.966	0.961	0.916	0.748	1.019
0.873	0.980	0.980	0.812	0.914
0.882	0.940	0.921	0.911	0.927
0.985	0.867	0.880	0.852	0.813
0.992	0.866	0.850	0.877	0.820
0.968	0.944	0.823	0.870	0.975
0.879	0.951	0.892	0.708	0.825
0.970	0.928	0.863	0.934	0.912
0.857	0.902	0.810	0.943	0.861
0.865	0.984	0.986	0.933	0.921
0.949	0.688	0.886	0.757	0.997
0.930	0.924	0.872	1.012	0.931
0.886	0.935	0.930	0.881	0.942
0.988	0.940	0.934	0.934	0.910
0.999	0.890	0.885	0.948	0.920
0.715	0.898	0.898	0.827	0.845
0.929	0.891	0.893	0.870	0.848
0.955	0.930	0.890	0.849	0.956
0.970	1.002	0.623	0.899	1.008
0.736	0.914	0.941	0.887	0.908
0.841	0.810	0.946	0.834	0.915
0.931	0.949	0.890	0.928	0.779
0.926	0.800	0.877	0.746	0.840
0.981	0.838	0.903	0.871	0.856
0.917	0.881	0.878	0.825	0.913
0.958	0.893	0.956	0.862	0.910
0.965	0.967	0.896	0.573	0.870
0.948	0.362	0.954	1.071	0.966
0.966	0.892	0.938	0.930	1.014
0.945	0.971	0.926	0.971	0.918

CH2M05-00105_029-032_Pore Water_Growth Data				
FX Ctl	J112X5	J11253	J11256	J116D1
0.951	0.915	0.868	1.002	0.940
0.968	0.919	0.822	0.919	0.907
0.786	0.986	0.806	0.952	0.962
0.935	0.884	0.892	0.500	0.975
1.006	1.001	0.912	0.946	0.965
0.940	0.966	0.898	0.901	0.924
0.933	0.891	0.924	0.942	0.910
0.972	0.931	0.939	0.917	0.882
0.939	0.914	0.974	0.941	0.949
0.761	0.923	0.898	0.829	0.870
0.921	0.938	0.870	0.939	0.936
0.958	0.910	0.920	0.904	0.893
0.945	0.762	0.928	0.906	0.885
1.002	0.907	0.916	0.900	0.912
1.038	0.791	0.810	0.785	0.957
0.770	1.008	0.917	0.908	0.884
1.022	0.658	0.925	0.975	0.775
0.956	0.890	0.830	0.913	0.920
1.021	0.959	0.802	0.925	1.026
0.969	0.968	0.970	0.909	0.930
0.974	0.836	0.887	0.855	0.850
0.987	0.991	0.851	0.871	0.936
0.954	0.943	0.918	0.925	0.921
0.817	0.985	0.805	0.879	0.921
0.960	0.666	0.978	0.903	0.860
0.972	0.958	0.940	0.759	0.897
0.984	1.010	0.900	0.944	0.863
0.996	0.936	0.902	0.729	0.865
0.823	0.885	1.025	0.904	0.895
0.901	0.873	0.960	0.877	0.837
0.864	0.819	0.918	0.727	0.861
0.832	0.887	0.852	0.841	0.863
0.943	0.830	0.821	0.904	0.806
0.931	0.915	0.863	0.807	0.861
0.886	0.975	0.912	0.920	0.933
0.931	0.848	0.913	0.810	0.875
0.973	0.950	0.877	0.767	0.331
0.716	0.913	0.890	0.855	0.725
1.008	0.994	0.883	0.822	0.860
0.978	0.873	0.768	0.871	0.389
0.811	1.003	0.799	0.953	0.918
0.333	0.855	0.838	0.883	0.830
0.960	0.660	0.841	0.885	1.026
0.959	0.895	0.870	0.859	0.846
0.876	0.965	0.922	0.894	0.896
0.892	0.851	0.863	0.901	0.828
0.891	0.882	0.911	0.873	0.926
		0.919		0.860
				0.940

Descriptive Statistics:

Data source: CH2M05-00105_029-032_PoreWater_Growth

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean	% Growth
FX Ctl	97	0	0.907	0.11	0.0112	0.0222	-
J112X5	97	0	0.9	0.0909	0.00923	0.0183	99.23
J11253	98	0	0.891	0.0602	0.00608	0.0121	98.24
J11256	97	0	0.872	0.0876	0.0089	0.0177	96.14
J116D1	99	0	0.882	0.0979	0.00984	0.0195	97.24

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.705	1.038	0.333	0.938	0.878	0.97
J112X5	0.648	1.01	0.362	0.915	0.874	0.951
J11253	0.412	1.034	0.623	0.895	0.863	0.922
J11256	0.571	1.071	0.5	0.883	0.834	0.926
J116D1	0.695	1.026	0.331	0.896	0.849	0.931

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	-2.955	11.68	0.189	<0.001	87.932	80.88
J112X5	-2.823	12.741	0.159	<0.001	87.322	79.402
J11253	-0.877	3.527	0.092	0.04	87.358	78.224
J11256	-1.419	4.271	0.129	<0.001	84.578	74.484
J116D1	-3.109	15.291	0.153	<0.001	87.288	77.901

One Way Analysis of Variance

Data source: CH2M05-00105_029-032_PoreWater_Growth

Normality Test: **Failed** (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
FX Ctl	97	0	0.938	0.878	0.97
J112X5	97	0	0.915	0.874	0.951
J11253	98	0	0.895	0.863	0.922
J11256	97	0	0.883	0.834	0.926
J116D1	99	0	0.896	0.849	0.931

H = 28.925 with 4 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

Multiple Comparisons versus Control Group (**Dunn's Method**) :

Comparison	Diff of Ranks	Q	P<0.05
J11256 vs FX Ctl	94.428	4.663	Yes
J116D1 vs FX Ctl	72.814	3.614	Yes
J11253 vs FX Ctl	71.34	3.532	Yes
J112X5 vs FX Ctl	27.222	1.344	No

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Descriptive Statistics:

Data source: CH2M05-00105_029-032_PoreWater_Mortality

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0.03	0.0383	0.0191	0.0609
J112X5	4	0	0.03	0.02	0.01	0.0318
J11253	4	0	0.02	0.04	0.02	0.0636
J11256	4	0	0.03	0.0383	0.0191	0.0609
J116D1	4	0	0.01	0.02	0.01	0.0318

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.08	0.08	0	0.02	0	0.06
J112X5	0.04	0.04	0	0.04	0.02	0.04
J11253	0.08	0.08	0	0	0	0.04
J11256	0.08	0.08	0	0.02	0	0.06
J116D1	0.04	0.04	0	0	0	0.02

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0.855	-1.289	0.283	0.289	0.12	0.008
J112X5	-2	4	0.441	0.006	0.12	0.0048
J11253	2	4	0.441	0.006	0.08	0.0064
J11256	0.855	-1.289	0.283	0.289	0.12	0.008
J116D1	2	4	0.441	0.006	0.04	0.0016

One Way Analysis of Variance

Data source: CH2M05-00105_029-032_PoreWater_Mortality

Normality Test: **Passed** (P = 0.032)

Equal Variance Test: **Passed** (P = 0.671)

Group Name	N	Missing	Mean	Std Dev	SEM
asinsqrtFX Ctl	4	0	0.122	0.145	0.0726
asinsqrtJ112X5	4	0	0.151	0.101	0.0503
asinsqrtJ11253	4	0	0.0717	0.143	0.0717
asinsqrtJ11256	4	0	0.122	15%	7%
asinsqrtJ116D1	4	0	0.0503	0.101	0.0503

Source of Variation	DF	SS	MS	F	P
Between Groups	4	0.0271	0.00678	0.409	0.8
Residual	15	0.249	0.0166		
Total	19	0.276			

The differences in the mean values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.800).

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.800.
You should interpret the negative findings cautiously.

Descriptive Statistics:

Data source: CH2M05-00105_029-032_PoreWater_Malformation

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0.0205	0.0237	0.0118	0.0377
J112X5	4	0	0.0518	0.0209	0.0104	0.0332
J11253	4	0	0.0308	0.0205	0.0103	0.0327
J11256	4	0	0.062	0.042	0.021	0.0669
J116D1	4	0	0.0707	0.0386	0.0193	0.0614

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0.042	0.042	0	0.02	0	0.041
J112X5	0.043	0.083	0.04	0.042	0.041	0.0625
J11253	0.043	0.043	0	0.04	0.02	0.0415
J11256	0.085	0.125	0.04	0.0415	0.04	0.084
J116D1	0.08	0.12	0.04	0.0615	0.04	0.102

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0.00617	-5.964	0.307	0.203	0.082	0.00336
J112X5	1.988	3.961	0.43	0.01	0.207	0.012
J11253	-1.971	3.91	0.424	0.012	0.123	0.00505
J11256	1.993	3.977	0.424	0.011	0.248	0.0207
J116D1	0.733	-1.931	0.287	0.273	0.283	0.0245

One Way Analysis of Variance

Data source: CH2M05-00105_029-032_PoreWater_Malformation

Normality Test: **Passed** (P > 0.200)

Equal Variance Test: **Passed** (P = 0.469)

Group Name	N	Missing	Mean	Std Dev	SEM
asinsqrtFX Ctl	4	0	0.102	0.118	0.0589
asinsqrtJ112X5	4	0	0.227	0.0438	0.0219
asinsqrtJ11253	4	0	0.153	0.102	0.051
asinsqrtJ11256	4	0	0.243	8%	4%
asinsqrtJ116D1	4	0	0.262	0.0746	0.0373

Source of Variation	DF	SS	MS	F	P
Between Groups	4	0.073	0.0182	2.403	0.096
Residual	15	0.114	0.00759		
Total	19	0.187			

The differences in the mean values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.096).

Power of performed test with alpha = 0.050: 0.327

The power of the performed test (0.327) is below the desired power of 0.800.
You should interpret the negative findings cautiously.

CH2M05-00105_023-028, 033-039_Pore Water_Growth Data													
FX Ctl	J116D6	J116D4	J116D5	J116C9	J116D2	J116D0	J116D3	J116D7	J11225	J112X6	J11254	J116D8	J11255
0.9309	0.9209	0.9841	0.9818	0.8319	0.8746	0.8905	0.9602	0.8417	1.0200	0.9513	0.9166	0.9409	0.9661
0.9925	0.8515	0.8415	0.9475	1.0296	1.0198	0.9069	0.8737	0.8875	0.8683	0.9368	0.8994	0.9895	0.9705
1.0080	0.9589	0.8836	0.9107	0.9712	0.9829	0.8509	0.9168	0.7852	0.9456	0.9487	0.9714	0.8628	1.0246
1.0060	0.9043	0.8588	0.9513	0.7887	0.9534	0.8798	0.9266	0.8601	1.0325	0.8683	0.9183	1.0668	1.0557
0.9179	0.9394	0.9585	0.9074	0.9459	0.8186	0.8486	0.9489	0.8919	0.9661	0.9400	0.9074	0.9610	1.1321
0.9791	0.9409	0.9124	0.9291	0.9481	0.9454	0.8695	0.9638	0.8485	0.9055	0.9025	1.0088	0.9618	1.0060
1.0847	0.9775	0.9334	0.8798	0.8188	0.8415	0.9464	0.8110	0.9829	1.0113	0.9680	0.9000	1.0632	1.0621
0.9479	0.9122	0.8857	0.9851	0.9485	0.8709	0.8065	0.9248	0.9114	0.9161	0.9559	0.9101	0.9702	1.0707
0.8824	0.8766	0.9168	1.0002	0.8848	0.8812	0.8338	0.9733	1.0009	0.9742	0.9508	1.0218	0.8875	0.9849
0.8987	0.8220	0.8851	0.9341	1.0000	0.9386	0.9677	0.8367	1.0255	0.9835	0.9848	0.8262	0.9700	1.0060
0.9902	0.8431	0.9362	0.9464	1.0044	0.9504	0.8873	1.0245	0.8472	0.9848	0.9300	1.0179	0.9713	1.0151
0.9720	0.8559	0.8640	0.9946	0.9159	0.8864	0.8853	0.9946	0.9096	0.9774	0.9904	0.9813	0.8001	0.9831
0.9220	0.8853	0.9014	0.9354	0.8580	0.9060	0.9159	1.0394	0.5720	0.9025	0.9905	1.0436	1.0112	0.8766
0.9276	0.9464	0.9750	1.0500	0.9485	1.0132	0.9356	0.9546	1.0167	0.7703	0.9155	0.9640	0.9908	1.0374
0.9349	0.9270	0.8139	0.9916	1.0000	0.8709	0.8987	0.9118	1.0121	0.9527	0.9932	0.9437	0.9326	0.8956
0.9898	0.9193	0.9069	0.9905	0.9330	0.9588	0.9526	0.9209	0.9502	1.0058	0.9411	1.0912	0.9710	0.9430
1.0424	0.9930	0.9774	0.9904	0.8280	0.8873	1.0179	0.9166	0.9646	0.9835	0.8319	1.0600	0.7971	0.9235
0.9982	0.9808	1.0208	0.9108	0.9301	1.0377	0.9590	1.0335	0.8746	0.7770	0.8746	0.9908	0.8357	0.7616
1.0058	0.8154	0.9306	1.0085	0.9201	0.8846	0.9800	0.9964	1.0331	0.9009	0.9144	0.9884	0.9235	1.0171
0.8600	0.9860	0.9625	0.9334	0.9171	0.9794	0.9546	1.0024	1.0283	1.0102	0.9808	0.9276	0.9126	1.0018
0.9725	1.0114	0.9456	0.8987	0.9197	1.0200	0.9210	0.8006	0.9003	0.9319	1.0265	0.8860	0.9365	1.0324
1.0261	0.9795	0.9879	0.8724	0.9082	0.9244	1.0273	0.9492	0.9339	0.9961	1.0494	0.9904	1.0118	1.0780
0.9454	0.8516	0.9434	0.9582	0.8732	0.7737	0.9205	0.9155	0.9618	0.9291	0.9192	0.9390	0.9712	1.0623
0.9392	0.8633	0.9276	0.9571	0.8154	0.9207	0.9619	0.9235	1.0246	0.9831	0.9946	0.9825	0.9702	1.1068
0.9625	0.7716	0.8683	0.9675	0.8635	0.9047	0.8812	0.8981	1.0448	0.9990	0.7344	0.9560	0.9270	0.9494
0.9843	0.9823	0.8523	0.9862	0.8443	0.9818	0.8911	0.9867	1.0072	1.0141	0.9235	0.8065	0.8373	0.9879
0.8323	0.9244	0.8823	0.9933	0.8507	0.9548	0.9767	0.9948	0.9610	0.9534	0.9492	0.9534	0.9823	0.8621
0.9302	0.9884	0.8769	0.9801	1.0153	0.9589	0.9296	1.0197	1.0309	1.0108	0.8742	0.8757	0.9296	0.8562
0.8732	1.0114	0.9508	0.8969	0.9231	0.8873	0.9571	1.1300	0.9257	0.9660	0.9403	1.0098	1.0002	0.7577
0.9751	0.8820	0.7529	0.8367	1.0607	0.9176	0.9176	0.9774	0.9601	1.0288	0.8868	0.9605	0.6450	0.9578
0.9898	0.9618	0.9774	1.0045	0.8990	0.8668	0.9155	0.9899	1.0502	1.0404	0.8920	0.9823	0.8668	0.9305
0.8509	0.9242	0.9470	0.8875	0.8322	0.9043	0.9712	0.8955	0.9464	0.8721	1.0187	0.9126	1.0662	0.8621
0.8603	0.9617	0.9972	1.0406	0.9630	1.0296	0.9035	0.9060	0.9831	0.9541	1.0475	0.9774	0.9801	0.8490
1.0395	0.8202	0.9705	0.9667	1.0183	0.9940	0.8242	0.8683	1.0239	0.9266	0.8746	0.7749	0.9361	0.6977
0.9144	0.9296	1.0072	0.8846	0.8676	0.8588	0.9009	0.9661	0.9051	0.8732	0.7877	0.9618	1.0155	0.9492
0.9311	0.9619	1.0512	0.9304	0.9487	1.0179	0.8570	0.9171	1.0404	0.9972	0.9684	0.9618	0.8600	0.8571
0.9928	1.0012	0.9663	0.8600	0.9751	0.9835	1.0022	0.8319	0.9047	0.9105	1.0204	0.9527	0.9719	0.7783
1.0371	0.9381	1.0296	0.9394	0.8682	0.9708	0.8515	0.9272	0.9231	0.9289	0.7467	0.9677	0.9677	0.8732
1.0455	0.9571	0.9259	0.8562	0.9193	0.9625	0.9708	0.8996	0.9666	0.9153	1.0151	1.0127	0.9201	1.0066
0.8909	0.9708	0.9642	0.8881	0.8147	0.9872	0.8377	0.7810	0.8410	0.9534	0.9130	0.8559	0.9192	0.8548
0.9841	0.9630	0.8521	1.0032	0.9127	0.8360	0.7519	0.9749	0.9996	0.8102	0.8205	0.9405	0.9324	0.9270
0.8515	0.8472	1.0112	0.9527	0.9409	0.9976	0.8276	0.9669	1.0022	0.9405	0.8222	0.9278	0.9798	0.9872
0.8851	0.9972	0.9895	0.9823	0.9270	0.8860	0.8760	1.0085	0.8393	0.9343	1.0062	0.8984	0.9254	0.9124
1.0171	1.0000	0.9831	0.9803	0.9038	0.8909	0.9211	0.9092	1.0152	0.9265	1.0234	0.9884	0.9784	0.9769
1.0187	1.0000	0.8721	0.9841	1.0323	0.8580	1.0044	0.8635	1.0754	0.9202	0.9868	1.0599	0.9731	0.9365
0.9297	0.9038	0.9240	0.9265	0.9898	0.9795	0.9849	0.9297	1.1404	0.9904	0.9964	0.9708	0.9625	0.9248
0.8855	0.9176	1.0359	0.9483	0.9841	0.9557	0.9589	1.0310	1.0000	0.9424	0.9265	1.0379	0.9808	0.8401
1.0489	0.9829	0.9052	1.0102	1.0468	0.9925	0.8472	0.9048	0.9600	1.0045	0.9985	0.9949	1.0308	0.9347
0.9981	0.8078	0.8320	0.9265	0.9800	0.9708	0.9100	1.0149	0.8633	0.9214	0.9392	0.9930	0.8760	0.9996
0.9362	0.9302	0.7965	1.0042	0.9139	0.9905	0.8420	0.9964	1.0394	0.8756	0.8746	0.8682	0.8293	0.3276
0.9374	0.9364	0.9202	1.0050	0.9409	0.9485	0.9831	0.8653	0.9202	0.9365	0.9905	0.9751	0.9035	0.8668
1.0293	0.9168	0.8302	0.8786	0.7970	0.9751	0.9841	0.9708	0.9976	0.8728	0.9038	1.0462	0.4072	1.0012
0.9950	0.8301	0.8905	0.9481	0.9618	0.9210	0.9992	0.9825	0.8728	0.9348	0.9571	1.0628	0.9563	0.9900
1.0424	0.9296	1.0604	0.9652	0.9074	0.9688	1.0013	1.0496	1.0245	0.8023	1.0024	0.9341	0.8911	0.8571
0.9767	0.8559	0.9764	0.8683	0.8089	0.9025	0.8322	0.9575	0.8184	0.9949	0.8341	0.9097	0.9240	0.9296
0.9479	1.0440	0.9993	0.9904	0.9201	0.8641	0.9762	0.9913	0.9244	0.9767	0.9702	1.0508	0.9409	1.0155

CH2M05-00105_023-028, 033-039_Pore Water_Growth Data

FX Ctl	J116D6	J116D4	J116D5	J116C9	J116D2	J116D0	J116D3	J116D7	J11225	J112X6	J11254	J116D8	J11255
0.9860	0.9415	1.0119	1.0226	0.9552	1.0200	1.0852	0.8429	0.9719	1.0323	0.9534	1.0102	0.9823	0.9105
0.9753	0.9494	0.9176	0.9492	0.9047	0.9398	0.8982	0.8950	0.8605	0.9808	0.9884	1.0404	0.9121	0.9390
0.8826	0.9675	1.0325	1.0022	0.9244	0.8065	1.0072	0.8868	1.0834	1.0913	0.9701	0.9719	0.9794	1.0024
0.9155	1.0012	0.8828	0.9296	0.8881	0.9129	0.8233	0.9178	0.9473	0.9266	1.0165	0.9487	0.9266	0.9024
0.9964	0.9767	0.9571	0.9458	0.9485	0.8797	0.8523	0.8828	0.8246	1.0332	0.9552	0.9962	0.9407	0.9270
1.1149	0.8802	0.9426	0.9080	0.9034	0.8927	0.9055	0.9155	1.0113	1.0519	0.9415	0.9751	0.9118	0.9341
1.1336	0.8683	0.9621	0.7247	0.8453	0.8349	0.9062	0.9866	0.9270	0.9492	0.7118	1.0381	0.9786	1.0502
0.8448	0.8016	0.8065	0.9479	0.9339	1.0044	0.8415	0.9259	0.9061	0.9744	0.9604	0.9657	0.8931	0.8490
0.8994	0.9625	0.9831	0.9657	0.9443	0.9244	0.9276	0.9266	0.9266	0.9925	0.8637	0.8814	0.9415	0.9976
0.9341	0.7622	0.9745	1.0466	0.9352	0.9265	0.9868	0.9688	0.9646	0.8637	0.9643	0.9888	0.9365	0.9101
1.0570	0.8905	0.9713	0.8996	0.9986	0.9341	0.9100	0.9688	0.9481	0.9976	0.9535	0.9925	0.9055	0.9272
1.0700	0.8737	0.9323	0.9020	0.9725	1.0050	0.8374	0.9753	0.9585	0.9665	0.8916	0.9548	1.0242	0.8601
0.9220	0.9575	0.9981	1.0728	0.8846	0.9708	0.9014	1.1179	0.9381	0.9791	0.9860	0.7424	0.9261	0.9902
1.0104	0.9552	0.8521	0.9727	0.9198	0.8902	0.8601	1.0335	0.9265	0.9936	0.9625	0.9936	0.8580	1.0462
1.1538	0.9961	0.9677	0.9060	0.9949	0.9803	0.9818	0.9946	1.0834	0.9021	0.9621	0.9179	0.8440	0.8854
0.9588	0.9489	0.9526	0.9242	0.9625	0.9426	0.9419	0.7517	0.8465	1.0780	0.9702	0.9365	0.8713	1.0689
0.9502	0.9630	0.9860	0.9552	0.8944	0.9805	0.9552	0.8901	0.9192	0.8599	1.0000	0.9313	0.9021	1.0719
0.9100	0.9657	0.9434	1.0008	0.8682	1.0184	0.9848	0.9758	0.8713	0.9610	0.9485	0.9621	0.7398	0.9403
1.0151	1.0012	0.8737	1.0141	0.8139	0.7918	1.0512	0.9227	0.8955	0.9557	0.8705	0.9467	0.8602	0.9257
0.9319	0.9586	0.9304	0.9220	0.9481	0.9925	0.9985	0.9335	0.8905	1.0400	1.0012	0.8635	0.8905	0.9403
0.9619	0.9341	1.0283	0.9291	0.9608	0.9092	0.9646	0.9621	0.9306	0.9003	1.0420	0.9928	0.9759	1.0824
1.0417	1.0312	0.6862	0.9441	0.9400	0.9762	0.8927	0.8902	0.9901	0.9818	1.0024	0.8905	0.9361	0.9214
0.8996	0.8683	1.0050	0.9586	0.9860	0.8658	0.9005	0.9538	0.9630	0.8785	0.9872	0.9038	0.8300	0.8668
0.9198	0.9402	0.9244	0.9690	0.9841	0.9025	0.7965	0.9236	0.9818	0.9390	1.0098	0.9794	0.9301	1.0400
0.9841	0.8873	1.0400	0.9473	1.0121	0.9708	0.9305	0.9280	0.9657	0.8981	0.9602	0.8798	0.9315	1.0259
1.0224	0.7843	1.0273	0.9114	1.0140	0.8864	0.8140	1.0300	0.9155	0.9005	0.8505	0.8902	0.8905	0.9080
0.9411	1.0720	0.9937	0.9002	1.0255	0.9898	0.8497	0.9231	0.9618	0.8601	0.9683	0.9354	0.9801	0.9306
1.0375	0.9459	0.9139	0.8968	0.9386	0.9930	0.9343	1.0500	0.9546	0.9745	0.9992	0.9470	0.8222	1.0030
1.0121	0.8588	0.9560	1.0406	0.8853	0.9420	0.9220	0.9725	1.0179	0.9618	0.9176	0.9546	0.9365	1.0404
0.9543	0.9458	0.9818	0.8711	0.9209	0.7778	0.9519	0.8448	1.0273	0.9902	0.9343	1.0359	0.7354	0.8261
0.9941	0.9839	0.8853	1.0085	0.9356	0.9879	0.8902	0.8963	1.0348	0.9155	0.9321	0.8450	0.9246	1.0262
0.9409	0.8793	0.9618	0.9913	0.9876	0.9802	0.9285	0.9596	0.9451	0.9141	0.9548	0.9500	0.9519	0.8801
0.9705	0.9080	0.8194	0.9003	0.8824	0.9021	0.8402	0.8431	0.8920	0.8562	0.9750	0.9513	1.0186	0.7962
0.8802	1.0565	0.9454	0.8768	0.9192	1.0374	0.9105	1.0004	1.0359	0.8949	1.0124	0.9168	0.7906	1.0090
0.9155	0.9008	0.9831	0.9080	0.8570	0.8820	0.8201	0.8945	0.9415	1.0184	1.0042	0.9300	0.8994	1.0057
0.9848	0.9201	0.9702	0.9508	1.0216	0.9535	0.9669	1.1823	0.9725	0.9742	0.9381	0.9552	0.9829	0.9069
0.9725	0.8981	0.9774	0.8969	0.9178	0.9508	0.9101	1.0512	0.8927	0.9719	1.0042	0.8570		0.9487
0.8596	0.9805	1.0021	0.9905	0.9849	0.9683	0.9135	0.9159	0.9526	0.9683	0.9319			0.9630
0.9361	0.9683	0.9459	0.8999	1.0830	0.9874	0.8969	0.9661	0.9534	0.9526	0.9544			0.8900
0.8969	0.8920	0.9586	0.8459	0.9168	0.9626	0.7531	0.9201	1.0572	1.0781	0.8543			0.7624
0.9285	0.9044	0.9552	0.7752	0.8645	0.9080	0.8914		0.9055	0.8609	1.0057			0.8911
0.9487	0.9860		1.0013	1.0066	0.8810			1.0090		0.9401			
0.9862			0.7762					1.0240					
1.0104			1.0072										

Descriptive Statistics:

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Growth

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean	% Growth
FX Ctl	100	0	0.964	0.0636	0.00636	0.0126	-
J116D6	98	0	0.928	0.0635	0.00642	0.0127	96.27
J116D4	97	0	0.937	0.0674	0.00684	0.0136	97.20
J116D5	100	0	0.944	0.0598	0.00598	0.0119	97.93
J116C9	98	0	0.929	0.0636	0.00642	0.0127	96.37
J116D2	98	0	0.934	0.0604	0.0061	0.0121	96.89
J116D0	97	0	0.914	0.0642	0.00652	0.0129	94.81
J116D3	96	0	0.945	0.071	0.00724	0.0144	98.03
J116D7	99	0	0.95	0.0785	0.00789	0.0157	98.55
J11225	97	0	0.95	0.0628	0.00638	0.0127	98.55
J112X4	98	0	0.943	0.0665	0.00671	0.0133	97.82
J11254	93	0	0.952	0.0634	0.00658	0.0131	98.76
J116D8	92	0	0.922	0.09	0.00938	0.0186	95.64
J11255	97	0	0.941	0.105	0.0107	0.0212	97.61

Column	Range	Max	Min	Median	0.25	0.75
FX Ctl	0.321	1.154	0.832	0.967	0.922	1.006
J116D6	0.31	1.072	0.762	0.939	0.885	0.977
J116D4	0.374	1.06	0.686	0.947	0.889	0.983
J116D5	0.348	1.073	0.725	0.948	0.904	0.99
J116C9	0.294	1.083	0.789	0.929	0.885	0.975
J116D2	0.264	1.038	0.774	0.944	0.887	0.98
J116D0	0.333	1.085	0.752	0.91	0.867	0.963
J116D3	0.431	1.182	0.752	0.941	0.905	0.988
J116D7	0.568	1.14	0.572	0.955	0.905	1.011
J11225	0.321	1.091	0.77	0.954	0.913	0.993
J112X4	0.338	1.049	0.712	0.955	0.915	0.99
J11254	0.349	1.091	0.742	0.955	0.916	0.991
J116D8	0.66	1.067	0.407	0.934	0.891	0.974
J11255	0.805	1.132	0.328	0.94	0.889	1.006

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0.319	0.222	0.0522	0.667	96.429	93.386
J116D6	-0.447	-0.0536	0.0724	0.229	90.979	84.853
J116D4	-0.88	1.245	0.1	0.018	90.891	85.604
J116D5	-0.761	1.448	0.0684	0.288	94.366	89.404
J116C9	-0.0869	-0.381	0.0612	0.462	91.055	84.994
J116D2	-0.505	-0.251	0.0934	0.035	91.521	85.825
J116D0	-0.0689	-0.136	0.0575	0.559	88.641	81.398
J116D3	0.238	1.248	0.0763	0.18	90.746	86.258
J116D7	-1.08	4.391	0.0551	0.603	94.097	90.041
J11225	-0.432	0.413	0.0629	0.428	92.176	87.97
J112X4	-1.221	1.82	0.125	<0.001	92.455	87.652
J11254	-0.572	0.908	0.0685	0.337	88.54	84.663
J116D8	-2.501	11.489	0.142	<0.001	84.786	78.875
J11255	-2.179	10.927	0.0985	0.021	91.272	86.948

One Way Analysis of Variance

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Growth

Normality Test: **Failed** (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Group	N	Missing	Median	25%	75%
FX Ctl	100	0	0.967	0.922	1.006
J116D6	98	0	0.939	0.885	0.977
J116D4	97	0	0.947	0.889	0.983
J116D5	100	0	0.948	0.904	0.99
J116C9	98	0	0.929	0.885	0.975
J116D2	98	0	0.944	0.887	0.98
J116D0	97	0	0.91	0.867	0.963
J116D3	96	0	0.941	0.905	0.988
J116D7	99	0	0.955	0.905	1.011
J11225	97	0	0.954	0.913	0.993
J112X4	98	0	0.955	0.915	0.99
J11254	93	0	0.955	0.916	0.991
J116D8	92	0	0.934	0.891	0.974
J11255	97	0	0.94	0.889	1.006

H = 47.037 with 13 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

Multiple Comparisons versus Control Group (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
J116D0 vs FX Ctl	286.03	5.11	Yes
J116C9 vs FX Ctl	198.166	3.55	Yes
J116D6 vs FX Ctl	191.753	3.435	Yes
J116D8 vs FX Ctl	191.288	3.372	Yes
J116D2 vs FX Ctl	159.885	2.864	No
J116D4 vs FX Ctl	129.313	2.31	Do Not Test
J116D3 vs FX Ctl	113.479	2.022	Do Not Test
J116D5 vs FX Ctl	101.405	1.826	Do Not Test
J11255 vs FX Ctl	84.602	1.512	Do Not Test
J112X4 vs FX Ctl	78.278	1.402	Do Not Test
J11225 vs FX Ctl	64.37	1.15	Do Not Test
J116D7 vs FX Ctl	59.592	1.07	Do Not Test
J11254 vs FX Ctl	52.902	0.935	Do Not Test

Descriptive Statistics:

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Mortality

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0	0	0	0
J116D6	4	0	0.02	0.0231	0.0115	0.0367
J116D4	4	0	0.03	0.0383	0.0191	0.0609
J116D5	4	0	0	0	0	0
J116C9	4	0	0.02	0.0231	0.0115	0.0367
J116D2	4	0	0.02	0.04	0.02	0.0636
J116D0	4	0	0.03	0.0383	2%	6%
J116D3	4	0	0.04	0	0	0
J116D7	4	0	0.01	0.02	0.01	0.0318
J11225	4	0	0.03	0.0383	0.0191	0.0609
J112X6	4	0	0.02	0.0231	0.0115	0.0367
J11254	4	0	0.07	0.02	0.01	0.0318
J116D8	4	0	0.08	0.0327	0.0163	0.052
J11255	4	0	0.03	0.02	1%	3%

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0	0	0	0	0	0
J116D6	0.04	0.04	0	0.02	0	0.04
J116D4	0.08	0.08	0	0.02	0	0.06
J116D5	0	0	0	0	0	0
J116C9	0.04	0.04	0	0.02	0	0.04
J116D2	0.08	0.08	0	0	0	0.04
J116D0	0.08	0.08	0	0.02	0	0.06
J116D3	0	0.04	0.04	0.04	0.04	0.04
J116D7	0.04	0.04	0	0	0	0.02
J11225	0.08	0.08	0	0.02	0	0.06
J112X6	0.04	0.04	0	0.02	0	0.04
J11254	0.04	0.08	0.04	0.08	0.06	0.08
J116D8	0.08	0.12	0.04	0.08	0.06	0.1
J11255	0.04	0.04	0	0.04	0.02	0.04

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0	<0.001	0	0
J116D6	0	-6	0.307	0.203	0.08	0.0032
J116D4	0.855	-1.289	0.283	0.289	0.12	0.008
J116D5	0	-6	0	<0.001	0	0
J116C9	0	-6	0.307	0.203	0.08	0.0032
J116D2	2	4	0.441	0.006	0.08	0.0064
J116D0	0.855	-1.289	0.283	0.289	0.12	0.008
J116D3	0	-6	0	<0.001	0.16	0.0064
J116D7	2	4	0.441	0.006	0.04	0.0016
J11225	0.855	-1.289	0.283	0.289	0.12	0.008
J112X6	0	-6	0.307	0.203	0.08	0.0032
J11254	-2	4	0.441	0.006	0.28	0.0208
J116D8	-7.40E-16	1.5	0.25	0.432	0.32	0.0288
J11255	-2	4	0.441	0.006	0.12	0.0048

One Way Analysis of Variance

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Mortality

Normality Test: **Passed** (P = 0.029)

Equal Variance Test: **Passed** (P = 0.012)

Group Name	N	Missing	Mean	Std Dev	SEM
asinsq FX Ctl	4	0	0	0	0
asinsq J116D6	4	0	0.101	0.116	0.0581
asinsq J116D4	4	0	0.122	0.145	0.0726
asinsq J116D5	4	0	0	0%	0%
asinsq J116C9	4	0	0.101	0.116	0.0581
asinsq J116D2	4	0	0.0717	14%	7%
asinsq J116D0	4	0	0.122	0.145	0.0726
asinsq J116D3	4	0	0.201	0	0
asinsq J116D7	4	0	0.0503	0.101	0.0503
asinsq J11225	4	0	0.122	0.145	0.0726
asinsq J112X6	4	0	0.101	0.116	0.0581
asinsq J11254	4	0	0.265	0.0427	0.0213
asinsq J116D8	4	0	0.282	0.0624	0.0312
asinsq J11255	4	0	0.151	0.101	0.0503

Source of Variation	DF	SS	MS	F	P
Between Groups	13	0.369	0.0283	2.64	0.009
Residual	42	0.451	0.0107		
Total	55	0.819			

The differences in the mean values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.009).

Power of performed test with alpha = 0.050: 0.767

The power of the performed test (0.767) is below the desired power of 0.800.
You should interpret the negative findings cautiously.

Multiple Comparisons versus Control Group (**Bonferroni t-test**):

Comparisons for factor:

Comparison	Diff of Means	t	P	P<0.050
asinsq FX Ctl vs. asinsq J116D8	0.282	3.851	0.005	Yes
asinsq FX Ctl vs. asinsq J11254	0.265	3.622	0.01	Yes
asinsq FX Ctl vs. asinsq J116D3	0.201	2.748	0.114	No
asinsq FX Ctl vs. asinsq J11255	0.151	2.061	0.592	Do Not Test
asinsq FX Ctl vs. asinsq J116D4	0.122	1.666	1	Do Not Test
asinsq FX Ctl vs. asinsq J11225	0.122	1.666	1	Do Not Test
asinsq FX Ctl vs. asinsq J116D0	0.122	1.666	1	Do Not Test
asinsq FX Ctl vs. asinsq J116C9	0.101	1.374	1	Do Not Test
asinsq FX Ctl vs. asinsq J112X6	0.101	1.374	1	Do Not Test
asinsq FX Ctl vs. asinsq J116D6	0.101	1.374	1	Do Not Test
asinsq FX Ctl vs. asinsq J116D2	0.0717	0.978	1	Do Not Test
asinsq FX Ctl vs. asinsq J116D7	0.0503	0.687	1	Do Not Test
asinsq FX Ctl vs. asinsq J116D5	0	0	1	Do Not Test

Descriptive Statistics:

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Malformation

Column	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
FX Ctl	4	0	0	0	0	0
J116D6	4	0	0	0	0	0
J116D4	4	0	0.01	0.02	0.01	0.0318
J116D5	4	0	0	0	0	0
J116C9	4	0	0.021	0.0242	0.0121	0.0386
J116D2	4	0	0.0217	0.0435	0.0217	0.0692
J116D0	4	0	0.01	0.02	1%	3%
J116D3	4	0	0	0	0	0
J116D7	4	0	0.01	0.02	0.01	0.0318
J11225	4	0	0.02	0.04	0.02	0.0636
J112X6	4	0	0.0205	0.0237	0.0118	0.0377
J11254	4	0	0	0	0	0
J116D8	4	0	0.0212	0.0245	0.0123	0.039
J11255	4	0	0.031	0.0207	1%	3%

Column	Range	Max	Min	Median	25%	75%
FX Ctl	0	0	0	0	0	0
J116D6	0	0	0	0	0	0
J116D4	0.04	0.04	0	0	0	0.02
J116D5	0	0	0	0	0	0
J116C9	0.042	0.042	0	0.021	0	0.042
J116D2	0.087	0.087	0	0	0	0.0435
J116D0	0.04	0.04	0	0	0	0.02
J116D3	0	0	0	0	0	0
J116D7	0.04	0.04	0	0	0	0.02
J11225	0.08	0.08	0	0	0	0.04
J112X6	0.042	0.042	0	0.02	0	0.041
J11254	0	0	0	0	0	0
J116D8	0.043	0.043	0	0.021	0	0.0425
J11255	0.042	0.042	0	0.041	0.02	0.042

Column	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
FX Ctl	0	-6	0	<0.001	0	0
J116D6	0	-6	0	<0.001	0	0
J116D4	2	4	0.441	0.006	0.04	0.0016
J116D5	0	-6	0	<0.001	0	0
J116C9	0	-6	0.307	0.203	0.084	0.00353
J116D2	2	4	0.441	0.006	0.087	0.00757
J116D0	2	4	0.441	0.006	0.04	0.0016
J116D3	0	-6	0	<0.001	0	0
J116D7	2	4	0.441	0.006	0.04	0.0016
J11225	2	4	0.441	0.006	0.08	0.0064
J112X6	0.00617	-5.964	0.307	0.203	0.082	0.00336
J11254	0	-6	0	<0.001	0	0
J116D8	0.00144	-5.992	0.307	0.203	0.085	0.00361
J11255	-1.988	3.957	0.418	0.014	0.124	0.00513

One Way Analysis of Variance

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Malformation

Normality Test: **Failed** (P = <0.001)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks

Data source: CH2M05-00105_023-028, 033-039_PoreWater_Malformation

Group	N	Missing	Median	25%	75%
asinsq FX Ctl	4	0	0	0	0
asinsq J116D6	4	0	0	0	0
asinsq J116D4	4	0	0	0	0.101
asinsq J116D5	4	0	0	0	0
asinsq J116C9	4	0	0.103	0	0.206
asinsq J116D2	4	0	0	0	0.15
asinsq J116D0	4	0	0	0	0.101
asinsq J116D3	4	0	0	0	0
asinsq J116D7	4	0	0	0	0.101
asinsq J11225	4	0	0	0	0.143
asinsq J112X6	4	0	0.101	0	0.204
asinsq J11254	4	0	0	0	0
asinsq J116D8	4	0	0.103	0	0.208
asinsq J11255	4	0	0.204	0.101	0.206

H = 15.554 with 13 degrees of freedom. (P = 0.274)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.274)