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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.

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

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

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 Thomas by AK

William J. Thomas
for BEST BEST & KRIEGER LLP

WJT:avr
attachments

Exhibit A

KINGS RIVER SUB-WATERSHED

TOXAPHENE RESULTS

All Values in ug L unless noted
ND = Not Detected
NS = Not Sampled
J = Estimated Value
Below Lab Reporting Limit

Sample Date	Reporting Limit	Sample Location							
		ACCE Bridge	Mill Creek	Manning Ave	Manning Dup	Lemoore Weir	Lemoore Dup	Jackson Ave	James Weir
1/3/2004	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
8/9/2004	0.5 ug / L	NS	NS	ND	NS	NS	NS	NS	NS
2/22/2005	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
3/15/2005	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
4/12/2005	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
5/10/2005	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
6/7/2005	0.5 ug / L	NS	NS	ND	NS	ND	NS	ND	NS
7/19/2005	0.5 ug / L	ND	NS	ND	NS	ND	NS	ND	NS
8/23/2005	0.5 ug / L	ND	NS	ND	NS	ND	NS	ND	ND
9/27/2005	0.5 ug / L	ND	NS	ND	NS	ND	NS	ND	NS
12/21/2005	0.5 ug / L	ND	NS	ND	ND	ND	NS	ND	NS
1/4/2006	0.5 ug / L	ND	ND	ND	ND	NS	NS	ND	NS
2/22/2006	0.5 ug / L	ND	ND	ND	ND	ND	NS	ND	NS
3/15/2006	0.5 ug / L	ND	ND	ND	ND	ND	NS	ND	NS
4/19/2006	0.5 ug / L	ND	ND	ND	ND	ND	NS	ND	NS
4/25/2006	0.5 ug / L	ND	ND	ND	ND	ND	NS	ND	NS
5/16/2006	0.5 ug / L	ND	ND	ND	ND	ND	NS	ND	NS
6/21/2006	0.5 ug / L	ND	ND	ND	NS	ND	ND	ND	NS
7/18/2006	0.5 ug / L	ND	ND	ND	NS	ND	NS	ND	NS
8/15/2006	0.5 ug / L	NS	NS	ND	ND	ND	NS	ND	ND
9/5/2006	0.5 ug / L	NS	NS	ND	NS	ND	ND	ND	ND
10/3/2006	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
2/21/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
3/[illegible]/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
5/14/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
6/[illegible]/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
7/[illegible]/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
7/14/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
7/[illegible]/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
8/15/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS
9/5/2007	0.5 ug / L	NS	NS	NS	NS	NS	NS	ND	NS

EXHIBIT "A"

Exhibit B

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

Fish Name	APPL ID	Sample Date	Testing Method	Analyte	Toxaphene Detection	PQL/MDL (Units)	Extrction Date	Analysis Date
1 Gold Fish	AX94895	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
2 Gold Fish	AX94896	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
3 Gold Fish	AX94897	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
4 Gold Fish	AX94898	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
5 Gold Fish	AX94899	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
6 Gold Fish	AX94900	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
7 Gold Fish	AX94901	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
8 Gold Fish	AX94902	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
9 Gold Fish	AX94903	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
10 Gold Fish	AX94904	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
11 Common Carp	AX94905	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
12 Common Carp	AX94906	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
13 Common Carp	AX94907	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
14 Common Carp	AX94908	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
15 Common Carp	AX94909	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
16 Common Carp	AX94910	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
17 Common Carp	AX94911	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
18 Common Carp	AX94912	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
19 Common Carp	AX94913	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
20 Common Carp	AX94914	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
21 Channel Catfish	AX94915	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
22 Channel Catfish	AX94916	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
23 Large Mouth Bass	AX94917	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
24 Large Mouth Bass	AX94918	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009
25 Large Mouth Bass	AX94919	4/10/2009	EPA 8081A	Toxaphene	Not Detected	1000/260 ug/kg	4/24/2009	5/13/2009

Doc. # 57975

Exhibit C

Key: Blank Cell = no sample
Grey Cell = Significantly Reduced Growth

ND = Not Detected
J = Value between Lab Reporting Level and Instrument Detection Level
B = Tested Constituent found in Blank

ADD DATA ONLY, DO NOT MODIFY FORMAT

DOES INCLUDE ACOE DATA

Date Updated: 1/27/2010

Site	Constituent	Field/Lab	BPO	Units	5/18/2006	6/21/06	7/19/2006	8/15/2006	9/5/2006	10/3/2006	02/21/07	03/01/07	03/14/07	04/11/07	06/14/07
1.0-ACOE Bridge	Flow	KRWA		cfs		10818	7405	5759	3290	1535	628	516	440	345	
1.0-ACOE Bridge	Chlorpyrifos	APPL		ug/L							ND	ND	ND	ND	
2.0-Mill Creek	Flow	KRWA		cfs	86 (est)	15.3					13	83	19	11	
2.0-Mill Creek	Chlorpyrifos	APPL		ug/L							ND	ND	ND	ND	
3.0-Manning Ave	Flow	KRWA		cfs	9300	6560	3857	3140	1540	120	390	515	200	220	2200
3.0-Manning Ave	Chlorpyrifos	APPL		ug/L			ND	ND	ND	ND	ND	ND	ND	ND	ND
3.1-Manning Ave-D	Chlorpyrifos	APPL		ug/L			ND		ND		ND		ND		
4.0-Lemoore Weir	Flow	KRWA		cfs	6850	4187	1235	283	440	40	no flow	320	150	145	665
4.0-Lemoore Weir	Chlorpyrifos	APPL		ug/L			ND	ND	ND	ND	no flow	ND	ND	ND	ND
4.1-Lemoore Weir-D	Chlorpyrifos	APPL		ug/L				ND		ND		ND		ND	ND
9.0-James Weir	Flow	KRWA		cfs	4350 (est)	2500					no flow	no flow	no flow	no flow	no flow
9.0-James Weir	Chlorpyrifos	APPL		ug/L							no flow	no flow	no flow	no flow	no flow
9.1-James Weir-D	Chlorpyrifos	APPL		ug/L							no flow	no flow	no flow	no flow	

Kings River at Reed Ave

Sample Date	Results (ug/l)
1/27/2005	0.033
1/28/2005	0.03
1/29/2005	0.028
1/30/2005	0.021
2/1/2005	0.024
2/4/2005	0.026

Period of low flows 75 to 93 cfs
None exceeded the EPA standard of 0.041 ug/l
No numeric standard in Basin Plan
0.61 inches rainfall prior to test
0.3 inches during
No detections since (30 sample events)
Site is questionable, as Reedley's stormwater can enter the Kings

Site name with "-D" after it indicates a field duplicate

Sample Month and Results															
07/12/07	08/15/07	09/05/07	12/19/07	1/28/08	3/10/08	4/22/08	5/20/08	6/17/08	7/16/08	8/14/08	2/17/09	3/26/09	6/16/09	7/21/09	8/18/09	12/15/09
			not sampled	not sampled	20	0	0	700	240	0						
			ND	ND		ND	ND	ND	ND							
2400	1475	150	48	180	580	420	360	3025	2390	990	100 (est)	450	2190	2769	1210	65
ND	ND	ND	ND	0.019 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ND		no flow	no flow	ND					ND	ND					
895	485	110			385	240	no flow	940	550	230	no flow	310	360	400	275	no flow
ND	ND	ND			ND	ND	no flow	ND	ND	ND	no flow	ND	ND	ND	ND	no flow
ND		ND									no flow	ND	ND		ND	no flow
no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	
no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	no flow	

Exhibit D

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING

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 10^6)
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.

My regards,

Stephen Clark
Vice President and Special Projects 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

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
Gould	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

Sandy Nurse

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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 Laboratory Control Water Started 04-21-10 13:55 Ended 04-25-10 13:00
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:

Treatment	# Larvae	# Replicates	% Survival 96h
Gould	40	4	97.5
+DMW Lab Control	40	4	100.0

Data meet EPA criteria for acceptability using DMW lab control.

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

Survival: Wilcoxon Rank Sum test PMSD = 3.9

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April 30, 2010

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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:

Treatment	# Neonates/ # Replicates	% Survival 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

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April 30, 2010

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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# 689098 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
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
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	10000	4	1.12
-LHMHSFW	10000	4	.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

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Chronic Toxicity Testing - Raw Data FATHEAD MINNOW (Pimephales promelas)

Kings River Conserv Dist Gould Canal
Starting 04-21-10

Gould

	Container#:	5021	5022	5023	5024	DO	pH
Starting #	Larvae:	10	10	10	10	9.0	7.8
Mortality	Day 1	0	0	0	0	8.2	7.7
	Day 2	0	0	0	0	8.1	7.9
	Day 3	0	0	0	0	8.0	7.8
	Day 4	0	1	0	0	8.0	7.8

dMW

	Container#:	5001	5002	5003	5004	DO	pH
Starting #	Larvae:	10	10	10	10	7.8	7.9
Mortality	Day 1	0	0	0	0	8.2	8.0
	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 Testing - Raw Data CERIODAPHNIA (Ceriodaphnia dubia)

Kings River Conserv Dist Gould Canal

Starting 04-21-10

Container# 351 Gould

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	Day 1	5	5	5	5	7.6	8.1
	Day 2	5	5	5	5	7.6	8.1
	Day 3	5	5	5	5		8.1
	Day 4	5	5	5	5		8.0

Container# 301 dMW

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	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

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Chronic Toxicity Testing - Raw Data ALGAE (Selenastrum capricornutum)

Kings River Conserv Dist Gould Canal
Starting 04-21-10

[Rep 4] used only for daily chemistry

Gould

	Container#:	6021	6022	6023	[6024]
Turbidity (Absorbance Units):		.054	.055	.056	[.057]
Cell Density (million/mL):		1.10	1.12	1.14	[1.16]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.8	49.8	7.6	20	22

Daily pH	Day 1	Day 2	Day 3	Day 4
	8.5	8.1	8.4	8.5

LHMHS

	Container#:	6029	6030	6031	[6032]
Turbidity (Absorbance Units):		.006	.006	.007	[.006]
Cell Density (million/mL):		.170	.170	.189	[.170]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
				26	12

Daily pH	Day 1	Day 2	Day 3	Day 4
	8.4	8.0	8.1	8.1

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 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:	29h	**Station:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-1357-7846	96h Survival Rate	100	>100	N/A	5.56%	1	Wilcoxon Rank Sum Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-1357-7846	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.975	0.9563	0.9937	0.9	1	0.009129	0.05	5.13%	2.5%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
100		1	0.9	1	1

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 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:	29h	**Station:**			

Dissolved Oxygen-Daily-mg/L

Conc-%	Control Type	1	2	3	4
0	DMW	8.2	7.8	7.9	8
100		8.2	8.1	8	8

Dissolved Oxygen-Initial-mg/L

Conc-%	Control Type	1
0	DMW	7.8
100		9

pH-Daily-Units

Conc-%	Control Type	1	2	3	4
0	DMW	8	7.9	8.1	8.1
100		7.7	7.9	7.8	7.8

pH-Initial-Units

Conc-%	Control Type	1
0	DMW	7.9
100		7.8

CETIS Analytical Report

Sierra Foothill Laboratory Inc.

Fathead Minnow 96-h Acute Survival Test

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
Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 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:	29h	**Station:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	5.56%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
DMW		100	16		1	0.3429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	2.291	2.127	0.0077	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.003319917	0.003319917	1	1	0.3559	Non-Significant Effect
Error	0.0199195	0.003319917	6			
Total	0.02323942	0.006639833	7			

ANOVA Assumptions

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

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	0.975	0.956	0.994	0.9	1	0.009285	0.05	5.13%	2.5%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
100		4	1.371	1.34	1.402	1.249	1.412	0.01513	0.08149	5.94%	2.89%

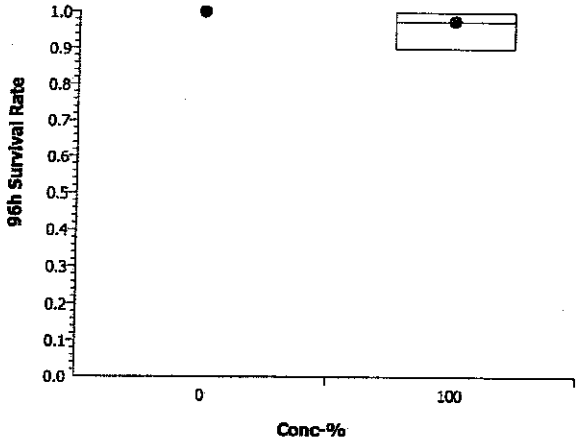
Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

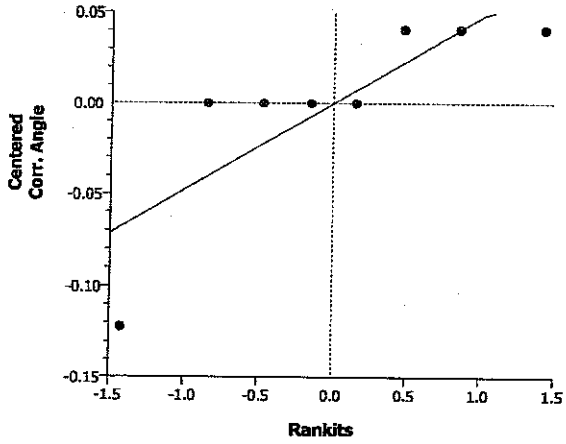
Analysis ID:	14-1357-7846	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:00	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
100		1	0.9	1	1

Graphics





CETIS Summary Report

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:	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:	29h	**Station:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-9490-9380	96h Survival Rate	100	>100	N/A	5.0%	1	Wilcoxon Rank Sum Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
18-9490-9380	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
100		1	1	1	1

CETIS Measurement Report

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:	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:	29h	**Station:**			

Dissolved Oxygen-Daily-mg/L

Conc-%	Control Type	1	2	3	4
0	DMW	7.5	7.7		
100		7.6	7.6		

pH-Daily-Units

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

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

Analysis ID:	18-9490-9380	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:18	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes
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:	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:	29h	**Station:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	100	>100	N/A	1	5.0%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
DMW		100	18		1	0.4429	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65540	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65540	13.75	<0.0001	Unequal Variances

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	0.0%
100		4	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	0.0%

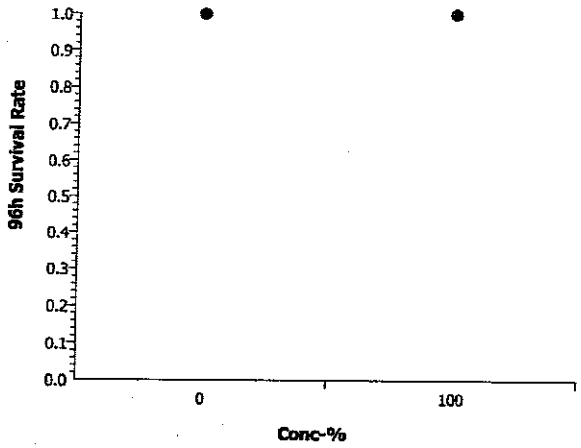
Ceriodaphnia 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

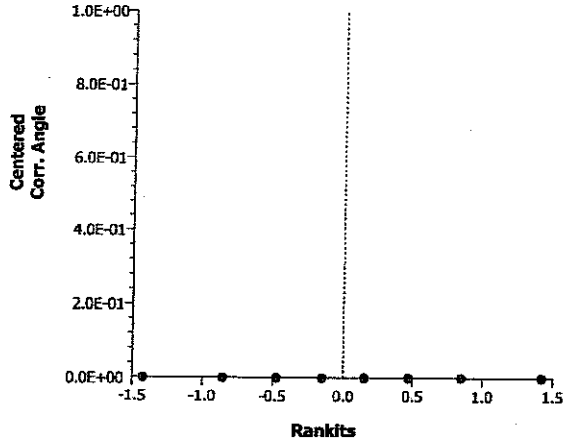
Analysis ID:	18-9490-9380	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:18	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
100		1	1	1	1

Graphics





CETIS Summary Report

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:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-7016-3540	Cell Density	100	>100	N/A	15.06%	1	Equal Variance t Two-Sample Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
10-7016-3540	Cell Density	Control CV	0.05487	NL - 0.2	Yes	Result Within Limits
10-7016-3540	Cell Density	Control Resp	1.75E+5	1.00E+6 - NL	Yes	Result Below Limit
10-7016-3540	Cell Density	PMSD	0.1506	0.091 - 0.29	Yes	Result Within Limits

Cell Density Summary

Conc-%	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%
100		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%

Cell Density Detail

Conc-%	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
100		1.100E+6	1.120E+6	1.139E+6	1.159E+6

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	1
0	Low Hard MH	12
100		22

Conductivity-Initial-µmhos

Conc-%	Control Type	1
0	Low Hard MH	
100		49.8

Dissolved Oxygen-Initial-mg/L

Conc-%	Control Type	1
0	Low Hard MH	
100		7.6

Hardness (CaCO3)-Initial-mg/L

Conc-%	Control Type	1
0	Low Hard MH	26
100		20

pH-Daily-Units

Conc-%	Control Type	1	2	3	4
0	Low Hard MH	8.4	8	8.1	8.1
100		8.5	8.1	8.4	8.5

pH-Initial-Units

Conc-%	Control Type	1
0	Low Hard MH	
100		7.8

CETIS Analytical Report

Test Code: 08-0634-4742/042110SC4SKRCD

Sierra Foothill Laboratory Inc.

Selenastrum Growth Test (Screen)

Analysis ID:	10-7016-3540	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	19 May-10 9:37	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
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:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	100	>100	N/A	1	15.06%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Low Hard MHSFW		100	-70.53	1.943	26310	1.0000	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control CV	0.05487	NL - 0.2	Yes	Result Within Limits
Control Resp	1.75E+5	1.00E+6 - NL	Yes	Result Below Limit
PMSD	0.1506	0.091 - 0.29	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	1.66	2.127	0.5488	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1.823075E+12	1.823075E+12	1	4974	<0.0001	Significant Effect
Error	2199048000	366508000	6			
Total	1.825274E+12	1.823442E+12	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.984	47.47	0.1447	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9542		0.7539	Normal Distribution

Cell Density Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Low Hard MHSF	4	1.746E+5	1.710E+5	1.783E+5	1.698E+5	1.890E+5	1.779E+3	9.582E+3	5.49%	0.0%
100		4	1.129E+6	1.120E+6	1.139E+6	1.100E+6	1.159E+6	4.702E+3	2.532E+4	2.24%	-546.7%

Analyst: QA:

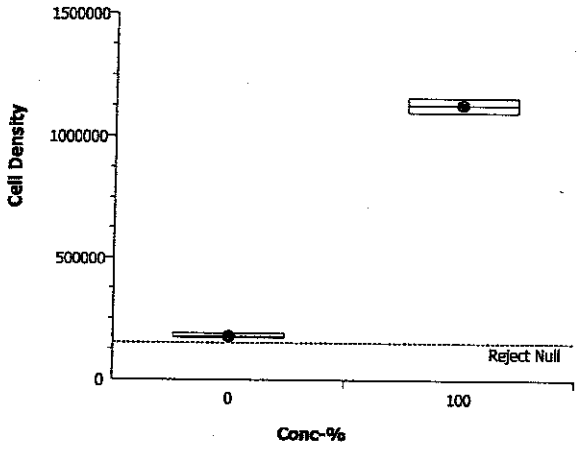
Selenastrum Growth Test (Screen) — **Sierra Foothill Laboratory Inc.**

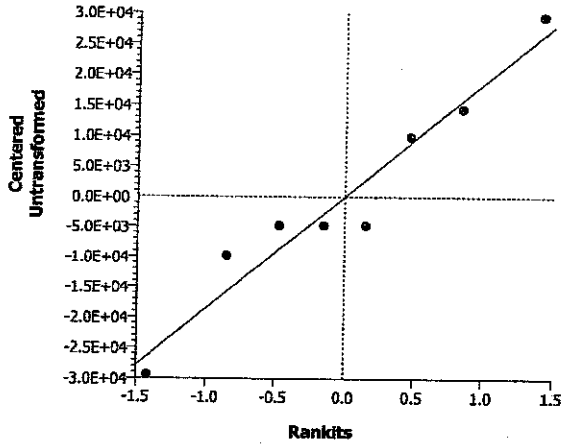
Analysis ID:	10-7016-3540	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	19 May-10 9:37	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Cell Density Detail

Conc-%	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
100		1.100E+6	1.120E+6	1.139E+6	1.159E+6

Graphics





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Project Report: **182422**

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

Results for Project 182422

689098 GOULD CANAL GRAB Liquid Taken: 04/20/2010 0915 By: Client Rec:04/21/2010

RECEIVED IN CLIENT AMBER GLASS 1GAL BOTTLES X6.

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

Sample Preparation Steps for Project 182422

689098 GOULD CANAL GRAB Liquid Taken: 04/20/2010 0915 By: Client Rec:04/21/2010

Parameter	Result	Unit		Method	Analyzed	By
Nitrogen, Ammonia-N Screen	ND	mg/L	0.50	SFL SOP 125	04/21/2010 1100	R&C

SET Quality Control/Quality Assurance for Project 182422

Alkalinity, Total as CaCO3 (Analyzed: 04/22/2010 1215 JP Verified: 04/23/2010 14:42 KL)

Sample	Type	Result	Value	Unit	Recovery (%)	RPD
QC	Standard	475	480	mg/L	99.0	
	Blank	<5.0		mg/L		
689082	Duplicate	78	78	mg/L		0.0
689125	Duplicate	28	28	mg/L		0.0
689082	Matrix SPK	352	349	mg/L	101	

Continued

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SET Quality Control/Quality Assurance for Project 182422

Alkalinity, Total as CaCO3

(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 Residual,Total, Lab*

(Analyzed: 04/21/2010 1225 CZ Verified: 04/22/2010 11:58 KL)

Sample	Type	Result	Value	Unit	Recovery (%)	RPD
	Blank	<0.10		mg/L		
689098	Duplicate	<0.10	<0.10	mg/L		0.0

Oxygen, Dissolved, Lab*

(Analyzed: 04/21/2010 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 Conductance

(Analyzed: 04/21/2010 1045 R&C Verified: 04/22/2010 11:52 KL)

Sample	Type	Result	Value	Unit	Recovery (%)	RPD
	Standard	96	100	umho/cm	96.0	
689024	Duplicate	413	405	umho/cm		2.0
689089	Duplicate	163	161	umho/cm		1.2
689090	Duplicate	161	161	umho/cm		0.0
689124	Duplicate	292	296	umho/cm		1.4
689180	Duplicate	159	159	umho/cm		0.0
689181	Duplicate	161	162	umho/cm		0.6

Hardness as CaCO3

(Analyzed: 04/22/2010 1406 JP Verified: 04/23/2010 14:38 KL)

Sample	Type	Result	Value	Unit	Recovery (%)	RPD
QC	Standard	515	489	mg/L	105.3	
	Blank	<5.0		mg/L		
689087	Duplicate	85	85	mg/L		0.0
689103	Duplicate	57	57	mg/L		0.0
689087	Matrix SPK	272	262	mg/L	104	
689103	Matrix SPK	254	262	mg/L	97	

pH, Lab*

(Analyzed: 04/21/2010 1150 R&C Verified: 04/22/2010 11:56 KL)

Sample	Type	Result	Value	Unit	Recovery (%)	RPD
	Standard	7.4	7.4	unit	100.0	
	Standard	7.4	7.4	unit	100.0	
689072	Duplicate	6.4	6.4	unit		0.0
689089	Duplicate	7.8	7.8	unit		0.0
689090	Duplicate	7.8	7.8	unit		0.0
689123	Duplicate	6.7	6.7	unit		0.0

Continued

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Client: **KRCD**
Project Report: **182422**

SET Quality Control/Quality Assurance for Project 182422

pH, Lab* (Analyzed: 04/21/2010 1150 R&C Verified: 04/22/2010 11:56 KL)

Sample	*Type*	*Result*	*Value*	*Unit*	*Recovery (%)*	*RPD*
689180	Duplicate	7.9	7.9	unit		0.0
689181	Duplicate	7.9	7.9	unit		0.0

ELAP #1113 NELAP #06245CA

Sandy Nurse

Sandy Nurse, Lab Director

Sierra Foothill Laboratory, Inc.

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

LAB # _____

DATE RECEIVED: 4-21-10 TIME RECEIVED: _____

CUSTOMER NAME: KRCD BILL TO: SAME

ADDRESS: 4886 E JENSEN ADDRESS: _____

CITY, STATE, ZIP: FRESNO CA 93725 CITY, STATE, ZIP: _____

ATTENTION: ERIC ATHORP ATTENTION: YVONNE OVALLE

PREPAID: _____ CHECK/RECEIPT # _____ PO#: 9090 REQUISITION # _____

ID#	SOURCE DESCRIPTION	ANALYSIS	G/C	SAMPLING & CONTAINER INFORMATION W. WW. S	P/G	DATE COLLECTED	BY
1890-18 -01	GOULD CANAL	WET	G	W	P G	4/20/10 0915	EA
		AFS5			* received x6 amber glass 1gal		
		ACS5					
		ALG4					
						3.6°C on ice	

RELINQUISHED BY: Eric Athorp DATE/TIME: 4/21/10 1135

RECEIVED BY: Mark DATE/TIME: 4-21-10 1135

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: _____ DATE/TIME: _____

OCC FORMS

DATA ENTERED: KD

Date: 4/21/10 Time: _____

SIERRA
FOOTHILL LABORATORY Inc

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(209) 223 – 2800
sandy@sierrafoothilllab.com

REPORT

Reference Toxicant Test Data Report
4-21-2010

Sierra Foothill Laboratory, Inc.

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April 30, 2010

SFL

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, Survival = 1.0g/L
Dose-Response (Survival): Type 1

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

Summary prepared by:

Sandy Nurse

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
diluted with Laboratory Control Water Started 04-21-10 13:45 Ended 04-25-10 13:00
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:

Treatment	# Larvae	# Replicates	% Survival 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

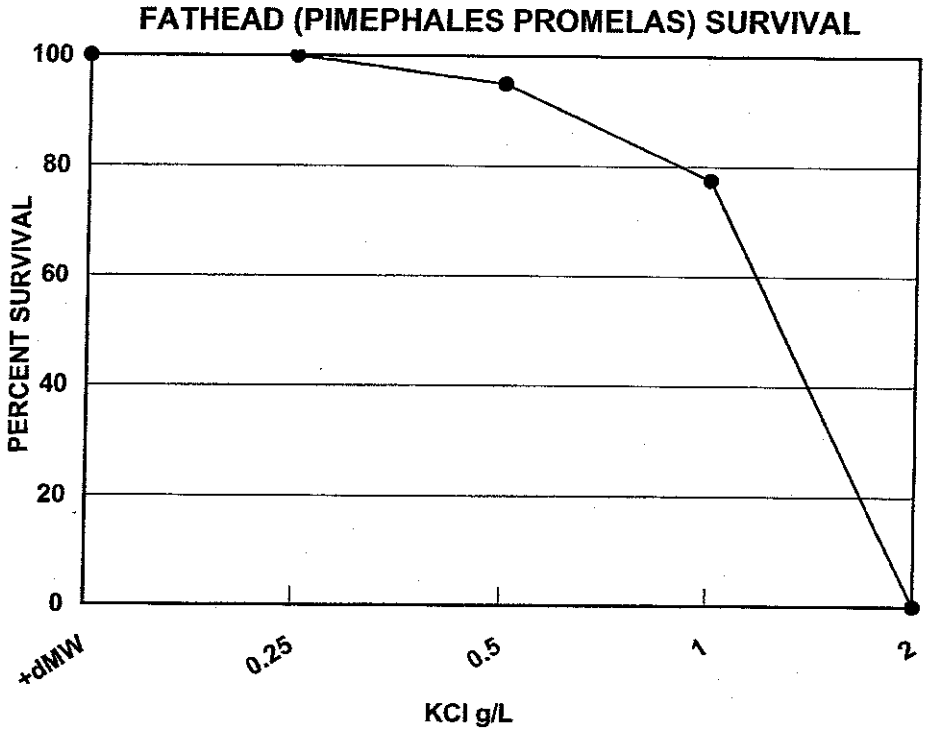
Data meet EPA criteria for acceptability using DMW lab control.

Survival
7d LC50 = 1.17g/L — Spearman-Karber
NOAEC, Survival = 0.5g/L — Steels Many-One Rank test PMSD = 8.3
LOAEC, Survival = 1.0g/L — Steels Many-One Rank test
Dose-Response (Survival): Type 1

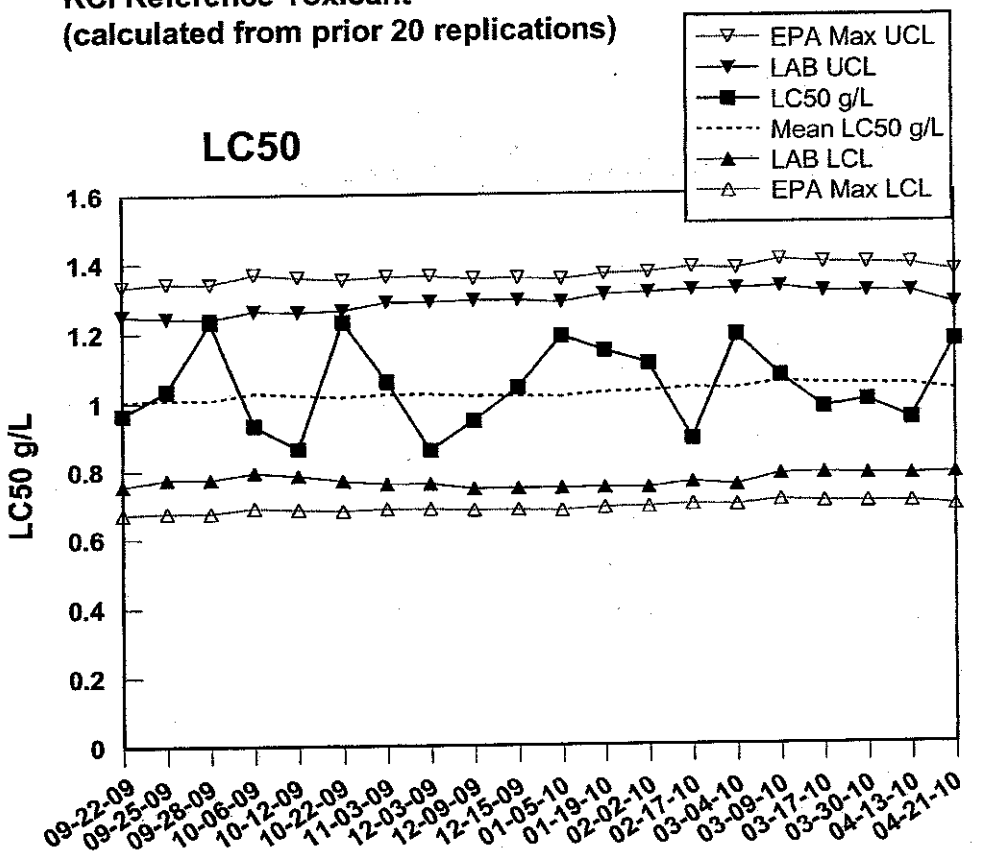
Note: * Significantly reduced from control
+ Meets EPA criteria for acceptability as control group

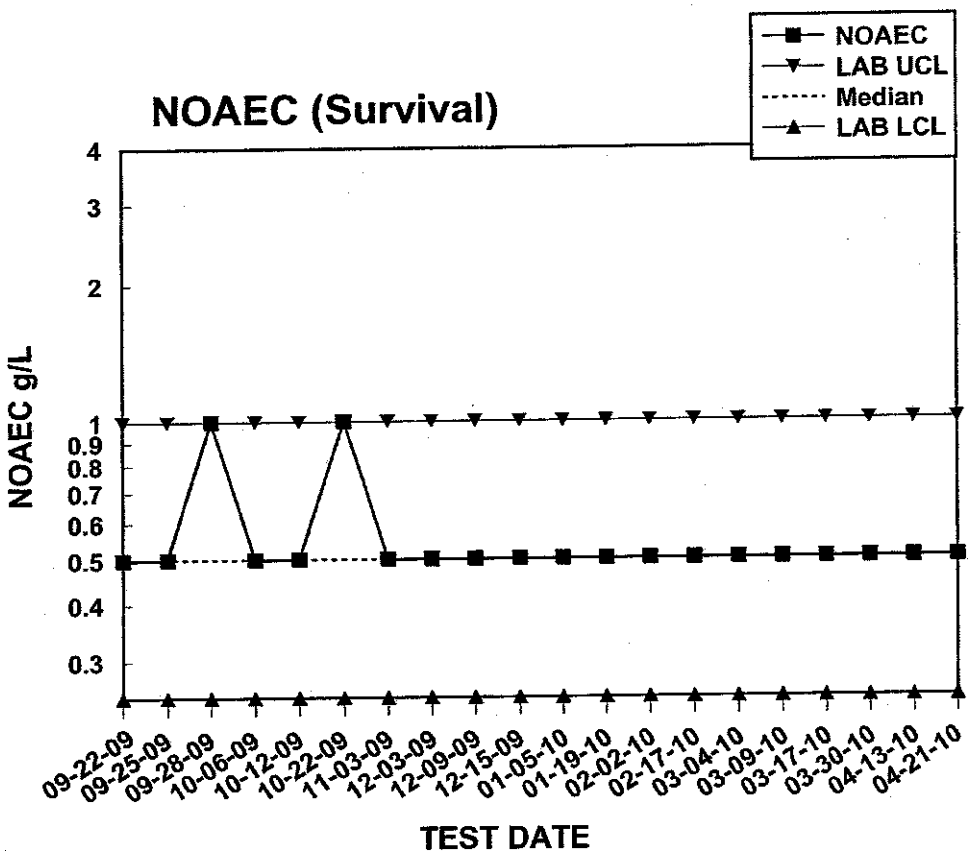
Chronic Toxicity Tests: EPA-821-R-02-013 (4th Edition)

96 h KCl 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
(calculated from prior 20 replications)





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Chronic Toxicity Testing - Raw Data FATHEAD MINNOW (Pimephales promelas)

SFL KCl Reference Toxicant / Fish in dMW
Starting 04-21-10

2.0g/L

	Container#:	5005	5006	5007	5008	DO	pH
Starting #	Larvae:	10	10	10	10	7.8	8.0
Mortality	Day 1	10	10	10	10	8.2	8.2
	Day 2	0	0	0	0		
	Day 3	0	0	0	0		
	Day 4	0	0	0	0		

1.0g/L

	Container#:	5009	5010	5011	5012	DO	pH
Starting #	Larvae:	10	10	10	10	7.9	8.0
Mortality	Day 1	3	2	0	1	8.2	8.2
	Day 2	1	0	2	0	7.9	8.2
	Day 3	0	0	0	0	8.0	8.2
	Day 4	0	0	0	0	8.1	8.2

0.5g/L

	Container#:	5013	5014	5015	5016	DO	pH
Starting #	Larvae:	10	10	10	10	8.1	8.1
Mortality	Day 1	0	0	0	0	8.3	8.2
	Day 2	0	0	0	2	7.8	8.3
	Day 3	0	0	0	0	8.0	8.2
	Day 4	0	0	0	0	8.1	8.2

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Chronic Toxicity Testing - Raw Data FATHEAD MINNOW (Pimephales promelas)

SFL KCl Reference Toxicant / Fish in dMW

Starting 04-21-10

0.25g/L

	Container#:	5017	5018	5019	5020	DO	pH
Starting # Larvae:		10	10	10	10	8.1	8.1
Mortality	Day 1	0	0	0	0	8.1	8.2
	Day 2	0	0	0	0	8.1	8.3
	Day 3	0	0	0	0	8.0	8.2
	Day 4	0	0	0	0	8.0	8.2

dMW

	Container#:	5001	5002	5003	5004	DO	pH
Starting # Larvae:		10	10	10	10	7.8	7.9
Mortality	Day 1	0	0	0	0	8.2	8.0
	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

CETIS Summary Report

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 d
Sample ID:	18-8651-4500	**Code:**	0410-59	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Potassium chloride	**Project:**	
Receive Date:	21 Apr-10	**Source:**	KCl Reference Toxicant		
Sample Age:	14h	**Station:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-0294-3014	96h Survival Rate	0.5	1	0.7071	10.6%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	gm/L	95% LCL	95% UCL	TU	Method
12-2841-8384	96h Survival Rate	EC50	1.169	1.054	1.296		Spearman-Kärber

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
07-0294-3014	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
12-2841-8384	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
0.25		4	1	1	1	1	1	0	0	0.0%	0.0%
0.5		4	0.95	0.9127	0.9873	0.8	1	0.01826	0.1	10.53%	5.0%
1		4	0.775	0.728	0.822	0.6	0.9	0.02297	0.1258	16.24%	22.5%
2		4	0	0	0	0	0	0	0		100.0%

96h Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
0.25		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

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 d
Sample ID:	18-8651-4500	**Code:**	0410-59	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Potassium chloride	**Project:**	
Receive Date:	21 Apr-10	**Source:**	KCl Reference Toxicant		
Sample Age:	14h	**Station:**			

Dissolved Oxygen-Daily-mg/L

Conc-gm/L	Control Type	1	2	3	4
0	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 Oxygen-Initial-mg/L

Conc-gm/L	Control Type	1
0	DMW	7.8
0.25		8.1
0.5		8.1
1		7.9
2		7.8

pH-Daily-Units

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			

pH-Initial-Units

Conc-gm/L	Control Type	1
0	DMW	7.9
0.25		8.1
0.5		8.1
1		8
2		8

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Analysis ID:	07-0294-3014	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 12:54	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 d
Sample ID:	18-8651-4500	**Code:**	0410-59	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Potassium chloride	**Project:**	
Receive Date:	21 Apr-10	**Source:**	KCl Reference Toxicant		
Sample Age:	14h	**Station:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	0.5	1	0.7071		10.6%

Steel Many-One Rank Test

Control	vs	Conc-gm/L	Test Stat	Critical	Ties	P-Value	Decision(5%)
DMW		0.25	18	10	1	0.7500	Non-Significant Effect
		0.5	16	10	1	0.5065	Non-Significant Effect
		1*	10	10	0	0.0277	Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	2.391	2.586	0.1260	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.2841521	0.09471737	3	8.287	0.0030	Significant Effect
Error	0.1371484	0.01142903	12			
Total	0.4213005	0.1061464	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	1.07	5.953	0.3983	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7824		0.0016	Non-normal Distribution

96h Survival Rate Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
0.25		4	1	1	1	1	1	0	0	0.0%	0.0%
0.5		4	0.95	0.912	0.988	0.8	1	0.01857	0.1	10.53%	5.0%
1		4	0.775	0.7271	0.8229	0.6	0.9	0.02337	0.1258	16.24%	22.5%
2		4	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

Conc-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1.412	1.412	1.412	1.412	1.412	0	0	0.0%	0.0%
0.25		4	1.412	1.412	1.412	1.412	1.412	0	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%
1		4	1.087	1.03	1.144	0.8861	1.249	0.02784	0.1499	13.79%	22.99%
2		4	0.1588	0.1588	0.1588	0.1588	0.1588	0	0	0.0%	88.76%

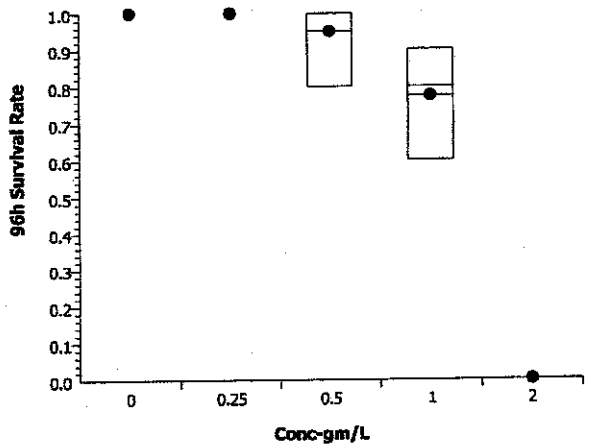
Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

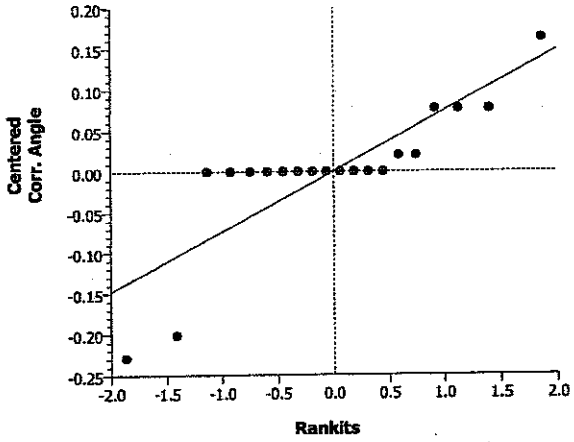
Analysis ID:	07-0294-3014	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 12:54	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

96h Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
0.25		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





CETIS Analytical Report

Test Code: 14-7558-2739/042110PA4LRT1

Fathead Minnow 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

Analysis ID:	12-2841-8384	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 12:55	**Analysis:**	Untrimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	04-0493-4719	**Test Type:**	Survival (96h)	**Analyst:**	
Start Date:	21 Apr-10 13:55	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Diluted Mineral Water
Ending Date:	25 Apr-10 13:00	**Species:**	Pimephales promelas	**Brine:**	
Duration:	95h	**Source:**	Enviro Sciences Inc, TX	**Age:**	2 d
Sample ID:	18-8651-4500	**Code:**	0410-59	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Potassium chloride	**Project:**	
Receive Date:	21 Apr-10	**Source:**	KCl Reference Toxicant		
Sample Age:	14h	**Station:**			

Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	0.00%	0.06773	0.02242	1.169	1.054	1.296

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	2.691	2.708	0.0543	No Outliers Detected

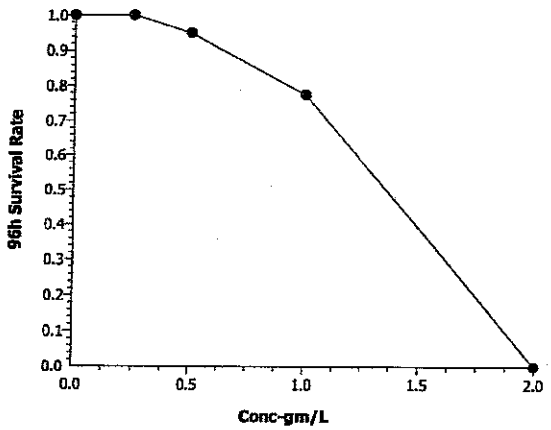
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-gm/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	DMW	4	1	1	1	0	0	0.0%	0.0%	40	40
0.25		4	1	1	1	0	0	0.0%	0.0%	40	40
0.5		4	0.95	0.8	1	0.01826	0.1	10.53%	5.0%	38	40
1		4	0.775	0.6	0.9	0.02297	0.1258	16.24%	22.5%	31	40
2		4	0	0	0	0	0		100.0%	0	40

96h Survival Rate Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	DMW	1	1	1	1
0.25		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



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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
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

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	# Neonates/ # Replicates	% Survival 96h
1.7mg/L ZnSO4 in Lab	20 / 4	0.0*
0.85mg/L ZnSO4 in Lab	20 / 4	5.0*
0.43mg/L ZnSO4 in Lab	20 / 4	80.0
0.21mg/L ZnSO4 in Lab	20 / 4	100.0
+DMW Lab Control	20 / 4	100.0

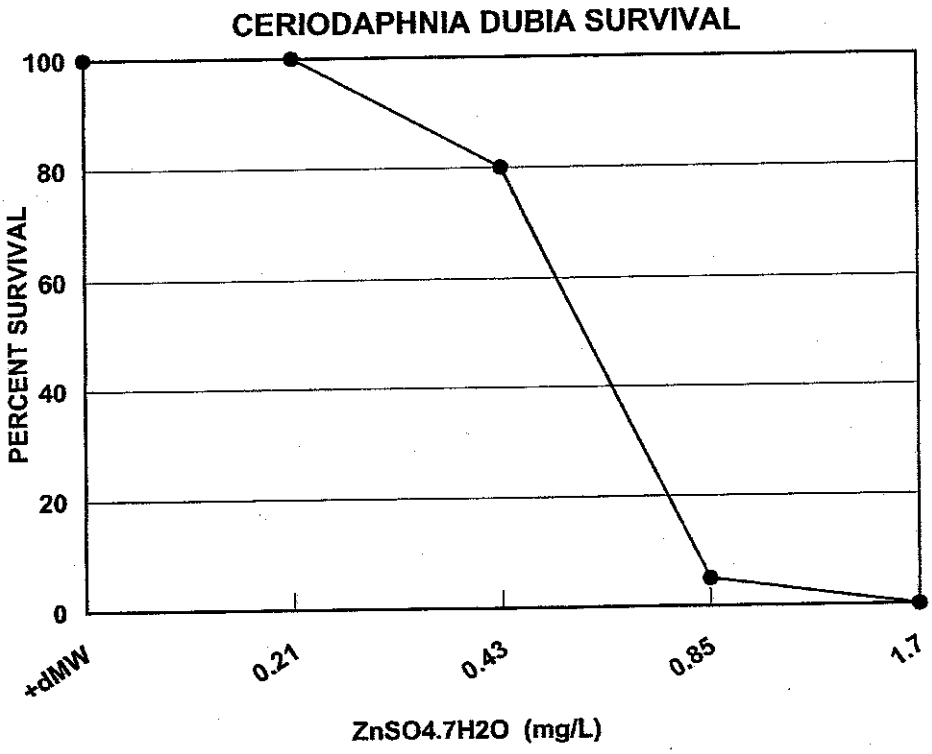
Data meet EPA criteria for acceptability using DMW lab control.

Survival
4d LC50 = 0.54mg/L Spearman-Karber
NOAEC, Survival = 0.43mg/L Steels Many-One Rank test PMSD = 17
LOAEC, Survival = 0.85mg/L Steels Many-One Rank test
Dose-Response (Survival): Type 1

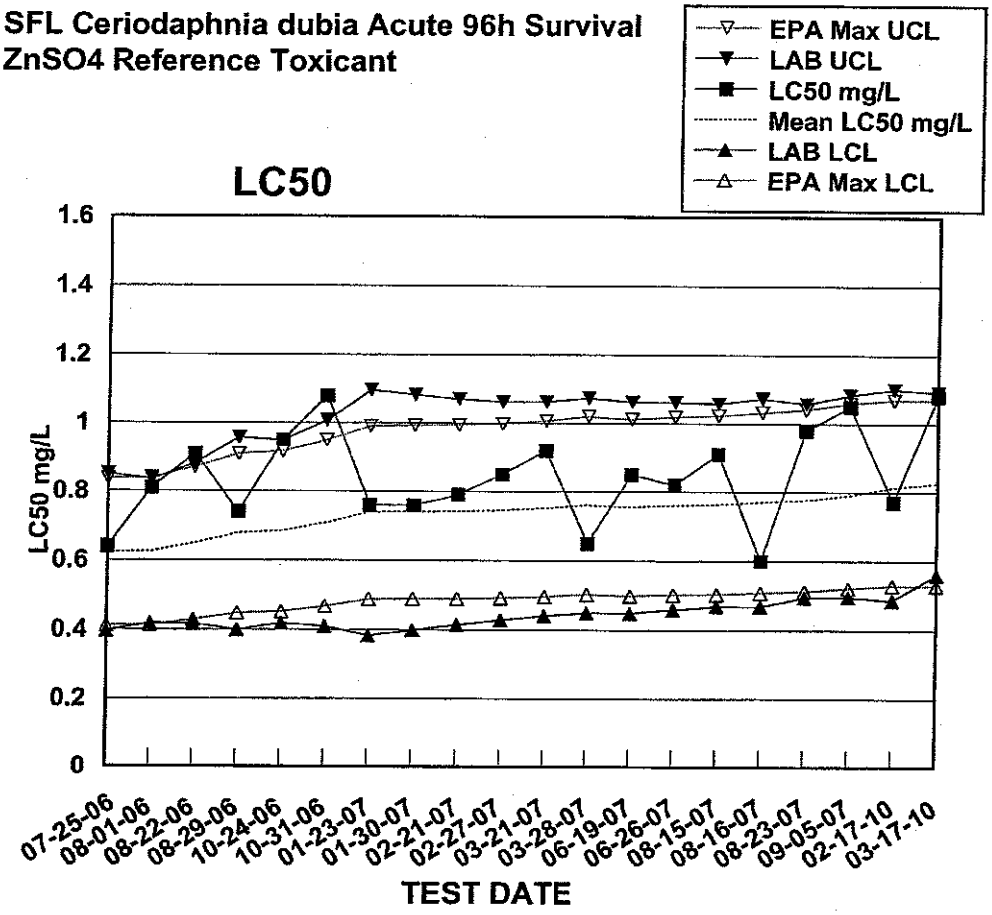
Note: * Significantly reduced from control
+ Meets EPA criteria for acceptability as control group

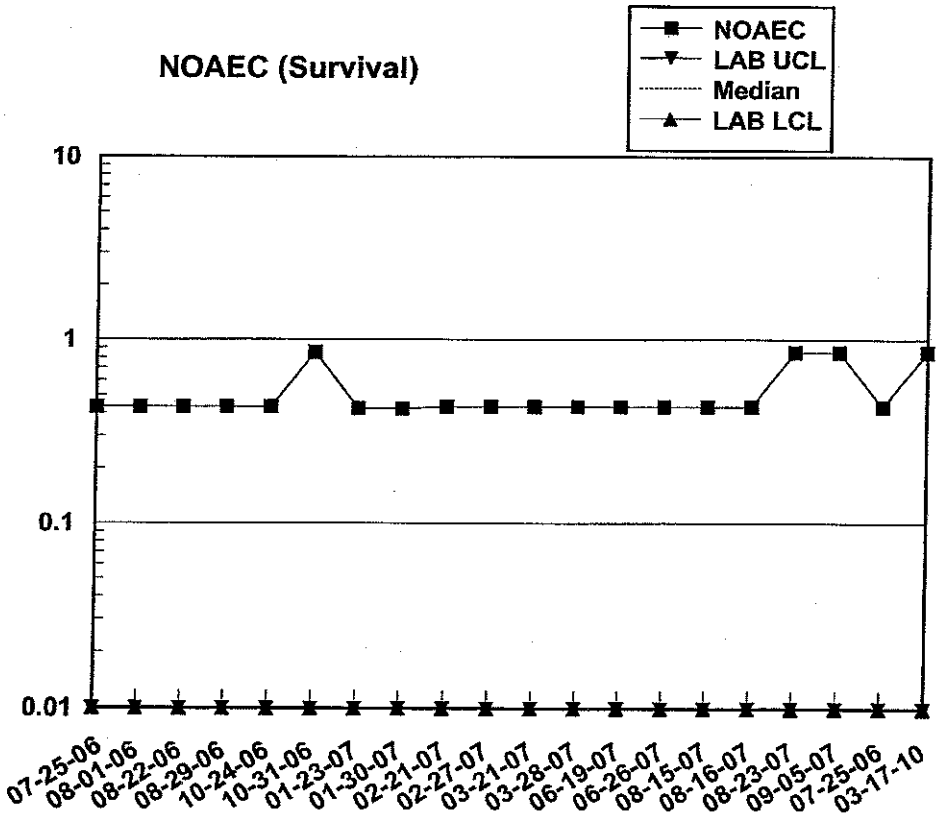
Acute Toxicity Tests: EPA-821-R02-012 (5th Edition)

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



SFL Ceriodaphnia dubia Acute 96h Survival
ZnSO4 Reference Toxicant





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Chronic Toxicity Testing - Raw Data CERIODAPHNIA (Ceriodaphnia dubia)

SFL Zinc Sulfate.7H20 Ref Toxicant / Cerio in dMW
Starting 04-21-10

Container# 311 1.7mg/L

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	Day 1	0	0	0	0	7.5	8.3
	Day 2	0	0	0	0		
	Day 3	0	0	0	0		
	Day 4	0	0	0	0		

Container# 321 0.85mg/L

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	Day 1	3	1	2	3	7.5	8.4
	Day 2	1	0	0	0	7.8	8.3
	Day 3	1	0	0	0		8.3
	Day 4	1	0	0	0		8.3

Container# 331 0.43mg/L

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	Day 1	5	5	5	5	7.6	8.4
	Day 2	2	5	5	4	7.7	8.4
	Day 3	2	5	5	4		8.3
	Day 4	2	5	5	4		8.3

Container# 341 0.21mg/L

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	Day 1	5	5	5	5	7.6	8.4
	Day 2	5	5	5	5	7.5	8.4
	Day 3	5	5	5	5		8.3
	Day 4	5	5	5	5		8.3

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Chronic Toxicity Testing - Raw Data CERIODAPHNIA (Ceriodaphnia dubia)

SFL Zinc Sulfate.7H20 Ref Toxicant / Cerio in dMW
Starting 04-21-10

Container# 301 dMW

	Replicate:	1	2	3	4	DO	pH
Live Organisms	Day 0	5	5	5	5		
	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

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:**			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-1099-0240	96h Survival Rate	0.43	0.85	0.6046	22.58%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
07-5004-7959	96h Survival Rate	EC50	0.5441	0.4721	0.627		Spearman-Kärber

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-1099-0240	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits
07-5004-7959	96h Survival Rate	Control Resp	1	0.9 - NL	Yes	Result Within Limits

96h Survival Rate Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
0.21		4	1	1	1	1	1	0	0	0.0%	0.0%
0.43		4	0.8	0.6944	0.9056	0.4	1	0.05164	0.2828	35.36%	20.0%
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	0.8
0.85		0.2	0	0	0
1.7		0	0	0	0

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	1	2	3	4
0	DMW	7.5	7.7		
0.21		7.6	7.5		
0.43		7.6	7.7		
0.85		7.5	7.8		
1.7		7.5			

pH-Daily-Units

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			

CETIS Analytical Report

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

Analysis ID:	02-1099-0240	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:09	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
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:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	0.43	0.85	0.6046		22.58%

Steel Many-One Rank Test

Control	vs	Conc-mg/L	Test Stat	Critical	Ties	P-Value	Decision(5%)
DMW		0.21	18	10	1	0.7500	Non-Significant Effect
		0.43	14	10	1	0.2626	Non-Significant Effect
		0.85*	10	10	0	0.0277	Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	2.923	2.586	0.0060	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	3.047321	1.015774	3	36.53	<0.0001	Significant Effect
Error	0.3336688	0.02780573	12			
Total	3.38099	1.043579	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	3.069	5.953	0.0689	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7522		0.0007	Non-normal Distribution

96h Survival Rate Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1	1	1	1	1	0	0	0.0%	0.0%
0.21		4	1	1	1	1	1	0	0	0.0%	0.0%
0.43		4	0.8	0.6924	0.9076	0.4	1	0.05252	0.2828	35.36%	20.0%
0.85		4	0.05	0.01196	0.08804	0	0.2	0.01857	0.1	200.0%	95.0%
1.7		4	0	0	0	0	0	0	0		100.0%

Angular (Corrected) Transformed Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	DMW	4	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	0.0%
0.21		4	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	0.0%
0.43		4	1.121	1.002	1.239	0.6847	1.345	0.05785	0.3115	27.8%	16.7%
0.85		4	0.285	0.2398	0.3303	0.2255	0.4636	0.02211	0.1191	41.77%	78.81%
1.7		4	0.2255	0.2255	0.2255	0.2255	0.2255	0	0	0.0%	83.24%

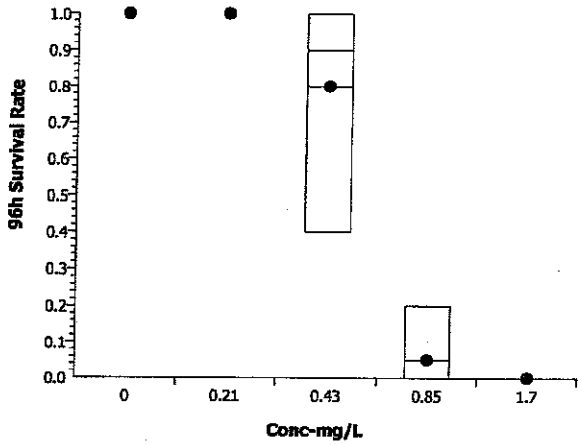
Ceriodaphnia 96-h Acute Survival Test — **Sierra Foothill Laboratory Inc.**

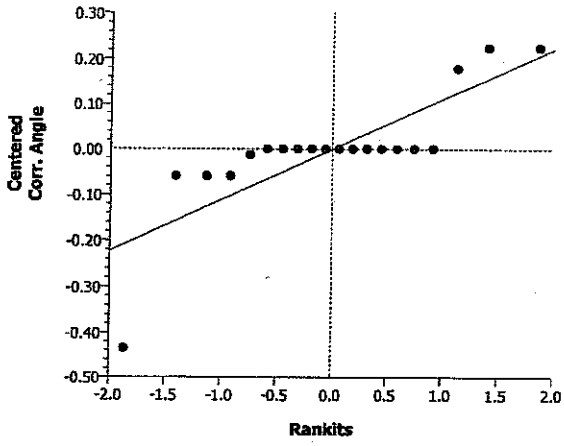
Analysis ID:	02-1099-0240	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:09	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

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	0.8
0.85		0.2	0	0	0
1.7		0	0	0	0

Graphics





CETIS Analytical Report

Test Code: 17-0781-0202/042110CA4LRT2

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

Analysis ID:	07-5004-7959	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 13:09	**Analysis:**	Untrimmed Spearman-Kärber	**Official Results:**	Yes
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:**			

Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	0.00%	-0.2644	0.03081	0.5441	0.4721	0.627

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.9 - NL	Yes	Result Within Limits

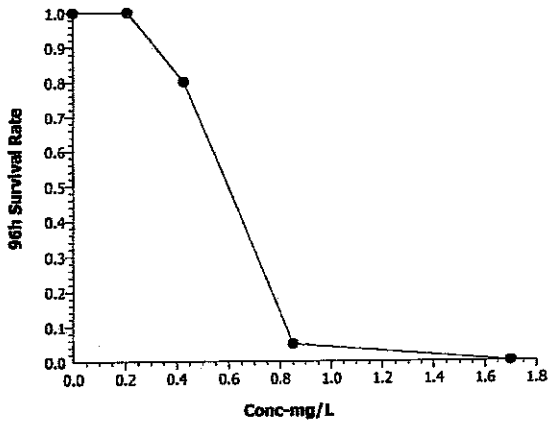
96h Survival Rate Summary

			Calculated Variate(A/B)								
Conc-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	DMW	4	1	1	1	0	0	0.0%	0.0%	20	20
0.21		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 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



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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
+MHSFW Lab Control	1.32
-LHMHSFW	.176
IC50 = 35.2mg/L	IC25 = 25.0mg/L
NOAEC = 12.5mg/L	LOAEC = 25mg/L
Dose-Response (Growth): Type 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

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

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ALGAE (Selenastrum capricornutum), GROWTH TEST

RE: Abbreviated static chronic toxicity testing of Boron Reference Toxicant / Algae
diluted with 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.

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.

RESULTS:

Treatment	# cells/mL in inoculum	initial # replicates	96h cells/mL (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	10000	4	1.31
+MHSFW Lab Control	10000	4	1.32
-LHMHSFW	10000	4	.176

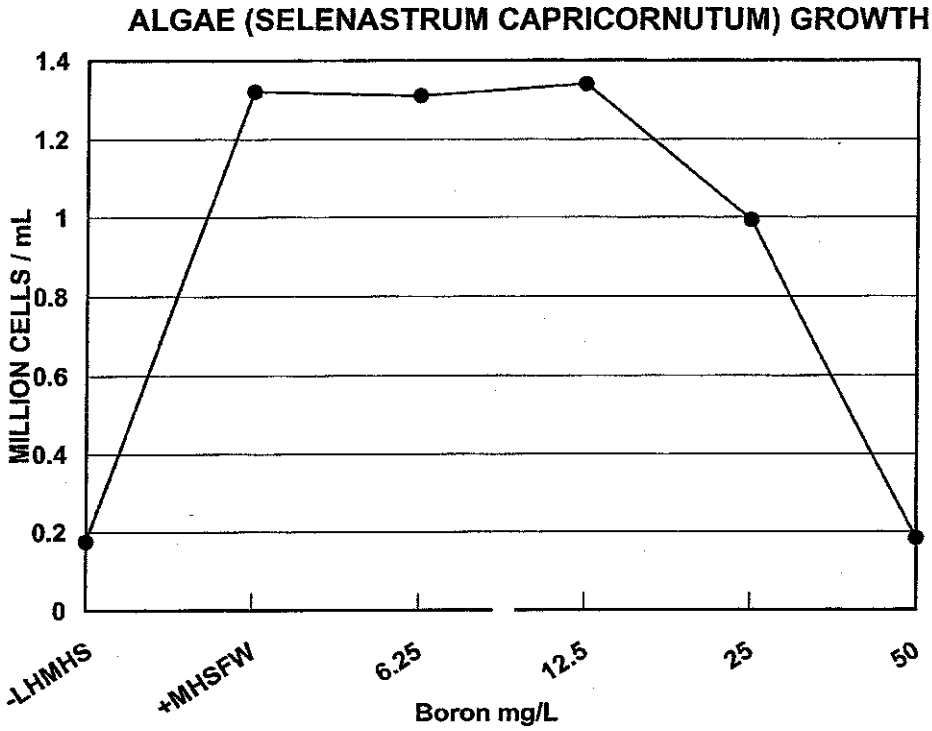
Data meet EPA criteria for acceptability using MHSFW lab control.

Growth
IC50 = 35.2mg/L
IC25 = 25.0mg/L
NOAEC = 12.5mg/L Bonferroni t-test PMSD = 9.1
LOAEC = 25mg/L 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.

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

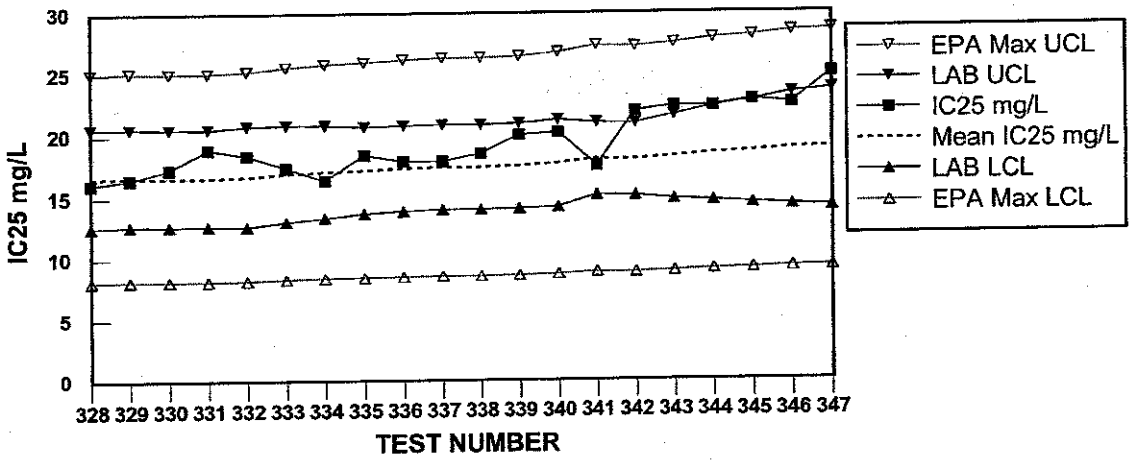
Chronic Toxicity Tests: EPA-821-R-02-013 (4th Edition)

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

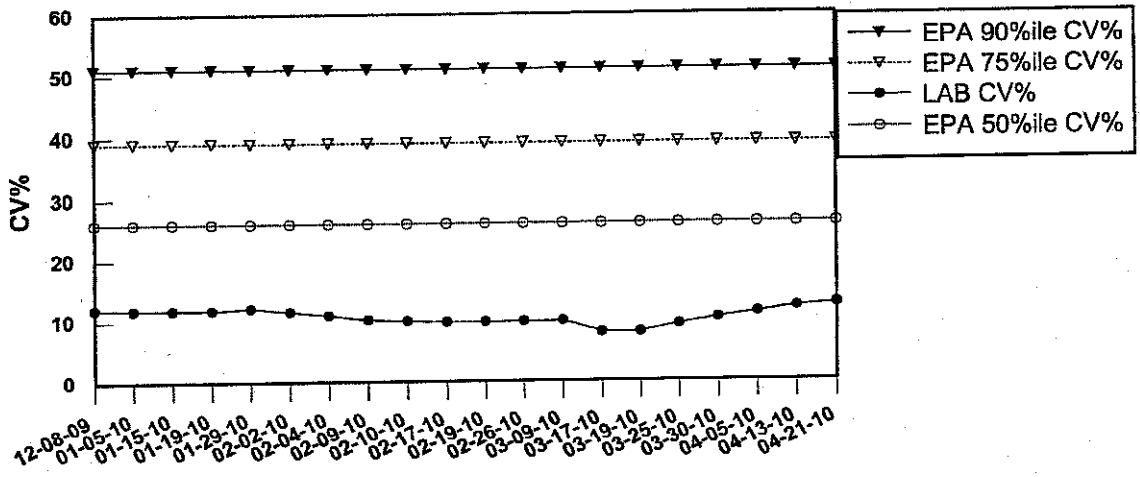


SFL Algae Chronic Growth
Boron Reference Toxicant
(calculated from prior 20 replications)

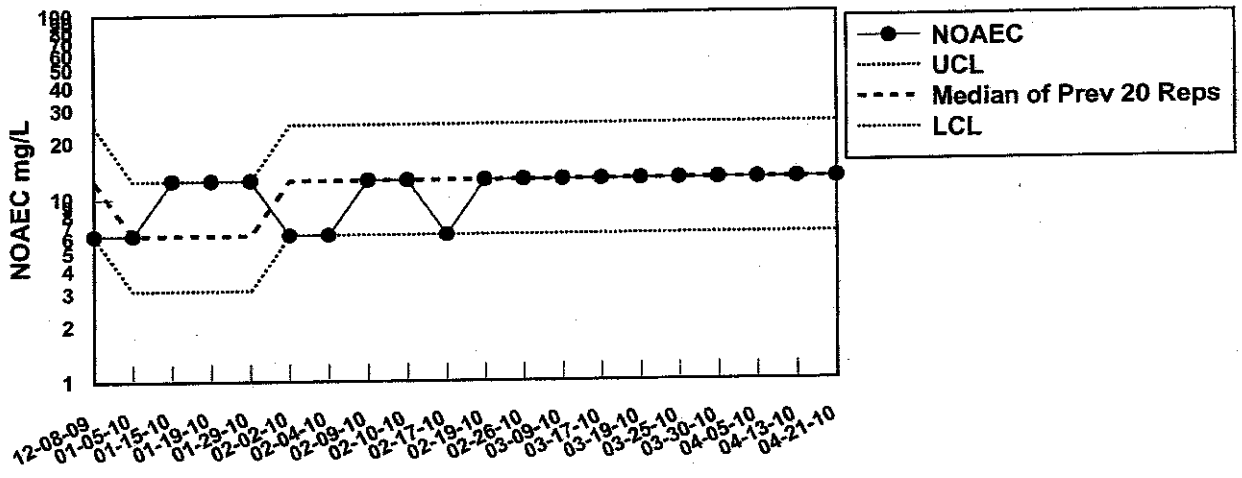
IC25



CV% for IC25



NOAEC - GROWTH



TEST DATE

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Chronic Toxicity Testing - Raw Data ALGAE (Selenastrum capricornutum)

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

[Rep 4] used only for daily chemistry

50mg/L

	Container#:	6005	6006	6007	[6008]
Turbidity (Absorbance Units):		.007	.007	.006	[.009]
Cell Density (million/mL):		.189	.189	.170	[.227]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.6	153	8.3	147	64
Daily pH	Day 1	Day 2	Day 3	Day 4	
	8.1	8.2	8.2	8.2	

25mg/L

	Container#:	6009	6010	6011	[6012]
Turbidity (Absorbance Units):		.038	.039	.068	[.045]
Cell Density (million/mL):		.788	.807	1.38	[.924]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.7	156	8.7	151	64
Daily pH	Day 1	Day 2	Day 3	Day 4	
	8.3	8.3	8.4	8.6	

12.5mg/L

	Container#:	6013	6014	6015	[6016]
Turbidity (Absorbance Units):		.069	.063	.066	[.074]
Cell Density (million/mL):		1.40	1.28	1.34	[1.49]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.8	157	8.6	156	64
Daily pH	Day 1	Day 2	Day 3	Day 4	
	8.4	8.4	8.7	8.9	

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Chronic Toxicity Testing - Raw Data ALGAE (Selenastrum capricornutum)

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

[Rep 4] used only for daily chemistry

6.25mg/L

Container#:	6017	6018	6019	[6020]
Turbidity (Absorbance Units):	.063	.065	.065	[.076]
Cell Density (million/mL):	1.28	1.32	1.32	[1.53]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.9	159	8.7	156	66

Daily pH	Day 1	Day 2	Day 3	Day 4
	8.4	8.4	8.8	9.1

MHSFW

Container#:	6001	6002	6003	[6004]
Turbidity (Absorbance Units):	.063	.067	.065	[.073]
Cell Density (million/mL):	1.28	1.36	1.32	[1.47]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
	7.9	161	8.2	156	60

Daily pH	Day 1	Day 2	Day 3	Day 4
	8.3	8.3	8.7	9.5

LHMHS

Container#:	6029	6030	6031	[6032]
Turbidity (Absorbance Units):	.006	.006	.007	[.006]
Cell Density (million/mL):	.170	.170	.189	[.170]

Chemistry (Initial)	pH	EC	DO	Hard	Alk
				26	12

Daily pH	Day 1	Day 2	Day 3	Day 4
	8.4	8.0	8.1	8.1

CETIS Summary Report

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	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	25 Apr-10 13:50	**Species:**	Selenastrum capricornutum	**Brine:**	
Duration:	95h	**Source:**	In-House Culture	**Age:**	5 d
Sample ID:	08-8591-0139	**Code:**	0410-908	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Boron	**Project:**	
Receive Date:	21 Apr-10	**Source:**	Boron Reference Toxicant		
Sample Age:	15h	**Station:**			

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

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	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	25 Apr-10 13:50	**Species:**	Selenastrum capricornutum	**Brine:**	
Duration:	95h	**Source:**	In-House Culture	**Age:**	5 d
Sample ID:	08-8591-0139	**Code:**	0410-908	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Boron	**Project:**	
Receive Date:	21 Apr-10	**Source:**	Boron Reference Toxicant		
Sample Age:	15h	**Station:**			

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

Alkalinity-Initial CaCO3-mg/L

Conc-mg/L	Control Type	1
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	1
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	1
0	Low Hard MH	26
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	1
0	Low Hard MH	
0	MHSFW Lab C	7.9
6.25		7.9
12.5		7.8
25		7.7
50		7.6

Selenastrum Growth Test (Dil: Lab) — **Sierra Foothill Laboratory Inc.**

Analysis ID:	06-6655-2445	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 11:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	18-4223-8522	**Test Type:**	Cell Growth	**Analyst:**	
Start Date:	21 Apr-10 15:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	25 Apr-10 13:50	**Species:**	Selenastrum capricornutum	**Brine:**	
Duration:	95h	**Source:**	In-House Culture	**Age:**	5 d
Sample ID:	08-8591-0139	**Code:**	0410-908	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Boron	**Project:**	
Receive Date:	21 Apr-10	**Source:**	Boron Reference Toxicant		
Sample Age:	15h	**Station:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.68		23.41%

Dunnett's Multiple Comparison Test

Control	vs	Conc-mg/L	Test Stat	Critical	MSD	P-Value	Decision(5%)
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
		50*	9.07	2.466	308100	<0.0001	Significant Effect

Test Acceptability

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
PMSD	0.2341	0.091 - 0.29	Yes	Result Within Limits

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision
Extreme Value	Grubbs Single Outlier	2.979	2.548	0.0024	Outlier Detected

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
Error	2.342971E+11	23429710000	10			
Total	3.142911E+12	7.505832E+11	14			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	20.21	13.28	0.0005	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.7691		0.0015	Non-normal Distribution

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%
50		3	1.826E+5	1.784E+5	1.868E+5	1.698E+5	1.890E+5	2.055E+3	1.106E+4	6.06%	86.12%

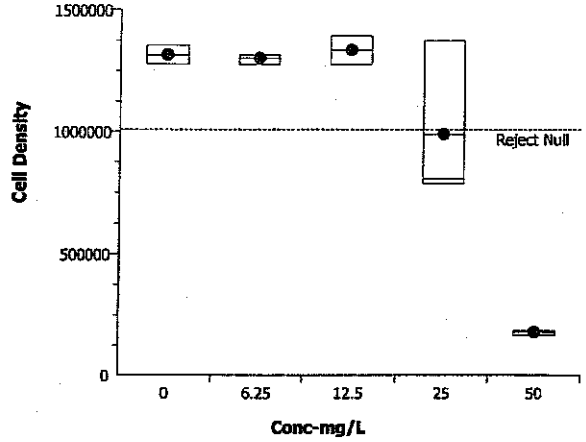
Selenastrum Growth Test (Dil: Lab) — **Sierra Foothill Laboratory Inc.**

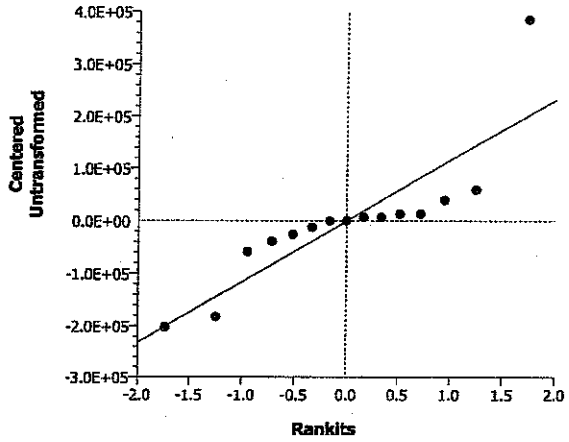
Analysis ID:	06-6655-2445	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 11:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

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	1.375E+6	
50		1.890E+5	1.890E+5	1.698E+5	

Graphics





Selenastrum Growth Test (Dil: Lab) — **Sierra Foothill Laboratory Inc.**

Analysis ID:	04-3095-6194	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 11:33	**Analysis:**	Parametric-Multiple Comparison	**Official Results:**	Yes
Batch ID:	18-4223-8522	**Test Type:**	Cell Growth	**Analyst:**	
Start Date:	21 Apr-10 15:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	25 Apr-10 13:50	**Species:**	Selenastrum capricornutum	**Brine:**	
Duration:	95h	**Source:**	In-House Culture	**Age:**	5 d
Sample ID:	08-8591-0139	**Code:**	0410-908	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Boron	**Project:**	
Receive Date:	21 Apr-10	**Source:**	Boron Reference Toxicant		
Sample Age:	15h	**Station:**			

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	0	C > T	Not Run	12.5	25	17.68		5.97%

Bonferroni Adj t Test

Control	vs	Conc-mg/L	Test Stat	Critical	MSD	P-Value	Decision(5%)
MHSFW Lab Contro		6.25	0.4489	2.685	78610	1.0000	Non-Significant Effect
		12.5	-0.6738	2.685	78610	1.0000	Non-Significant Effect
		25*	15.85	2.685	87890	<0.0001	Significant Effect
		50*	38.72	2.685	78610	<0.0001	Significant Effect

Test Acceptability

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
PMSD	0.05973	0.091 - 0.29	Yes	Result Below Limit

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	3.000258E+12	7.500646E+11	4	583.4	<0.0001	Significant Effect
Error	11571340000	1285704000	9			
Total	3.01183E+12	7.513503E+11	13			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	4.885	13.28	0.2993	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9647		0.7997	Normal Distribution

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		2	7.973E+5	7.921E+5	8.025E+5	7.876E+5	8.070E+5	2.555E+3	1.376E+4	1.73%	39.42%
50		3	1.826E+5	1.784E+5	1.868E+5	1.698E+5	1.890E+5	2.055E+3	1.106E+4	6.06%	86.12%

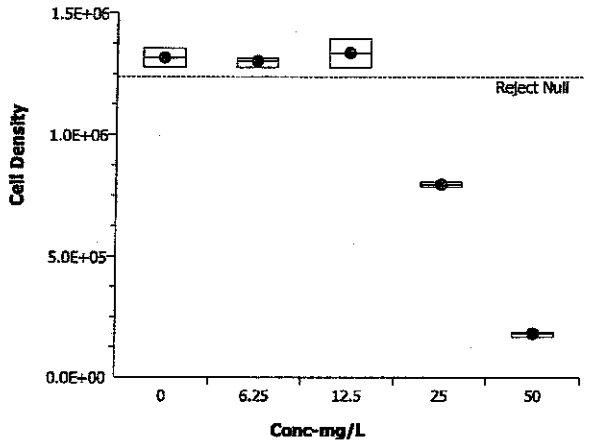
Selenastrum Growth Test (Dil: Lab) — **Sierra Foothill Laboratory Inc.**

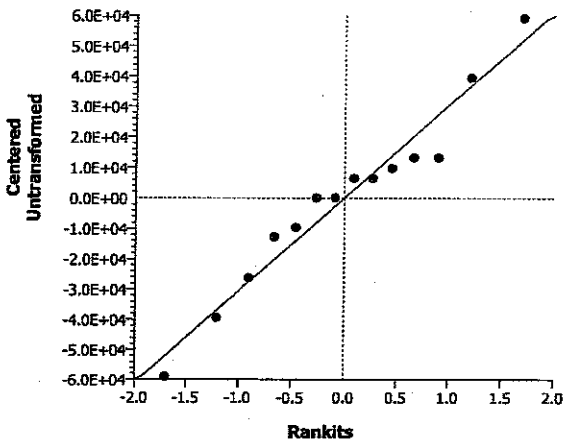
Analysis ID:	04-3095-6194	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 11:33	**Analysis:**	Parametric-Multiple Comparison	**Official Results:**	Yes

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





CETIS Analytical 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.**

Analysis ID:	03-6560-4814	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.7.0
Analyzed:	28 Apr-10 11:34	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-4223-8522	**Test Type:**	Cell Growth	**Analyst:**	
Start Date:	21 Apr-10 15:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	25 Apr-10 13:50	**Species:**	Selenastrum capricornutum	**Brine:**	
Duration:	95h	**Source:**	In-House Culture	**Age:**	5 d
Sample ID:	08-8591-0139	**Code:**	0410-908	**Client:**	Sierra Foothill Laboratory
Sample Date:	21 Apr-10	**Material:**	Boron	**Project:**	
Receive Date:	21 Apr-10	**Source:**	Boron Reference Toxicant		
Sample Age:	15h	**Station:**			

Linear Interpolation Options

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

Test Acceptability

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

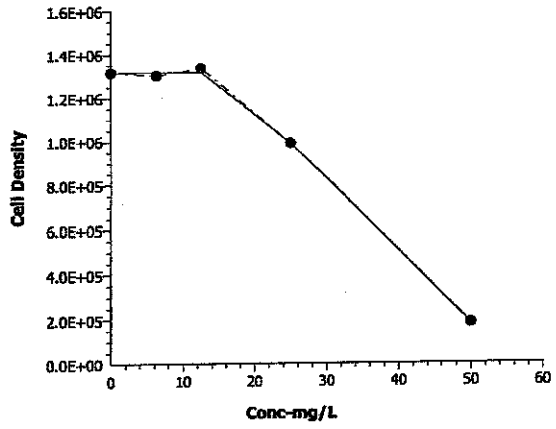
Cell Density Summary

			Calculated Variate						
Conc-mg/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	

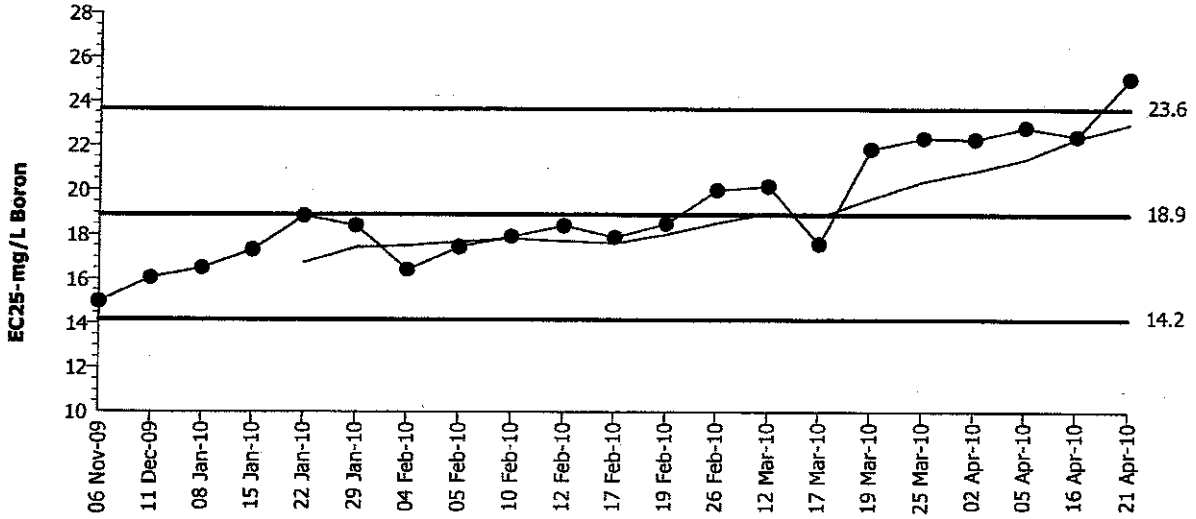
Graphics



Selenastrum Growth Test (Dil: Lab) — **Sierra Foothill Laboratory Inc.**

Test Type:	Cell Growth	**Organism:**	Selenastrum capricornutum (Green A	**Material:**	Boron
Protocol:	EPA/821/R-02-013 (2002)	**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

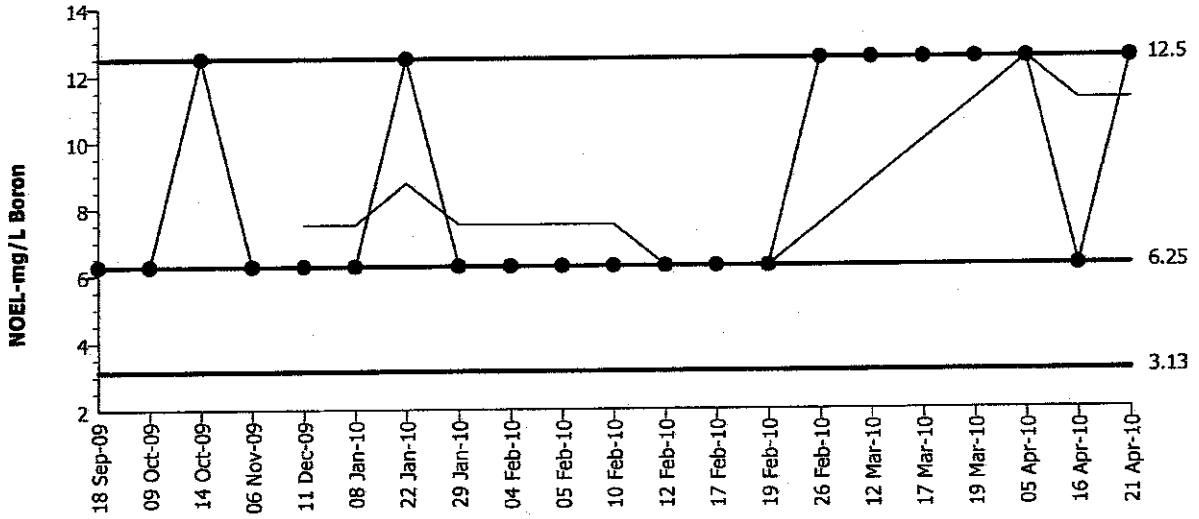
Quality Control Data

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

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

Test Type: Cell Growth **Organism:** Selenastrum capricornutum (Green A **Material:** Boron
Protocol: EPA/821/R-02-013 (2002) **Endpoint:** Cell Density **Source:** Boron Reference Toxicant-RT3

Selenastrum Growth Test (Dil: Lab)



Mode: 6.25 **Count:** 20 **-1ci Action Limit:** 3.125
Dil Fact: 0.5 **+1ci Action Limit:** 12.5

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2009	Sep	18	6.25	0				03-5179-2583	08-2760-3238
2		Oct	9	6.25	0				16-2755-1859	04-9901-0244
3			14	12.5	6.25				08-3479-3911	16-0281-8203
4		Nov	6	6.25	0				00-6537-4735	11-6654-4633
5		Dec	11	6.25	0				19-9024-3774	17-8123-5787
6	2010	Jan	8	6.25	0				04-8181-2561	02-0825-7298
7			22	12.5	6.25				16-5817-9867	06-5928-1473
8			29	6.25	0				13-2184-4457	09-5894-4494
9		Feb	4	6.25	0				05-8399-6767	13-0889-5063
10			5	6.25	0				18-5774-4071	05-6487-8086
11			10	6.25	0				11-9096-4869	14-7794-8335
12			12	6.25	0				14-5220-0913	05-4036-9478
13			17	6.25	0				05-2300-5022	17-1420-1511
14			19	6.25	0				20-3916-7695	08-8331-7796
15			26	12.5	6.25				16-4266-3845	17-3024-2410
16		Mar	12	12.5	6.25				17-3279-5748	09-0532-0320
17			17	12.5	6.25				20-4704-0138	10-1530-6122
18			19	12.5	6.25				05-9270-9678	10-7946-9569
19		Apr	5	12.5	6.25				13-1848-9548	10-3554-6383
20			16	6.25	0				20-8886-8946	06-4245-0587
21			21	12.5	6.25				06-8188-0203	04-3095-6194