

BEST BEST & KRIEGER

ATTORNEYS AT LAW

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May 28, 2010

SENT VIA EMAIL

State Water Resources Control Board Attn: Jeanine Townsend, Clerk to the Board 1001 I Street Sacramento CA 95814



Re: Comments to the proposed 2010 Integrated Report

Dear State Water Resources Control Board:

Best Best & Krieger LLP represents the Kings River Conservation District ("KRCD") and the Southern San Joaquin Valley Water Quality Coalition ("SSJVWQC"), and submits the following comments on behalf of KRCD and SSJVWQC. The comments are in response to the proposed 2010 Integrated Report on proposed 303d listings and concern three proposed listing decisions on the Kings River. The listing decisions of concern are Decision ID 6975 (Toxaphene), Decision ID 15766 (Chlorpyrifos), and Decision ID 15767 (Unknown Toxicity).

I. Decision ID 6975 - Toxaphene

KRCD and SSJVWQC water quality monitoring data shows that toxaphene has not been detected in the Kings River since 1986. Toxaphene has been actively monitored from 2004 through 2009 and has not been detected in the Kings River (Island Weir to Stinson and Empire Weirs). More specifically, extensive water quality monitoring data has been developed from January 3, 2004 through September 5, 2007. (See Exhibit A) The sample size was 100 with zero detections. These results far surpass the criteria required to de-list a water body under section 4.1 of the Water Quality Control Policy adopted by the State Board in 2004. That criteria qualifies a delisting with as few as 28 samples. This water quality information, showing no toxaphene, was presented to the Central Valley Regional Water Quality Control Board ("Regional Board") on August 25, 2008. KRCD and SSJVWQC were informed on October 15, 2008 by Regional Board staff that they were not going to honor this data notwithstanding the delisting criteria. Staff explained that this new position was justified because the original listing appeared to have been based on a single "composite (of seven white bass individuals) fish fillet sample collected in May 1986 from the south fork of the Kings River contain[ing] 470 ppb of toxaphene, which was above the NAS toxaphene guideline of 100 ng/g." Regional Board staff also stated that their new position was that a decision to de-list toxaphene would not be based on water column sampling data (which Regional Board staff had previously indicated would be acceptable), but would need to be based on similar fish tissue sampling data as opposed to the water column sampling data submitted by KRCD and SSJVWQC and normally required.

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KCRD and SSJVWQC conferred with the California Department of Fish and Game ("DFG") about the appropriate fish to sample because there are no longer any white bass in the Kings River. With guidance from DFG, KRCD and SSJVWQC advised the Regional Board of their intention to test fish, and undertook the appropriate fish tissue sampling and analysis. Per DFG's advice Gold fish, Carp, Catfish and Large Mouth Bass were all taken at the pool created by Weir #1 and their tissue was sampled. No toxaphene whatsoever was detected in any of the samples. (See Exhibit B) Once available, the fish tissue sampling data was submitted to Regional Board staff on July 17, 2009. After submission, KRCD and SSJVWQC were informed by Regional Board staff that the fish tissue sampling data was submitted late and would therefore not be considered in the 2008 listing cycle and they would have to wait another three years for the next listing cycle.

The Regional Board staff decision not to consider the fish tissue sampling data is without merit and capricious. The required water data was all submitted well before any deadline. The supplemental fish data was submitted as soon as it was available. It took two months for the Regional Board staff to advise KRCD and SSJVWQC of their decision to reject the fish tissue sampling data. The fish data was submitted in July 2009. That was only ten months after the Regional Board's notice. It took several months just to coordinate with DFG. The effort included development of methodology, actual fish sampling, analysis and reporting and was all completed within ten months, no small feat. The data was submitted with more than ample time for staff to review it prior to completing their regional report and submitting same to State Board staff. Therefore, because both the water column and fish tissue sampling data show absolutely no evidence of toxaphene exceedances for the period required for de-listing criteria, the State Board should de-list toxaphene on the Kings River. It may be helpful to the State Board in making its decision to note that it has been 24 years since the toxephene fish data, alleged to be the basis for listing, was collected.

II. Decision ID 15766 - Chlorpyrifos

Regional Board staff has recommended not to place Chlorpyrifos on the section 303(d) list because applicable water quality standards are not being exceeded. The data on Chlorpyrifos supports the Regional Board recommendation. Failing to properly consider the most current monitoring data available, the State Board staff has decided to overrule the Regional Board and recommend that Chlorpyrifos be placed on the 303(d) list. State board staff has erred in making this decision for three reasons. First, a review of the most current water monitoring data available shows that Chlorpyrifos has not been detected in the Kings River since 2005. (See Exhibit C) Second, the 2005 exceedance of Chlorpyrifos occurred during a storm event and was most likely the result of urban runoff. (Chlorpyrifos is a chemical that is also registered for home and garden use.) Further, Chlorpyrifos has never been detected on a significant portion of the river stretch proposed to be listed. Third, the data relied upon by State Board staff was collected by a third party that did not follow the rigid water quality protocol being used in the Irrigated Lands Regulatory Program ("ILRP"). The third party did not document the conditions present when the samples were collected, the type of water body they were obtained from or how they were transported.

Chlorpyrifos should not be listed because more current monitoring data is available and no physical indicators of potential contamination, such as fish kills, nuisance complaints, etc., have been reported. The ILRP monitoring data from May 2006 through December 2009 shows Chlorpyrifos has not

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been detected even once in the last three and one half years. (ILRP monitoring for Chlorpyrifos terminated as of January 1, 2010 based on these results.) Data cited by State Board staff as the basis for their decision is outdated and even then is barely able to meet the level required for a lab to certify an exceedance has occurred. For these reasons the State Board should not list chlorpyrifos on the Kings River.

III. Decision ID 15767 - Unknown Toxicity

The Regional Board and State Board staff recommendation for listing "unknown toxicity" is based on the lack of algae growth in water samples voluntarily collected and submitted by SSJVWQC under the ILRP beginning in 2004. However, this sampling data obtained through the ILRP is widely recognized to be flawed because the testing procedure used by the laboratory was incorrect and resulted in false positives for toxicity. (See Exhibit D.) The samples obtained under the program have falsely indicated reduced algae growth since the inception of the program, but have not shown any chemical constituents identified in Phase II testing as a cause of toxicity. The samples consistently showed positive algae growth, just not at the same growth rate as that of the control samples.

Early in that program these consistent, but at the time unexplained, results were of concern to KRCD and SSJVQWC. As a result an investigation was undertaken in 2006. Up to that point, all algae tests were run through the same laboratory and suspicions arose as to lab procedures or control water. In September 2006, KRCD and Regional Board staff jointly collected and split water samples from the same location on the same date. KRCD sent its samples to its normal lab, while Regional Board samples were sent to the DFG lab which the Regional Board normally uses. The samples submitted by KRCD again showed significant differences in algae growth as compared to the control (interpreted as toxic), but the samples submitted to the DFG state laboratory did not show any significant difference (and interpreted as non-toxic). KRCD conducted a second split study by taking identical water samples and sending them to two different laboratories. The laboratory results from the laboratory that KRCD had normally used showed a significant difference as they had in the past. However, the other laboratory, Fruit Growers Laboratory, showed no significant difference.

After further investigation it was determined that under the required quality control laboratory "method" the individual laboratory has considerable freedom as to the actual procedures followed and this can lead to very inconsistent results from one laboratory to the next. Until KRCD undertook this investigation in cooperation with the Regional Board, it was not told that the control water used in the testing process could be reformulated to match the hardness levels of the sample water. A USGS scientist familiar with the testing method involved concluded that the difference in water hardness contributes to a "shock effect" on the algae, which delays its growth curve. A special test run over eight days as opposed to the normal four day period showed that algae growth in the KRCD samples matched the growth in control samples after the shock effect of the control water wore off.

KRCD ran further tests in May of 2009 to confirm these initial findings. In those tests, water hardness of the control samples matched the water hardness of the KRCD samples. The results were consistent with the initial findings. The algae growth in the KRCD samples matched or surpassed the algae growth in the control samples. (See Exhibit E) The data relied upon by the Regional Board staff in

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making its recommendation to list Kings River for unknown toxicity was therefore flawed because it was based on false positive toxicity tests.

Additional data exists and was submitted to Regional Board staff for its review in 2009. These types of problems associated with algae toxicity testing are now well known by all parties. In fact, this method of testing has recently produced results that have failed to meet U.S. EPA criteria for acceptability due to insufficient algae growth within the control sample. (See Exhibit F) The U.S. EPA sanctioned option allows the use of modified, low hardness control water, which more closely matches the EC and hardness levels in the Kings River. Unfortunately, the algal culture does not always reach the acceptability criteria required of the test (0.200 million cells/ml). Thus, Kings River water quality tests showing slow growing algae do not prove there is an unknown toxicity in the water, they merely prove that water nutrients are such that the algae is slow growing. The additional data submitted by KRCD and SSJVWQC further supports a "do not list" recommendation and explains why initial testing results were flawed. Any recommendation as to listing should only be based on the more recent data developed in or after 2009, when these lab procedures have been somewhat worked out, but that data confirms no toxicity. Based on the circumstances in this case the State Board should not list unknown toxicity on the Kings River.

Thank you for your consideration in these matters and we are happy to provide additional information if required by the State Board.

Sincerely,

William J. Thomas

for BEST & KRIEGER LLP

WJT:avr attachments

Exhibit A

KINGS RIVER SUB-WATERSHED

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Exhibit B

KINGS RIVER CONSERVATION DISTRICT SUMMARY DATA FOR TOXAPHENE 303(D) KINGS RIVER WATERSHED Sample Location: Pool Created by Empire Weir #1

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Exhibit C

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Exhibit D

Eric Athorp
Kings River Conservation District
4886 East Jensen Avenue
Fresno, CA 93725

May 11, 2010

At the request of the Kings River Conservation District, Pacific EcoRisk is providing algae toxicity data that was developed to address the potential for false positives (i.e., defined as a conclusion that a sample is toxic when the "toxicity" is due to the method or test interferences rather than due to toxicants in the sample) due to the type of Lab Control water that is selected to perform the testing. It is important to note that our intention is not to discount the value of performing algae toxicity testing with Selenastrum capricornutum, as this method has been a crucial tool used for many years to assess potential impacts on algae due to toxicant exposure. Rather, the objective of sharing this information is to point out that the type of Lab Control water used by the toxicity testing laboratory may result in reporting that the sample is toxic, when in fact the sample would not be toxic had another type of acceptable Lab Control water been used.

As noted in Section 7.1 of the EPA manual (821-R-02-012), latitude is provided for laboratories to select a type of Lab Control water that supports adequate performance of the test organism with respect to algal growth (i.e., consistently meets test acceptability criteria for control responses), is consistent in quality, and does not contain contaminants that produce toxicity. The Lab Control water may be synthetic water or synthetic water that is adjusted to the approximate receiving water conditions (e.g., hardness). Often, the laboratory will also determine what type of water not only meets the above requirements, but also best suites their needs (e.g., is readily available, is cost effective, etc.).

The Lab Control water requirements result in considerable differences as to the source water used by laboratories for the *Selenastrum* test. For example, some laboratories have a readily available source of high-quality well water; others may have a high-end Type I water treatment system that produces reverse osmosis/de-ionized water, while others may purchase bottles water (e.g., Arrowhead spring water, Perrier, Evian). All of these waters would likely be acceptable for use as a Lab Control for the *Selenastrum* test.

Pacific EcoRisk has previously been contracted by a variety of point source dischargers to review the test results that were performed by other laboratories since the labs were reporting toxicity, but they were unable to identify the cause of the toxicity. Pacific EcoRisk rather quickly determined that the Lab Control performance for the labs was often many times higher than other Lab Control data, which could result in a false positive. To determine if this hypothesis was correct, Pacific EcoRisk performed an in-house comparison of readily available Lab Control waters to determine if two different samples would be toxic depending on which Lab Control the sample was compared to. The study design consisted of determining the effect on algal growth of

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two different effluent samples as compared to de-ionized water, Arrowhead spring water, EPA moderately hard water (EPAMH – prepared by adding reagent grade salts to Type 1 water), Perrier water, and Evian water. The results of the experiment are presented in the table below.

Treatment	Cell Growth (x 10 ⁶)	Cell Growth (x 106)
Type 1 Lab Water	3.83	3.83
Arrowhead Water	4.18	4.18*
EPA Moderately Hard Water	4.54	4.54*
Perrier Water	4.01	4.01
Evian Water	4.73*	4.73*
Effluent 1	4.35	4.35
Effluent 2	3.63	3.63

^{*} Effluent treatment is significantly less than the Lab Control treatment at p < 0.05.

The results of this testing supported our hypothesis that a sample may be deemed toxic (i.e., significantly less than the Lab Control) with some Lab Control waters and not with others. For example, Effluent 1 was not toxic when compared to four Lab Control waters, but was toxic when compared to Evian water. Effluent 2 was not toxic when compared to two Lab Control waters, but was toxic when compared to Arrowhead, EPAMH, and Evian waters. The conclusion is that the finding of "toxicity" for the effluent is being driven by the type of Lab Control water being selected for testing.

As the Type 1 Lab Water is virtually devoid of all minerals and had the lowest algal growth, and all other waters tested had higher growth and a greater mineral content, we believe that the higher growth in the other waters is due to the additional minerals in these waters serving as a nutrient sources for the algae. It is important to note that all of these waters met the EPA test acceptability criteria for testing, and would be deemed acceptable for use as Lab Control water. In essence, all Lab Control waters are not equal in their growth potential for the algae, which is resulting in a greater stimulatory response in some Lab Control waters that creates a greater separation in algal growth for these waters from the sample being tested, and a greater potential for the finding of "toxicity".

As noted earlier, the primary concern with such results is that some labs may report a sample as being toxic, while split lab testing with another lab could result in the other lab not reporting the very same sample as toxic solely based on using a different Lab Control water. Similarly, a laboratory that elects to use Lab Control water that has a greater stimulatory potential could be reporting toxicity more frequently than other labs. We believe that this is an artifact of the test design and results in false positives – reporting a sample as being toxic when they are in fact not. A further problem is that many regulatory programs would require follow up testing to determine the cause of this "toxicity" via the application of Toxicity Identification Evaluations. If the cause is in fact a stimulatory Lab Control, then literally thousands to tens of thousands of dollars could be spent with absolutely no identification of the toxicant causing toxicity since there is in fact no

toxicant reducing the algal growth in the sample. Of even greater concern is that ambient monitoring sites could be listed on the 303(d) list simply due to the use of a stimulatory Lab Control in the testing performed by the laboratory.

Pacific EcoRisk has participated in the Irrigated Lands Regulatory Program (ILRP) Technical Issues Committee (TIC) from its' inception. When this information became available about two years ago, we shared it with the TIC and ILRP staff. We cautioned the labs that are performing ILRP testing that they should critically review their choice of Lab Control waters. ILRP staff decided that the participating labs should review their Lab Control performance, and that the agricultural Coalitions should review their data and solicit appropriate (and acceptable) changes to their Lab Control media if there was a potential for false positives in their testing.

Please feel free to contact me should you have any questions regarding this data or this summary of the information involved with our study.

so for

Stephen Clark
Vice President and Special Projects Director

255 Scottsville Blvd PO Box 1268 Jackson, CA 95642

Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

April 30, 2010

Kings River Conserv Dist

Attn: Eric Athorp 4886 E Jensen Ave Fresno CA 93725

TEST SUMMARY

RE: Abbreviated static-renewal acute toxicity testing of Gould Canal compared to

Laboratory Control Water

04-21-10 to 04-25-10

Method = Agricultural Waiver

Lab# 689098

Fathead Minnow (Pimephales promelas) Larval 96h Survival Test Treatment 96h % Survival

Could

97. 5

+DMW Lab Control

100.0

Survival of fathead minnows exposed to 100% Gould Canal was not significantly reduced from the DMW control.

Ceriodaphnia dubia Larval 96h Survival Test

Treatment

96h % Survival

Gould

100.0

+DMW Lab Control

100.0

Survival of Ceriodaphnia exposed to 100% Gould Canal was not significantly reduced from the DMW control.

Algae (Selenastrum capricornutum) Growth Test

Treatment

96h cells/mL (million)

Gould

1. 12

-LHMHSFW

. 176

Low-hardness Moderately-Hard Synthetic Freshwater (LHMHSFW) did not meet Test Acceptability Growth criterion of minimum 0.200 million cells/mL.

Note:

- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group
- Does not meet EPA criteria for acceptability as control group

Summary prepared by:

Sandy Nurse

Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise.

Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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April 30, 2010

Kings River Conserv Dist Attn: Eric Athorp 4886 E Jensen Ave Fresno CA 93725

FATHEAD (Pimephales promelas) LARVAL 96H SURVIVAL TEST

RE: Abbreviated static-renewal acute toxicity testing of Gould Canal compared to Started 04-21-10 13:55 Ended 04-25-10 13:00 Laboratory Control Water The testing method used closely followed EPA-821-R02-012, 5th Edition.

Gould Lab# 689098 collected 04-20-10

Comparison/Control Laboratory water was DMW (diluted mineral water: 26% Evian Spring + 74%

Arrowhead Distilled) prepared 04-21-10

Pimephales promelas (fathead minnow) positively identified to species 02-05-10

Organism age: 2 d from EnviroScience

Test chambers: 500 mL size plastic, containing 300 mL test solution

Solution renewal: 250 mL at 48 h

Feeding: prior to testing and 2 h prior to renewal

Test temperature (25C) did not range more than 3C during the test

KCl reference toxicant test date: 04-21-10

RESULTS:

RESULTS:	. #	• #	% Survival	
Treatment	Larvae	Replicate	s 96h	
Gould +DMW Lab Control Data meet EPA	40 40 criteria for a	4 4 acceptability	97.5 100.0 using DMW lab contr	ol.

Survival of fathead minnows exposed to 100% Gould Canal was not significantly reduced from the DMW control.

PMSD = 3.9Survival: Wilcoxon Rank Sum test

> Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise. Results are specific to the sample(s) as submitted and only to the parameter(s) reported. This report shall not be reproduced, except in full, without the written permission of Sierra Foothill Laboratory, Inc.

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April 30, 2010

Kings River Conserv Dist

Attn: Eric Athorp 4886 E Jensen Ave

Fresno CA 93725

CERIODAPHNIA (C. dubia) LARVAL 96H SURVIVAL TEST

RE: Abbreviated static-renewal acute toxicity testing of Gould Canal compared to Laboratory Control Water Started 04-21-10 14:00 Ended 04-25-10 13:30 The testing method used closely followed EPA-821-R02-012, 5th Edition.

Gould Lab# 689098 collected 04-20-10

Comparison/Control Laboratory water was DMW (diluted mineral water: 26% Evian Spring + 74%

Arrowhead Distilled) prepared 04-21-10

Ceriodaphnia dubia (water flea) positively identified to species 02-05-10

Organism age: 16 h from Sierra Foothill Laboratory

Test chambers: 30 mL size glass, containing 15 mL test solution

Solution renewal: at 48 h

Feeding: prior to testing and 2 h prior to renewal with .1 mL YCT prepared 04-16-10+.1

mL algae prepared 04-21-10

Test temperature (25C) did not range more than 3C during the test

ZnSO4 reference toxicant test date 04-21-10

RESULTS:

	nates/ % Survival Licates 96h
--	----------------------------------

Gould	20 / 4	100.0
+DMW Lab Control	20 / 4	100.0

Data meet EPA criteria for acceptability using DMW lab control.

Survival of Ceriodaphnia exposed to 100% Gould Canal was not significantly reduced from the DMW control.

Survival: Wilcoxon Rank Sum test PMSD = 5.0

> Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise. Results are specific to the sample(s) as submitted and only to the parameter(s) reported. This report shall not be reproduced, except in full, without the written permission of Sierra Foothill Laboratory, Inc.

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April 30, 2010

Kings River Conserv Dist Attn: Eric Athorp 4886 E Jensen Ave Fresno CA 93725

ALGAE (Selenastrum capricornutum), GROWTH TEST

RE: Abbreviated static chronic toxicity testing of Gould Canal compared to Laboratory Control Water Started 04-21-10 15:15 Ended 04-25-10 13:50 The testing method used closely followed EPA-821-R-02-013, 4th Edition.

Gould Lab# 68 90 98 collected 04-20-10
Comparison/Control Laboratory water was MHSFW (moderately hard synthetic freshwater)
prepared 04-09-10
Sample and dilution water were filtered prior to preparation of test
concentrations using cellulose nitrate .45u pore size filters
Selemastrum capricornutum (algae) positively identified to species 10-19-09
Organism age: 5d from Sierra Foothill Laboratory, UTEX 10-19-09, subcultured
04-16-10 to 04-21-10. Unialgal microscopic exam by SFL on 04-22-10
Nutrient spike: 1 mL/100 mL Bolds Basal Medium without EDTA
Test chambers: 250 mL size glass containing 100 mL test solution; continuous light and shaking
Test temperature (25C) did not range more than 3C during the test
Boron reference toxicant test date 04-21-10
Cell density determined by spectrophotometric turbidity method
Four replicates were initiated; one of which was used solely for daily chemistry measurements.

RESULTS:

Treatment	# cells/mL in inoculum	initial # replicates	96h cells/mL (million)	
Gould -LHMHSFW	10000 10000	4	1. 12 . 176	

Low-hardness Moderately-Hard Synthetic Freshwater (LHMHSFW) did not meet Test Acceptability Growth criterion of minimum 0.200 million cells/mL.

Note:

- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group
- Does not meet EPA criteria for acceptability as control group

Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise.

Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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Chronic Toxicity Test	ing - Ra	w Data	FATHEAL	WONNIM C	(Pimephales	promelas)
Kings River Conserv I Starting 04-21-10	Dist	Gould Ca	ınal			Page 1
Gould			* *			
Container#:	5021	5022	5023	5024	DO	рН
Starting # Larvae:	10	10	10	10	9.0	7.8
Day 1	0	0	0	0	8.2	7.7
Mortality Day 2	0	0	0	0	8.1	
Day 3	0	0	0	0	8.0	
Day 4	0	1	0	0	8.0	7.8
dmw						
Container#:	5001	5002	5003	5004	DO	рН
Starting # Larvae:	10	10	10	10	7.8	7.9
Day 1	0	0	0	0	8.2	8.0
Mortality Day 2	. 0	0	0	0	7.8	7.9
Day 3	0	0	0	0	7.9	8.1
Day 4	0	0	0	0	8.0	8.1

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Chronic Toxicity Te	sting - E	Raw Data		CERIO	DAPHNIA	(Cerio	daphnia	dubia)
Kings River Conserv Starting 04-21-10	Dist	Gould	Canal			·	·	Page 1
Container# 351 Go Rep Live Organisms	uld licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 5 5 5 5	2 5 5 5 5 5	3 5 5 5 5 5	4 5 5 5 5 5		DO 7.6 7.6	pH 8.1 8.1 8.1 8.0
Container# 301 dM Rep Live Organisms	W licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 5 5 5 5 5	2 5 5 5 5 5	3 5 5 5 5	4 5 5 5 5 5 5		DO 7.5 7.7	pH 8.4 8.3 8.3 8.4

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Chronic Toxicity Testing - Raw Data

ALGAE (Selenastrum capricornutum)

Kings River Conserv Dist Starting 04-21-10

Gould Canal

Page 1

[Rep 4] used only for daily chemistry

			JULY		
Gould Conta Turbidity (Absorbance U Cell Density (millio	iner#: nits): n/mL):	6021 .054 1.10	6022 .055 1.12	6023 .056 1.14	[6024] [.057] [1.16]
Chemistry (Initial) Daily pH	pH 7.8 Day 1 8.5	EC 49.8 Day 2 8.1	DO 7.6 Day 3 8.4	Hard 20 Day 4 8.5	A1k 22
LHMHS Conta Turbidity (Absorbance U Cell Density (millio		6029 .006 .170	6030 .006 .170	6031 .007 .189	[.006]
Chemistry (Initial) Daily pH	pH Day 1 8.4	EC Day 2 8.0	DO Day 3 8.1	Hard 26 Day 4 8.1	Alk 12

Report Date:

28 Apr-10 13:00 (p 1 of 1)

Test Code:

13-0947-2923/042110PA4SKRCD

Fathead Minno	ow 96-h Acute S	urvival Te	st								Sierra Foo	othill Labo	ratory in
Batch ID: Start Date: Ending Date: Duration:	04-0493-4719 21 Apr-10 13:55 25 Apr-10 13:00 95h	Test	Type: locol: cies:	Survival (EPA/821, Pimepha Enviro So	R-02-0 es pro				Analy Dilue Brine Age:	nt: Dilut : 2 d	ed Mineral \		· ·
Sample ID: Sample Date: Receive Date: Sample Age:	20-4801-3451 20 Apr-10 09:15 21 Apr-10 29h	Sou	le: erial: rce: ion:	689098 Ambient KRCD G	•			···	Clien Proje	-	s River Con	servation D	istrict
Comparison S	Summary												
Analysis ID	Endpoint		NOE	L LOI		TOEL	PMSD	TU		Method		O1-	Toot
14-1357-7846	96h Survival Ra	ate	100	>10	0	N/A	5.56%	1		Wilcoxon	Rank Sum 7	wo-Sample	rest
Test Acceptat	oility												
Analysis ID	Endpoint		Attrib	oute		Test Stat	TAC Lim	its		Overlap	Decision		
14-1357-7846		ate	Contr	ol Resp		1	0.9 - NL			Yes	Result Wi	thin Limits	
	Rate Summary												D:500/
Conc-%	Control Type	Count	Mear	95%	6 LCL	95% UCL	Min	Ma	х	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1		1	1	1		0	0	0.0%	0.0%
100		4	0.975	5 0.9	563	0.9937	0.9	1		0.009129	0.05	5.13%	2.5%
96h Survival I	Rate Detail								_				
Conc-%	Control Type	Rep 1	Rep	2 Re	3	Rep 4		_					
0	DMW	1	1	1		1							
· .	T) IAI A A	1	0.9	1		1							
100		•	9.0	•									

Analyst:

surement	Rep	ort			Report Dat Test Code:	
ow 96-h Acute	Survi	val Test				Sierra Foothill Laboratory Inc.
21 Apr-10 13:	55	Test Type: Protocol: Species: Source:	EPA/821/ Pimephal	R-02-012 (2002) es promelas	Analyst: Diluent; Brine: Age:	Diluted Mineral Water
		Code: Material: Source: Station:		•	Cilent: Project:	Kings River Conservation District
gen-Daily-mg/	/L					<u> </u>
Control Type	1	2	3	· ·· 4		
OMW	8.2 8.2	7.8 8.1	7.9 8	8		
gen-Initial-mg	/L					
_	1					
OMW	7. 8 9					
ontrol Type	1	2	3	4		
MW	8 7.7	7.9 7.9	8.1 7.8	8.1 7.8		
	ow 96-h Acute 04-0493-4719 21 Apr-10 13: 25 Apr-10 13: 95h 20-4801-3451 20 Apr-10 09: 21 Apr-10 29h gen-Daily-mg. Control Type DMW Control Type DMW Control Type	0w 96-h Acute Survi 04-0493-4719 21 Apr-10 13:55 25 Apr-10 13:00 95h 20-4801-3451 20 Apr-10 09:15 21 Apr-10 29h gen-Daily-mg/L Control Type 1 DMW 8.2 8.2 gen-Initial-mg/L Control Type 1 DMW 7.8 9	21 Apr-10 13:55	ow 96-h Acute Survival Test 04-0493-4719 Test Type: Survival (21 Apr-10 13:55 Protocol: EPA/821/25 Apr-10 13:00 Species: Pimephal Source: Enviro Sc 25 Apr-10 13:00 Species: Pimephal Source: Enviro Sc 20-4801-3451 Code: 689098 20 Apr-10 09:15 Material: Ambient Sc 21 Apr-10 Source: KRCD Go 29h Station: gen-Daily-mg/L 2 Control Type 1 2 8.2 8.1 8.2 8.1 8 9	04-0493-4719	Test Code: ow 96-h Acute Survival Test 04-0493-4719

000-324-166-1

Control Type DMW

7.9

7.8

Conc-%

100

CETIS™ v1.7.0revO

\nalyst:_____ QA:____

ANOVA Assumption	ıs
------------------	----

ANOVA Assumpti	Olis			To Market	Decision(1%)
Attribute	Test	Test Stat	Critical	P-Value	
	Mod Levene Equality of Variance	1	13.75	0.3559	Equal Variances
Variances		0.7065		0.0027	Non-normal Distribution
Distribution	Shapiro-Wilk Normality	0.7005			

96h Survival Rate Summary

96n Surviv	al Kate Summary				000/ 1101	Min	Max	Std Err	Std Dev	CV%	Diff%
Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	30111	1	0	0	0.0%	0.0%
0	DMW	4	1	1	1	1	1	0.009285	0.05	5.13%	2.5%
100		4 .	0.975	0.956	0.994	0.9	<u> </u>	0.003200			

Angular (Corrected) Transformed Summary

Angular (Co	rrected) i ransioi	meu Jum			0.50/ 1101	Min	Max	Std Err	Std Dev	CV%	Diff%	
Conc-%	Control Type	Count	Mean		95% UCL		1,412	0.0	0	0.0%	0.0%	
0	DMW	4	1.412	1.412	1.412	1.412		0.04540	0.08149	5.94%	2.89%	
100		4	1.371	1.34	1.402	1.249	1.412	0.01513	0.00149	0.0770	2.007	

CETIS™ v1.7.0revO

QA: Analyst:

CETIS Analytical Report

Report Date:

28 Apr-10 13:00 (p 2 of 2)

Test Code:

13-0947-2923/042110PA4SKRCD

Fathead Minnow 96-h Acute Survival Test

Sierra Foothill Laboratory Inc.

Analysis ID:

14-1357-7846

Endpoint: 96h Survival Rate

CETIS Version:

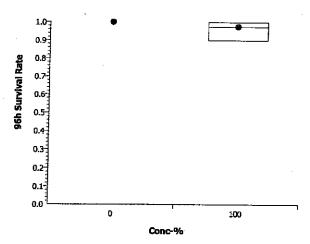
CETISv1.7.0

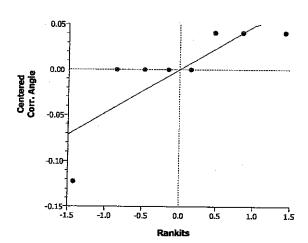
Analyzed: 28 Apr-10 13:00 Analysis: Nonparametric-Two Sample Official Results: Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep
0	DMW	1 .	1	1	1
100		1	0.9	1	1

Graphics





Analyst: QA: 11 of 23

Report Date:

28 Apr-10 13:19 (p 1 of 1)

Fest Code:

ne.7426-1016/042110CA4SKRCD

JE NO SUM	illially itepo						T	est Code:	: 06-	7426-10	16/042110	CA4SKRCI
Ceriodaphnia (96-h Acute Surv	ivai Tes	t						Si	ierra Foo	othill Labo	ratory Inc.
Batch ID: Start Date:	01-7019-0343 21 Apr-10 14:00		est Type:	Survival (96h) EPA/821/R-02-	•		D	nalyst: iluent:	Diluted	Mineral V	Vater	•
Ending Date: Duration:	25 Apr-10 13:30 95h		pecies: lource:	Ceriodaphnia d In-House Cultu				rine: .ge:	16 h	. .		
Sample ID: Sample Date: Receive Date: Sample Age:	20-4801-3451 20 Apr-10 09:15 21 Apr-10 29h	5 A	ode: laterial: lource: station:	689098 Ambient Sampl KRCD Gould C			_	llient: Project:	Kings R	tiver Con	servation [District
Comparison S	Summary											
Analysis ID	Endpoint		NOE	L LOEL	TOEL	PMSD	TU	Met		b Com T	Compl	- Toet
18-9490-9380	96h Survival Ra	ite	100	>100	N/A	5.0%	1	VVIIC	oxon Kar	IK Sum I	wo-Sampl	E 1621
Test Acceptat	oility											
Analysis ID	Endpoint		Attril	oute	Test Stat	TAC Lim	its		-	ecision		
18-9490-9380	96h Survival Ra	ite	Contr	rol Resp	1	0.9 - NL		Yes	i R	tesult Wit	thin Limits	
	Rate Summary	Count	Mear	n 95% LCL	95% UCL	Min	Max	Std	Err S	itd Dev	CV%	Diff%
Conc-%	Control Type	4	1	1	1	1	1	0	0		0.0%	0.0%
0	DMW	4	1	1	1	1	1	0	0	•	0.0%	0.0%
100	· <u> </u>	4		<u> </u>								
96h Survival I	Rate Detail											
Сопс-%	Control Type	Rep 1			Rep 4	·						
0	DMW	1	1	1	1							
100		1	1 .	1	1	-						

Analyst:_____ QA:____

CETIS Measurement Report

Report Date:

28 Apr-10 13:19 (p 1 of 1)

Test Code:

126-1016/042110CA4SKRCD

							lest Code:	06-7426-1016/042110CA4SKRCD
Ceriodaphnia	a 96-h Acute Su	ırvival	Test					Sierra Foothill Laboratory Inc.
Batch ID:	01-7019-0343	3	Test Type:	Survival (96h)		Analyst:	
Start Date:	21 Apr-10 14:	00	Protocol:	EPA/821/	R-02-012 (2002)		Diluent:	Diluted Mineral Water
Ending Date:	25 Apr-10 13:	30	Species:	Ceriodaph	nnia dubia		Brine:	
Duration:	95h		Source:	In-House	Culture		Age:	16 h
Sample ID:	20-4801-3451		Code:	689098			Client:	Kings River Conservation District
Sample Date:	20 Apr-10 09:	15	Material:	Ambient S	Sample		Project:	3
Receive Date	: 21 Apr-10		Source:	KRCD Go	uld Canal			
Sample Age:	29h		Station:					
Dissolved Ox	ygen-Daily-mg	/L.	******				· <u>, </u>	
Conc-%	Control Type	1	2	3	4			
0	DMW	7.5	7.7					
100		7.6	7.6			÷		
pH-Daily-Unit	s		4		· · · · · · · · · · · · · · · · · · ·	<u>, </u>		
Conc-%	Control Type	1	2	3	4		•	
0	DMW	8.4	8.3	8.3	8.4		 	
100		8.1	8.1	8.1	8	=		

000-324-166-1

CETIS™ v1.7.0revO

Analyst: QA:

Report Date:

28 Apr-10 13:19 (p 1 of 2)

06-7426-1016/042110CA4SKRCD Test Code:

A 1	96-h Acute Surv	rival To							Sierra Foo	thill Labo	ratory Inc
	18-9490-9380	1701 10		ih Survival Rat	te	<u> </u>	CETI	S Version:	CETISv1.7	7.0	
Analysis ID: Analyzed:	28 Apr-10 13:18	3		onparametric-			Offic	ial Results:	Yes	<u> </u>	
Batch ID:	01-7019-0343	-	Test Type: Si		Α.		Analy	•	A financi M	Untor	
Start Date:	21 Apr-10 14:00)		PA/821/R-02-0			Dilue		ed Mineral V	vale	
Ending Date:	25 Apr-10 13:30)	*	eriodaphnia du			Brine				
Duration:	95h		Source: In	-House Cultur	e 		Age:			· · · · ·	
Sample ID:	20-4801-3451		Code: 68	89098			Clien	_	s River Cons	servation L	HSTRCE
Sample Date:	20 Apr-10 09:15	5	•	mbient Sample			Proje	ect:			
Receive Date:	21 Apr-10		Source: K	RCD Gould Ca	anal						
Sample Age:	29h		Station:								
Data Transfor	m	Zeta	Alt Hyp		rlo	NOEL	LOEL	TOEL	TU	PMSD 5.0%	
Angular (Corre	cted)	0	C>T	Not Run		100	>100	N/A		0.0 70	<u>.</u> ,
Wilcoxon Ran	k Sum Two-San	nple To	est					(FR/)			
Control	vs Conc-%		Test Sta	t Critical	Ties	P-Value	Decision(
DMW	100	_	18		1	0.4429	Non-Signi	ficant Effect			
Test Acceptal	bility							-		÷	
Attribute	Test Stat	TAC	Limits	Overlap	Decision			<u>,</u>			
Control Resp	1	0.9 -	NL	Yes	Result Wit	hin Limits					
ANOVA Table	· · · · · · · · · · · · · · · · · · ·										
ANOVA Table	Sum Squ	ares	Mean S	quare	DF	F Stat	P-Value	Decision	· · · · · · · · · · · · · · · · · · ·		
ANOVA Table Source Between		ares	Mean S	quare	1	F Stat 65540	P-Value <0.0001	Decision Significan	· · · · · · · · · · · · · · · · · · ·		
Source	Sum Squ	ares	0	quare	1 6				· · · · · · · · · · · · · · · · · · ·		
Source Between	Sum Squ 0	ares	0	quare	1				· · · · · · · · · · · · · · · · · · ·		
Source Between Error	Sum Squ 0 0 0	ares	0	quare	1 6				· · · · · · · · · · · · · · · · · · ·		
Source Between Error Total ANOVA Assu	Sum Squ 0 0 0	ares	0	quare Test Stat	1 6 7			Significan	· · · · · · · · · · · · · · · · · · ·		
Source Between Error Total	Sum Squ 0 0 0 mptions		0	Test Stat	1 6 7	65540	<0.0001	Significan	· · · · · · · · · · · · · · · · · · ·		
Source Between Error Total ANOVA Assu Attribute Variances	Sum Squ 0 0 0 mptions		0 0	Test Stat	1 6 7 Critical	65540 P-Value	<0.0001	Significan (1%) Variances	t Effect		
Source Between Error Total ANOVA Assu Attribute Variances 96h Survival	Sum Squ 0 0 0 mptions Test Mod Lev		0 0 0 uality of Varian	Test Stat	1 6 7 Critical 13.75	65540 P-Value	Co.0001 Decision Unequal	Significan (1%) Variances Std Err	t Effect	CV%	Diff%
Source Between Error Total ANOVA Assu Attribute Variances 96h Survival Conc-%	Sum Squ 0 0 0 mmptions Test Mod Lev Rate Summary	ene Eq	0 0 0 uality of Varian	Test Stat ce 65540	1 6 7 Critical 13.75	P-Value <0.0001	Decision Unequal	Significan (1%) Variances Std Err 0	Std Dev	0.0%	0.0%
Source Between Error Total ANOVA Assu Attribute Variances 96h Survival	Sum Squ 0 0 0 mptions Test Mod Lev Rate Summary Control Type	ene Eq	0 0 0 uality of Varian	Test Stat ce 65540 95% LCL	1 6 7 Critical 13.75	P-Value <0.0001	Co.0001 Decision Unequal	Significan (1%) Variances Std Err	t Effect		
Between Error Total ANOVA Assu Attribute Variances 96h Survival Conc-% 0 100	Sum Squ 0 0 0 mptions Test Mod Lev Rate Summary Control Type	ene Eq Cou 4 4	0 0 0 uality of Varian nt Mean 1	Test Stat ce 65540 95% LCL 1	1 6 7 Critical 13.75	P-Value <0.0001 Min 1	Decision Unequal	Significan (1%) Variances Std Err 0	Std Dev 0	0.0% 0.0%	0.0% 0.0%
Source Between Error Total ANOVA Assu Attribute Variances 96h Survival Conc-% 0 100 Angular (Cor	Sum Squ 0 0 0 mmptions Test Mod Lev Rate Summary Control Type DMW	ene Eq Cou 4 4	uality of Varian Mean 1 1	Test Stat ce 65540 95% LCL 1	1 6 7 Critical 13.75 95% UCL 1	P-Value <0.0001 Min 1	Decision Unequal	Significan (1%) Variances Std Err 0 0 Std Err	Std Dev 0 0 Std Dev	0.0% 0.0% CV%	0.0% 0.0% Diff%
Source Between Error Total ANOVA Assu Attribute Variances 96h Survival Conc-% 0 100	Sum Squ 0 0 0 mptions Test Mod Lev Rate Summary Control Type DMW	ene Eq Cou 4 4	uality of Varian Mean 1 1	Test Stat ce 65540 95% LCL 1	1 6 7 Critical 13.75 95% UCL 1	P-Value <0.0001 Min 1	Decision Unequal	Significan (1%) Variances Std Err 0	Std Dev 0	0.0% 0.0%	0.0% 0.0%

CETIS Analytical Report

Report Date:

28 Apr-10 13:19 (p 2 of 2)

Test Code:

06-7426-1016/042110CA4SKRCD

Ceriodaphnia 96-h Acute Survival Test

Sierra Foothill Laboratory Inc.

Analysis ID: Analyzed:

18-9490-9380 28 Apr-10 13:18 Endpoint: 96h Survival Rate Analysis:

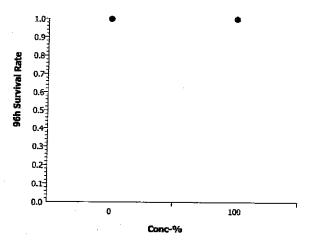
Nonparametric-Two Sample

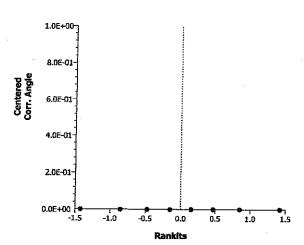
CETIS Version: CETISv1.7.0

Official Results: Yes

96h Survival Rate Detail







Report Date: **CETIS Summary Report** 08-0634-4742/042110SC4SKRCD Test Code: Sierra Foothill Laboratory Inc. Seienastrum Growth Test (Screen) Analyst: Test Type: Cell Growth 01-5752-2336 Batch ID: Diluent: Not Applicable EPA/821/R-02-013 (2002) Protocol: 21 Apr-10 15:15 Start Date: Brine: Selenastrum capricornutum Ending Date: 25 Apr-10 13:50 Species: Age: 5 d In-House Culture Source: Duration: Kings River Conservation District Client: 20-4801-3451 Code: 689098 Sample ID: Project: Material: **Ambient Sample** Sample Date: 20 Apr-10 09:15 KRCD Gould Canal Receive Date: 21 Apr-10 Source: Station: Sample Age: 30h **Comparison Summary** Method TOEL **PMSD** TU LOEL NOEL Analysis ID **Endpoint** Equal Variance t Two-Sample Test 15.06% 1 N/A >100 100 10-7016-3540 Cell Density **Test Acceptability** Decision Test Stat TAC Limits Overlap Attribute Analysis ID Endpoint **Result Within Limits** Yes NL - 0.2 0.05487 Control CV 10-7016-3540 Cell Density Yes Result Below Limit 1.75E+5 1.00E+6 - NL Control Resp 10-7016-3540 Cell Density Result Within Limits Yes 0.1506 0.091 - 0.29 **PMSD** 10-7016-3540 Cell Density

CONG-70											0.0%
0	Low Hard MHSF	4	1.746E+5	1.711E+5	1.782E+5	1.6981:+5	1.890E+5	1.748673	9.00ZE*0	3.4370	
100	2011 11012 111112	4	1.129E+6	1.120E+6	1.139E+6	1.100E+6	1.159E+6	4.623E+3	2.532E+4	2.24%	-546.7%
	- D-4-!!										
Cell Density	y Detaii										
Cell Density Conc-%	y Detail Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
						<u> </u>	 .				

95% LCL 95% UCL Min

Mean

Count

QA: Analyst: 16 of 23

19 May-10 09:37 (p 1 of 1)

Diff%

0.0%

CV%

Std Dev

1.749E+3 9.582E+3 5.49%

Std Err

Max

Cell Density Summary

Conc-%

Control Type

CETIS Measurement Report Report Date: 19 May-10 09:37 (p 1 of 1) Test Code: 08-0634-4742/042110SC4SKRCD Selenastrum Growth Test (Screen) Sierra Foothill Laboratory Inc. Batch ID: 01-5752-2336 Test Type: Cell Growth Analyst: Start Date: 21 Apr-10 15:15 Protocol: EPA/821/R-02-013 (2002) Diluent: Not Applicable Ending Date: 25 Apr-10 13:50 Species: Selenastrum capricornutum Brine: Duration: 95h Source: in-House Culture Age: 5 d Sample ID: 20-4801-3451 Code: 689098 Client: Kings River Conservation District Sample Date: 20 Apr-10 09:15 Material: Ambient Sample Project: Receive Date: 21 Apr-10 Source: **KRCD Gould Canal** Sample Age: 30h Station: Alkalinity-Initial CaCO3-mg/L Conc-% **Control Type** 0 Low Hard MH 12 100 22 Conductivity-Initial-umhos **Control Type** 0 Low Hard MH

	49.8				
ygen-Initial-mg	/L				
Control Type	1				·
Low Hard MH					
	7.6		_		
CO3)-Initial-mg	/L				
Control Type	1				
Low Hard MH	26				
-	20			_	
;					
Control Type	1	2	3	4	
Low Hard MH	8.4	8	8.1	8.1	
	8.5	8.1	8.4	8.5	
9	Control Type Low Hard MH	Low Hard MH 7.6 CO3)-Initial-mg/L Control Type 1 Low Hard MH 26 20 S Control Type 1 Low Hard MH 8.4	Control Type 1 Low Hard MH 7.6 CO3)-Initial-mg/L Control Type 1 Low Hard MH 26 20 S Control Type 1 2 Low Hard MH 8.4 8	Control Type 1 Low Hard MH 7.6 CO3)-Initial-mg/L Control Type 1 Low Hard MH 26 20 S Control Type 1 2 3 Low Hard MH 8.4 8 8.1	Control Type 1 Low Hard MH 7.6 CO3)-Initial-mg/L Control Type 1 Low Hard MH 26 20 S Control Type 1 2 3 4 Low Hard MH 8.4 8 8.1 8.1

p n- initiai-ur	its							
Conc-%	Control Type	1						
0	Low Hard MH			 	 -	 	 	 _
100		7.8	•					

000-324-166-1

CETIS™ v1.7.0revO

Analyst:_____ QA:___

Report Date:

19 May-10 09:37 (p 1 of 2)

Test Code:

08-0634-4742/042110SC4SKRCD

ETIS Anal	ytica	al Keboi	π						Test Co	ode: 0	8-0634-4742	/042110SC	4SKRCD
Selenastrum G	rowth	Test (Scre	een)				· · · · ·				Sierra Footh	nill Labora	tory Inc.
		16-3540		Endpoir	nt: Cell	Density				Version:	CETISv1.7.	0	
Analyzed:		ay-10 9:37	_	Analysi	s: Para	metric-Two S	Sample		Official	Results:	Yes	:	· ·
Satch ID:	•	52-2336			pe: Cell		3 (2002)		Analys Diluent		pplicable		
Start Date:		or-10 15:15		Protoco		/821/R-02-01			Brine:				
Ending Date:	25 A	or-10 13:50		Species		nastrum capi ouse Culture			Age:	5 d			
Ouration:	ration: 95h Source: In-House Cult									16:	River Conse	nuation Dis	strict
Sample ID: 20-4801-3451 Code: 6890				98			Client:		KIVEL COLISC	A VAUGUE DIA	,,,,,,		
Sample Date:	20 A	or-10 09:15		Materia		ient Sample			Projec	L.			
Receive Date:				Source	: KRC	D Gould Car	nai						
Sample Age:				Station	:						TIL	PMSD	
Data Transfori	m		Zeta		lt Hyp	Monte Carl				TOEL N/A		15.06%	
Untransformed			0	C	> T	Not Run		100	> 100				
Equal Varianc	e t Tv	vo-Sampie	Test						D!-:/E	9/3			
Control	vs Conc-% Test Stat			est Stat	Critical			Decision(5 Non-Signific					
Low Hard MHS	FW	100		-7	70.53	1.943	26310	1.0000	NOII-SIGI IIIC	Zant Encor			
Test Acceptal	oility												
Attribute		Test Stat	TAC	Limits		Overlap	Decision					<u> </u>	
Control CV		0.05487	NL -			Yes	Result With						
Control Resp		1.75E+5	1.00	E+6 - NL		Yes	Result Belo						
PMSD		0.1506	0.09	1 - 0.29		Yes	Result With	in Limits					
Auxiliary Test	ts									•			
Attribute		Test				Test Stat	Critical	P-Value	Decision	Detector			
Extreme Value		Grubbs S	ingle	Outlier		1.66	2.127	0.5488	No Outliers	Detected			
ANOVA Table													•
Source		Sum Squ	ares	ī	Mean Squ	Jare	DF	F Stat	P-Value	Decision(
Between		1,823075		1	.823075	E+12	1	4974	<0.0001	Significant	Effect		
Enor		21990480	00		36650800		6						
Total		1.825274	E+12		1.823442	E+12	7						_
ANOVA Assu	ımptic	ons								40/1		•	
Attribute		Test				Test Stat	Critical	P-Value	Decision(Equal Vari				
Variances	Variance Ratio F			6.984	47.47	0.1447 0.7539	Normal Dis						
Distribution		Shapiro-	Wilk N	lormality		0.9542		0.7000	TOTAL DA			 	
Cell Density	Sumr	nary								044 E-	Std Dev	ČV%	Diff%
		trol Type	Co		Mean	95% LCL		Min 1.698E+5	Max 1.890E+5	Std Err 1.779E+3			0.0%
Conc-%	•						2 700F E			1.7.75573			
Conc-%		Hard MHS	F 4		1.746E+5 1.129E+6		1.783E+5 1.139E+6					2.24%	-546.7%

OA.

CETIS Analytical Report

Report Date:

19 May-10 09:37 (p 2 of 2)

Test Code:

08-0634-4742/042110SC4SKRCD

Selenastrum Growth Test (Screen)

10-7016-3540 19 May-10 9:37

Endpoint: Cell Density

Analysis: Parametric-Two Sample

CETIS Version:

Sierra Foothill Laboratory Inc.

CETISv1.7.0

Cell Density Detail

Conc-% **Control Type**

Rep 1 Rep 2 Rep 3

Official Results: Yes

Analysis ID:

Analyzed:

0 100

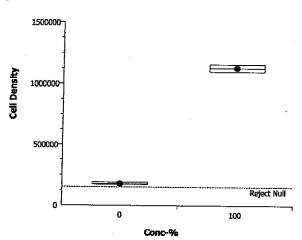
Low Hard MHSF 1.698E+5 1.698E+5

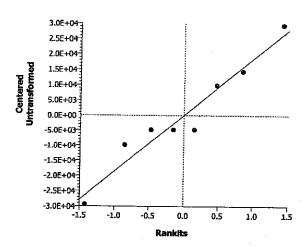
1.890E+5

Rep 4 1.698E+5

1.100E+6 1.120E+6 1.139E+6 1.159E+6

Graphics





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Report Date: 04/29/2010

Page 1 of 3 Client: KRCD

Kings River Conservation Dist Eric Athorp 4886 E Jensen Ave Fresno, CA 93725-

Project Report: 182422

Results for Project 182422

689098 GOULD CAN		TAGG 10%E	DA.THURO	x 6	Liquid Taken: 04/20/2010 0	Rec:04/21/2010		
Parameter Acute tox 96h fathead, 5th ed	Result See Report	Unit %survival	Flag	RL .	<i>Method</i> 821-R-02-012	Analyzed 04/22/2010 1100	By SFL	CAS
96h Acute C. dubia, 5th ed	See Report	%survival			821-R02-012 821-R02-012	04/22/2010 1100 04/21/2010	SFL SFL	%
Ref tox 96h algal MHSFW no ED Ref tox, 96h Cdubia DMW dilue		growth %survival			821-R02-012	04/22/2010 1100	SFL	
Ref tox, 96h fathead DMW dilu 96h Algae growth, 4th ed	See Report See Report	%survival growth			821-R02-012 821-R02-013	04/22/2010 1100 04/22/2010 1100		
Specific Conductance	53.0	umho/cm		1.00 5.0	EPA120.1/SM2510B EPA310.1/SM2320B	04/21/2010 1045 04/22/2010 1215		
Alkalinity, Total as CaCO3 ILP database entry SWAMP	22 See report	mg/L			ILP	04/29/2010	SFL	
Hardness as CaCO3 pH, Lab*	22 7.5	mg/L unit		5.0 0.1	SM2340C SM4500-H+B	04/22/2010 1406 04/21/2010 1150		*past hold
Oxygen, Dissolved, Lab* Chlorine Residual, Total, Lab*	12.2 <0.10	mg/L mg/L		0.1 0.10	SM4500-O G SM4500Cl G	04/21/2010 1135 04/21/2010 1225		*past hold *past hold

Sample Preparation Steps for Project 182422

689098	GOULD CAN	IAL GRAB			Liquid Taken: 04/20/2010 09	915 By: Client	Rec:04/21/2010
Parameter	nonia-N Screen	<i>Result</i> ND	<i>Unit</i> mg/L	0.50	Method SFL SOP 125	Analyzed 04/21/2010 1100	By R&C

SET Quality Control/Quality Assurance for Project 182422

ož.	Alkalinity, Total	as CaCO	3	(,	Analyzed: 04/22/2010 1215	5 JP Verified: 04/23/2010 14:42 h		
Sample QC	Ty. Sta		Result 475 <5.0	Value 480	<i>Unit</i> mg/L mg/L	Recovery (%) 99.0	RPD	
689082	Du	plicate	78	78	mg/L		0.0	
689125	Du	plicate	28	28	mg/L		0.0	
689082	Ma	atrix SPK	352	349	mg/L	101		

Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise.

Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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Continued

20 of 23

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Report Date:

04/29/2010

Page 2 of 3 Client: **KRCD**

Project Report: 182422

SET Quality Control/Quality Assurance for Project 182422

	Alkalinity,	, Total as CaC	O3	*	(Analyzed: 04/22/2010 1215 JP Verified: 04/23/2010 14:42 KL.)				
Sample		Type	Result	Value	Unit	Recovery (%) RPD	,		
689125		Matrix SPK	349	349	mg/L	100	•		
	Chlorine F	Residual,Total	, Lab*		(Analyzed: 04/21/201	0 1225 CZ Verified: 04/22/2010 11:	58 KL)		
Sample		<i>Type</i> Blank	Result <0.10	Value	<i>Unit</i> mg/L	Recovery (%) RPD			
689098		Duplicate	<0.10	<0.10	mg/L	0.0			
	Oxygen, D	issolved, Lab	*		(Analyzed: 04/21/201	0 1135 CZ Verified: 04/22/2010 11:	57 KL)		
Sample		Type	Result	Value	Unit	Recovery (%) RPD	•		
689074		Duplicate	8.6	8.4	mg/L	2.4			
689089		Duplicate	10.1	10.0	mg/L	1.0			
689090		Duplicate	10.1	10.1	mg/L	0.0			
	Specific C	onductance			(Analyzed: 04/21/2010	0 1045 R&C Verified: 04/22/2010 11	:52 KL		
Sample		Туре	Result	Value	Unit	Recovery (%) RPD			
		Standard	96	100	umho/cm	96.0			
89024		Duplicate	413	405	umho/cm	2.0			
89089		Duplicate	163	161	umho/cm	1.2			
89090	:	Duplicate	161	161	umho/cm	0.0			
89124		Duplicate	292	296	umho/cm	1.4			
89180		Duplicate	159	159	umho/cm	0.0			
89181		Duplicate	161	162	umno/cm	0.6			
	Hardness a	as CaCO3			(Analyzed: 04/22/2010	1406 JP Verified: 04/23/2010 14:3	8 KL)		
Sample		Туре	Result	Value	Unit	Recovery (%) RPD			
C		Standard	515	489	mg/L	105.3			
		Blank	<5.0		mg/L				
89087		Duplicate	85	85	mg/L	0.0			
89103		Duplicate	57	57	mg/L	0.0			
89087		Matrix SPK	272	262	mg/L	104			
89103	. *	Matrix SPK	254	262	mg/L	97			
	pH, Lab*				(Analyzed: 04/21/2010	1150 R&C Verified: 04/22/2010 11:	56 KL)		
ample		Type	Result	Value	Unit	Recovery (%) RPD			
		Standard	7.4	7.4	unit	100.0			
		Standard	7.4	7.4	unit	100.0			
39072		Duplicate	6.4	6.4	unit	0.0			
39089		Duplicate	7.8	7.8	unit	0.0			
39090		Duplicate	7.8	7.8	unit	0.0			
39123		Duplicate	6.7	6.7	unit	. 0.0			

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Report Date: 04/29/2010

Page 3 of 3 Client: **KRCD**

Project Report: 182422

SET Quality Control/Quality Assurance for Project 182422

Sample 689180 689181	pH, Lab*	<i>Type</i> Duplicate Duplicate	<i>Result</i> 7.9 7.9	Value 7.9 7.9	(Analyzed: 04/21/ <i>Unit</i> unit unit	/2010 1150 R&C Verified: 04/22/2010 11:56 KL) **Recovery (%) RPD 0.0 0.0	

ELAP #1113 NELAP #06245CA

Sandey Nurse

Sandy Nurse, Lab Director

Sierra Foothill Laboratory, Inc. 255 Scottsville Blvd PO Box 1268 Jackson, CA 95642

Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

SIERRA FOOTHILL LABORATORY P.O. Box 1268 • 255 Scottsville Blvd. Jackson, CA. 95642 (209) 223-2800

ADDRE	DMER NAME: KRC) ESS: 4886 E JE STATE, ZIP: FRES NO ITION: ERIC AT HO ID: CHECKE	CA 93725		BILL TO: SAME ADDRESS: CITY, STATE, ZIP: ATTENTION: YVONALE WALKE PO#: 9690 REQUISITION#					
ID# .	SOURCE DESCRIPTION	ANALYSIS	G/C	W. WW. 5	SAMPLING	8 & CONTAINER INFORMATI	ION		
98	GOLLD CANAL	WET	On	<i>u.</i>	\$6	4/20/10 09/5) <u>5</u>		
/B1		AFSO			Kre		glace		
	1	ACS5							
		ALG 4							
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	· · · · ·								
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		- //							
RECEIVE	IISHED BY:	Hibel L	DATE TIME: DATE TIME: DATE: DATE:	4-21-	/ 6 13 10 11	5- 35-			

SIERRA FOOTHILL LABORATORY Inc

REPORT

255 SCOTTSVILLE BLVD.
P.O. BOX 1268 JACKSON, CA 95642
(209) 223 – 2800
sandy@sierrafoothilllab.com

Reference Toxicant Test Data Report 4-21-2010

255 Scottsville Blvd PO Box 1268 Jackson, CA 95642

Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

SFL

April 30, 2010

TEST SUMMARY

RE: Abbreviated static-renewal acute toxicity testing of KCl Reference Toxicant / Fish diluted with Laboratory Control Water 04-21-10 to 04-25-10

Method = Agricultural Waiver Lab# 0410-59

Fathead Minnow (Pimephales promelas) Larval 96h Survival Test Treatment 96h % Survival

2.0g/L KCl in Lab	0.0*
1.0g/L KCl in Lab	77.5*
0.5g/L KCl in Lab	95. 0
0.25g/L KCl in Lab	100.0
+DMW Lab Control	100.0
7d LC50 = 1.17g/L	
NOAEC, Survival = $0.5g/L$	LOAEC,
Dose-Response (Survival):	Type 1

Note:

- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group

Summary prepared by:

Sandy Nurse

Dose-Response Relationship Types (EPA 821-B-00-004, with page reference)
Type 1: Ideal concentration-response relationship. p4-6.

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April 30, 2010

SFL

FATHEAD (Pimephales promelas) LARVAL 96H SURVIVAL TEST

RE: Abbreviated static-renewal acute toxicity testing of KCl Reference Toxicant / Fish Started 04-21-10 13:45 Ended 04-25-10 13:00 diluted with Laboratory Control Water The testing method used closely followed EPA-821-R02-012, 5th Edition.

KCl Reference Toxicant / Fish Laboratory # 0410-59 collected 04-21-10 Dilution water was Laboratory Control Water DMW (diluted mineral water: 26% Evian Spring + 74% Arrowhead Distilled) prepared 04-21-10

Pimephales promelas (fathead minnow) positively identified to species 02-05-10

Organism age: 2 d from EnviroScience

Test chambers: 500 mL size plastic, containing 300 mL test solution

Solution renewal: 250 mL at 48 h

Feeding: prior to testing and 2 h prior to renewal

Test temperature (25C) did not range more than 3C during the test

RESULTS:

	#	# %	Survival
Treatment	La rv a	e Replicates	96h
2. 0g/L KCl in Lab	40	4	0. 0*
1. 0g/L KCl in Lab	40	4	77. 5*
0.5g/L KCl in Lab	40	4	95. 0
0.25g/L KCl in Lab	40	4	100. 0
+DMW Lab Control	40	4	100. 0
Data meet EPA criteria	for	acceptability using	DMW lab control.

Survival

7d LC50 = 1.17g/L

NOAEC, Survival = 0.5g/L

LOAEC, Survival = 1.0g/L

Spearman-Karber

Steels Many-One Rank test

Steels Many-One Rank test

PMSD = 8.3

Dose-Response (Survival): Type 1

Note:

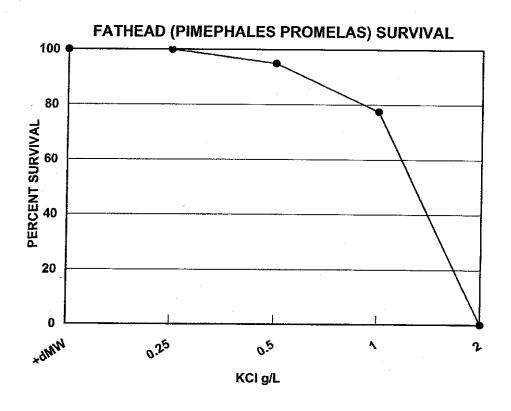
* Significantly reduced from control

+ Meets EPA criteria for acceptability as control group

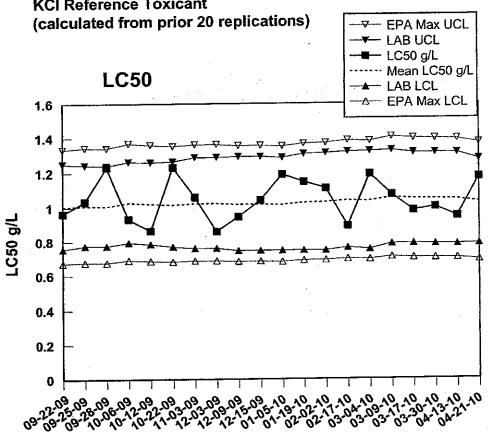
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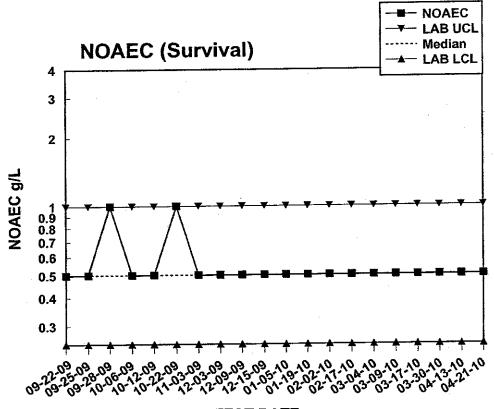
Chronic Toxicity Tests: EPA-821-R-02-013 (4th Edition)

96 h KCI 0410-59 Reference Toxicant diluted with DMW Lab Water 04-21-10 to 04-25-10



SFL Fathead Minnow (Pimephales promelas) Acute 96h Survival KCl Reference Toxicant





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Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

Chronic 1	Toxicity Test	ing - Raw	Data	FATHEAD	MINNOW	(Pimephales pr	omelas)
SFL I Starting	KCl Reference 04-21-10	Toxicant	/ Fish	in dMW			Page 1
Starting	Container#: # Larvae: Day 1 Day 2 Day 3 Day 4	10	5006 10 10 0 0	5007 10 10 0 0	5008 10 10 0 0	DO 7.8 8.2	pH 8.0 8.2
	Day 1	5009 10 3 1 0	5010 10 2 0 0	5011 10 0 2 0	5012 10 1 0 0	DO 7.9 8.2 7.9 8.0 8.1	pH 8.0 8.2 8.2 8.2 8.2
0.5g/L C Starting Mortality	Day 1	5013 10 0 0 0	5014 10 0 0 0	5015 10 0 0 0	5016 10 0 2 0	DO 8.1 8.3 7.8 8.0 8.1	pH 8.1 8.2 8.3 8.2 8.2

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Chronic Toxicity Test	ing - Raw	Data	FATHEAD	MINNOW	(Pimephales pro	omelas)
SFL KCl Reference Starting 04-21-10	e Toxicant	/ Fish	in dMW			Page 2
Container#: Starting # Larvae: Day 1 Mortality Day 2 Day 3 Day 4	5017 10 0 0 0 0	5018 10 0 0 0 0	5019 10 0 0 0	5020 10 0 0 0	DO 8.1 8.1 8.1 8.0 8.0	pH 8.1 8.2 8.3 8.2 8.2
dMW Container#: Starting # Larvae: Day 1 Mortality Day 2 Day 3 Day 4	5001 10 0 0 0	5002 10 0 0 0	5003 10 0 0 0	5004 10 0 0 0	DO 7.8 8.2 7.8 7.9 8.0	pH 7.9 8.0 7.9 8.1 8.1

CETIS Summary Report

Report Date:

28 Apr-10 12:55 (p 1 of 1)

Test Code:

14-7558-2739/042110PA4LRT1

									•		10 21 00/07E	
Fathead Minr	now 96-h Acut	e Surviv	al Test						. :	Sierra F	oothill Lab	oratory Inc
Batch ID: Start Date: Ending Date: Duration:	04-0493-471 21 Apr-10 13 25 Apr-10 13 95h	:55	Test Type: Protocol: Species: Source:	Survival (96h) EPA/821/R-02 Pimephales p Enviro Science	2-012 (2002) romelas		F	Analyst: Diluent: Brine: Age:	Diluted	i Minera	l Water	
Sample ID:	18-8651-4500	0	Code:	0410-59				Client:	Sierra	Foothill	Laboratory	
Sample Date:			Material:	Potassium chi	oride			Project:				
Receive Date:	• -		Source:	KCI Reference	e Toxicant						•	
Sample Age:	14h		Station:									
Comparison S	Summary											· · · · · · · · · · · · · · · · · · ·
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU	Meth	od			
07-0294-3014	96h Survival F	Rate	0.5	1	0.7071	10.6%		Steel	Many-C	ne Ran	k Test	
Point Estimate	e Summary											
Analysis ID	Endpoint		Level	gm/L	95% LCL	95% UCL	TU	Meth	od			
12-2841-8384	96h Survival F	Rate	EC50	1.169	1.054	1.296		Spea	rman-Ka	irber		
Test Acceptab	oility											
Analysis ID	Endpoint		Attribu	ıte	Test Stat	TAC Limi	its	Over	lap D	ecision		
07-0294-3014	96h Survival F	Rate	Contro	l Resp	1	0.9 - NL		Yes	R	esult Wi	thin Limits	
12-2841-8384	96h Survival F	Rate	Contro	Resp	1 .	0.9 - NL		Yes			thin Limits	
96h Survival R	tate Summary						-					
Conc-gm/L	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr S	td Dev	CV%	Diff%
	DMW	4	1	1	1	1	1	0	0		0.0%	0.0%
).25		4	1	1	1	1	1	0	0		0.0%	0.0%
).5		4	0.95	0.9127	0.9873	0.8	1	0.018	26 0.	1 -	10.53%	5.0%
		4	0.775	0.728	0.822	0.6	0.9	0.022	97 D.	1258	16.24%	22.5%
<u> </u>		4	0	0	0	0	0	0	0			100.0%
6h Survival R	ate Detail											
	Control Type	Rep 1	Rep 2	Rep 3	Rep 4							
_	DMW	1	1	1	1							
.25		1	1	1	1							
.5		1	1	1	8.0							
		0.6	8.0	8.0	0.9							
		0	0	0	0							

nalyst:______ 8 6/39_____

CETIS Measurement Report

Report Date:

28 Apr-10 12:55 (p 1 of 1)

Test Code:

14-7558-2739/042110PA4LRT1

Fathead Minno	ow 96-h Acute	Surviv	al Test					Sierra Foothill Laboratory Inc.
Batch ID: Start Date:	04-0493-4719 21 Apr-10 13:5 25 Apr-10 13:0 95h	5		Survival (96h) EPA/821/R-02-012 (2002) Pimephales promelas Enviro Sciences Inc, TX 0410-59 Potassium chloride KCI Reference Toxicant			Analyst: Diluent: Brine: Age:	Diluted Mineral Water
Sample ID: Sample Date: Receive Date: Sample Age:	21 Apr-10		Code: Material: Source: Station:			Client: Project:		Sierra Foothill Laboratory
Dissolved Oxy	/gen-Daily-mg/	L.						
Conc-gm/L	Control Type	1	2	3	4			
	DMW	8.2	7.8	7.9	8			
0.25		8.1	8.1	8	8			
0.5	•	8.3	7.8	8	8.1			
1		8.2	7.9	8	8.1			
2		8.2				 		
Dissolved Oxy	/gen-Initial-mg	/L						
Conc-gm/L	Control Type	1	N _e			 		
0	DMW	7.8						
0.25		8.1						
0.5		8.1						
1		7.9						
2		7.8				 		
pH-Daily-Unit	5							
Conc-gm/L	Control Type	1	2	3	4			
0	DMW	8	7.9	8.1	8.1			
0.25		8.2	8.3	8.2	8.2			
0.5		8.2	8.3	8.2	8.2			•
. 1		8.2	8.2	8.2	8.2			
2		8.2			<u> </u>	 	<u> </u>	
pH-Initial-Unit	s							
Conc-gm/L	Control Type	1				 . <u></u>		
0	DMW	7.9			-			
0.25		8.1						
0.5		8.1						
1		8						
2		8						

Report Date:

28 Apr-10 12:55 (p 1 of 2)

Test Code:

14-7558-2739/042110PA4LRT1

							Te	est Code:	14-755	8-2739/042	2110PA4LR
Fathead Minn	ow 96-h Acute	Surviv	al Test						Sierra F	oothill Lat	oratory Inc
Analysis ID:	07-0294-3014	1	Endpoint:	96h Survival F	Rate		Ci	ETIS Version	: CETIS	170	
Analyzed:	28 Apr-10 12		Analysis:	Nonparametri		Treatments		ficial Results		1.1.0	
Batch ID:	04-0493-4719)	Test Type:	Survival (96h)			Ar	nalyst:			
Start Date:	21 Apr-10 13:	:55	Protocol:	EPA/821/R-02-012 (2002)				luent: Dik	uted Minera	Water	
Ending Date:	25 Apr-10 13:	:00	Species:	Pimephales p	romelas		Вг	ine:			
Duration:	95h		Source:	Enviro Science	es Inc, TX		Ą	je: 2 d			
Sample ID:	18-8651-4500)	Code:	0410-59			CI	ient: Sie	rra Foothill	Laboratory	
Sample Date:	21 Apr-10		Material:	Potassium chl	oride		. Pr	oject:			
Receive Date:	21 Apr-10		Source:	KCl Reference	e Toxicant						
Sample Age:	14h		Station:								
Data Transfor	m	Zeta	Alt H	yp Monte C	arlo	NOEL	LOEL	TOEL	TU	PMSD	
Angular (Corre	cted)	0	C > T	Not Run		0.5	1	0.7071		10.6%	
Steel Many-Or	ne Rank Test						• •				
Control	vs Conc-gr	m/L	Test \$	Stat Critical	Ties	P-Value	Decisio	n(5%)	•		
DMW	0.25		18	10	1	0.7500	_	nificant Effec			
	0.5		16	10	1	0.5065	_	nificant Effec	t		
	1*		10	10	0	0.0277	Significa	ant Effect			
Test Acceptab	ility										
Attribute	Test Stat	t TAC	Limits	Overlap	Decision	1					
Control Resp	1	0.9 -	NL	Yes	Result Wi	ithin Limits					
Auxiliary Tests	<u> </u>										
Attribute	Test			Test Stat	Critical	P-Value	Decisio	n			
Extreme Value	Grubbs (Single O	utlier	2.391	2.586	0.1260	No Outli	ers Detected			
ANOVA Table											
Source	Sum Squ	ıares	Mean	Square	DF	F Stat	P-Value	Decision	(5%)		
3etween	0.284152	1	0.0947	1737	3	8.287	0.0030	Significan	t Effect		
Error	0.137148	4	0.0114	12903	12						
Fotal	0.421300	5	0.1061	464	15						
NOVA Assum	ptions										
Attribute	Test			Test Stat	Critical	P-Value	Decisio	n(1%)			
/ariances		•	ality of Varia		5.953	0.3983	Equal Va				
Distribution	Shapiro-	Wilk Nor	mality	0.7824		0.0016	Non-non	mal Distributio	on		
6h Survival R	ate Summary										
	Control Type	Coun		95% LCL			Max	Std Err	Std Dev	CV%	Diff%
	OMW	4	1	1	1	1	1	0	0	0.0%	0.0%
.25		4	1	1	1	1	1	0	0	0.0%	0.0%
.5		4	0.95	0.912	0.988	8.0	1	0.01857	0.1	10.53%	5.0%
		4	0.775	0.7271	0.8229	0.6	0.9	0.02337	0.1258	16.24%	22.5%
	· · · ·	4	0	0	0	0	0	0	0		100.0%
ngular (Corre	cted) Transfor	med Sı	ummary								
 	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
	WMC	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
.25		4 .	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
.5		4	1.336	1.278	1.394	1.107	1.412	0.02831	0.1524	11.41%	5.4%
		4	1.087	1.03	1.144	0.8861	1.249	0.02784	0.1499	13.79%	22.99%
		4	0.1588	0.1588	0.1588	0.1588	0.1588	0	0	0.0%	88.76%

Report Date:

28 Apr-10 12:55 (p 2 of 2)

Test Code:

14-7558-2739/042110PA4LRT1

Fathead Minnow 96-h	Acute	Survival	Test
---------------------	-------	----------	------

Sierra Foothill Laboratory Inc.

Analysis ID: Analyzed:

07-0294-3014 28 Apr-10 12:54 Endpoint:

96h Survival Rate

Nonparametric-Control vs Treatments Analysis:

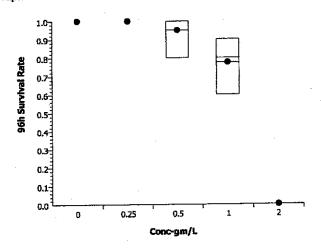
CETIS Version: Official Results: Yes

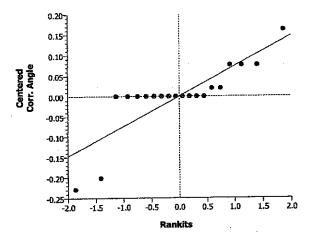
CETISv1.7.0

96h Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
)	DMW	1	1	1	1
.25		1	1	1	1
0.5		1	1	1	0.8
1		0.6	0.8	0.8	0.9
2		0	0	0	0

Graphics





Report Date:

28 Apr-10 12:55 (p 1 of 1)

Test Code:

14-7558-2739/042110PA4LRT1

								Te	st Code:	14-75	58-2739/042	110PA4LF
Fathead M	linnov	v 96-h Acute	Survival	Test						Sierra I	oothill Lab	oratory In
Analysis II	D : 1	2-2841-8384	‡ E	Endpoint:	96h Survival F	Rate		CE	TIS Version	: CETIS	/1.7.0	
Analyzed:	2	28 Apr-10 12	:55 A	lnalysis:	Untrimmed Sp	oearman-Kä	ärber	Off	icial Results	s: Yes		
Batch ID:	0	4-0493-4719) T	est Type:	Survival (96h)	·		Ana	alyst;			
Start Date:	2	1 Apr-10 13:	55 P	rotocol:	EPA/821/R-02-012 (2002)				Diluent: Diluted Mineral Water			
Ending Da	te: 2	5 Apr-10 13:	00 S	pecies:	Pimephales pr	romeias	•	Brit	ne:			
Duration:	9	5h	S	ource:	Enviro Science	es Inc, TX		Age	2 d			
Sample ID:	1.	8-8651-4500	C	ode:	0410-59			Clie	nt: Sie	rra Footbill	Laboratory	
Sample Da	te: 2	1 Apr-10	M	laterial:	Potassium chl	oride		Pro	ject:		,	
Receive Da	ate: 2	1 Apr-10	S	ource:	KCI Reference	Toxicant		•	√			
Sample Ag	e: 1	4h	S	tation:								
Spearman-	Kärbe	r Estimates										· ·
Threshold	Optio	n T	Threshold	Trim	Mu	Sigma	•	EC50	95% LCL	95% UC	L.	
Control Thre	eshold	()	0.00%	0.06773	0.02242		1.169	1.054	1.296		
Test Accep	tabilit	v .										
Attribute		- Test Stat	TAC Lir	nits	Overlap	Decision						
Control Res	р	1	0.9 - NL		Yes		ithin Limits					
Residual A	naiysi	s										
Attribute		Method			Test Stat	Critical	P-Value	Decision	(5%)			
xtreme Val	ue	Grubbs E	xtreme Va	lue	2.691	2.708	0.0543		rs Detected			
6h Surviya	i Rate	Summary				Calcı	ulated Varia	ite(A/B)				
Conc-gm/L			Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	Α	В
)	DMV	/	4	1	1	1	0	0	0.0%	0.0%	40	40
.25			4	1	1	1	0	0	0.0%	0.0%	40	40
.5			4	0.95	0.8	1	0.01826	0.1	10.53%	5.0%	38	40
			4	0.775	0.6	0.9	0.02297	0.1258	16.24%	22.5%	31	40
			4	0 .	C	0	0	0		100.0%	0	40
6h Surviva	i Rate	Detail									••	
onc-gm/L	Cont	rol Type	Rep 1	Rep 2	Rep 3	Rep 4						
	DMW	·	1	1	1	1			, ,,,			

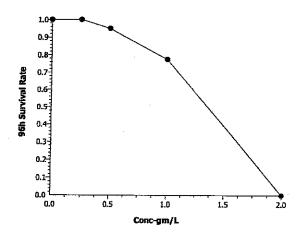
Graphics

0.25

0.5

1

2



1

1

0.6

0

1

1

0

0.8

1

1

0

8.0

1

0.8

0.9

0

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April 30, 2010

SFL

TEST SUMMARY

RE: Abbreviated static-renewal acute toxicity testing of Zinc Sulfate. 7H20 Ref Toxicant / Cerio diluted with Laboratory Control Water 04-21-10 to 04-25-10

Method = Agricultural Waiver Lab# 0410-906

Ceriodaphnia dubia Larval 96h Survival Test
Treatment 96h % Survival

1.7mg/L ZnSO4 in Lab	0.0*
0.85mg/L ZnSO4 in Lab	5.0*
0.43mg/L ZnSO4 in Lab	80. 0
0.21mg/L ZnSO4 in Lab	100.0
+DMW Lab Control	100.0

4d LC50 = 0.54mg/L

NOAEC, Survival = 0.43mg/L LOAEC, Survival = 0.85mg/L Dose-Response (Survival): Type 1

Note:

* Significantly reduced from control

+ Meets EPA criteria for acceptability as control group

Summary prepared by:

Sandy Nurse

Dose-Response Relationship Types (EPA 821-B-00-004, with page reference)
Type 1: Ideal concentration-response relationship. p4-6.

Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise.

Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

SFL

April 30, 2010

CERIODAPHNIA (C. dubia) LARVAL 96H SURVIVAL TEST

RE: Abbreviated static-renewal acute toxicity testing of Zinc Sulfate. 7H20 Ref Toxicant / Cerio diluted with Laboratory Control Water Started 04-21-10 14:00 Ended 04-25-10 13:30

The testing method used closely followed EPA-821-R02-012, 5th Edition.

Zinc Sulfate. 7H20 Ref Toxicant / Cerio Laboratory # 0410-906 collected 04-21-10 Dilution water was Laboratory Control Water DMW (diluted mineral water: 26% Evian Spring + 74% Arrowhead Distilled) prepared 04-21-10

Ceriodaphnia dubia (water flea) positively identified to species 02-05-10

Organism age: 16 h from Sierra Foothill Laboratory

Test chambers: 30 mL size glass, containing 15 mL test solution

Solution renewal: at 48 h

Feeding: prior to testing and 2 h prior to renewal with .1 mL YCT prepared 04-16-10 + .1

mL algae prepared 04-21-10

Test temperature (25C) did not range more than 3C during the test

RESULTS:

Treatment	<pre># Neonates/ # Replicates</pre>	<pre>% Survival 96h</pre>	
1.7mg/L ZnSO4 in Lab	20 / 4	0. 0*	
0.85mg/L 2nSO4 in Lab	20 / 4	5. 0*	
0.43mg/L ZnSO4 in Lab	20 / 4	80. 0	
0.21mg/L ZnS04 in Lab	20 / 4	100.0	
+DMW Lab Control	20 / 4	100.0	

Data meet EPA criteria for acceptability using DMW lab control.

Survival

4d LC50 = 0.54mg/L

NOAEC, Survival = 0.43mg/L

Spearman-Karber

Steels Many-One Rank test

LOAEC, Survival = 0.85mg/L Steels Many-One Rank test

Dose-Response (Survival): Type 1

Note:

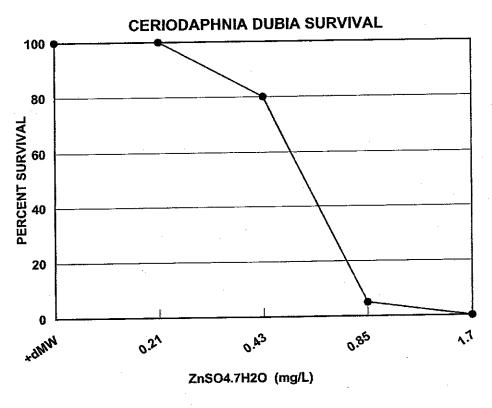
- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group

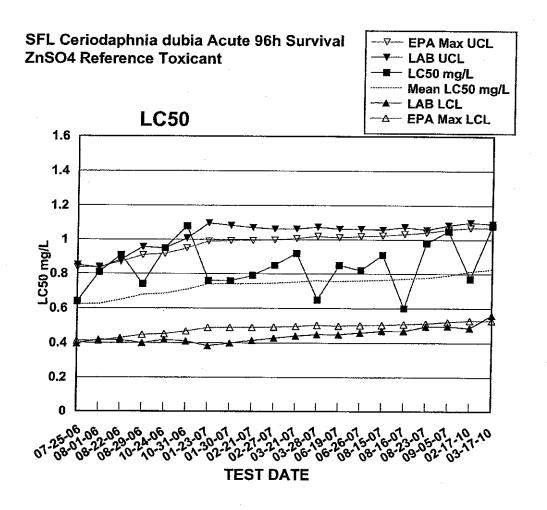
Sierra Foothiil Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise. Results are specific to the sample(s) as submitted and only to the parameter(s) reported. This report shall not be reproduced, except in full, without the written permission of Sierra Foothill Laboratory, Inc.

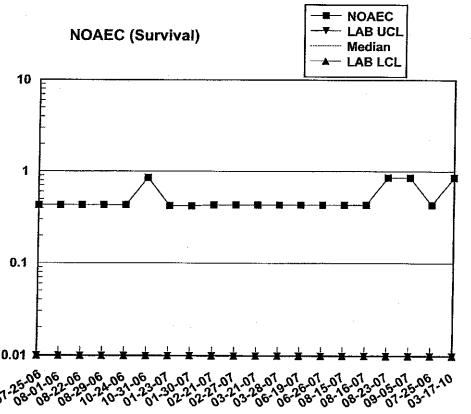
PMSD = 17

Acute Toxicity Tests: EPA-821-R02-012 (5th Edition)

96 h Zinc Sulfate 0410-906 Ref Toxicant diluted with DMW Lab Water 04-21-10 to 04-25-10







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Chronic Toxicity Tes	sting - Ra	w Data		CERIC	DAPHNIA	(Ceriodar	hnia	dubia)
SFL Zinc Sulfate Starting 04-21-10	e.7H20 Ref	Toxica	nt /	Cerio	in dMW			Page 1
Container# 311 1.7 Repl Live Organisms	mg/L licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 0 0 0	2 5 0 0 0	3 5 0 0 0	4 5 0 0 0		DO 7.5	рН 8.3
Container# 321 0.8 Repl Live Organisms	S5mg/L Licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 3 1 1	2 5 1 0 0	3 5 2 0 0	4 5 3 0 0		DO 7.5 7.8	pH 8.4 8.3 8.3 8.3
	13mg/L licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 5 2 2 2	2 5 5 5 5 5	3 5 5 5 5 5	4 5 5 4 4	*	DO 7.6 7.7	pH 8.4 8.4 8.3 8.3
	21mg/L licate: Day 0 Day 1 Day 2 Day 3 Day 4	1 5 5 5 5	2 5 5 5 5 5 5	3 5 5 5 5 5 5	4 5 5 5 5 5 5		DO 7.6 7.5	pH 8.4 8.3 8.3

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Chronic Toxicity Tes	sting - F	aw Data	CERIODAPHNIA		(Ceriodaphnia	dubia)	
SFL Zinc Sulfate Starting 04-21-10	e.7H20 R∈	ef Toxio	cant /	Cerio	in dMW		Page 2
Container# 301 dMV	₹				. *		
Repl	licate:	1	2	3	4	DO	рН
_	Day 0	1 5	5	5	5	_ +	<u>.</u>
Live Organisms	Day 1	5	5	5	5	7.5	8.4
	Day 2	5	5	5	5	7.7	8.3
	Day 3	5	5	5	5		8.3
	Day 4	5	5	5	5		8 4

CETIS Summary Report

Report Date:

28 Apr-10 13:09 (p 1 of 1)

CETIS Sum	ımary керо	ıτ					T	est Code:	17-0781-	0202/04211	0CA4LRT
Ceriodaphnia	96-h Acute Sur	vival Te	est						Sierra Fo	othill Labor	atory Inc.
Batch ID: Start Date: Ending Date: Duration:	21 Apr-10 14:00 Protocol:		Survival (96h) EPA/821/R-02-012 (2002) Ceriodaphnia dubia In-House Culture			B	Irine: .ge: 16 h				
Sample ID: Sample Date: Receive Date: Sample Age:	21 Apr-10		Code: Material: Source: Station:	0410-906 Zinc sulfate ZnSO4.7H2O R	teference To	oxicant	-	client: Sier Project:	ra Foothill L	aboratory	
Comparison S	Summary										
Analysis ID	Endpoint		NOE	LOEL	TOEL	PMSD	TU	Method			
02-1099-0240	96h Survival Ra	ate	0.43	0.85	0.6046	22.58%		Steel Mar	y-One Ran	K I est	
Point Estimat	e Summary Endpoint	·	Leve	l mg/L	95% LCL	95% UCL	TU	Method			
07-5004-7959	96h Survival R	ate	EC50	0.5441	0.4721	0.627		Spearmai	n-Kärber		
Test Acceptal Analysis ID 02-1099-0240	Endpoint	ate		ol Resp	1	TAC Lim	its	Overlap Yes		ithin Limits	
07-5004-7959	96h Survival R	ate	Conti	rol Resp	1	0.9 - NL	<u></u>	Yes	Result VV	IIIIII LIIIIIIS	
•	Rate Summary			95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
Conc-mg/L	Control Type	Cour	nt Mear	1 93% LCL	1	1	1	0	0	0.0%	0.0%
0	DMW	4 4	1	1	1	. 1	1	0	0	0.0%	0.0%
0.21		4	0.8	0.6944	0.9056	0.4	1	0.05164	0.2828	35.36%	20.0%
0.43 0.85		4	0.05	0.01266	0.08734	0	0.2	0.01826	0.1	200.0%	95.0%
1.7		4	0	0	0	0	0	0	0		100.0%
96h Survival	Rate Detail										
Conc-mg/L	Control Type	Rep	1 Rep	2 Rep 3	Rep 4						
0	DMW	1	1	1	1						
0.21		1	1	1	1						
0.43		0.4	1	1	8.0						
0.85		0.2	0	0	0						
		_		n	n						

1.7

Report Date: **CETIS Measurement Report** 28 Apr-10 13:16 (p 1 of 1) **Test Code:** 17-0781-0202/042110CA4LRT2 Ceriodaphnia 96-h Acute Survival Test Sierra Foothill Laboratory Inc. Batch ID: 01-7019-0343 Test Type: Survival (96h) Analyst: Start Date: 21 Apr-10 14:00 Protocol: EPA/821/R-02-012 (2002) Diluent: Diluted Mineral Water Ending Date: 25 Apr-10 13:30 Species: Ceriodaphnia dubia Brine: **Duration:** 95h Source: In-House Culture Age: 16 h Sample ID: 01-9330-8072 Code: 0410-906 Client: Sierra Foothill Laboratory Sample Date: 21 Apr-10 Material: Zinc sulfate Project: Receive Date: 21 Apr-10 Source: ZnSO4.7H2O Reference Toxicant Sample Age: 14h Station: Dissolved Oxygen-Daily-mg/L Conc-mg/L **Control Type** 2 0 7.7 DMW 7.5 0.21 7.6 7.5 0.43 7.6 7.7

0.85		7.5	7.8							
1.7		7.5								
pH-Daily-Un	its									
Conc-mg/L	Control Type	1	2	3	4					
0	DMW	8.4	8.3	8.3	8.4	 '		 		
0.21		8.4	8.4	8.3	8.3					
0.43		8.4	8.4	8.3	8.3					•
0.85		8.4	8.3	8.3	8.3		•	•		
1.7		8.3								

000-324-166-1

CETIS™ v1.7.0revO

Analyst: QA: QA: 20 of 39

Report Date:

28 Apr-10 13:09 (p 1 of 2)

Test Code:

17-0781-0202/042110CA4LRT2

zenogapnnia	96-h A	cute Survi	ıval le	est								thill Labora	
nalysis ID:	02-109	99-0240		Endpoin	t: 96h	Survival Rat	е		CETI	S Version:	CETISv1.7	7.0	
nalyzed:		r-10 13:09	+ 1	Analysis	: Non	parametric-C	Control vs Tr	eatments	Offici	al Results:	Yes		
Satch ID:	01-701	19-0343		Test Typ	e: Surv	vival (96h)			Anal	/st:			
itart Date:		r-10 14:00		Protocol		V821/R-02-0	12 (2002)		Dilue	nt: Dilut	ed Mineral V	Vater	
Ending Date:		r-10 13:30		Species:	: Ceri	iodaphnia du	bia		Brine				-
Duration:	95h			Source:	in-H	louse Culture	·		Age:	16 h			
Sample ID:	01-93	30-8072		Code:	041	0-906			Clien	-	ra Foothill La	boratory	
Sample Date:	21 Ap	r-10		Material:	: Zinc	: sulfate			Proje	ect:			
Receive Date:				Source:	ZnS	04.7H2O R	eference Tox	kicant					
Sample Age:	14h			Station:					<u>.</u>				
Data Transfor	m		Zeta	Alt	Нур	Monte Car		NOEL	LOEL	TOEL	TU	PMSD	
Angular (Corre	cted)		0	C:	> T	Not Run		0.43	0.85	0.6046		22.58%	
Steel Many-O	ne Ran	k Test		<u>"</u>									
Control	vs	Conc-mg	/L		st Stat	Critical	Ties	P-Value	Decision(
WMC		0.21		18		10	1 ,	0.7500		ficant Effect ficant Effect			
		0.43		14		10	1 0	0.2626 0.0277	Significan			4	
		0.85*		10	<u> </u>	10 ————	U	0.0211	Olganitodi I				
Test Accepta	-			ä									
Attribute		Test Stat				Overlap	Decision	to Utantan					
Control Resp		<u> </u>	0.9 -	NL		Yes	Result With	nn Limits 					
									•				
Auxiliary Tes	ts												
•	ts	Test			. <u> </u>	Test Stat		P-Value	Decision				
Attribute		Test Grubbs S	ingle C	Outlier	<u> </u>	Test Stat 2.923	Critical 2.586	P-Value 0.0060	Decision Outlier De				
Attribute Extreme Value	}		ingle C	Outlier									
Attribute Extreme Value ANOVA Table)	Grubbs S			ean Squ	2.923				etected Decision			
Attribute Extreme Value ANOVA Table Source)	Grubbs S Sum Squa		Me	ean Squ 015774	2.923	2.586	0.0060	Outlier De	etected			
Auxiliary Tes Attribute Extreme Value ANOVA Table Source Between Error)	Grubbs S	ares	M e		2.923 Jare	2.586 DF	0.0060 F Stat	Outlier De	etected Decision			
Attribute Extreme Value ANOVA Table Source Between Error) ;	Grubbs S Sum Squa 3.047321	ares	Me 1.0	015774	2.923 Jare	2.586 DF 3	0.0060 F Stat	Outlier De	etected Decision			
Attribute Extreme Value ANOVA Table Source Between Error Total)	Grubbs S Sum Squa 3.047321 0.3336688 3.38099	ares	Me 1.0	015774 027805	2.923 Jare	2.586 DF 3 12	0.0060 F Stat	Outlier De	etected Decision			
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Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute)	Sum Squa 3.047321 0.3336688 3.38099	ares	Mo 1.0 0.4	015774 027805 043579	2.923 Jare 73 Test Stat	2.586 DF 3 12 15	0.0060 F Stat 36.53	P-Value <0.0001 Decision Equal Va	Decision Significan (1%)	t Effect		
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances)	Grubbs S Sum Squa 3.047321 0.3336688 3.38099	ares	Mo 1.0 0.4 1.0 guality of \	015774 027805 043579	2.923 Jare 73 Test Stat	2.586 DF 3 12 15 Critical	0.0060 F Stat 36.53	P-Value <0.0001 Decision Equal Va	Decision Significan	t Effect		
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution	e S	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V	ares	Mo 1.0 0.4 1.0 guality of \	015774 027805 043579	2.923 Jare 73 Test Stat 2.923	2.586 DF 3 12 15 Critical	0.0060 F Stat 36.53 P-Value 0.0689	P-Value <0.0001 Decision Equal Va	Decision Significan (1%) riances nal Distributi	t Effect		
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution	e e e e e e e e e e	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V	ares	Mo 1.0 0.4 1.0 guality of \	015774 027805 043579	2.923 Jare 73 Test Stat 2.923	2.586 DF 3 12 15 Critical	0.0060 F Stat 36.53 P-Value 0.0689 0.0007	P-Value <0.0001 Decision Equal Va Non-norm Max	Decision Significan (1%) riances nal Distributi	t Effect	CV%	Diff%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L	e e e e e e e e e e	Sum Squa 3.047321 0.3336688 3.38099 Is Test Mod Leve Shapiro-V	ares } ene Eq Viik No	Mo 1.0 0.4 1.0 guality of \	015774 027805 043579 Variance	2.923 Jare 73 Test Stat 3.069 0.7522	2.586 DF 3 12 15 Critical 5.953 95% UCL 1	0.0060 F Stat 36.53 P-Value 0.0689 0.0007	P-Value <0.0001 Decision Equal Va Non-norm Max	Decision Significan (1%) tiances nal Distributi Std Err 0	on Std Dev 0	0.0%	0.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L	e simption	Sum Squa 3.047321 0.3336688 3.38099 Is Test Mod Leve Shapiro-V	ene Eq Viik No	Mo 1.0 0.6 1.0 quality of \ pormality	015774 027805 043579 Variance	2.923 Jare 73 Test Stat 2.3069 0.7522 95% LCL 1 1	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1	P-Value <0.0001 Decision Equal Value Non-norm Max 1	Decision Significan (1%) fiances nal Distributi Std Err 0 0	on Std Dev 0	0.0% 0.0%	0.0% 0.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21	e simption	Sum Squa 3.047321 0.3336688 3.38099 Is Test Mod Leve Shapiro-V	ene Eq Vilk No	Month of Normality Int Month of Month	015774 027805 043579 Variance	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 1 0.6924	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 1 0.4	P-Value <0.0001 Decision Equal Value Non-norm Max 1 1	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252	on Std Dev 0 0.2828	0.0% 0.0% 35.36%	0.0% 0.0% 20.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43	e simption	Sum Squa 3.047321 0.3336688 3.38099 Is Test Mod Leve Shapiro-V	ene Eq Viik No Cou 4 4 4	Month of Normality int Month of Normality 1 1 0. 0.	015774 027805 043579 Variance	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 1 0.6924 0.01196	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 1 0.4 0	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 1 0.2	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857	Std Dev 0 0.2828 0.1	0.0% 0.0%	0.0% 0.0% 20.0% 95.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85	e simption	Sum Squa 3.047321 0.3336688 3.38099 Is Test Mod Leve Shapiro-V	ene Eq Vilk No Cou 4 4	Month of Normality Int Month of Month	015774 027805 043579 Variance	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 1 0.6924	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 1 0.4	P-Value <0.0001 Decision Equal Value Non-norm Max 1 1	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252	on Std Dev 0 0.2828	0.0% 0.0% 35.36%	0.0% 0.0% 20.0% 95.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7	mptior Rate Si Contr	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	ene Eq Viik No Cou 4 4 4 4	Mo 1.0 1.0 1.0 quality of \ pormality ant M 1 1 0.0 0.0	015774 027805 043579 Variance ean 8 05	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 1 0.6924 0.01196	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 1 0.4 0	P-Value <0.0001 Decision Equal Value Non-norm Max 1 1 0.2 0	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857 0	Std Dev 0 0.2828 0.1 0	0.0% 0.0% 35.36% 200.0%	0.0% 0.0% 20.0% 95.0% 100.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7 Angular (Cor	Rate S Contr	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	ene Eq Viik No Cou 4 4 4 4	guality of \ cornality int M 1 0.0 0.0 0.0 Summary	015774 027805 043579 Variance ean 8 05	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 0.6924 0.01196 0	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804 0	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 1 0.4 0 0	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 0.2 0	Decision Significan (1%) riances nal Distributi Std Err 0 0.05252 0.01857 0 Std Err	Std Dev 0 0.2828 0.1 0 Std Dev	0.0% 0.0% 35.36% 200.0%	0.0% 0.0% 20.0% 95.0% 100.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7 Angular (Cor	Rate S Contr	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	ene Eq Vilk No 4 4 4 4 4	multipus of \ compality int 1 0.0 int M 1 0.0 0.0 Summary	015774 027805: 043579 Variance ean 8 05	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 0.6924 0.01196 0 95% LCL 1.345	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 0.9076 0.08804 0 95% UCL 1.345	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 0.4 0 0 Min 1.345	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 0.2 0 Max 1.345	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857 0 Std Err	Std Dev 0 0 0.2828 0.1 0 Std Dev 0	0.0% 0.0% 35.36% 200.0% CV%	0.0% 0.0% 20.0% 95.0% 100.0% Diff%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7 Angular (Cor Conc-mg/L 0	mptior Rate Si Contr DMW	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	Cou 4 4 4 4 4 7 4 6 6 6	multipus of \ omnality nt M 1.0 0.0 0.0 0.0 Summary int M 1.1	015774 027805; 043579 Variance ean 8 05	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 0.6924 0.01196 0 95% LCL 1.345 1.345	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804 0 95% UCL 1.345 1.345	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 0.4 0 0 Min 1.345 1.345	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 0.2 0 Max 1.345 1.345	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857 0 Std Err 0 0	on Std Dev 0 0.2828 0.1 0 Std Dev 0	0.0% 0.0% 35.36% 200.0% CV% 0.0%	0.0% 0.0% 20.0% 95.0% 100.0% Diff% 0.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7	mptior Rate Si Contr DMW	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	ene Eq Vilk No 4 4 4 4 4 7 med :	uality of \ ormality nt M 1.0 0.0 0.0 Summary nt M 1.1	015774 027805; 043579 Variance ean 8 05	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 0.6924 0.01196 0 95% LCL 1.345 1.345 1.002	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804 0 95% UCL 1.345 1.345 1.239	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 0.4 0 0 Min 1.345 1.345 0.6847	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 0.2 0 Max 1.345 1.345 1.345	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857 0 Std Err 0 0 0.05785	on Std Dev 0 0.2828 0.1 0 Std Dev 0 0.3115	0.0% 0.0% 35.36% 200.0% CV% 0.0% 0.0%	0.0% 0.0% 20.0% 95.0% 100.0% Diff% 0.0% 0.0%
Attribute Extreme Value ANOVA Table Source Between Error Total ANOVA Assu Attribute Variances Distribution 96h Survival Conc-mg/L 0 0.21 0.43 0.85 1.7 Angular (Cor Conc-mg/L 0 0.21	mptior Rate Si Contr DMW	Sum Squa 3.047321 0.3336688 3.38099 ns Test Mod Leve Shapiro-V ummary of Type	Cou 4 4 4 4 4 4 4 4 4 4	Montality of \ ormality nt M 1 0.0 0.0 Summary nt M 1.1 1.1 1.1	015774 027805 043579 Variance ean 8 05 y lean 345	2.923 Jare 73 Test Stat 3.069 0.7522 95% LCL 1 0.6924 0.01196 0 95% LCL 1.345 1.345	2.586 DF 3 12 15 Critical 5.953 95% UCL 1 1 0.9076 0.08804 0 95% UCL 1.345 1.345	0.0060 F Stat 36.53 P-Value 0.0689 0.0007 Min 1 0.4 0 0 Min 1.345 1.345	P-Value <0.0001 Decision Equal Va Non-norm Max 1 1 0.2 0 Max 1.345 1.345	Decision Significan (1%) riances nal Distributi Std Err 0 0 0.05252 0.01857 0 Std Err 0 0	on Std Dev 0 0.2828 0.1 0 Std Dev 0	0.0% 0.0% 35.36% 200.0% CV% 0.0%	0.0% 0.0% 20.0% 95.0% 100.0% Diff% 0.0%

Report Date:

28 Apr-10 13:09 (p 2 of 2)

Test Code:

17-0781-0202/042110CA4LRT2

Ceriodaphnia	96-h Acute	Survival	Test
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Sierra Foothill Laboratory Inc.

Analysis ID: Analyzed:

02-1099-0240

28 Apr-10 13:09

Endpoint: 96h Survival Rate

Analysis: Nonparametric-Control vs Treatments

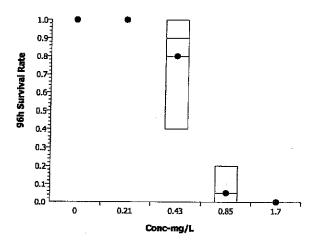
CETIS Version: Official Results: Yes

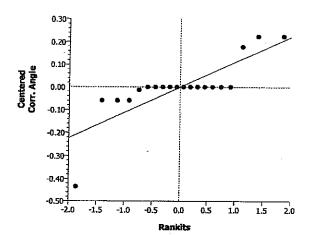
CETISv1.7.0

96h Surviva	Rate Detai
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Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	DMW	1	1	1	1	
0.21		1	1	1	1	
0.43		0.4	1	1	0.8	
0.85		0.2	0	0	0	
1.7		0	0	0	0	

Graphics





Report Date:

28 Apr-10 13:09 (p 1 of 1)

Test Code:

17-0781-0202/042110CA4LRT2

Ceriodaphnia	96-h Acute	Survival Test
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Sierra Foothill Laboratory Inc.

Analysis ID:	07-5004-7959	Endpoint:	96h Survival Rate	CETIS Version:	CETISv1.7.0
Analysis ibi	28 Apr-10 13:00		Untrimmed Spearman-Kärber	Official Results:	Yes

Analyzed: 28 Apr-10 13:09

Analysis: Untrimmed Spearman-Kärber

Batch iD:

01-7019-0343

Test Type: Survival (96h)

Trim

0.00%

Analyst:

Diluted Mineral Water

Start Date: Ending Date:

21 Apr-10 14:00 25 Apr-10 13:30

EPA/821/R-02-012 (2002) Protocol: Ceriodaphnia dubia Species:

Diluent: Brine:

Duration:

In-House Culture Source:

Age:

16 h

01-9330-8072 Sample ID: Sample Date: 21 Apr-10

Code: Material:

0410-906 Zinc sulfate Client:

Sierra Foothill Laboratory

Receive Date: 21 Apr-10

Source: Station:

ZnSO4.7H2O Reference Toxicant

Project:

Sample Age: 14h Spearman-Kärber Estimates

Threshold Threshold Option Control Threshold

Mu -0.2644 Sigma 0.03081 EC50 0.5441 95% LCL 95% UCL 0.4721

0.627

Test Acceptability

Attribute Control Resp Test Stat TAC Limits 0.9 - NL

Decision Overlap Yes

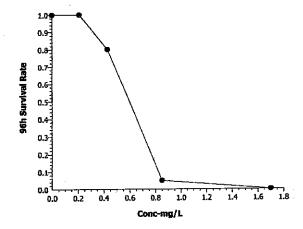
Result Within Limits

96h Survival Rate Summary		Calculated Variate(A/B)									
Conc-ma/L	Control Type	Count	Mean	Min	Мах	Std Err	Std Dev	CV%	Diff%	A	В
0	DMW	4	1	1	1	0	0	0.0%	0.0%	20	20
0.21	Divity	4	1	1	1	0	0	0.0%	0.0%	20	20
0.43		4	0.8	0.4	. 1	0.05164	0.2828	35.36%	20.0%	16	20
0.85		4	0.05	0	0.2	0.01826	0.1	200.0%	95.0%	1	20
1.7		4	0	0	0	0	0		100:0%	0	20

96h Survival Rate Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep
0	DMW	1	1	1	1
0.21		1	1	1	1
0.43		0.4	1	1	8.0
0.85		0.2	0	0	0
1.7		0	0	0	0

Graphics



255 Scottsville Blvd PO Box 1268 Jackson, CA 95642 Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

April 30, 2010

SFL

TEST SUMMARY

RE: Abbreviated static chronic toxicity testing of Boron Reference Toxicant / Algae diluted with Laboratory Control Water 04-21-10 to 04-25-10

Method = Agricultural Waiver Lab# 0410-908

Algae (Selenastrum capricornutum) Growth Test

Treatment 96h cells/mL (million)

50mg/L Boron in Lab	.183*
25mg/L Boron in Lab	. 992*
12.5mg/L Boron in Lab	1. 34
6.25mg/L Boron in Lab	1. 31
4MHSFW Lab Control	1. 32
-LHMHSFW	. 176
IC50 = 35.2mg/L	IC25 = 25.0 mg/L
NOAEC = 12.5mg/L	LOAEC = 25mg/L
Dose-Response (Growth): Ty	pe 1

Note:

- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group
- Does not meet EPA criteria for acceptability as control group

Summary prepared by:

Sandy Nurse

Dose-Response Relationship Types (EPA 821-B-00-004, with page reference)
Type 1: Ideal concentration-response relationship. p4-6.

Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise.

Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

April 30, 2010

SFL

ALGAE (Selenastrum capricornutum), GROWTH TEST

RE: Abbreviated static chronic toxicity testing of Boron Reference Toxicant / Algae Started 04-21-10 15:15 Ended 04-25-10 13:50 diluted with Laboratory Control Water The testing method used closely followed EPA-821-R-02-013, 4th Edition.

Boron Reference Toxicant / Algae Laboratory # 0410-908 collected 04-21-10 Dilution water was Laboratory Control Water MHSFW (moderately-hard synthetic freshwater) prepared 04-09-10

Sample and dilution water were filtered prior to preparation of test concentrations using cellulose nitrate . 45u pore size filters Selenastrum capricornutum (algae) positively identified to species 10-19-09 Organism age: 5d from Sierra Foothill Laboratory, UTEX 10-19-09, subcultured 04-16-10 to 04-21-10. Unialgal microscopic exam by SFL on 04-22-10 Nutrient spike: 1 mL/100 mL Bolds Basal Medium without EDTA

Test chambers: 250 mL size glass containing 100 mL test solution; continuous light and shaking

Test temperature (25C) did not range more than 3C during the test Cell density determined by spectrophotometric turbidity method Four replicates were initiated; one of which was used solely for daily chemistry measurements.

RESID.TS:

RESOLTS:	# cells/mL	initial #	96h cells/mL	
Treatment	in inoculum	replicates	(million)	
50mg/L Boron in Lab	10000	4	. 183*	
25mg/L Boron in Lab	10000	4	. 992*	•
12.5mg/L Boron in Lab	10000	4	1. 34	
6. 25mg/L Boron in Lab		4	1. 31	•
MHSFW Lab Control	10000	4	1. 32	
-LHMHSFW	10000	4	. 176	

Data meet EPA criteria for acceptability using MHSFW lab control.

Growth

IC50 = 35.2 mg/L

IC25 = 25.0 mg/L

NOAEC = 12.5mg/LLOAEC = 25mg/L

Bonferroni t-test

PMSD = 9.1

Bonferroni t-test

Dose-Response (Growth): Type 1

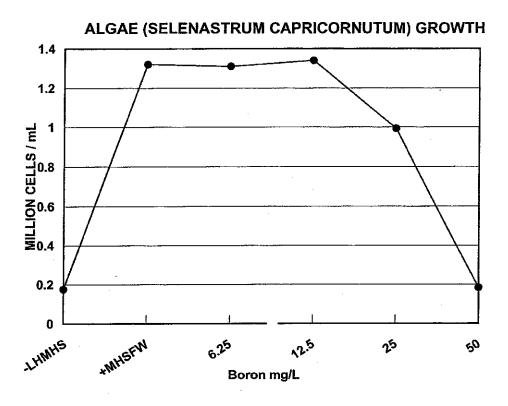
The percent minimum significant difference (PMSD) for NOAEC and LOAEC in this test was more sensitive than EPA's guidance PMSD bounds (EPA-821-R-02-013 section 10.2.8.2.5). The EPA lower bound was defaulted to.

- * Significantly reduced from control
- + Meets EPA criteria for acceptability as control group
- Does not meet EPA criteria for acceptability as control group Sierra Foothill Laboratory certifies that test results meet all applicable NELAC requirements unless stated otherwise. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

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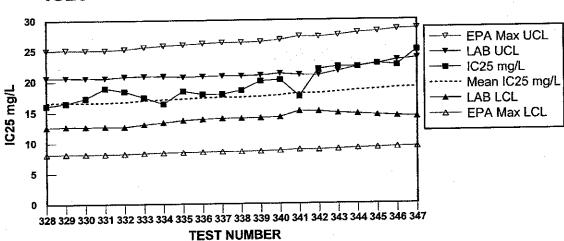
Chronic Toxicity Tests: EPA-821-R-02-013 (4th Edition)

Boron Reference Toxicant 0410-908 diluted with MHSFW Lab Water 04-21-10 to 04-25-10

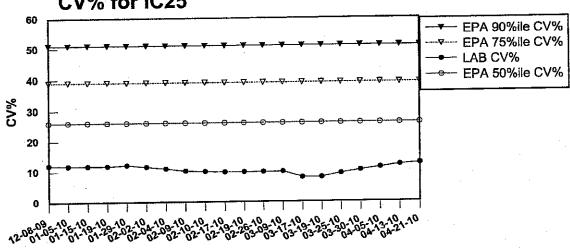


SFL Algae Chronic Growth **Boron Reference Toxicant** (calculated from prior 20 replications)

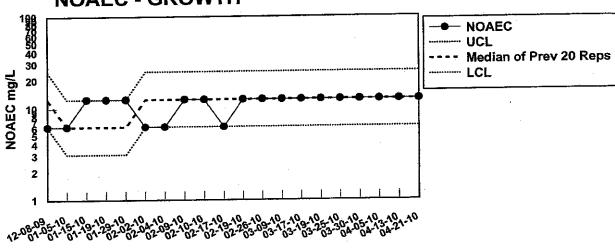




CV% for IC25



NOAEC - GROWTH



TEST DATE

255 Scottsville Blvd PO Box 1268 Jackson, CA 95642

Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

Chronic Toxicity Testing - Raw Data ALGAE (Selenastrum capricornutum)

Boron Reference Toxicant / Algae in MHSFW Starting 04-21-10

Page 1

[Rep 4] used only for daily chemistry

•					
50mg/L					
Turbidity (Absorbance Cell Density (mill	: Units):		.007	.006	[.009]
Chemistry (Initial)	рН 7.6	EC	DO	Hard	Alk
Daily pH			8.3 Day 3 8.2		64
25mg/L					
Turbidity (Absorbance Cell Density (mill	tainer#: Units): ion/mL):	.038	.039	.068	[045]
Chemistry (Initial)		EC 156	DO	Hard	Alk
Daily pH	Day 1	Day 2	8.7 Day 3 8.4	Day 4	64
12.5mg/L	- n i nam# .	6012	C07.4	C015	feores.
Turbidity (Absorbance Cell Density (milli	cainer#: Units): ion/mL):	.069	.063	.066	[6016] [.074] [1.49]
Chemistry (Initial)			DO		
Daily pH	Day 1 8.4	Day 2 8.4	8.6 Day 3 8.7	156 Day 4 8.9	64

255 Scottsville Blvd PO Box 1268 Jackson,CA 95642 Phone 209/223-2800 Fax 209/223-2747 Email info@sierralab.com

Chronic Toxicity Testing - Raw Data

ALGAE (Selenastrum capricornutum)

SFL Boron Reference Toxicant / Algae in MHSFW Starting 04-21-10

Page 2

[Rep 4] used only for daily chemistry

6.25mg/L Conta Turbidity (Absorbance U Cell Density (millio	iner#: nits): n/mL):	6017 .063 1.28	6018 .065 1.32	6019 .065 1.32	[.076]
Chemistry (Initial) Daily pH	pH 7.9 Day 1 8.4	EC 159 Day 2 8.4	DO 8.7 Day 3 8.8	Hard 156 Day 4 9.1	Alk 66
MHSFW Conta Turbidity (Absorbance U Cell Density (millio	iner#: nits): n/mL):	6001 .063 1.28	6002 .067 1.36	.065	[6004] [.073] [1.47]
Chemistry (Initial) Daily pH	pH 7.9 Day 1 8.3			Hard 156 Day 4 9.5	Alk 60
LHMHS Conta Turbidity (Absorbance U Cell Density (million	iner#: nits): on/mL):	6029 .006 .170	6030 .006 .170	6031 .007 .189	[.006]
Chemistry (Initial) Daily pH	pH Day 1 8.4	EC Day 2 8.0	DO Day 3	Hard 26 Day 4 8.1	Alk 12

CETIS Summary Report

Report Date:

28 Apr-10 12:32 (p 1 of 1)

Test Code:

06-8188-0203/042110SC4LRT3

Selenastrum Growth Test (Dil; Lab)	Sierra Foothill Laboratory Inc.

Batch ID: 18-4223-8522

Test Type: Cell Growth

Analyst:

Start Date: 21 Apr-10 15:15 Ending Date: 25 Apr-10 13:50 Protocol: EPA/821/R-02-013 (2002) Species:

Diluent:

Mod-Hard Synthetic Water

Duration:

Source:

Selenastrum capricornutum In-House Culture

Boron Reference Toxicant

Brine:

Sample ID: 08-8591-0139 Sample Date: 21 Apr-10

Code:

0410-908 Boron

Age:

Sierra Foothill Laboratory

Receive Date: 21 Apr-10

Material: Source:

Client: Project:

Sample Age: 15h

Station:

5 d

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
04-3095-6194	Cell Density	12.5	25	17.68	5.97%		Bonferroni Adj t Test
06-6655-2445		12.5	25	17.68	23.41%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL TU	Method
03-6560-4814	Cell Density	IC25	25.04	14.59	40	Linear Interpolation (ICPIN)
		IC50	35.24	24.59	43.82	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-6560-4814	Cell Density	Control CV	0.02994	NL - 0.2	Yes	Result Within Limits
04-3095-6194	Cell Density	Control CV	0.02994	NL - 0.2	Yes	Result Within Limits
06-6655-2445	Cell Density	Control CV	0.02994	NL - 0.2	Yes	Result Within Limits
03-6560-4814	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Result Within Limits
04-3095-6194	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Result Within Limits
06-6655-2445	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Result Within Limits
04-3095-6194	Cell Density	PMSD	0.05973	0.091 - 0.29	Yes	Result Below Limit
06-6655-2445	Cell Density	PMSD	0.2341	0.091 - 0.29	Yes	Result Within Limits

Cell Density Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Low Hard MHSF	4	1.746E+5	1.711E+5	1.782E+5	1.698E+5	1.890E+5	1.749E+3	9.582E+3	5.49%	0.0%
0	MHSFW Lab Co	4	1.356E+6	1.324E+6	1.387E+6	1.277E+6	1.474E+6	1.557E+4	8.528E+4	6.29%	-676.3%
6.25		4	1.361E+6	1.317E+6	1.404E+6	1.277E+6	1.533E+6	2.131E+4	1.167E+5	8.58%	-679.1%
12.5		4	1.375E+6	1.341E+6	1.410E+6	1.277E+6	1.494E+6	1.691E+4	9.259E+4	6.73%	-687.6%
25	•	4	9.735E+5	8.709E+5	1.076E+6	7.876E+5	1.375E+6	5.013E+4	2.746E+5	28.21%	-457.4%
50		4	1.938E+5	1.848E+5	2.028E+5	1.698E+5	2.274E+5	4.405E+3	2.413E+4	12.45%	-10.98%

Cell Density Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Low Hard MHSF	1.698E+5	1.698E+5	1.890E+5	1.698E+5
0	MHSFW Lab Co	1.277E+6	1.356E+6	1.316E+6	1.474E+6
6.25		1.277E+6	1.316E+6	1.316E+6	1.533E+6
12.5		1.395E+6	1.277E+6	1.336E+6	1.494E+6
25		7.876E+5	8.070E+5	1.375E+6	9.239E+5
50		1.890E+5	1.890E+5	1.698E+5	2.274E+5

CETIS Measurement Report

Report Date: Test Code:

04 May-10 09:25 (p 1 of 2) 06-8188-0203/042110SC4LRT3

Selenastrum G	Frowth Test (Dil: La		Sierra Foothill Laboratory Inc.		
Batch ID: Start Date:	18-4223-8522 21 Apr-10 15:15 25 Apr-10 13:50 95h	Test Type: Protocol:	Cell Growth EPA/821/R-02-013 (2002) Selenastrum capricomutum In-House Culture	Analyst: Diluent: Brine: Age:	Mod-Hard Synthetic Water 5 d
Sample ID: Sample Date: Receive Date: Sample Age:	21 Apr-10	Code: Material: Source: Station:	0410-908 Boron Boron Reference Toxicant	Client: Project:	Sierra Foothill Laboratory

CETIS™ v1.7.0revO

Analyst:

04 May-10 09:25 (p 2 of 2) Test Code: 06-8188-0203/042110SC4LRT3 Selenastrum Growth Test (Dil: Lab) Sierra Foothill Laboratory Inc. Alkalinity-Initial CaCO3-mg/L Conc-mg/L Control Type 0 Low Hard MH 12 0 MHSFW Lab C 80 6.25 78 12.5 80 25 78 50 74 Conductivity-Initial-µmhos Conc-mg/L Control Type 1 0 Low Hard MH 0 MHSFW Lab C 161 6.25 159 12.5 157 25 156 50 153 Dissolved Oxygen-Initial-mg/L Conc-mg/L **Control Type** 0 Low Hard MH 0 MHSFW Lab C 8.2 6.25 8.7 12.5 8.6 25 8.7 50 8.3 Hardness (CaCO3)-Initial-mg/L Conc-mg/L **Control Type** 0 Low Hard MH 0 MHSFW Lab C 87 6.25 83 12.5 83 25 81 50 87 pH-Daily-Units Conc-mg/L **Control Type** 1 2 3 4 0 Low Hard MH 0 MHSFW Lab C 8.3 8.3 8.7 9.5 6.25 8.4 8.4 8.8 9.1 12.5 8.4 8.4 8.7 8.9 25 8.3 8.3 8.4 8.6 50 8.1 8.2 8.2 8.2 pH-Initial-Units Conc-mg/L **Control Type** 0 Low Hard MH 0 MHSFW Lab C 7.9 6.25 7.9 12.5 7.8 25 7.7 50 7.6

Report Date:

000-324-166-1

CETIS Measurement Report

CETIS™ v1.7.0revO

Analyst:_ QA:

32 of 39

Report Date: 28 Apr-10 12:32 (p 1 of 4) **CETIS Analytical Report** 06-8188-0203/042110SC4LRT3 Test Code: Selenastrum Growth Test (Dil: Lab) Sierra Foothill Laboratory Inc. **CETIS Version: CETISv1.7.0** Analysis ID: 06-6655-2445 Endpoint: Cell Density 28 Apr-10 11:33 Analyzed: Analysis: Parametric-Control vs Treatments Official Results: Test Type: Cell Growth Batch ID: 18-4223-8522 Analyst: EPA/821/R-02-013 (2002) Diluent: Mod-Hard Synthetic Water Start Date: 21 Apr-10 15:15 Protocol: Brine: Ending Date: 25 Apr-10 13:50 Species: Selenastrum capricornutum Source: In-House Culture Age: 5 d **Duration:** Client: Sierra Foothill Laboratory 0410-908 Sample ID: 08-8591-0139 Code: Material: Project: Sample Date: 21 Apr-10 Boron Receive Date: 21 Apr-10 Source: Boron Reference Toxicant Sample Age: 15h Station: Monte Carlo TU **PMSD** NOEL LOEL **TOEL Data Transform** Zeta Alt Hyp 23.41% 12.5 17.68 Not Run 25 Untransformed 0 C > T**Dunnett's Multiple Comparison Test** P-Value Decision(5%) Conc-mg/L **Test Stat** Critical MSD Control MHSFW Lab Contro 6.25 0.1052 2.466 308100 0.7645 Non-Significant Effect 12.5 -0.1578 2.466 308100 0.8466 Non-Significant Effect 25* 2.61 2.466 308100 0.0396 Significant Effect 2.466 308100 < 0.0001 Significant Effect 50* 9.07 **Test Acceptability**

Attribute	Test	Test Stat	Critical	P-Value	Decision	<u> </u>	
Extreme Value	Grubbs Single Outlier	2.979	2.548	0.0024	Outlier De	tected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)	
Between	2.908614E+12	7.271534E+11	4	31.04	<0.0001	Significant Effect	
Ептог	2.342971E+11	23429710000	10				
Total	3.142911E+12	7.505832E+11	14				

Decision

Result Within Limits

Result Within Limits

Result Within Limits

Overlap

Yes

Yes

Yes

Variances Distribution	Bartlett Ed Shapiro-W			20.21 0.7691	13.28	0.0005 0.0015	Unequal V Non-norma						
Cell Density Summary													
Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%		
0	MHSFW Lab Co	3	1.316E+6	1.301E+6	1.331E+6	1.277E+6	1.356E+6	7.318E+3	3.941E+4	2.99%	0.0%		
6.25		3	1.303E+6	1.294E+6	1.312E+6	1.277E+6	1.316E+6	4.223E+3	2.274E+4	1.75%	1.0%		
12.5		3	1.336E+6	1.313E+6	1.358E+6	1.277E+6	1.395E+6	1.098E+4	5.915E+4	4.43%	-1.5%		
25		3 .	9.900E+5	8.630E+5	1.117E+6	7.876E+5	1.375E+6	6.199E+4	3.339E+5	33.72%	24.78%		

P-Value

1.826E+5 1.784E+5 1.868E+5 1.698E+5 1.890E+5 2.055E+3 1.106E+4 6.06%

Decision(1%)

Test Stat Critical

86.12%

Attribute

PMSD

Control CV

Control Resp

ANOVA Assumptions

Attribute

50

Test Stat TAC Limits

NL - 0.2

1.00E+6 - NL

0.091 - 0.29

0.02994

1.32E+6

0.2341

Test

3

Report Date:

28 Apr-10 12:32 (p 2 of 4)

Test Code:

06-8188-0203/042110SC4LRT3

Selenastrum Growth Test (Dil: Lab)

Sierra Foothill Laboratory Inc.

Analysis ID: Analyzed:

06-6655-2445

28 Apr-10 11:33

Endpoint: Cell Density

Analysis: Parametric-Control vs Treatments

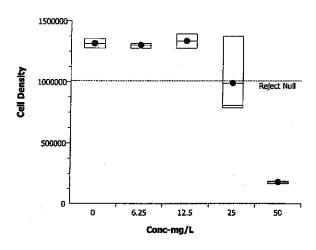
CETIS Version: Official Results: Yes

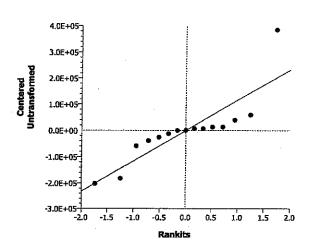
CETISv1.7.0

Cell Density Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	MHSFW Lab Co	1.277E+6	1.356E+6	1.316E+6	
6.25		1.277E+6	1.316E+6	1.316E+6	
12.5		1.395E+6	1.277E+6	1.336E+6	
25		7.876E+5	8.070E+5	1.375E+6	
50		1.890E+5	1.890E+5	1.698E+5	

Graphics





Report Date:

28 Apr-10 12:32 (p 3 of 4)

Test Code:

06-8188-0203/042110SC4LRT3

									1000				
Selenastrum G	Frowt	h Test (Dil:	Lab)								Sierra Foo	thill Labo	ratory Inc
Analysis ID:		095-6194		Endpoint:	Cell	Density			CETIS	S Version:	CETISv1.7	7.0	
Analyzed:	_	pr-10 11:33	3	Analysis:		_	iple Compar	rison	Offici	al Results:	Yes		
Batch ID:	18-4	223-8522		Test Type:	Cell	Growth		*******	Analy	rst:			
Start Date:		pr-10 15:15	i	Protocol:		/821/R-02-0	13 (2002)		Dilue	nt: Mod-	Hard Synthe	etic Water	
Ending Date:		pr-10 13:50		Species:	Sele	nastrum ca	pricornutum		Brine	: .			
Duration:	95h			Source:		ouse Cultur			Age:	5 d			
Sample ID:	08-8	591-0139		Code:	0410	0-908			Clien	t: Siem	a Foothill La	boratory	
Sample Date:				Material:	Boro	ก			Proje	ct:			
Receive Date:				Source:	Вого	n Referenc	e Toxicant						
Sample Age:		F		Station:					•				
Data Transfori	 m		Zeta	Alt F	lyp	Monte Car	10	NOEL	LOEL	TOEL	TU	PMSD	
Untransformed	i		0	C > T	-	Not Run		12.5	25	17.68		5.97%	
Bonferroni Ad	ij t Te	st			-								
Control	VS	Conc-mg	/L	Test	Stat	Critical	MSD	P-Value	Decision(
MHSFW Lab C	ontro	6.25		0.448	9	2.685	78610	1.0000	•	icant Effect			
		12.5		-0.67	38	2.685	78610	1.0000	_	icant Effect			
		25*		15.85	i	2.685	87890	<0.0001	Significant				
		50*		38.72	?	2.685	78610	<0.0001	Significant	Effect			
Test Acceptab	oility												
Attribute		Test Stat	TAC	Limits		Overlap	Decision						
Control CV		0.02994	NL-			Yes	Result With						
Control Resp		1.32E+6	1.00	E+6 - NL		Yes	Result With						
PMSD		0.05973	0.09	1 - 0.29		Yes	Result Bek	ow Limit					
ANOVA Table													
Source		Sum Squa	ires	Mear			DF	F Stat	P-Value	Decision(
Between		3.000258E	+12)646E		4	583.4	<0.0001	Significant	Effect		
Еггог		11571340	000		70400		9						÷
Total		3.01183E+	12	7.513	3503E	+11	13						
ANOVA Assur	mptio	ns								•			
Attribute		Test				Test Stat	Critical	P-Value	Decision(
Variances				of Variance		4.885	13.28	0.2993	Equal Vari				
Distribution		Shapiro-V	Vilk No	mality		0.9647		0.7997	Normal Dis	SUIDLUOII			
Cell Density S	Summ	агу				-					A. 1 =	ė.	D.cm/
		rol Type	Cou	nt Mean	1		95% UCL		Max	Std Err	Std Dev	2 00%	Diff% 0.0%
0	MHS	FW Lab Co		1.316	6±+6	1.301E+6	1.331E+6	1.2775.+6	1.356E+6	7.318E+3	3.941E+4	2.55% 4.75%	
6.25			3								2.274E+4		1.0%
12.5		•	3								5.915E+4		-1.5%
25			2								1.376E+4		39.42%
50			3	1.829	6E+5	1.784E+5	1.868E+5	1.698E+5	1.890E+5	2.055E+3	1.106E+4	6.06%	86.12%

Report Date:

28 Apr-10 12:32 (p 4 of 4)

Test Code:

06-8188-0203/042110SC4LRT3

Selenastrum Growth Test (Dil: Lab)

Sierra Foothill Laboratory Inc.

Analysis ID: Analyzed:

04-3095-6194 28 Apr-10 11:33 Endpoint: Cell Density

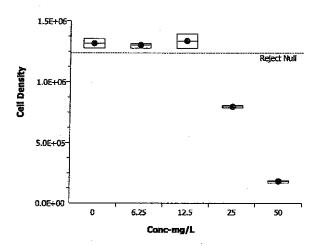
Analysis: Parametric-Multiple Comparison **CETIS Version:** CETISv1.7.0

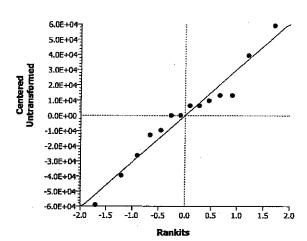
Official Results: Yes

Cell	Density	Detail
------	---------	--------

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	MHSFW Lab Co	1.277E+6	1.356E+6	1.316E+6		
6.25	•	1.277E+6	1.316E+6	1.316E+6		
12.5	•	1.395E+6	1.277E+6	1.336E+6		
25		7.876E+5	8.070E+5	Outlier		
50		1.890E+5	1.890E+5	1.698E+5		

Graphics





Report Date:

28 Apr-10 12:32 (p 1 of 1)

Test Code:

06-8188-0203/042110SC4LRT3

Selenastrum (Growth Test (Dil: La	ıb)	Sierra Foothill Laboratory in	
Analysis ID: Analyzed:	03-6560-4814 28 Apr-10 11:34	•	Cell Density Linear Interpolation (ICPIN)	CETIS Version: CETISv1.7.0 Official Results: Yes
Batch ID: 18-4223-8522 Start Date: 21 Apr-10 15:15		Protocol:	Cell Growth EPA/821/R-02-013 (2002)	Analyst: Diluent: Mod-Hard Synthetic Water
Ending Date: Duration:	25 Apr-10 13:50 95h	Species: Source:	Selenastrum capricornutum In-House Culture	Brine: Age: 5 d

Sample ID: 08-8591-0139 Code: 0410-908 Client: Sierra Foothill Laboratory
Sample Date: 21 Apr-10 Material: Boron Project:

Sample Date: 21 Apr-10 Material: Boron Reference Toxicant Project

Receive Date: 21 Apr-10 Source: Boron Reference Toxicant

Station:

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	57951	200	Yes	Two-Point Interpolation

Test Acceptability

Sample Age: 15h

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control CV	0.02994	NL - 0.2	Yes	Result Within Limits
Control Resp	1.32E+6	1.00E+6 - NL	Yes	Result Within Limits

Point Estimates

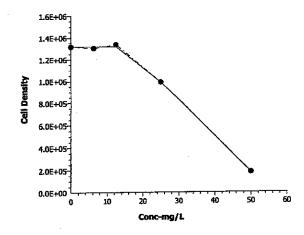
Level	mg/L	95% LCL	95% UCL	
IC25	25.04	14.59	40	
IC50	35.24	24.59	43.82	

Cell Density	/ Summary			Calculated Variate							
Conc-ma/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	·	
0	MHSFW Lab Con	3	1.316E+6	1.277E+6	1.356E+6	7.195E+3	3.941E+4	2.99%	0.0%		
6.25		3	1.303E+6	1.277E+6	1.316E+6	4.152E+3	2.274E+4	1.75%	1.0%		
12.5		3	1.336E+6	1.277E+6	1.395E+6	1.080E+4	5.915E+4	4.43%	-1.5%		
25		3	9.900E+5	7.876E+5	1.375E+6	6.095E+4	3.339E+5	33.72%	24.78%		
50		3	1.826E+5	1.698E+5	1.890E+5	2.020E+3	1.106E+4	6.06%	86.12%		

Cell Density Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	MHSFW Lab Cont	1.277E+6	1.356E+6	1.316E+6	
6.25		1.277E+6	1.316E+6	1.316E+6	
12.5		1.395E+6	1.277E+6	1.336E+6	
25		7.876E+5	8.070E+5	1.375E+6	
50		1.890E+5	1.890E+5	1.698E+5	

Graphics



Analyst: ________ QA: _____

Report Date:

28 Apr-10 11:53 (1 of 1)

Selenastrum Growth Test (Dii: Lab)

Sierra Foothill Laboratory Inc.

Test Type: Cell Growth

Protocol: EPA/821/R-02-013 (2002)

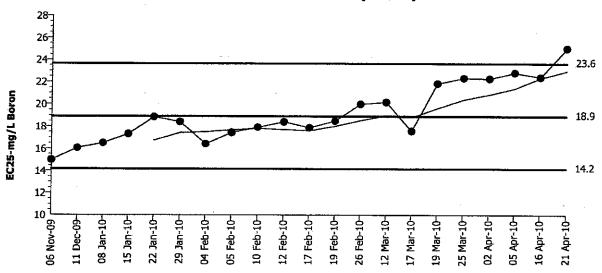
Organism: Selenastrum capricomutum (Green A Material:

Endpoint: Cell Density

Source:

Boron Reference Toxicant-RT3

Selenastrum Growth Test (Dil: Lab)



Mean: 18.9 Count: 20 -2s Action Limit: 14.16 Sigma: 2.371 CV: 12.50% +2s Action Limit: 23.64

_		_	-
n.	ralih.	~~~	 Data

Point	Year	Month	Day	/ QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2009	Nov	6	14.98	-3.922	-1.654			00-6537-4735	07-7820-1220
2		Dec	11	16.05	-2.848	-1.201			19-9024-3774	04-9652-8701
3	2010	Jan	8	16.51	-2.391	-1.008			04-8181-2561	13-2018-5194
4			15	17.31	-1.592	-0.6715			09-0592-7003	07-1790-9163
5			22	18.84	-0.0572	-0.02412			16-5817-9867	15-5663-9912
6			29	18.4	-0.4982	-0.2101			13-2184-4457	10-2677-1588
7		Feb	4	16.42	-2.483	-1.047			05-8399-6767	06-1689-4224
8			5	17.44	-1.46	-0.616			18-5774-4071	07-2808-1701
9			10	17.91	-0.9881	-0.4167			11-9096-4869	14-9207-9217
10			12	18.4	-0.5015	-0.2115			14-5220-0913	05-1833-6633
11			17	17.87	-1.03	-0.4346			05-2300-5022	13-4646-9172
12			19	18.48	-0.4211	-0.1776			20-3916-7695	06-2786-5474
13			26	19.98	1.076	0.4536	•		16-4266-3845	11-4920-6253
14		Mar	12	20.17	1.268	0.5347			17-3279-5748	15-7939-6068
15			17	17.6	-1.303	-0.5494			20-4704-0138	07-4917-9568
16			19	21.85	2.946	1.243			05-9270-9678	11-4084-2882
17			25	22.33	3.434	1.448			18-3225-0934	08-0874-0314
18		Apr	2	22.29	3.387	1.429			04-5530-6563	03-2019-7309
19			5	22.81	3.913	1.65			13-1848-9548	01-9112-7684
20			16	22.42	3.516	1.483			20-8886-8946	14-3565-9175
21			21	25.04	6.137	2.588		(+)	06-8188-0203	03-6560-4814

Report Date:

Boron

28 Apr-10 11:54 (1 of 1)

Selenastrum Growth Test (Dil: Lab)

Sierra Foothill Laboratory Inc.

Test Type: Cell Growth

Protocol: EPA/821/R-02-013 (2002)

Organism: Selenastrum capricornutum (Green A

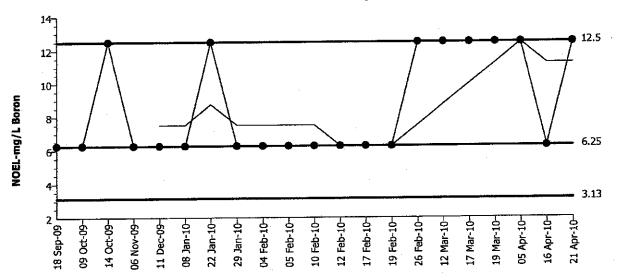
Endpoint: Cell Density

Material:

Source:

Boron Reference Toxicant-RT3

Selenastrum Growth Test (Dil: Lab)



6.25 Mode:

Count: 20

-1ci Action Limit: 3.125 +1ci Action Limit: 12.5

Dil Fact: 0.5

Year	Month	Day	QC Data	Delta Sigma	Warning	Action Test ID	Analysis ID	
		18	6.25	0		03-5179-2583	08-2760-3238	
	Oct	9	6.25	0		16-2755-1859	04-9901-0244	
		14	12.5	6.25		08-3479-3911	16-0281-8203	
	Nov	6	6.25	0		00-6537-4735	11-6654-4633	
	Dec	11	6.25	0		19-9024-3774	17-8123-5787	
2010	Jan	8	6.25	0		04-8181-2561	02-0825-7298	
		22	12.5	6.25		16-5817-9867	06-5928-1473	
		29	6.25	0		13-2184-4457	09-5894-4494	
	Feb	4	6.25	0		05-8399-6767	13-0889-5063	
		5	6.25	0		18-5774-4071	05-6487-8086	
		10	6.25	0		11-9096-4869	14-7794-8335	
			6.25	0 .		14-5220-0913	05-4036-9478	
		17	6.25	0		05-2300-5022	17-1420-1511	
		19	6.25	0		20-3916-7695	08-8331-7796	
		26	12.5	6.25		16-4266-3845	17-3024-2410	
	Mar			6.25		17-3279-5748	09-0532-0320	
				6.25		20-4704-0138	10-1530-6122	
				6.25		05-9270-9678	10-7946-9569	
	Apr					13-1848-9548	10-3554-6383	
	· •			0		20-8886-8946	06-4245-0587	
		21	12.5	6.25		06-8188-0203	04-3095-6194	
	2009	2009 Sep Oct Nov Dec	2009 Sep 18 Oct 9 14 Nov 6 Dec 11 2010 Jan 8 22 29 Feb 4 5 10 12 17 19 26 Mar 12 17 19 Apr 5 16	Oct 9 6.25 Nov 6 6.25 Dec 11 6.25 2010 Jan 8 6.25 22 12.5 29 6.25 Feb 4 6.25 10 6.25 10 6.25 17 6.25 19 6.25 26 12.5 Mar 12 12.5 17 12.5 19 12.5 Apr 5 12.5 16 6.25	2009 Sep 18 6.25 0 Oct 9 6.25 0 14 12.5 6.25 Nov 6 6.25 0 Dec 11 6.25 0 2010 Jan 8 6.25 0 22 12.5 6.25 29 6.26 0 Feb 4 6.25 0 10 6.25 0 10 6.25 0 11 6.25 0 12 6.25 0 11 6.25 0 12 6.25 0 17 6.25 0 19 6.25 0 26 12.5 6.25 Mar 12 12.5 6.25 19 12.5 6.25 Apr 5 12.5 6.25 16 6.25 0	2009 Sep 18 6.25 0 Oct 9 6.25 0 14 12.5 6.25 Nov 6 6.25 0 Dec 11 6.25 0 2010 Jan 8 6.25 0 22 12.5 6.25 29 6.26 0 Feb 4 6.25 0 10 6.25 0 10 6.25 0 11 6.25 0 11 6.25 0 12 6.25 0 11 6.25 0 12 6.25 0 13 6.25 0 14 6.25 0 15 6.25 0 16 6.25 0 17 6.25 0 18 6.25 0 19 6.25 0 19 6.25 0 19 6.25 0 19 6.25 0 19 6.25 0 26 12.5 6.25 19 12.5 6.25 19 12.5 6.25 Apr 5 12.5 6.25 16 6.25 0	2009 Sep 18 6.25 0 03-5179-2583 Oct 9 6.25 0 16-2755-1859 Nov 6 6.25 0 00-6537-4735 Dec 11 6.25 0 19-9024-3774 2010 Jan 8 6.25 0 04-8181-2561 2010 Jan 8 6.25 0 05-839-6767 2010 Ban 6.25 0 11-9096-4869 12-9096-4869 12-9096-4869 10 6.25 0 14-5220-0913 12-5200-5022 12-3916-7695 12-3916-7695 12-3916-7695 12-3916-7695	