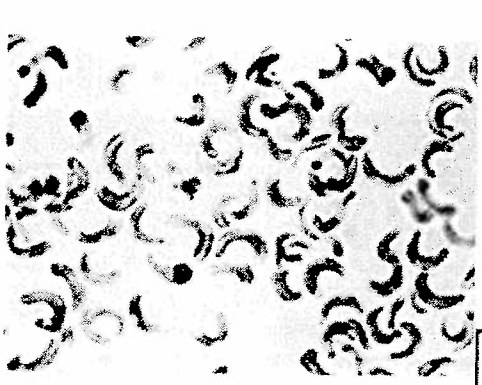
BIOMONITORING REPORT

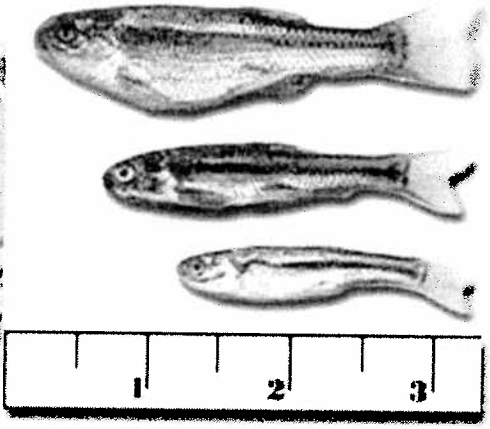
FOR

CITY OF CALDWELL WWTP

LAB #1700963

PERMIT # ID0021504





JANUARY 2017

PREPARED BY:

ANALYTICAL LABORATORIES, INC.
1802 N. 33RD STREET
BOISE, ID 83703
(208)342-5515

SUMMARY OF ANALYSES
CITY OF CALDWELL WWTP

JANUARY 2017

The results for the Fathead Minnow survival study:

NOEC:	100%
LOEC:	>100%
IC25:	>100%
TU_C:	1

The results for the Fathead Minnow growth study:

NOEC:	100%
LOEC:	>100%
IC25:	>100%
TUc:	1

The results for the *Ceriodaphnia dubia* reproduction study:

NOEC:	100%
LOEC:	>100%
IC25:	>100%
TU_C:	1

*Associated control replicates did not meet minimum acceptability requirements for reproduction. However, three simultaneously run control boards passed requirements outlined in Test Design/Standard Conditions Method 1002.0. Raw data and analysis for substitute control has been included as Appendix V. Please see Interpretation, EPA Method 1002.0.

The results for the *Ceriodaphnia dubia* survival study:

NOEC:	100%
LOEC:	>100%
IC25:	>100%
TU_C:	1

The results for the algae, *Selenastrum capricornutum* growth study:

NOEC:	100%
LOEC:	>100%
IC25:	>100%
TUc:	1

Interpretation

EPA Method 1000.0- *Pimephales promelas*

Statistical analyses of survival and growth data for test method 1000.0 demonstrated that all concentrations tested were not significantly different from the controls and displayed no chronic toxicity. Stock cultures run simultaneously with

* EPA Method 1002.0- *Ceriodaphnia dubia*

Statistical analyses of survival data for test method 1002.0 demonstrated no chronic toxicity. However, the reproduction data showed a failure within only those control replicates which were recorded on test bench sheets to meet minimum acceptability requirements. Gradual improvement in reproduction as effluent concentration increases, and comparability of reproductive output in 100% effluent and additional, simultaneously run controls provide clear evidence that the result was not a consequence of toxicity of the effluent, but due to an intralaboratory control water issue.

EPA Method 1003.0 – *Selenastrum capricornutum*

Statistical analyses of growth inhibition data for test method 1003.0 demonstrated that all concentrations tested displayed no chronic toxicity. However, significantly greater growth in test concentrations may indicate a bio stimulatory effect caused by the sample which resulted in increased growth correlating with increased effluent concentrations.

Introduction

Toxicity analyses, consisting of three chronic bioassays, EPA Test Method 1000.0, EPA Test Method 1002.0 and EPA Test Method 1003.0 were conducted on effluent samples collected by the City of Caldwell WWTP. Samples were collected January 10, January 12, January 13, and January 16, 2017, as 24-hour effluent composites. Once collected, samples were sent immediately to Analytical Laboratories, Inc. for analyses. Effluent composites were collected in one-gallon jugs for solution renewal water and in one liter cubitainers for water chemistries testing. Samples were chilled during transport by the addition of cold packs to the coolers. Method 1000.0, using the freshwater fathead minnow *Pimephales promelas*, was conducted on January 12 and completed on January 19, 2017. Method 1002.0, utilizing the freshwater flea *Ceriodaphnia dubia*, was conducted on January 10, 2016 and completed on January 18, 2017. Method 1003.0 utilizing the green algae *Selenastrum capricornutum* was initiated January 17, and completed on January 21, 2017. Testing was conducted according to Short-Term Methods for Estimating the Chronic Toxicity of Effluents and receiving Waters to Freshwater Organisms, Fourth Edition October 2002 EPA-821-R-02-013 and Standard Methods for the Examination of Water and Wastewater, 19th Edition.

Methods and Materials

Test methods are designed to estimate and measure chronic toxicity of effluents to the cladoceran *Ceriodaphnia dubia* and the fathead minnow *Pimephales promelas* in a 7-day static renewal test. The green algae *Selenastrum capricornutum* was exposed in a static system to a series of concentrations of effluent for 96 hours to estimate chronic toxicity. Effluent was used, whole or combined, with artificially prepared dilution water to prepare dilution series. Dilution water was prepared (20% v/v Perrier mineral water in Millipore Milli-Q deionized water) to produce a moderately hard dilution and control water. Water was prepared in bulk 24 hours prior to analyses and was aerated for 24 hours prior to starting the test in order to produce sufficient dissolved oxygen in the control water. All test method design and overviews are provided below.

For Method 1000.0, utilizing the fathead minnow *Pimephales promelas*, larvae (less than 24 hours) were sent from Aquatic Biosystems, Inc. in Fort Collins, Colorado. Organisms were sent by UPS in oxygen saturated water contained in plastic bags in an insulated container. It should be noted that the first shipment of organisms sent from Aquatic Biosystems were not received on time and a reshipment occurred, this resulted in the fourth collection date of the effluent samples. Once received, larvae were steadily acclimated to laboratory control water prior to transfer to test dilutions. Healthy larvae were transferred to test cells using wide-bore pipettes. Larvae were offered freshly hatched, freshwater-rinsed brine shrimp *Artemia nauplii*. Larvae were fed twice daily and water renewed daily using fresh test solution for seven consecutive days. Data obtained was used to determine NOEC, LOEC, IC25 and TUc for survival and growth (dry weight gain).

For Test Method 1002.0, *Ceriodaphnia dubia* neonates were produced in house from brood organisms that produce 8 or more young in their 3rd or subsequent broods. Brood animals are fed daily and transferred to new culture media at a minimum of 3 times a week. Survival and reproduction records are maintained to ensure healthy test organisms. Original mass cultures of organisms were started from brood organisms obtained from Aquatic Biosystems in Fort Collins, Colorado. Neonates less than 24 hours old were selected from known parentage, inspected, and arranged in five sample dilutions and a control with ten replicates. Analyses at a static renewal were performed over the next seven consecutive days. Data obtained was used to determine NOEC, LOEC, and IC25 for survival and reproduction (see Appendix I - Definition of Terms).

For Test Method 1003.0, utilizing the green algae *Selenastrum capricornutum*, starter cultures are purchased from Aquatic Biosystems with an initial concentration of 3.0×10^7 cells/mL. This stock solution is diluted with algal medium to produce at initial concentration of >10,000 algae cells/mL in each replicate. A spectrophotometer is used at the beginning and after completion of the test to determine the cell density in each replicate prior to the start, and at the end of the test period. For the duration of the test, vessels are shaken twice daily to avoid sedimentation of algal cells for prolonged periods of time. Data obtained was used to determine NOEC, LOEC, IC25 and TUc (see Appendix I - Definition of Terms) for specific growth rate (increase in cell density).

Test Designed/Standard Conditions/Method 1000.0:

Test design and standard conditions for Method 1000.0 are as follows:

1. Test Type - static renewal (daily)

   Collection #1 – Renewal Day 1 and 2 – January 12, 2017

   Collection #2 – Renewal Day 3 and 4 – January 13, 2017

   Collection #3 – Renewal Day 5 and 6 – January 16, 2017

   Day 7 – Final counts and statistical review

2. Temperature - 25 +/ - 1 degrees Celsius.
3. Light Quality - Environmental Chamber Fisher/11-67966
4. Light Intensity - Incubation chamber (as above)
5. Photoperiod - 16 hours light; 8 hours dark
6. Test Chamber - 500 mL tall form beakers
7. Test Solution Volume - 250 ml / replicate
8. Renewal static - All dilutions daily
9. Age of Test Organisms - Larvae; less than 24 hours old
10. Individual/Chamber - 10 per chamber
11. Chamber Replicates - 4 replicates of each dilution and control
12. Feeding - 0.1 ml newly hatched brine shrimp twice daily; 8 hour intervals
13. Dilution Water - 20% v/v Perrier Mineral Water in deionized water
14. Dilution Concentrations - 100%, 69.5%, 39%, 19.5%, 9.75% and Control
15. Test Duration - 7 days
16. Endpoints - Survival and growth (individual dry weight gain)
17. Acceptability - 80% survival in controls. Average net dry weight gain of surviving controls equals or exceeds 0.25 mg/individual
18. Sample Volume Taken - 1 gallon for test solution renewal and 1 liter for daily composite water chemistries
19. Source of organisms - Aquatic Biosystems, Inc., Fort Collins, Colorado

Test Design/Standard Conditions Method 1002.0

1. Test Type - static renewal (daily)

   Collection #1 – Renewal Day 1 and 2 – January 10, 2017

   Collection #2 – Renewal Day 3 and 4 – January 12, 2017

   Collection #3 – Renewal Day 5 and 6 – January 13, 2017

   Day 7 – Final counts and statistical review

2. Temperature - 25 +/- 1 degree Celsius.
3. Light Quality - Environmental Chamber Fisher/11-67966
4. Light Intensity - Incubation chamber (as above)
5. Photoperiod - 16 hours light; 8 hours dark
6. Test Chamber - 30 ml anchor-hocking
7. Renewal - All dilutions daily
8. Age - Neonates/less than 24 hours
9. Organisms per chamber - One
10. Replicates - Ten chambers/control and each dilution
11. Feeding - 0.1 ml YTC; 0.1 ml *Selenastrum capricornutum* suspension - once daily
12. Dilution water - 20% v/v Perrier Mineral Water in deionized water
13. Concentrations used - 100%, 69.5%, 39%, 19.5%, 9.75% and Control
14. Duration - Seven days
15. Endpoint - Survival/reproduction
16. Acceptability - 80% or greater of control survival / 60% of control produce 3rd brood / Average of 15 young/surviving female
17. Source of organisms - In house

Test Designed/Standard Conditions/Method 1003.0

1. Test Type:	Static system Collection – January 16, 2017
2. Temperature:	25 degrees C. +/- 1 degree C.
3. Light Quality:	Incubator chamber (Percival Scientific Model AL30L2C8)
4. Light Intensity:	Incubation chamber (as above)
5. Photoperiod:	24 hours light
6. Test Chamber:	250 mL borosilicate glass bottles
7. Test Solution Volume:	100 ml / replicate
8. Age of Test Organisms:	4 day culture
9. Individual/Vessel:	5.6 x 10^5 cells per mL initially
10. Vessel Replicates:	4 replicates of control and each dilution
11. Feeding:	Initial addition of Algal culture medium (prepared by Aquatic Biosystems) at equal portion in each dilution.
12. Dilution Water:	20% diluted Perrier mineral water
13. Dilution Concentrations:	100%, 69.5%, 39%, 19.5%, 9.75% and Control
14. Test Duration:	96 hours
15. Endpoint:	Growth – Absorbance values obtained from Spectronic 601 are used to determine cells/mL based on a standardized linear relationship
16. Acceptability:	Mean cell density of at least 1.0 x 10^6 cells/mL in the controls; and variability (CV%) among control replicates less than or equal to 20%
Source of Algae:	Aquatic Biosystems, Fort Collins, Colorado

Interpretation - Statistical Review

Results - Method 1000.0

During Method 1000.0, larval survival and growth test using the fathead minnow *Pimephales promelas*, survival and growth from specific dilutions of collected wastewater were measured and compared to values obtained from controls prepared in 20% diluted mineral water.

Statistical analyses of survival and growth data for test method 1000.0 demonstrated that all concentrations tested were not significantly different from the controls and displayed no chronic toxicity.

Endpoints Determined - Method 1000.0

		NOEC	LOEC	IC25
Pimephales promelas	Survival	100%	>100%	>100%
	Growth	100%	>100%	>100%

Survival of controls exceeded eighty-percent (80%) and net dry weight gain of surviving individuals did exceed 0.25 mg/individuals in controls. Test was declared valid.

Results - Method 1002.0

During EPA Method 1002.0, survival and reproduction test using *Ceriodaphnia dubia*, survival and reproduction values from specific dilutions of collected effluent are measured and compared to values obtained from control individuals.

Statistical analyses of survival, and reproduction data for test method 1002.0 demonstrated that all concentrations tested were not significantly different than controls and displayed no chronic toxicity.

Endpoints Determined - Method 1002.0

		NOEC	LOEC	IC25
Ceriodaphnia dubia	Survival	100%	>100%	>100%
	Reproduction	100%	>100%	>100%

*Associated control replicates did not meet minimum acceptability requirements for reproduction. However, three simultaneously run control boards passed requirements outlined in Test Design/Standard Conditions Method 1002.0. Raw data and analysis for substitute control has been included as Appendix V. Please see Interpretation, EPA Method 1002.0.

Results - Method 1003.0

During EPA Method 1003.0, algal growth response test using the green algae *Selenastrum capricornutum*, growth from specific dilutions of collected effluent were measured and compared to values obtained from controls prepared in 20% diluted Perrier mineral water.

Statistical analyses of growth inhibition data for test method 1003.0 demonstrated that all concentrations tested were not significantly different from the controls and displayed no chronic toxicity.

Endpoints Determined - Method 1003.0

		NOEC	LOEC	IC25
Selenastrum capricornutum	Growth	100%	>100%	>100%

Final mean cell counts of control exceeded 1.0 x 10^6 cell/mL cell density and less than 20% variation in controls was established. Test was declared valid.

Test Quality Control

Quality control practices for effluent toxicity tests include certain precautions at each of the following steps:

1. Effluent sampling and handling. Sampling containers prepared as per section 7 of Methods for Measuring and Chronic Toxicity of Effluent to Freshwater and Marine Organisms were provided to client. Insulated transportation containers with cooling packs to chill samples were provided.
2. Condition of test organisms. Test organisms for Method 1000.0 and 1002.0, 1003.0 are purchased from Aquatic Biosystems, Inc. in Fort Collins, Colorado, a state and federally approved aquatic test organism supplier.
3. Conditions of test equipment. All test equipment used is maintained according to manufacturer's specifications. Equipment such as balances, thermometers, .etc is calibrated annually by outside sources and certificates are maintained. All equipment maintenance and calibrations are recorded and archived.
4. Test conditions. Only test methods directly from EPA references or methodologies provided are used. Any deviations or alterations from these procedures are documented and approved prior to use.
5. Reference toxicants. Reference toxicants are used for both Methods 1000.0 and 1002.0. Sodium chloride is made up in dilution control water at prescribed concentrations and is used to determine toxicity for each method. Reference toxicants are run once per month to ensure consistency in test methodology. Quality control data is provided and a graphical representation over time is attached.
6. Record Keeping. All raw data, data evaluation, and statistical analysis are included in report to client. Original hardcopies along with all test records are maintained at laboratory for client or future reference.

LIST OF TABLES AND APPENDICES

Table I	-*Pimephales promelas* Survival Data - Method 1000.0
Table II	-Pimephales promelas Growth Data - Method 1000.0
Table III	-Water Chemistries – Daily Renewal Summary – Method 1000.0
Table IV	-*Ceriodaphnia dubia* Survival and Reproduction Summary - Method 1002.0
Table V	-Water Chemistries - Daily Renewal Summary – Method 1002.0
Table VI	-*Selenastrum capricornutum* water pH and temperature- Method 1003.0
Table VII	-*Selenastrum capricornutum* cell count density summary- Method 1003.0
Table VIII	- Dilution chemistries summary
Table VIIII	- Sample chemistries summary
Appendix I	-Definition of Terms
Appendix II	-*Ceriodaphnia dubia* Raw Data & Analysis
Appendix III	-*Pimephales promelas* Raw Data & Analysis
Appendix IV	-*S. capricornutum* Raw Data & Analysis
*Appendix V	-S. capricornutum Raw Data & Analysis (Control Substitution)
Appendix VI	-Effluent Samples Chain of Custodies & Chemistries Reports
Appendix VII	-NPDES WETT Permit Requirements
Appendix VII	-Organisms - Transfer Sheets
Appendix VIII	-Literature Cited
Appendix VIIII	-Reference Toxicants Data and Graphs

CITY OF CALDWELL WWTP
LAB ID # 1700963
JANUARY 2017

METHOD 1000.0

Concentration	Initial Count	48-hour Count	96-hour Count	Final Count	Percent Survival
Control	40	40	39	39	98%
9.75%	40	40	40	40	100%
19.5%	40	40	40	40	100%
39%	40	40	40	40	100%
69.5%	40	40	40	40	100%
100%	40	40	39	39	98%

Table I: Fathead Minnow Larvae Survival Summary

Concentration	APPROXIMATE AVERAGE INITIAL WEIGHT (mg)*	ENDING AVERAGE WEIGHT (mg)	ENDING AVERAGE WEIGHT GAIN (mg)
Control	0.13	0.51	0.38
9.75%	0.13	0.49	0.36
19.5%	0.13	0.50	0.37
39%	0.13	0.48	0.35
69.5%	0.13	0.49	0.36
100%	0.13	0.55	0.42

* Initial weight obtained by taking 40 individuals at beginning of procedure (weight is dry weight/mg, 100° C. for 24 hours.)

Table II: Fathead Minnow Larvae Growth Summary

Concentration	Day	1	2	3	4	5	6	7
Control	DO	6.7	6.7	6.4	6.9	6.6	6.0	6.2
	pH	7.5	7.6	7.6	7.8	7.7	7.5	7.5
9.75%	DO	6.6	6.4	6.6	6.7	6.5	6.1	6.2
	pH	7.5	7.6	7.3	7.7	7.7	7.5	7.6
19.5%	DO	6.4	6.3	6.6	6.8	6.5	6.1	6.3
	pH	7.6	7.6	7.5	7.8	7.6	7.6	7.7
39%	DO	6.5	6.2	6.4	6.9	6.4	6.1	6.3
	pH	7.7	7.7	7.6	7.9	7.7	7.7	7.8
69.5%	DO	6.7	6.3	6.4	6.7	6.3	6.0	6.4
	pH	7.8	7.9	7.8	7.9	7.8	7.8	7.9
100%	DO	6.8	6.3	6.2	6.7	6.3	5.8	6.3
	pH	7.9	8.0	7.9	8.1	7.9	7.9	8.0

Table III: Water Chemistries, Daily Renewals – Old Water pH & Dissolved Oxygen Values

CITY OF CALDWELL WWTP
LAB ID #1700963
JANUARY 2017

METHOD 1002.0

Concentration	Initial Count	48-hour Count	96-hour Count	Final Count	Percent Survival	Average Young/ Remaining Female
Control	10	10	10	8	80%	13.9
9.75%	10	10	10	8	80%	14.4
19.5%	10	10	10	8	80%	18.0
39%	10	10	10	9	90%	22.7
69.5%	10	10	10	10	100%	33.3
100%	10	10	10	10	100%	34.0

Table IV: *Ceriodaphnia dubia* Survival And Reproduction Summary

Concentration	Control		9.75%		19.5%		39%		69.5%		100%	
Day	DO	pH	DO	pH	DO	pH	DO	pH	DO	pH	DO	pH
1	7.7	7.7	7.6	7.9	7.5	7.9	7.6	8.0	7.6	8.1	7.7	8.2
2	7.7	7.7	7.4	7.8	7.5	7.8	7.5	7.9	7.5	8.1	7.6	8.2
3	7.4	7.7	7.3	7.8	7.3	7.8	7.4	7.9	7.6	8.0	7.6	8.1
4	7.5	8.0	7.4	7.9	7.4	8.0	7.5	8.1	7.6	8.2	7.9	8.4
5	7.6	8.0	7.5	8.0	7.5	8.0	7.6	8.1	7.7	8.2	7.8	8.3
6	7.6	7.7	7.7	7.9	7.6	8.0	7.8	8.1	7.8	8.2	7.9	8.4
7	7.9	7.6	8.0	7.8	8.0	8.0	8.0	8.1	7.9	8.2	8.0	8.3

Table V: Water Chemistries, Daily Renewals – Old Water pH & Dissolved Oxygen Values

CITY OF CALDWELL WWTP
LAB ID #1700963
JANUARY 2017

METHOD 1003.0

Conc	Day 0		Day 1		Day 2		Day 3		Day 4	
	pH	Temp	pH	Temp	pH	Temp	pH	Temp	pH	Temp
Control	7.9	23.6	9.6	23.6	10.5	23.7	10.6	24.4	10.7	24.3
9.75%	7.8	24.1	9.6	23.6	10.7	24.2	10.8	24.1	10.8	24.4
19.5%	7.8	24.1	9.6	23.8	10.8	24.3	11.0	24.2	10.9	24.6
39%	7.8	23.9	9.5	24.0	10.7	24.3	10.9	24.0	10.9	24.6
69.5%	7.8	23.8	9.4	24.2	10.7	24.2	10.9	23.9	10.9	24.7
100%	7.7	24.1	9.3	23.2	10.6	24.4	10.7	24.2	10.9	24.8

Table VI: *Selenastrum capricornutum* Water pH & Temperature

Concentration	Initial Cell Density	Final Cell Density Replicate 1	Final Cell Density Replicate 2	Final Cell Density Replicate 3	Final Cell Density Replicate 4	Final Cell Density Average
Control	0.56	2.23	2.29	2.47	1.90	2.23
9.75%	0.56	2.44	2.59	2.50	1.93	2.37
19.5%	0.56	3.01	3.04	3.10	2.38	2.89
39%	0.56	3.85	3.88	3.82	2.32	3.47
69.5%	0.56	5.11	5.35	5.41	3.52	4.85
100%	0.56	7.15	7.36	7.00	4.18	6.43

*Millions of cells per mL

Table VII: *Selenastrum capricornutum* Growth Response Summary

CITY OF CALDWELL WWTP
LAB ID # 1700963
JANUARY 2017

Sample Date	CHLORINE RESIDUAL (mg/L)	ALKALINITY (mg/L)	CONDUCTIVITY (umhos)	HARDNESS (mg/L)	AMMONIA (mg/L)	pH S.U.
01/10/2017	<0.10	166	703	141	<0.04	7.3
01/12/2017	<0.10	169	744	124	0.06	7.3
01/13/2017	<0.10	174	795	149	<0.04	7.2
01/16/2017	<0.10	178	737	150	<0.04	7.1

Table VIII: Effluent Chemistries Summary for EPA Method 1000.0 and 1002.0

Concentration	CHLORINE RESIDUAL (mg/L)	ALKALINITY (mg/L)	CONDUCTIVITY (umhos)	HARDNESS (mg/L)	AMMONIA (mg/L)	pH S.U.
CONTROL	<0.10	100	281	109	<0.04	6.8
9.75%	<0.10	98.6	310	115	<0.04	6.8
39%	<0.10	131	491	133	<0.04	6.8
100%	<0.10	190	793	170	0.04	7.1

Dilution Chemistries Summary for EPA Method 1003.0

Definition of Terms

1. Safe Concentration. The highest concentrations of toxicant that will permit normal propagation of fish and other aquatic life in receiving waters, biologically defined rather than statistically.
2. NOEC (No-Observed Effect Concentration) - The highest concentration of toxicant in which the values for the observed parameters (survival, growth, reproduction) in which there is no statistically significant difference from controls and no observable effect on organism behavior or health.
3. LOEC (Lowest-Observed Effect Concentration) - The lowest concentration of toxicant in which the values for the observed parameters (survival, growth, reproduction) do have a statistical significant difference from controls. At this concentration there is evidence of toxicity.
4. TUc (chronic toxicity units) – 100/NOEC for Survival; 100/IC25 for all other endpoints
5. IC25 (Inhibition concentration - 25%) – Concentration where at least 25% of the organisms have some statistically significant effect.

   Taken from: Short-Term methods for Estimating the Chronic Toxicity of Effluents and receiving Waters to Freshwater Organisms, Fourth Edition. October 2002. EPA-821-R-02-013.

BENCH SHEET FOR CERIODAPHNIA SURVIVAL/REPRODUCTION TEST. EPA Method 1002.0

LAB ID# 1700963 Analyst: WR/CP Final Report Review: SC

Discharged: Effluent Test Start Date/Time: 1/10/17, 1400

Description: City of Caldwell WWTP Test Stop Date/Time: 1/18/17, 1315

Temp Received: Day 1: 5.0 Day 2: 5.3 Day 3: 3.7

Renewal Lab Numbers: **Day 0 & 1:** 963 **Day 2 & 3:** 1343 **Day 4, 5 & 6:** 1543

Conc Control

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O.	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.6	7.4	XXX	XXX	22.8
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.8	7.7	7.7	23.2
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.9	7.7	7.7	22.9
4-	✓	1/5	1/7	1/6	1/1	1/6	1/7	1/6	1/5	1/6	~~9~~ 49	7.7	7.6	7.4	7.7	23.5
5-	✓	✓	✓	✓	✓	✓	✓	✓	✓	2/9	9	7.9	7.9	7.5	8.0	22.7
6-	✓	2/13	2/12	2/14	✓	2/3	2/12	2/14	2/12	✓	80	8.1	7.8	7.6	8.0	22.1
7-	✓	✓	✓	✓	✓	D	✓	D	✓	3/2	2	8.0	8.0	7.6	7.7	22.5
Total	0	18	19	20	1	0	19	0	17	17	111	wR ~~8.1~~	~~7.9~~	~~7.8~~ sc	~~7.3~~ sc	
														7.9	7.6	

Conc ~~9.5%~~ 9.75%

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.5	XXX	XXX	22.7
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.0	7.8	7.6	7.9	23.1
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.7	7.4	7.8	22.8
4-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.9	7.5	7.3	7.8	23.7
5-	1/1	1/2	1/7	1/5	✓	1/5	1/7	1/6	1/7	1/6	36	~~7.5~~ 8.0	7.9	7.4	7.9	22.6
6-	2/1	2/1	✓	2/14	✓	D	2/13	2/17	2/12	2/16	60	8.1	8.0	7.5	8.0	22.3
7-	✓	✓	✓	D	✓	↓	✓	✓	✓	3/19	19	8.0	7.9	7.7	7.9	23.1
Total	2	3	7	0	0	0	20	23	19	41	115	wR ~~7.8~~		~~7.6~~ sc	~~7.7~~ sc	
														8.0	7.8	

Conc 19.5%

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.9	7.6	XXX	XXX	22.7
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.8	7.5	7.9	23.0
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.6	7.5	7.8	22.7
4-	✓	1/8	1/7	1/6	✓	1/6	1/5	1/6	1/6	1/6	50	8.1	7.5	7.3	7.8	23.4
5-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.0	7.9	7.4	8.0	22.7
6-	~~2~~ 5	2/7	2/12	2/12	✓	2/13	2/12	2/8	✓	2/14	78	8.3	7.9	7.5	8.0	22.4
7-	D	✓	3/3	✓	D	✓	✓	✓	✓	3/13	16	8.2	7.8	7.6	8.0	23.1
Total	0	15	22	18	0	19	17	14	6	33	144			8.0	8.0	

BENCH SHEET FOR CERIODAPHNIA SURVIVAL/REPRODUCTION TEST. EPA Method 1002.0

LAB ID# 1700963 Analyst: WR/CP Final Report Review: SC

Discharged: Effluent Test Start Date/Time: 1/10/17, 1400

Description: City of Caldwell WWTP Test Stop Date/Time: 1/18/17, 1315

Temp Received: Day 1: 5.0 Day 2: 5.3 Day 3: 3.7

Renewal Lab Numbers: **Day 0 & 1:** 963 **Day 2 & 3:** 1343 **Day 4, 5 & 6:** 1543

Conc 39%

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O.	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.2	7.6	XXX	XXX	22.6
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.5	7.7	7.6	8.0	23.1
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.5	7.5	7.9	22.5
4-	1/6	1/7	1/5	1/7	1/5	1/6	1/7	1/6	1/6	1/5	53	8.5	7.5	7.4	7.9	23.5
5-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.3	7.7	7.5	8.1	22.7
6-	2/15	2/13	2/13	2/13	✓	2/14	2/10	2/15	2/16	2/13	109	8.6	7.8	7.6	8.1	22.5
7-	✓	0	3/13	3/16	✓	✓	3/3	3/5	✓	3/5	42	8.6	7.7	7.8	8.1	23.2
Total	21	0	31	36	5	20	20	26	22	23	204			8.0	8.1	

Conc 69.5%

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.6	7.5	XXX	XXX	22.5
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		9.0	7.6	7.6	8.1	23.2
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.7	7.5	7.5	8.1	22.8
4-	1/8	1/6	1/7	1/7	1/6	1/6	1/5	1/5	1/6	1/5	61	9.0	7.5	7.6	8.0	23.2
5-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.8	7.6	7.6	8.2	22.8
6-	2/16	2/17	2/13	2/14	2/14	2/11	2/12	2/16	2/13	2/13	138	9.2	7.8	7.7	8.2	22.4
7-	3/10	3/21	3/2	3/19	3/7	3/5	3/15	3/21	3/21	3/13	134	9.1	7.6	7.8	8.2	23.5
Total	34	44	22	40	27	22	32	41	40	31	333			7.9	8.2	

Conc 100%

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		9.1	7.5	XXX	XXX	22.5
2-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		9.3	7.5	7.7	8.2	23.4
3-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		9.0	7.6	7.6	8.2	23.4
4-	1/6	1/7	1/4	1/6	1/7	1/6	1/7	1/5	1/7	1/6	61	9.3	7.5	7.6	8.1	23.1
5-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		9.2	7.6	7.9	8.4	23.0
6-	2/14	2/14	2/15	2/12	2/13	2/14	2/12	2/13	2/14	2/11	132	9.5	7.6	7.8	8.3	22.3
7-	3/17	3/23	3/16	3/19	3/10	3/4	3/18	3/20	✓	3/20	147	9.6	7.6	7.9	8.4	23.3
Total	37	44	35	37	30	24	37	38	21	37	340			8.0	8.3	

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Ceriodaphnia dubia (water flea)
Date	1/22/2017	**Test Type**	Reproduction
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	0	2	0	21	34	37
2	18	3	15	0	44	44
3	19	7	22	31	22	35
4	20	0	18	36	40	37
5	1	0	0	5	27	30
6	0	0	19	20	22	24
7	19	20	17	20	32	37
8	0	23	14	26	41	38
9	17	19	6	22	40	21
10	17	41	33	23	31	37
Mean	11.100	11.500	14.400	20.400	33.300	34.000
Stdev	9.386	13.786	10.167	10.803	7.931	6.976

Output

Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	11.100	9.386	0.846	
	0.0975	11.500	13.786	1.199	NS
	0.195	14.400	10.167	0.706	NS
	0.39	20.400	10.803	0.530	NS
	0.695	33.300	7.931	0.238	NS
	1	34.000	6.976	0.205	NS

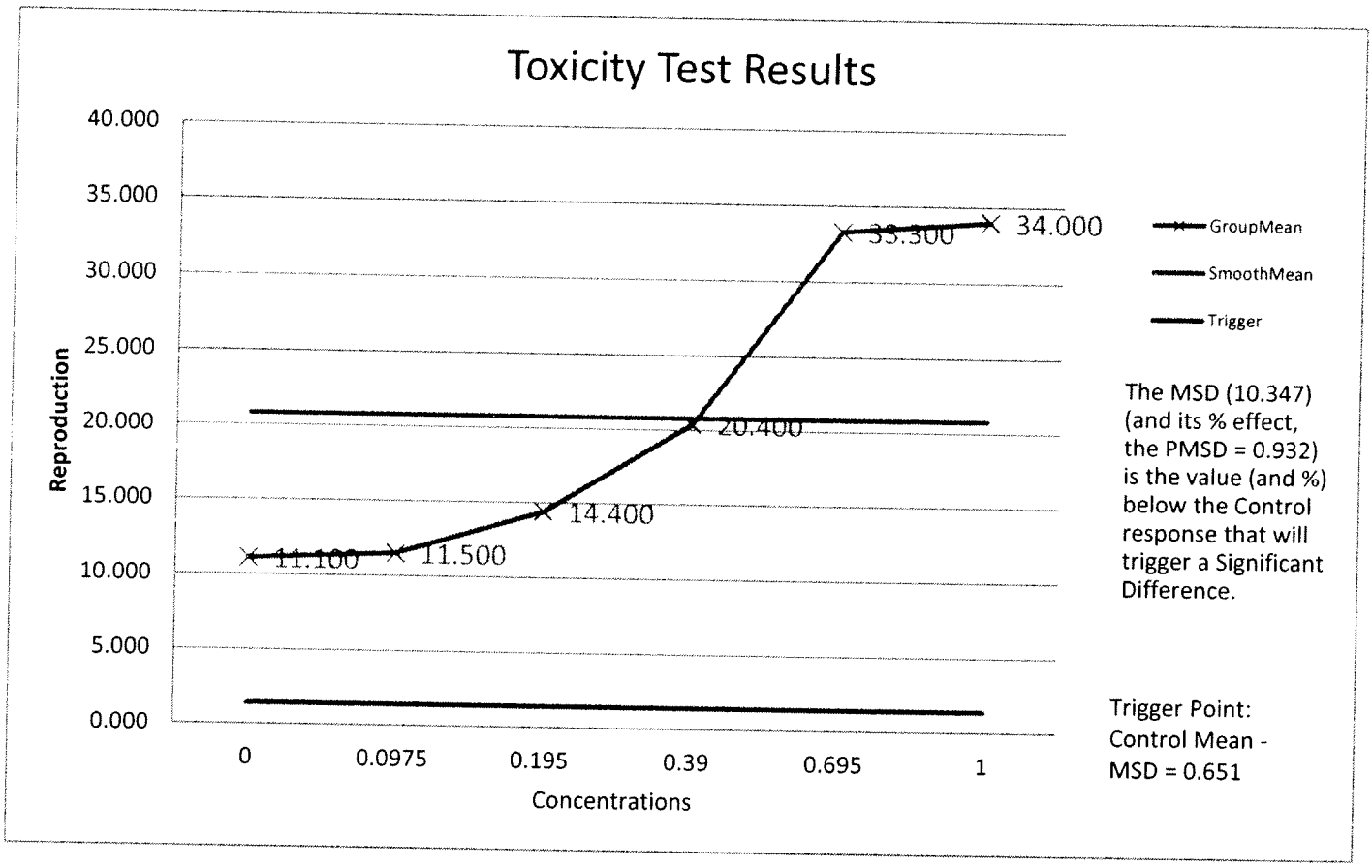
NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
10.347	93.2%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Ceriodaphnia dubia (water flea)
Date	1/22/2017	**Test Type**	Chronic Survival
IWC Conc.			

Input

Number of Organisms Exposed or Counted

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	1	1	1	1	1	1
2	1	1	1	1	1	1
3	1	1	1	1	1	1
4	1	1	1	1	1	1
5	1	1	1	1	1	1
6	1	1	1	1	1	1
7	1	1	1	1	1	1
8	1	1	1	1	1	1
9	1	1	1	1	1	1
10	1	1	1	1	1	1

Number of Organisms Surviving or Responding

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	1	1	0	1	1	1
2	1	1	1	0	1	1
3	1	1	1	1	1	1
4	1	0	1	1	1	1
5	1	1	0	1	1	1
6	0	0	1	1	1	1
7	1	1	1	1	1	1
8	0	1	1	1	1	1
9	1	1	1	1	1	1
10	1	1	1	1	1	1

Total Organisms	10	10	10	10	10	10
Total Responding	8	8	8	9	10	10
% Responding	80.0%	80.0%	80.0%	90.0%	100.0%	100.0%

Output

Summary Sheet

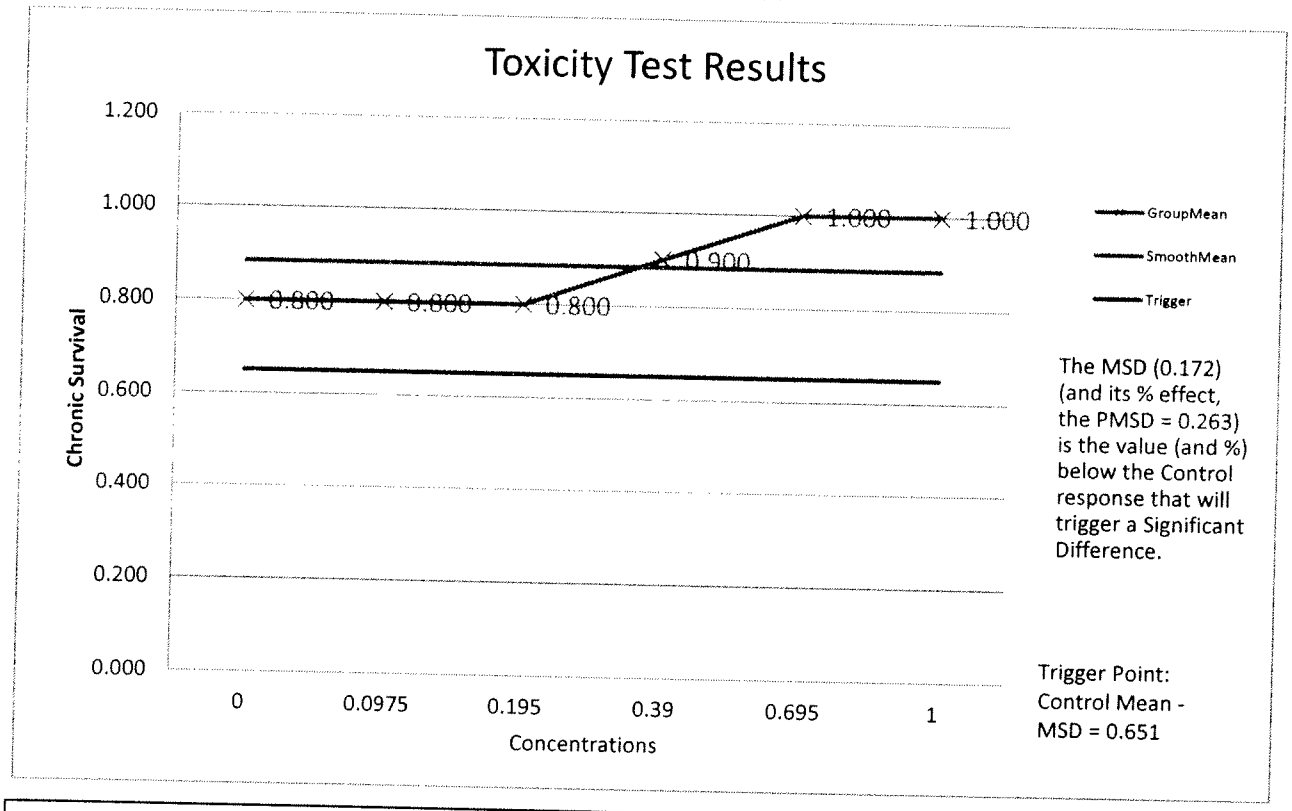
Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	0.942	0.221	0.234	
Statistics are based on the transformed data used for endpoint calculations	0.0975	0.942	0.221	0.234	NS
	0.195	0.942	0.221	0.234	NS
	0.39	0.995	0.166	0.166	NS
	0.695	1.047	0.000	0.000	NS
	1	1.047	0.000	0.000	NS

NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.172	26.3%

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

Ceriodaphnia dubia Stock Culture Log Month/Year: January 2017

Start Date: 1-10-17 End Date: Board#: 1

Trans. Date	1	2	3	4	5	6	7	8	9	10	Time
1-10-17 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1350
1-11-17 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1350
1-12-17 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1140
1-13-17 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1510
1-14 4	1/7	1/5	✓	1/6	1/4	1/6	1/6	1/7	1/7	1/6	1410
1-15 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1400
1-16 6	2/8	2/11	↓	2/1	2/10	2/14	2/17	2/13	2/12	2/14	1155
1-17 7	3/20	3/19	↓	3/8	3/18	3/18	3/21	3/24	3/21	3/20	1700

Survival > 80%: 4 yes/no Average offspring per female > 20: yes/no

Start Date: 1-10 End Date: Board#: 2

Trans.	1	2	3	4	5	6	7	8	9	10	Time
1-10-17 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1400
1-11-17 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1400
1-12-17 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1445
1-13-17 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1515
1-14 4	1/6	1/5	1/7	1/6	1/6	1/6	1/7	1/4	1/5	1/7	1415
1-15 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1405
1-16 6	2/11	2/13	2/12	2/11	2/10	2/14	2/2	2/14	2/13	2/12	1205
1-17 7	3/13	3/20	3/18	3/21	3/11	3/21	3/12	3/16	3/19	3/17	1705

Survival > 80%: yes/no Average offspring per female > 20: yes/no

Start Date: 1-10 End Date: Board#: 3

Trans.	1	2	3	4	5	6	7	8	9	10	Time
1-10-17 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1410
1-11-17 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1410
1-12-17 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1150
1-13-17 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1520
1-14 4	1/7	1/7	1/4	1/6	✓	1/6	✓	1/6	✓	1/7	1425
1-15 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1410
1-16 6	2/11	2/9	2/10	2/10	↓	2/11	1/18	2/13	1/17	2/12	1210
1-17 7	3/23	3/20	3/19	3/19	↓	3/18	✓	3/17	✓	3/20	1710

Survival > 80%: yes/no Average offspring per female > 20: yes/no

* Stock cultures ran simultaneously with City of Caldwell WETT (permit #ID 0021504)

* Substitute Control

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Ceriodaphnia dubia (water flea)
Date	1/22/2017	**Test Type**	Reproduction
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	35	2	0	21	34	37
2	35	3	15	0	44	44
3	0	7	22	31	22	35
4	15	0	18	36	40	37
5	32	0	0	5	27	30
6	38	0	19	20	22	24
7	44	20	17	20	32	37
8	44	23	14	26	41	38
9	40	19	6	22	40	21
10	40	41	33	23	31	37
Mean	32.300	11.500	14.400	20.400	33.300	34.000
Stdev	14.072	13.786	10.167	10.803	7.931	6.976

Output

Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	32.300	14.072	0.436	
	0.0975	11.500	13.786	1.199	Y
	0.195	14.400	10.167	0.706	Y
	0.39	20.400	10.803	0.530	NS
	0.695	33.300	7.931	0.238	NS
	1	34.000	6.976	0.205	NS

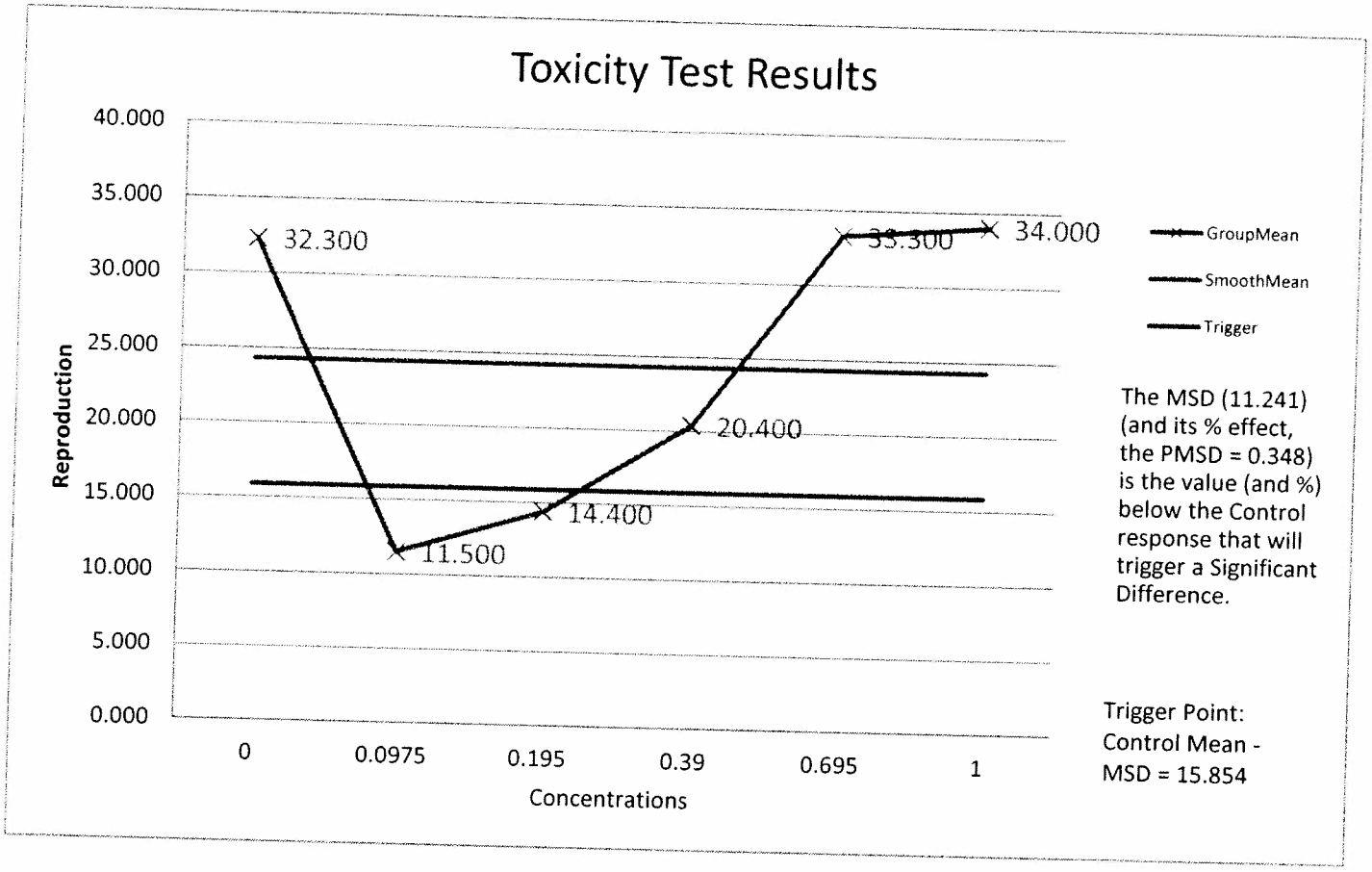
NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
11.241	34.8%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

Bench Sheet For Fathead Minnow Survival Test EPA METHOD 1000.0

LAB ID#: 1700963
Discharged: Effluent
Location: City of Caldwell WWTP
Renewal Lab ID# Day 0,1: ~~1530~~ 1343 Day 2,3: 1543 Day 4,5,6: 1740

Analyst: WR Final Report Review: SC
Test Start Date: 1/12/17
Test Stop Date: 1/19/17

Lab Id/Day:											
Day		0	1	2	3	4	5	6	7	Remarks
Conc:	Beaker#									
Control	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	9	9	9	9	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	10	
New DO		~~7.8~~	7.7	7.9	8.1	8.0 ~~8.2~~	8.1 ~~7.9~~	8.0 ~~7.4~~	xxx	
New pH		7.9	7.6	7.9	7.8				xxx	
Temp		22.9	23.5	22.7	~~20.8~~	22.9	23.1	~~22.6~~	xxx	
Old DO		xxx	6.7	6.7	~~6.4~~	6.9	6.6	6.0	6.2	
Old pH		xxx	7.5	7.6	7.6	7.8	7.7	7.5	7.5	
Conc: 9.75%	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	10	
New DO		7.8	7.9	8.0	8.1	8.0	~~8.2~~	~~8.0~~	xxx	
New pH		7.7	7.5	7.9	8.0	7.9	7.9	7.9	xxx	
Temp		22.8	23.7	22.8	~~23.3~~	23.3	23.7	22.6	xxx	
Old DO		xxx	6.6	6.4	6.6	6.7	6.5	6.1	6.2	
Old pH		xxx	7.5	7.6	7.3	7.7	7.7	7.5	7.6	
Conc: 19.5%	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	10	
New DO		7.8	8.1	8.0	~~8.3~~	~~8.2~~	~~8.3~~	~~8.1~~	xxx	
New pH		7.6	7.5	7.9	7.9	7.8	7.8	7.5	xxx	
Temp		22.7	23.4	23.5	23.5	23.0	23.4	22.9	xxx	
Old DO		xxx	6.4	6.3	6.6	6.8	6.5	6.1	6.3	
Old pH		xxx	7.6	7.6	7.5	7.8	7.6	7.6	7.7	
Conc: 39%	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	10	
New DO		8.1	8.5	8.3	8.6	8.6	8.7	8.5	xxx	
New pH		7.5	7.5	7.7	7.8	7.7	7.7	7.5	xxx	
Temp		22.5	23.3	23.0	23.6	23.4	23.0	23.2	xxx	
Old DO		xxx	6.5	6.2	6.4	6.9	6.4	6.1	6.3	
Old pH		xxx	7.7	7.7	7.6	7.9	7.7	7.7	7.8	
Conc: 69.5%	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	10	
New DO		8.7	9.0	8.8	9.2	9.1	9.3	9.0	xxx	
New pH		7.5	7.5	7.6	7.8	7.6	7.6	7.6	xxx	
Temp		22.8	23.0	22.7	23.4	23.5	23.4	23.7	xxx	
Old DO		xxx	6.7	6.3	6.4	6.7	6.3	6.0	6.4	
Old pH		xxx	7.8	7.9	7.8	7.9	7.8	7.8	7.9	
Conc: 100%	1	10	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	10	
	3	10	10	10	9	9	9	9	9	
	4	10	10	10	10	10	10	10	10	
New DO		9.0	9.3	9.2	9.5	9.6	9.7	9.6	xxx	
New pH		7.6	7.5	7.6	7.6	7.6	7.6	7.7	xxx	
Temp		23.4	22.5	22.8	23.4	23.5	23.9	23.9	xxx	
Old DO		xxx	6.8	6.3	6.2	6.7	6.3	5.8	6.3	
Old pH		xxx	7.9	8.0	7.9	8.1	7.9	7.9	8.0	
Feeding	A.M.	xxx	CP	CP	WR	WR	WR	WR	xxx	
	P.M.	WR	CP	CP	WR	WR	CP	WR	xxx	

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Pimephales promelas (fathead minnow)
Date	1/22/2017	**Test Type**	Chronic Survival
IWC Conc.			

Input

Number of Organisms Exposed or Counted

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	10	10	10	10	10	10
2	10	10	10	10	10	10
3	10	10	10	10	10	10
4	10	10	10	10	10	10

Number of Organisms Surviving or Responding

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	10	10	10	10	10	10
2	9	10	10	10	10	10
3	10	10	10	10	10	9
4	10	10	10	10	10	10

Total Organisms	40	40	40	40	40	40
Total Responding	39	40	40	40	40	39
% Responding	97.5%	100.0%	100.0%	100.0%	100.0%	97.5%

Output

Summary Sheet

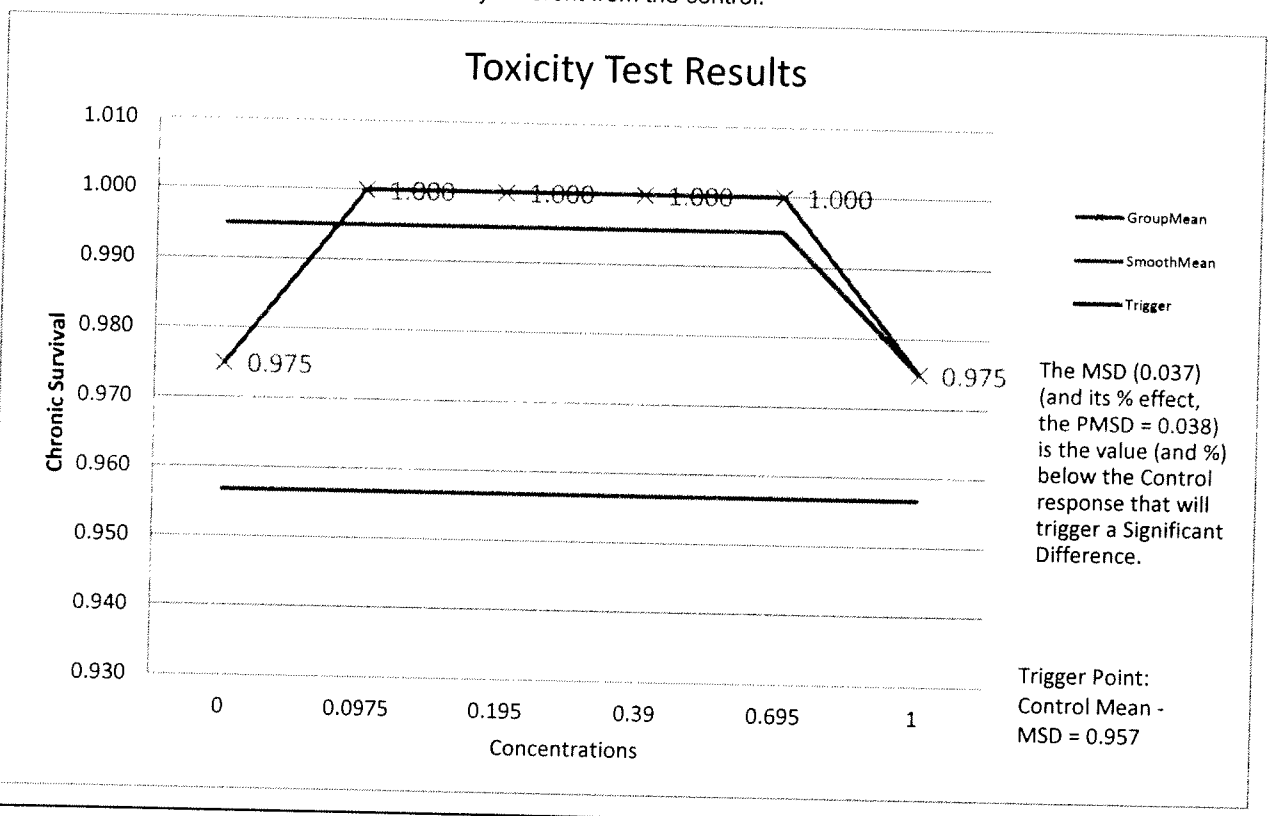
Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	1.371	0.081	0.059	
Statistics are based on the transformed data used for endpoint calculations	0.0975	1.412	0.000	0.000	NS
	0.195	1.412	0.000	0.000	NS
	0.39	1.412	0.000	0.000	NS
	0.695	1.412	0.000	0.000	NS
	1	1.371	0.081	0.059	NS

NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.037	3.8%

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

BENCH SHEET FOR FATHEAD MINNOW INITIAL WEIGHT DATA EPA METHOD 1000.0

LAB ID#: 1709068 Test Start Date: 1/10/17 Drying Temp: 100°C

Weighing Date: 1/11/17 Test End Date: 1/17/17 Drying Time: 24 hours

Location/Client: City of Caldwell WWTP

	Rep No.	Weight of Boat (g)	Boat and Dry Larvae (g)	Dry Weight of Larvae (g)	No. of Larvae	Mean Dry Weight of Larvae (mg)	Average
Initial	I1	1.2879	1.2891	.0012	10	.12mg	0.13mg
	I2	1.2928	1.2940	.0012	10	.12mg	
	I3	1.2912	1.2924	.0012	10	.12mg	
	I4	1.2919	1.2933	.0014	10	.14mg	

Reviewed By: SC

Fathead Minnow Weight Data EPA METHOD 1000.0

LAB ID#: 1700963 Test Start Date: 1/10/17 Drying Temp: 100°C

Weighing Date: 1/18/17 Test End Date: 1/17/17 Drying Time: 24 hours

Location/Client: City of Caldwell CWTP

Conc.	ID No.	Weight of Boat (g)	Weight of Boat and Dry Larvae (g)	Dry Weight of Larvae (g)	Original No. of Larvae	Mean Dry Weight of Larvae (mg)	Avg - Initial = Net Weight Gain
CONTROL	1	1.2810	1.2863	0.0053	10	.53	0.51mg - 0.13mg = 0.38mg
	2	1.2788	1.2837	0.0049		.49	
	3	1.2763	1.2804	0.0041		.41	
	4	1.2706	1.2767	0.0061		.61	
9.75%	x5	1.2948	1.2998	0.0050		.50	0.49mg - 0.13mg = 0.36mg
	x6	1.2645	1.2689	0.0044		.44	
	x7	1.2971	1.3017	0.0046		.46	
	x8	1.2888	1.2945	0.0057		.57	
19.5%	x9	1.2907	1.2956	0.0049		.49	0.50mg - 0.13mg = 0.37mg
	x10	1.2962	1.3007	0.0045		.45	
	x11	1.2977	1.3031	0.0054		.54	
	x12	1.2869	1.2920	0.0051		.51	
39%	x13	1.2949	1.2997	0.0048		.48	0.48mg - 0.13mg = 0.35mg
	x14	1.2980	1.3031	0.0051		.51	
	x15	1.2909	1.2958	0.0049		.49	
	x16	1.2866	1.2909	0.0043		.43	
69.5%	x17	1.2931	1.2976	0.0045		.45	0.49mg - 0.13mg = 0.36mg
	x18	1.2984	1.3038	0.0054		.54	
	x19	1.2938	1.2990	0.0052		.52	
	x20	1.2895	1.2938	0.0043		.43	
100%	x21	1.2914	1.2968	0.0054		.54	0.55mg - 0.13mg = 0.42mg
	x22	1.2954	1.2999	0.0045		.45	
	x23	1.2981	1.3043	0.0062		.62	
	x24	1.2982	1.3040	0.0058		.58	

Reviewed By: SC

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Pimephales promelas (fathead minnow)
Date	1/22/2017	**Test Type**	Growth
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	0.53	0.5	0.49	0.48	0.45	0.54
2	0.49	0.44	0.45	0.51	0.54	0.45
3	0.41	0.46	0.54	0.49	0.52	0.62
4	0.61	0.57	0.51	0.43	0.43	0.58
Mean	0.510	0.493	0.498	0.478	0.485	0.548
Stdev	0.083	0.057	0.038	0.034	0.053	0.073

Output

Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	0.510	0.083	0.163	
	0.0975	0.493	0.057	0.116	NS
	0.195	0.498	0.038	0.076	NS
	0.39	0.478	0.034	0.071	NS
	0.695	0.485	0.053	0.110	NS
	1	0.548	0.073	0.133	NS

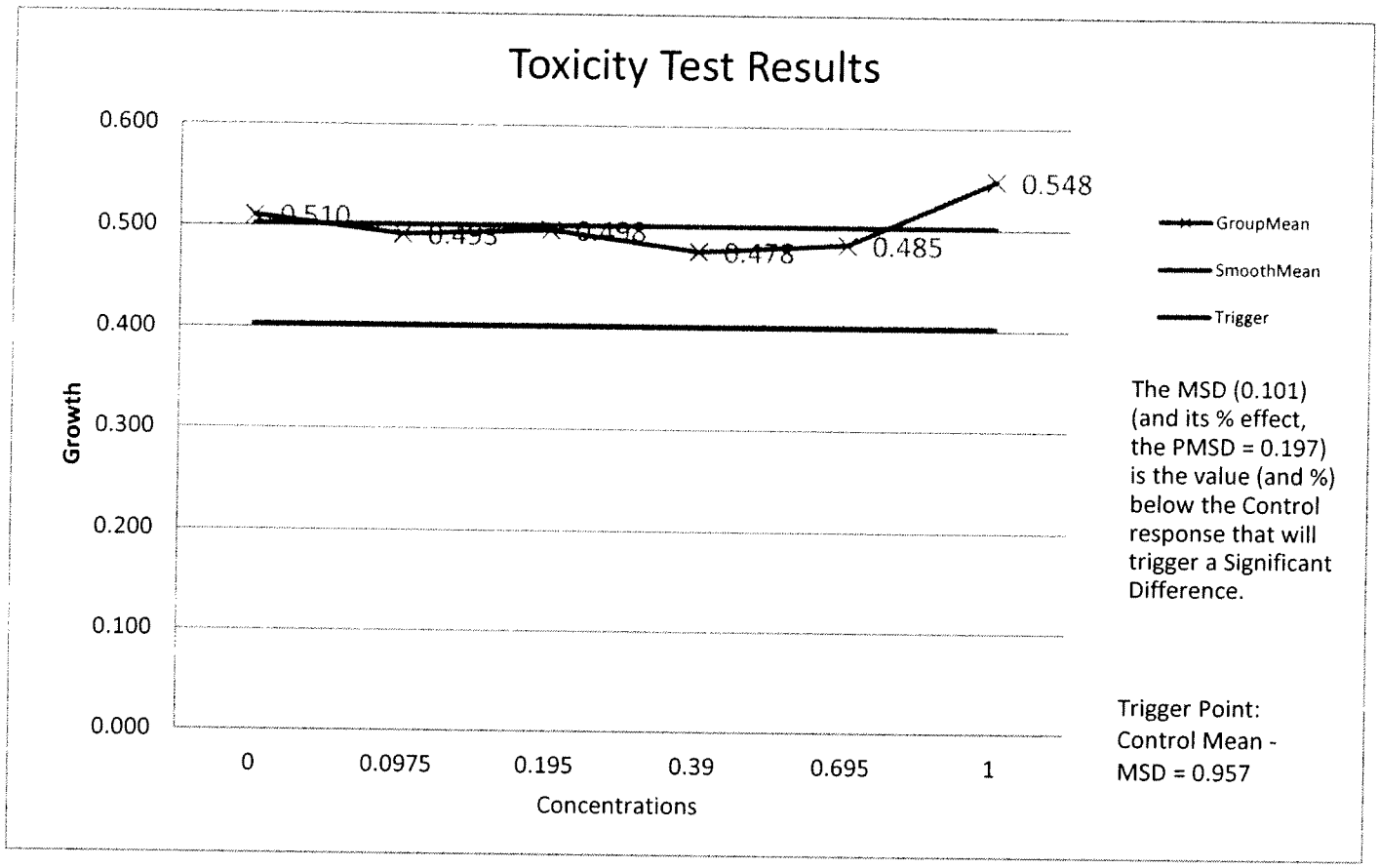
NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.101	19.7%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

BENCH SHEET FOR *S. capicornutum* ALGAL GROWTH TEST.
EPA METHOD 1003.0

1700963

LAB ID# ~~1701543~~cp Analyst: WR/CP
Discharged: Effluent
Description: City of Caldwell WWTP
Lab Id # used to make dilutions: 1701543

Final Report Review: SC
Test Start Date/Time: ~~pH adj~~ 1/17/17, 1600
Test Stop Date/Time: 1/21/17, 1500

Daily pH and Temp.

CONCENTRATION	Day 0		Day 1		Day 2		Day 3		Day 4		Comments
	pH	Temp	pH	Temp	pH	Temp	pH	Temp	pH	Temp	
Control	7.9	23.6	9.6	23.6	10.5	23.7	10.8	24.4	10.7	24.3	
9.75%	7.8	24.1	9.6	23.6	10.7	24.2	10.8	24.1	10.8	24.4	
19.5%	7.8	24.1	9.6	23.8	10.8	24.3	11.0	24.2	10.9	24.6	
39%	7.8	23.9	~~9.4~~ 9.5 LR	24.0	10.7	24.3	10.9	24.0	10.9	24.6	
69.5%	7.8	23.8	9.4	24.2	10.7	24.2	10.9	~~24~~ 23.9	10.9	24.7	
100%	7.7	24.1	9.3	23.2	10.6	24.4	10.7	24.2	10.9	24.8	

BENCH SHEET FOR *S. capicornutum* ALGAL GROWTH TEST **EPA TEST**

METHOD 1003.0

LAB ID# 1700963 ANALYST: CW/KP FINAL REPORT REVIEW: SC

DISCHARGED: Effluent TEST START DATE/TIME: 1/17/17, 1600

DESCRIPTION: City of Caldwell WWTP TEST END DATE/TIME: 1/21/17, 1500

Lab ID# used to make Dilutions: 1701543

Initial Algae Count (cells/mL)

	Random Sample #1	Random Sample #2	Random Sample #3	Random Sample #4	Initial Average
	Absorbance Value: .016 Cells/mL: 52	Absorbance Value: .016 Cells/mL: 52	Absorbance Value: .018 Cells/mL: 58	Absorbance Value: .019 Cells/mL: 61	Absorbance Value: .017 Cells/mL: 56

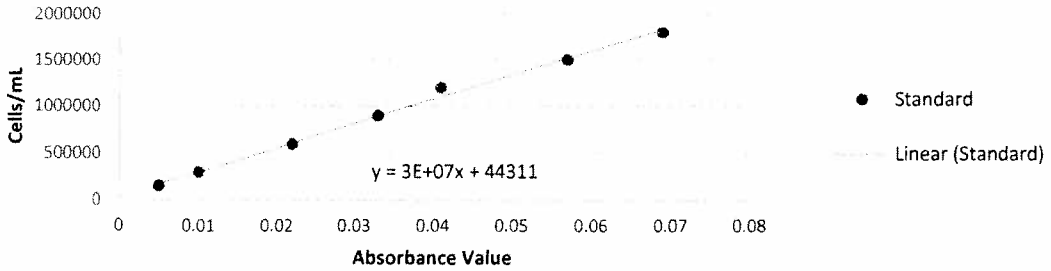
Final Algae Count (cells/mL)

CONCENTRATION	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Average
CONTROL	Absorbance Value: .073 Cells/mL: 223	Absorbance Value: .075 Cells/mL: 2.29	Absorbance Value: .081 Cells/mL: 247	Absorbance Value: .062 Cells/mL: 1.90	Absorbance Value: .073 Cells/mL: 2.23
9.75%	Absorbance Value: .080 Cells/mL: 2.44	Absorbance Value: .085 Cells/mL: 2.59	Absorbance Value: .082 Cells/mL: 2.50	Absorbance Value: .063 Cells/mL: 1.93	Absorbance Value: .078 Cells/mL: 2.37
19.5%	Absorbance Value: .099 Cells/mL: 3.01	Absorbance Value: .100 Cells/mL: 3.04	Absorbance Value: .102 Cells/mL: 3.10	Absorbance Value: .078 Cells/mL: 2.38	Absorbance Value: .095 Cells/mL: 2.89
39%	Absorbance Value: .127 Cells/mL: 3.85	Absorbance Value: .128 Cells/mL: 3.88	Absorbance Value: .126 Cells/mL: 3.82	Absorbance Value: .076 Cells/mL: 2.32	Absorbance Value: .114 Cells/mL: 3.47
69.5%	Absorbance Value: .169 Cells/mL: 5.11	Absorbance Value: .177 Cells/mL: 5.35	Absorbance Value: .179 Cells/mL: 5.41	Absorbance Value: .116 Cells/mL: 3.52	Absorbance Value: .160 Cells/mL: 4.85
100%	Absorbance Value: .237 Cells/mL: 7.15	Absorbance Value: .244 Cells/mL: 7.36	Absorbance Value: .232 Cells/mL: 7.00	Absorbance Value: .138 Cells/mL: 4.18	Absorbance Value: .213 Cells/mL: 6.43

***Cells/mL are shown in millions**

***Absorbance values (AV) obtained from Spectronic 601 spectrophotometer are used to determine cells/mL based on a standardized linear relationship ((3x10^7)(AV) + 44311).**

Selenastrum capricornutum **Conversion Chart**



Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	1700963 City of Caldwell WWTP	**Species**	Selenastrum capricornutum (green algae)
Date	1/22/2017	**Test Type**	Growth
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.0975	0.195	0.39	0.695	1
1	2.23	2.44	3.01	3.85	5.11	7.15
2	2.29	2.59	3.04	3.88	5.35	7.36
3	2.47	2.5	3.1	3.82	5.41	7
4	1.9	1.93	2.38	2.32	3.52	4.18
Mean	2.223	2.365	2.883	3.468	4.848	6.423
Stdev	0.238	0.296	0.337	0.765	0.894	1.502

Output

Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	2.223	0.238	0.107	
	0.0975	2.365	0.296	0.125	NS
	0.195	2.883	0.337	0.117	NS
	0.39	3.468	0.765	0.221	NS
	0.695	4.848	0.894	0.185	NS
	1	6.423	1.502	0.234	NS

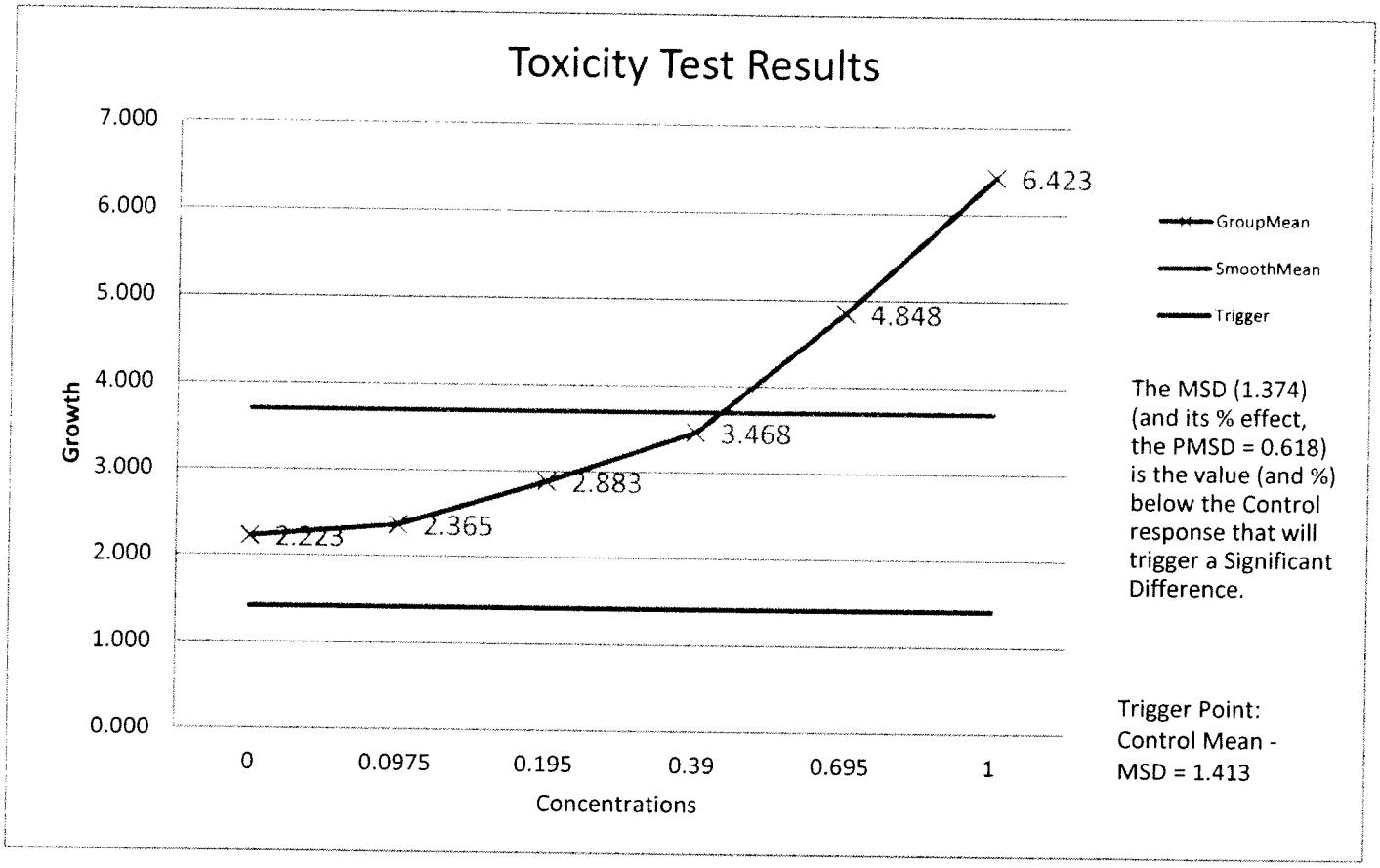
NOEC	LOEC	IC25	95% Confidence Intervals	
1	>1	>1	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
1.374	61.8%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

CLIENT CODE=

CHAIN OF CUSTODY RECORD

*SPC

ANALYTICAL LABS, INC.

1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

CLIENT INFORMATION:	PROJECT INFORMATION:
Project Manager: Salvador Acevedo	Project Name:
Company: CALDWW	PWS Number:
Address: 208 Johnson Ln	Purchase Order Number:
Caldwell ID 83605	Required Due Date:
Phone: 455-3027 Fax:	E-mail Address:
Sampled by: (Please print) Rodger Hawker	Transported by: (Please print) S. Curtis

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	BOD-TSS	TP	E Coli	WETT	LV BOD TSS	NH3, TKN, NO3+NO2, TP, TPO4 low, Cu, TAN, DOC, Hardness, Alkalinity, Conductivity, Dissolved O2, TPO4 low	Remarks:
961	1-10-17	0710	INF-C (2 Bottles)	WATER	✓	✓					FIELD TEMP: 7.0°C
962	1-10-17	0722	FE-G ~~(2 Bottles)~~	15.4°C			✓				
963	1-10-17	0725	FE-C (3 Bottles)				✓				
	1-10-17	0725	FE-C					✓			
	1-10-17	0725	FE-C						✓		
964	1-10-17	0725	FE-C							✓	
	1-10-17	0725	FE-C								
	1-10-17	0725	FE-C							✓	
965	1/19/17	7:39	FE-G			✓					

Invoice to: (If different than above address)

Special Instructions: OPO4 send unfiltered

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature) Rodger Hawker	Rodger Hawker	CALDWW	1-10-17	0825
Received By: (Signature)	Spencer Cates	ALI	1-10-17	1040
Relinquished By: (Signature)	Spencer Cates	ALI	1-10-17	1215
Received By: (Signature)	Tom Saylor	ALI	1/10/17	12:15

SAMPLE RECEIPT Total # of Containers: 12 Chains of Custody Seals Y / N / (NA) Intact: Y / N / (NA) Temperature Received: 5.0°C Condition: Good

REV 2/19/12

WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 1:13:05 PM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1700963

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: R. HAWKER
Submitted By: S. CURTIS

Source of Sample:
FE-C BIO DAY 1

Time of Collection: 7:25
Date of Collection: 1/10/2017
Date Received: 1/10/2017
Report Date: 1/23/2017

Field Temp: Temp Rcvd in Lab: 5.0 °C

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ceriodaphnia dubia		*			EPA 1002.0	1/23/2017	WR
Pimephales promela		*			EPA 1000.0	1/23/2017	WR
Selenastrum		*			EPA 1003.0	1/23/2017	WR
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/14/2017	CJS
Alkalinity		166	mg/L		EPA 310.1	1/13/2017	CJS
Chlorine Residual, Cl2		<0.10	mg/L	0.10	EPA 330.5	1/10/2017	NC
Conductivity		703	umhos	2	EPA 120.1	1/10/2017	NC
Hardness		141	mg/L	5.0	SM 2340	1/13/2017	CJS
pH		7.3	S.U.		SM 4500-H B	1/10/2017	NC

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

CLIENT CODE=

CHAIN OF CUSTODY RECORD

*SPC

CLIENT INFORMATION:

Project Manager: Salvador Arreola
Company: CALDWW
Address: 208 Johnson LN
Caldwell ID 83605
Phone: 455-3027
Fax:
Sampled by: (Please print) Rodger Hawker
Transported by: (Please print) C. Pate

PROJECT INFORMATION:

Project Name:
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address:

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	CNT	BOD	TSS	LV BOD	TSS	NH_3	TP	WET	E-Coli	Remarks:
1340	1-11-17	1643	INF-C	WATER	✓									Field temp: 7.1°C
1341	↓	1638	FE-C	↓	✓									
1342	1-12-17	0722	INF-C	WATER		✓								
1344		0747	FE-C (3 Bottles)					~~✓~~	~~✓~~	✓				
1343		0747	FE-C (3 Bottles WET)					~~✓~~	~~✓~~		✓			
1345	↓	0749	FE-G	↓								✓		

Invoice to: *(If different than above address)*

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature) Rodger Hawker	Rodger Hawker	CALDWW	1-12-17	0839
Received By: (Signature) C R	Chris Pate	A.L.I.	1-12-17	1015
Relinquished By: (Signature) C R	Chris Pate	A.L.I.	1-12-17	1135
Received By: (Signature)	Tom Saylor	ALI	1/12/17	1135

SAMPLE RECEIPT Total # of Containers: 10 Chains of Custody Seals Y / N / (NA) Intact: Y / N / (NA) Temperature Received: 5.3°C Condition: Good

REV. 2/19/12

WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/17/2017 12:12:26 PM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1701343

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: R. HAWKER
Submitted By: C. PATE

Source of Sample:
FE-C BIO DAY 2

Time of Collection: 7:47
Date of Collection: 1/12/2017
Date Received: 1/12/2017
Report Date: 1/17/2017

Field Temp: Temp Rcvd in Lab: 5.3 °C

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		0.06	mg/L	0.04	EPA 350.1	1/14/2017	CJS
Alkalinity		169	mg/L		EPA 310.1	1/13/2017	CJS
Chlorine Residual, Cl2		<0.10	mg/L	0.10	EPA 330.5	1/12/2017	RME
Conductivity		744	umhos	2	EPA 120.1	1/12/2017	NC
Hardness		124	mg/L	5.0	SM 2340	1/13/2017	CJS
pH		7.3	S.U.		SM 4500-H B	1/12/2017	RME

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

CLIENT CODE=

CHAIN OF CUSTODY RECORD

*SPC

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

CLIENT INFORMATION:

Project Manager: SALVADOR ARREOLA
Company: CALDWW
Address: 208 JOHNSON LN
CALDWELL ID 83605
Phone: 455-3027
Fax:
Sampled by: (Please print) Rodger Hawker

PROJECT INFORMATION:

Project Name:
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address:
Transported by: (Please print) C. Pate

TESTS REQUESTED

CNT PK
COFF WET

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix										Remarks:
1541	1-12-17	1638	INF-C	WATER	✓									Field temp: 6.2°C
1542		1645	FE-C	↓	✓									
1543	1-13-17	0757	FE-C		✓									

Invoice to: (If different than above address)

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature) Rodger Hawker	Rodger Hawker	CALDWW	1-13-17	0840
Received By: (Signature) C P	Chris Pate	A.L.I	1-13-17	1010
Relinquished By: (Signature) C P	Chris Pate	A.L.I.	1-13-17	1100
Received By: (Signature)				

SAMPLE RECEIPT Total # of Containers: 6 Chains of Custody Seals Y / N / (NA) Intact: Y / N / (NA) Temperature Received: 3.7°C Condition: Good

REV. 2/19/12

WHITE - STAYS WITH SAMPLE (S) YELLOW - LAB PINK - SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 11:23:15 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1701543

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: R. HAWKER
Submitted By: C. PATE

Source of Sample:
FE-C BIO DAY 3

Time of Collection: 7:57
Date of Collection: 1/13/2017
Date Received: 1/13/2017
Report Date: 1/23/2017

Field Temp: Temp Rcvd in Lab: 3.7 °C

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/14/2017	CJS
Alkalinity		174	mg/L		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Cl2		<0.10	mg/L	0.10	EPA 330.5	1/13/2017	JD
Conductivity		795	umhos	2	EPA 120.1	1/13/2017	JD
Hardness		149	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		7.2	S.U.		SM 4500-H B	1/13/2017	JD

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

CLIENT CODE=

SPC

CHAIN OF CUSTODY RECORD

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

CLIENT INFORMATION:	PROJECT INFORMATION:
Project Manager: SALVADOR ARREOLA	Project Name:
Company: CALDWW	PWS Number:
Address: 208 JOHNSON LN	Purchase Order Number:
CALDWELL ID 83605	Required Due Date:
Phone: 455-3027 Fax:	E-mail Address:
Sampled by: (Please print) Rodger Hawker	Transported by: (Please print) S. Curtis

TESTS REQUESTED: WET

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	Remarks:
1740	1-16-17	0710	FE-C Bio Day 4	WATER	FIELD TEMP: 3.8°C

Invoice to: (If different than above address)

Special Instructions: Day 4 due to late delivery of fish - 1/16/17 DY tester

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: (Signature) Rodger Hawker	Rodger Hawker	CALDWW	1-16-17	0800
Received By: (Signature)	SPENCER CURTIS	ALI	1-16-17	1021
Relinquished By: (Signature)	SPENCER CURTIS	ALI	1-16-17	1138
Received By: (Signature)	TOM SAYLOR	ALI	1/16/17	11:38

SAMPLE RECEIPT Total # of Containers: 3 Chains of Custody Seals Y / N / NA Intact: Y / N / NA Temperature Received: 2.6°C Condition: Good

REV 2/19/12

WHITE STAYS WITH SAMPLE(S) YELLOW LAB PINK SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 7:26:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1701740

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: R. HAWKER
Submitted By: S. CURTIS

Source of Sample:
FE-C BIO MONITORING DAY 4

Time of Collection: 7:10
Date of Collection: 1/16/2017
Date Received: 1/16/2017
Report Date: 1/23/2017

Field Temp: 3.8 °C Temp Rcvd in Lab: 2.6 °C

PWS#:
PWS Name:

DAY 4 DUE TO LATE DELIVERY OF TESTER FISH

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/20/2017	CJS
Alkalinity		178	mg/L CaCO3		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Cl2		<0.10	mg/L	0.10	EPA 330.5	1/16/2017	DS
Conductivity		737	umhos	2	EPA 120.1	1/17/2017	CJS
Hardness		150	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		7.1	S.U.		SM 4500-H B	1/16/2017	DS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions about this report, or any future analytical needs, please contact your client manager:
James Hibbs

CLIENT CODE=

CHAIN OF CUSTODY RECORD

*SPC

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

CLIENT INFORMATION:
Project Manager: Salvador Arreola
Company: CALD WW
Address: 208 Johnson LN
Caldwell ID 83605
Phone: 455-3027
Fax:
Sampled by: (Please print) Rodger Hawker
Transported by: (Please print) C. Pate

PROJECT INFORMATION:
Project Name:
PWS Number:
Purchase Order Number:
Required Due Date:
E-mail Address:

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	CNT per WET	WET								Remarks:
1541	1-12-17	1638	INF-C	WATER	✓									Field temp: 6.2°C
1542		1645	FE-C	↓	✓									
1543	1-13-17	0757	FE-C	↓		✓								

Invoice to: (If different than above address)

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure, their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstances will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

Relinquished By: (Signature) Rodger Hawker	Print Name: Rodger Hawker	Company: CALD WW	Date: 1-13-17	Time: 0840
Received By: (Signature) C P	Print Name: Chris Pate	Company: A.L.I	Date: 1-13-17	Time: 1010
Relinquished By: (Signature) C P	Print Name: Chris Pate	Company: A.L.I.	Date: 1-13-17	Time: 1100
Received By: (Signature)	Print Name:	Company:	Date:	Time:

SAMPLE RECEIPT Total # of Containers: 6 Chains of Custody Seals Y / N / NA Intact: Y / N / NA Temperature Received: 3.7°C Condition: Good

REV 2/19/12 WHITE: STAYS WITH SAMPLE (S) YELLOW: LAB PINK: SAMPLER

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/24/2017 11:12:19 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1702760

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By:
Submitted By:

Source of Sample:
ADDN. TESTING FOR LAB ID 1700963 CONTROL

Time of Collection: 15:00
Date of Collection: 1/17/2017
Date Received: 1/17/2017
Report Date: 1/24/2017

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/20/2017	CJS
Alkalinity		100	mg/L CaCO3		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Total		<0.10	mg/L	0.10	EPA 330.5	1/17/2017	NC
Conductivity		281	umhos	2	EPA 120.1	1/17/2017	NC
Hardness		109	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		6.8	S.U.		EPA 150.1	1/17/2017	JMS

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.
If you have any questions about this report, or any future analytical needs, please contact your client manager:
James Hibbs

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 7:26:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1702053

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: W. REYNOLDS
Submitted By: W. REYNOLDS

Source of Sample:
ADDN. TESTING FOR LAB ID 170963 9.75%

Time of Collection: 15:00
Date of Collection: 1/17/2017
Date Received: 1/17/2017
Report Date: 1/23/2017

Field Temp:

Temp Rcvd in Lab:

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/20/2017	CJS
Alkalinity		98.6	mg/L CaCO3		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Total		<0.10	mg/L	0.10	EPA 330.5	1/17/2017	JD
Conductivity		310	umhos	2	EPA 120.1	1/17/2017	JD
Hardness		115	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		6.8	S.U.		EPA 150.1	1/17/2017	JD

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 7:26:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1702054

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: W. REYNOLDS
Submitted By: W. REYNOLDS

Source of Sample:
ADDN. TESTING FOR LAB ID 170963 39%

Time of Collection: 15:00
Date of Collection: 1/17/2017
Date Received: 1/17/2017
Report Date: 1/23/2017

Field Temp:

Temp Rcvd in Lab:

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		<0.04	mg/L	0.04	EPA 350.1	1/20/2017	CJS
Alkalinity		131	mg/L CaCO3		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Total		<0.10	mg/L	0.10	EPA 330.5	1/17/2017	JD
Conductivity		491	umhos	2	EPA 120.1	1/17/2017	JD
Hardness		133	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		6.8	S.U.		EPA 150.1	1/17/2017	JD

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 1/23/2017 7:26:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1702055

Attn: SALVADOR ARREOLA
CALDWELL WASTEWATER
PO BOX 1179
CALDWELL, ID 83607

Collected By: W. REYNOLDS
Submitted By: W. REYNOLDS

Source of Sample:
ADDN. TESTING FOR LAB ID 170963 100%

Time of Collection: 15:00
Date of Collection: 1/17/2017
Date Received: 1/17/2017
Report Date: 1/23/2017

Field Temp:
Temp Rcvd in Lab:

PWS#:
PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Ammonia Direct (as N)		0.04	mg/L	0.04	EPA 350.1	1/20/2017	CJS
Alkalinity		190	mg/L CaCO3		EPA 310.1	1/19/2017	CJS
Chlorine Residual, Total		<0.10	mg/L	0.10	EPA 330.5	1/17/2017	JD
Conductivity		793	umhos	2	EPA 120.1	1/17/2017	JD
Hardness		170	mg/L	5.0	SM 2340	1/19/2017	CJS
pH		7.1	S.U.		EPA 150.1	1/17/2017	JD

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Table 3: Total Phosphorus Interim Effluent Limits and Compliance Schedule Dates		
6	January 31, 2024	Complete Bidding Deliverable: The permittee will provide DEQ and EPA with written notice that the Bid has been awarded.
7	April 30, 2024	Start Construction Deliverable: The permittee will provide DEQ and EPA with a copy of the Notice to Proceed with construction.
8	April 30, 2026	Complete Construction Deliverable: The permittee will provide DEQ and EPA with written notice that the construction is completed.
9	September 30, 2026	Process Optimization and Achieve Final Effluent Limitation Deliverable: The permittee must achieve compliance with the final effluent limitations and provide DEQ and EPA with written notice of compliance with final effluent limitations.
Notes: 1. The annual average total phosphorus concentration and load must be calculated as the sum of all daily discharges measured for total phosphorus during a calendar year, divided by the number of daily discharges measured for total phosphorus during that year. 2. The annual average total phosphorus concentration and load must be reported on the December DMR.		

D. Whole Effluent Toxicity Testing Requirements

The permittee must conduct chronic toxicity tests on effluent samples from outfall 001. Testing must be conducted in accordance with subsections 1 through 7, below.

1. Toxicity testing must be conducted on 24-hour composite samples of effluent. In addition, a split of each sample collected must be analyzed for the chemical and physical parameters required in Part I.B, above, with a required effluent sampling frequency of once per month or more frequently, using the sample type required in Part I.B. For parameters for which grab samples are required in Part I.B, grab samples must be taken during the same 24-hour period as the 24-hour composite sample used for the toxicity tests. When the timing of sample collection coincides with that of the sampling required in Part I.B, analysis of the split sample will fulfill the requirements of Part I.B as well.
2. Chronic Test Species and Methods
   a) For outfall 001, chronic tests must be conducted once per quarter. Quarters are defined as January – March, April through June, July – September, and October – December.
   b) The permittee must conduct short-term tests with the water flea, *Ceriodaphnia dubia* (survival and reproduction test), the fathead minnow, *Pimephales promelas* (larval survival and growth test), and a green alga, *Selenastrum capricornutum* (growth test) for the first three suites of tests. After this screening period, monitoring must be conducted using the most sensitive species, which is defined below.

(i) The most sensitive species is the species which, during the screening period, produces the greatest maximum toxicity result in chronic toxic units (TU_c), which is defined in Part I.D.2.d, below.

(ii) If all three species produce the identical maximum toxicity result (including no toxicity in 100% effluent) the permittee must use Ceriodaphnia dubia for subsequent tests.

(iii) If two species produce the identical maximum toxicity result, which is greater than 1.0 TU_c and also greater than the maximum toxicity result of the third species, the permittee may use either of the two species producing the greater maximum toxicity result for subsequent tests.

c) The presence of chronic toxicity must be determined as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA/821-R-02-013, October 2002.

d) Results must be reported in TU_c (chronic toxic units), which is defined as follows:

(i) For survival endpoints, $TU_c = 100/NOEC$.

(ii) For all other test endpoints, $TU_c = 100/IC_{25}$.

(iii) IC_{25} means "25% inhibition concentration." The IC_{25} is a point estimate of the toxicant concentration, expressed in percent effluent, that causes a 25% reduction in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).

(iv) NOEC means "no observed effect concentration." The NOEC is the highest concentration of toxicant, expressed in percent effluent, to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

3. Quality Assurance

a) The toxicity testing on each organism must include a series of five test dilutions and a control. The dilution series must include the receiving water concentration (RWC), which is the dilution associated with the average monthly whole effluent toxicity limits, two dilutions above the RWC, and two dilutions below the RWC. The RWCs are:

(i) 62% effluent for April – June

(ii) 39% effluent for July – March

b) All quality assurance criteria and statistical analyses used for chronic tests and reference toxicant tests must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to*

Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002, and individual test protocols.

c) In addition to those quality assurance measures specified in the methodology, the following quality assurance procedures must be followed:

(i) If organisms are not cultured in-house, concurrent testing with reference toxicants must be conducted. If organisms are cultured in-house, monthly reference toxicant testing is sufficient. Reference toxicant tests must be conducted using the same test conditions as the effluent toxicity tests.

(ii) If either of the reference toxicant tests or the effluent tests do not meet all test acceptability criteria as specified in the test methods manual, the permittee must re-sample and re-test within 14 days of receipt of the test results.

(iii) Control and dilution water must be receiving water or lab water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control, using culture water must also be used. Receiving water may be used as control and dilution water upon notification of EPA and IDEQ. In no case shall water that has not met test acceptability criteria be used for either dilution or control.

4. Reporting

a) The permittee must submit the results of the toxicity tests with the discharge monitoring reports (DMRs). Results must be reported on the DMRs for the last month of the quarter in which the samples were taken.

b) The report of toxicity test results must include all relevant information outlined in Section 10, Report Preparation, of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA/821-R-02-013, October 2002. In addition to toxicity test results, the permittee must report: dates of sample collection and initiation of each test; flow rate at the time of sample collection; and the results of the monitoring required in Part I.B of this permit, for parameters with a required monitoring frequency of once per month or more frequently.

5. Preparation of initial investigation toxicity reduction evaluation (TRE) workplan: By January 31, 2017, the permittee must submit to EPA a copy of the permittee's initial investigation TRE workplan. This plan shall describe the steps the permittee intends to follow in the event that chronic toxicity is detected above the applicable effluent limits in Table 1 of this permit, and must include at a minimum:

a) A description of the investigation and evaluation techniques that would be used to identify potential causes/sources of toxicity, effluent variability, treatment system efficiency;

b) A description of the facility's method of maximizing in-house treatment efficiency, good housekeeping practices, and a list of all chemicals used in operation of the facility; and

c) If a toxicity identification evaluation (TIE) is necessary, who will conduct it (i.e., in-house or other).

d) The initial investigation TRE workplan must be sent to the following address:

US EPA Region 10
Attn: NPDES WET Coordinator
1200 Sixth Avenue
Suite 900 OWW-191
Seattle, WA 98101-3140

6. Accelerated testing: If chronic toxicity is detected above the applicable average monthly limit for whole effluent toxicity in Part I.B or I.C of this permit, the permittee must comply with the following:

a) The permittee must conduct six more bi-weekly (every two weeks) chronic toxicity tests, over a 12-week period. This accelerated testing shall be initiated within 10 calendar days of receipt of the test results indicating the initial exceedance.

b) The permittee must notify EPA of the exceedance in writing at the address in Part I.C.5.d, above, within 5 calendar days of receipt of the test results indicating the exceedance. The notification must include the following information:

(i) A status report on any actions required by the permit, with a schedule for actions not yet completed.

(ii) A description of any additional actions the permittee has taken or will take to investigate and correct the cause(s) of the toxicity.

(iii) Where no actions have been taken, a discussion of the reasons for not taking action.

c) If none of the six accelerated chronic toxicity tests required under Part I.C.6.a are above the applicable average monthly limit in Part I.B or I.C of this permit, the permittee may return to the regular chronic toxicity testing cycle specified in Part I.D.2.a.

d) If any of the six accelerated chronic toxicity tests required under Part I.C.6.a are above the applicable average monthly limit in Part I.B or I.C of this permit, then the permittee must implement the initial investigation TRE workplan as described in Part I.D.7.

7. Implementation of Initial Investigation TRE Workplan

a) The permittee must implement the initial investigation TRE workplan within 48 hours of the permittee's receipt of the accelerated toxicity test result demonstrating an exceedance of the applicable average monthly limit in Part I.B or I.C of this permit.

(i) If implementation of the initial investigation workplan clearly identifies the source of toxicity to the satisfaction of EPA (e.g., a temporary plant upset), the permittee may return to the regular chronic toxicity testing cycle specified in Part I.D.2.a.

(ii) If implementation of the initial investigation workplan does not clearly identify the source of toxicity to the satisfaction of EPA, then the permittee must begin implementation of further toxicity reduction evaluation (TRE) requirements in part I.D.8 below.

8. Detailed TRE/TIE

a) If implementation of the initial investigation workplan does not clearly identify the source of toxicity to the satisfaction of EPA, then, in accordance with the permittee's initial investigation workplan and EPA manual EPA 833-B-99-002 (*Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*), the permittee must develop as expeditiously as possible a more detailed TRE workplan, which includes:

(i) Further actions to investigate and identify the cause of toxicity;

(ii) Actions the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and

(iii) A schedule for these actions.

b) The permittee may initiate a TIE as part of the overall TRE process described in the EPA acute and chronic TIE manuals EPA/600/6-91/005F (Phase I), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III).

c) If the detailed TRE/TIE clearly identifies the source of toxicity to the satisfaction of EPA, the permittee may return to the regular chronic toxicity testing cycle specified in Part I.D.2.a.

9. Inconclusive TRE/TIE

a) If the detailed TRE described in Part I.D.8 is inconclusive, the permittee must conduct six bi-weekly (every two weeks) chronic toxicity tests, over a 12-week period. This accelerated testing shall be initiated within 10 calendar days of completing the detailed TRE/TIE.

b) If none of the six accelerated chronic toxicity tests required under Part I.D.9.a exceed the applicable average monthly limit in Part I.B or I.C of this permit, the permittee may return to the regular chronic toxicity testing cycle specified in Part I.D.2.a.

c) If any of the six accelerated chronic toxicity tests required under Part I.D.9.a exceed the applicable chronic toxicity trigger in Part I.D.6 of this permit, then the permittee must repeat the TRE/TIE process described in Part I.D.8.

E. Surface Water Monitoring

The permittee must conduct surface water monitoring. The program must meet the following requirements:

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

YTC TOTAL SOLIDS MEASUREMENT

(Method from EPA/505/8-89-002a)

YTC Process Date: 12/21/2016: Best if used by 3/31/2017
Average Total Solids: 1710 mg/l

Ingredient Lot Numbers

Pines International® Wheat Grass: COCDW12S50; Zeigler Finfish Starter #1 (Lot 10/19/2016); Fleischmanns Yeast: G-3

Analyzed Metals	Report Limits	Results (mg/L)
Aluminum	0.03	0.08
Arsenic	0.001	U
Cadmium	0.001	U
Chromium	0.005	U
Copper	0.05	0.033
Iron	0.02	0.24
Lead	0.001	U
Mercury	0.001	U
Nickel	0.005	U
Silver	0.001	U
Zinc	0.01	0.14

EPA Required Toxic Metals and Pesticide Analyses*

Compounds	Report Limits	Results (ug/L)
Aldrin	0.5	U
alpha-BHC	0.5	U
beta-BHC	0.5	U
delta-BHC	0.5	U
gamma-BHC (Lindane)	0.5	U
alpha-Chlordane	0.5	U
gamma-Chlordane	0.5	U
4,4' – DDD	0.5	U
4.4' – DDE	0.5	U
4.4' –DDT	0.5	U
Dieldrin	0.5	U
Endosulfan I	0.5	U
Endosulfan II	0.5	U
Endosulfan sulfate	0.5	U
Endrin	0.5	U
Endrin aldehyde	0.5	U
Endrin ketone	0.5	U
Heptachlor	0.8	U
Heptachlor epoxide	0.5	U
Methozychlor	0.5	U
Chlordane (technical)	5.0	U
Toxaphene	25	U
Aroclor-1016	5.0	U
Aroclor-1221	5.0	U
Aroclor-1232	5.0	U
Aroclor-1242	5.0	U
Aroclor-1248	5.0	U
Aroclor-1254	5.0	U
Aroclor-1260	5.0	U
Aroclor-1262	5.0	U
Aroclor-1268	5.0	U

U – Indicates compound was analyzed for but not detected.
*Testing performed by Energy Labs, Billings, Montana

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Algae Preparation History

DATE: 12/27/2016

SPECIES: *Raphidocelis subcapitata**

INOCULATION DATE: 12/13/2016

HARVEST DATE: 12/19/2016

CONCENTRATION DATE: 12/21/2016

CELL COUNT (/ml): 3.0×10^7 cells/ml

Comments:

* Formerly known as *Psuedokirschneriella subcapitata* and *Selenastrum capricornutum*

** All concentrated algae diluted to proper cell count with reconstituted moderately hard DI water.

Supervisor

Ceriodaphnia dubia Stock Culture Log Month/Year: January 2017

Start Date: 1/3/17 End Date: 1/12/17 Board#: X1

Trans. Date	1	2	3	4	5	6	7	8	9	10	Time
1/3 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1/4 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1020
1/5 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1300
1/6 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1405
1/7 4	1/6	1/6	1/7	1/7	1/6	1/6	1/6	1/7	1/8	1/6	1300
1/8 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1340
1/9 6	2/15	2/12	2/16	2/9	2/13	2/13	2/15	2/9	2/15	2/14	1310
1/10 7	3/20	3/3	3/22	3/21	3/23	3/19	3/21	3/21	3/22	3/21	1335

Survival > 80%: 4 yes/no Average offspring per female > 20: yes/no

Start Date: 1/3/17 End Date: 1/12/17 Board#: X2

Trans.	1	2	3	4	5	6	7	8	9	10	Time
1/3 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1/4 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1025
1/5 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1305
1/6 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1410
1/7 4	1/6	1/6	1/7	1/6	1/7	1/6	1/5	1/6	1/8	1/7	1310
1/8 5	2/10	2/13	✓	✓	✓	✓	✓	✓	✓	✓	1345
1/9 6	3/4	✓	2/13	2/14	2/13	2/13	2/13	2/13	2/16	2/12	1315
1/10 7	3/16	3/24	3/19	3/23	3/18	3/22	3/21	3/17	3/20	3/20	1350

Survival > 80%: yes/no Average offspring per female > 20: yes/no

Start Date: 1/3/17 End Date: 1/12/17 Board#: X3

Trans.	1	2	3	4	5	6	7	8	9	10	Time
1/3 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1/4 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1030
1/5 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	130
1/6 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1415
1/7 4	1/6	1/7	1/7	1/6	1/6	1/6	1/6	1/7	1/6	1/7	1320
1/8 5	2/17	2/14	✓	✓	✓	✓	✓	✓	✓	✓	1350
1/9 6	✓	✓	2/14	2/14	2/11	2/12	2/11	2/12	2/17	2/17	1320
1/10 7	3/22	3/21	3/21	3/22	3/18	3/21	3/20	3/23	3/25	3/24	1405

Survival > 80%: yes/no Average offspring per female > 20: yes/no

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 1/11/2017

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 1/11/2017

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Current	Range
TEMPERATURE:	22°C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	122 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	90 mg/l	--
pH:	8.30	--

Comments:

Facility Supervisor

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Algae Preparation History

DATE: 1/16/2017

SPECIES: *Raphidocelis subcapitata**

INOCULATION DATE: 1/3/2017

HARVEST DATE: 1/9/2017

CONCENTRATION DATE: 1/11/2017

CELL COUNT (/ml): 3.0×10^{7} cells/ml

Comments:

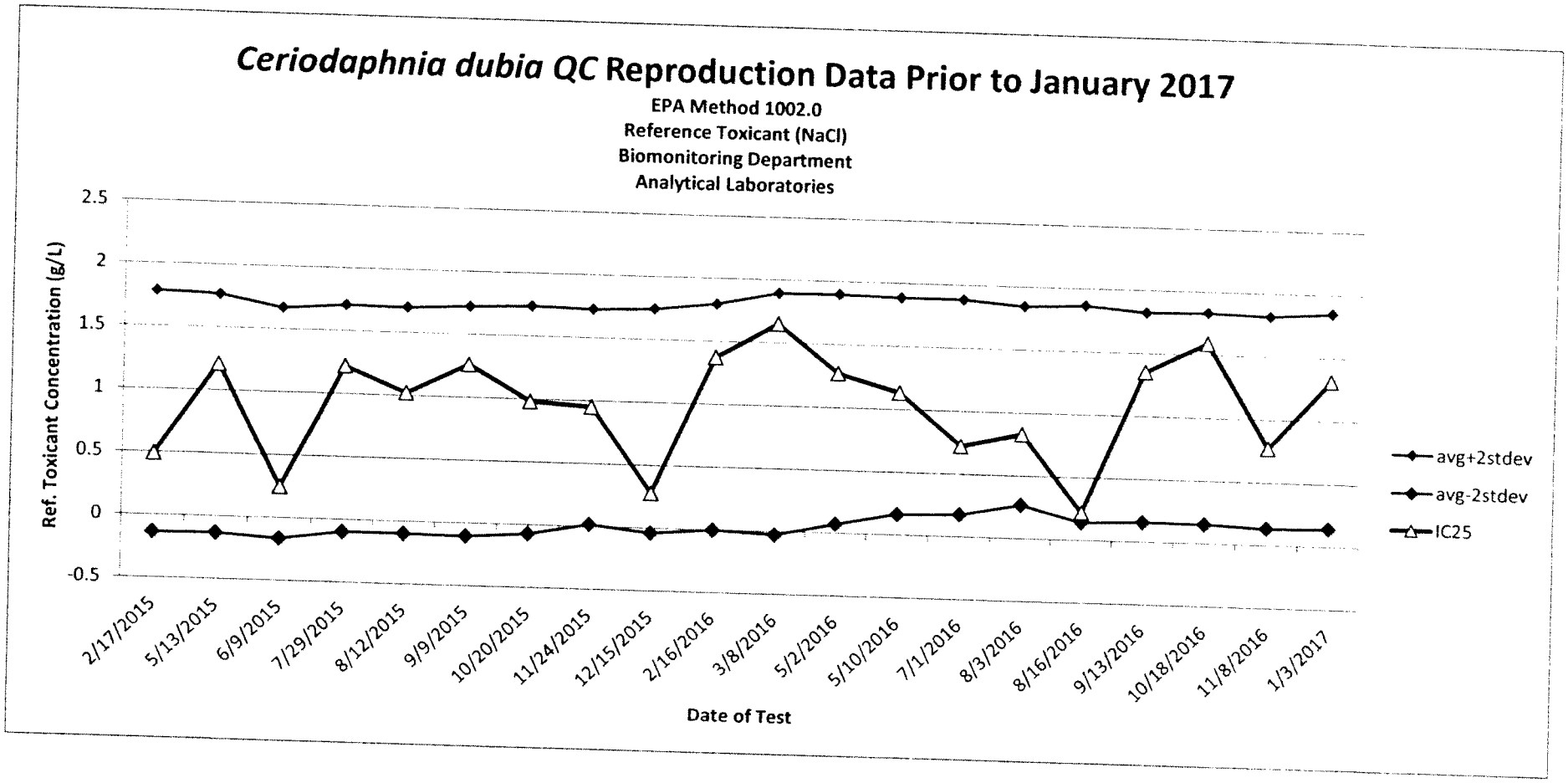
* Formerly known as *Pseudokirschneriella subcapitata* and *Selenastrum capricornutum*

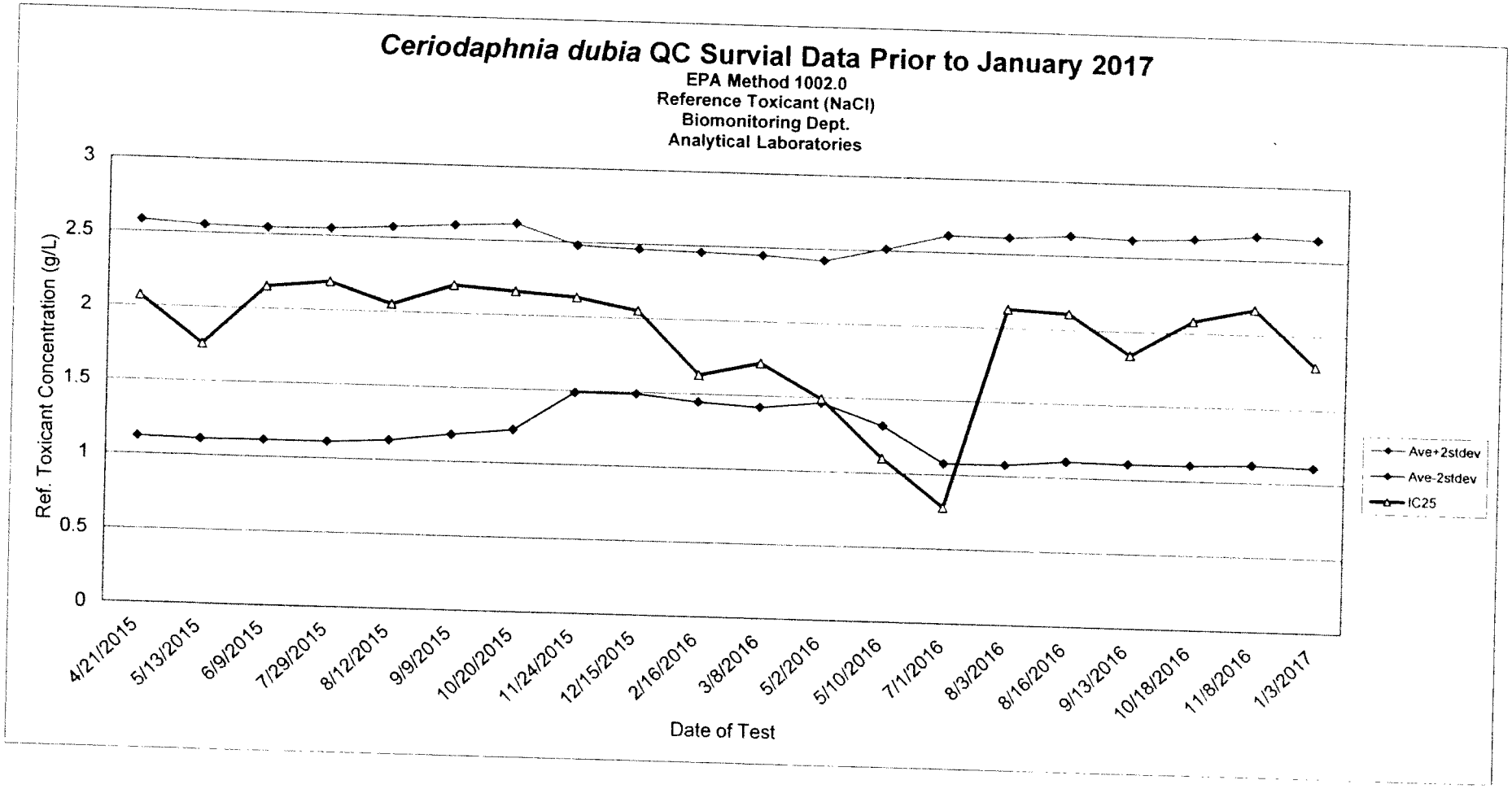
** All concentrated algae diluted to proper cell count with reconstituted moderately hard DI water.

Supervisor

Literature Cited

1. Short-Term methods for Estimating the Chronic Toxicity of Effluents and receiving Waters to Freshwater Organisms, Fourth Edition. October 2002. EPA-821-R-02-013.
2. Methods for Measuring the Chronic Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-85/013, US EPA.
3. Standard Methods for the Examination of Water and Wastewater, 19 Edition, 1995, APHA, AWWA, WPCF.
4. Handbook for Analytical Quality Control in Water and Wastewater Laboratories, Environmental Monitoring and Support Laboratory, Cincinnati, EPA/600/4-79/019, US EPA


Ceriodaphnia dubia QC Reproduction Data Prior to January 2017
EPA Method 1002.0
Reference Toxicant (NaCl)
Biomonitoring Department
Analytical Laboratories
Ref. Toxicant Concentration (g/L)
2.5
2
1.5
1
0.5
0
-0.5
2/17/2015
5/13/2015
6/9/2015
7/29/2015
8/12/2015
9/9/2015
10/20/2015
11/24/2015
12/15/2015
2/16/2016
3/8/2016
5/2/2016
5/10/2016
7/1/2016
8/3/2016
8/16/2016
9/13/2016
10/18/2016
11/8/2016
1/3/2017
Date of Test
avg+2stdev
avg-2stdev
IC25


Ceriodaphnia dubia QC Survial Data Prior to January 2017
EPA Method 1002.0
Reference Toxicant (NaCl)
Biomonitoring Dept.
Analytical Laboratories
Ref. Toxicant Concentration (g/L)
3
2.5
2
1.5
1
0.5
0
4/21/2015
5/13/2015
6/9/2015
7/29/2015
8/12/2015
9/9/2015
10/20/2015
11/24/2015
12/15/2015
2/16/2016
3/8/2016
5/2/2016
5/10/2016
7/1/2016
8/3/2016
8/16/2016
9/13/2016
10/18/2016
11/8/2016
1/3/2017
Date of Test
Ave+2stdev
Ave-2stdev
IC25

BENCH SHEET FOR QC CERIODAPHNIA SURVIVAL/REPRODUCTION TEST.

TEST MONTH Dec 2016 Analyst: WR, CP

Test Start Date/Time: 12/13/16 Test Stop Date/Time: 12/20/16, 1130

Conc. **CONTROL**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O.	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.7	XXX	XXX	22.6
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.8	7.6	7.6	7.7	23.0
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.7	8.0	7.8	22.0
4	1/6	1/9	1/7	1/7	1/4	1/9	1/7	1/9	1/8	1/8	74	7.82	7.7	7.6	8.0	22.7
5	✓	2/14	✓	2/11	✓	✓	✓	2/16	✓	✓	41	8.0	8.0	7.5	8.1	23.0
6	2/14	✓	2/14	✓	2/15	2/16	2/15	✓	2/15	2/17	106	8.2	8.1	8.2	8.1	22.3
7	3/20	3/28	3/22	3/19	3/24	3/21	3/17	3/23	✓	3/23	192	7.8	~~8.1~~	7.9	8.2	22.1
Total	40	46	43	37	43	46	39	48	23	48	413			7.8	7.8	

Conc. **0.50 g/L**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.8	XXX	XXX	22.6
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.9	7.9	7.6	7.9	22.9
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.9	7.9	7.8	22.5
4	1/6	1/7	1/6	1/8	1/7	1/8	1/7	1/9	✓	1/8	66	7.8	7.8	7.7	8.1	22.8
5	✓	2/16	✓	✓	✓	✓	✓	2/17	1/6	✓	39	7.7	8.1	7.5	8.1	23.2
6	2/15	✓	2/14	2/12	2/13	2/18	2/15	✓	2/12	2/16	115	7.7	8.0	7.6	8.1	22.3
7	3/20	3/23	3/19	3/24	3/21	3/21	3/17	3/22	✓	3/23	190	8.1	8.1	7.8	8.2	22.7
Total	41	46	39	44	41	47	39	48	18	47	410			7.8	8.0	

Conc. **1.25 g/L**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.8	XXX	XXX	22.5
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		7.9	7.8	7.7	7.9	22.9
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.0	7.8	8.2	7.9	22.7
4	1/7	1/6	1/6	1/5	1/7	1/6	1/6	1/7	0	1/7	57	7.7	7.9	7.7	8.1	22.9
5	✓	✓	✓	✓	✓	✓	✓	2/15	↓	✓	15	7.7	8.1	7.6	8.2	23.2
6	2/13	2/15	2/12	2/9	2/15	2/11	2/13	✓		2/17	105	7.7	8.1	7.7	8.1	22.4
7	3/18	3/21	3/18	3/18	3/22	3/17	✓	3/23	↓	3/22	159	8.2	8.2	7.8	8.2	22.9
Total	38	42	36	32	44	34	19	45	0	46	336			7.8	8.1	

BENCH SHEET QC CERIODAPHNIA SURVIVAL/REPRODUCTION TEST.

TEST MONTH Dec 2016 Analyst: CR, CR

Test Start Date/Time: 12/13/16, 1130 Test Stop Date/Time: 12/20/16

Conc. **2.00 g/L**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O.	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		8.1	7.9	XXX	XXX	22.6
2	✓	✓	✓	✓	D	✓	✓	D	D	✓		7.9	7.9	7.7	7.9	23.0
3	✓	✓	✓	✓	|	✓	✓	|	|	✓		8.1	7.9	8.2	7.9	22.6
4	✓	✓	✓	✓	|	✓	✓	|	|	1/4	4	7.8	8.0	7.7	8.1	22.9
5	1/3	✓	✓	✓	|	1/2	✓	|	|	✓	5	7.7	8.0	7.8	8.0	23.1
6	2/10	1/3	✓	2/6	|	2/10	1/1	|	|	2/11	43	7.6	8.1	7.6	8.1	22.9
7	✓	2/11	1/6	✓	✓	✓	✓	↓	↓	✓	17	8.1	8.2	8.0	8.3	23.3
Total	13	14	6	8	0	12	1	0	0	15	69			7.9	8.1	

Conc. **2.75 g/L**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	D	D	✓	✓	D	✓	✓	✓	D	✓		8.1	7.8	XXX	XXX	22.7
2	|	|	D	D	|	D	D	✓	|	D		7.8	7.9	7.7	8.0	23.1
3	|	|	|	|	|	|	|	D	|	|		8.0	7.8	8.2	7.9	22.6
4	|	|	|	|	|	|	|	|	|	|		7.7	7.9			
5	|	|	|	|	|	|	|	|	|	|						
6	|	|	|	|	|	|	|	|	|	|						
7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						
Total	0	0	0	0	0	0	0	0	0	0						

Conc. **3.50 g/L**

Day-Lab #	1	2	3	4	5	6	7	8	9	10	# Young	New D.O,	New pH	Old D.O.	Old pH	Daily Temp
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	XXX	XXX	XXX	XXX	XXX	XXX
1	D	D	✓	✓	D	D	D	✓	D	D		8.1	7.8	XXX	XXX	22.6
2	|	|	D	D	|	|	|	D	|	|		7.8	7.9	7.9	8.0	23.1
3	|	|	|	|	|	|	|	D	|	|		8.0	7.8	7.8	7.8	22.5
4	|	|	|	|	|	|	|	|	|	|						
5	|	|	|	|	|	|	|	|	|	|						
6	|	|	|	|	|	|	|	|	|	|						
7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						
Total	0	0	0	0	0	0	0	0	0	0						

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Ceriodaphnia dubia (water flea)
Date	1/3/2017	**Test Type**	Chronic Survival
IWC Conc.			

Input

Number of Organisms Exposed or Counted

	Concentrations					
Replicate	0	0.5	1.25	2	2.75	3.5
1	1	1	1	1	1	1
2	1	1	1	1	1	1
3	1	1	1	1	1	1
4	1	1	1	1	1	1
5	1	1	1	1	1	1
6	1	1	1	1	1	1
7	1	1	1	1	1	1
8	1	1	1	1	1	1
9	1	1	1	1	1	1
10	1	1	1	1	1	1

Number of Organisms Surviving or Responding

	Concentrations					
Replicate	0	0.5	1.25	2	2.75	3.5
1	1	1	1	1	0	0
2	1	1	1	1	0	0
3	1	1	1	1	0	0
4	1	1	1	1	0	0
5	1	1	1	0	0	0
6	1	1	1	1	0	0
7	1	1	1	1	0	0
8	1	1	1	0	0	0
9	1	1	0	0	0	0
10	1	1	1	1	0	0

Total Organisms	10	10	10	10	10	10
Total Responding	10	10	9	7	0	0
% Responding	100.0%	100.0%	90.0%	70.0%	0.0%	0.0%

Output

Summary Sheet

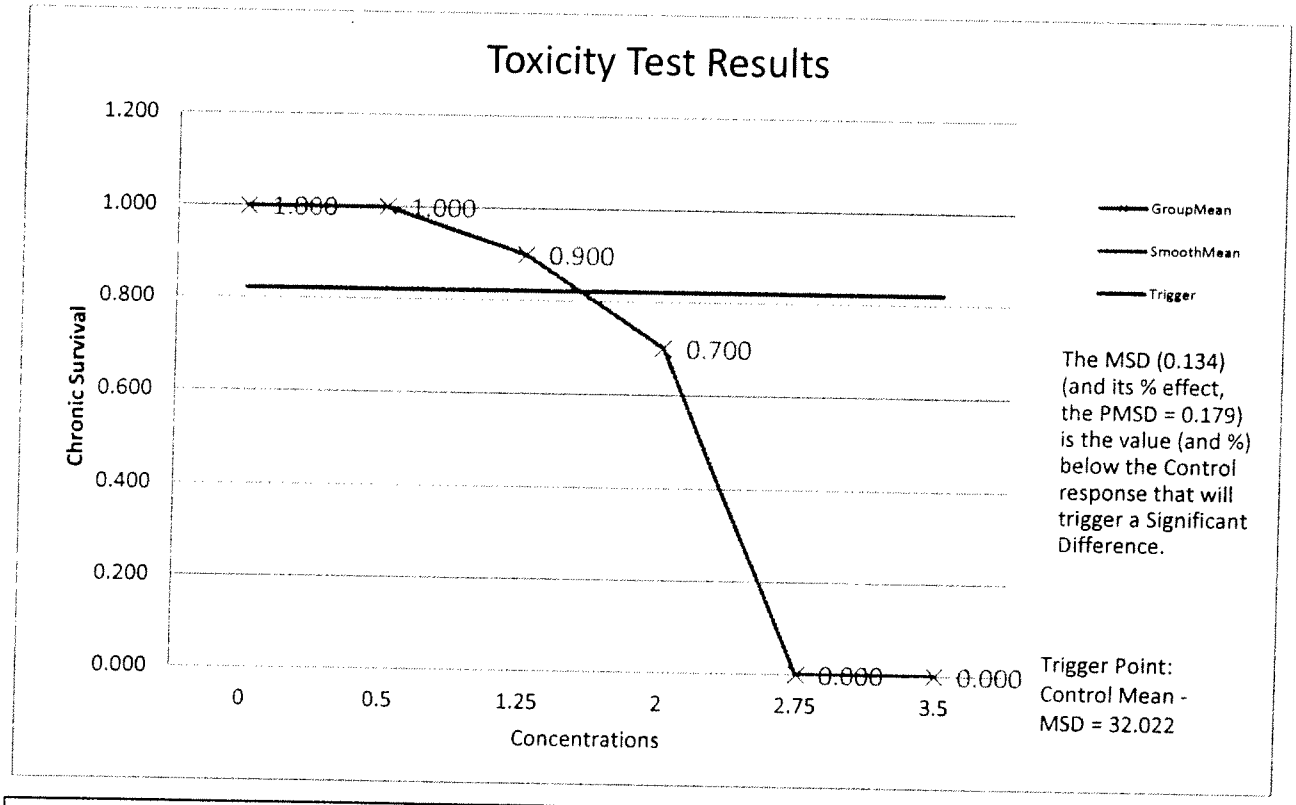
Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	1.047	0.000	0.000	
Statistics are based on the transformed data used for endpoint calculations	0.5	1.047	0.000	0.000	NS
	1.25	0.995	0.166	0.166	NS
	2	0.890	0.253	0.284	NS
	2.75				Y
	3.5				Y

NOEC	LOEC	IC25	95% Confidence Intervals	
2	2.75	1.79	1.10	2.11

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.134	17.9%

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Ceriodaphnia dubia (water flea)
Date	1/3/2017	**Test Type**	Reproduction
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.5	1.25	2	2.75	3.5
1	40	41	38	13	0	0
2	46	46	42	14	0	0
3	43	39	36	6	0	0
4	37	44	32	8	0	0
5	43	41	44	0	0	0
6	46	47	34	12	0	0
7	39	39	19	1	0	0
8	48	48	45	0	0	0
9	23	18	0	0	0	0
10	48	47	46	15	0	0
Mean	41.300	41.000	33.600	6.900	0.000	0.000
Stdev	7.454	8.769	14.269	6.315	0.000	0.000

Output

Statistical Data	Conc.	Mean	Stdev	CV	Steel test
	0	41.300	7.454	0.180	
	0.5	41.000	8.769	0.214	NS
	1.25	33.600	14.269	0.425	NS
	2	6.900	6.315	0.915	Y
	2.75	0.000			Y
	3.5	0.000			Y

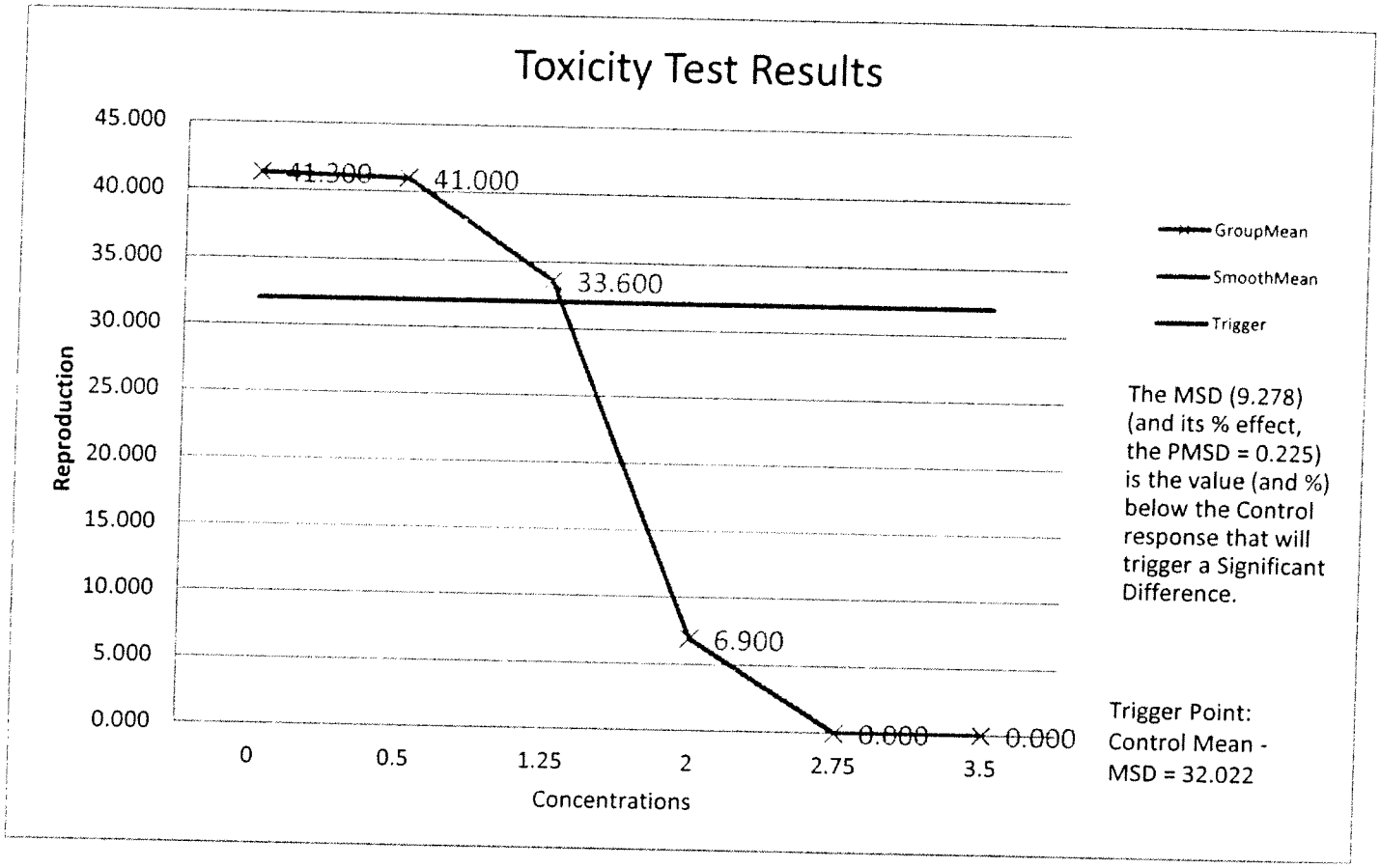
NOEC	LOEC	IC25	95% Confidence Intervals	
1.25	2	1.31	0.92	1.45

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
9.278	22.5%

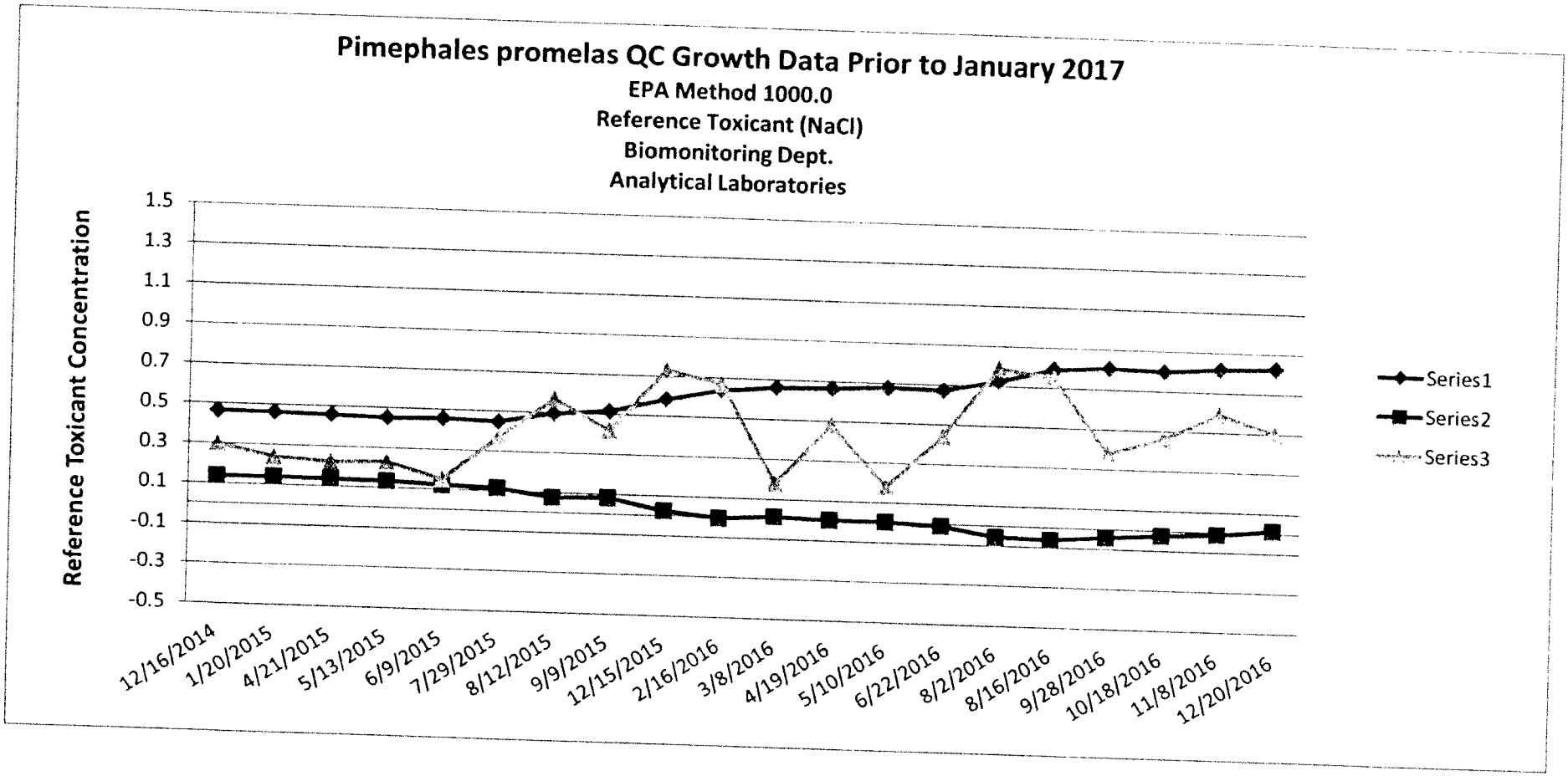
Summary Sheet

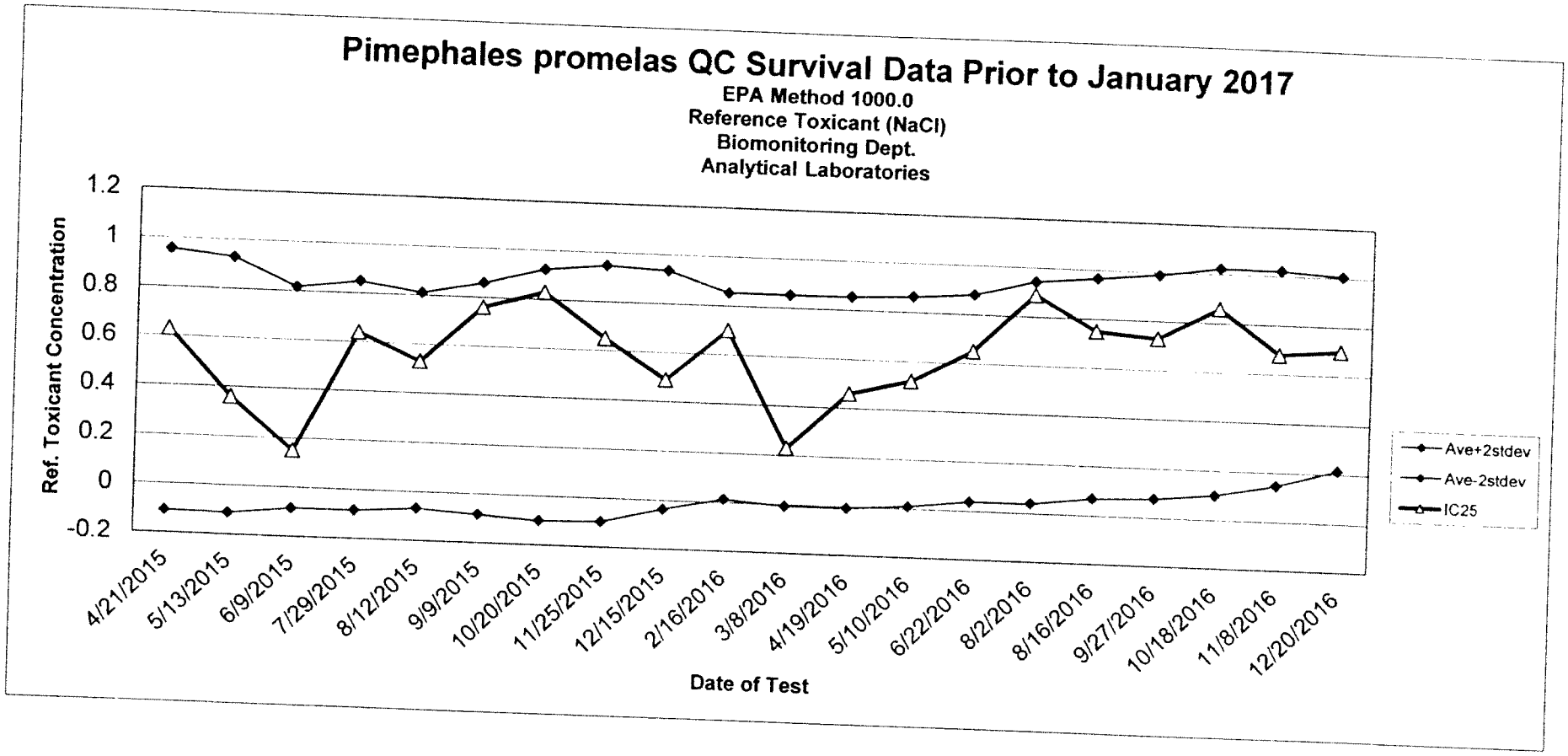
Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.


Pimephales promelas QC Growth Data Prior to January 2017
EPA Method 1000.0
Reference Toxicant (NaCl)
Biomonitoring Dept.
Analytical Laboratories
Reference Toxicant Concentration
1.5
1.3
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
-0.3
-0.5
12/16/2014
1/20/2015
4/21/2015
5/13/2015
6/9/2015
7/29/2015
8/12/2015
9/9/2015
12/15/2015
2/16/2016
3/8/2016
4/19/2016
5/10/2016
6/22/2016
8/2/2016
8/16/2016
9/28/2016
10/18/2016
11/8/2016
12/20/2016
Series1
Series2
Series3


Pimephales promelas QC Survival Data Prior to January 2017
EPA Method 1000.0
Reference Toxicant (NaCl)
Biomonitoring Dept.
Analytical Laboratories
Ref. Toxicant Concentration
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
4/21/2015
5/13/2015
6/9/2015
7/29/2015
8/12/2015
9/9/2015
10/20/2015
11/25/2015
12/15/2015
2/16/2016
3/8/2016
4/19/2016
5/10/2016
6/22/2016
8/2/2016
8/16/2016
9/27/2016
10/18/2016
11/8/2016
12/20/2016
Date of Test
Ave+2stdev
Ave-2stdev
IC25

Bench Sheet For Fathead Minnow QC Survival Test Method 1000.0

Test Month/Year: Dec 2016
Test Start Date/Time: 12/13/16
Analyst: WR/CP
Test Stop Date/Time: 12/20/16

Reference Toxicant Used: Sodium Chloride

Day		0	1	2	3	4	5	6	7	Remarks
Conc:	Beaker#									
Control	1	10	10	10	10	10	9	9	9	
	2	10	10	10	10	10	10	10	9	
	3	10	10	10	10	10	10	10	10	
	4	10	10	10	10	9	9	9	9	
New DO	XXX	7.7	7.5	7.6	7.7	7.6	8.0	8.5	XXX	
New pH	XXX	7.3	7.5	7.6	7.9	7.9	7.7	8.1	XXX	
Temp	XXX	24.0	~~23.2~~ 22.7	22.9	22.5	22.7	22.3	22.4	XXX	
Old DO	XXX	XXX	6.5	6.3	6.1	5.9	7.0	6.9	7.5	
Old pH	XXX	XXX	7.7	7.7	7.6	7.6	~~7.8~~ WR	7.6	7.6	
Conc: 0.25g/L	1	10	10	10	10	10	10	10	8	
	2	10	10	10	10	10	10	9	9	
	3	10	10	10	10	10	10	10	9	
	4	10	10	10	10	10	10	10	10	
New DO	XXX	7.7	7.5	7.6	7.7	7.6	8.0	8.5	XXX	
New pH	XXX	8.0	7.8	8.0	7.9	8.2	7.9	7.9	XXX	
Temp	XXX	23.6	23.3	22.9	22.7	22.6	23.2	22.9	XXX	
Old DO	XXX	XXX	6.5	6.4	6.4	6.0	6.6	6.9	7.4	
Old pH	XXX	XXX	7.6	7.7	7.6	7.6	~~7.8~~	7.6	7.4	
Conc: 1.5g/L	1	10	10	10	10	9	7	5	2	
	2	10	10	10	10	9	8	8	4	
	3	10	10	10	10	9	8	6	4	
	4	10	10	10	10	9	7	6	5	
New DO	XXX	7.7	7.5	7.5	7.7	7.6	8.0	8.5	XXX	
New pH	XXX	8.0	7.9	8.0	7.9	8.1	7.9	8.0	XXX	
Temp	XXX	23.9	23.2	22.7	23.2	22.7	23.0	23.1	XXX	
Old DO	XXX	XXX	6.6	6.7	6.2	6.2	6.8	7.0	7.6	
Old pH	XXX	XXX	7.7	7.7	7.6	7.7	7.9	7.6	7.6	
Conc: 2.5g/L	1	10	10	10	10	9	8	7	6	
	2	10	10	10	10	10	10	8	4	
	3	10	10	10	10	10	7	8	6	
	4	10	10	10	10	8	6	4	4	
New DO	XXX	7.7	7.5	7.5	7.7	7.6	8.0	8.5	XXX	
New pH	XXX	8.0	7.9	7.9	7.9	8.1	8.0	8.0	XXX	
Temp	XXX	23.5	23.2	22.5	23.7	22.9	22.8	23.0	XXX	
Old DO	XXX	XXX	6.8	6.7	6.6	6.3	6.8	7.1	7.6	
Old pH	XXX	XXX	7.7	7.7	7.7	7.7	7.7	7.6	7.6	
Conc:	1	10	10	10	10	10	8	4	4	
Conc: 3.5g/L	2	10	10	10	10	9	9	6	4	
	3	10	10	10	10	10	10	6	6	
	4	10	10	10	9	9	8	5	2	
New DO	XXX	7.7	7.5	7.5	7.7	7.6	8.2	8.5	XXX	
New pH	XXX	8.0	7.9	7.9	7.9	8.1	8.0	8.0	XXX	
Temp	XXX	23.5	23.3	22.8	23.3	23.0	22.8	22.8	XXX	
Old DO	XXX	XXX	6.8	6.8	6.6	6.3	7.0	7.1	7.5	
Old pH	XXX	XXX	7.7	7.8	7.6	7.7	7.8	7.6	7.6	
Conc: 8.5g/L	1	10	10	9	3	3	3	3	2	
	2	10	10	5	0	0	0	0	0	
	3	10	10	3	2	1	0	0	0	
	4	10	10	4	1	0	0	0	0	
New DO	XXX	7.8	7.5	7.5	7.3	7.6	8.2	8.6	XXX	
New pH	XXX	~~7.8~~ 7.9	7.8	7.9	7.8	8.0	7.9	7.9	XXX	
Temp	XXX	23.6	23.4	23.3	23.1	22.8	22.7	22.7	XXX	
Old DO	XXX	XXX	6.9	7.0	6.3	6.3	7.1	7.4	7.2	
Old pH	XXX	XXX	7.6	7.7	7.6	7.7	7.7	7.6	7.7	
Feeding	A.M.	XXX	CP	WR	CP	CP	WR	WR	XXX	
	P.M.	WR	WR	WR	CP	CP	WR	WR	XXX	

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Pimephales promelas (fathead minnow)
Date	12/20/2016	**Test Type**	Chronic Survival
IWC Conc.			

Input

Number of Organisms Exposed or Counted

	Concentrations					
Replicate	0	0.25	1.5	2.5	3.5	8.5
1	10	10	10	10	10	10
2	10	10	10	10	10	10
3	10	10	10	10	10	10
4	10	10	10	10	10	10

Number of Organisms Surviving or Responding

	Concentrations					
Replicate	0	0.25	1.5	2.5	3.5	8.5
1	9	8	2	6	4	2
2	9	9	4	4	4	0
3	10	9	4	6	6	0
4	9	10	5	4	2	0

Total Organisms	40	40	40	40	40	40
Total Responding	37	36	15	20	16	2
% Responding	92.5%	90.0%	37.5%	50.0%	40.0%	5.0%

Output

Summary Sheet

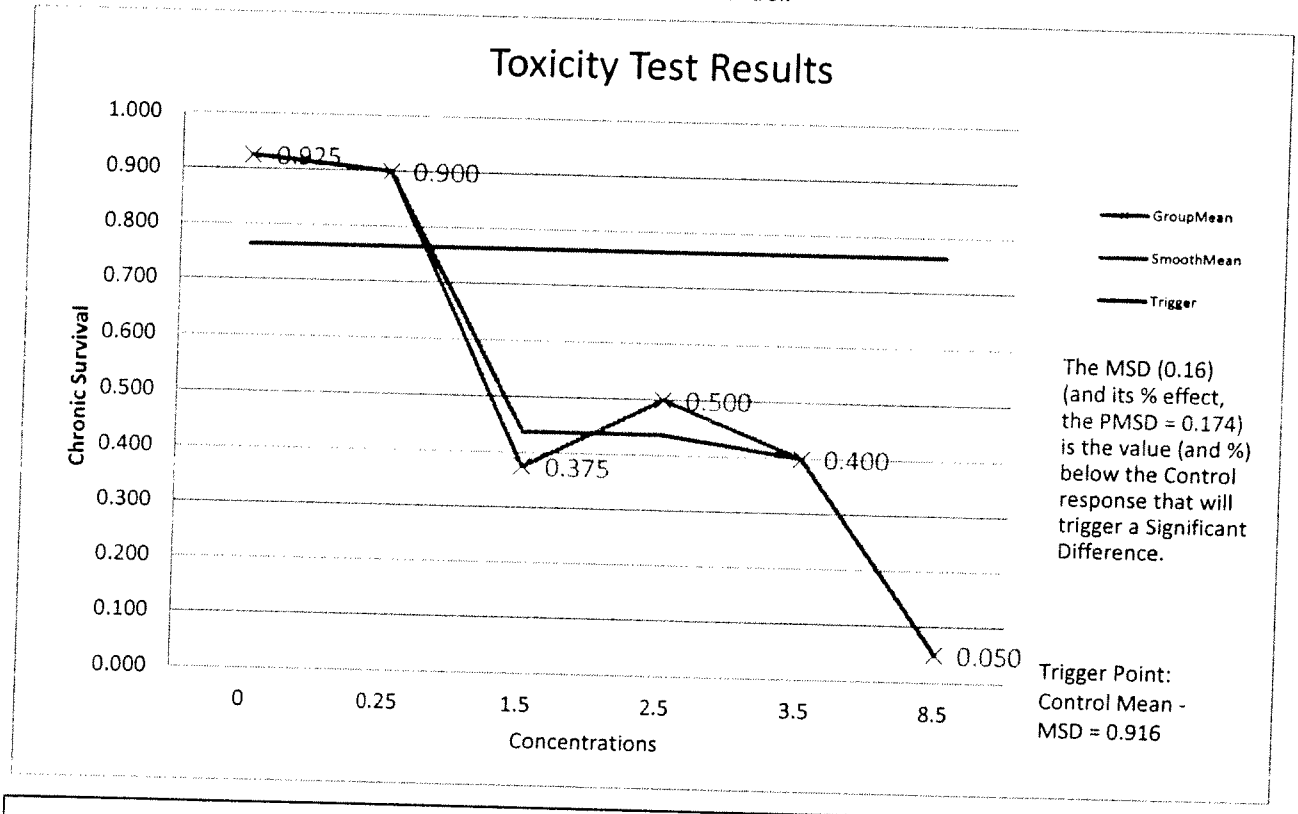
Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	1.290	0.081	0.063	
Statistics are based on the transformed data used for endpoint calculations	0.25	1.254	0.125	0.099	NS
	1.5	0.655	0.136	0.208	Y
	2.5	0.785	0.116	0.148	Y
	3.5	0.680	0.173	0.254	Y
	8.5	0.235	0.152	0.649	Y

NOEC	LOEC	IC25	95% Confidence Intervals	
0.25	1.5	0.70	0.53	0.81

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.160	17.4%

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

BENCH SHEET FOR FATHEAD MINNOW INITIAL WEIGHT DATA QC EPA METHOD 1000.0

Month/Year: Dec 2016 Test Start Date: 12/13/16 Drying Temp: 100° C

Weighing Date: 12/14/16 Test End Date: 12/20/16 Drying Time: 23hrs

Location/Client: QC

	Rep No.	Weight of Boat (g)	Boat and Dry Larvae (g)	Dry Weight of Larvae (g)	No. of Larvae	Mean Dry Weight of Larvae (mg)	Average
Initial	I1	1.2878	1.2892	.0014	10	.14	0.13mg
	I2	1.2924	1.2936	.0012	↓	.12	
	I3	1.2913	1.2925	.0012		.12	
	I4	1.2920	1.2934	.0014	↓	.14	

Reviewed By: SC

Fathead Minnow QC Weight Data

Analyst: CR Test Month/Year: Dec 2016 Drying Temp: 100°C

Weighing Date: 12/21/16 Drying Time: 23hrs

Conc.	Rep No.	Weight of Boat (g)	Boat and Dry Larvae (g)	Dry Weight of Larvae (g)	No. of Larvae	Mean Dry Weight of Larvae (mg)	Avg.-Init.= Avg. Wt. Gain (mg)
CONTROL	1	1.2810	1.2859	.0049	10	.49	
	2	1.2785	1.2829	.0044		.44	0.44mg - 0.13mg = 0.31mg
	3	1.2770	1.2814	.0044		.44	
	4	1.2711	1.2751	.0040		.40	
0.25g/L	x5	1.2953	1.2993	.0040		.40	
	x6	1.2652	1.2687	.0035		.35	0.40mg - 0.13mg = 0.27mg
	x7	1.2972	1.3013	.0041		.41	
	x8	1.2892	1.2936	.0044		.44	
1.5g/L	x9	1.2910	1.2922	.0012		.12	
	x10	1.2968	1.2977	.0009		.09	0.11mg - 0.13mg = -0.02mg
	x11	1.2979	1.2988	.0009		.09	
	x12	1.2872	1.2886	.0014		.14	
2.5g/L	x13	1.2952	1.2973	.0021		.21	
	x14	1.2981	1.2993	.0012		.12	0.18mg - 0.13mg = 0.05mg
	x15	1.2911	1.2931	.0020		.20	
	x16	1.2868	1.2887	.0019		.19	
3.5g/L	x17	1.2929	1.2943	.0014		.14	
	x18	1.2988	1.3008	.0020		.20	0.12mg - 0.13mg = -0.01mg
	x19	1.2942	1.2954	.0012		.12	
	x20	1.2896	1.2899	.0003		.03	
8.5g/L	x21	1.2917	1.2925	.0008		.08	0.08mg - 0.13mg = -0.05mg + 0.11mg
	x22	1.2952	—				
	x23	1.2985	—				
	x24	1.2985	—				

Reviewed By: SC

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Pimephales promelas (fathead minnow)
Date	12/20/2016	**Test Type**	Growth
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.25	1.5	2.5	3.5	8.5
1	0.49	0.4	0.12	0.21	0.14	0.08
2	0.44	0.35	0.09	0.12	0.2	0
3	0.44	0.41	0.09	0.2	0.12	0
4	0.4	0.44	0.14	0.19	0.03	0
Mean	0.443	0.400	0.110	0.180	0.123	0.020
Stdev	0.037	0.037	0.024	0.041	0.070	0.040

Output

Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	0.443	0.037	0.083	
	0.25	0.400	0.037	0.094	NS
	1.5	0.110	0.024	0.223	Y
	2.5	0.180	0.041	0.227	Y
	3.5	0.123	0.070	0.575	Y
	8.5	0.020	0.040	2.000	Y

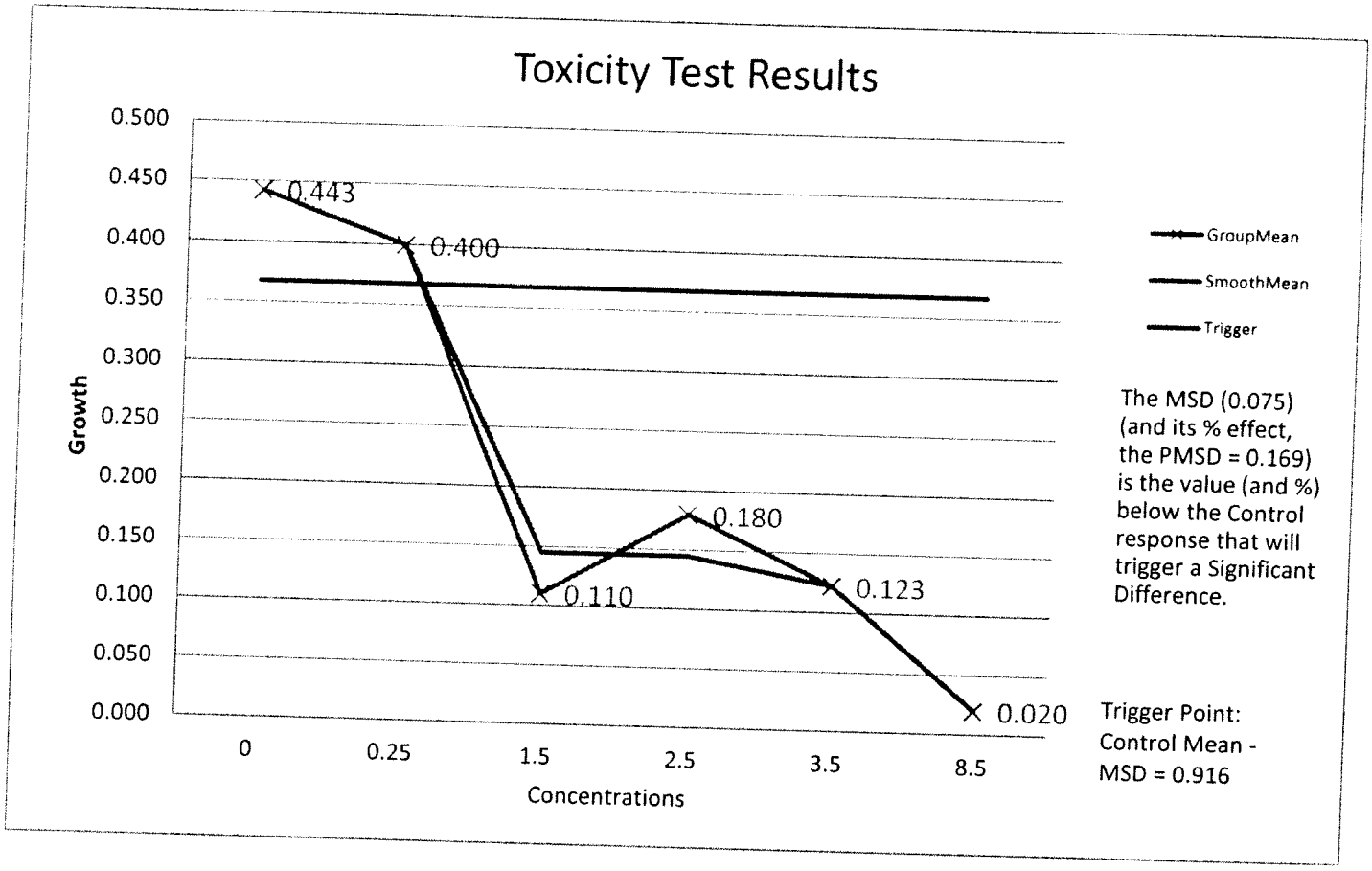
NOEC	LOEC	IC25	95% Confidence Intervals	
0.25	1.5	0.50	0.39	0.63

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.075	16.9%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Selenastrum capricornutum (green algae)
Date	12/20/2016	**Test Type**	Growth
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.5	1.5	5.5	8.5	10
1	0.056	0.062	0.05	0.057	0.048	0.045
2	0.051	0.054	0.05	0.061	0.046	0.051
3	0.055	0.053	0.05	0.064	0.047	0.047
4	0.05	0.052	0.052	0.061	0.044	0.049
Mean	0.053	0.055	0.051	0.061	0.046	0.048
Stdev	0.003	0.005	0.001	0.003	0.002	0.003

Output

Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	0.053	0.003	0.056	
	0.5	0.055	0.005	0.083	NS
	1.5	0.051	0.001	0.020	NS
	5.5	0.061	0.003	0.047	NS
	8.5	0.046	0.002	0.037	Y
	10	0.048	0.003	0.054	Y

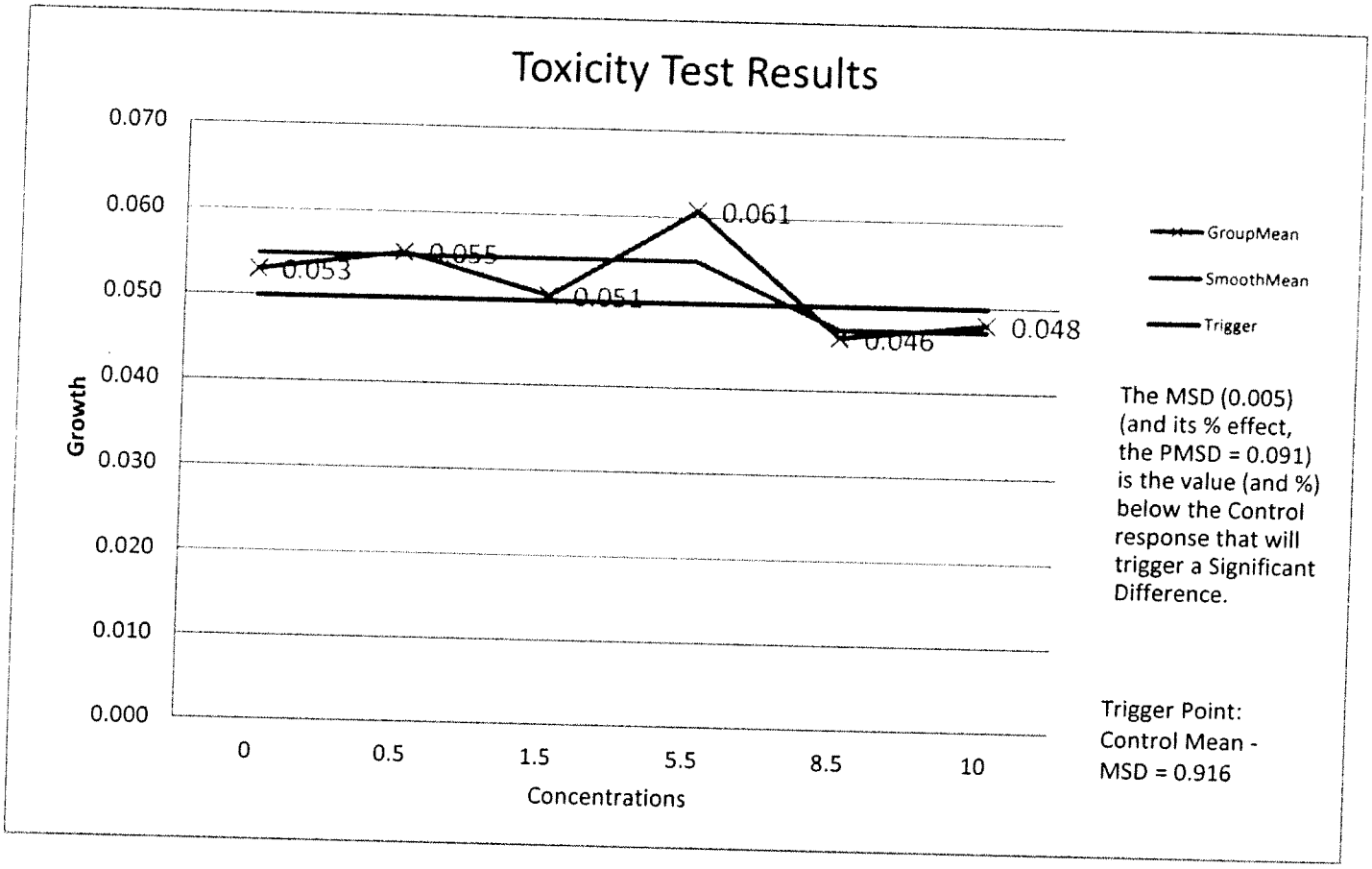
NOEC	LOEC	IC25	95% Confidence Intervals	
5.5	8.5	>10	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.005	9.1%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

BENCH SHEET FOR *S. capicornutum* ALGAL QC GROWTH TEST
EPA TEST METHOD 1003.0

TEST MONTH/YEAR# Dec 2016 ANALYST WR FINAL REPORT REVIEW: SC
TEST START DATE/TIME: 12/11/16, 1200
TEST END DATE/TIME: 12/15/16, 1600

Initial Algae Count (cells/mL)

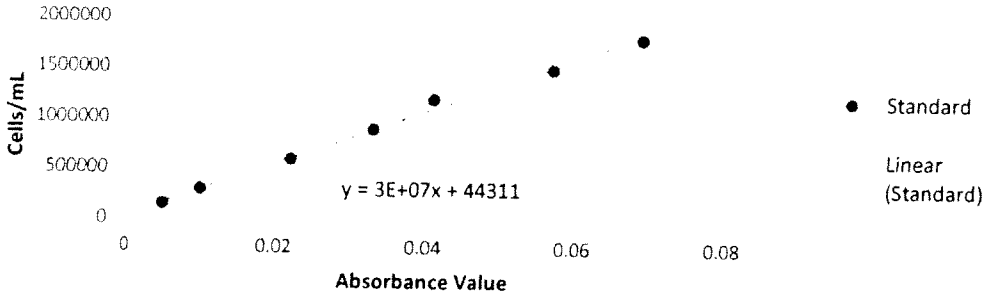
	Random Sample #1	Random Sample #2	Random Sample #3	Random Sample #4	Initial Average
	Absorbance Value: .020	Absorbance Value: .022	Absorbance Value: .022	Absorbance Value: .022	Absorbance Value: .022 Cells/mL: 0.689

Final Algae Count (cells/mL)

CONCENTRATION	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Average
CONTROL	Absorbance Value: .056	Absorbance Value: .051	Absorbance Value: .055	Absorbance Value: .050	Absorbance Value: .053 Cells/mL: 1.63
0.5	Absorbance Value: .062	Absorbance Value: .054	Absorbance Value: .053	Absorbance Value: .052	Absorbance Value: .055 Cells/mL: 1.70
1.5	Absorbance Value: .050	Absorbance Value: .050	Absorbance Value: .050	Absorbance Value: .052	Absorbance Value: .051 Cells/mL: 1.56
5.5	Absorbance Value: .057	Absorbance Value: .061	Absorbance Value: .064	Absorbance Value: .061	Absorbance Value: .058 Cells/mL: 1.79
8.5	Absorbance Value: .043	Absorbance Value: .046	Absorbance Value: .047	Absorbance Value: .044	Absorbance Value: .046 Cells/mL: 1.43
10	Absorbance Value: .045	Absorbance Value: .051	Absorbance Value: .047	Absorbance Value: .049	Absorbance Value: .048 Cells/mL: 1.48

***Absorbance values (AV) obtained from Spectronic 601 spectrophotometer are used to determine cells/mL based on a standardized linear relationship ((3x10^7)(AV) + 44311).**

Selenastrum capricornutum **Conversion Chart**



BENCH SHEET FOR *S. capicornutum* ALGAL QC GROWTH TEST.
EPA METHOD 1003.0

Test Month/Year Dec 2016 Analyst: WP/CP Final Report Review: SC
Test Start Date/Time: 12/11/16, 1200
Test Stop Date/Time: 12/15/16, 1600

Daily pH and Temp.

CONCENTRATION	Day 0		Day 1		Day 2		Day 3		Day 4		Comments
	pH	Temp	pH	Temp	pH	Temp	pH	Temp	pH	Temp	
Control	8.3	24.8	9.6	23.7	10.3	24.3	11.0	24.0	10.8	24.5	
0.50 g/L	8.2	24.5	9.9	23.8	10.7	24.2	10.9	24.1	11.0	24.9	
1.5 g/L	8.3	24.2	10.0	24.0	10.7	24.3	10.9	23.9	10.9	25.0	
5.5 g/L	8.3	23.8	9.8	24.2	10.3	24.3	10.5	23.9	10.4	24.8	
8.5 g/L	8.3	23.5	9.7	24.4	10.0	24.6	10.0	23.8	9.9	24.8	
10 g/L	8.3	23.4	9.6	23.4	10.0	24.3	10.1	24.0	10.1	25.8	

Summary Sheet

Facility	Analytical Laboratories	**Analyst**	Will Reynolds
Test ID	QC DECEMBER 2016	**Species**	Selenastrum capricornutum (green algae)
Date	1/3/2017	**Test Type**	Growth
IWC Conc.			

Input

	Concentrations					
Replicate	0	0.5	1.5	5.5	8.5	10
1	0.056	0.062	0.05	0.057	0.048	0.045
2	0.051	0.054	0.05	0.061	0.046	0.051
3	0.055	0.053	0.05	0.054	0.047	0.047
4	0.05	0.052	0.052	0.061	0.044	0.049
Mean	0.053	0.055	0.051	0.058	0.046	0.048
Stdev	0.003	0.005	0.001	0.003	0.002	0.003

Output

Statistical Data	Conc.	Mean	Stdev	CV	Dunnett test
	0	0.053	0.003	0.056	
	0.5	0.055	0.005	0.083	NS
	1.5	0.051	0.001	0.020	NS
	5.5	0.058	0.003	0.058	NS
	8.5	0.046	0.002	0.037	Y
	10	0.048	0.003	0.054	NS

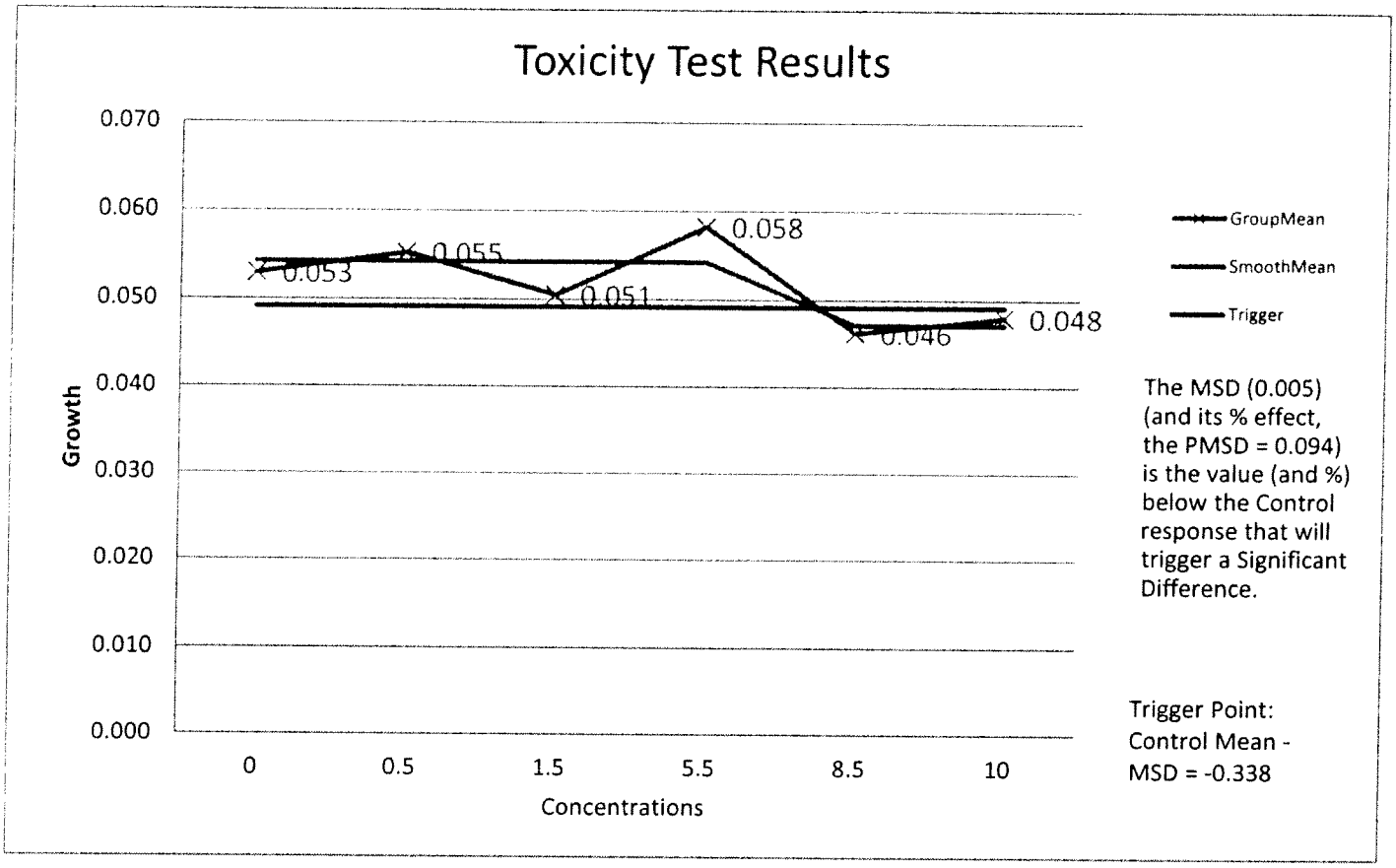
NOEC	LOEC	IC25	95% Confidence Intervals	
10	>10	>10	N/A	N/A

TST	Calculated t-value	Table t-value	Relative % Effect at IWC

MSD	PMSD
0.005	9.4%

Summary Sheet

Note - For statistical tests, "NS" indicates that the concentration is not statistically different from the control, while "Y" indicates that the concentration is statistically different from the control.



NOTICE

The United States Environmental Protection Agency (EPA), through its Office of Wastewater Management, funded and managed the development of the whole effluent toxicity (WET) Tool described here. This is a tool that calculates WET test endpoints for the EPA-approved WET test methods and is used by EPA internally for analyzing valid WET test data. Neither the EPA nor any of their employees, assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or process disclosed. Furthermore, the WET Tool is supplied "as-is" without guarantee or warranty, expressed or implied, including without limitation, any warranty of merchantability or fitness for a specific purpose.

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

YTC TOTAL SOLIDS MEASUREMENT

(Method from EPA/505/8-89-002a)

YTC Process Date: 12/21/2016: Best if used by 3/31/2017
Average Total Solids: 1710 mg/l

Ingredient Lot Numbers

Pines International® Wheat Grass: COCDW12S50; Zeigler Finfish Starter #1 (Lot 10/19/2016); Fleischmanns Yeast: G-3

Analyzed Metals	Report Limits	Results (mg/L)
Aluminum	0.03	0.08
Arsenic	0.001	U
Cadmium	0.001	U
Chromium	0.005	U
Copper	0.05	0.033
Iron	0.02	0.24
Lead	0.001	U
Mercury	0.001	U
Nickel	0.005	U
Silver	0.001	U
Zinc	0.01	0.14

EPA Required Toxic Metals and Pesticide Analyses*

Compounds	Report Limits	Results (ng/L)
Aldrin	0.5	U
alpha-BHC	0.5	U
beta-BHC	0.5	U
delta-BHC	0.5	U
gamma-BHC (Lindane)	0.5	U
alpha-Chlordane	0.5	U
gamma-Chlordane	0.5	U
4,4' – DDD	0.5	U
4.4' – DDE	0.5	U
4,4' –DDT	0.5	U
Dieldrin	0.5	U
Endosulfan I	0.5	U
Endosulfan II	0.5	U
Endosulfan sulfate	0.5	U
Endrin	0.5	U
Endrin aldehyde	0.5	U
Endrin ketone	0.5	U
Heptachlor	0.8	U
Heptachlor epoxide	0.5	U
Methozychlor	0.5	U
Chlordane (technical)	5.0	U
Toxaphene	25	U
Aroclor-1016	5.0	U
Aroclor-1221	5.0	U
Aroclor-1232	5.0	U
Aroclor-1242	5.0	U
Aroclor-1248	5.0	U
Aroclor-1254	5.0	U
Aroclor-1260	5.0	U
Aroclor-1262	5.0	U
Aroclor-1268	5.0	U

U – Indicates compound was analyzed for but not detected.
*Testing performed by Energy Labs, Billings, Montana

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Algae Preparation History

DATE: 12/27/2016

SPECIES: *Raphidocelis subcapitata**

INOCULATION DATE: 12/13/2016

HARVEST DATE: 12/19/2016

CONCENTRATION DATE: 12/21/2016

CELL COUNT (/ml): 3.0×10^7 cells/ml

Comments:

* Formerly known as *Psuedokirschneriella subcapitata* and *Selenastrum capricornutum*

** All concentrated algae diluted to proper cell count with reconstituted moderately hard DI water.

Supervisor

from Mass Culture

Ceriodaphnia dubia Stock Culture Log

Month/Year: December/2016

Start Date: 12/21 End Date: Board#: (

Trans. Date	1	2	3	4	5	6	7	8	9	10	Time
12/21 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0930
12/22 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1500
12/23 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	[illegible]0
12/24 3	1/1	✓	3/3 1/2	✓	✓	✓	✓	✓	✓	✓	1400
12/26 4	2/7	1/5	2/4	1/2	1/5	1/4	1/4	1/4	1/4	1/4	1235
12/27 5	3/16	2/10	3/15	2/10	2/6	2/11	2/7	2/11	2/7	2/7	1130
12/28 6	✓	3/14	✓	✓	3/12	✓	✓	✓	3/13	✓	1215
12/29 7	4/13	✓	4/15	3/9	✓	3/8	3/15	3/11	✓	3/17	1230

Survival > 80%: 4 yes/no

Average offspring per female > 20: yes/no

Start Date: End Date: Board#: 2

Trans.	1	2	3	4	5	6	7	8	9	10	Time
12/21 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0935
12/22 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1505
12/23 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1135
12/24 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1405
12/26 4	1/3	1/4	1/4	1/3	1/3	1/2	1/3	1/3	1/1	1/3	1240
12/27 5	2/11	2/6	2/12	2/9	2/13	2/6	2/9	2/13	2/12	2/13	1135
12/28 6	✓	✓	✓	✓	✓	✓	3/1	3/16	✓	✓	1220
12/29 7	3/14	3/11	3/15	3/14	3/13	3/15	3/12	✓	3/19	3/17	1235

Survival > 80%: yes/no

Average offspring per female > 20: yes/no

Start Date: End Date: Board#: 3

Trans.	1	2	3	4	5	6	7	8	9	10	Time
12/21 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0940
12/22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1510
12/23 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1140
12/24 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1410
12/26 4	1/8	1/4	1/2	1/14	1/7	1/3	1/1	1/5	1/4	1/5	1245
12/27 5	✓	2/12	2/11	2/11	2/9	2/7	2/8	2/6	2/12	2/12	1140
12/28 6	2/15	✓	✓	3/14	✓	✓	3/13	3/13	✓	✓	1225
12/29 7	3/14	3/11	3/12	✓	3/10	3/14	✓	✓	3/18	3/18	1240

Survival > 80%: yes/no

Average offspring per female > 20: yes/no

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

Algae Preparation History

DATE: 12/5/2016

SPECIES: *Raphidocelis subcapitata**

INOCULATION DATE: 11/16/2016

HARVEST DATE: 11/21/2016

CONCENTRATION DATE: 11/23/2016

CELL COUNT (/ml): 3.0×10^{7} cells/ml

Comments:

* Formerly known as *Pseudokirschneriella subcapitata* and *Selenastrum capricornutum*

** All concentrated algae diluted to proper cell count with reconstituted moderately hard DI water.

Supervisor

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

YTC TOTAL SOLIDS MEASUREMENT

(Method from EPA/505/8-89-002a)

YTC Process Date: 11/30/2016: Best if used by 2/28/2017
Average Total Solids: 1750 mg/l

Ingredient Lot Numbers

Pines International® Wheat Grass: COCDW12S50; Zeigler Finfish Starter #1 (Lot 06.05.2016); Fleischmanns Yeast: G-3

Analyzed Metals	Report Limits	Results (mg/L)
Aluminum	0.03	0.09
Arsenic	0.001	U
Cadmium	0.001	U
Chromium	0.005	U
Copper	0.005	0.046
Iron	0.02	0.26
Lead	0.001	U
Mercury	0.001	U
Nickel	0.005	U
Silver	0.001	U
Zinc	0.01	0.15

EPA Required Toxic Metals and Pesticide Analyses*

Compounds	Report Limits	Results (ug/L)
Aldrin	0.5	U
alpha-BHC	0.5	U
beta-BHC	0.5	U
delta-BHC	0.5	U
gamma-BHC (Lindane)	0.5	U
alpha-Chlordane	0.5	U
gamma-Chlordane	0.5	U
4,4' – DDD	0.5	U
4,4' – DDE	0.5	U
4,4' –DDT	0.5	U
Dieldrin	0.5	U
Endosulfan I	0.5	U
Endosulfan II	0.5	U
Endosulfan sulfate	0.5	U
Endrin	0.5	U
Endrin aldehyde	0.5	U
Endrin ketone	0.5	U
Heptachlor	0.8	U
Heptachlor epoxide	0.5	U
Methoxychlor	0.5	U
Chlordane (technical)	5.0	U
Toxaphene	25	U
Aroclor-1016	5.0	U
Aroclor-1221	5.0	U
Aroclor-1232	5.0	U
Aroclor-1242	5.0	U
Aroclor-1248	5.0	U
Aroclor-1254	5.0	U
Aroclor-1260	5.0	U
Aroclor-1262	5.0	U
Aroclor-1268	5.0	U

U – Indicates compound was analyzed for but not detected.
*Testing performed by Energy Labs, Billings, Montana