0072730

SAF-RC-082
RCBRA-Inter-Areas Shoreline Assessment – Sediment
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jackie Queen H4-22 KW 4/12/07
Initials/Date

COMMENTS:

SDG F3158 SAF-RC-082

Rad only X Chem only Rad & Chem

X Complete Partial

Waste Site: RCBRA 2m Aq

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BIOASSAY REPORT
SEDIMENT BIOASSAYS
Conducted January 23 through March 4, 2007

Prepared for

ELR CONSULTING, INC.
WASHINGTON HANFORD CLOSURE
RICHLAND, WASHINGTON

Prepared by

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April 9, 2007
Lab I.D. B1728-01 through 16
SDG NUMBER BP1728

RC-082
F3158

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INTRODUCTION

CH2M HILL conducted bioassays using the Pak Choi (*Brassica chinensis*, Li-Ren-Choi variety) plant on sediment samples provided by ELR Consulting for Washington Closure Hanford, Richland, Washington.

Testing on samples BP1728-01 through -09 was initiated on December 20, 2006. This test event exhibited poor germination rates. After contacting the client, it was decided to abort the tests and restart testing. This series of tests was aborted on January 8, 2007. New seeds were obtained. See the corrective action report (CAR) dated January 9, 2007, attached in Appendix A.

Testing on samples BP1728-01 through -16 was initiated on January 10, 2007. This test also exhibited poor germination. The tests were aborted on January 23, 2007. See the CAR dated January 23, 2007, attached in Appendix A.

The tests were set up again from January 23 through March 4, 2007. The data from this testing period is summarized below.

A deviation from the previous tests and the Statement of Work summary of test conditions was the number of seeds planted per replicate was increased from 4 to 10 on the January 23, 2007 tests.

METHODS AND MATERIALS

TEST METHODS

The Pak Choi test method was adapted from: *Phytotoxicity of dredged sediment from urban canal as land application*, Chen et. al., Environmental Pollution 117 (2002) 233-241.

Additional guidance was provided by: *The Water-Culture Method for Growing Plants Without Soil*, California Agricultural Experiment Station Circular No. 347, Hoagland and Arnon, (1950).

TEST ORGANISMS

The Pak Choi seeds were obtained from Snow Seed Organic, Salinas, California. Lab ID number: PC002, Supplier Lot number: K2953-00-00.

CONTROL SEDIMENT

The control sediment used in the tests was artificial sediment comprised of 70 grade silica sand (70 percent by weight), kaolin clay (20 percent), and peat moss (10 percent). Calcium carbonate (0.4 percent of total weight) was added to adjust soil pH to 7.0 ± 0.5.

HYDRATION WATERS

The water used to hydrate the control and test sediments was de-ionized water. Supplemental nutrients were supplied to the test chambers by the addition of half-strength Hoagland's solution.

TEST CONCENTRATIONS

The concentrations tested were 100 percent sample with artificial control sediment as the laboratory control. The Pak Choi test concentrations were run in quadruplicate with one plant per replicate.

TEST DESIGN

Test chambers were 13 cm in diameter, 13 cm deep, round plastic pots with drainage holes in the bottom. Polyester fiber was used to cover the drain holes and allow moisture transfer. Approximately 1.5 kg of test medium was placed on top of the fiber. Each test container was placed inside an individual 3 liter (18 cm diameter, 14.5 cm deep) hydration chamber.

SAMPLE COLLECTION

The sediment samples were collected from November 28 through December 22, 2006. 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.

SAMPLE CROSS-REFERENCE TABLE

Table 1 provides a cross-reference of the client identification (ID) numbers, sampling dates, sampling locations, Pak Choi test sample identification (SDG) numbers, and analytical SDG numbers.

Table 1
Sample Cross-Reference

Sample Number	Sample Date	Sample Location	Pak Choi test SDG	Analytical Lab SDG
J13TD0	11/28/2006	RCBRA BEV REF 1	BP1728-01	F3128-01
J13TC9	11/28/2006	RCBRA 1a Aq	BP1728-02	F3128-02
J13TV9	11/29/2006	RCBRA 2c Aq	BP1728-03	F3128-03
J13TF1	11/28/2006	RCBRA 2a Aq	BP1728-04	F3128-04
J13TW5	12/04/2006	RCBRA 5d Aq	BP1728-05	F3128-05
J13V47	12/12/2006	RCBRA 3b Aq	BP1728-06	F3132-01
J13TD6	12/12/2006	RCBRA 2l Aq	BP1728-07	F3132-02
J13TV8	12/12/2006	RCBRA 2l Aq	BP1728-08	F3132-03
J13V46	12/13/2006	RCBRA 2m Aq	BP1728-09	F3158-01
J13TW4	12/14/2006	RCBRA 5c Aq	BP1728-10	G1249-01
J13V48	12/19/2006	RCBRA 4a Aq	BP1728-11	F3185-01
J13V49	12/19/2006	RCBRA 4b Aq	BP1728-12	F3185-02
J13V50	12/19/2006	RCBRA 4c Aq	BP1728-13	F3185-03
J13TW6	12/20/2006	RCBRA BEV REF 2	BP1728-14	F3195-01
J13V44	12/20/2006	RCBRA 2b Aq	BP1728-15	F3195-02
J13TW7	12/22/2006	RCBRA 2f Aq	BP1728-16	F3205-01

SAMPLE PREPARATION

Test sediments were homogenized prior to use. For each replicate, approximately 1.5 kg wet weight of sediment was added to each test chamber. The sediments were initially hydrated with Milli-Q equivalent de-ionized water via subirrigation. In addition, a sub sample of the sediment was added to a surrogate chamber and hydrated for pH measurements.

WATERING SCHEDULE

Test chambers were hydrated with deionized water prior to test initiation and daily thereafter for the first seven days via subirrigation. Test sediments were hydrated by placing the test chamber into a hydration chamber containing deionized water and allowing the water to percolate into the bottom of the chamber. After a minimum of 15 minutes, the test chambers were lifted, excess water removed from the hydration chamber, and the test chamber placed back into the hydration chamber.

Starting eight days after planting, test soils were supplemented with nutrients by the addition of 50 ml of half strength Hoagland's solution three days a week (Monday, Wednesday, and Fridays). The half strength Hoagland's solution was applied directly to the sediment surface. Hydration with deionized water via subirrigation was performed on Sunday, Tuesday, Thursday, and Saturdays.

TEST INITIATION

Following sample preparation, ten Pak Choi seeds were planted into each test chamber. For the December 20, 2006 and January 10, 2007 tests, the seeds were planted 1 ½ times the seed diameter (approx. 1 mm) and covered gently with sediment. For the January 23, 2007 test, the seeds were placed on the sediment surface. A small amount of hydration water (10 ml) was sprayed onto the sediment surface to ensure seeds received moisture. To increase the relative humidity, the test chambers were covered with clear plastic wrap.

TEST MONITORING

Sediment pH was taken at test initiation and termination by placing approximately 30 g of sediment into a specimen cup, adding 100 ml of hydration water, and mixing. The slurry was allowed to settle for one hour and the supernatant pH was determined.

Temperature was monitored in the incubator continuously throughout the testing period.

On Day 3, test chambers that had more than four seedlings starting to germinate were thinned to reduce the number of seedlings to four, and the roots were gently covered with test sediment.

On Day 4, the clear wrap was removed from the test chambers.

The Pak Choi tests were monitored on Day 16 for the number of living seedlings. On Day 16, test chambers that had more than one seedling growing were thinned to reduce the number of seedlings to one.

No seedlings were transplanted during this test event.

TEST TERMINATION

For each test chamber, all of the above ground biomass (i.e. "shoots") from the single plant was collected and placed into a tared aluminum tin. The shoots were weighed to determine the wet weight immediately following removal from the test chamber. The shoots were then dried in an oven at 70 °C for a minimum of 48 hours. The shoots were then placed into a desiccator for a minimum of 2 hours and weighed to determine dry weight.

DATA ANALYSIS

For each test chamber, the following endpoints were calculated:

- Average Above Ground Biomass (Wet)
  (Calculated as the total wet weight of the shoots in each replicate test chamber)
- Average Above Ground Biomass (Dry)
  (Calculated as the total dry weight of the shoots in each replicate test chamber)

Statistical analysis for each endpoint listed comprised of entering the data obtained from each replicate chamber of a test soil and comparing the result to the data from the replicate chambers of the laboratory control. Comparisons were made as a single tailed t-test, evaluating for statistically significant reductions from the control value, using CETIS version 1.1.2. The Equal Variance t Two-Sample test was used. When the assumptions of equality of variance or normality necessary for Equal Variance t Two-Sample test was not met, the Unequal Variance t Two-Sample test or Wilcoxon Rank Sum Two Sample test was used.

The endpoint data and the results statistical analysis are summarized in Table 2 below. The data represents the average value of the replicate chambers used in each test concentration.

RESULTS AND DISCUSSION

Table 2 summarizes the results of the Pak Choi tests initiated on January 23, 2007.

The results for samples J13V47, J13V46, J13V48 and J13TW7 indicated a statistically significant reduction in above ground biomass (wet weight) and in above ground biomass (dry weight) when compared to the laboratory control.

The results for sample J13V44 indicated no statistically significant reduction in above ground biomass (wet weight) but a statistically significant reduction in above ground biomass (dry weight) when compared to the laboratory control.

With the exception of samples J13V47, J13V46, J13V48, J13TW7, and J13V44 (as listed above), all other samples indicated no statistically significant reduction in above ground biomass (wet weight) and no statistically significant reduction in above ground biomass (dry weight) when compared to the laboratory control.

Table 2:
***Pak choi* Chronic Test Results**
for Washington Closure Hanford
Initiated on January 23, 2007

E, significantly different from lab control by use of Equal Variance t Two-Sample Test

ns indicates a non statisticaly significant result; [5], indicates significant at alpha (p) = 0.05;

–, indicates no statistical test performed.

Lab ID:	Sample Number:	*Pak choi* Above Ground Biomass (Wet Wt.) Endpoint (g)	Statistically significant difference when compared to Lab Control?	*Pak choi* Above Ground Biomass (Dry Wt.) Endpoint (g)	Statistically significant difference when compared to Lab Control?
Tests initiated on January 23, 2007					
Laboratory Control		4.07	–	0.201	–
B1728-01	J13TD0	3.15	ns	0.158	ns
B1728-02	J13TC9	3.51	ns	0.166	ns
B1728-03	J13TV9	2.91	ns	0.135	ns
B1728-04	J13TF1	3.57	ns	0.183	ns
B1728-05	J13TW5	4.00	ns	0.185	ns
B1728-06	J13V47	2.22	E [5]	0.110	E [5]
B1728-07	J13TD6	3.38	ns	0.165	ns
B1728-08	J13TV8	3.87	ns	0.191	ns
B1728-09	J13V46	2.27	E [5]	0.116	E [5]
B1728-10	J13TW4	3.72	ns	0.189	ns
B1728-11	J13V48	1.91	E [5]	0.109	E [5]
B1728-12	J13V49	4.47	ns	0.211	ns
B1728-13	J13V50	4.85	ns	0.235	ns
B1728-14	J13TW6	3.60	ns	0.181	ns
B1728-15	J13V44	3.08	ns	0.151	E [5]
B1728-16	J13TW7	2.64	E [5]	0.130	E [5]

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

Greenhouse and Test Conditions for Plant Bioassays

Client: ELR- HANFORD **Start Date:** JAN 23 - 2007

Lights: Fixture Manufacturer: American Horticulture Corporation Photoperiod: 16 hrs Light, 8 hrs Dark

Bulb Type: ☒ Cool White & Warm White
☒ Full Spectrum
☐ Other:

END DATE: MAR 4, 2007

Lables on Bulbs: GE Ecolux SP41, GE Ecolux Aquarium 50, GE Wide spectrum

Light Intesity @ Soil surface: Protocol calls for 400 (+ 10%) footcandles

Light Intensity Readings (footcandles):

1st Shelf:	386	381	414	382	401
2nd Shelf:	397	399	401	416	404
3rd Shelf:	N/A				

Incubator (s) : # 8 Shelf distance from light source: 546 mm

Temperature: Protocol calls for 17-23 °C (Day time) 17-23 °C (Night time)
20±3 20±3
↳ 21°C for 1st 48 hrs

Watering: ☒ Upland Condition (Soils)
☐ Flooded Condition (Sediments)

Type: ☒ Milli-Q water - 1st 7 days & then Tues, Thurs, Sat & Sundays
☒ 1/2 strength Hoagland's solution → Mon, Wed, Friday (after 1st 7 days)
☐ Other:

Delivery: ☒ Subirrigation : Mill; Q H_2O Soak for 15 minutes / day
☒ Surface misting: Amount: immediately after planting mls / day
☒ Other: Hoaglands soln: 50 ml/day delivered to top of soil surface

Test Containers: Number of Test Chambers per Concentration: _____
Number of Test Chambers per Hydration Chamber: _____

Test Chambers: ☐ Square pots: _____ wide x _____ tall (mm)
☒ Round pots: 130 diameter x 125 tall (mm)
☐ Other:

Hydration Chambers: ☐ Square pots: _____ wide x _____ tall (mm)
☒ Round pots: 180 diameter x 145 tall (mm)
☐ Other:

Number of Test chambers per Hydration Chamber : 1

Test Organisms: Species: Pak Choi (Li Ren Chai variety) Lab ID #: PC002
Supplier: Snow Seed Organics Lot #: K 2953-00-00
Stated germination rate: 95 % as of Dec / 2006 (date)

Planting Conditions: ☒ Seeds Planting Depth: 0 mm
☐ Germinated Seedlings / Tubers # of Seeds Planted / rep: 10 ave per
☒ Other: Seeds misted w/ Mill.Q on planting, pots covered w/ clear wrap for 1st 48 hrs.

Control Soil: ☒ Art. Soil (Sand, Clay, Peat) Soil volume or weight (wet dry) used
☐ Other: _____ per replicate: 1500 (g ml)

Cover Soil: ☒ none
☐ Other: _____ volume / weight used: _____

Comments:

Pak Choi: Watering and Relative Humidity - Sign off sheet

First 7 days of test : Fill hydration chamber with DI water, allow to subirrigate for ~ 15 minutes, drain and rotate

After first 7 days: Mon, Wed, Fri : Add 50 mls of 1/2 strength Hoagland's to soil surface and rotate
Sat, Sun, Tues, Thurs : Fill hydration chamber with DI water, ~ 15 minutes, drain and rotate

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1/21/07	1/22	1/23	1/24	1/25	1/26	1/27
Initials	—	—	TP	TP	TP	TP	TP
Relative Humidity, Min/Max (%)	—	—	na*	na*	na*	na*	na*

	1/28	1/29	1/30	1/31	2/1	2/2	2/3
Initials	TP	TP	NJ	TP	TP	Bm	NJ
Relative Humidity, Min/Max (%)	na*	na*	na*	43% -> Hi	58% ~ Hi	47 - Hi	80/~~45~~ Hi

	2/4	2/5	2/6	2/7	2/8	2/9	2/10
Initials	NJ	NJ	NJ	TP	TP	TP	NJ
Relative Humidity, Min/Max (%)	79/54	75/50	Hi/59	Hi/51	Hi/51%	Hi/50	Hi/57

	2/11	2/12	2/13	2/14	2/15	2/16	2/17
Initials	TP	TP	NJ	NJ	TP	TP	TP
Relative Humidity, Min/Max (%)	57/Hi	51/Hi	Hi/57	Hi/59	Hi/60	Hi/55	Hi/60

	2/18	2/19	2/20	2/21	2/22	2/23	2/24
Initials	TP	TP	NJ	TP	TP	TP	TP
Relative Humidity, Min/Max (%)	Hi/60	Hi/53	Hi/60	Hi/47	Hi/51	Hi/45	Hi/53

	2/25	2/26	2/27	2/28	3/1	3/2	3/3
Initials	TP	TP	TP	TP	TP	Bm	NJ
Relative Humidity, Min/Max (%)	Hi/48	Hi/48	Hi/52	Hi/53	Hi/47	Hi/60	Hi/57

	3/4	3/5	3/6	3/7	3/8	3/9	3/10
Initials	MS						
Relative Humidity, Min/Max (%)	Hi/60						

na*: Relative Humidity meter unavailable @ test initiation. Ordered and installed on Jan 30 Bm

MAX READING OF "Hi" = relative Humidity > 90%.

ROTATION PROCEDURE: incubator has 2 shelves, pots on top shelf removed to table for watering and then placed randomly onto bottom shelf. (Bottom shelf similar procedure -> to top shelf) for daily rotation. Initial positioning (Day 0) random across both shelves. Bm

Sign off on Pak Choi Watering

Mon, Wed, Fri : Fill with 1/2 strength Hoagland's, ~ ~~15 minutes, drain and rotate~~ 50 mls
Sat, Sun, Tues, Thurs : Fill with DI water, ~ 15 minutes, drain and rotate

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1/21	1/22	1/23	1/24	1/25	* ~~1/26~~	** 1/27
Initials	---	---	TP	TP	TP	TP	TP
	1/28	* Start Hoagland's 1/29	1/30	1/31	2/1	2/2	2/3
Initials	TP	TP	TP	TP	TP		
	2/4	2/5	2/6	2/7	2/8	2/9	2/10
Initials							
	2/11	2/12	2/13	2/14	2/15	2/16	2/17
Initials							
	2/18	2/19	2/20	2/21	2/22	2/23	2/24
Initials							
	2/25	2/26	2/27	2/28	3/1	3/2	3/3
Initials							
	3/4	3/5	3/6	3/7	3/8	3/9	3/10
Initials							

* thinned seedlings from 10 → 4 TP
** Took Saran Wrap off

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date : 1-23-2007 Seed ID Number: PC 002

Day 0 Initials TD Day 16 Initials XX Day 16 Initials MS Day 40 Initials MS

Number of seedlings thinned from 10 to 4 on day 8 TD

Number of seedlings planted per rep = 10 TD Seedlings thinned to 1 plant on Day 16

CONC.	REP.	# of Seedlings germinated on DAY 16	DAY	DAY	pH DAY 0	DAY 40
Control	A	4			6.0	8.2
	B	4				
	C	4				
	D	4				
BP1728-01 100 %	A	4			6.4	7.8
	B	3				
	C	4				
	D	4				
BP1728-02 100 %	A	4			6.4	8.1
	B	5 4				
	C	5				
	D	4				
BP1728-03 100 %	A	4			6.4	7.7
	B	4				
	C	4				
	D	4				
BP1728-04 100 %	A	4			6.0	7.8
	B	4				
	C	5				
	D	4				
BP1728-05 100 %	A	4			6.2	7.7
	B	3				
	C	4				
	D	4				

Initials TD Date 2-15-07	Initials MS Date 3-4-07	Initials MS Date 2-6-07
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
4.24581	8.96760	4.46453
4.22916	7.38042	4.39684
4.21547	7.52233	4.37057
4.22422	9.30600	4.47784
4.22523	7.52911	4.38887
4.21075	7.19817	4.36360
4.21557	6.43011	4.33679
4.37569	8.47367	4.57173
3.85511	8.69130	4.06619
3.84478	6.39800	3.98566
3.84362	6.07197	3.93343
3.83119	6.23107	4.04147
3.84100	8.06491	4.04489
3.84962	4.35379	3.87982
3.84236	7.69813	4.00303
3.98830	7.06074	4.13279
3.89999	7.94939	4.09935
3.89098	7.10513	4.05099
3.88409	7.45573	4.07946
3.89182	7.34600	4.06924
3.82600	8.41211	4.03634
3.86278	7.64146	4.04900
3.83950	6.78642	3.97273
4.00447	8.67972	4.21355

Comments:

BP1728-03 B - Plant much smaller than other reps

pH measurements 20g soil weighed out & 100 ml's water added - MS

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date: 1-23-2007 Seed ID Number: P C002

Day 0 Initials TP Day 16 Initials BO Day ___ Initials ___ Day ___ Initials ___

Number of seedlings thinned from 10 to 4 on day 8 TP

Number of seedlings planted per rep = 4 TP Seedlings thinned to 1 plant on Day 16

CONC.	REP.	# of Seeds ~~germinated~~ Lives on DAY 16	DAY	DAY	pH DAY 0	pH DAY 40
BP1728-06 100 %	A	4			6.1	7.3
	B	4				
	C	3				
	D	3				
BP1728-07 100 %	A	3			6.2	7.5
	B	4				
	C	4				
	D	4				
BP1728-08 100 %	A	4			6.1	7.3
	B	4				
	C	4				
	D	4				
BP1728-09 100 %	A	4			6.7	7.6
	B	4				
	C	4				
	D	4				
BP1728-10 100 %	A	4			6.1	7.6
	B	4				
	C	4				
	D	4				
BP1728-11 100 %	A	4			6.1	7.6
	B	4				
	C	4				
	D	4				

Initials BO Date 2-15-07	Initials MS Date 3-4-07	Initials MS Date 3-6-07
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
4.20086	5.74489	4.28239
4.21359	7.53266	4.36045
4.21801	5.86182	4.31041
4.20838	6.59311	4.32771
4.22330	7.87451	4.39244
4.22916	8.59893	4.43358
4.23069	7.22352	4.37393
4.39447	6.86722	4.53608
4.21660	9.16035	4.46318
4.22469	8.13432	4.41736
4.22499	8.15497	4.41156
4.22879	~~7.98737~~ 6.91337 MS	4.36584
4.21250	6.36051	4.33361
4.20750	6.07865	4.31563
4.21843	6.53520	4.32640
4.38137	7.12710	4.50749
4.23695	8.28101	4.43~~9~~42 MS
4.22986	5.87563	4.32654
4.22003	9.45787	4.46600
4.23876	8.21065	4.45118
4.23183	6.48867	4.34897
4.22243	6.11422	4.32741
4.23446	5.98742	4.32730
4.39616	6.12630	4.51591

Comments:

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date: 1-23-2007 Seed ID Number: PC002

Day 0 Initials TP Day 14 Initials DB Day ___ Initials ___ Day ___ Initials ___

Number of seedlings planted per rep = 10 (TP) Seedlings thinned to 1 plant on Day 16

Number of seedlings thinned from 10 to 4 on Day 3

CONC.	REP.	# of Seedlings ~~germinated~~ on DAY 16	DAY	DAY	pH DAY 0	DAY ~~28~~ 40
BP1728-12 100 %	A	4			7.0	9.1
	B	4				
	C	4				~~7.8~~ (TP)
	D	4				
BP1728-13 100 %	A	4			7.0	8.0
	B	4				
	C	4				~~7.0~~ (TP)
	D	4				
BP1728-14 100 %	A	4			6.5	7.8
	B	4				
	C	4				~~6.5~~ (TP)
	D	4				
BP1728-15 100 %	A	4			6.6	7.6
	B	4				
	C	4				~~6.6~~ (TP)
	D	4				
BP1728-16 100 %	A	4			7.3	8.6
	B	4				
	C	4				~~7.3~~ (TP)
	D	4				
	A					
	B					
	C					
	D					

Initials (DO) Date 2-15-07	Initials MS Date 3-4-07	Initials MS Date 3-4-07
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)
4.21999	8.00041	4.40650
4.20820	7.70328	4.37248
4.20938	10.41427	4.49674
4.21387	8.63291	4.41974
4.22685	8.66310	4.44354
4.23046	8.39614	4.44647
4.24442	8.96972	4.46935
4.39513	10.46767	4.68277
4.21554	7.46573	4.36593
4.22392	8.22790	4.42842
4.23748	7.32309	4.39369
4.24360	8.28931	4.45569
4.22672	6.56997	4.34050
4.22955	7.35399	4.38381
4.22611	7.39665	4.38512
4.38890	8.06992	4.56412
4.21783	6.49610	4.33185
4.21303	~~7.23969~~ 7.04151	4.36405
4.22102	6.90023	4.34410
4.37100	7.12750	4.50486

Comments:

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date : 1/23/2007 Seed ID Number: PC002

Day 0 Initials _____ Day___ Initials _____ Day___ Initials _____ Day___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials DO Date 2/15/07 Tare Weight (g)	Initials MS Date 3/04/07 Total Wet Weight (g)	Initials MS Date 3/06/07 Total Dry Weight (g)
Control	A						4.24581	8.96761	4.46453
	B						4.22196	7.38042	4.39684
	C						4.21547	7.52233	4.37057
	D						4.22422	9.30600	4.47784
BP1728-01 100 %	A						4.22523	7.52911	4.38887
	B						4.21075	7.19817	4.36360
	C						4.21557	6.43011	4.33679
	D						4.37569	8.47367	4.57173
BP1728-02 100 %	A						3.85511	8.69130	4.06619
	B						3.84478	6.39800	3.98566
	C						3.83136	6.07197	3.93343
	D						3.83119	8.23107	4.04147
BP1728-03 100 %	A						3.84100	8.06491	4.04489
	B						3.84962	4.35379	3.87982
	C						3.84236	7.69813	4.00303
	D						3.98830	7.06074	4.13279
BP1728-04 100 %	A						3.89999	7.94939	4.09935
	B						3.89098	7.10513	4.05099
	C						3.88409	7.45573	4.07946
	D						3.89182	7.34600	4.06924
BP1728-05 100 %	A						3.82600	8.41211	4.03634
	B						3.86278	7.64146	4.04900
	C						3.83950	6.78642	3.97273
	D						4.00447	8.67972	4.21355

Comments: Weights entered & reviewed [illegible] 4-2-07

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date : 1/23/2007 Seed ID Number: PC002

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials DO / Date 2/15/07 Tare Weight (g)	Initials MS / Date 3/04/07 Total Wet Weight (g)	Initials MS / Date 3/06/07 Total Dry Weight (g)
BP1728-06 100 %	A						4.20086	5.74489	4.28239
	B						4.21359	7.53266	4.36045
	C						4.21801	5.86182	4.31041
	D						4.20838	6.59311	4.32771
BP1728-07 100 %	A						4.22330	7.87451	4.39244
	B						4.22916	8.59893	4.43358
	C						4.23069	7.22352	4.37393
	D						4.39447	6.88722	4.53608
BP1728-08 100 %	A						4.21660	9.16035	4.46318
	B						4.22469	8.13432	4.41736
	C						4.22499	8.15497	4.41156
	D						4.22879	6.91387	4.36584
BP1728-09 100 %	A						4.21250	6.36051	4.33361
	B						4.20750	6.07865	4.31563
	C						4.21843	6.53520	4.32640
	D						4.38137	7.12710	4.50749
BP1728-10 100 %	A						4.23695	8.28101	4.43942
	B						4.22986	5.87563	4.32654
	C						4.22003	9.45787	4.46600
	D						4.23876	8.21065	4.45118
BP1728-11 100 %	A						4.23183	6.48867	4.34897
	B						4.22243	6.11422	4.32741
	C						4.23446	5.98742	4.32730
	D						4.39616	6.12630	4.51591

Comments: Weights entered & reviewed Sm 4-2-07

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project Test Start Date: 1/23/2007 Seed ID Number: PC002

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials DO / Date 2/15/07 Tare Weight (g)	Initials MS / Date 3/04/07 Total Wet Weight (g)	Initials MS / Date 3/08/07 Total Dry Weight (g)
BP1728-12 100 %	A						4.21999	8.00041	4.40650
	B						4.20820	7.70328	4.37248
	C						4.20938	10.41427	4.49674
	D						4.21387	8.63291	4.41974
BP1728-13 100 %	A						4.22685	8.66310	4.44354
	B						4.23046	8.39614	4.44047
	C						4.24442	8.96972	4.46935
	D						4.39513	10.46767	4.68277
BP1728-14 100 %	A						4.21554	7.46573	4.36593
	B						4.22392	8.22790	4.42842
	C						4.23748	7.32309	4.39369
	D						4.24366	8.28931	4.45569
BP1728-15 100 %	A						4.22672	6.56997	4.34050
	B						4.22955	7.35399	4.38381
	C						4.22611	7.39665	4.38512
	D						4.38890	8.06992	4.56412
BP1728-16 100 %	A						4.21783	6.49610	4.33185
	B						4.21303	7.04151	4.36405
	C						4.22102	6.90023	4.34410
	D						4.37100	7.12750	4.50186
	A								
	B								
	C								
	D								

Comments: Weights entered and reviewed [illegible] 4-2-07

CETIS Test Summary

Report Date: 02 Apr-07 10:00 AM
Test Link: 10-3029-8314/B172801pcc

Plant Chronic test — **CH2M Hill**

Test No:	15-0516-8656	Test Type:	Plant Chronic	Duration:	40d 0h
Start Date:	23 Jan-07	Protocol:	ASTM E1963-02 (2002)	Species:	Poa sandbergii
Ending Date:	04 Mar-07	Dil Water:		Source:	
Setup Date:	23 Jan-07 12:00 AM	Brine:			

Sample No:	16-0201-1309	Code:	B1728-01	Client:	
Sample Date:	28 Nov-06	Material:	Sediment	Project:	
Receive Date:	05 Dec-06	Source:	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	Station:			

Comments: J13TD0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
01-8504-3310	Average AG Wt (Wet, mg)	100	> 100	N/A	29.85%	Equal Variance t Two-Sample
13-7777-9497	Average AG Wt (Dry, mg)	100	> 100	N/A	26.13%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.15095	2.21454	4.09798	0.38986	0.77971	24.75%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.15844	0.12122	0.19604	0.01543	0.03086	19.48%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		3.30388	2.98742	2.21454	4.09798

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.16364	0.15285	0.12122	0.19604

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	16-0201-1309	**Code:**	B1728-01	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TD0

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	10-3029-8314	10-3029-8314	02 Apr-07 10:00 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	29.85%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.46632	1.94318	0.0965	1.21425	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.679102	1.679102	1	2.15	0.19292	Non-Significant Effect
Error	4.685658	0.780943	6			
Total	6.3647604	2.460045	7			

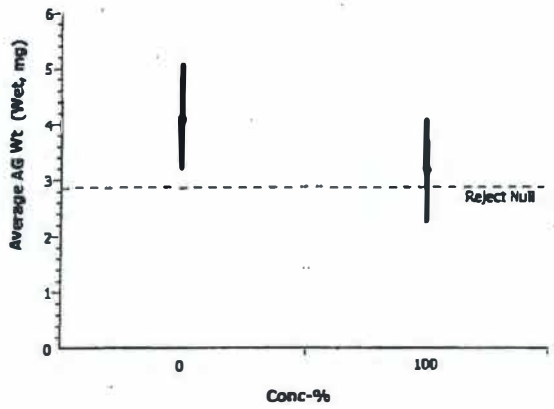
ANOVA Assumptions

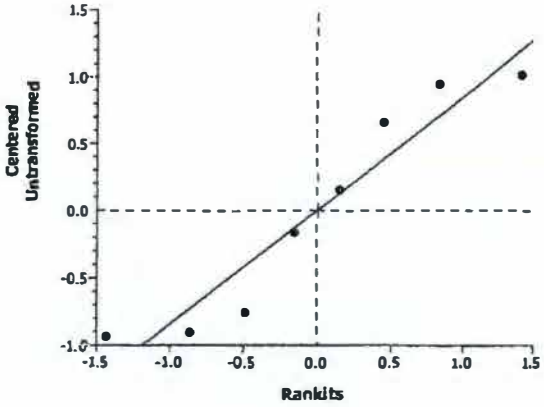
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.56909	47.46723	0.72028	Equal Variances
Distribution	Shapiro-Wilk W	0.88215		0.19744	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.15095	2.21454	4.09798	0.77971				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	16-0201-1309	**Code:**	B1728-01	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TD0

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	10-3029-8314	10-3029-8314	02 Apr-07 10:00 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	26.13%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.56258	1.94318	0.0846	0.05241	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0035520	0.003552	1	2.44	0.16918	Non-Significant Effect
Error	0.0087286	0.001455	6			
Total	0.01228060	0.0050068	7			

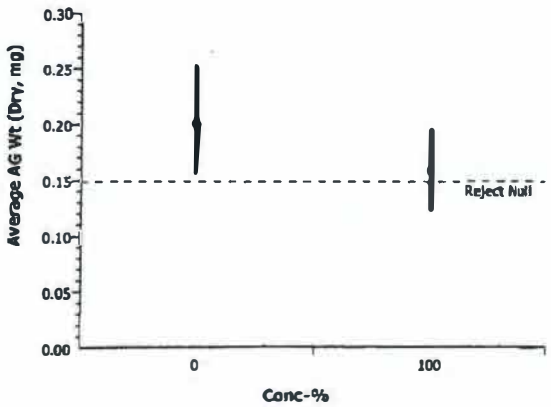
ANOVA Assumptions

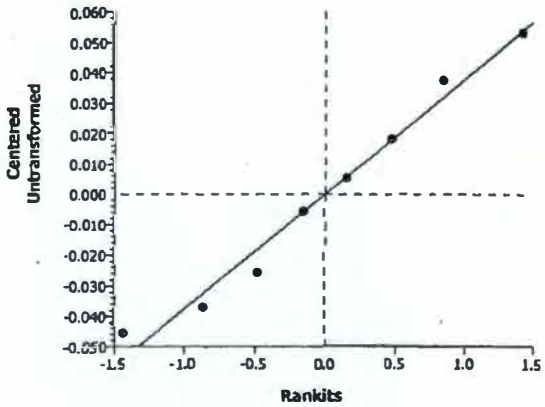
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.05475	47.46723	0.56927	Equal Variances
Distribution	Shapiro-Wilk W	0.96049		0.81473	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.15844	0.12122	0.19604	0.03086				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:04 AM
Test Link: 09-7158-3919/B172802pcc

Plant Chronic test — **CH2M Hill**

Test No:	05-7185-9984	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	08-4487-7173	**Code:**	B1728-02	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TC9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-1781-6440	Average AG Wt (Wet, mg)	100	> 100	N/A	38.86%	Equal Variance t Two-Sample
09-8374-9339	Average AG Wt (Dry, mg)	100	> 100	N/A	33.77%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.50747	2.24061	4.83619	0.65048	1.30095	37.09%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.16608	0.10207	0.21108	0.02694	0.05389	32.45%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.83619	2.55322	2.24061	4.39988

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.21108	0.14088	0.10207	0.21028

 Analyst: Br Approval:_____

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	08-4487-7173	**Code:**	B1728-02	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TC9

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	09-7158-3919	09-7158-3919	02 Apr-07 10:04 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	38.86%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.68817	1.94318	0.2585	1.58056	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.6266407	0.626641	1	0.47	0.51705	Non-Significant Effect
Error	7.939219	1.323203	6			
Total	8.56586015	1.9498439	7			

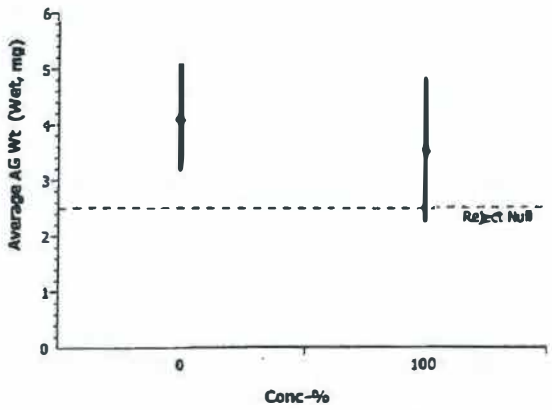
ANOVA Assumptions

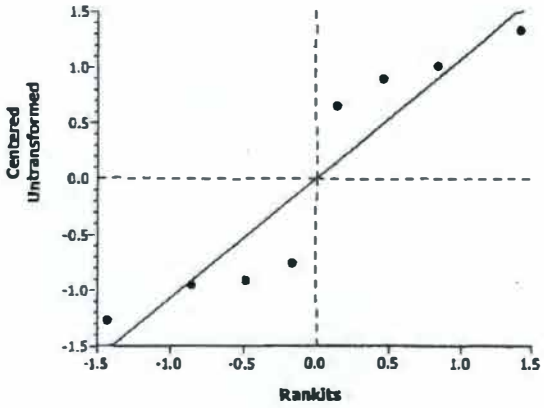
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.77421	47.46723	0.64934	Equal Variances
Distribution	Shapiro-Wilk W	0.84399		0.08275	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.50747	2.24061	4.83619	1.30095				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	08-4487-7173	**Code:**	B1728-02	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TC9

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	09-7158-3919	09-7158-3919	02 Apr-07 10:04 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	33.77%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.98977	1.94318	0.1803	0.06774	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0023809	0.002381	1	0.98	0.36051	Non-Significant Effect
Error	0.0145822	0.002430	6			
Total	0.01696303	0.0048112	7			

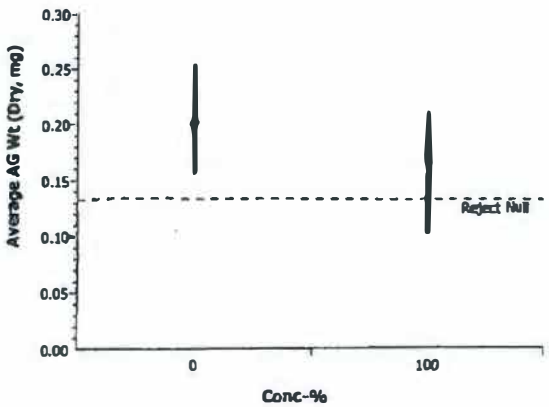
ANOVA Assumptions

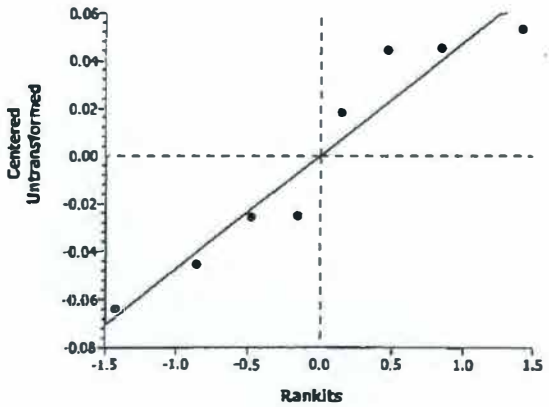
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.48367	47.46723	0.75362	Equal Variances
Distribution	Shapiro-Wilk W	0.89325		0.25080	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.16608	0.10207	0.21108	0.05389				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:07 AM
Test Link: 16-8117-9574/B172803pcc

Plant Chronic test — **CH2M Hill**

Test No:	18-8846-8162	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	11-0482-8865	**Code:**	B1728-03	**Client:**	
Sample Date:	29 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	55d 0h	**Station:**			

Comments: J13TV9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-3739-9264	Average AG Wt (Wet, mg)	100	> 100	N/A	46.36%	Equal Variance t Two-Sample
10-8649-7697	Average AG Wt (Dry, mg)	100	> 100	N/A	41.81%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	2.91407	0.50417	4.22391	0.83841	1.67682	57.54%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.13481	0.03020	0.20389	0.03706	0.07411	54.97%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.22391	0.50417	3.85577	3.07244

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.20389	0.03020	0.16067	0.14449

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	11-0482-8865	**Code:**	B1728-03	**Client:**	
Sample Date:	29 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	55d 0h	**Station:**			

Comments: J13TV9

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	16-8117-9574	16-8117-9574	02 Apr-07 10:07 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	46.36%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.18849	1.94318	0.1398	1.88540	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	2.659522	2.659522	1	1.41	0.27954	Non-Significant Effect
Error	11.29698	1.88283	6			
Total	13.9565012	4.5423522	7			

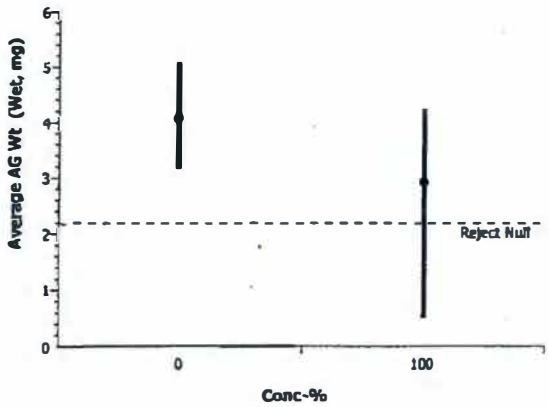
ANOVA Assumptions

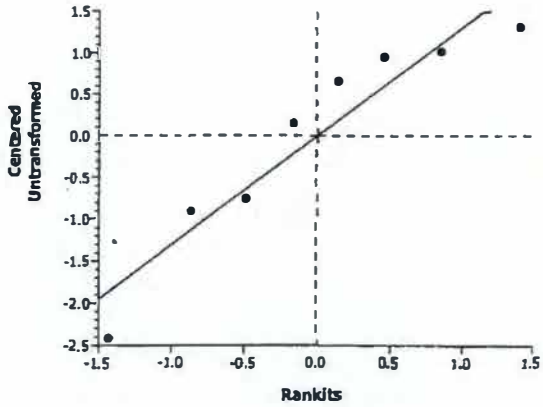
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.94751	47.46723	0.39835	Equal Variances
Distribution	Shapiro-Wilk W	0.89801		0.27726	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	2.91407	0.50417	4.22391	1.67682				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	11-0482-8865	**Code:**	B1728-03	**Client:**	
Sample Date:	29 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	55d 0h	**Station:**			

Comments: J13TV9

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	16-8117-9574	16-8117-9574	02 Apr-07 10:07 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	41.81%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.52397	1.94318	0.0892	0.08386	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0086508	0.008651	1	2.32	0.17835	Non-Significant Effect
Error	0.0223489	0.003725	6			
Total	0.03099969	0.0123756	7			

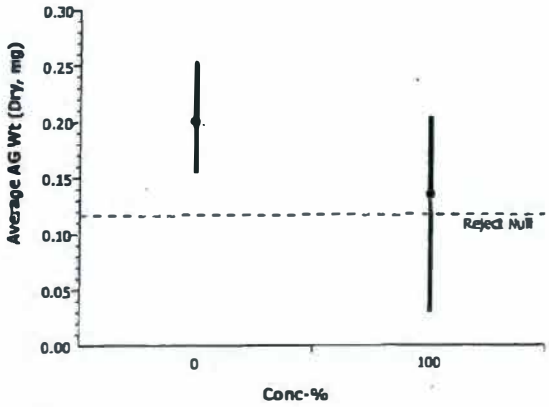
ANOVA Assumptions

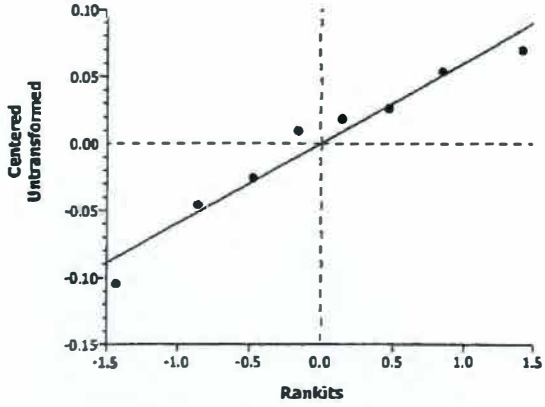
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.80653	47.46723	0.41926	Equal Variances
Distribution	Shapiro-Wilk W	0.95067		0.71794	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.13481	0.03020	0.20389	0.07411				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:18 AM
Test Link: 16-6665-3759/B172804pcc

Plant Chronic test — **CH2M Hill**

Test No:	16-9521-8773	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	06-4806-1546	**Code:**	B1728-04	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TF1

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
03-0688-9828	Average AG Wt (Wet, mg)	100	> 100	N/A	24.79%	Equal Variance t Two-Sample
06-2066-9541	Average AG Wt (Dry, mg)	100	> 100	N/A	23.15%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.57234	3.21415	4.04940	0.17556	0.35112	9.83%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.18304	0.16001	0.19936	0.00904	0.01808	9.88%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.04940	3.21415	3.57164	3.45418

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.19936	0.16001	0.19537	0.17742

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	06-4806-1546	**Code:**	B1728-04	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TF1

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	16-6665-3759	16-6665-3759	02 Apr-07 10:17 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	24.79%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.95363	1.94318	0.1885	1.00840	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.4898174	0.489817	1	0.91	0.37709	Non-Significant Effect
Error	3.231647	0.538608	6			
Total	3.72146490	1.0284253	7			

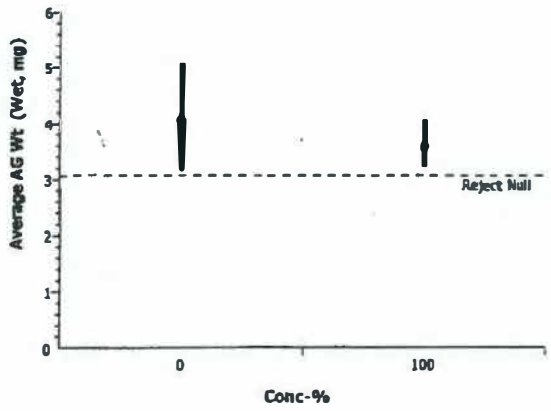
ANOVA Assumptions

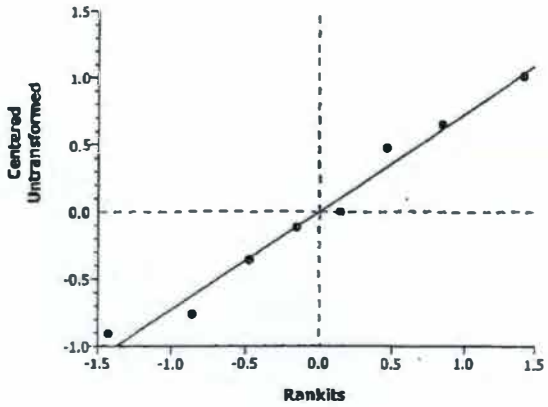
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.73777	47.46723	0.12685	Equal Variances
Distribution	Shapiro-Wilk W	0.96307		0.83877	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.57234	3.21415	4.04940	0.35112				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	06-4806-1546	**Code:**	B1728-04	**Client:**	
Sample Date:	28 Nov-06	**Material:**	Sediment	**Project:**	
Receive Date:	05 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	56d 0h	**Station:**			

Comments: J13TF1

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	16-6665-3759	16-6665-3759	02 Apr-07 10:18 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	23.15%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.73405	1.94318	0.2453	0.04643	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0006153	0.000615	1	0.54	0.49060	Non-Significant Effect
Error	0.0068515	0.001142	6			
Total	0.00746684	0.0017572	7			

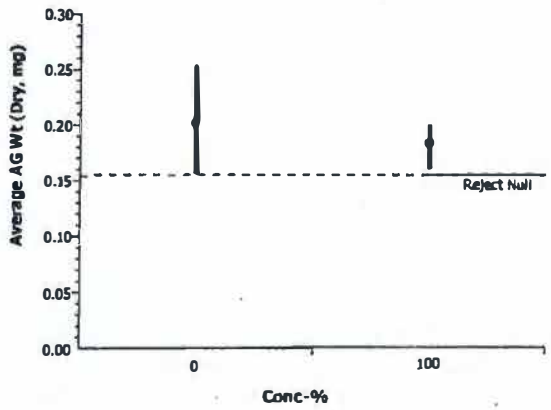
ANOVA Assumptions

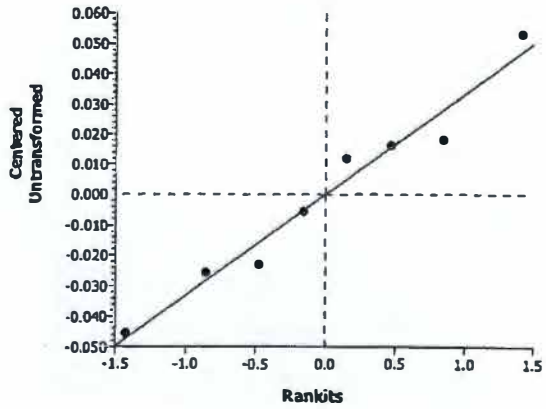
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	5.98900	47.46723	0.17566	Equal Variances
Distribution	Shapiro-Wilk W	0.96664		0.87041	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.18304	0.16001	0.19936	0.01808				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:19 AM
Test Link: 08-9741-2378/B172805pcc

Plant Chronic test — CH2M Hill

Test No:	13-6091-4461	Test Type:	Plant Chronic	Duration:	40d 0h
Start Date:	23 Jan-07	Protocol:	ASTM E1963-02 (2002)	Species:	Poa sandbergii
Ending Date:	04 Mar-07	Dil Water:		Source:	
Setup Date:	23 Jan-07 12:00 AM	Brine:			

Sample No:	18-8362-0619	Code:	B1728-05	Client:	
Sample Date:	04 Dec-06	Material:	Sediment	Project:	
Receive Date:	06 Dec-06	Source:	ELR-Washington Closure Hanford		
Sample Age:	50d 0h	Station:			

Comments: J13TW5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
10-9445-3977	Average AG Wt (Wet, mg)	100	> 100	N/A	30.28%	Equal Variance t Two-Sample
03-3557-3577	Average AG Wt (Dry, mg)	100	> 100	N/A	27.65%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.99674	2.94692	4.67525	0.40388	0.80776	20.21%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.18472	0.13323	0.21034	0.01804	0.03607	19.53%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.58611	3.77868	2.94692	4.67525

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.21034	0.18622	0.13323	0.20908

CETIS Analysis Detail

Plant Chronic test — CH2M Hill

Sample No:	18-8362-0619	**Code:**	B1728-05	**Client:**	
Sample Date:	04 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	06 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	50d 0h	**Station:**			

Comments: J13TW5

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	08-9741-2378	08-9741-2378	02 Apr-07 10:19 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	30.28%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.11122	1.94318	0.4575	1.23143	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0099363	0.009936	1	0.01	0.91507	Non-Significant Effect
Error	4.819205	0.803201	6			
Total	4.82914111	0.8131371	7			

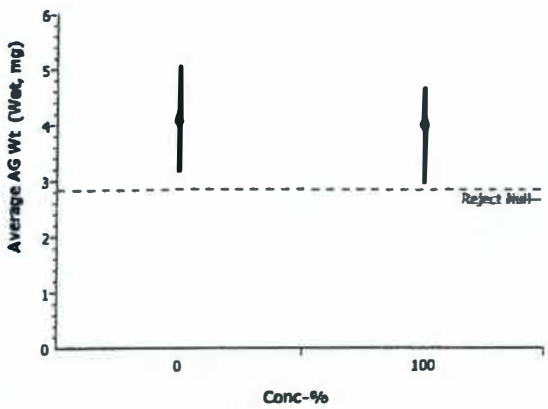
ANOVA Assumptions

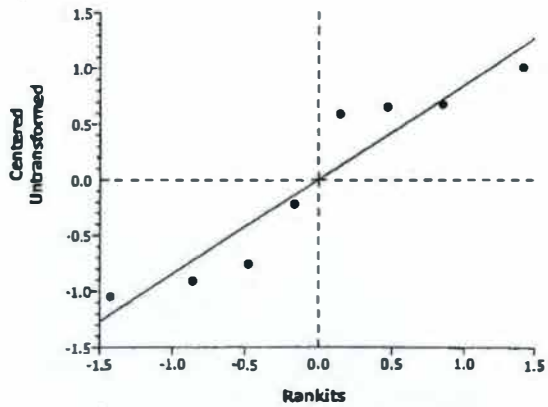
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.46204	47.46723	0.76247	Equal Variances
Distribution	Shapiro-Wilk W	0.86737		0.14203	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.99674	2.94692	4.67525	0.80776				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M HILL**

Sample No:	18-8362-0619	**Code:**	B1728-05	**Client:**	
Sample Date:	04 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	06 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	50d 0h	**Station:**			

Comments: J13TW5

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	08-9741-2378	08-9741-2378	02 Apr-07 10:19 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	27.65%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.5558	1.94318	0.2992	0.05546	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0005032	0.000503	1	0.31	0.59845	Non-Significant Effect
Error	0.0097745	0.001629	6			
Total	0.01027774	0.0021323	7			

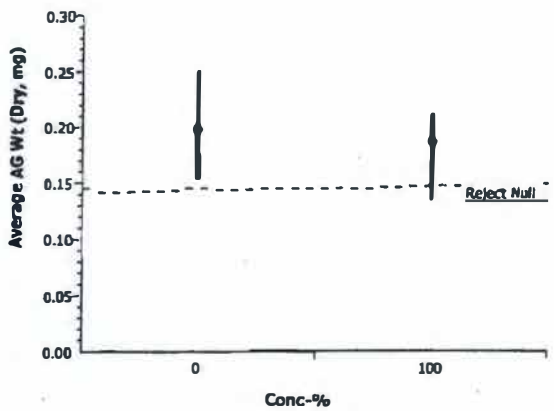
ANOVA Assumptions

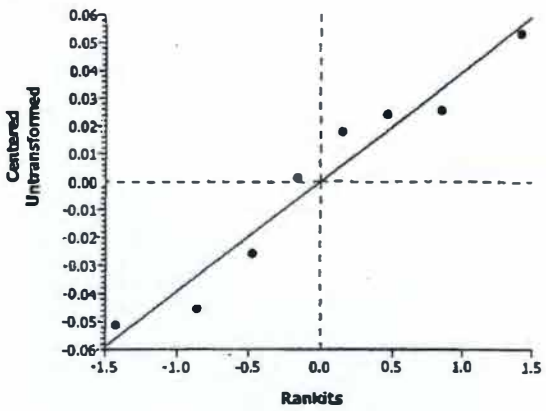
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.50417	47.46723	0.74540	Equal Variances
Distribution	Shapiro-Wilk W	0.93193		0.53379	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.18472	0.13323	0.21034	0.03607				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:22 AM
Test Link: 05-8780-1729/B172806ppc

Plant Chronic test — **CH2M Hill**

Test No:	10-3112-6066	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	04-5717-0728	**Code:**	B1728-06	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13V47

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-1424-6838	Average AG Wt (Wet, mg)	< 100	100	N/A	30.49%	Equal Variance t Two-Sample
11-8735-1840	Average AG Wt (Dry, mg)	< 100	100	N/A	25.69%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	2.22291	1.54403	3.31907	0.41069	0.82138	36.95%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.11003	0.08153	0.14686	0.01462	0.02925	26.58%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		1.54403	3.31907	1.64381	2.38473

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.08153	0.14686	0.09240	0.11933

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	04-5717-0728	**Code:**	B1728-06	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13V47

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	05-8780-1729	05-8780-1729	02 Apr-07 10:22 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		N/A	30.49%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.89040	1.94318	0.0138	1.23991	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	6.802996	6.802996	1	8.35	0.02768	Significant Effect
Error	4.885786	0.814298	6			
Total	11.6887817	7.6172938	7			

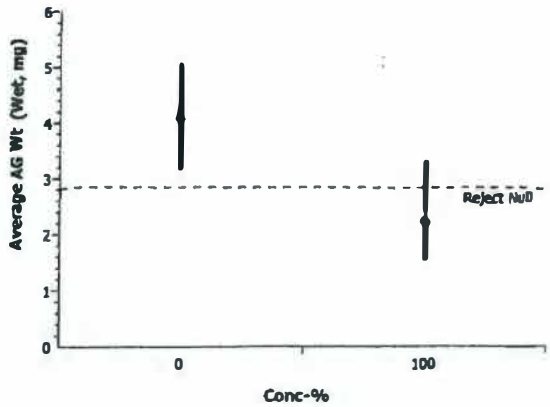
ANOVA Assumptions

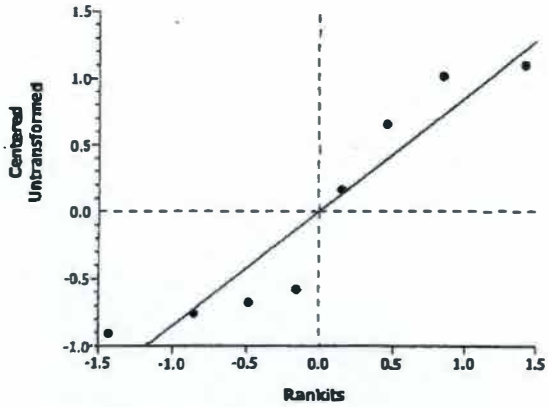
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.41394	47.46723	0.78274	Equal Variances
Distribution	Shapiro-Wilk W	0.86004		0.12017	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	2.22291	1.54403	3.31907	0.82138				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	04-5717-0728	**Code:**	B1728-06	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13V47

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	05-8780-1729	05-8780-1729	02 Apr-07 10:22 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		N/A	25.69%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.41493	1.94318	0.0071	0.05153	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0163987	0.016399	1	11.66	0.01423	Significant Effect
Error	0.0084372	0.001406	6			
Total	0.02483585	0.0178049	7			

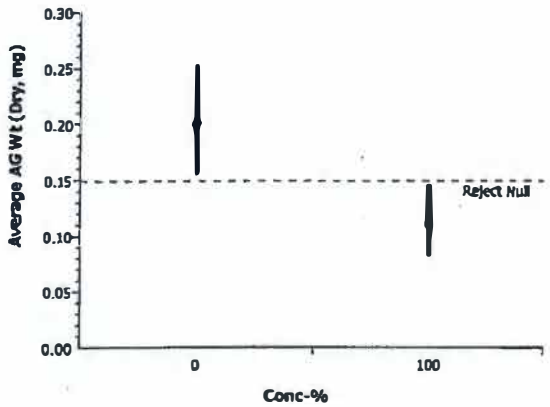
ANOVA Assumptions

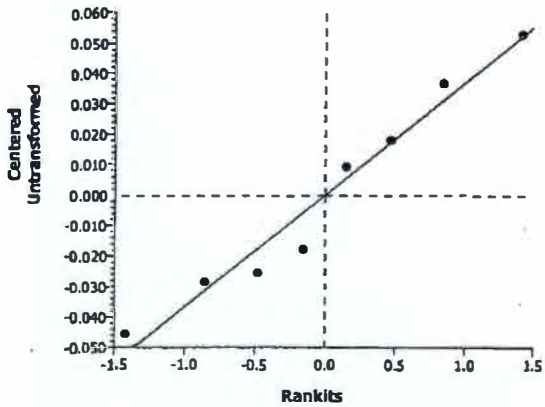
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.28810	47.46723	0.51428	Equal Variances
Distribution	Shapiro-Wilk W	0.94881		0.69925	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.11003	0.08153	0.14686	0.02925				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:23 AM
Test Link: 10-9998-2715/B172807ppc

Plant Chronic test — **CH2M Hill**

Test No:	09-7826-7032	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	11-5441-6006	**Code:**	B1728-07	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TD6

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
14-7752-1082	Average AG Wt (Wet, mg)	100	> 100	N/A	30.38%	Equal Variance t Two-Sample
11-0261-7376	Average AG Wt (Dry, mg)	100	> 100	N/A	25.73%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.37664	2.49275	4.36977	0.40725	0.81451	24.12%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.16460	0.14161	0.20442	0.01469	0.02939	17.85%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		3.65121	4.36977	2.99283	2.49275

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.16914	0.20442	0.14324	0.14161

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	11-5441-6006	**Code:**	B1728-07	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TD6

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	10-9998-2715	10-9998-2715	02 Apr-07 10:23 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	30.38%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.08604	1.94318	0.1596	1.23562	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.9538156	0.953816	1	1.18	0.31916	Non-Significant Effect
Error	4.852068	0.808678	6			
Total	5.80588406	1.7624937	7			

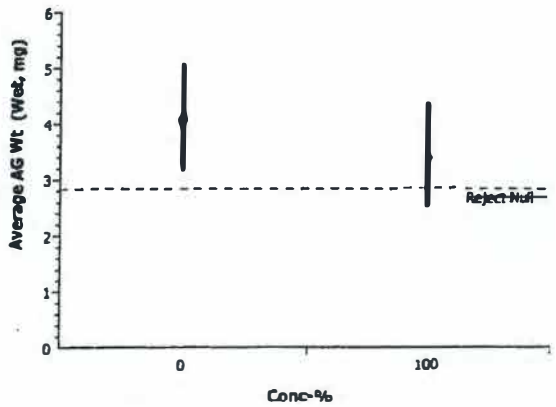
ANOVA Assumptions

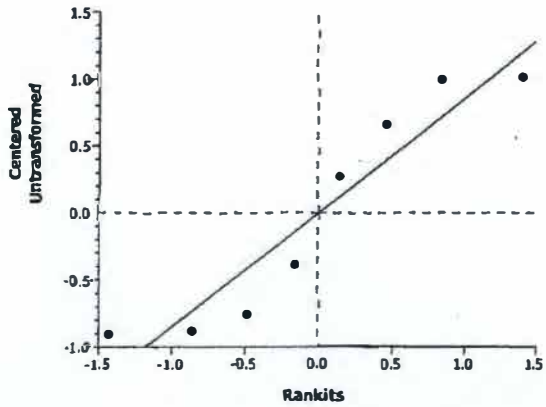
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.43790	47.46723	0.77254	Equal Variances
Distribution	Shapiro-Wilk W	0.85971		0.11927	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.37664	2.49275	4.36977	0.81451				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	11-5441-6006	**Code:**	B1728-07	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TD6

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	10-9998-2715	10-9998-2715	02 Apr-07 10:23 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	25.73%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.35482	1.94318	0.1121	0.05160	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0025888	0.002589	1	1.84	0.22426	Non-Significant Effect
Error	0.0084623	0.001410	6			
Total	0.01105105	0.0039992	7			

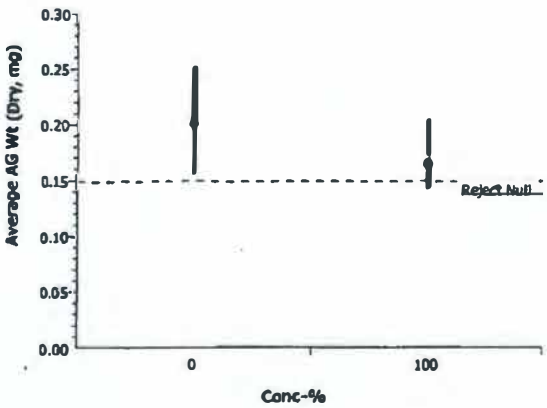
ANOVA Assumptions

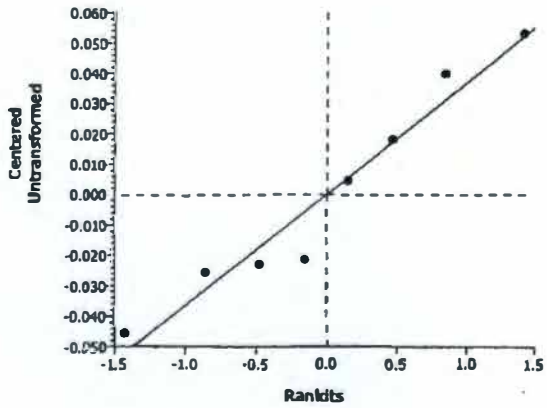
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.26595	47.46723	0.51912	Equal Variances
Distribution	Shapiro-Wilk W	0.93603		0.57249	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.16460	0.14161	0.20442	0.02939				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:26 AM
Test Link: 12-9502-8625/B172808pcc

Plant Chronic test — **CH2M Hill**

Test No:	08-2235-9802	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	04-5991-4278	**Code:**	B1728-08	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TV8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
18-0159-0052	Average AG Wt (Wet, mg)	100	> 100	N/A	32.12%	Equal Variance t Two-Sample
12-3018-4366	Average AG Wt (Dry, mg)	100	> 100	N/A	30.50%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.86711	2.68508	4.94375	0.46207	0.92414	23.90%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.19072	0.13705	0.24658	0.02240	0.04480	23.49%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.94375	3.90963	3.92998	2.68508

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.24658	0.19267	0.18657	0.13705

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	04-5991-4278	**Code:**	B1728-08	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TV8

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	12-9502-8625	12-9502-8625	02 Apr-07 10:26 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	32.12%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.29766	1.94318	0.3880	1.30641	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.080092	0.080092	1	0.09	0.77600	Non-Significant Effect
Error	5.423908	0.903985	6			
Total	5.50400023	0.9840767	7			

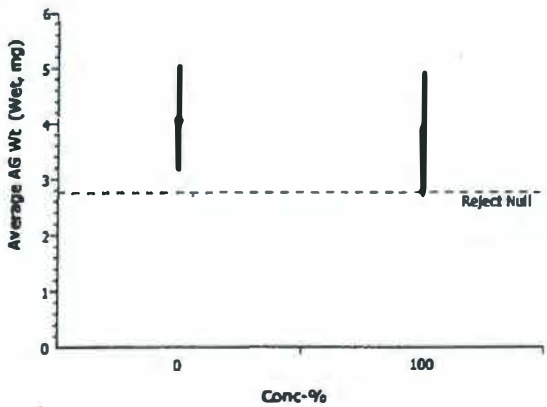
ANOVA Assumptions

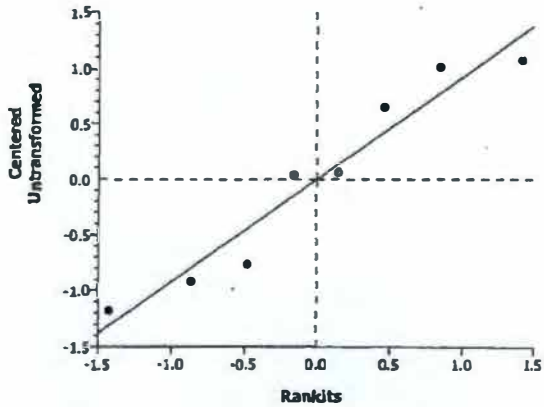
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.11697	47.46723	0.92968	Equal Variances
Distribution	Shapiro-Wilk W	0.91184		0.36722	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.86711	2.68508	4.94375	0.92414				

Graphics





CETIS Analysis Detail

Plant Chronic test — CH2M HILL

Sample No:	04-5991-4278	**Code:**	B1728-08	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	14 Dec-06	**Source:**	ELR-Washington.Closure Hanford		
Sample Age:	42d 0h	**Station:**			

Comments: J13TV8

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	12-9502-8625	12-9502-8625	02 Apr-07 10:26 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	30.50%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.31328	1.94318	0.3823	0.06117	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0001945	0.000195	1	0.10	0.76467	Non-Significant Effect
Error	0.0118930	0.001982	6			
Total	0.01208757	0.0021767	7			

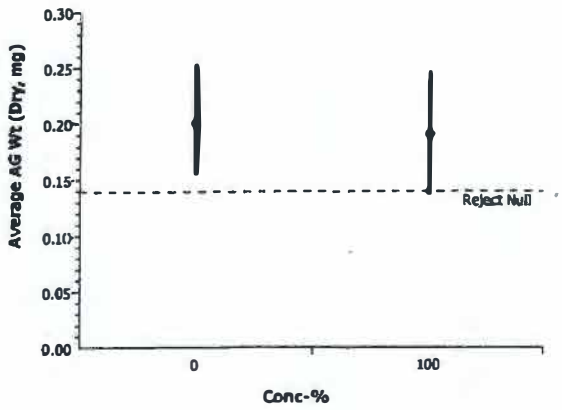
ANOVA Assumptions

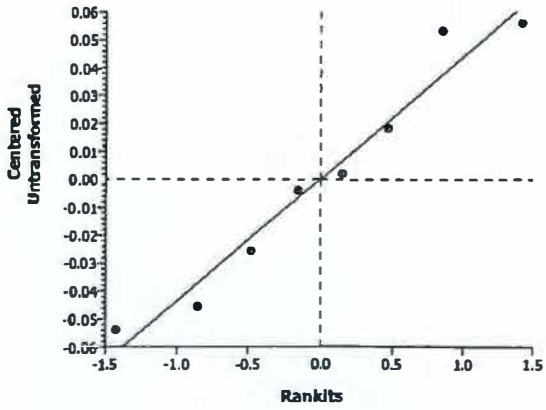
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.02566	47.46723	0.98387	Equal Variances
Distribution	Shapiro-Wilk W	0.93508		0.56339	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.19072	0.13705	0.24658	0.04480				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:27 AM
Test Link: 07-7694-8295/B172809pcc

Plant Chronic test — **CH2M Hill**

Test No:	03-5707-4577	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	00-0536-9214	**Code:**	B1728-09	**Client:**	
Sample Date:	13 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	15 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	41d 0h	**Station:**			

Comments: J13V46

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-5181-0551	Average AG Wt (Wet, mg)	< 100	100	N/A	24.92%	Equal Variance t Two-Sample
09-0355-7441	Average AG Wt (Dry, mg)	< 100	100	N/A	21.89%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	2.27041	1.87115	2.74573	0.18314	0.36627	16.13%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.11583	0.10797	0.12612	0.00461	0.00922	7.96%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		2.14801	1.87115	2.31677	2.74573

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.12111	0.10813	0.10797	0.12612

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	00-0536-9214	**Code:**	B1728-09	**Client:**	
Sample Date:	13 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	15 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	41d 0h	**Station:**			

Comments: J13V46

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	07-7694-8295	07-7694-8295	02 Apr-07 10:27 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		N/A	24.92%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.44509	1.94318	0.0069	1.01348	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	6.457054	6.457054	1	11.87	0.01372	Significant Effect
Error	3.264268	0.544045	6			
Total	9.72132158	7.0010983	7			

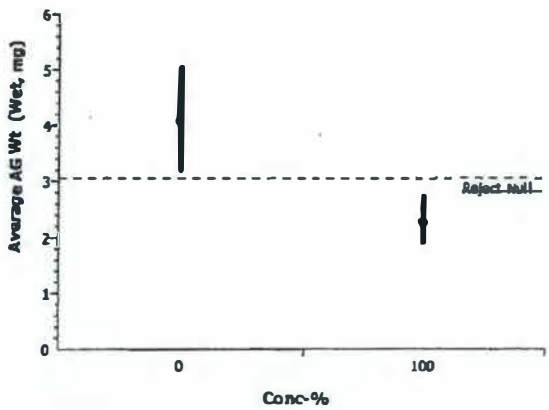
ANOVA Assumptions

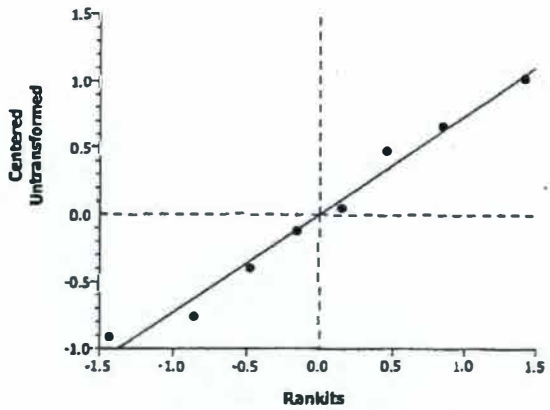
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.11061	47.46723	0.14143	Equal Variances
Distribution	Shapiro-Wilk W	0.96405		0.84767	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	2.27041	1.87115	2.74573	0.36627				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	00-0536-9214	**Code:**	B1728-09	**Client:**	
Sample Date:	13 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	15 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	41d 0h	**Station:**			

Comments: J13V46

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	07-7694-8295	07-7694-8295	02 Apr-07 10:27 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		N/A	21.89%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.75084	1.94318	0.0048	0.04390	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0143643	0.014364	1	14.07	0.00950	Significant Effect
Error	0.0061260	0.001021	6			
Total	0.02049038	0.0153853	7			

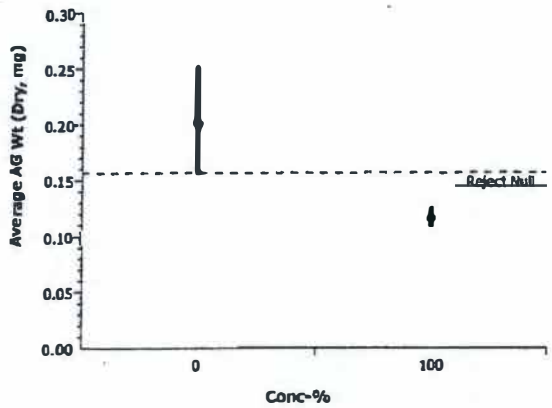
ANOVA Assumptions

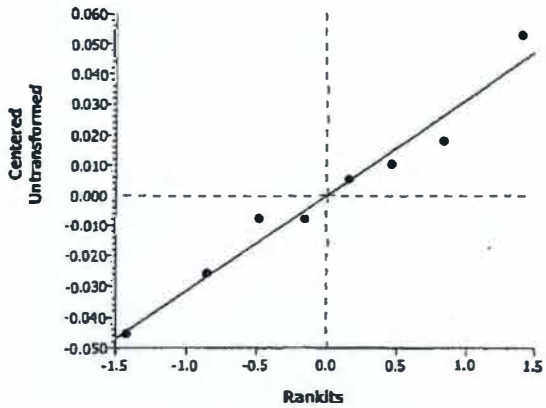
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	23.03899	47.46723	0.02845	Equal Variances
Distribution	Shapiro-Wilk W	0.97763		0.95024	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.11583	0.10797	0.12612	0.00922				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:30 AM
Test Link: 14-3376-4053/B172810pcc

Plant Chronic test — **CH2M Hill**

Test No:	07-2028-4767	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	13-5091-3252	**Code:**	B1728-10	**Client:**	
Sample Date:	14 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	40d 0h	**Station:**			

Comments: J13TW4

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
05-3233-5037	Average AG Wt (Wet, mg)	100	> 100	N/A	42.81%	Equal Variance t Two-Sample
19-1297-4680	Average AG Wt (Dry, mg)	100	> 100	N/A	37.90%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.72489	1.64577	5.23784	0.75137	1.50273	40.34%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.18939	0.09668	0.24597	0.03227	0.06454	34.08%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.04406	1.64577	5.23784	3.97189

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.20247	0.09668	0.24597	0.21242

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	13-5091-3252	**Code:**	B1728-10	**Client:**	
Sample Date:	14 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	40d 0h	**Station:**			

Comments: J13TW4

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	14-3376-4053	14-3376-4053	02 Apr-07 10:30 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	42.81%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.38202	1.94318	0.3578	1.74133	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.2343867	0.234387	1	0.15	0.71561	Non-Significant Effect
Error	9.636435	1.606072	6			
Total	9.87082121	1.840459	7			

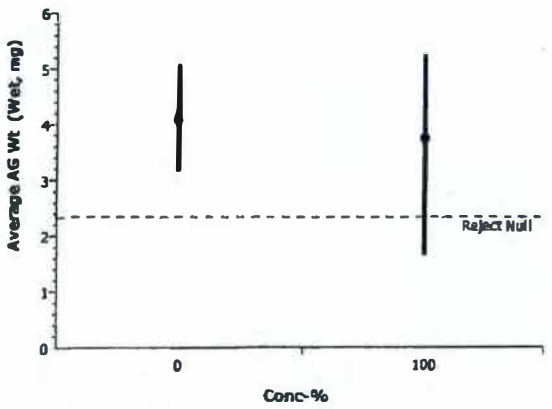
ANOVA Assumptions

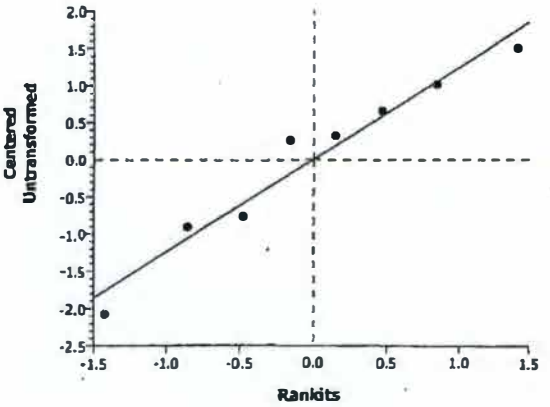
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.36726	47.46723	0.49759	Equal Variances
Distribution	Shapiro-Wilk W	0.95500		0.76140	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.72489	1.64577	5.23784	1.50273				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M HILL**

Sample No:	13-5091-3252	**Code:**	B1728-10	**Client:**	
Sample Date:	14 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	40d 0h	**Station:**			

Comments: J13TW4

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	14-3376-4053	14-3376-4053	02 Apr-07 10:30 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	37.90%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.28613	1.94318	0.3922	0.07603	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0002507	0.000251	1	0.08	0.78440	Non-Significant Effect
Error	0.0183691	0.003062	6			
Total	0.01861977	0.0033122	7			

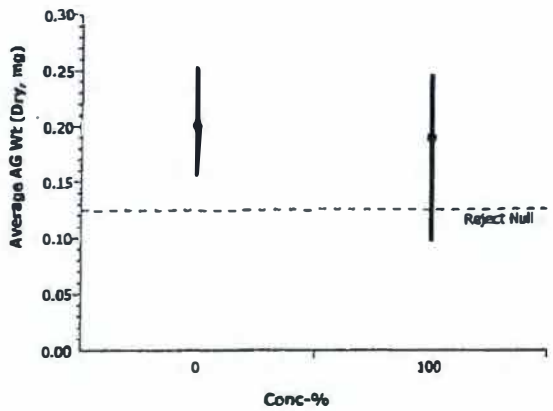
ANOVA Assumptions

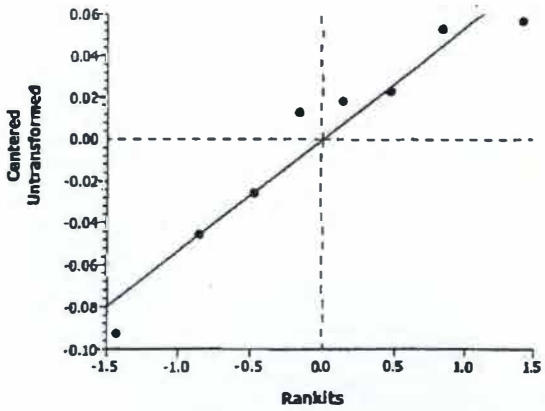
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.12868	47.46723	0.55084	Equal Variances
Distribution	Shapiro-Wilk W	0.92443		0.46684	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.18939	0.09668	0.24597	0.06454				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:31 AM
Test Link: 17-0074-5228/B172811pcc

Plant Chronic test — **CH2M Hill**

Test No:	10-8304-4469	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	19-9378-5026	**Code:**	B1728-11	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V48

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
08-1617-7795	Average AG Wt (Wet, mg)	< 100	100	N/A	24.04%	Equal Variance t Two-Sample
05-6921-5693	Average AG Wt (Dry, mg)	< 100	100	N/A	22.25%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	1.90793	1.73014	2.25684	0.12166	0.24333	12.75%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.10868	0.09284	0.11975	0.00618	0.01237	11.38%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		2.25684	1.89179	1.75296	1.73014

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.11714	0.10498	0.09284	0.11975

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	19-9378-5026	**Code:**	B1728-11	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V48

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	17-0074-5228	17-0074-5228	02 Apr-07 10:31 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		N/A	24.04%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	4.29049	1.94318	0.0026	0.97795	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	9.325089	9.325089	1	18.41	0.00515	Significant Effect
Error	3.039423	0.506571	6			
Total	12.3645122	9.8316599	7			

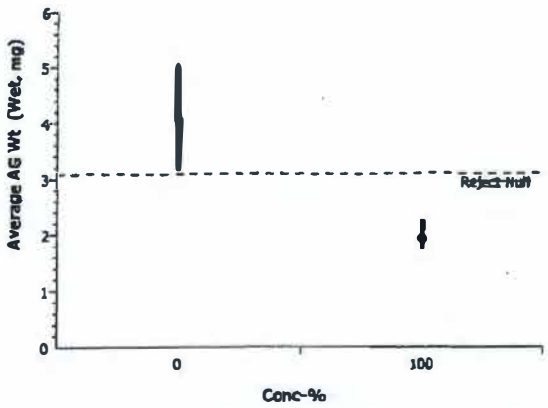
ANOVA Assumptions

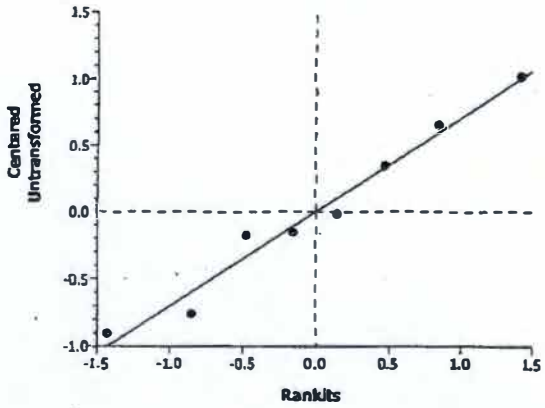
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	16.11160	47.46723	0.04712	Equal Variances
Distribution	Shapiro-Wilk W	0.96357		0.84338	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	1.90793	1.73014	2.25684	0.24333				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	19-9378-5026	**Code:**	B1728-11	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V48

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	17-0074-5228	17-0074-5228	02 Apr-07 10:31 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		N/A	22.25%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	4.00147	1.94318	0.0036	0.04463	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0168922	0.016892	1	16.01	0.00711	Significant Effect
Error	0.0063299	0.001055	6			
Total	0.02322209	0.0179472	7			

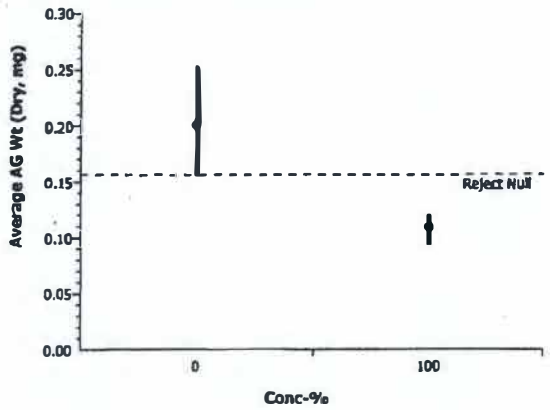
ANOVA Assumptions

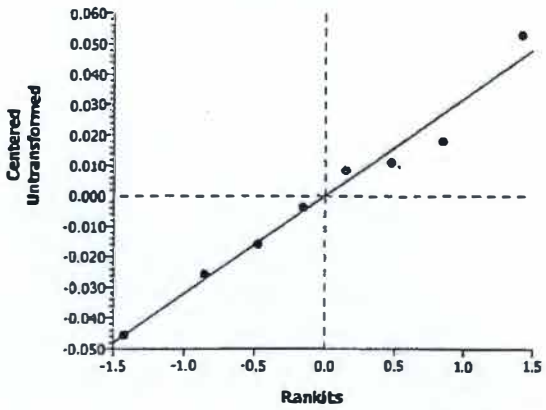
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	12.79956	47.46723	0.06477	Equal Variances
Distribution	Shapiro-Wilk W	0.98287		0.97568	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.10868	0.09284	0.11975	0.01237				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:37 AM
Test Link: 02-1152-2724/B172812pcc

Plant Chronic test — CH2M Hill

Test No:	01-2524-3150	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	10-7684-7517	**Code:**	B1728-12	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V49

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
15-7340-6060	Average AG Wt (Wet, mg)	100	> 100	N/A	37.26%	Equal Variance t Two-Sample
10-5257-0017	Average AG Wt (Dry, mg)	100	> 100	N/A	33.69%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	4.47486	3.49508	6.20489	0.60816	1.21632	27.18%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.21100	0.16428	0.28736	0.02683	0.05366	25.43%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		3.78042	3.49508	6.20489	4.41904

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.18651	0.16428	0.28736	0.20587

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	10-7684-7517	**Code:**	B1728-12	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V49

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	02-1152-2724	02-1152-2724	02 Apr-07 10:37 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	37.26%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.5226	1.94318	0.6900	1.51561	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.3323285	0.332329	1	0.27	0.61996	Non-Significant Effect
Error	7.300135	1.216689	6			
Total	7.63246360	1.5490177	7			

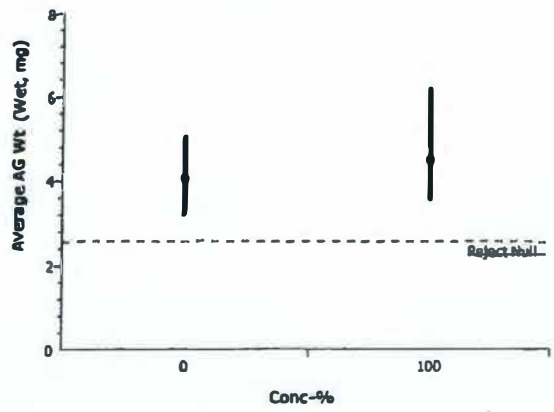
ANOVA Assumptions

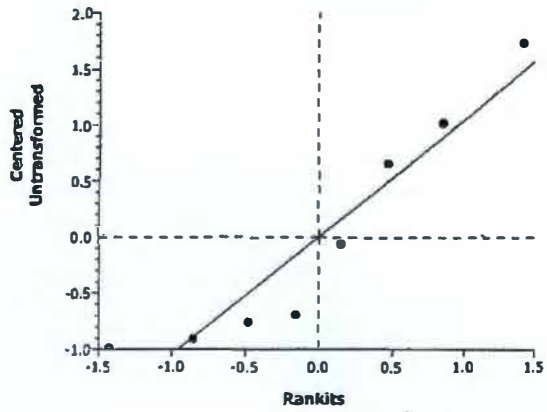
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.55089	47.46723	0.72718	Equal Variances
Distribution	Shapiro-Wilk W	0.87806		0.18045	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	4.47486	3.49508	6.20489	1.21632				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	10-7684-7517	**Code:**	B1728-12	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V49

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	02-1152-2724	02-1152-2724	02 Apr-07 10:37 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	33.69%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.2998	1.94318	0.6128	0.06757	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0002174	0.000217	1	0.09	0.77445	Non-Significant Effect
Error	0.0145108	0.002418	6			
Total	0.0147282	0.0026358	7			

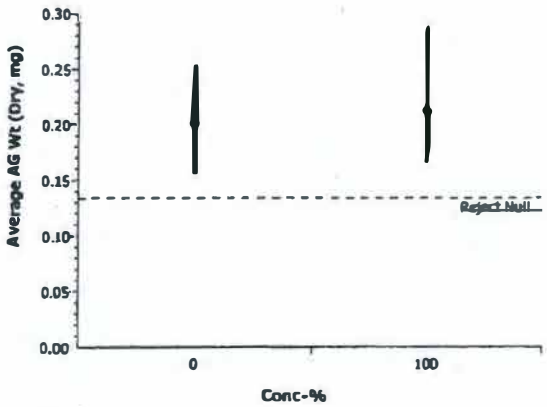
ANOVA Assumptions

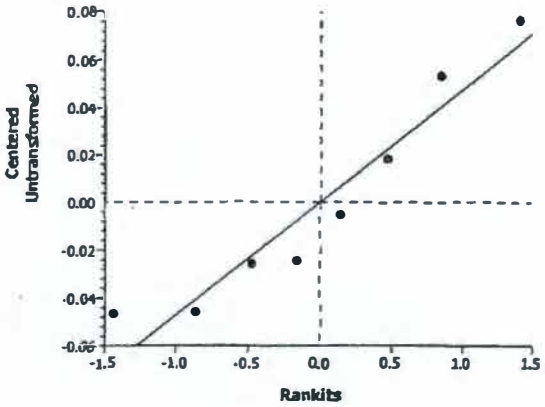
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.47153	47.46723	0.75857	Equal Variances
Distribution	Shapiro-Wilk W	0.90195		0.30085	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.21100	0.16428	0.28736	0.05366				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:39 AM
Test Link: 15-8187-0217/B172813pcc

Plant Chronic test — CH2M Hill

Test No:	07-3300-1455	Test Type:	Plant Chronic	Duration:	40d 0h
Start Date:	23 Jan-07	Protocol:	ASTM E1963-02 (2002)	Species:	Poa sandbergii
Ending Date:	04 Mar-07	Dil Water:		Source:	
Setup Date:	23 Jan-07 12:00 AM	Brine:			

Sample No:	07-7902-3863	Code:	B1728-13	Client:	
Sample Date:	19 Dec-06	Material:	Sediment	Project:	
Receive Date:	21 Dec-06	Source:	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	Station:			

Comments: J13V50

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
16-2992-8634	Average AG Wt (Wet, mg)	100	> 100	N/A	30.87%	Equal Variance t Two-Sample
07-6126-3836	Average AG Wt (Dry, mg)	100	> 100	N/A	27.55%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	4.84994	4.16568	6.07254	0.42325	0.84649	17.45%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.23482	0.21001	0.28764	0.01787	0.03574	15.22%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		4.43625	4.16568	4.72530	6.07254

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.21669	0.21001	0.22493	0.28764

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	07-7902-3863	**Code:**	B1728-13	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V50

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	15-8187-0217	15-8187-0217	02 Apr-07 10:39 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	30.87%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.2112	1.94318	0.8643	1.25575	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.225293	1.225293	1	1.47	0.27136	Non-Significant Effect
Error	5.011437	0.83524	6			
Total	6.23673022	2.0605327	7			

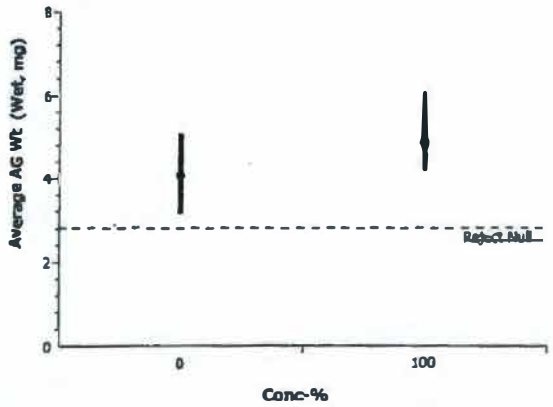
ANOVA Assumptions

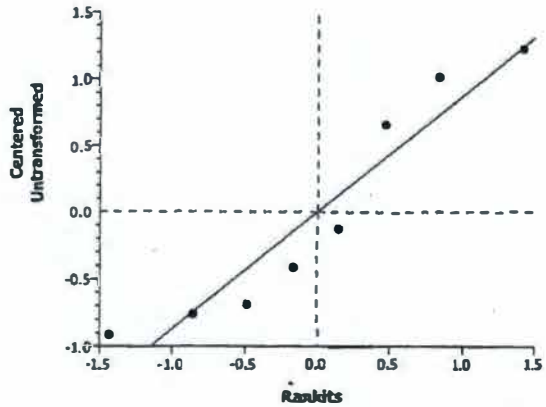
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.33129	47.46723	0.81967	Equal Variances
Distribution	Shapiro-Wilk W	0.88149		0.19458	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	4.84994	4.16568	6.07254	0.84649				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	07-7902-3863	**Code:**	B1728-13	**Client:**	
Sample Date:	19 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	21 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	35d 0h	**Station:**			

Comments: J13V50

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	15-8187-0217	15-8187-0217	02 Apr-07 10:39 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	27.55%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-1.2040	1.94318	0.8630	0.05526	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0023444	0.002344	1	1.45	0.27392	Non-Significant Effect
Error	0.0097032	0.001617	6			
Total	0.01204754	0.0039616	7			

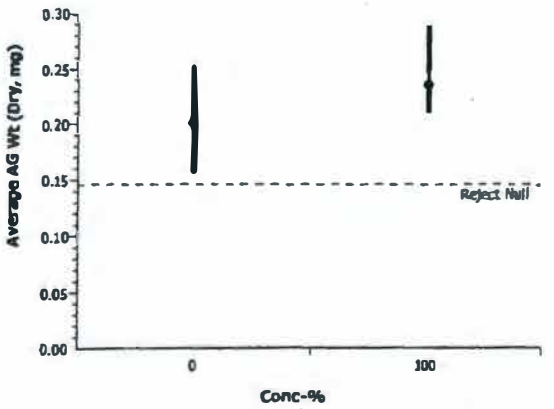
ANOVA Assumptions

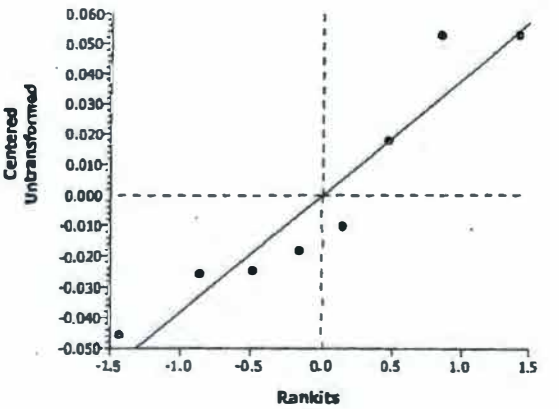
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.53217	47.46723	0.73439	Equal Variances
Distribution	Shapiro-Wilk W	0.88053		0.19053	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.23482	0.21001	0.28764	0.03574				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:40 AM
Test Link: 06-1713-2875/B172814pcc

Plant Chronic test — **CH2M Hill**

Test No:	16-2335-4652	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergil
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	13-7620-4299	**Code:**	B1728-14	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13TW6

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
19-9049-1244	Average AG Wt (Wet, mg)	100	> 100	N/A	26.21%	Equal Variance t Two-Sample
15-0971-1312	Average AG Wt (Dry, mg)	100	> 100	N/A	26.44%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.59636	3.08561	4.04565	0.24979	0.49957	13.89%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.18078	0.15039	0.21203	0.01599	0.03197	17.68%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		3.25019	4.00398	3.08561	4.04565

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.15039	0.20450	0.15621	0.21203

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	13-7620-4299	**Code:**	B1728-14	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13TW6

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	06-1713-2875	06-1713-2875	02 Apr-07 10:40 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	26.21%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.85843	1.94318	0.2118	1.06588	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.4434324	0.443432	1	0.74	0.42362	Non-Significant Effect
Error	3.610514	0.601752	6			
Total	4.05394658	1.0451848	7			

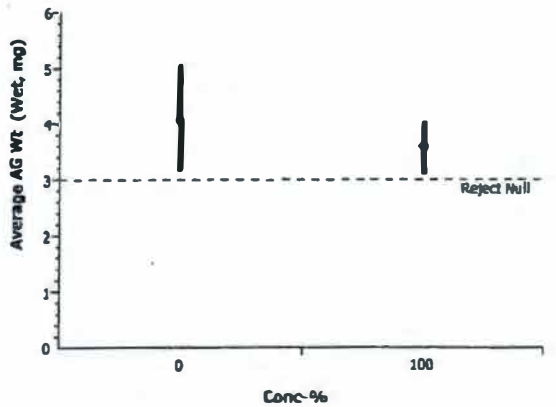
ANOVA Assumptions

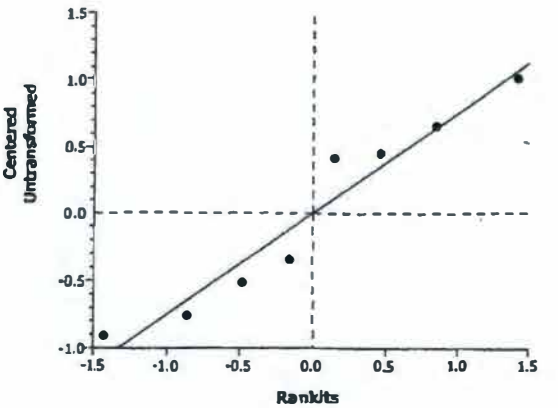
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.82228	47.46723	0.29987	Equal Variances
Distribution	Shapiro-Wilk W	0.91941		0.42512	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.59636	3.08561	4.04565	0.49957				

Graphics





CETIS Analysis Detail

Plant Chronic test — CH2M Hill

Sample No:	13-7620-4299	**Code:**	B1728-14	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13TW6

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	06-1713-2875	06-1713-2875	02 Apr-07 10:40 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	26.44%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.72542	1.94318	0.2478	0.05303	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0007839	0.000784	1	0.53	0.49550	Non-Significant Effect
Error	0.0089376	0.00149	6			
Total	0.00972153	0.0022735	7			

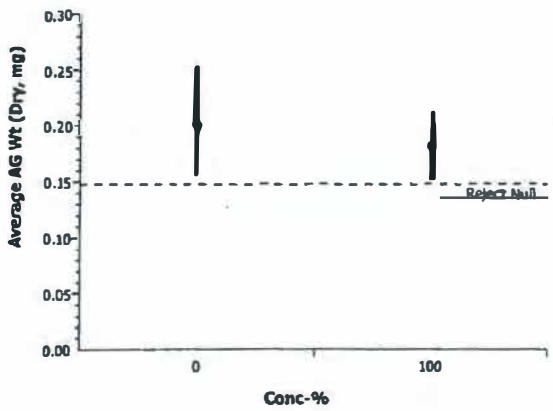
ANOVA Assumptions

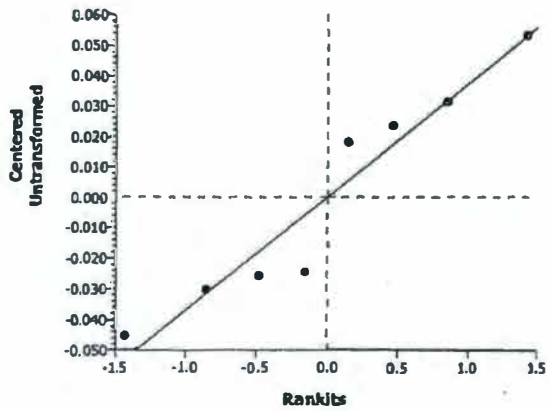
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.91467	47.46723	0.60710	Equal Variances
Distribution	Shapiro-Wilk W	0.90978		0.35249	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.18078	0.15039	0.21203	0.03197				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:43 AM
Test Link: 13-0094-6395/B172815pcc

Plant Chronic test — **CH2M Hill**

Test No:	04-2124-7384	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	16-2542-6934	**Code:**	B1728-15	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13V44

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
12-3452-8716	Average AG Wt (Wet, mg)	100	> 100	N/A	26.80%	Equal Variance t Two-Sample
10-7217-3725	Average AG Wt (Dry, mg)	< 100	100	N/A	24.88%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	3.07981	2.34325	3.68102	0.27601	0.55203	17.92%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.15057	0.11378	0.17522	0.01306	0.02611	17.34%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		2.34325	3.12444	3.17054	3.68102

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.11378	0.15426	0.15901	0.17522

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	16-2542-6934	**Code:**	B1728-15	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13V44

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	13-0094-6395	13-0094-6395	02 Apr-07 10:42 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	26.80%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.76025	1.94318	0.0644	1.09003	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.949967	1.949967	1	3.10	0.12885	Non-Significant Effect
Error	3.775996	0.629333	6			
Total	5.72596359	2.5792999	7			

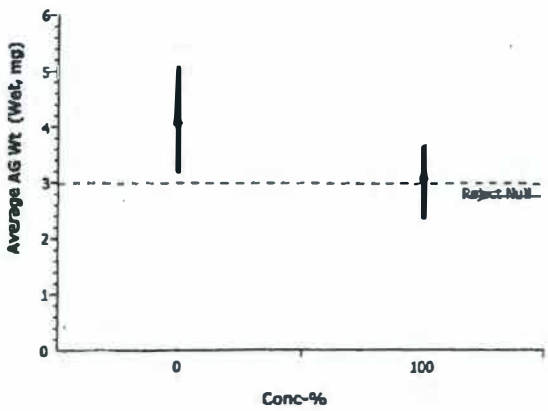
ANOVA Assumptions

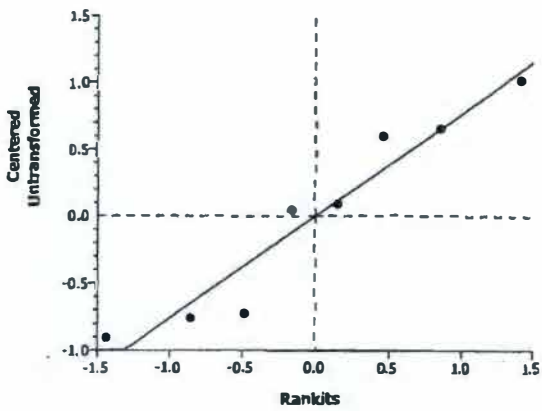
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.13040	47.46723	0.37369	Equal Variances
Distribution	Shapiro-Wilk W	0.90456		0.31732	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	3.07981	2.34325	3.68102	0.55203				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	16-2542-6934	**Code:**	B1728-15	**Client:**	
Sample Date:	20 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	27 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	34d 0h	**Station:**			

Comments: J13V44

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	13-0094-6395	13-0094-6395	02 Apr-07 10:42 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		N/A	24.88%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.94708	1.94318	0.0497	0.04991	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0050025	0.005003	1	3.79	0.09946	Non-Significant Effect
Error	0.0079172	0.00132	6			
Total	0.0129197	0.0063220	7			

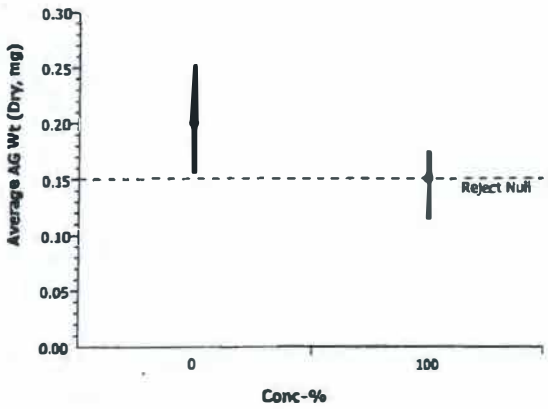
ANOVA Assumptions

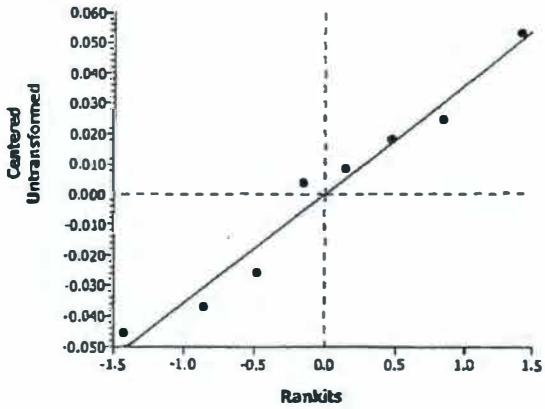
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.86964	47.46723	0.40968	Equal Variances
Distribution	Shapiro-Wilk W	0.95579		0.76913	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.15057	0.11378	0.17522	0.02611				

Graphics





CETIS Test Summary

Report Date: 02 Apr-07 10:44 AM
Test Link: 04-1287-7981/B172816pcc

Plant Chronic test — CH2M Hill

Test No:	09-7183-4816	**Test Type:**	Plant Chronic	**Duration:**	40d 0h
Start Date:	23 Jan-07	**Protocol:**	ASTM E1963-02 (2002)	**Species:**	Poa sandbergii
Ending Date:	04 Mar-07	**Dil Water:**		**Source:**	
Setup Date:	23 Jan-07 12:00 AM	**Brine:**			

Sample No:	12-3702-1727	**Code:**	B1728-16	**Client:**	
Sample Date:	22 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	29 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	32d 0h	**Station:**			

Comments: J13TW7

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
11-4088-6360	Average AG Wt (Wet, mg)	< 100	100	N/A	24.06%	Equal Variance t Two-Sample
03-2360-0629	Average AG Wt (Dry, mg)	< 100	100	N/A	22.75%	Equal Variance t Two-Sample

Average AG Wt (Wet, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.48835	0.97669	24.01%
100		4	2.63561	2.27827	2.82848	0.12295	0.24590	9.33%

Average AG Wt (Dry, mg) Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.02212	0.04424	22.06%
100		4	0.12975	0.11402	0.15102	0.00788	0.01576	12.15%

Average AG Wt (Wet, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	4.72180	3.15846	3.30686	5.08178
100		2.27827	2.82848	2.67921	2.75650

Average AG Wt (Dry, mg) Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Sedim	0.21872	0.17488	0.15510	0.25362
100		0.11402	0.15102	0.12308	0.13086

CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	12-3702-1727	**Code:**	B1728-16	**Client:**	
Sample Date:	22 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	29 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	32d 0h	**Station:**			

Comments: J13TW7

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Wet, mg)	Comparison	04-1287-7981	04-1287-7981	02 Apr-07 10:44 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		N/A	24.06%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.84282	1.94318	0.0147	0.97856	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	4.099015	4.099015	1	8.08	0.02946	Significant Effect
Error	3.043205	0.507201	6			
Total	7.14222074	4.6062161	7			

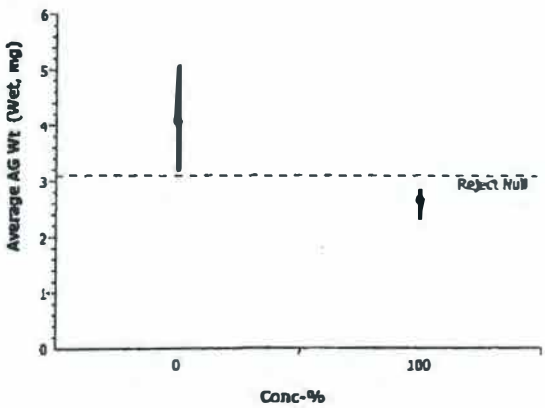
ANOVA Assumptions

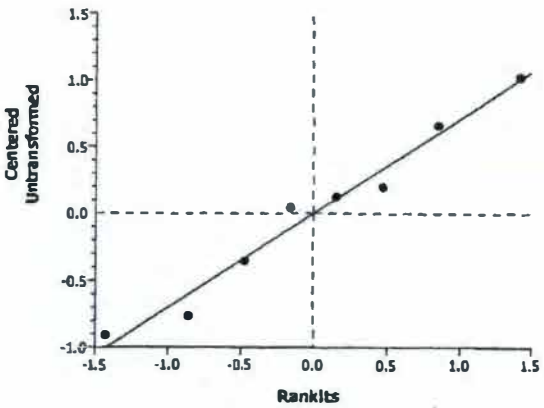
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	15.77563	47.46723	0.04852	Equal Variances
Distribution	Shapiro-Wilk W	0.96310		0.83903	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	4.06723	3.15846	5.08178	0.97669				
100		4	2.63561	2.27827	2.82848	0.24590				

Graphics





CETIS Analysis Detail

Plant Chronic test — **CH2M Hill**

Sample No:	12-3702-1727	**Code:**	B1728-16	**Client:**	
Sample Date:	22 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:	29 Dec-06	**Source:**	ELR-Washington Closure Hanford		
Sample Age:	32d 0h	**Station:**			

Comments: J13TW7

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Average AG Wt (Dry, mg)	Comparison	04-1287-7981	04-1287-7981	02 Apr-07 10:44 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		N/A	22.75%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	3.01659	1.94318	0.0118	0.04563	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0100352	0.010035	1	9.10	0.02350	Significant Effect
Error	0.0066168	0.001103	6			
Total	0.01665201	0.0111380	7			

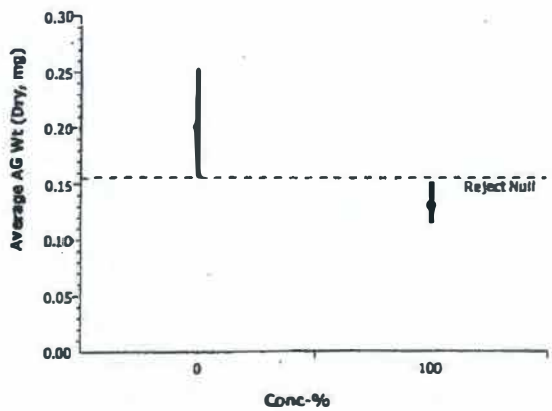
ANOVA Assumptions

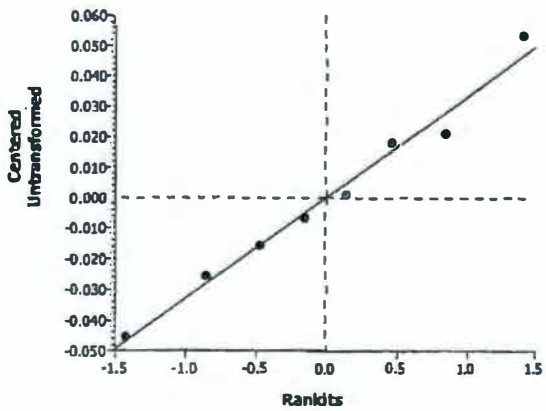
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	7.87471	47.46723	0.12399	Equal Variances
Distribution	Shapiro-Wilk W	0.98762		0.99051	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	4	0.20058	0.15510	0.25362	0.04424				
100		4	0.12975	0.11402	0.15102	0.01576				

Graphics





CORRECTIVE ACTION REPORT

Originator: Brett Mudge

Date: Jan 9, 2007

Subject (for example, test method, instrument, sample nos.): ELR Hanford

Park Chl. Tests initiated on Dec 20, 2006

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: Poor germination, including control (≈45%)

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:

Use of older seeds (95% Germination on June 2005) noted.
1-8-07 Contacted Rich Weiss/WCH about poor germination. He said to dig up plants & restart with the new seeds.

Approved by Department Manager/Designate: [signature]

Date: _____

Action Taken/Results: New seeds ordered (95% germination, Dec 2006)
Seedlings and sample in area where seeds planted were removed from replicates. Test ~~replicated~~ replicates replanted w/ new seed (PC0002)

CH2MHILL TELEPHONE CONVERSATION RECORD

CALL TO _____ PHONE NO. _____

DATE _____

CALL FROM _____ TIME _____ ☐ AM ☐ PM

MESSAGE TAKEN BY _____ PROJECT NO. _____

SUBJECT _____ (TP)

1-8-07 Pak Cho:

	A	B	C	D
Control	Ø	Ø	3	4
-01	1	Ø	Ø	Ø
-02	Ø	Ø	2	Ø
-03	0	Ø	3	3
-04	Ø	Ø	Ø	Ø
-05	1	1	Ø	1
-06	Ø	2	2	4
-07	Ø	Ø	1	Ø
-08	1	Ø	3	2
-09	1	Ø	3	1
-10				

REV 10/96 FORM 4

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 12/20/2006

Day 0 Initials PR Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials _____ Date _____ Tare Weight (g)	Initials _____ Date _____ Total Wet Weight (g)	Initials _____ Date _____ Total Dry Weight (g)
Control	A				6.0				
	B								
	C								
	D								
BP1728-01 100 %	A				6.4				
	B								
	C								
	D								
BP1728-02 100 %	A				6.4				
	B								
	C								
	D								
BP1728-03 100 %	A				6.4				
	B								
	C								
	D								
BP1728-04 100 %	A				6.0				
	B								
	C								
	D								
BP1728-05 100 %	A				6.2				
	B								
	C								
	D								

Comments: Light intensity at day 0 = 337, 328, 308 foot-candles PR

Poor Germination (Controls @ 45% 1/8/2007) - Test Aborted and Reset - Bm

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date 12/20/2006

Day 0 Initials [illegible] Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day _____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials _____ Date _____ Tare Weight (g)	Initials _____ Date _____ Total Wet Weight (g)	Initials _____ Date _____ Total Dry Weight (g)
BP1728-06 100 %	A				6.1				
	B								
	C								
	D								
BP1728-07 100 %	A				6.2				
	B								
	C								
	D								
BP1728-08 100 %	A				6.1				
	B								
	C								
	D								
BP1728-09 100 %	A				6.7				
	B								
	C								
	D								
	A								
	B								
	C								
	D								
	A								
	B								
	C								
	D								

Comments: Test Absorbed Jan 9-2007

PAK CHOI WATER/ROTATE

	20-Dec					25-DEC					30-JAN		01-Jan				05-JAN				
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TIME	1400	0915	0915	0825	1730	0700	0720	0840	08.30		0740	0710	0915	0930	0830		1000	1020	0820	1015	
INIT	[illegible]	[illegible]	[illegible]	[illegible]	NJ	NJ	MS	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	NJ	NJ	[illegible]	
	10-JAN					15-JAN					20-JAN					25-JAN				29-JAN	
DAY	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
TIME		1000																			
INIT		NJ																			
	M W F		Fill with Hoaglin's, let settle ~15 minutes, drain and rotate																		
	T R S S		Fill with DI water, let settle ~15 minutes, drain and rotate																		

CORRECTIVE ACTION REPORT

Originator: Troy Pittenger

Date: 1-23-2007

Subject (for example, test method, instrument, sample nos.): ELR - Washington Closure Pak Choi test initiated 1/10/2007

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: poor germination in samples and control (37.5%)

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:

Approved by Department Manager/Designate: [signature]

Date: 3-20-07

Action Taken/Results: Restarted test after digging up old seeds. Planted 10 seeds on top of the sediment. Note in report.

Sign off on Pak Choi Watering

Mon, Wed, Fri : Fill with 1/2 strength Hoagland's, ~ 15 minutes, drain and rotate
Sat, Sun, Tues, Thurs : Fill with DI water, ~ 15 minutes, drain and rotate

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1/10	1/11	1/12	1/13
Initials	---	---	---	---		TM	TP

	1/14	1/15	1/16	1/17	1/18	1/19	1/20
Initials			TP	TP		TP	NJ

Restarted

	1/21	1/22	1/23	1/24	1/25	1/26	1/27
Initials	NJ		TP				

	1/28	1/29	1/30	1/31	2/1	2/2	2/3
Initials							

	2/4	2/5	2/6	2/7	2/8	2/9	2/10
Initials							

	2/11	2/12	2/13	2/14	2/15	2/16	2/17
Initials							

	2/18	2/19	2/20	2/21	2/22	2/23	2/24
Initials							

Seed ID: PC002

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date : 1-10-07

Day 0 Initials [initials] Day ___ Initials ________ Day ___ Initials ________ Day ___ Initials ________

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day ____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40
Control	A					
	B					
	C					
	D					
BP1728-01 100 %	A					
	B					
	C					
	D					
BP1728-02 100 %	A					
	B					
	C					
	D					
BP1728-03 100 %	A					
	B					
	C					
	D					
BP1728-04 100 %	A					
	B					
	C					
	D					
BP1728-05 100 %	A					
	B					
	C					
	D					

Initials ____ Date ____	Initials ____ Date ____	Initials ____ Date ____
Tare Weight (g)	Total Wet Weight (g)	Total Dry Weight (g)

Comments:

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date :

Day 0 Initials _____ Day ___ Initials _____ Day ___ Initials _____ Day ___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day ____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials _____ Date _____ Tare Weight (g)	Initials _____ Date _____ Total Wet Weight (g)	Initials _____ Date _____ Total Dry Weight (g)
BP1728-06 100 %	A								
	B								
	C								
	D								
BP1728-07 100 %	A								
	B								
	C								
	D								
BP1728-08 100 %	A								
	B								
	C								
	D								
BP1728-09 100 %	A								
	B								
	C								
	D								
BP1728-10 100 %	A				6.1				
	B								
	C								
	D								
BP1728-11 100 %	A				6.1				
	B								
	C								
	D								

Comments: _____

Pak Choi GROWTH TEST

Client ELR Consulting - Washington Closure Hanford Project

Test Start Date :

Day 0 Initials _____ Day ___ Initials _____ Day___ Initials _____ Day___ Initials _____

Number of seedlings planted per rep = 4 Seedlings thinned to 1 plant on Day ____

CONC.	REP.	# of Seeds germinated on DAY	DAY	DAY	pH DAY 0	DAY 40	Initials _____ Date _____ Tare Weight (g)	Initials _____ Date _____ Total Wet Weight (g)	Initials _____ Date _____ Total Dry Weight (g)
BP1728-12 100 %	A				7.0				
	B								
	C								
	D								
BP1728-13 100 %	A				7.0				
	B								
	C								
	D								
BP1728-14 100 %	A				6.5				
	B								
	C								
	D								
BP1728-15 100 %	A				6.6				
	B								
	C								
	D								
BP1728-16 100 %	A				7.3				
	B								
	C								
	D								
	A								
	B								
	C								
	D								

Comments: _____

APPENDIX B

CHAIN OF CUSTODY

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-2	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Priee Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA BEV REF 1		SAF No. RC-082	Air Quality ☐	
Ice Chest No. AFS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT.~~ DAB 12/4/06 Fed Ex		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTME1706 BH1728-01	Sediment Phytotoxicity EEDP-04-11 BP1728-01								
Sample No. / Matrix * / Sample Date / Sample Time											
J13TD0 / OTHER SOLID / 11-28-06 / 1215	X	X	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1540 11-28-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1540 11-28-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 1000 12-4-06	Received By/Stored In David Sigman	Date/Time 12/4/06 1000
Relinquished By/Removed From David Sigman	Date/Time 12/4/06 1200	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In	Date/Time 12/5/06 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

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-01

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
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title Asst. Sci	Date/Time 12/5/06 1400
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-082-1	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 1a Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. APS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ ~~DAS~~ 12/4/06 Fed Ex		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See OSR		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 B1728 -02	Sediment Phytotoxicity EEDP-04-11 B1728 -03								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TC9	OTHER SOLID	11-28-06	1345	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	11-28-06 1540	EAS LOCKED STORAGE	11-28-06 1540
Relinquished By/Removed From EAS LOCKED STORAGE	12-4-06 1000	Received By/Stored In David Stozhan WCH	12/4/06 1000
Relinquished By/Removed From David Stozhan WCH	12/4/06 1200	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/5/06 1400
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-02

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
		Assoc. Sci.	12/5/06 1400

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-082-18	Page 1 of 1
Collector: B. TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code; Data Turnaround: 21 Days
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA 2c Aq	SAF No.: RC-082	Air Quality ☐
Ice Chest No.: AFS-04-017	Field Logbook No.: EL-1612; COA: BESBEA6520	Method of Shipment: ~~GROUND TRANSPORT~~ DAS 12/4/06 Fed Ex	
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A070118	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	1	1	1
Volume	1000g	1000g	6000g

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 BH 1723 WB	Sediment Phytotoxicity EEDP-04-11 BP 1723 DS
J13TV9	OTHER SOLID	11-29-06	1355	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TL KLINCKMAN	1100 NOV 30 2006	TL Klinckman EAS LOCKED STORAGE	NOV 30 2006
EAS LOCKED STORAGE	12-4-06 1000	David Stockwell	12/04/06 1000
David Stockwell	12/4/06 1200	FED EX	
FED EX		[illegible]	12/5/06 1400

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31728-03, 15.8°C 12/5/06 6000g sample

Matrix *: SoSoil; SESediment; SOSolid; SlSludge; W = Water; OOil; AAir; DSDrum Solids; DLDrum Liquids; TTissue; WIWipe; LLiquid; VVegetation; XOther

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	Asst. Sci	12/5/06 1400

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-082-10	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2a Aq		SAF No. RC-082		
Ice Chest No. AFD-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See DSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BH1-723 -04	Sediment Phytotoxicity EEDP-04-11 BH1-723 -04								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TF1	OTHER SOLID	11-28-06	1435	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1540 11-28-06	EAS LOCKED STORAGE	1540 11-28-06
Relinquished By/Removed From EAS LOCKED STORAGE	1000 12-4-06	David Stolm WCH	12/4/06 1000
Relinquished By/Removed From David Stolm WCH	12/4/06 1200	FED EX	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/5/06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

BH1-728-04, 16.0°C 12/5/06 600g sample

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: Assoc. Sci	Date/Time 12/5/06 1400
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-082-22	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA Sd Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. SAWS - 107	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex PAS 12/5/06		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070120		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BH1728-05	Sediment Phytotoxicity EEDP-04-11 BH1728-05								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TW5	OTHER SOLID	12-04-06	1230	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1515 12-04-06	EAS LOCKED STORAGE	1515 12-04-06
EAS LOCKED STORAGE	0815 12-05-06	DAVID BURTON WCH	12/5/06 0815
DAVID BURTON WCH	12/5/06 0900	FED EX	
Fed Ex		[illegible]	12/06/06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

BH1728-05,
COC seals intact, 2.0 °C on arrival,
All 3 subsamples in same cooler

Matrix *
S=Soil
SD=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 [illegible]	Title Assoc. Sci.	Date/Time 12/06/06
FINAL SAMPLE DISPOSITION	Disposal Method * all Sample used in test	Disposed By 12/20/06	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-60	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 3b Aq		SAF No. RC-082		
Ice Chest No. AFS-04-009	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070123		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	1	1 12-13-06	1
Volume	1000g ml	1000g ml	6000g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 B1728-06	Sediment Phytotoxicity EEDP-04-11 B1728-07

Sample No.	Matrix *	Sample Date	Sample Time			
J13V47	OTHER SOLID	12-12-06	0845	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1030 12-12-06	Received By/Stored In EAS LOCKED STORAGE	1030 12-12-06
Relinquished By/Removed From EAS LOCKED STORAGE	1000 12-13-06	Received By/Stored In Rob Weeks	12/13/06 1000
Relinquished By/Removed From Rob Weeks	12/13/06 1500	Received By/Stored In FED EX	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/14/06 1120
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival, COC seals intact

B1728-06 (same cooler as -07, -08)

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
OS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title Assoc. Sci	Date/Time 12/14/06 1120
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By All sample used	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-8	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 21 Aq		SAF No. RC-082		
Ice Chest No. AFS-04-009	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHill - Corvallis	Offsite Property No. A07012-3		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1 12-17-06	1								
Volume	1000g ml	1000g ml	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 BH1728-07	Sediment Phytotoxicity EEDP-04-11 BH1728-07								

Sample No.	Matrix *	Sample Date	Sample Time											
J13TD6	OTHER SOLID	12-12-06	0915	X	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: JAMES BERNHARD	1150 12-12-06	EAS LOCKED STORAGE	1150 12-12-06
Relinquished By/Removed From: EAS LOCKED STORAGE	0950 12-13-06	Rob Weeks	12/13/06 0950
Relinquished By/Removed From: WCH K. Wetzel	12/13/06 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX		Received By/Stored In: [illegible]	12/14/06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival, COC seals intact

BI728-07 (some coolers -06, -08)

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: [illegible]	Title: Area Sci	Date/Time: 12-14-06
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-082-16	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 21 Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. AFS-04-009	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070123		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1 (2) TEL	1 12-13-06	1								
Volume	1000g ml	1000g ml	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BH1728-03	Sediment Phytotoxicity EBDP-04-11 BH1728-09								

Sample No.	Matrix *	Sample Date	Sample Time											
J13TV8	OTHER SOLID	12-12-06	0920	X 1	X 1	X 1								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	12-12-06 1230	Received By/Stored In EAS LOCKED STORAGE	12-12-06 1230
Relinquished By/Removed From EAS LOCKED STORAGE	12-13-06 1000	Received By/Stored In Reb Locks	12/13/06 1000
Relinquished By/Removed From WCH	12/13/06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/14/06 1120
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival COC seals intact

BH1728-08 (same cooler as -06, -07)

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: Asst. Sci	Date/Time: 12/14/2006 1120
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-082-59	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2m Aq		SAF No. RC-082		
Ice Chest No. ERC-02-004	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070125		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None
Type of Container	G/P	P/G	P/G
No. of Container(s)	1	1	1
Volume	1000g	1000g	6000g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 31728-09	Sediment Phytotoxicity EEDP-04-11 31728-09

Sample No.	Matrix *	Sample Date	Sample Time			
J13V46	OTHER SOLID	12-13-06	1100	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	12-13-06 1330	Received By/Stored In EAS LOCKED STORAGE	12-13-06 1330
Relinquished By/Removed From EAS LOCKED STORAGE	12-14-06 1030	Received By/Stored In RVocks	12/14/06 1030
Relinquished By/Removed From RVocks	12/14/06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/15/06 1420
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31728-09, coc seals intact. 7.6°C on ice
↳ container for Hex(1) analysis labeled as sample No. J13V8Ø.
-12/18/06. 600g subsampled to particle sizing for (1) analysis by [signature] 12-18-06

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 [signature]	Title Resc. Sci	Date/Time 12/15/06 1420
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

CH2MHILL
Applied Sciences Group

Sample Receipt Exception Report

Sample Batch Number: B1728-01 to -04 **Client /Project** ELR - HANFORD

The following exceptions were noted:		Comments (write number of exception description and the impacted sample numbers)
	1. No custody seal as required by project	1 COOLER RECEIVED: CONTAINED BOTH 1 kg SAMPLE FOR IC Anions / etc. + 1 kg SAMPLE for INVERTEBRATES. COC seals intact, ON ICE @ 0.3°C 12/5/06. ALL SAMPLES for -01, -02, -03 & -04 OK.
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on reciept.	FOR THE 6000 g samples for Phytotoxicity: -01: samples not recieved. -02: sample not recieved. -03: Sample recieved in 5 gallon bucket. COC seals intact. However, 3 plastic bags were used. Sample in innermost bag appears intact. Water w/ styrofoam "peanuts" was found between inner most bag and other bags. Potential water leak from inner bag?
	5. Temperature of samples inappropriate for analysis requested	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requrested	
	10. Discrepancies between COC form and container labels.	-04: Similar condition to -03 sample.
	11. Other.	

ACTION TAKEN: Email initiated to Richard Weiss / PLO. Samples placed into 4°C cooler, "as recieved"

Originator: Date:

Client was notified on: (Date/Time) Client Contact:

CH2M HILL
Applied Sciences Laboratory

2300 NW Walnut Blvd., Corvallis, OR 97330-3538
P.O. Box 428, Corvallis, OR 97339-0428

Tel 541.752.4271
Fax 541.752.0276

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx. Express

Ship Date: 04DEC06
ActWgt: 126 LB
System#: 5851986/INET2500
Account#: S *********

REF: BESBEA6520

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

TUE
Deliver By:
05DEC06

TRK# 7980 5630 B136 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label ~~can be read and~~ scanned.

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B1728-01 1-02 6000 g subsamples

Received 12/6/06 [illegible]

- COC seals intact
- 17.2°C

From: Origin ID: (509)376-7768
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FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx. Express

Ship Date: 04DEC06
ActWgt: 80 LB
System#: 5851986/INET2500
Account#: S *********

REF: BESBEA6520

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

TUE
Deliver By:
05DEC06

TRK# 7980 5630 8125 FORM 0201

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B1728- 01, 02, 03, 04

1000g subsamples for IC Anions & Invertebrate toxicity.

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx Express

CLS 990204/03/23

Ship Date: 04DEC06
ActWgt: 20 LB
System#: 5851986/NET2500
Account#: S *********

REF: A070119

Delivery Address Bar Code

A070119

SHIP TO: (541)768-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

TUE
Deliver By:
05DEC06

TRK# 7990 4759 2637 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label ~~can be read and~~ scanned.

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B1728-03 - BUCKET

6000 g subsample for Phytotoxicity

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx Express

Ship Date: 04DEC06
ActWgt: 50 LB
System#: 5851986/INET2500
Account#:S *********

REF: BESBEA6520

Delivery Address Bar Code

SHIP TO: (541)758-3127 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

TUE
DeliverBy:
05DEC06

TRK# 7980 5630 8147 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

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Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label ~~can be read and~~ scanned.

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B1728-04 - Bucket

600g subsample for Phytotoxicity

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx Express

Ship Date: 05DEC06
ActWgt: 58 LB
System#: 5851986/INET2500
Account#: S *********

REF: A070120-BESBEA6520

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:
06DEC06

TRK# 7980 5693 6143 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

View all labels

Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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B1728-05 - all 3 subsamples in 1 cooler

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx. Express

Ship Date: 13DEC06
ActWgt: 109 LB
System#: 5851986/INET2500
Account#: S *********

REF: BESBEA 6520

Delivery Address Bar Code

SHIPTO: (541)752-4271 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

THU
Deliver By:
14DEC06

TRK# 7985 6370 6520 FORM 0201

PDX AA

97339 -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.

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31728-06, -07, -08

From: Origin ID: (509)376-7768
SHIPPING DEPT
FLUOR HANFORD
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx. Express

Ship Date: 14DEC06
ActWgt: 57 LB
System#: 5851986/WET2500
Account#: S *********

REF: BESBEA 6520

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT **FRI**

Deliver By: 15DEC06

TRK# 7985 6481 9735 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

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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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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.

B1728-09 12/15/06

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-21	Page 1 of 1

Collector: B. TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA 5c Aq	SAF No.: RC-082	
Ice Chest No.: JRP-03-014	Field Logbook No.: EL-1612	COA: BESBEA6520	Method of Shipment: ~~GROUND TRANSPORT~~ FED EX DAS 12/20/2006
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A070128		Bill of Lading/Air Bill No.: See DSA

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BH 1728-10	Sediment Phytotoxicity EEDP-04-11 BP 1728-10								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TW4	OTHER SOLID	12-14-06	1330	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 12-14-06 1545	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 12-14-06 1545
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 12-18-06 0955	Received By/Stored In: R Becks	Date/Time: 12/18/06 0955
Relinquished By/Removed From: R Becks	Date/Time: 12/20/06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In:	Date/Time: 12-21-06 1315
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

~~(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422~~
RW 12/18/06

B 1728-10 COC SEALS INTACT
sample # J13TW4 5.7 °C
on ice

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: Dimitri W. Alder	Title	Date/Time: 12-21-06 1315
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-082-61	Page 1 of 1

Collector B. TILLER R. Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code	Data Turnaround 21 Days	Air Quality ☐	
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 4a Aq		SAF No. RC-082
Ice Chest No. GRP-03-014	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ FED EX DAS 12/20/2006
Shipped To CH2MHill - Corvallis	Offsite Property No. 4070128		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions. ~~BH~~ ~~1728-11~~ B-11	Sediment Invertebrate Toxicity ASTM E1706 B/ 1728-11	Sediment Phytotoxicity EEDP-04-11 B/ 1728-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J13V48	OTHER SOLID	12-19-06	1345	X.	X.	X.							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Curet R. Curet	1630 12-19-06	R. Curet EAS LOCKED STORAGE	1630 12-19-06
EAS LOCKED ~~STORAGE~~	0845 12-20-06	R Vocks [illegible] 12/20/06	0845
R Vocks [illegible] 12/20/06	1500	FED EX	
FED EX		[illegible]	12-21-06 1315

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B 1728-11. COC SEALS INTACT.

5.8 °C on ice

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
	[illegible] N. [illegible]		12-21-06 1315

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-082-62	Page 1 of 1

Collector B. TILLER R. Curet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 4b Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. GRP-03-014	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment BHS 12/20/2006 ~~GROUND TRANSPORT~~ FED EX		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070128		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions. ~~BH~~ ~~1728-12~~ BD	Sediment Invertebrate Toxicity ASTM E1706 BR 1728-12	Sediment Phytotoxicity EEDP-04-11 BD 1729-12								

Sample No.	Matrix *	Sample Date	Sample Time										
J13V49	OTHER SOLID	12-19-06	1245	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: R. Curet R. Curet Date/Time 12-19-06 1615	Received By/Stored In: R. C. EAS LOCKED STORAGE Date/Time 12-19-06 1615
Relinquished By/Removed From: EAS LOCKED STORAGE Date/Time 12-20-06 0845	Received By/Stored In: R Voeks Date/Time 12/20/06 0845
Relinquished By/Removed From: R Voeks Date/Time 12/20/06 1500	Received By/Stored In: Fed Ex Date/Time
Relinquished By/Removed From: FED EX Date/Time	Received By/Stored In: Date/Time 12-21-06 1315
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

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B 1728-12 COC SEALS INTACT.
5.8°C.
on ice

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: David W. Coleman	Title	Date/Time 12-21-06 1315
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-082-63	Page 1 of 1

Collector B. TILLER R. C. [illegible]	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code	Data Turnaround 21 Days	Air Quality ☐	
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 4c Aq	SAF No. RC-082	
Ice Chest No. GRP-03-014	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ DAS 12/20/2006 FED EX
Shipped To CH2MHill - Corvallis	Offsite Property No. AO 70128		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions. ~~B14~~ ~~1728-13~~ BP	Sediment Invertebrate Toxicity ASTM E1706 B14 1728-13	Sediment Phytotoxicity EEDP-04-11 BP 1728-13								

Sample No.	Matrix *	Sample Date	Sample Time											
J13V50	OTHER SOLID	12-19-06	1224	X	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From R. C. [illegible] R. C. [illegible]	1605 12-19-06	Received By/Stored In EAS LOCKED STORAGE	1605 12-19-06
Relinquished By/Removed From EAS LOCKED STORAGE	0845 12-20-06	Received By/Stored In R Vokes [illegible]	12/20/06 0845
Relinquished By/Removed From R Vokes [illegible]	12/20/06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX.		Received By/Stored In [illegible]	12-21-06
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-13 COC SEALS INTACT 5.2°C on ice

Matrix *
SeSoil
SE=Sediment
SO=Solid
SlSludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Va=Vegetation
X=Other

LABORATORY SECTION	Received By [illegible]	Title	Date/Time 12-21-06 1315
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
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx. Express

Ship Date: 20DEC06
ActWgt: 133 LB
System#: 5851986/INET2500
Account#: S *********

REF: BESBEA 6520

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL THIRD PARTY

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

THU
Deliver By:
21DEC06

TRK# 7929 0413 6380 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

Shipping Label

View all labels

Place label in shipping label 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 1728-10
-11
-12
-13

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-23	Page 1 of 1

Collector: B. TILLER R. Curet	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: Air Quality ☐	Data Turnaround: 21 Days		
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA BEV REF 2		SAF No.: RC-082
Ice Chest No.: AFS-04-007	Field Logbook No.: EL-1612	COA: BESBEA6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A070129		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TW6	OTHER SOLID	12-20-06	1215	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: EAS R. Curet R. Curet	Date/Time: 1240 12-20-06	Received By/Stored In: Jackie Queen/WCH	Date/Time: 12-20-06/1240
Relinquished By/Removed From: Jackie M. Queen/WCH/	Date/Time: 12-20-06/1400	Received By/Stored In: JAMES BERNHARD	Date/Time: 12-20-06
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 1500 12-20-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 1500 12-20-06
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 0900 12-21-06	Received By/Stored In: Rob Ricks	Date/Time: 12/21/06 0900
Relinquished By/Removed From: WCH Rob Ricks	Date/Time: 12/21/06 1030	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In:	Date/Time: 12/27/06 0830

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-14 COC seals intact, samples on ice @ 0.3°C

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
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By:	Title: Assoc. Sci	Date/Time: 12/27/06
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-082-57	Page 1 of 1

Collector B. TILLER R. Cuvet	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2b Aq		SAF No. RC-082
Ice Chest No. AFS-04-007	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT
Shipped To CH2MHill - Corvallis	Offsite Property No. A070129		Bill of Lading/Air Bill No. SEE OSPC

Price Code: Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity BBDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J13V44	OTHER SOLID	12-20-06	1430	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From R. Cuvet R. Cuvet	1630 12-20-06	Received By/Stored In R. Cuvet EAS LOCKED STORAGE	1630 12-20-06
Relinquished By/Removed From EAS LOCKED STORAGE	0900 12-21-06	Received By/Stored In R Voeks	12/21/06 0900
Relinquished By/Removed From R Voeks	12/21/06 1030	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In T. Mary	12/27/06 0830
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

3 1728-15, COC seals intact, Samples on ice @ 0.9°C

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 T. Mary	Title Assoc. Sci	Date/Time 12/27/06 0830
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
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx Express

Ship Date: 21DEC06
ActWgt: 87 LB
System#: 5851986/INET2500
Account#: S *********

REF: BESBEA 6520 / A070129

Delivery Address Bar Code

SHIP TO: (541)752-4271 BILL SENDER

LIZ TEPPER
CH2M HILL
APPLIED SCIENCE LABORATORY
2300 NW WALNUT BLVD.
CORVALLIS, OR 97339

PRIORITY OVERNIGHT

FRI
Deliver By:
22DEC06

TRK# 7990 5874 1514 FORM 0201

PDX AA

97339 -OR-US

86 CVOA

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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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B1729-149.5

Received 12-27-06 Bm

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-24	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2fAq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. SAW5-114	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex 12/28/06		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070130		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TW7	OTHER SOLID	12-22-06	12:50	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JAMES BERNHARD	12-22-06 1515	Received By/Stored In EAS LOCKED STORAGE	12-22-06 1515
Relinquished By/Removed From EAS LOCKED STORAGE	12-28-06 0940	Received By/Stored In Rob Voeks	12/28/06 0940
Relinquished By/Removed From Rob Voeks	12/28/06 1030	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/29/06 1010
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-16, COC seals intact
4.8°C on arrival

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
Ts=Tissue
Wi=Wipe
La=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title Assoc. Sci.	Date/Time 12/29/06 1010
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
for the U.S. Dept. of Energy
2355 STEVENS DR BLDG 1162
RICHLAND, WA 99352

FedEx Express

Ship Date: 28DEC06
ActWgt: 41 LB
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Account#: S *********

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B1728-16

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BIOASSAY REPORT
CHRONIC SCREENING BIOASSAYS
Conducted December 21, 2006, through January 18, 2007

Prepared for

ELR CONSULTING, INC.
WASHINGTON CLOSURE HANFORD
RICHLAND, WASHINGTON

Prepared by

CH2M HILL
2300 NW Walnut Boulevard
Corvallis, Oregon 97330

February 1, 2007
Lab I.D. Nos. B1728-01 thru 09
SDG Number BH1728a

F3158
RC-082

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INTRODUCTION

CH2M HILL conducted 28-day chronic screening bioassay tests using the amphipod (*Hyalella azteca*) on sediment samples provided by the ELR Consulting for Washington Closure Hanford, Richland, Washington. The tests were conducted from December 21, 2006, through January 18, 2007.

METHODS AND MATERIALS

TEST METHODS

The amphipod tests were performed according to: *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*, ASTM E1706-05; and *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates – Second Edition* (2000); EPA/600/R-99/064.

TEST ORGANISMS

The amphipods used in the sediment tests were obtained from Chesapeake Cultures, Nayes, Virginia, and were 7 to 8 days old (approx 1.8 to 2.0 mm in length) at test initiation. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by ASTM and EPA. The test organisms appeared vigorous and in good condition prior to testing.

OVERLYING WATER

The water used for test organism acclimation and as overlying water during the static testing for the amphipods was reconstituted moderately hard water with a total hardness of 80 to 100 mg/L as $CaCO_3$ and an alkalinity of 60 to 70 mg/L as $CaCO_3$.

TEST CONCENTRATIONS

The concentration tested in the *Hyalella azteca* tests was 100 percent sample sediment with Beaver Creek sediment as laboratory control.

The control and test samples were randomly assigned to test chambers to avoid spatial (light, temperature, feeding, etc) and observational bias during testing.

SAMPLE COLLECTION

Individual sediment samples used during the testing were collected between November 28 and December 13, 2006. The samples were stored in the dark at 4°C until the initiation of the initiation of the tests. Chain of Custody for sample collection is provided in Appendix C.

SAMPLE CROSS-REFERENCE TABLES

Table 1 provides a cross-reference of the sample numbers, sampling dates, and sampling locations as listed on the chain of custody forms. Also included is the associated Amphipod test sample identification (SDG) numbers and Analytical Lab SDG numbers as assigned by CH2M HILL Applied Sciences Laboratory.

Table 1
Sample Cross-Reference
For Tests Initiated on December 18, 2006

Sample Number	Sample Date	Sampling Location	Amphipod Test SDG	Analytical Lab SDG
J13TD0	11/28/2006	RCBRA BEV REF 1	BH1728-01	F3128-01
J13TC9	11/28/2006	RCBRA 1a Aq	BH1728-02	F3128-02
J13TV9	11/29/2006	RCBRA 2c Aq	BH1728-03	F3128-03
J13TF1	11/28/2006	RCBRA 2a Aq	BH1728-04	F3128-04
J13TW5	12/04/2006	RCBRA 5d Aq	BH1728-05	F3128-05
J13V47	12/12/2006	RCBRA 3b Aq	BH1728-06	F3132-01
J13TD6	12/12/2006	RCBRA 2l Aq	BH1728-07	F3132-02
J13TV8	12/12/2006	RCBRA 2l Aq	BH1728-08	F3132-03
J13V46	12/13/2006	RCBRA 2m Aq	BH1728-09	F3158-01

SAMPLE PREPARATION

For the *Hyalella azteca* sediment bioassays, 100 g of sediment was placed in a test chamber, 175 ml of overlying water was then added and allowed to stand overnight prior to adding test organisms. Once the test was initiated (i.e., when organisms were added), the overlying water was carefully renewed twice daily at approximately 12 hours apart.

MONITORING OF BIOASSAYS

The amphipod tests were monitored at initiation and termination for dissolved oxygen, pH, conductivity, total hardness, alkalinity, ammonia, and temperature. During the tests, dissolved oxygen and pH were monitored every 3 days, conductivity was measured every 7 days and temperature was monitored every 24 hours within the test chambers. In addition, temperature was monitored in the water bath continuously throughout the testing period. Survival was determined at test termination and growth was measured by dry weight analysis.

DATA ANALYSIS

The effects measured during the amphipod chronic test included survival and growth (determined by mean dry weight per surviving organism) over the 28-day exposure period. The statistical analyses performed were those outlined in *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*, ASTM E1706-05; and *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates – Second Edition* (2000); EPA/600/R-99/064, using CETIS version 1.1.2. Equal variance t Two-Sample Test was used to compare the survival and growth 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 Mann-Whitney U test was used to analyze the data. All statistics were analyzed at the $p = 0.05$ level.

Table 2:
***Hyallela azteca* Chronic Test Results**
for Washington Closure Hanford
Initiated on December 21, 2006

E, significantly different from lab control by use of Equal Variance t Two-Sample Test

ns indicates a non statisticaly significant result; [5], indicates significant at alpha (p) = 0.05;

--, indicates no statistical test performed. NA = data not available.

Lab ID:	Sample Number:	*Hyallela azteca* Survival Endpoint Percent Survival	Statistically significant difference when compared to Lab Control?	*Hyallela azteca* Growth Endpoint Growth per surviving organism (mg)	Statistically significant difference when compared to Lab Control?
Tests initiated on December 21, 2006					
Laboratory Control		90	--	0.146	--
BH1728-01	J13TD0	94	ns	0.294	ns
BH1728-02	J13TC9	86	ns	0.177	ns
BH1728-03	J13TV9	94	ns	0.208	ns
BH1728-04	J13TF1	78	ns	0.286	ns
BH1728-05	J13TW5	92	ns	0.135	ns
BH1728-06	J13V47	100	ns	0.372	ns
BH1728-07	J13TD6	60	E [5]	0.158	ns
BH1728-08	J13TV8	56	E [5]	0.156	ns
BH1728-09	J13V46	74	E [5]	0.199	ns

REFERENCE TOXICANT TESTS

The data sheets for the reference toxicant tests are provided in Appendix B. The test results indicate that the test organisms were within their respective sensitivity range based on EPA guidelines.

Table 3
Reference Toxicant Tests
(Cadmium μg/L)

Species	LC_{50}	Control Chart
Hyallela azteca	4.6	2.8 to 8.3

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: SAMPLE, TEST ORGANISM, AND DILUTION WATER DATA*

Client: ELR - Hanford — Test Initiation: Date 12-21-2006

Contact: — Test Termination: Date 01-18-2007

Technician(s): P. Hengers, McKay, Winn, Stanaway, Johnson, Oldham

Sample ID Number	Field ID	Collected Date (mm/dd/yy)	Collected Time	Date Received	Date sediment added to test chambers	Ammonia NH_3-N mg/L 0 days / 28 days	Hardness mg/l as $CaCO_3$ 0 days / 28 days	Alkalinity mg/l as $CaCO_3$ 0 days / 28 days
BH1728-01	J13TD0	~~12/20/06~~ 11/28/06	1215	12/5/06	12-20-2006	0.15 / 0.09	96 / 102	80 / 78
BH1728-02	J13TC9	11/28/06	1345	12/5/06		0.31 / 0.19	110 / 116	84 / 82
BH1728-03	J13TV9	11/29/06	1355	12/5/06		0.01 / 0.10	100 / 108	86 / 80
BH1728-04	J13TF1	11/28/06	1435	12/5/06		0.18 / 0.40	110 / 106	86 / 76
BH1728-05	J13TW5	12/4/06	1230	12/6/06		0.01 / 0.02	98 / 106	80 / ~~82~~ 76
BH1728-06	J13V47	12/12/06	0845	12/14/06		0.04 / 0.36	104 / 108	80 / 82
BH1728-07	J13TD6	12/12/06	0915	12/14/06		0.29 / 0.05	114 / 108	88 / 74
BH1728-08	J13TV8	12/12/06	0920	12/14/06		0.13 / 0.08	100 / 104	84 / 72
BH1728-09	J13V46	12/13/06	1100	12/15/06		0.14 / 0.07	108 / 104	78 / 74
	BEAKER CHECK					0.27 / 0.00	90 / 106	70 / 74

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Comments: ☑ Indicates the action was taken, (☐= action not taken):
				test chamber 4B at time 0 had a worm-like organism present 12/21/06 (PP)
Recon MH (RBT)	2746	96	74	NH_3 in Control & others: 0.27 mg/L NH_3-N

Test Species Information	AMP # 60 *Hyallela azteca* 28 Day Chronic				
Organism Age at Initiation	7 to 8 days				
Test Container Size	300 ml				
Test Sediment Volume	100 ml				
Dilution Water (Overlying) Volume	175 ml				
Feeding: Type and Amount	1.0 ml YCT daily				
Aeration: n Test Chambers via Slow Bubble :	☒ None ☐ @ _____ hrs				
Dilution Water ID#	2746				
Acclimation Period	<24 hrs				
Test Location	# 12				
Organism Source	Chesapeak Cultures				
Size	—				
Dry Weight @ Initiation	0.055 mg/organism				

Water Quality Meters Used/ID#: Dissolved Oxygen #3 pH #3 Conductivity #2

Lab ID:	Field Sample Numb	Station Location	Replicate ID:	Random number	test chamber number:
Sediment Control	Beaver Creek	Control	E	0.846472033	7
Sediment Control	Beaver Creek	Control	A	0.785809386	11
Sediment Control	Beaver Creek	Control	B	0.785777661	12
Sediment Control	Beaver Creek	Control	D	0.605776887	20
Sediment Control	Beaver Creek	Control	C	0.135800138	39
BH1728-09	J13V46	0	D	0.834300393	8
BH1728-09	J13V46	0	C	0.789576874	10
BH1728-09	J13V46	0	E	0.063386699	44
BH1728-09	J13V46	0	A	0.058035561	45
BH1728-09	J13V46	0	B	0.04942218	46
BH1728-08	J13TV8	0	B	0.745371649	14
BH1728-08	J13TV8	0	C	0.396886827	33
BH1728-08	J13TV8	0	A	0.132222727	40
BH1728-08	J13TV8	0	E	0.115819361	42
BH1728-08	J13TV8	0	D	0.099185826	43
BH1728-07	J13TD6	0	D	0.585797998	23
BH1728-07	J13TD6	0	E	0.539303593	25
BH1728-07	J13TD6	0	A	0.534123862	26
BH1728-07	J13TD6	0	B	0.492530724	29
BH1728-07	J13TD6	0	C	0.397735976	32
BH1728-06	J13V47	0	B	0.996255492	1
BH1728-06	J13V47	0	D	0.931541651	3
BH1728-06	J13V47	0	E	0.864780298	4
BH1728-06	J13V47	0	A	0.404725432	31
BH1728-06	J13V47	0	C	0.148821068	38
BH1728-05	J13TW5	0	C	0.848171472	6
BH1728-05	J13TW5	0	E	0.67459077	16
BH1728-05	J13TW5	0	B	0.502804842	28
BH1728-05	J13TW5	0	D	0.209300685	35
BH1728-05	J13TW5	0	A	0.205876898	36
BH1728-04	J13TF1	0	E	0.94544923	2
BH1728-04	J13TF1	0	C	0.674123611	17
BH1728-04	J13TF1	0	A	0.518545379	27
BH1728-04	J13TF1	0	B	0.417550808	30
BH1728-04	J13TF1	0	D	0.027981849	47
BH1728-03	J13TV9	0	D	0.852179837	5
BH1728-03	J13TV9	0	B	0.765151201	13
BH1728-03	J13TV9	0	C	0.642437476	18
BH1728-03	J13TV9	0	A	0.581788147	24
BH1728-03	J13TV9	0	E	0.180703701	37
BH1728-02	J13TC9	0	A	0.819676468	9
BH1728-02	J13TC9	0	E	0.606211081	19
BH1728-02	J13TC9	0	B	0.588735773	21
BH1728-02	J13TC9	0	D	0.586703511	22
BH1728-02	J13TC9	0	C	0.124941621	41
BH1728-01	J13TD0	0	C	0.677886449	15
BH1728-01	J13TD0	0	D	0.217935942	34
BH1728-01	J13TD0	0	E	0.020400182	48
BH1728-01	J13TD0	0	A	0.017265849	49
BH1728-01	J13TD0	0	B	0.011404057	50

CH2M HILL

FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: ELR - Hanford

Sample Description: See Cross Reference Sheet batch Number B# 1728 -

Test Species: Hyallela azteca

ID#: Amp 60

Beginning, Date: 12-21-2006 Time: 1015

Ending, Date: 01-13-2007 Time: —

AM change:	Tech.	Day 0	Bm	Day 1	DW	Day 2	[illegible]	Day 3	[illegible]	Day 4	NJ	Day 5	MS	Day 6	MS	Day 7	[illegible]	Day 8	DW	Day 9	[illegible]
	Time	Day 0	1015	Day 1	0700	Day 2	0800	Day 3	0745	Day 4	0630	Day 5	0640	Day 6	0710	Day 7	0715	Day 8	0700	Day 9	0745
PM change:	Tech.	Day 0	[illegible]	Day 1	[illegible]	Day 2	[illegible]	Day 3	NJ	Day 4	NJ	Day 5	[illegible]	Day 6	Bm	Day 7	[illegible]	Day 8	DW	Day 9	[illegible]
	Time	Day 0	1545	Day 1	1630	Day 2	1540	Day 3	1710	Day 4	1630	Day 5	1630	Day 6	1700	Day 7	1600	Day 8	1630	Day 9	1800
Feeding: ✓ when done		Day 0	✓	Day 1	✓	Day 2	✓	Day 3	✓	Day 4	✓	Day 5	✓	Day 6	✓	Day 7	✓	Day 8	✓	Day 9	✓

Beaker Number	Dissolved Oxygen (mg/l)										Temperature (°C)										pH				Conductivity (µmohs/cm)	
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	3	6	9	0	7
9	7.9			6.9			6.5			6.6	22.8	22.4	23.1	23.2	22.9	22.8	22.9	23.0	23.3	23.4	7.4	7.2	7.1	7.2	~~496~~ 337	334
11	7.6			6.6			6.2			6.8	23.2	22.7	23.7	23.8	23.0	23.1	23.0	23.7	23.8	23.5	7.3	7.1	7.2	7.2	496	340
24	7.6			6.4			6.2			6.1	23.3	22.4	23.6	23.5	22.8	23.0	23.1	23.6	23.6	23.5	7.4	7.0	7.1	7.2	328	336
26	7.4			6.4			5.9			6.1	23.4	22.5	23.8	23.6	23.1	23.1	23.1	23.7	23.6	23.6	7.2	7.0	7.0	7.1	327	343
27	7.5			6.3			5.7			6.0	23.2	22.7	23.8	23.2	22.9	22.8	22.9	23.6	23.5	23.4	7.2	6.9	7.0	7.1	334	349
31	7.4			6.2			5.1			5.4	23.1	22.7	23.4	23.3	23.0	23.1	22.7	23.4	23.8	23.8	7.2	6.9	7.0	7.1	324	371
36	7.6			6.6			6.0			5.9	23.4	22.5	23.8	23.7	23.2	23.2	23.3	23.8	23.6	23.6	7.5	7.1	7.1	7.0	322	339
40	7.4			6.4			5.9			5.8	23.2	22.4	23.7	23.5	23.6	23.3	23.1	23.7	23.7	23.9	7.3	7.0	7.0	7.1	325	348
45	7.7			6.2			5.5			5.6	23.3	22.3	23.6	23.4	22.8	23.1	23.1	23.6	23.5	23.6	7.4	6.9	6.9	7.0	327	351
49	7.7			6.6			5.7			5.6	23.1	22.2	23.3	23.2	23.3	23.2	23.2	23.4	23.2	23.4	7.6	7.1	7.0	7.1	331	344

CH2M HILL

FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: ELR - Hanford

Sample Description: See Cross Reference Sheet batch Number B #1728

Test Species: Hyallela azteca

ID#:

Amp

Beginning, Date: 12-21-2006 Time: —

Ending, Date: 01-18-2007 Time: —

	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19
AM change: Tech.	[illegible]	[illegible]	[illegible]	[illegible]	MS	[illegible]	NJ	NJ	[illegible]	DW
Time	0800	0730	0730	0850	0720	0730	0930	0750	0730	0700
PM change: Tech.	[illegible]	[illegible]	[illegible]	[illegible]	NJ	NJ	NJ	NJ	[illegible]	NJ
Time	1900	1745	1615	1615	1530	1607	1810	1600	1650	1610
Feeding: ✓ when done	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Beaker Number	Dissolved Oxygen (mg/l)										Temperature (°C)										pH			Conductivity (µmohs/cm)	
	10	11	12	13	14	15	16	17	18	19	10	11	12	13	14	15	16	17	18	19	12	15	18	14	
9			6.9			6.8			6.5		22.9	23.0	23.4	23.0	24.1	22.5	22.3	22.2	22.1	22.1	7.2	7.1	7.0		
11			6.8			6.7			6.4		22.9	22.7	23.9	23.7	24.2	22.7	22.7	22.5	22.5	22.0	7.2	7.1	6.9		
24			7.0			6.9			6.6		23.1	22.9	23.8	23.7	24.3	22.2	22.6	22.4	22.3	22.4	7.2	7.1	7.0		
26			6.4			6.4			6.0		23.4	23.1	23.8	23.9	24.1	22.1	22.6	22.4	22.3	22.0	7.1	7.0	6.9		
27			6.5			6.2			6.1		23.3	23.2	23.6	23.6	24.0	22.0	22.4	22.3	22.2	22.0	7.0	6.9	6.8		
31			6.2			5.7			5.2		22.8	23.1	23.2	23.3	24.2	21.9	22.5	22.1	22.1	22.3	7.0	6.8	6.7		
36			6.3			6.5			6.4		23.0	22.8	23.9	23.9	24.0	22.1	22.6	22.5	22.2	21.9	7.0	7.0	6.9		
40			6.3			6.4			6.4		22.9	22.9	23.7	23.7	24.3	22.1	22.5	22.4	22.3	22.1	7.0	7.0	6.8		
45			6.6			6.9			6.2		22.8	22.9	23.8	23.8	24.1	22.1	22.5	22.4	22.2	22.0	7.1	7.1	6.9		
49			6.8			6.7			6.2		22.7	22.7	23.5	23.4	24.0	22.2	22.4	22.3	22.1	22.1	7.1	7.1	6.9		

CH2M HILL

FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: ELR - Hanford

Sample Description: See Cross Reference Sheet batch Number B # 1728

Test Species: Hyallela azteca

ID#: Amp

Beginning, Date: 12-21-2006 Time: –

Ending, Date: 1-15-07 Time: –

AM change:	Tech.	Day 20	DW	Day 21	DW	Day 22	[illegible]	Day 23	[illegible]	Day 24	Bm	Day 25	NJ	Day 26	[illegible]	Day 27	[illegible]	Day 28	[illegible]
	Time	Day 20	0700	Day 21	0700	Day 22	0700	Day 23	0730	Day 24	0730	Day 25	0805	Day 26	0630	Day 27	0700	Day 28	0730
PM change:	Tech.	Day 20	[illegible]	Day 21	Bm	Day 22	[illegible]	Day 23	[illegible]	Day 24	Bm	Day 25	NJ	Day 26	DW	Day 27	[illegible]		
	Time	Day 20	1550	Day 21	1700	Day 22	1500	Day 23	1540	Day 24	1325	Day 25	1615	Day 26	1630	Day 27	1615		
Feeding: ✓ when done		Day 20	✓	Day 21	✓	Day 22	✓	D Day 23	✓	Day 24	✓	Day 25	✓	Day 26	✓	Day 27	✓		

Beaker Number	Dissolved Oxygen (mg/l)										Temperature (°C)										pH				Conductivity (µmohs/cm)	
	20	21	22	23	24	25	26	27	28		20	21	22	23	24	25	26	27	28		21	24	26	28	21	28
9		7.8		6.8	7.1		6.1		7.1		22.0	22.1	22.7	22.0	21.9	21.8	22.8	23.1	23.1		7.2	7.1	7.0	7.0	326	298
11		7.7		7.5	7.0		6.2		6.8		22.2	22.3	22.3	22.4	22.1	22.3	22.5	23.0	23.4		7.3	7.0	6.9	6.9	320	304
24		7.7		6.9	7.0		6.3		6.8		22.3	22.0	22.0	22.2	21.9	22.2	22.3	22.8	22.9		7.3	7.0	6.9	7.0	325	306
26		7.6		6.2	6.9		5.6		6.3		21.9	22.3	22.1	22.3	22.0	22.1	22.2	22.9	22.9		7.3	6.9	6.8	6.8	326	304
27		7.6		6.9	6.9		5.7		6.2		22.0	22.1	22.1	22.0	21.9	22.0	22.0	22.7	22.8		7.3	6.9	6.8	6.9	333	308
31		7.6		6.5	6.8		5.2		5.5		22.1	22.1	22.2	22.4	21.6	21.6	22.3	22.4	22.4		7.2	6.8	6.7	6.8	343	317
36		7.6		6.1	6.9		5.6		6.2		22.3	22.1	22.1	22.4	22.0	22.2	22.3	22.8	22.9		7.3	6.9	6.8	6.9	326	304
40		7.7		6.5	6.9		5.6		6.5		22.0	22.0	22.7	22.2	21.9	22.0	22.2	22.8	22.8		7.3	6.9	6.8	6.9	325	304
45		7.7		6.3	6.9		5.8		6.6		22.1	22.3	22.8	22.1	21.9	22.1	22.2	22.9	22.8		7.4	6.9	6.9	7.0	336	310
49		7.7		6.5			6.1		6.6		22.1	22.1	22.5	22.1	21.9	21.9	22.1	22.7	22.7		7.5	6.9	6.9	7.0	335	313

CH2M HILL

FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client ELR - Hanford

Sample Description see randomization sheet. Batch number: B H 1728

Test Species: Hyallela azteca ID#: AMP 60

Beginning, Date 12-21-06 Time 1015

Ending, Date 1-18-2007 Time 0830

Test Initiation: Tech: Tech: Time: 1015

Test Termination: Tech: Tech: M.S Time: 0830

Beaker Number	Start Count 0	# alive found 10	# dead found 10	Comments:
1	10	10	0	
2	10	10	0	
3	10	10	0	
4	10	10	0	
5	10	9	0	
6	10	8	0	
7	10	8	0	
8	10	7	0	
9	10	8	0	
10	10	10	0	
11	10	9	0	
12	10	9	0	
13	10	10	0	
14	10	9	0	
15	10	9	0	

Beaker Number	Start Count 0	# alive found 10	# dead found 10	Comments:
16	10	10	0	
17	10	8	0	
18	10	9	0	
19	10	10	0	
20	10	10	0	
21	10	9	0	
22	10	8	0	
23	10	4	0	
24	10	10	0	
25	10	7	0	

CH2M HILL

FRESHWATER TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Client: ELR - Hanford

Sample Description: see randomization sheet. Batch number: BH1728-

Test Species: Hyallela azteca ID#: AMP 60

Beginning, Date: 12-21-07 Time: 1015

Ending, Date: 1-18-07 Time: 1050

Test Initiation: Tech: Tech: Bu Time: 1015

Test Termination: Tech: Tech: MS Time: 1050

Beaker Number	Start Count 0	# alive found 10	# dead found 10	Comments:
26	10	5	0	
27	10	7	0	
28	10	9	0	
29	10	6	0	
30	10	8	0	
31	10	10	0	
32	10	6	0	
33	10	2	0	
34	10	10	0	
35	10	9	0	
36	10	10	0	
37	10	9	0	
38	10	10	0	
39	10	9	0	
40	10	7	0	

Beaker Number	Start Count 0	# alive found 10	# dead found 10	Comments:
41	10	8	0	
42	10	8	0	
43	10	2	0	
44	10	7	0	
45	10	7	0	
46	10	6	0	
47	10	6	0	
48	10	9	0	
49	10	9	0	
50	10	10	0	

HYALLELA AZTECA GROWTH DATA

Client: ELR - Hanford Species ID#: AMP 60

Lab ID: BH1728 Start Date: 12/21/2006

Sample Description: See Cross Reference

Technician: TP NJ

Date: 1/22/2007 12/22/2006

Tin ID Number	Total Weight (mg)	Tare Weight (mg)	No. of Amphipods Surviving	No. of Amphipods in Tin
1	71.86	67.82	10	10
2	69.99	67.09	10	10
3	71.93	67.29	10	10
4	70.57	67.42	10	10
5	69.76	67.77	9	9
6	68.55	67.48	8	8
7	68.41	67.31	8	8
8	69.39	67.76	7	7
9	68.28	66.88	8	8
10	69.67	68.05	10	10
11	68.46	67.02	9	9
12	68.3	67.28	9	9
13	68.98	67.04	10	10
14	69.03	67.69	9	9
15	70.06	67.29	9	9
16	69.86	68.28	10	10
17	69.95	67.66	8	8
18	69.35	67.08	9	9
19	69.38	67.62	10	10
20	68.55	67.13	10	10
21	68.98	67.39	9	9
22	68.51	67.14	8	8
23	67.99	67.35	4	4
24	69.41	67.39	10	10
25	68	66.55	7	7

HYALLELA AZTECA GROWTH DATA

Client: ELR - Hanford Species ID#: AMP 60

Lab ID: BH1728 Start Date: 12/21/2006

Sample Description: See Cross Reference

Technician: TP NJ

Date: 1/22/2007 12/22/2006

Tin ID Number	Total Weight (mg)	Tare Weight (mg)	No. of Amphipods Surviving	No. of Amphipods in Tin
26	68.73	68.06	5	5
27	69.05	67.40	7	7
28	66.92	65.80	9	9
29	68.16	67.27	8	8
30	69.94	67.11	8	8
31	70.98	67.04	10	10
32	67.94	66.87	6	6
33	68.01	67.71	2	2
34	73.9	70.99	10	10
35	68.42	67.30	9	9
36	69.12	67.77	10	10
37	68.64	67.12	9	9
38	70.07	67.25	10	10
39	68.89	67.29	9	9
40	68.05	67.13	7	7
41	69.34	67.85	8	8
42	68.79	66.99	8	8
43	67.76	67.51	2	2
44	68.63	67.18	7	7
45	69.28	67.65	7	7
46	68.08	67.13	6	6
47	69.48	67.88	6	6
48	68.95	66.95	9	8
49	70.56	67.69	9	9
50	70.98	67.95	10	10

CETIS Test Summary

Report Date: 23 Jan-07 2:57 PM
Test Link: 17-4748-1376/B172801hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	18-7794-3208	**Code:**	B1728-01	**Client:**	
Sample Date:	05 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	16d 0h	**Station:**			

Comments: J13TD0

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-1326-4242	28d Mean Dry Weight	100	> 100	N/A	20.51%	Equal Variance t Two-Sample
08-7152-2393	28d Proportion Survived	100	> 100	N/A	8.54%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-7152-2393	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.29413	0.25000	0.31889	0.01191	0.02662	9.05%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.94000	0.90000	1.00000	0.02449	0.05477	5.83%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.16000 ✓	0.11333	0.17778	0.14200	0.13750
100		0.31889	0.30300	0.30778	0.29100	0.25000

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.90000 ✓	0.90000	0.90000	1.00000	0.80000
100		0.90000	1.00000	0.90000	1.00000	0.90000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	17-4748-1376	17-4748-1376	23 Jan-07 2:56 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	8.54%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-0.9734	1.85955	0.8206	0.11648	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0092944	0.009294	1	0.95	0.35887	Non-Significant Effect
Error	0.0784765	0.00981	8			
Total	0.08777090	0.019104	9			

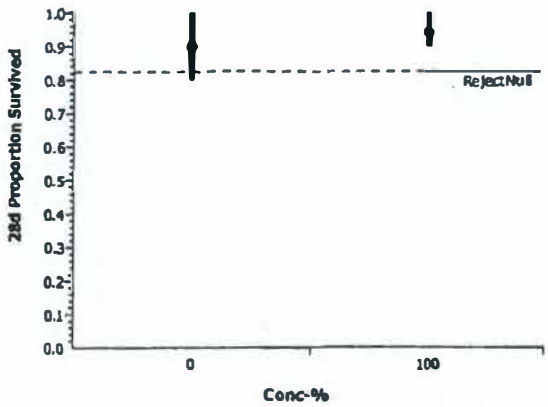
ANOVA Assumptions

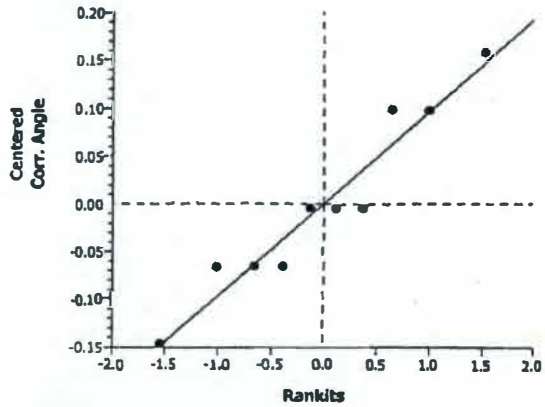
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.46230	23.15450	0.72168	Equal Variances
Distribution	Shapiro-Wilk W	0.93541		0.50317	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.94000	0.90000	1.00000	0.05477	1.31423	1.24905	1.41202	0.08926

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	17-4748-1376	17-4748-1376	23 Jan-07 2:57 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	20.51%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-9.1826	1.85955	1.0000	0.02997	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.054768	0.054768	1	84.32	0.00002	Significant Effect
Error	0.0051962	0.00065	8			
Total	0.05996418	0.0554175	9			

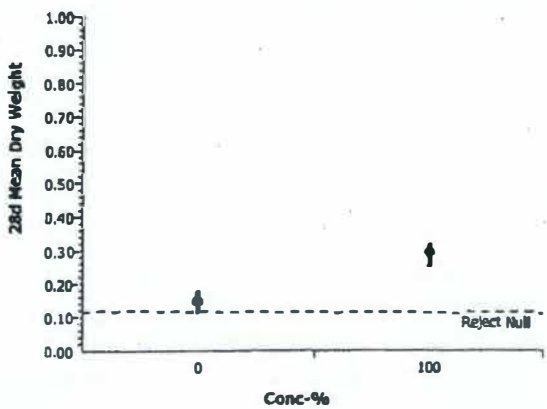
ANOVA Assumptions

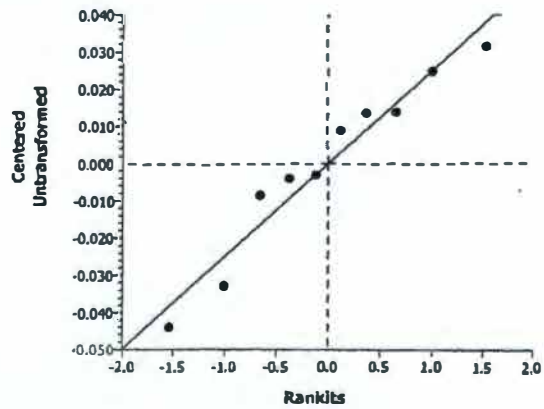
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.20080	23.15450	0.86352	Equal Variances
Distribution	Shapiro-Wilk W	0.94020		0.55527	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.29413	0.25000	0.31889	0.02662				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:01 PM
Test Link: 00-3618-9723/B172802hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	05-5194-8491	**Code:**	B1728-02	**Client:**	
Sample Date:	05 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	16d 0h	**Station:**			

Comments: J13TC9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
09-8348-4093	28d Mean Dry Weight	100	> 100	N/A	14.18%	Equal Variance t Two-Sample
02-1894-4189	28d Proportion Survived	100	> 100	N/A	10.91%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
02-1894-4189	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.17703	0.17125	0.18625	0.00249	0.00556	3.14%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.86000	0.80000	1.00000	0.04000	0.08944	10.40%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.17500	0.17667	0.18625	0.17125	0.17600

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Water	0.90000	0.90000	0.90000	1.00000	0.80000
100		0.80000	0.90000	0.80000	0.80000	1.00000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	00-3618-9723	00-3618-9723	23 Jan-07 3:00 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	10.91%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	0.73347	1.85955	0.2421	0.1439	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0080539	0.008054	1	0.54	0.48421	Non-Significant Effect
Error	0.1197645	0.014971	8			
Total	0.12781841	0.0230245	9			

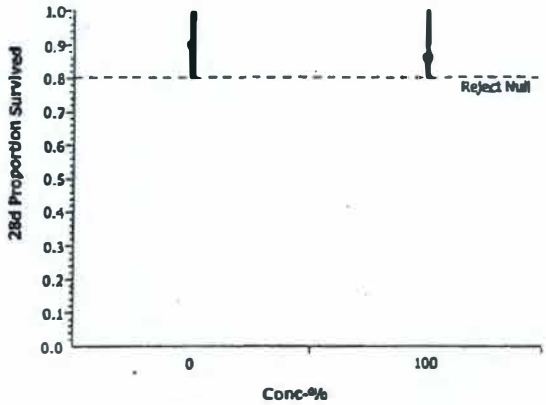
ANOVA Assumptions

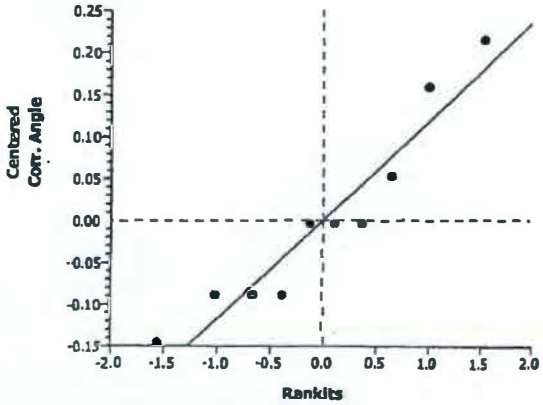
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.56976	23.15450	0.67287	Equal Variances
Distribution	Shapiro-Wilk W	0.90907		0.27463	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.86000	0.80000	1.00000	0.08944	1.19650	1.10715	1.41202	0.13524

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	00-3618-9723	00-3618-9723	23 Jan-07 3:01 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	14.18%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		100	-2.7732	1.85955	0.9879	0.02073	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0023887	0.002389	1	7.69	0.02418	Significant Effect
Error	0.0024848	0.000311	8			
Total	0.00487347	0.0026993	9			

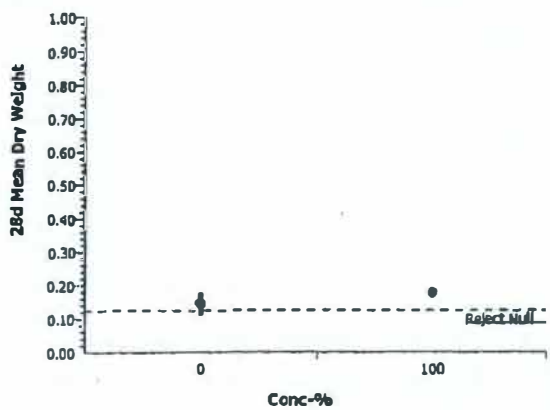
ANOVA Assumptions

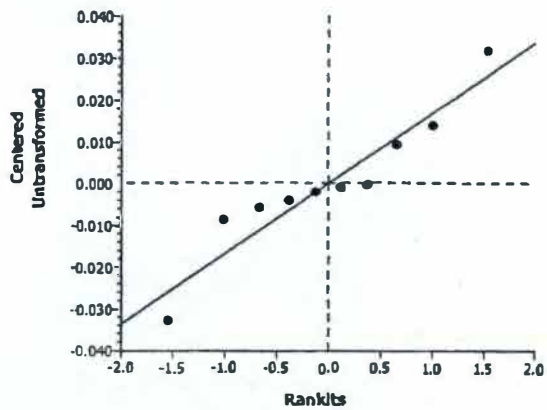
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	19.08364	23.15450	0.01438	Equal Variances
Distribution	Shapiro-Wilk W	0.93074		0.45519	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.17703	0.17125	0.18625	0.00558				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:03 PM
Test Link: 04-7224-3905/B172803hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	02-6948-5340	**Code:**	B1728-03	**Client:**	
Sample Date:	05 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	16d 0h	**Station:**			

Comments: J13TV9

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-3097-9840	28d Mean Dry Weight	100	> 100	N/A	22.50%	Equal Variance t Two-Sample
11-1051-7477	28d Proportion Survived	100	> 100	N/A	8.54%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
11-1051-7477	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.20764	0.16889	0.25222	0.01394	0.03118	15.02%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.94000	0.90000	1.00000	0.02449	0.05477	5.83%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.20200	0.19400	0.25222	0.22111	0.16889

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		1.00000	1.00000	0.90000	0.90000	0.90000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	04-7224-3905	04-7224-3905	23 Jan-07 3:03 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	8.54%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.9734	1.85955	0.8206	0.11648	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0092944	0.009294	1	0.95	0.35887	Non-Significant Effect
Error	0.0784765	0.00981	8			
Total	0.08777090	0.019104	9			

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.46230	23.15450	0.72168	Equal Variances
Distribution	Shapiro-Wilk W	0.93541		0.50317	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.94000	0.90000	1.00000	0.05477	1.31423	1.24905	1.41202	0.08926

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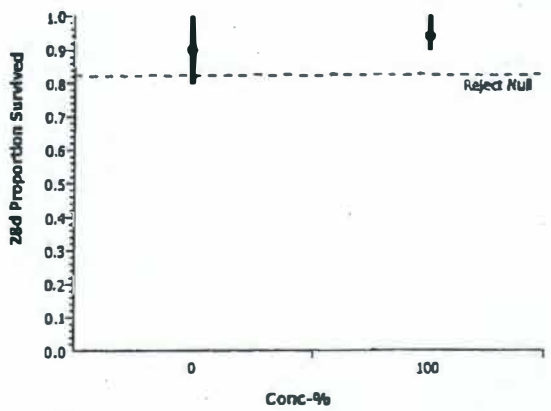
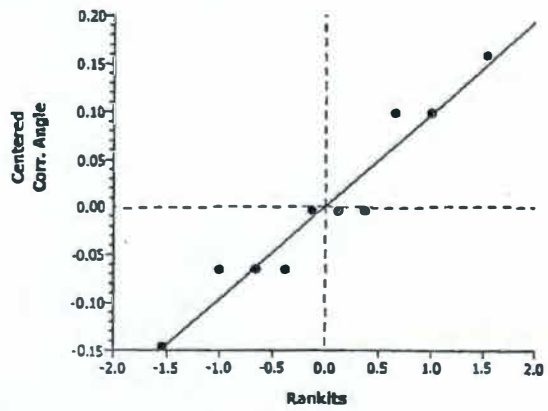




CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	04-7224-3905	04-7224-3905	23 Jan-07 3:03 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	22.50%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-3.4803	1.85955	0.9958	0.03287	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0094624	0.009462	1	12.11	0.00832	Significant Effect
Error	0.0062496	0.000781	8			
Total	0.01571199	0.0102436	9			

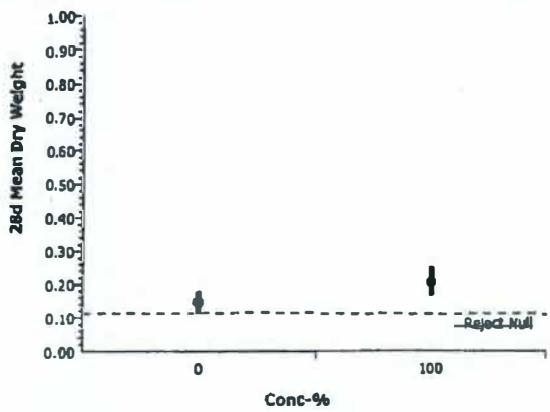
ANOVA Assumptions

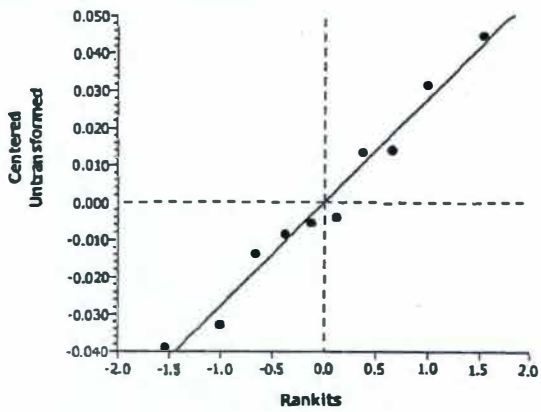
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.64695	23.15450	0.64068	Equal Variances
Distribution	Shapiro-Wilk W	0.96559		0.84717	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.20764	0.16889	0.25222	0.03118				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:04 PM
Test Link: 05-8018-2786/B172804hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	04-6333-1826	**Code:**	B1728-04	**Client:**	
Sample Date:	05 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	16d 0h	**Station:**			

Comments: J13TF1

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
00-5449-1515	28d Mean Dry Weight	100	> 100	N/A	28.27%	Equal Variance t Two-Sample
08-5998-9114	28d Proportion Survived	100	> 100	N/A	14.83%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-5998-9114	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.28648	0.23571	0.35375	0.01937	0.04332	15.12%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.78000	0.60000	1.00000	0.06633	0.14832	19.02%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.23571	0.35375	0.28625	0.26667	0.29000

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		0.70000	0.80000	0.80000	0.60000	1.00000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	05-8018-2786	05-8018-2786	23 Jan-07 3:04 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	14.83%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.51918	1.65955	0.0836	0.18673	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0581795	0.05818	1	2.31	0.16720	Non-Significant Effect
Error	0.2016689	0.025209	8			
Total	0.25984842	0.0833881	9			

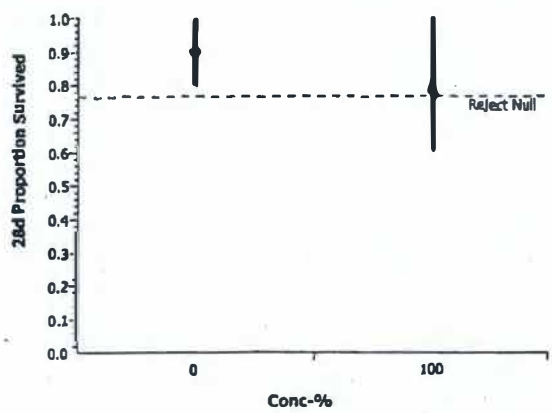
ANOVA Assumptions

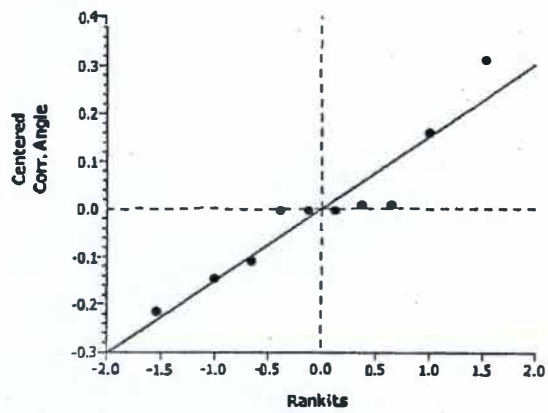
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.32717	23.15450	0.27107	Equal Variances
Distribution	Shapiro-Wilk W	0.90920		0.27553	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.78000	0.60000	1.00000	0.14832	1.10071	0.88608	1.41202	0.19689

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	05-8018-2786	05-8018-2786	23 Jan-07 3:04 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	28.27%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-6.3185	1.85955	0.9999	0.04131	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0492479	0.049248	1	39.92	0.00023	Significant Effect
Error	0.0098685	0.001234	8			
Total	0.05911638	0.0504815	9			

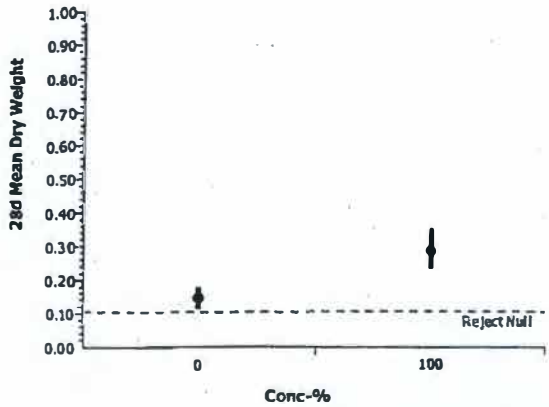
ANOVA Assumptions

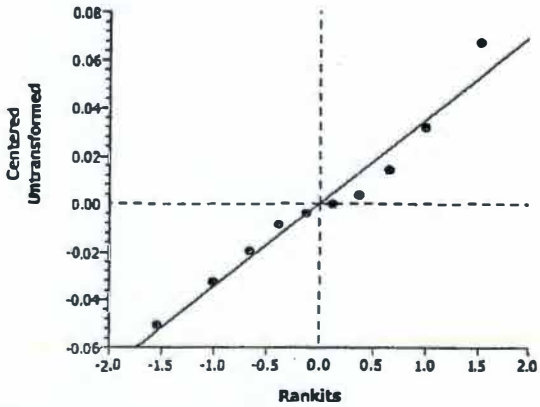
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.17967	23.15450	0.28867	Equal Variances
Distribution	Shapiro-Wilk W	0.96898		0.88120	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.28648	0.23571	0.35375	0.04332				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:06 PM
Test Link: 05-3968-8745/B172805hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	19-8204-3197	**Code:**	B1728-05	**Client:**	
Sample Date:	06 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	15d 0h	**Station:**			

Comments: J13TW5

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
11-2533-5274	28d Mean Dry Weight	100	> 100	N/A	15.88%	Equal Variance t Two-Sample
16-9078-4237	28d Proportion Survived	100	> 100	N/A	10.56%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
16-9078-4237	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.13513	0.12444	0.15800	0.00614	0.01372	10.16%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.92000	0.80000	1.00000	0.03742	0.08367	9.09%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.13500	0.12444	0.13375	0.12444	0.15800

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		1.00000	0.90000	0.80000	0.90000	1.00000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	05-3968-8745	05-3968-8745	23 Jan-07 3:06 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		100	>100	1	N/A	10.56%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.4335	1.85955	0.6619	0.13983	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0026559	0.002656	1	0.19	0.67613	Non-Significant Effect
Error	0.1130843	0.014136	8			
Total	0.11574025	0.0167915	9			

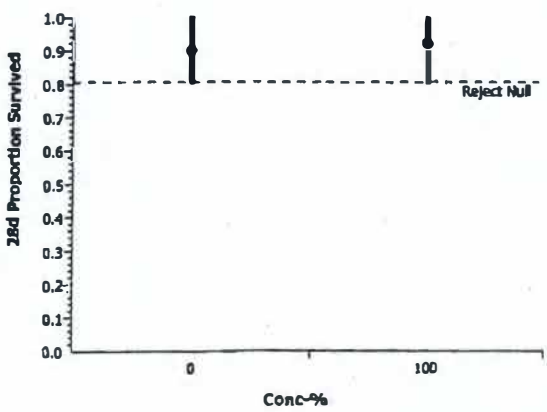
ANOVA Assumptions

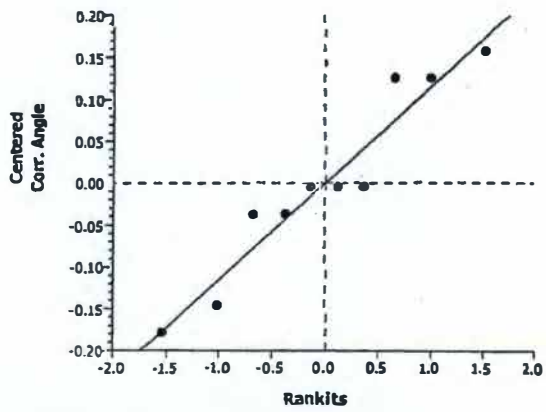
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	1.42643	23.15450	0.73910	Equal Variances
Distribution	Shapiro-Wilk W	0.91751		0.33663	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.92000	0.80000	1.00000	0.08367	1.28585	1.10715	1.41202	0.12892

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	05-3968-8745	05-3968-8745	23 Jan-07 3:06 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	15.88%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	0.88109	1.85955	0.2020	0.02320	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0003022	0.000302	1	0.78	0.40396	Non-Significant Effect
Error	0.0031144	0.000389	8			
Total	0.00341663	0.0006915	9			

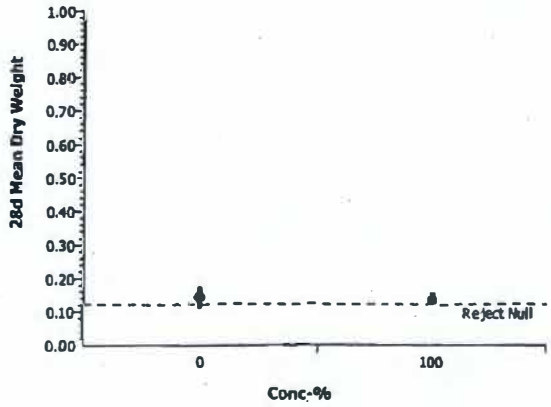
ANOVA Assumptions

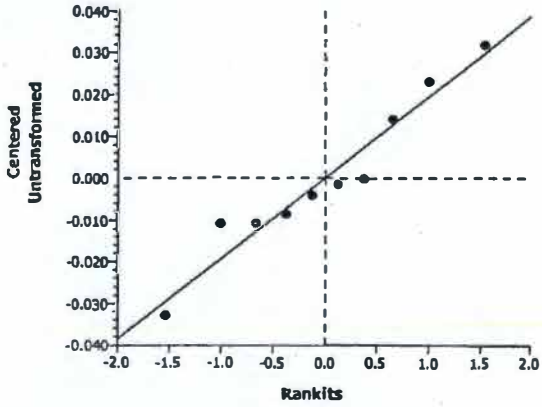
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.13407	23.15450	0.29446	Equal Variances
Distribution	Shapiro-Wilk W	0.95123		0.68312	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.13513	0.12444	0.15800	0.01372				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:09 PM
Test Link: 05-5907-2617/B175806hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	13-2552-8484	**Code:**	B1728-06	**Client:**	
Sample Date:	14 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	7d 0h	**Station:**			

Comments: J13V47

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
17-5809-3295	28d Mean Dry Weight	100	> 100	N/A	43.79%	Equal Variance t Two-Sample
04-2295-1009	28d Proportion Survived	100	> 100	N/A	6.32%	Wilcoxon Rank Sum Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
04-2295-1009	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.37180	0.28200	0.46400	0.03265	0.07301	19.64%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.39400	0.40400	0.28200	0.46400	0.31500

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		1.00000	1.00000	1.00000	1.00000	1.00000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	05-5907-2617	05-5907-2617	23 Jan-07 3:09 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	6.32%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Sediment		100	37.5		0.9722	1	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0630084	0.063008	1	10.82	0.01104	Significant Effect
Error	0.0466053	0.005826	8			
Total	0.10961371	0.0688341	9			

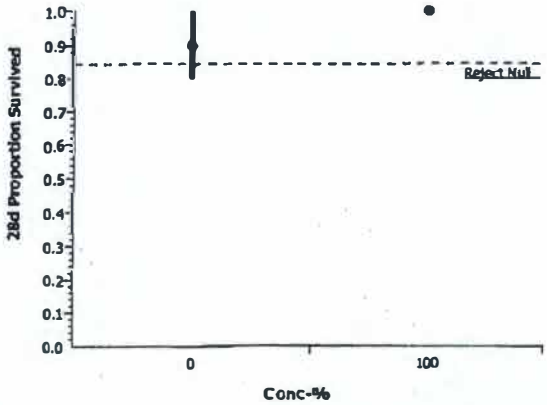
ANOVA Assumptions

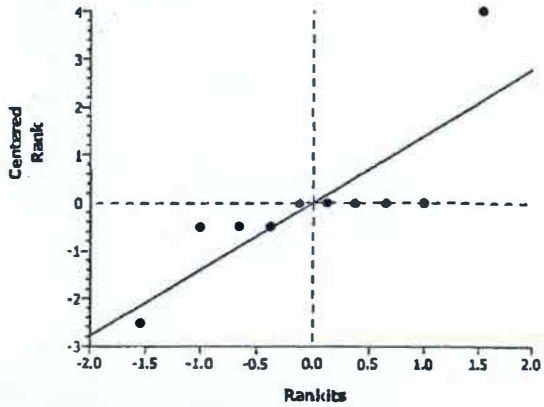
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	4.75457	11.25862	0.06082	Equal Variances
Distribution	Shapiro-Wilk W	0.67766		0.00047	Non-normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	3.50000	1.00000	7.50000	2.39792
100		5	1.00000	1.00000	1.00000	0.00000	7.50000	7.50000	7.50000	0.00000

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	05-5907-2617	05-5907-2617	23 Jan-07 3:09 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	43.79%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-6.5584	1.85955	0.9999	0.06399	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.1273258	0.127326	1	43.01	0.00018	Significant Effect
Error	0.0236819	0.002960	8			
Total	0.15100766	0.1302860	9			

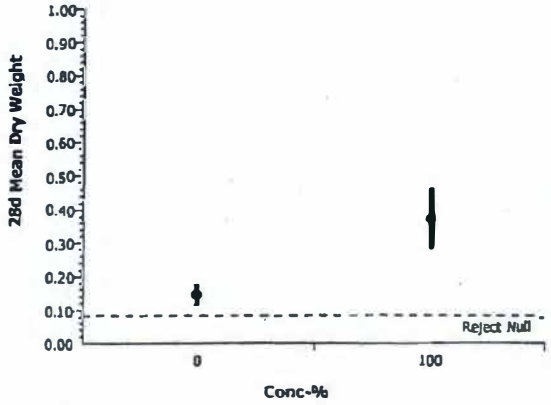
ANOVA Assumptions

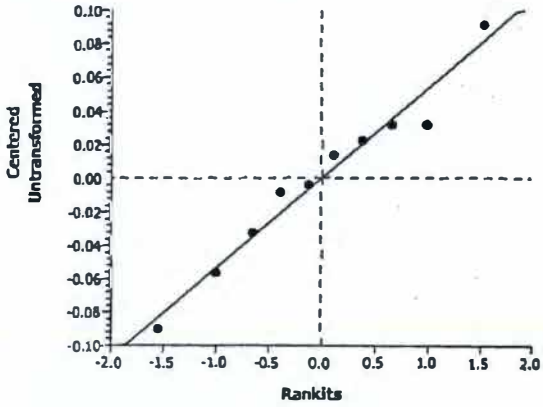
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	9.03017	23.15450	0.05568	Equal Variances
Distribution	Shapiro-Wilk W	0.97578		0.93867	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.37180	0.28200	0.46400	0.07301				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:27 PM
Test Link: 09-0696-9022/B172807hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	19-3947-0518	**Code:**	B1728-07	**Client:**	
Sample Date:	14 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	7d 0h	**Station:**			

Comments: J13TD6

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
01-8016-2579	28d Mean Dry Weight	100	> 100	N/A	25.38%	Equal Variance t Two-Sample
12-0196-9155	28d Proportion Survived	< 100	100	N/A	12.80%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
12-0196-9155	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.15815	0.11125	0.20714	0.01672	0.03740	23.65%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.60000	0.40000	0.80000	0.07071	0.15811	26.35%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.13400	0.11125	0.17833	0.16000	0.20714

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		0.50000	0.80000	0.60000	0.40000	0.70000

Analyst: RS Approval: _____

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	09-0696-9022	09-0696-9022	23 Jan-07 3:27 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		<100	100		N/A	12.80%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	4.08874	1.85955	0.0017	0.16480	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.3282628	0.328263	1	16.72	0.00349	Significant Effect
Error	0.1570846	0.019636	8			
Total	0.48534738	0.3478984	9			

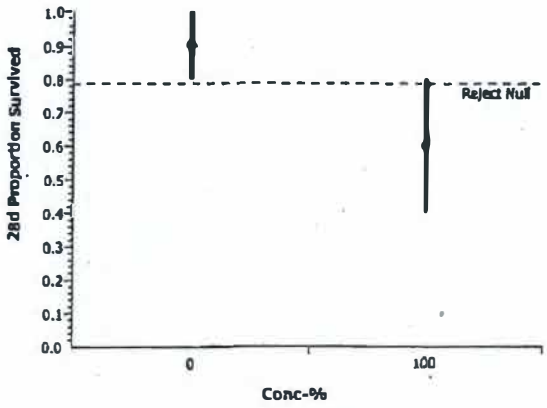
ANOVA Assumptions

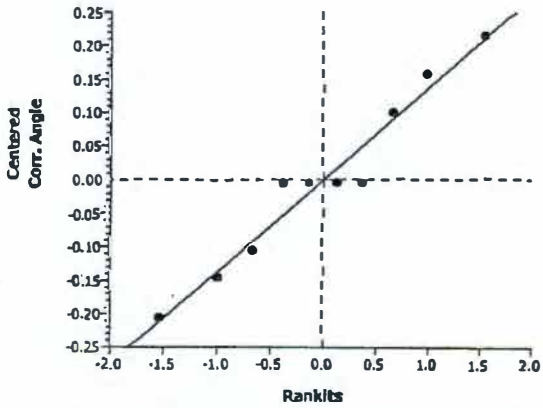
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.37053	23.15450	0.42368	Equal Variances
Distribution	Shapiro-Wilk W	0.95257		0.69892	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.60000	0.40000	0.80000	0.15811	0.89090	0.68472	1.10715	0.16619

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	09-0696-9022	09-0696-9022	23 Jan-07 3:27 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	25.38%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.6029	1.85955	0.7183	0.03709	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0003614	0.000361	1	0.36	0.56330	Non-Significant Effect
Error	0.0079548	0.000994	8			
Total	0.00831618	0.0013557	9			

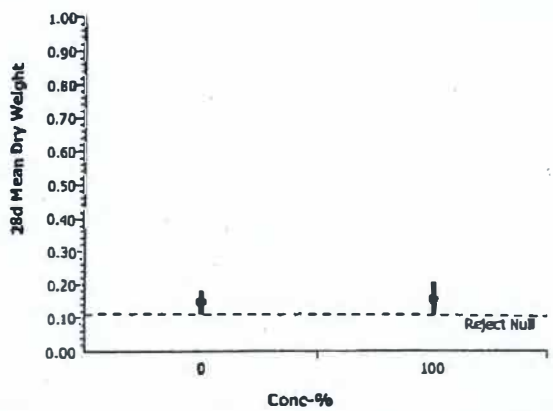
ANOVA Assumptions

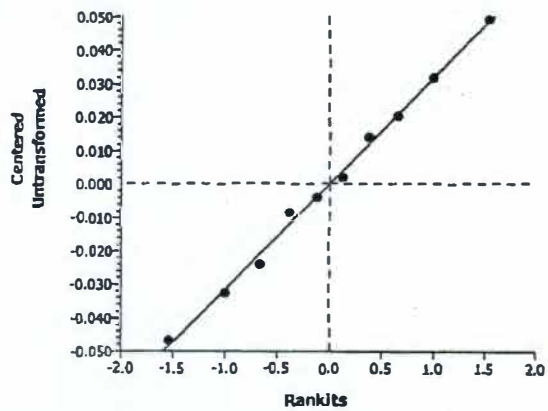
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.36916	23.15450	0.42398	Equal Variances
Distribution	Shapiro-Wilk W	0.98948		0.99614	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.15815	0.11125	0.20714	0.03740				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:29 PM
Test Link: 07-3783-5364/B172808hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	00-6878-2526	**Code:**	B1728-08	**Client:**	
Sample Date:	12 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	9d 0h	**Station:**			

Comments: J13TV8

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
04-4417-6377	28d Mean Dry Weight	100	> 100	N/A	26.65%	Equal Variance t Two-Sample
05-7046-0314	28d Proportion Survived	< 100	100	N/A	28.20%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
05-7046-0314	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.15606	0.12500	0.22500	0.01791	0.04004	25.66%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.56000	0.20000	0.90000	0.15033	0.33615	60.03%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.13143	0.14889	0.15000	0.12500	0.22500

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		0.70000	0.90000	0.20000	0.20000	0.80000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	07-3783-5364	07-3783-5364	23 Jan-07 3:29 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		<100	100		N/A	28.20%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	2.31857	1.85955	0.0245	0.31947	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.3966693	0.396669	1	5.38	0.04903	Significant Effect
Error	0.5903083	0.073789	8			
Total	0.98697761	0.4704578	9			

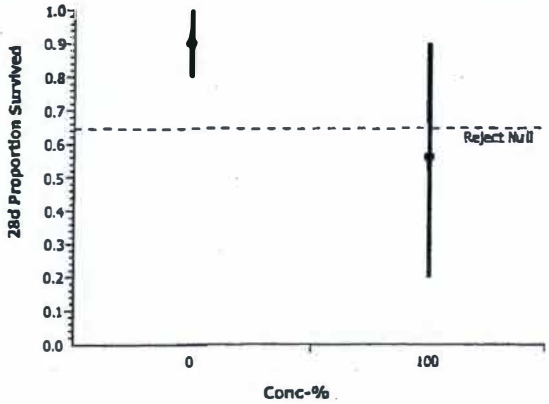
ANOVA Assumptions

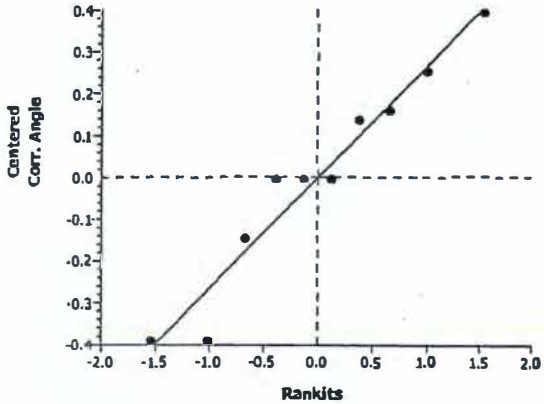
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	11.66612	23.15450	0.03543	Equal Variances
Distribution	Shapiro-Wilk W	0.93993		0.55219	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.56000	0.20000	0.90000	0.33615	0.85493	0.46365	1.24905	0.36868

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	07-3783-5364	07-3783-5364	23 Jan-07 3:29 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	26.65%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-0.4747	1.85955	0.6761	0.03895	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0002471	0.000247	1	0.23	0.64772	Non-Significant Effect
Error	0.0087734	0.001097	8			
Total	0.00902044	0.0013437	9			

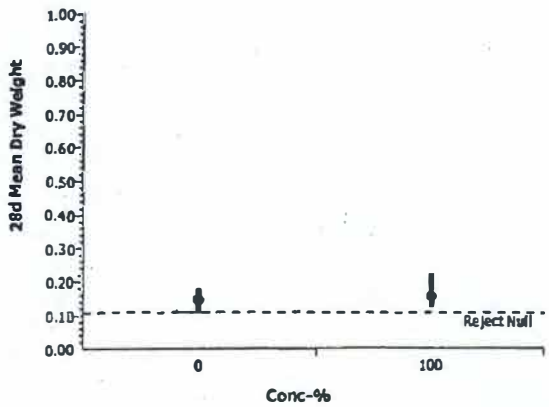
ANOVA Assumptions

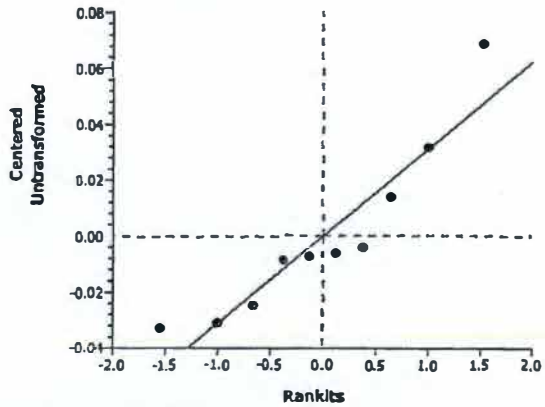
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.71586	23.15450	0.35658	Equal Variances
Distribution	Shapiro-Wilk W	0.87959		0.12908	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.15606	0.12500	0.22500	0.04004				

Graphics





CETIS Test Summary

Report Date: 23 Jan-07 3:30 PM
Test Link: 03-3428-9415/B172809hac

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — **CH2M Hill**

Test No:	12-8005-6952	**Test Type:**	Hyalella (42d)	**Duration:**	28d 0h
Start Date:	21 Dec-06	**Protocol:**	EPA/600/R-99/064 (2000)	**Species:**	Hyalella azteca
Ending Date:	18 Jan-07	**Dil Water:**		**Source:**	Chesapeak Cultures, Nayes, Virginia
Setup Date:	21 Dec-06 12:00 AM	**Brine:**			

Sample No:	15-1000-1188	**Code:**	B1728-09	**Client:**	
Sample Date:	13 Dec-06	**Material:**	Sediment	**Project:**	
Receive Date:		**Source:**	ELR-Washington Closure Hanford		
Sample Age:	8d 0h	**Station:**			

Comments: J13V46

Comparison Summary

Analysis	Endpoint	NOEL	LOEL	ChV	PMSD	Method
13-9786-0284	28d Mean Dry Weight	100	> 100	N/A	25.04%	Equal Variance t Two-Sample
08-2694-0702	28d Proportion Survived	< 100	100	N/A	15.39%	Equal Variance t Two-Sample

Test Acceptability

Analysis	Endpoint	Attribute	Statistic	TAC Range	Overlap	Decision
08-2694-0702	28d Proportion Survived	Control Response	0.9	0.8 - NL	Yes	Passes acceptability criteria

28d Mean Dry Weight Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.01087	0.02430	16.63%
100		5	0.19864	0.15833	0.23286	0.01640	0.03668	18.46%

28d Proportion Survived Summary

Conc-%	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.03162	0.07071	7.86%
100		5	0.74000	0.60000	1.00000	0.06782	0.15166	20.49%

28d Mean Dry Weight Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.16000	0.11333	0.17778	0.14200	0.13750
100		0.23286	0.15833	0.16200	0.23286	0.20714

28d Proportion Survived Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Dilution Sedim	0.90000	0.90000	0.90000	1.00000	0.80000
100		0.70000	0.60000	1.00000	0.70000	0.70000

CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Proportion Survived	Comparison	03-3428-9415	03-3428-9415	23 Jan-07 3:30 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Equal Variance t Two-Sample	C > T	Angular (Corrected)		<100	100		N/A	15.39%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	1.9196	1.85955	0.0456	0.19272	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0989506	0.098951	1	3.68	0.09117	Non-Significant Effect
Error	0.2148263	0.026853	8			
Total	0.31377691	0.1258039	9			

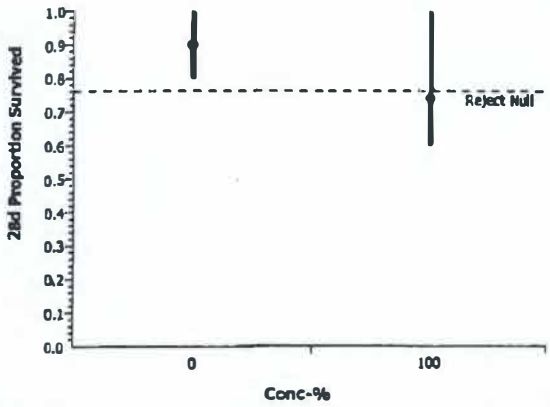
ANOVA Assumptions

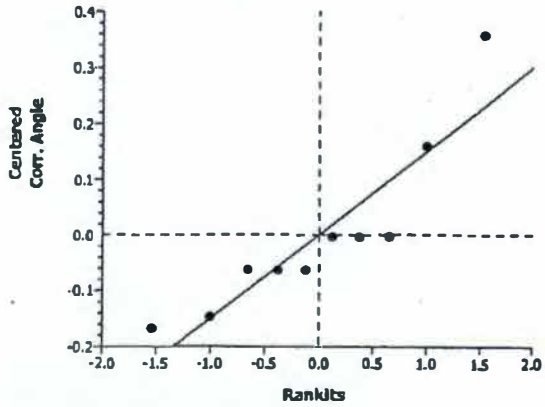
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	3.60948	23.15450	0.24155	Equal Variances
Distribution	Shapiro-Wilk W	0.83789		0.04163	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.90000	0.80000	1.00000	0.07071	1.25326	1.10715	1.41202	0.10794
100		5	0.74000	0.60000	1.00000	0.15166	1.05431	0.88608	1.41202	0.20507

Graphics





CETIS Analysis Detail

Hyallela 42-d Survival, Growth, and Reproduction Sediment Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
28d Mean Dry Weight	Comparison	03-3428-9415	03-3428-9415	23 Jan-07 3:30 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	25.04%

Group Comparisons

Control	vs	Conc-%	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Sediment		100	-2.6692	1.85955	0.9858	0.03659	Non-Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0068946	0.006895	1	7.12	0.02840	Significant Effect
Error	0.0077420	0.000968	8			
Total	0.01463666	0.0078624	9			

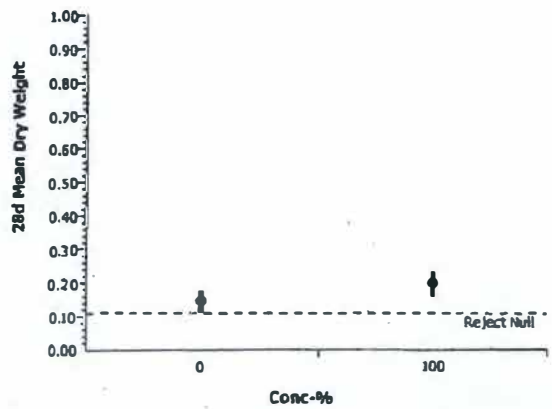
ANOVA Assumptions

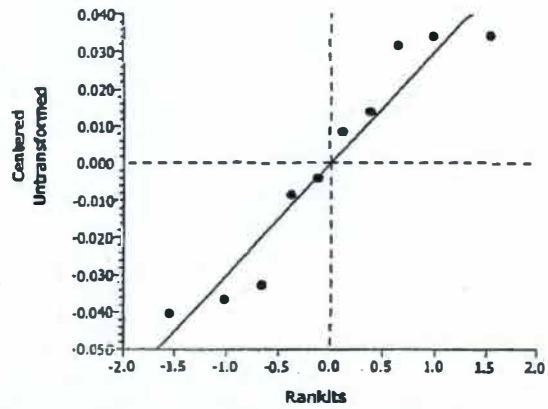
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Variance Ratio F	2.27904	23.15450	0.44458	Equal Variances
Distribution	Shapiro-Wilk W	0.89298		0.18313	Normal Distribution

Data Summary

			Original Data				Transformed Data			
Conc-%	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Sedim	5	0.14612	0.11333	0.17778	0.02430				
100		5	0.19864	0.15833	0.23286	0.03668				

Graphics





APPENDIX B
REFERENCE TOXICANT DATA SHEETS

REFERENCE TOXICANT DATA SHEET

Client: QA/QC
Test Organism: Hyallela azteca
Source: Chesapeake Cultures
ID#: Amp 60
Age: 5-10 days
Size: -
Loading: -

Reference Toxicant: 1 ppt CdCl2 · 2.5 H2O
Solvent: distilled water Stock Solution: 1ppt Cd
Reagent Log ID #: ~~NJ 2745~~ 13052-01
*Dilution Water: Recon MH ID#: 2745
Total Hardness as CaCO3: 94 Total Alkalinity as CaCO3: 70
Conductivity (µmhos/cm)// Salinity (ppt): 303 Temperature: 20 ± 1°C

Test Begin: Date 12-19-06 Time 11:30
Test End: Date 12-21-06 Time 0940

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	NJ	DW	[illegible]		
Time	11:30	1130	0940		

Toxicant Concen. µg/L	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen mg/l 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond. 0
Cont		10	10	10			8.0	8.6	8.7			7.7	7.7	7.7			19.6	19.8	20.0			299
2		10	10	7			8.2	8.6	8.8			7.7	7.7	7.7			19.8	19.6	20.2			303
4		10	10	7			8.1	8.6	8.8			7.8	7.7	7.8			19.8	19.5	20.1			305
8		10	10	4			8.1	8.6	8.8			7.8	7.7	7.8			19.7	19.5	20.1			300
16		10	9	0			8.1	8.7	8.9			7.8	7.7	7.8			19.7	19.6	20.1			294
32		10	0	–			8.1	8.9	–			7.8	7.7	–			19.8	19.7	–			296
Test Acceptability Limits:		Survival in Controls: > or = 90%					For RBT (12°C): >6.0 and <10.8 All Others (at 20°C): >4.0 and <9.1					pH: > 6.0 and < 9.0					Temperature ± 1 °C					

*Dilution Water Code
Recon. - reconstituted water
S - soft
MH - moderately hard
H - hard
Art. Sea - Artificial Sea Water

48 h LC50 4.6

Cusum Chart Limits 2.8 to 8.3

Statistical Method Probit

We verify this data is true and correct.

Task Manager [signature]

Project Manager [signature]

QA Officer [signature]

REFERENCE TOXICANT DATA SHEET

Client: QA/QC
Test Organism: Hyallela azteca
Source: Chesapeake Cultures
ID#: Amp 60
Age: 5-10 days
Size: –
Loading: –

Reference Toxicant: 1 ppt CdCl2· 2.5 H2O
Solvent: distilled water Stock Solution: 1ppt Cd
Reagent Log ID #: ~~W-2745~~ 13052-01
*Dilution Water: Recon MH ID#: 2745
Total Hardness as CaCO3: 94 Total Alkalinity as CaCO3: 70
Conductivity (µmhos/cm)/ Salinity (ppt): 303 Temperature: 20 ± 1°C

Test Begin: Date 12-11-06 Time 11:30
Test End: Date 12-21-06 Time 0940

	0 hr	24 hr	48 hr	72 hr	96 hr
Technician	NJ	DW	[illegible]		
Time	11:30	1130	0940		

Toxicant Concen. µg/L	Test Chamber Number	Number Surviving 0	24	48	72	96	Dissolved Oxygen mg/l 0	24	48	72	96	pH 0	24	48	72	96	Temperature °C 0	24	48	72	96	Cond. 0
Cont		10	10	10			8.0	8.6	8.7			7.7	7.7	7.7			19.6	19.8	20.0			299
2		10	10	7			8.2	8.6	8.8			7.7	7.7	7.7			19.9	19.6	20.2			303
4		10	10	7			8.1	8.6	8.8			7.8	7.7	7.8			19.8	19.5	20.1			305
8		10	10	4			8.1	8.6	8.8			7.8	7.7	7.8			19.7	19.5	20.1			300
16		10	9	0			8.1	8.7	8.9			7.8	7.7	7.8			19.7	19.6	20.1			294
32		10	0	–			8.1	8.9	–			7.8	7.7	–			19.8	19.7	–			296

Test Acceptability Limits:	Survival in Controls: > or = 90%	For RBT (12°C): >6.0 and <10.8 All Others (at 20°C): > 4.0 and < 9.1	pH: > 6.0 and < 9.0	Temperature ± 1 °C

*Dilution Water Code
Recon. - reconstituted water
S - soft
MH - moderately hard
H - hard
Art. Sea - Artificial Sea Water

48 h LC50: 4.6
Cusum Chart Limits: 2.8 to 8.3
Statistical Method: Prob.t

We verify this data is true and correct.
Task Manager: [signature]
Project Manager: [signature]
QA Officer:

CETIS Test Summary

Report Date: 21 Dec-06 10:02 AM
Test Link: 10-5613-1065/rhaa060

Hyallela azteca 48-h Acute Survival Test — CH2M Hill

Test No:	05-0144-7562	Test Type:	Survival (48h)	Duration:	46h
Start Date:	19 Dec-06 11:30 AM	Protocol:		Species:	Hyalella azteca
Ending Date:	21 Dec-06 09:40 AM	Dil Water:		Source:	Chesapeak Cultures, Nayes, Virginia
Setup Date:	19 Dec-06 11:30 AM	Brine:			

Sample No:	12-3570-8807	Code:	1B052-01	Client:	
Sample Date:	11 Jul-06	Material:	Cadmium	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	161d 11h	Station:			

Comments: Cd as CdCl2 x 2.5H2O

Point Estimate Summary

Analysis	Endpoint	% Effect	Conc-µg/L	95% LCL	95% UCL	Method
12-1344-0896	48h Proportion Survived	50	4.638636	2.754177	6.915484	Linear Regression

48h Proportion Survived Summary

Conc-µg/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV
0	Dilution Water	1	1.00000	1.00000	1.00000			
2		1	0.70000	0.70000	0.70000			
4		1	0.70000	0.70000	0.70000			
8		1	0.40000	0.40000	0.40000			
16		1	0.00000	0.00000	0.00000			0.00%
32		1	0.00000	0.00000	0.00000			0.00%

48h Proportion Survived Detail

Conc-µg/L	Control Type	Rep 1
0	Dilution Water	1.00000
2		0.70000
4		0.70000
8		0.40000
16		0.00000
32		0.00000

CETIS Analysis Detail

Hyallela azteca 48-h Acute Survival Test — CH2M Hill

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
48h Proportion Survived	Linear Regression	10-5613-1065	10-5613-1065	21 Dec-06 10:01 AM	CETISv1.1.2

Linear Regression Options

Model Function	Threshold Option	Threshold	Threshold Opt	Reweighted	Pooled Groups	Het Corr
Log-Normal [NED=A+B*log(X)]	Control Threshold	0	Yes	Yes	No	No

Regression Summary

Iters	Log Likelihood	Mu	Sigma	G	Chi-Sq	Critical	P-Value	Decision(0.05)
6	-21.21965	1.26698	0.38667	0.24207	3.77407	7.81473	0.28692	Non-Significant Heterogeneity

Point Estimates

% Effect	Conc-µg/L	95% LCL	95% UCL
50	4.638636	2.754177	6.915484

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P-Value	Decision(0.05)
Slope	2.586157	0.649184	1.313756	3.858557	3.984	0.02831	Significant
Intercept	3.27661	0.5343581	2.229268	4.323952	6.132	0.00872	Significant

Residual Analysis

Attribute	Method	Statistic	Critical	P-Value	Decision(0.05)
Distribution	Shapiro-Wilk W	0.8373437		0.15771	Normal Distribution

Data Summary

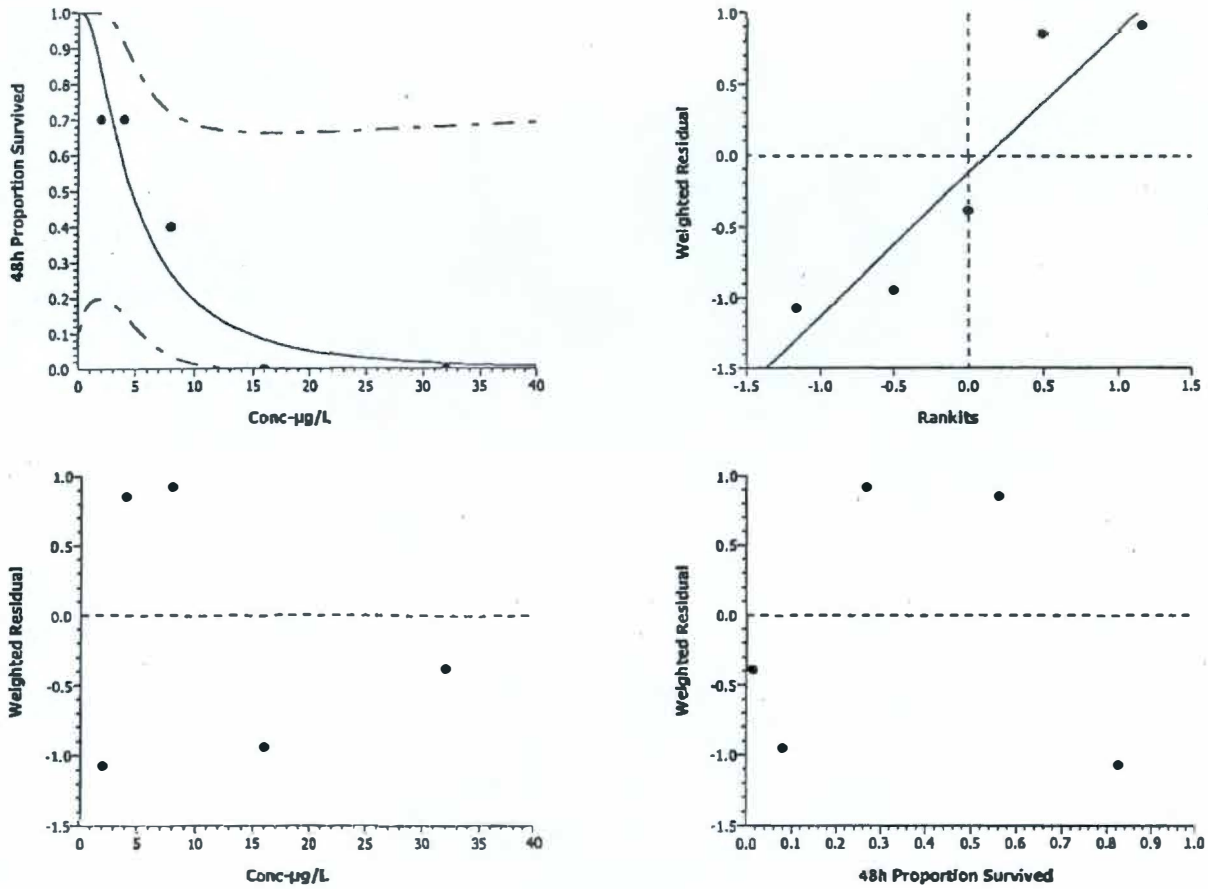
Conc-µg/L	Control Type	Count	Calculated Variate(A/B) Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	1	1.00000	1.00000	1.00000			10	10
2		1	0.70000	0.70000	0.70000			7	10
4		1	0.70000	0.70000	0.70000			7	10
8		1	0.40000	0.40000	0.40000			4	10
16		1	0.00000	0.00000	0.00000			0	10
32		1	0.00000	0.00000	0.00000			0	10

Data Detail

Conc-µg/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									
2		0.70000									
4		0.70000									
8		0.40000									
16		0.00000									
32		0.00000									

CETIS Analysis Detail

Graphics



APPENDIX C
CHAIN OF CUSTODY

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-2	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA BEV REF 1		SAF No. RC-082
Ice Chest No. AFS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ DAS 12/4/06 Fed Ex
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See OSPC

Price Code

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 BH1728-01	Sediment Phytotoxicity EEDP-04-11 BH1728-01								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TD0	OTHER SOLID	11-28-06	1215	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1540 11-28-06	Received By/Stored In EAS LOCKED STORAGE
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 1000 12-4-06	Received By/Stored In David Bjorn
Relinquished By/Removed From David Bjorn	Date/Time 12/4/06 1200	Received By/Stored In Fed. Ex
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In [illegible]
Relinquished By/Removed From	Date/Time	Received By/Stored In
Relinquished By/Removed From	Date/Time	Received By/Stored In

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-01

Matrix *

SeSed
SEwSediment
SOwSolid
SlwSludge
W = Water
OwOil
AwAir
DSwDrum Solids
DLwDrum Liquids
TwTissue
WIwWipe
LwLiquid
VwVegetation
XwOther

LABORATORY SECTION	Received By [illegible]	Title Asst. Sci.	Date/Time 12/5/06 1400
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-082-1	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 1a Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. AFS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ DAS 12/4/06 Fed Ex		
Shipped To CH2MHill - Corvallis	Offsite Property No. AD70118		Bill of Lading/Air Bill No. See OSFC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTME1706 SH1728 .02	Sediment Phytotoxicity EEDP-04-11 SH1728 .03								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TC9	OTHER SOLID	11-28-06	1345	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	11-28-06 1540	Received By/Stored In EAS LOCKED STORAGE	11-28-06 1540
Relinquished By/Removed From EAS LOCKED STORAGE	12-4-06 1000	Received By/Stored In David Strain WCH	12/4/06 1000
Relinquished By/Removed From David Strain WCH	12/4/06 1200	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/5/06 1400
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31728-02

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: Assoc. Sci.	Date/Time 12/5/06 1400
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-082-18	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2c Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. AFS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex DFS 12/4/06		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See DSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTME1706 BH1723 -03	Sediment Phytotoxicity EEDP-04-11 BH1723 -03								
Sample No. / Matrix * / Sample Date / Sample Time											
J13TV9 / OTHER SOLID / 11-29-06 / 1355	X	X	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	NOV 30 2006 1100	[illegible] EAS LOCKED STORAGE	NOV 30 2006
EAS LOCKED STORAGE	12-4-06 1000	David Stockwell	12/04/06 1000
David Stockwell	12/4/06 1200	FED EX	
FED EX		[illegible]	12/5/06 1400

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

B1728-03, 15.3°C 12/5/06 6000g sample

Matrix *

SoSoil
SE=Sediment
SO=Solid
StaStaige
W = Water
O=Oil
AirAir
DS=Drum Solids
DL=Drum Liquids
TsTissue
WipWipe
LaLaqual
VeVegetation
XeOther

LABORATORY SECTION	Received By [illegible]	Title Asst. Sci	Date/Time 12/5/06 1400
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-082-10	Page 1 of 1

Collector B. TILLER JAMES BERNHART	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code Air Quality	Data Turnaround 21 Days		
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2a Aq		SAF No. RC-082
Ice Chest No. AFS-04-017	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex DAS 12/4/06
Shipped To CH2MHill - Corvallis	Offsite Property No. A070118		Bill of Lading/Air Bill No. See ofpc

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BH1723-04	Sediment Phytotoxicity EEDP-04-11 BH1723-04								

Sample No.	Matrix *	Sample Date	Sample Time											
J13TF1	OTHER SOLID	11-28-06	1435	X	X	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHART	1540 11-28-06	EAS LOCKED STORAGE	1540 11-28-06
EAS LOCKED STORAGE	10 00 12-4-06	David St John Wall	12/4/06 1000
David St John Wall	12/4/06 1200	Fed Ex	
Fed Ex			12/5/06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

3172E.04, 16.0°C 12/5/06 bags sample

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 Assoc. Sci	Date/Time 12/5/06 1400
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-082-22	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA Sd Aq		SAF No. RC-082		
Ice Chest No. SAWS-107	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment ~~GROUND TRANSPORT~~ Fed Ex PAS 12/5/06		
Shipped To CH2M Hill - Corvallis	Offsite Property No. A070120		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 SH1723-05	Sediment Phytotoxicity EEDP-04-11 SH1723-05							
J13TW5	OTHER SOLID	12-04-06	1230	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1515 12-04-06	EAS LOCKED STORAGE	1515 12-04-06
EAS LOCKED STORAGE	0815 12-05-06	DAVID SULZBACH West	12/5/06 0815
DAVID SULZBACH West	12/5/06 0700	FED EX	
Fed Ex		[illegible]	12/06/06

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

D1723-05,

COC seals intact, 2.0 °C on arrival,

All 3 subsamples in same cooler

Matrix *

SoSoil
SEaSediment
SOaSolid
SlaSludge
W = Water
OaOil
AaAir
DSaDrum Solids
DLaDrum Liquids
TaTissue
WIaWipe
LaLiquid
VaVegetation
XaOther

LABORATORY SECTION	Received By	Title	Date/Time
	[illegible]	Assoc. Sci.	12/06/06

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time
	* all Sample used in test	12/20/06	

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-60	Page 1 of 1

Collector: B. TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: Air Quality ☐	Data Turnaround: 21 Days		
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA 3b Aq		SAF No.: RC-082
Ice Chest No.: AFS-04-009	Field Logbook No.: EL-1612	COA: BESBEA6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A070123		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1 12-13-06	1								
Volume	1000g ml	1000g ml	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 B1728-06	Sediment Phytotoxicity EEDP-04-11 B1728-07								

Sample No.	Matrix *	Sample Date	Sample Time										
J13V47	OTHER SOLID	12-12-06	0845	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 1030 12-12-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 1030 12-12-06
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 1000 12-13-06	Received By/Stored In: Rob Vickers	Date/Time: 12/13/06 1000
Relinquished By/Removed From: Rob Vickers	Date/Time: 12/13/06 1500	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time:	Received By/Stored In:	Date/Time: 12/14/06 1120
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

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival. COC seals intact

B1728-06 (same cooler as -07, -08)

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: Asso. Sci.	Date/Time: 12/14/06 1120
FINAL SAMPLE DISPOSITION	Disposal Method:	Disposed By: All sample used	Date/Time:

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-8	Page 1 of 1
Collector: B. TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 21 Days
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA 21 Aq	SAF No.: RC-082	Air Quality ☐
Ice Chest No.: AFS-04-009	Field Logbook No.: EL-1612; COA: BESBEA6520	Method of Shipment: GROUND TRANSPORT	
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A07012-3	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1 12-17-06	1								
Volume	1000g ml	1000g ml	6000g								
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706 BK1723-07	Sediment Phytotoxicity EEDP-04-11 BP1722-07								
Sample No. / Matrix * / Sample Date / Sample Time											
J13TD6 / OTHER SOLID / 12-12-06 / 0915	X	X	X								

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: JAMES BERNHARD		12-12-06 1150	EAS LOCKED STORAGE	12-12-06 1150
Relinquished By/Removed From: EAS LOCKED STORAGE		12-13-06 0950	Rob Lacks	12/13/06 0950
Relinquished By/Removed From: K. Lacks		12/13/06 1500	FED EX	
Relinquished By/Removed From: FED EX			Received By/Stored In	12/14/06
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival. COC seals intact

B1728-07 (some coolers -06, -08)

Matrix *: SaSoil; SESediment; SOcSolid; SlaSludge; W = Water; OaOil; AaAir; DSaDrumSolids; DLaDrum Liquids; TaTissue; WIaWipe; LaLiquid; VaVegetation; XaOther

LABORATORY SECTION	Received By	Title	Date/Time
		Assoc Sci	12-14-06

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-082-16	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 21 Aq		SAF No. RC-082		
Ice Chest No. AFS-04-009	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2MHill - Corvallis	Offsite Property No. A070123		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1 (2)	1 12-13-06	1								
Volume	1000g ml	1000g ml	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								
		381725 .02	381722 .01								

Sample No.	Matrix *	Sample Date	Sample Time										
J13TV8	OTHER SOLID	12-12-06	0920	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From JAMES BERNHARD	1230 12-12-06	Received By/Stored In EAS LOCKED STORAGE	1230 12-12-06
Relinquished By/Removed From EAS LOCKED STORAGE	1000 12-13-06	Received By/Stored In Reb Uhlis	12/13/06 1000
Relinquished By/Removed From Rick Hall	12/13/06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex		Received By/Stored In	12/14/06 1120
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

6.4°C on arrival COC seals intact

D172608 (same coolers .06, -07)

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
		Asst. Sci	12/14/2006 1120
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-082-59	Page 1 of 1

Collector B. TILLER JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 21 Days
Project Designation RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location RCBRA 2m Aq		SAF No. RC-082	Air Quality ☐	
Ice Chest No. ERC-02-004	Field Logbook No. EL-1612	COA BESBEA6520	Method of Shipment GROUND TRANSPORT		
Shipped To CH2M Hill - Corvallis	Offsite Property No. A070125		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None									
Type of Container	G/P	P/G	P/G									
No. of Container(s)	1	1	1									
Volume	1000g	1000g	6000g									
SAMPLE ANALYSIS	See Item (1) in Special Instructions	Sediment Invertebrate Toxicity ASTM E1706 31728-09	Sediment Phytotoxicity SEDP-04-11 31728-09									
Sample No.	Matrix *	Sample Date	Sample Time									
J13V46	OTHER SOLID	12-13-06	1100	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From JAMES BERNHARD	Date/Time 1330 12-13-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1330 12-13-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 1030 12-14-06	Received By/Stored In R Vocks	Date/Time 12/14/06 1030
Relinquished By/Removed From R Vocks	Date/Time 12/14/06 1500	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In	Date/Time 12/15/06 1420
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

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31728-09, cooler seals intact. 7.6°C on ice.
↳ container for Hanford analysis labeled as sample No. J13V46.
-12/18/06. tray subsampled to produce 100g for (1) analysis by [illegible] 12-18-06

Matrix *
S=Soil
SF=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 Assoc. Sci	Date/Time 12/15/06 1420
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

CH2M HILL
Applied Sciences Laboratory
2300 NW Walnut Blvd
Corvallis, OR
97330-3538
P.O. Box 428
Corvallis, OR
97339-0428
Tel 541.752.4271
Fax 541.752.0276

RECEIVED
FEB 05 2007

CH2MHILL
Applied Sciences Laboratory

January 17, 2007

ELR Consulting
2328 S. Garfield Street
Kennewick, WA 99337

RE: Laboratory Report for ELR Consulting
Applied Sciences Laboratory Reference No. F3158

Dear Emmett Richards:

On December 15, 2006, CH2M HILL Applied Sciences Laboratory received one sample with a request for analysis of selected parameters. All analyses were performed by CH2M HILL unless otherwise indicated below.

The analytical results and associated quality control data are enclosed. Any unusual difficulties encountered during the analysis of your samples are discussed in the case narrative. This data package meets standards requested by client and is not intended or implied to meet any other standard.

CH2M HILL Applied Sciences Laboratory appreciates your business and looks forward to serving your analytical needs again. If you should have any questions concerning the data, or if you need additional information, please call Mike Stanaway at (541) 758-0235, extension 3161.

Sincerely,

Mark Bos
Analytical Manager

Enclosures

CLIENT SAMPLE CROSS-REFERENCE

CH2M HILL Applied Sciences Laboratory Reference No. F3158

Sample ID	Client Sample ID	Date Collected	Time Collected
F315801	J13V46	12/13/2006	11:00

Table of Contents
CH2M HILL Laboratory Reference No. F3158

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Total Kjeldahl Nitrogen Analysis by Method EPA351.2 45
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Total Organic Carbon Analysis by Method ASTM E777 60
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Chain of Custody/Shipping Documents 75

CH2MHILL

Applied Sciences Laboratory

Organic CLP and CLP Like Data Qualifiers

U — The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ — The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

N — The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ — The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

P — The primary and confirmation analyte result recoveries do not match.

E — The analyte was positively identified; the associated numerical value exceeded the instrument calibration range.

R — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Inorganic CLP and CLP Like Data Qualifiers

U — The analyte was analyzed for, but not detected above the reported sample quantitation limit.

B — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ — The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

E — The analyte was positively identified; the associated numerical value exceeded the instrument calibration range.

N — The matrix spike/matrix spike duplicate recovery for the analyte is outside of acceptance criteria—qualifier is applied to the native sample only.

R — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

AMMONIA-N BY METHOD EPA350.1

CASE NARRATIVE
AMMONIA

Analytical Method: EPA 350.1 Batch No.: F3158

Lab Name: CH2M HILL Applied Sciences Lab Contract #.: 920842.OTC

Base/Command: ELR Consulting Prime Contractor.: _____

I. Holding Times:
All acceptance criteria were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike/Matrix Spike Duplicate Sample(s):
All acceptance criteria were met.

D. Laboratory Control Spike(LCS)
All acceptance criteria were met.

E. Analytical Exception:
None.

F. Other:
None.

III. Sampling Equipment:
None.

IV. Documentation Exceptions:
None

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Reported by: _____ Date: 1/2/07

Reviewed by: _____ Date: 1-5-07

SAMPLE DATA
SUMMARY

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: F315801

% Moisture: 1

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
7664-41-7	Ammonia-N	0.0523	1.90	1.90	U	mg/kg	1	2.661 G	E350.1	12/21/06

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

SB1-1221

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: SB1-1221

% Moisture: 0

Date Received: / /

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
7664-41-7	Ammonia-N	0.0551	2.00	2.00	U	mg/kg	1	2.5 G	E350.1	12/21/06

QC DATA SUMMARY

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Initial Calibration Date: 12/08/06 10:39

Instrument Name: LACH8500

Concentration Units: MG/L

Initial Calibration ID: 120806NH3cal

Analyte	Std 1	Resp 1	Std 2	Resp 2	Std 3	Resp 3	Std 4	Resp 4	Std 5	Resp 5	Std 6	Resp 6
Ammonia-N	5.0	6.0	2.0	2.7	1.0	1.3	0.50	0.65	0.10	0.16	0.050	0.075

Comments:

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Initial Calibration Date: 12/08/06 10:39

Instrument Name: LACH8500

Concentration Units: MG/L

Initial Calibration ID: 120806NH3cal

Analyte	Std 7	Resp 7	Std 8	Resp 8	Std 9	Resp 9	Std 10	Resp 10				
Ammonia-N	0.010	0.0048	0.00	0.063								

Comments:

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Initial Calibration Date: 12/08/06 10:39

Instrument Name: LACH8500

Concentration Units: MG/L

Initial Calibration ID: 120806NH3cal

Analyte	Curve Type	r	Q
Ammonia-N	LNR	0.9993	

Comments:

2B-WC

GENERAL CHEMISTRY SECOND SOURCE CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Second Source ID: ICV-1208

Instrument Name: LACH8500

Concentration Units: mg/L

Initial Calibration ID: 120806NH3cal

Analyte	Expected	Found	%D	Q
Ammonia-N	1.22	1.13	-7.1	

Comments:

2A-WC

GENERAL CHEMISTRY CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Analytical Lot ID: 122106NH3

Instrument Name: LACH8500

Concentration Units: mg/L

Initial Calibration ID: 120806NH3cal

CCV #1 ID: CV1-1221 CCV #2 ID: CV2-1221 CCV #3 ID:

Analyte	Expected	Found	%D	Q	Expected	Found	%D	Q	Expected	Found	%D	Q
Ammonia-N	1	0.906	-9.4		1	0.918	-8.2					

Comments:

3-WC

SOIL GENERAL CHEMISTRY METHOD BLANK SUMMARY

Field Sample ID:

SB1-1221

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Lab Sample ID: SB1-1221

Initial Calibration ID: 120806NH3cal

Date Analyzed: 12/21/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1040

Instrument: LACH8500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
1	BS1S1221	BS1S1221	12/21/06	1039
2	J13V46	F315801	12/21/06	1051

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

LCS ID: BS1S1221

Initial Calibration ID: 120806NH3cal

Date Analyzed: 12/21/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1039

Instrument: LACH8500

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Ammonia-N	18.4	19.2	104	75-125	

* Values outside of QC limits

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Lab Code: CVO

Instrument: LACH8500

Analytical Lot ID: 120806NH3cal

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	LEVEL 1	LEVEL 1	12/08/06	1039
02	LEVEL 2	LEVEL 2	12/08/06	1041
03	LEVEL 3	LEVEL 3	12/08/06	1043
04	LEVEL 4	LEVEL 4	12/08/06	1045
05	LEVEL 5	LEVEL 5	12/08/06	1046
06	LEVEL 6	LEVEL 6	12/08/06	1048
07	LEVEL 7	LEVEL 7	12/08/06	1050
08	LEVEL 8	LEVEL 8	12/08/06	1052
09	ICV-1208	ICV-1208	12/08/06	1054

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E350.1

Lab Code: CVO

Instrument: LACH8500

Analytical Lot ID: 122106NH3

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	CV1-1221	CV1-1221	12/21/06	1037
02	BS1S1221	BS1S1221	12/21/06	1039
03	SB1-1221	SB1-1221	12/21/06	1040
15	J13V46	F315801	12/21/06	1051
16	CV2-1221	CV2-1221	12/21/06	1052

Comments:

CH2MHILL
Applied Sciences Laboratory

CH2M HILL
Applied Sciences Laboratory (ASL)
2300 NW Walnut Blvd.
P.O. Box 428
Corvallis, OR 97330-0428
Telephone: 541-752-4271
Fax: 541-752-0276

01/02/07

MDL Study Report

Analytical Method: E350.1

Matrix: Soil

Instrument ID: LACH8500

Concentration Units: mg/kg

Analyte	Analysis Date	Amt. Spiked	Replicates 1	2	3	4	5	6	7	8	Std. Dev.	MDL
Ammonia	11/09/06	0.12	0.284	0.310	0.310	0.289	0.334	0.316	0.288	0.282	0.0184	0.0551

ANIONS BY METHOD EPA300.0A

CASE NARRATIVE
ANIONS

Analytical Method: EPA 300.0 Batch No.: F3158

Lab Name: CH2M HILL Applied Sciences Lab Contract #.: 920842.OTC

Base/Command: ELR Consulting Prime Contractor.:

I. Holding Times:
All acceptance criteria were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike/Matrix Spike Duplicate Sample(s):
Samples were analyzed in accordance with SOP.

D. Laboratory Control Spike(LCS)
All acceptance criteria were met.

E. Analytical Exception:
None.

F. Other:
None.

III. Sampling Equipment:
None.

IV. Documentation Exceptions:
None

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Reported by: Date: 1/15/07

Reviewed by: Date: 1-15-07

SAMPLE DATA
SUMMARY

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: F315801

% Moisture: 1

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
16887-00-6	Chloride	0.0495	0.474	0.504		mg/kg	1	5.33 G	E300.0A	12/22/06
16984-48-8	Fluoride	0.0419	0.474	0.0904	B	mg/kg	1	5.33 G	E300.0A	12/22/06
14797-55-8	Nitrate-N	0.0240	0.474	0.504		mg/kg	1	5.33 G	E300.0A	12/22/06
14797-65-0	Nitrite-N	0.0283	0.474	0.474	U	mg/kg	1	5.33 G	E300.0A	12/22/06
14808-79-8	Sulfate	0.0716	0.474	2.18		mg/kg	1	5.33 G	E300.0A	12/22/06

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

SB1-1222

SDG No.: F3158

Matrix: SOIL

% Moisture: 0

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: SB1-1222

Date Received: / /

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
16887-00-6	Chloride	0.0523	0.500	0.355	B	mg/kg	1	5 G	E300.0A	12/22/06
16984-48-8	Fluoride	0.0442	0.500	0.500	U	mg/kg	1	5 G	E300.0A	12/22/06
14797-55-8	Nitrate-N	0.0254	0.500	0.500	U	mg/kg	1	5 G	E300.0A	12/22/06
14797-65-0	Nitrite-N	0.0299	0.500	0.500	U	mg/kg	1	5 G	E300.0A	12/22/06
14808-79-8	Sulfate	0.0756	0.500	0.500	U	mg/kg	1	5 G	E300.0A	12/22/06

QC DATA SUMMARY

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Initial Calibration Date: 08/31/06 20:56

Instrument Name: ICQ

Concentration Units: mg/L

Initial Calibration ID: EPA300A-083106

Analyte	Std 1	Resp 1	Std 2	Resp 2	Std 3	Resp 3	Std 4	Resp 4	Std 5	Resp 5	Std 6	Resp 6
Chloride	0.010	0.0027	0.050	0.011	0.10	0.020	0.50	0.081	1.0	0.16	5.0	0.84
Fluoride			0.050	0.0090	0.10	0.022	0.50	0.10	1.0	0.20	5.0	1.1
Nitrate-N	0.010	0.0073	0.050	0.020	0.10	0.043	0.50	0.21	1.0	0.40	5.0	2.1
Nitrite-N	0.010	0.0036	0.050	0.014	0.10	0.026	0.50	0.15	1.0	0.28	5.0	1.5
Sulfate	0.030	0.0075	0.15	0.024	0.30	0.046	1.5	0.18	3.0	0.35	15.0	1.9

Comments:

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Initial Calibration Date: 08/31/06 20:56

Instrument Name: ICQ

Concentration Units: mg/L

Initial Calibration ID: EPA300A-083106

Analyte	Std 7	Resp 7	Std 8	Resp 8	Std 9	Resp 9	Std 10	Resp 10				
Chloride	10.0	1.8	25.0	4.7								
Fluoride	10.0	2.4	25.0	6.1								
Nitrate-N	10.0	4.6	25.0	12.4								
Nitrite-N	10.0	3.1	25.0	7.6								
Sulfate	30.0	3.9	75.0	10.3								

Comments:

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Initial Calibration Date: 08/31/06 20:56

Instrument Name: ICQ

Concentration Units: mg/L

Initial Calibration ID: EPA300A-083106

Analyte	Curve Type	r	Q
Chloride	LNR	1.0000	
Fluoride	LNR	0.9999	
Nitrate-N	LNR	0.9999	
Nitrite-N	LNR	1.0000	
Sulfate	LNR	0.9999	

Comments:

GENERAL CHEMISTRY SECOND SOURCE CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Second Source ID: ICV-0831

Instrument Name: ICQ

Concentration Units: mg/L

Initial Calibration ID: EPA300A-083106

Analyte	Expected	Found	%D	Q
Chloride	5	4.82	-3.6	
Fluoride	5	5.08	1.7	
Nitrate-N	7.19	7.24	0.7	
Nitrite-N	3.47	3.52	1.4	
Sulfate	5	5.04	0.8	

Comments:

2A-WC

GENERAL CHEMISTRY CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Analytical Lot ID: 122006Q5

Instrument Name: ICQ

Concentration Units: mg/L

Initial Calibration ID: EPA300A-083106

CCV #1 ID: CV1-1222 CCV #2 ID: CV2-1222 CCV #3 ID: CV3-1222

Analyte	Expected	Found	%D	Q	Expected	Found	%D	Q	Expected	Found	%D	Q
Chloride	5	5.04	0.7		5	5.21	4.1		5	5.01	0.1	
Fluoride	5	4.55	-9.1		5	4.54	-9.2		5	4.56	-8.8	
Nitrate-N	5	4.50	-10.0		5	4.53	-9.4		5	4.54	-9.2	
Nitrite-N	5	5.49	9.7		5	5.49	9.7		5	5.39	7.8	
Sulfate	15	14.8	-1.2		15	15.1	0.6		15	15.2	1.1	

Comments:

SOIL GENERAL CHEMISTRY METHOD BLANK SUMMARY

Field Sample ID: SB1-1222

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Lab Sample ID: SB1-1222

Initial Calibration ID: EPA300A-083106

Date Analyzed: 12/22/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1312

Instrument: ICQ

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
1	BS1S1222	BS1S1222	12/22/06	1209
2	BS2S1222	BS2S1222	12/22/06	1230
3	BS3S1222	BS3S1222	12/22/06	1251
4	J13V46	F315801	12/22/06	1724

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

LCS ID: BS1S1222

Initial Calibration ID: EPA300A-083106

Date Analyzed: 12/22/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1209

Instrument: ICQ

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Chloride	25	23.0	92.0	90-110	
Fluoride	25	22.8	91.3	90-110	
Sulfate	25	26.1	105	90-110	

* Values outside of QC limits

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

LCS ID: BS2S1222

Initial Calibration ID: EPA300A-083106

Date Analyzed: 12/22/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1230

Instrument: ICQ

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrite-N	18.7	19.0	102	90-110	

* Values outside of QC limits

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

LCS ID: BS3S1222

Initial Calibration ID: EPA300A-083106

Date Analyzed: 12/22/06

Matrix: (Soil/Water) SOIL

Time Analyzed: 1251

Instrument: ICQ

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate-N	36	35.1	97.5	90-110	

* Values outside of QC limits

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Lab Code: CVO

Instrument: ICQ

Analytical Lot ID: 300A-083106

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	ICB-0831	ICB-0831	08/31/06	1808
02	LEVEL1	LEVEL1	08/31/06	1829
03	LEVEL2	LEVEL2	08/31/06	1850
04	LEVEL3	LEVEL3	08/31/06	1911
05	LEVEL4	LEVEL4	08/31/06	1932
06	LEVEL5	LEVEL5	08/31/06	1953
07	LEVEL6	LEVEL6	08/31/06	2014
08	LEVEL7	LEVEL7	08/31/06	2035
09	LEVEL8	LEVEL8	08/31/06	2056
10	ICV-0831	ICV-0831	08/31/06	2117
11	ICV-0831	ICV-0831	08/31/06	2138
13	ICV-0831	ICV-0831	08/31/06	2220

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E300.0A

Lab Code: CVO

Instrument: ICQ

Analytical Lot ID: 122006Q5

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
15	CV1-1222	CV1-1222	12/22/06	1127
17	BS1S1222	BS1S1222	12/22/06	1209
18	BS2S1222	BS2S1222	12/22/06	1230
19	BS3S1222	BS3S1222	12/22/06	1251
20	SB1-1222	SB1-1222	12/22/06	1312
31	CV2-1222	CV2-1222	12/22/06	1703
32	J13V46	F315801	12/22/06	1724
41	CV3-1222	CV3-1222	12/22/06	2032

Comments:

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Fax: 541-752-0276

01/23/07

MDL Study Report

Analytical Method: E300.0A

Matrix: Soil

Instrument ID: ICQ

Concentration Units: mg/kg

Analyte	Analysis Date	Amt. Spiked	Replicates 1	2	3	4	5	6	7	8	Std. Dev.	MDL
Nitrate	11/15/06	0.25	0.190	0.175	0.185	0.190	0.197	0.200	0.195	0.200	0.00846	0.0254
Nitrite-N	11/15/06	0.25	0.235	0.225	0.210	0.235	0.220	0.210	0.225	0.215	0.00998	0.0299
Sulfate	11/15/06	0.75	0.685	0.750	0.675	0.700	0.705	0.735	0.705	0.725	0.0252	0.0756
Chloride	11/15/06	0.25	0.370	0.355	0.346	0.320	0.334	0.365	0.359	0.365	0.0174	0.0523
Fluoride	11/15/06	0.25	0.185	0.174	0.184	0.190	0.170	0.190	0.215	0.170	0.0148	0.0442

PERCENT MOISTURE
ASTM D2216

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Matrix: SOIL

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: F315801

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
MOISTURE	Moisture	0.00	0.00	1.41		%	1	9.815 G	ASTM D2216	12/21/06

PARTICLE SIZE
METHOD 422

Hanford

Particle Size

420.2 g sample used

Weight retained is the weight of material ON each sieve

ANALYST: KRM 1/12/2007

Lab I.D.	Client I.D.	Sieve #	Sieve Size (um)	Sieve Size (mm)	Weight Retained (g)	Weight Retained (%)	Cumulative Coarser (%)	Cumulative Finer (%)
F315801	J13V46	8	2362	2.362	1.10	0.26	0.26	99.74
		16	1180	1.180	2.00	0.48	0.74	99.26
		30	600	0.600	3.90	0.93	1.67	98.33
		50	500	0.500	18.20	4.34	6.01	93.99
		100	147	0.147	241.70	57.67	63.68	36.32
		200	75	0.075	130.80	31.21	94.89	5.11
		pan			21.40	5.11	100.00	0.00
		total			419.1			

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pH
METHOD SW9045C

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Matrix: SOIL

% Moisture: 1

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: F315801

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
PH	pH	0.00	0.00	7.45		pH	1	20 G	SW9045	12/22/06

TKN
METHOD EPA 351.2

CASE NARRATIVE
TKN

Analytical Method: EPA 351.2 Batch No.: F3158

Lab Name: CH2M HILL Applied Sciences Lab Contract #.: 920842.OTC

Base/Command: ELR Consulting Prime Contractor.:

I. Holding Times:
All acceptance criteria were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike/Matrix Spike Duplicate Sample(s):
Samples were analyzed in accordance with SOP.

D. Laboratory Control Spike(LCS)
All acceptance criteria were met.

E. Analytical Exception:
None.

F. Other:
None.

III. Sampling Equipment:
None.

IV. Documentation Exceptions:
None

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Reported by: Date: 1/10/07

Reviewed by: Date: 1/12/07

SAMPLE DATA
SUMMARY

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: F315801

% Moisture: 1

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
TKN	Total Kjeldahl Nitrogen as N	4.63	1150	249	B	mg/kg	25	2.744 G	E351.2	01/05/07

DK070110-10:58-F3158-W

FORM I GEN CHEM

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

SB1-1221

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: SB1-1221

% Moisture: 0

Date Received: / /

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
TKN	Total Kjeldahl Nitrogen as N	0.201	50.0	50.0	U	mg/kg	1	2.5 G	E351.2	01/05/07

QC DATA SUMMARY

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Initial Calibration Date: 03/28/06 16:38

Instrument Name: LACH8000

Concentration Units: mg/L

Initial Calibration ID: 032806TKN

Analyte	Std 1	Resp 1	Std 2	Resp 2	Std 3	Resp 3	Std 4	Resp 4	Std 5	Resp 5	Std 6	Resp 6
Total Kjeldahl Nitrogen as N	5.0	5600000	2.0	2390000	1.0	1300000	0.50	702000	0.20	273000	0.10	218000

Comments:

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Initial Calibration Date: 03/28/06 16:38

Instrument Name: LACH8000

Concentration Units: mg/L

Initial Calibration ID: 032806TKN

Analyte	Curve Type	r	Q
Total Kjeldahl Nitrogen as N	LNR	0.9994	

Comments:

GENERAL CHEMISTRY SECOND SOURCE CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Second Source ID: ICV-0328

Instrument Name: LACH8000

Concentration Units: mg/L

Initial Calibration ID: 032806TKN

Analyte	Expected	Found	%D	Q
Total Kjeldahl Nitrogen as N	18.7	20.5	9.6	

Comments:

2A-WC

GENERAL CHEMISTRY CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Analytical Lot ID: 010507TKN

Instrument Name: LACH8000

Concentration Units: mg/L

Initial Calibration ID: 032806TKN

CCV #1 ID: CV5-0105 CCV #2 ID: CV6-0105 CCV #3 ID:

Analyte	Expected	Found	%D	Q	Expected	Found	%D	Q	Expected	Found	%D	Q
Total Kjeldahl Nitrogen as N	0.5	0.520	4.1		0.5	0.520	4.1					

Comments:

3-WC

SOIL GENERAL CHEMISTRY METHOD BLANK SUMMARY

Field Sample ID:

SB1-1221

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Lab Sample ID: SB1-1221

Initial Calibration ID: 032806TKN

Date Analyzed: 01/05/07

Matrix: (Soil/Water) SOIL

Time Analyzed: 1703

Instrument: LACH8000

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
1	BS1S1221	BS1S1221	01/05/07	1701
2	J13V46	F315801	01/05/07	1704

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

LCS ID: BS1S1221

Initial Calibration ID: 032806TKN

Date Analyzed: 01/05/07

Matrix: (Soil/Water) SOIL

Time Analyzed: 1701

Instrument: LACH8000

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Total Kjeldahl Nitrogen as N	227	191	84.1	75-125	

* Values outside of QC limits

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Lab Code: CVO

Instrument: LACH8000

Analytical Lot ID: 032806TKN

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	LEVEL 1	LEVEL 1	03/29/06	1638
02	LEVEL 2	LEVEL 2	03/29/06	1639
03	LEVEL 3	LEVEL 3	03/29/06	1640
04	LEVEL 4	LEVEL 4	03/29/06	1641
05	LEVEL 5	LEVEL 5	03/29/06	1642
06	LEVEL 6	LEVEL 6	03/29/06	1643
08	ICV-0328	ICV-0328	03/29/06	1645

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: E351.2

Lab Code: CVO

Instrument: LACH8000

Analytical Lot ID: 010507TKN

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
45	CV5-0105	CV5-0105	01/05/07	1650
47	BS1S1221	BS1S1221	01/05/07	1701
48	SB1-1221	SB1-1221	01/05/07	1703
49	J13V46	F315801	01/05/07	1704
61	CV6-0105	CV6-0105	01/05/07	1716

Comments:

CH2MHILL
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01/10/07

MDL Study Report

Analytical Method: E351.2

Instrument ID: LACH8000

Matrix: Soil

Concentration Units: mg/kg

Analyte	Analysis Date	Amt. Spiked	Replicates 1	2	3	4	5	6	7	8	Std. Dev.	MDL
Total Kjeldahl Nitrogen	12/08/06	2	2.03	2.07	1.97	2.00	2.05	1.91	1.91		0.0640	0.201

TOTAL ORGANIC CARBON
BY ASTM E777

CASE NARRATIVE
TOC SOIL

Analytical Method: ASTM E-777 Batch No.: F3158

Lab Name: CH2M HILL Applied Sciences Lab Contract #.: 920842.OTC

Base/Command: ELR Consulting Prime Contractor.:

I. Holding Times:
All acceptance criteria were met.

II. Analysis:

A. Calibration:
All acceptance criteria were met.

B. Blanks:
All acceptance criteria were met.

C. Matrix Spike/Matrix Spike Duplicate Sample(s):
All acceptance criteria were met.

D. Laboratory Control Spike(LCS)
All acceptance criteria were met.

E. Analytical Exception:
None.

F. Other:
None.

III. Sampling Equipment:
None.

IV. Documentation Exceptions:
None

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Reported by: [signature] Date: 1-3-07

Reviewed by: JBeatman Date: 1-4-07

SAMPLE DATA SUMMARY

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

J13V46

SDG No.: F3158

Matrix: SOIL

% Moisture: 0

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: F315801

Date Received: 12/15/06

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
TOC	Total Organic Carbon	140	329	7270		mg/kg	1	0.3035 G	ASTM E777	01/02/07

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

SB1-0102

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Matrix: SOIL

Lab Sample ID: SB1-0102

% Moisture: 0

Date Received: / /

CAS No.	Analyte	MDL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
TOC	Total Organic Carbon	42.5	100	100	U	mg/kg	1	1 G	ASTM E777	01/02/07

QC SUMMARY

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Initial Calibration Date: 11/20/06 1540

Instrument Name: TOC SKALAR

Concentration Units: mg/Kg

Initial Calibration ID: 112006S1

Analyte	Std 1	Resp 1	Std 2	Resp 2	Std 3	Resp 3	Std 4	Resp 4	Std 5	Resp 5	Std 6	Resp 6
Total Organic Carbon	100	681000	200	1670000	1000	7620000	4000	2.80E+7	8000	5.03E+7		

Comments:

2-WC

GENERAL CHEMISTRY INITIAL CALIBRATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Initial Calibration Date: 11/20/06 1540

Instrument Name: TOC SKALAR

Concentration Units: mg/Kg

Initial Calibration ID: 112006S1

Analyte	Curve Type	r	Q
Total Organic Carbon	LNR	0.9968	

Comments:

2B-WC

GENERAL CHEMISTRY SECOND SOURCE CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Second Source ID: ICV-1121

Instrument Name: TOC SKALAR

Concentration Units: mg/kg

Initial Calibration ID: 112006S1

Analyte	Expected	Found	%D	Q
Total Organic Carbon	8840	10400	18.2	

Comments:

2A-WC

GENERAL CHEMISTRY CALIBRATION VERIFICATION DATA

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Analytical Lot ID: 010207TOCS

Instrument Name: TOC SKALAR

Concentration Units: mg/kg

Initial Calibration ID: 112006S1

CCV #1 ID: CV1-0102 CCV #2 ID: CV2-0102 CCV #3 ID:

Analyte	Expected	Found	%D	Q	Expected	Found	%D	Q	Expected	Found	%D	Q
Total Organic Carbon	4000	4240	6.1		4000	3860	-3.4					

Comments:

3-WC

SOIL GENERAL CHEMISTRY METHOD BLANK SUMMARY

Field Sample ID:

SB1-0102

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Lab Sample ID: SB1-0102

Initial Calibration ID: 112006S1

Date Analyzed: 01/02/07

Matrix: (Soil/Water) SOIL

Time Analyzed: 1037

Instrument: TOC SKALAR

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
1	BS1S0102	BS1S0102	01/02/07	1023
2	J13V46	F315801	01/02/07	1345

Comments:

7-WC

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

LCS ID: BS1S0102

Initial Calibration ID: 112006S1

Date Analyzed: 01/02/07

Matrix: (Soil/Water) SOIL

Time Analyzed: 1023

Instrument: TOC SKALAR

Concentration Units: mg/kg

Analyte	Expected	Found	%R	QC Limits %R	Q
Total Organic Carbon	8840	9870	112	75-125	

* Values outside of QC limits

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Lab Code: CVO

Instrument: TOC SKALAR

Analytical Lot ID: 112006S1

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	ICB-1120	ICB-1120	11/20/06	1451
02	LEVEL1	LEVEL1	11/20/06	1540
03	LEVEL2	LEVEL2	11/20/06	1550
04	LEVEL3	LEVEL3	11/20/06	1600
05	LEVEL4	LEVEL4	11/20/06	1610
06	LEVEL5	LEVEL5	11/20/06	1620
07	ICV-1121	ICV-1121	11/21/06	1447

Comments:

14-WC

GENERAL CHEMISTRY ANALYTICAL SEQUENCE

SDG No.: F3158

Lab Name: CH2M HILL/LAB/CVO

Analysis Method: ASTM E777

Lab Code: CVO

Instrument: TOC SKALAR

Analytical Lot ID: 010207TOCS

	Field Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed
01	CV1-0102	CV1-0102	01/02/07	1012
02	BS1S0102	BS1S0102	01/02/07	1023
03	SB1-0102	SB1-0102	01/02/07	1037
07	J13V46	F315801	01/02/07	1345
16	CV2-0102	CV2-0102	01/02/07	1729

Comments:

CH2MHILL
Applied Sciences Laboratory

CH2M HILL
Applied Sciences Labortory (ASL)
2300 NW Walnut Blvd.
P.O. Box 428
Corvallis, OR 97330-0428
Telephone: 541-752-4271
Fax: 541-752-0276

01/03/07

MDL Study Report

Analytical Method: ASTM E777

Instrument ID: TOC Skalar

Matrix: Soil

Concentration Units: mg/kg

Analyte	Analysis Date	Amt. Spiked	Replicates 1	2	3	4	5	6	7	8	Std. Dev.	MDL
Total Organic Carbon	09/06/06	140	53.8	79.8	81.2	45.1	58.9	68.5	57.4		13.5	42.5

CHAIN OF CUSTODY/SHIPPING DOCUMENTS

F3158

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-082-59	Page 1 of 1

Collector: B. TILLER JAMES BERNHARD	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: RCBRA-Inter-Areas Shoreline Assessment - Sediment	Sampling Location: RCBRA 2m Aq		SAF No.: RC-082
Ice Chest No.: ERC-02-004	Field Logbook No.: EL-1612	COA: BESBEA6520	Method of Shipment: GROUND TRANSPORT
Shipped To: CH2MHill - Corvallis	Offsite Property No.: A070125		Bill of Lading/Air Bill No.: SEE OSPC

Priee Code: Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

COOL 4 C

Preservation	Cool 4C	None	None								
Type of Container	G/P	P/G	P/G								
No. of Container(s)	1	1	1								
Volume	1000g	1000g	6000g								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Sediment Invertebrate Toxicity ASTM E1706	Sediment Phytotoxicity EEDP-04-11								

Sample No.	Matrix *	Sample Date	Sample Time										
J13V46	OTHER SOLID	12-13-06	1100	X	X	X							-1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: JAMES BERNHARD	Date/Time: 1330 12-13-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 1330 12-13-06
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 1030 12-14-06	Received By/Stored In: R Weeks	Date/Time: 12/14/06 1030
Relinquished By/Removed From: R Weeks	Date/Time: 12/14/06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time:	Received By/Stored In:	Date/Time: 12/15/06 1420
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time: 12/15/06 14:20
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0; Ammonia - 350.3; pH (Soil) - 9045; TOC - 9060; Moisture Content - D2216; Nitrogen by Kjeldahl - 351.2; Particle Size (Dry Sieve) - D422

31728-09, COC seals intact. 7.6°C o-ice

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: Assoc. Sci	Date/Time: 12/15/06 1420
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

CH2MHILL
Analytical Services

Sample Receipt Record

Batch Number: E3158 Date received: 12/15/06

Client/Project ELR - Sediment from Bioassay

VERIFICATION OF SAMPLE CONDITIONS (verify all items) * HD = Client Hand delivered Samples

Observation	YES	NO
Radiological Screening for AFCEE		X N/A
Were custody seals intact and on the outside of the cooler?	X	
If yes, Where? Front X Rear X Lt Side ____ Rt Side ____		
Type of packing material: (Ice) Blue Ice Bubble wrap		
Was the Chain of Custody inside the cooler?	X	
Was the Chain of Custody properly filled out?		X
Were the sample containers in good condition?	X	
Containers supplied by ASL?		X
Any sample with < 1/2 holding time remaining? If so contact LPM		X
Was there ice in the cooler? Enter temp. 4.2 C	X	
All VOCs free of air bubbles ?		N/A

VERIFICATION OF SAMPLE PRESERVATION

Sample No	Nutrients pH <2	Metals pH <2	Volatiles pH <2	Cyanides pH >12	TOC pH <2	TOX pH <2	Other (specify)	N/A (soils/unpres)
1								X
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								

LOGIN AND pH VERIFICATIONS PERFORMED BY

Darcy Hubbard 12/15/06 14:55

Date/Time Date/Time

CH2MHILL
Applied Sciences Group

Sample Receipt Exception Report

Sample Batch Number: F3158 **Client /Project** ELR (Sediment)

The following exceptions were noted:		Comments (write number of exception description and the impacted sample numbers)
	1. No custody seal as required by project	10) COC ID: J13V46 Container Label ID: J13V00 (ASL ID: F3158-01)
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on reciept.	
	5. Temperature of samples inappropriate for analysis requested	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requrested	
X	10. Discrepancies between COC form and container labels.	
	11. Other.	

ACTION TAKEN: 10) Notify client - this form emailed to Mike Stanaway 12/15/06 DOH + Brett Muckey to communicate w/ client

Originator: Daisy Hubbard Date: 12-15-06

Client was notified on: (Date/Time) Client Contact:

12/15/0. by Mike Stanaway Richard Weiss

per client request - place sample on hold - do not analyze pending resampling. See attached email DOH 12/18/06

Bioassay lab to supply chemistry lab with sufficient volume of properly labelled sample to conduct chemistry analysis. DOH 12/18/06

CH2M HILL
Applied Sciences Laboratory
2300 NW Walnut Blvd., Corvallis, OR 97330-3538
P.O. Box 428, Corvallis, OR 97339-0428
Tel 541.752.4271
Fax 541.752.0276

Hubbard, Daisy/CVO

From: Muckey, Brett/CVO
Sent: Monday, December 18, 2006 12:08 PM
To: Weiss, Richard L; Stanaway, Mike/CVO; Hubbard, Daisy/CVO
Subject: RE: Sediment COC

Rich,

As per our phone conversation: We will sample approx 1 kg from the J13V46 subsample for PakChoi analysis and submit it for chemical analysis as a replacement for the J13V00 bottle.

Brett

From: Weiss, Richard L [mailto:richard.weiss@wch-rcc.com]
Sent: Monday, December 18, 2006 11:54 AM
To: Stanaway, Mike/CVO; Muckey, Brett/CVO; Hubbard, Daisy/CVO
Subject: RE: Sediment COC

Daisy and Brett,

After further consultation with the project, they are going to try to resample for the mis-labeled bottle. Please put any analytical work associated with the J13V00 bottle on-hold. I'll get more details as we work things out.

Rich Weiss
509-372-9631

From: Mike.Stanaway@CH2M.com [mailto:Mike.Stanaway@CH2M.com]
Sent: Monday, December 18, 2006 11:30 AM
To: brett.muckey@ch2m.com; daisy.hubbard@ch2m.com
Cc: richard.weiss@wch-rcc.com
Subject: RE: Sediment COC

Hi Daisy and Brett,

Rich called on this sample. Please treat the analytical sample that was mis-labeled (J13V00) as sample J13V46. Rich will get back to us on how to report the sample.

Also, please put the above email address from Rich into your contacts as the one on in the outlook address book does not work.

Thanks
Mike

From: Muckey, Brett/CVO
Sent: Friday, December 15, 2006 3:34 PM
To: Weiss, Richard/RLO
Cc: Stanaway, Mike/CVO; Hubbard, Daisy/CVO
Subject: Sediment COC

Rich,

We received 1 cooler today. It had 1 COC form for Sample ID J13V46 listing 3 analyses.

The containers for the "sediment invertebrate" and the "sediment phytoxicity" subsamples matched the COC and were labeled J13V46. However, the container for the "special instructions" subsample did not match the COC and was labeled J13V00. A sample receipt exception report was created and is included in the attachment.

Please advise on how you would like us to deal with the discrepancy.

Thanks,

Brett