California Regional Water Quality Control Board
Central Valley Region
1685 E Street
Fresno, CA 93706-2020

Attention: Mr. Dale Harvey, Senior Engineer

Subject: Malaga County Water District
WDR No. 2008-0033 NPDES CA0084239
Telephone Number 559-485-7353

Dear Mr. Harvey:

Please find attached the monthly operations report for the Malaga County Water District for the month of December Year 2008. The report includes the following subjects:

1) Tertiary Effluent Monitoring (Acute and chronic toxicity quarterly report)

I certify that under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Tony Morales
Malaga Wastewater Treatment Plant Operator

2-5-09
Date

MONITORING REPORT REVIEW

Engineer _____

Compliance _____ Yes _____ no

Date Reviewed _____

FEB 0 9 2009

MOORE TWINING ASSOCIATES, INC.
EST. 1898
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
Office: (559) 268-7021
Fax: (559) 268-0740

Analytical Chemistry Division

January 26, 2009

Work Order #: 8L17019

Tony Morales
Malaga County Water District
3580 S. Frank
Fresno, CA 93725

RE: Malaga Sewer Plant

Enclosed are the analytical results for samples received by our laboratory on 12/17/08. For your reference, these analyses have been assigned laboratory work order number 8L17019.

Please find enclosed the official letter of documentation for the Bioassay analysis from the subcontracted laboratory, which was received at our laboratory on 01/23/09.

All analyses have been performed according to our subcontractor laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results only apply to samples analyzed.

If you have any questions, Please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Ronald J. Boquist
Director of Analytical Chemistry

Ron Boquist
Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721

January 9, 2009

Dear Ron:

I have enclosed two copies of our report "NPDES Compliance Acute Toxicity Testing of the Malaga County Water District Wastewater Treatment Facility Effluent" for the effluent sample collected December 17, 2008.

There was 100% survival in the Malaga effluent, indicating that the effluent was ***not*** acutely toxic to fathead minnows.

If you have any questions regarding this test or the report, feel free to call me at (707) 207-7760.

Sincerely,

R. Scott Ogle, Ph.D.
Principal & Special Projects Director

This testing was performed under Lab Order 14255. The test results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report, and only relate to the sample(s) tested. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk.

NPDES Compliance Acute Toxicity Testing of the Malaga County Water District Wastewater Treatment Facility Effluent

Sample collected December 17, 2008

Prepared For:

Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721

Prepared By:

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534
(707) 207-7760

January 2009

PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

NPDES Compliance Acute Toxicity Testing of the Malaga County Water District Wastewater Treatment Facility Effluent

Sample collected December 17, 2008

Prepared For:

Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721

Prepared By:

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534
(707) 207-7760

January 2009

NPDES Compliance Acute Toxicity Testing of the Malaga County Water District Wastewater Treatment Facility Effluent

Sample collected December 17, 2008

Table of Contents

Appendices

1. INTRODUCTION

Moore Twining Associates, Inc., has contracted Pacific EcoRisk (PER) to perform an acute toxicity evaluation of effluent produced by the Malaga County Water District Wastewater Treatment Facility (Malaga). This acute toxicity evaluation consisted of performing the US EPA 96-hr acute toxicity test with fathead minnows (*Pimephales promelas*).

This acute toxicity test was conducted for an effluent sample that was collected on December 17, 2008. This report describes the performance and results of this test.

2. ACUTE TOXICITY TEST PROCEDURES

The methods used in conducting this test followed the guidelines established by the EPA manual "Methods for Estimating the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition" (EPA-821-R-02-012).

2.1 Receipt and Handling of the Effluent Sample

On December 17, Malaga staff collected a sample of effluent into an appropriately cleaned sample container; this sample was transported, on ice and under chain-of-custody, to the PER testing laboratory in Fairfield. Upon receipt at the testing laboratory, aliquots of the sample were collected for analysis of initial water quality characteristics (Table 1); the remainder of the sample was stored at 0-6°C except when being used to prepare test solutions. The chain-of-custody record for the collection and delivery of this effluent sample is provided in Appendix A.

Table 1. Initial water quality characteristics of Malaga effluent sample.

Sample Receipt Date	Sample ID	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (µS/cm)	Total Ammonia (mg/L N)
12/17/08	8L17019-01	1.2	7.49	9.4	98	163	835	<1.0

2.2 Acute Toxicity Testing with Fathead Minnows

The fathead minnows used in this test were obtained from a commercial supplier (Aquatic Biosystems, Fort Collins, CO). These fish were maintained at 20°C in aerated aquaria containing EPA synthetic moderately-hard water prior to their use in this test. During this pre-test period, the fish were fed brine shrimp nauplii *ad libitum*.

The Lab Control water for this bioassay consisted of EPA synthetic "moderately-hard" water, prepared by addition of reagent grade chemicals to reverse-osmosis, de-ionized water. The

effluent sample was tested at the 100% concentration only. "New" water quality characteristics (pH, dissolved oxygen [D.O.], and conductivity) were determined for the Lab Control and 100% effluent treatment test solutions prior to the start of the test.

There were 2 replicates for each test treatment, each replicate consisting of 400 mL of test solution in a 600-mL glass beaker. The test was initiated by randomly allocating ten 4-day old fathead minnows into each replicate beaker. The beakers were placed in a temperature-controlled room at 20°C under a 16L:8D photoperiod.

Each replicate container was examined daily, and the number of live fish in each was recorded at that time. Routine water quality characteristics (pH, D.O., and conductivity) of the treatment waters were measured and recorded for one randomly-selected replicate per treatment each day.

On Day 2 of the 4-day test, the test organisms were fed brine shrimp nauplii, and fresh test solutions were prepared and characterized as before. Then, after ~48 hrs exposure, the number of live fish in each replicate was determined after which approximately 80% of the test media in each beaker was carefully poured out and replaced with fresh test solution. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the discarded test solution from one randomly-selected replicate beaker at each treatment.

After 96 (±2) hrs, the test was terminated and the number of live fish in each replicate beaker was determined. The resulting survival data were analyzed to evaluate any reductions caused by the effluent; all statistical analyses were performed using the CETIS® statistical software (TidePool Scientific, McKinleyville, CA).

3. RESULTS

3.1 Acute Effects of Malaga Effluent on Fathead Minnows

The results of this test are summarized in Table 2. There was 100% survival in the Lab Control treatment; there was also 100% survival in the Malaga effluent, indicating that this effluent sample was ***not*** acutely toxic to larval fathead minnows.

The test data and summary of statistics for this test are presented in Appendix B.

Table 2. Acute effects of Malaga effluent on fathead minnows.

Test Treatment	Mean % Survival
Lab Control	100
100% Effluent	100

4. SUMMARY AND CONCLUSIONS

The results of this toxicity test indicated that the Malaga effluent sample collected on December 17, 2008, was ***not*** acutely toxic to larval fathead minnows.

4.1 QA/QC Summary

Test Conditions - Test conditions (pH, D.O., temperature, etc.) were all within acceptable limits for this test. All analyses were performed according to laboratory Standard Operating Procedures.

Negative Control - The biological responses at the Lab Control treatment were within acceptable limits.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the Malaga Effluent Sample

MOORE TWINING ASSOCIATES, INC

California ELAP Certification # 1371

SUBCONTRACT ORDER - Purchase Order # 6293

MTA Project # 8L17019

Please reference these numbers on all reports and invoices:
We also request QC data be provided with final report.

SENDING LABORATORY:

Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721
Phone: (559) 268-7021
Fax: (559) 268-0740
Project Manager: Andrea Seruntine

RECEIVING LABORATORY:

Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534
Phone :(707) 207-7760
Fax: (707) 207-7916

Sample Comments

Client Sample ID#: Tertiary Eff.

MTA Sample ID: 8L17019-01 Matrix: Water **Sampled: 12/17/08 10:30** **Report Due to Client: 01/02/09**

Requested Analysis: Bioassay - Acute Holding time expires: 12/19/08 10:30

Containers Supplied:

1G Cubitainer (A) 1G Cubitainer (B)

Released By	Date	Received By	Date
	12/17/08		12/18/08

Please fax copy of receipt with your assigned sample ID number to (559) 268-0740 Page 1 of 1

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Acute Toxicity of Malaga Effluent to Fathead Minnows

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Test Run No:	15-9857-2472	**Test Type:**	Survival (96h)	**Analyst:**	Jason Walker
Start Date:	18 Dec-08 14:30	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	Not Applicable
Ending Date:	22 Dec-08 15:35	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	4

Sample No:	12-1051-1231	**Code:**	Eff	**Client:**	Moore Twining Associates, Inc.
Sample Date:	17 Dec-08 10:30	**Material:**	Effluent	**Project:**	14255
Receive Date:	18 Dec-08 10:25	**Source:**	Moore Twining Associates, Inc.		
Sample Age:	28h (1.2 °C)	**Station:**	Tertiary Effluent		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-9036-4986	96h Survival Rate	100	>100	N/A	2.5%	1	Equal Variance t Two-Sample Test

96h Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	2	1	1	1	1	1	0	0	0.0%	0.0%
100		2	1	1	1	1	1	0	0	0.0%	0.0%

96h Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2
0	Control	1	1
100		1	1

CETIS Analytical Report

Report Date: 04 Jan-09 09:22 (p 1 of 1)
Test Code: 05-5458-8927/31211

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis No:	18-9036-4986	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.6.5
Analyzed:	04 Jan-09 9:21	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run	100	>100	N/A	1	2.5%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Control		100	0	2.92	0	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65500	0.0000	Significant Effect
Error	0	0	2			
Total	0	0	3			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65500	98.5	0.0000	Unequal Variances

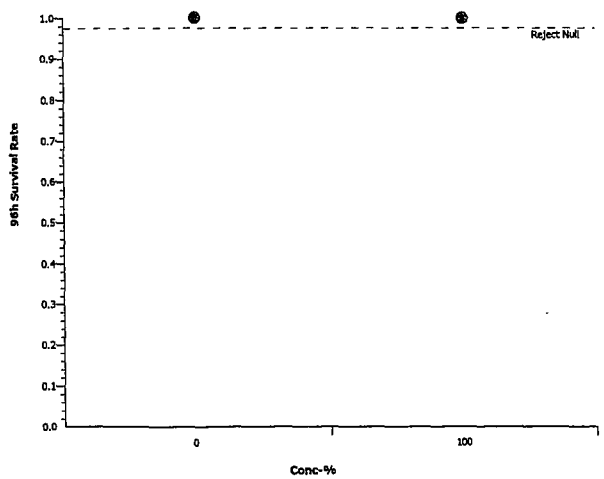
96h Survival Rate Summary

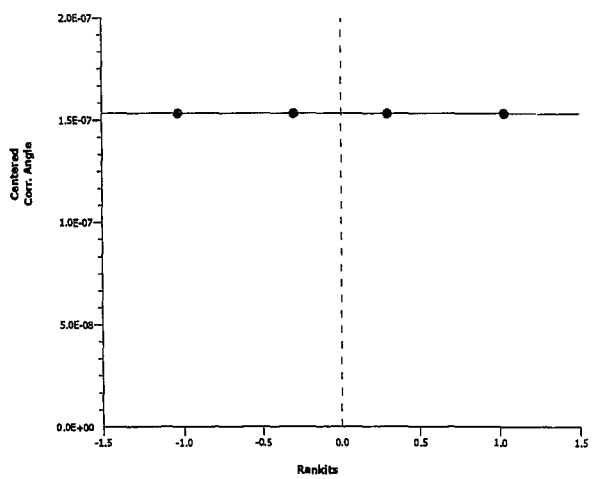
Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	2	1	1	1	1	1	0	0	0.0%	0.0%
100		2	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	2	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
100		2	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%

Graphics





96 Hour Acute Fathead Minnow Toxicity Test

Client: **Moore Twining Associates** Organism Log #: 4301 Age: 4 d

Test Material: Grab Effluent Organism Supplier: ABS

Test ID#: 31211 Project # 14255 Control: EPAMH

Test Date: 12/18/08 Randomizaiton: 2:2:3 Control Water Batch: 1155

Feeding T_0 Time: 830 Initials: PA Feeding T46-hr Time: 1030 Initials JT

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µS/cm) new	Conductivity (µS/cm) old	# Live Organisms Rep A	# Live Organisms Rep B	SIGN-OFF
Control	20.4	8.05		8.9		278		10	10	Date: 12/18/08 Sample ID: 21072 Test Solution Prep: JWL
100%	20.4	7.68		7.4		799		10	10	New WQ: SL Initiation Time: 1430 Initiation Signoff:
Meter ID	17A	pH 11		DO 14		EC04				
Control	20.3		8.15		8.4		282	10	10	Date: 12/19/08 Count Time: 0850 Count Signoff: KO Old WQ:
100%	20.3		8.17		8.4		852	10	10	
Meter ID	17A		PH11		DO10		pH EC04 DO			
Control	20.5	8.12	7.91	10.1	8.2	283	295	10	10	Date: 12.20.08 Sample ID: 21072 Test Solution Prep: EKK
100%	20.5	7.62	7.58	12.1	7.0	843	878	10	10	New WQ: EKK Renewal Time: 1400 Renewal Signoff: KO
Meter ID	17A	pH 03	pH12	DO14	DO10	EC05	EC01			Old WQ:
Control	20.5		7.96		9.1		289	10	10	Date: 12/21/08 Count Time: 0950 Count Signoff:
100%	20.5		7.64		8.2		879	10	10	Old WQ: AK
Meter ID	17A		pH03		DO14		EC05			
Control	20.3		8.07		6.2		289	10	10	Date: 12/22/08 Termination Time: 1535 Termination Signoff: PA
100%	20.3		7.88		6.1		869	10	10	Old WQ:
Meter ID	17A		pH11		DO10		EC01			

TWINING LABORATORIES, INC.

ANALYTICAL CHEMISTRY - ENVIRONMENTAL SERVICES
GEOTECHNICAL ENGINEERING - SAMPLING SERVICES
CONSTRUCTION INSPECTION & MATERIALS TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

2527 FRESNO STREET • FRESNO, CA 93721 • PHONE (559) 268-7021 • FAX: (559) 268-0740

WORK ORDER #: 817019
PAGE 1 **OF** 1

REPORT TO:

ATTENTION: Tony Morales
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank
Fresno, Ca 93725
PHONE: 485-7353
FAX: 495-1070

☐ **INVOICE TO:**

ATTENTION: Laurie Cortez
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank
Fresno, Ca 93725
PHONE: 485-7353
FAX: 485-7319

☐ **REPORT COPY TO:**

REPORTING:

☐ STANDARD PRINTED REPORT
☐ WRITE-ON (STATE FORM/EDD/EDT) (please include system ID#)
☐ GEOTRACKER/COELT (LUFT)
☐ County DHS:
☐ Environmental Health Agency
☐ OTHER:

SAMPLE INFORMATION

SAMPLED BY (PRINT): Tony Morales
SIGNATURE: Tony Morales

☐ PUBLIC SYSTEM ☒ ROUTINE
☐ PRIVATE WELL ☐ REPEAT
☐ OTHER ☐ REPLACEMENT

TURN AROUND TIME: ☐ RUSH, DUE ON:
☒ STANDARD

SAMPLE TYPES:

SOLID:
BS - BIOSOLID
CR - CERAMIC
SL - SOIL/SOLID
LIQUID:
DW - DRINKING WATER
GW - GROUND WATER
OL - OIL
SF - SURFACE WATER
ST - STORM WATER
WW - WASTE WATER

PROJECT INFORMATION

CONTRACT/P.O. NO:
PROJECT NAME: Malaga sewer plant
PROJECT NUMBER:
PROJECT MANAGER:

ANALYSIS REQUESTED

LAB USE

NOTES ON RECEIVED CONDITION:
☐ CUSTODY SEAL(S) BROKEN ☐ SAMPLE(S) DAMAGED
☐ ON ICE ☐ AMBIENT TEMP. ☐ INCORRECT PRESERVATION
P.H.O

CLIENT SAMPLE ID	DATE	TIME	TYPE	X Acute toxicity Testing	LAB USE
Tertiary Eff	12-16-08	10:30 AM	WW	X	2X 16 Lab.
→	12-17-08	10:30 AM 24 HR COMP SAMPLE			

COMMENTS/ADDITIONAL INSTRUCTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
Tony Morales	Malaga County Water District	12-17-08	13:47	[illegible]	MTA

MOORE TWINING ASSOCIATES, INC.
California ELAP Certificate #1371

2527 Fresno Street
Fresno, CA 93721
Office: (559) 268-7021
Fax: (559) 268-0740

Analytical Chemistry Division

January 26, 2009

Work Order #: 8L15015,
8L17018, 8L19008 & 8L22015

Tony Morales
Malaga County Water District
3580 S. Frank
Fresno, CA 93725

RE: Malaga Sewer Plant

Enclosed are the analytical results for samples received by our laboratory on 12/15, 17, 19 & 22/08. For your reference, these analyses have been assigned laboratory work order number 8L15015, 8L17018, 8L19008 & 8L22015.

Please find enclosed the official letter of documentation for the Bioassay analysis from the subcontracted laboratory, which was received at our laboratory on 01/23/09.

All analyses have been performed according to our subcontractor laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results only apply to samples analyzed.

If you have any questions, Please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Ronald J. Boquist
Director of Analytical Chemistry

Ronald Boquist
Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721

January 9, 2009

Dear Mr. Boquist:

I have enclosed two copies of the report "NPDES Compliance Chronic Toxicity Testing of the Malaga WWTF Final Effluent" for testing performed of the effluent samples collected on December 15, 17, 19, and 22, 2008. The results of these tests can be summarized as follows:

Chronic Effects of Malaga Effluent on *Selenastrum capricornutum*
There were ***no*** significant reductions in algal growth in the Malaga effluent; the NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

Chronic Effects of Malaga Effluent on *Ceriodaphnia dubia*
There were significant reductions in *Ceriodaphnia* reproduction in the Malaga effluent; the NOEC was 50% effluent, resulting in 2.0 TUc (where TUc = 100/NOEC).

Chronic Effects of Malaga Effluent on Larval Fathead Minnows
There were ***no*** significant reductions in fathead minnow survival or growth in the Malaga effluent. The NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC) for both test endpoints.

If you have any questions regarding the performance or interpretation of these tests, please feel free to contact me at (707) 207-7760.

Sincerely,

R. Scott Ogle, Ph.D.
Principal & Special Projects Director

This testing was performed under Lab Order 14256. The test results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report, and only relate to the sample(s) tested. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk.

CORPORATE HEADQUARTERS
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2792 W. Loker Avenue, Ste. 100
Carlsbad, CA 92010
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fax : 760.602.9119

www.pacificecorisk.com

NPDES Compliance Chronic Toxicity Testing of the Malaga WWTF Final Effluent

Effluent samples collected December 15, 17, 19, and 22, 2008

Prepared For:

Moore Twining Associates
2527 Fresno Street
Fresno, CA 93721

Prepared By:

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534

January 2009

PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

NPDES Compliance Chronic Toxicity Testing of the Malaga WWTF Final Effluent

Effluent samples collected December 15, 17, 19, and 22, 2008

Prepared For:

Moore Twining Associates
2527 Fresno Street
Fresno, CA 93721

Prepared By:

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534

January 2009

NPDES Compliance Chronic Toxicity Testing of the Malaga WWTF Final Effluent

Effluent samples collected December 15, 17, 19, and 22, 2008

Table of Contents

Appendices

1. INTRODUCTION

Moore Twining Associates has contracted Pacific EcoRisk (PER) to perform an evaluation of the chronic toxicity of effluent produced by the Malaga County Water District Wastewater Treatment Facility (Malaga WWTF). This evaluation consisted of performing the following US EPA freshwater short-term chronic toxicity tests:

- 96-hr algal growth test with the green alga *Selenastrum capricornutum;*
- 3-brood (6-8 day) survival and reproduction test with the crustacean *Ceriodaphnia dubia;* and
- 7-day survival and growth test with larval fathead minnows (*Pimephales promelas*).

These tests were performed for Malaga WWTF effluent samples collected December 15, 17, 19, and 22, 2008. In order to assess the sensitivity of the test organisms to toxic stress, reference toxicant tests were also performed. This report describes the performance and results of these effluent and reference toxicant tests.

2. CHRONIC TOXICITY TEST PROCEDURES

The methods used in conducting these tests followed the guidelines established by the EPA manual "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013).

2.1 Receipt and Handling of the Effluent Samples

On December 15, 17, 19, and 22, Malaga WWTF staff collected samples of final effluent into appropriately cleaned sample cubitainers. Each sample was transported, on ice and under chain-of-custody, to the PER laboratory in Fairfield, CA. Upon receipt at the testing laboratory, aliquots of each sample were collected for analysis of initial water quality characteristics (Table 1), with the remainder of the samples being stored at 4°C except when being used to prepare test solutions. The chain-of-custody records for the collection and delivery of these samples are provided in Appendix A.

Table 1. Initial water quality characteristics of the Malaga effluent samples.

Sample Receipt Date	Sample ID	Temp. (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (μS/cm)	Total Ammonia (mg/L N)
12/15/08	8L15015-01	5.1	7.64	9.6	108	156	741	<1.0
12/17/08	8L17018-01	0.7	7.48	8.8	99	163	840	<1.0
12/19/08	8L19008-01	1.2	7.76	10.5	105	146	756	<1.0
12/22/08	8L22015-01	1.8	7.71	10.7	112	153	718	<1.0

2.2 Algal Growth Toxicity Testing with *Selenastrum capricornutum*

The short-term chronic algal toxicity test consists of a 96-hr bioassay in which the green alga *Selenastrum capricornutum* is exposed to a series of effluent dilutions and the effects on cellular reproduction (= growth) determined. The specific procedures used in this test are described below.

The Lab Control/diluent for this test consisted of reverse-osmosis, de-ionized (RO/DI) water. Aliquots of the Lab Control water and effluent were filtered (using sterile 0.45 μm filters) and then amended with nutrients before use in this test, as per EPA guidelines. The filtered, nutrient-amended Lab Control water and effluent were then used to prepare test solutions at test treatment concentrations of 12.5%, 25%, 50%, 75% and 100% effluent. Routine water quality characteristics (pH, dissolved oxygen [D.O.], and conductivity) were measured on these test solutions prior to their use in the test.

There were 4 replicates for each test treatment, each replicate consisting of a 250-mL glass Erlenmeyer flask containing 100 mL of test solution; an additional replicate was established at each test treatment in order to measure the test solution water quality characteristics during the test and at test termination. Each flask was inoculated to an initial cell density of 10,000 cells/mL of *Selenastrum* from an ongoing laboratory culture that is maintained in log growth phase. These flasks were loosely capped and randomly positioned within a temperature-controlled room at 25°C, under continuous cool-white fluorescent illumination. Each day, the flasks were gently shaken in the morning and in the afternoon and re-positioned within the holding shelf.

After 96 (±2) hrs of exposure, the algal cell density in each replicate flask was determined by spectrophotometric analysis. The resulting cell density data were analyzed to evaluate any impairment of algal growth caused by the effluent. All statistical analyses were performed using the CETIS® statistical software (TidePool Scientific, McKinleyville, CA).

2.2.1 Reference Toxicant Testing of the *Selenastrum capricornutum*

In order to assess the sensitivity of the *Selenastrum* to toxic stress, a reference toxicant test was performed concurrently with the effluent test. The reference toxicant test was performed similarly to the effluent test except that test solutions consisted of Lab Control water spiked with NaCl at concentrations of 0.5, 1, 2, 4, and 8 gm/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., IC_{50}); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

2.3 Survival and Reproduction Toxicity Testing with *Ceriodaphnia dubia*

The short-term chronic *Ceriodaphnia* test consists of exposing individual females to a series of effluent dilutions for the length of time it takes for the Lab Control treatment females to produce 3 broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in this test are described below.

The Lab Control/diluent water for this test consisted of a mixture of commercial spring waters (80% Arrowhead:20% Evian). The Lab Control water and effluent were used to prepare test solutions at test treatment concentrations of 12.5%, 25%, 50%, 75% and 100% effluent. For each treatment, 200 mL aliquots of test solution were amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll-Trout Food (YCT) to provide food for the test organisms. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in this test.

There were 10 replicates for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. This "3-brood" test was initiated by allocating one neonate (<24 hours old) *Ceriodaphnia*, obtained from in-house laboratory cultures, into each replicate cup. The test replicate cups were placed into foam boards that floated in a temperature-controlled room at 25°C, under cool white fluorescent lighting on a 16L:8D photoperiod.

Each day of the test, fresh test solutions were prepared and characterized as before, and a "new" set of replicate cups was prepared. The original test replicate cups were examined, with surviving "original" individual organisms being transferred to the corresponding new cup. The contents of each of the remaining "old" replicate cups was carefully examined and the number of neonate offspring produced by each original organism was determined, after which the "old" water quality characteristics (pH, D.O., and conductivity) were measured for the old media from one randomly-selected replicate at each treatment.

After it was determined that ≥60% of the *Ceriodaphnia* in the Lab Control treatment had produced their third brood of offspring, the test was terminated. The resulting survival and reproduction (# of offspring) data were analyzed to evaluate any impairment(s) caused by the effluent; all statistical analyses were performed using the CETIS® statistical software.

2.3.1 Reference Toxicant Testing of the *Ceriodaphnia dubia*

In order to assess the sensitivity of the *Ceriodaphnia* test organisms to toxic stress, a reference toxicant test was performed concurrently with the effluent test. The reference toxicant test was performed similarly to the effluent test except that test solutions consisted of Lab Control water spiked with NaCl at test concentrations of 250, 500, 1000, 1500, and 2000 mg/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., IC_{50}); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of

the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

2.4 Survival and Growth Toxicity Testing with Larval Fathead Minnows

The short-term chronic fathead minnow test consists of exposing larval fish to a series of effluent dilutions for 7 days, after which effects on survival and growth are evaluated. The specific procedures used in this test are described below.

The larval fathead minnows used in this test were obtained from a commercial supplier (Aquatic Biosystems, Fort Collins, CO); upon receipt at the testing lab, the larval fish were maintained in aerated tanks of US EPA moderately-hard water at 25°C, and were fed brine shrimp nauplii *ad libitum*.

The Lab Control/dilution water for this test consisted of consisted of US EPA synthetic moderately-hard water. The Lab Control/dilution water and the effluent sample were used to prepare daily test solutions at test treatment concentrations of 12.5%, 25%, 50%, 75%, and 100% effluent. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in the test.

There were 4 replicates at each test treatment, each replicate consisting of 400 mL of test media in a 600-mL glass beaker. This test was initiated by randomly allocating 10 larval fathead minnows (<48 hrs old) into each replicate. The replicate beakers were placed in a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod. The test fish were fed brine shrimp nauplii twice daily.

Each day of the test, fresh test solutions were prepared for each treatment, and water quality characteristics were determined as before. The beakers containing the fathead minnows were examined, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live fish in each replicate was determined and then approximately 80% of the old test media in each beaker was carefully poured out and replaced with fresh test solution. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water that had been discarded from one randomly selected replicate at each treatment.

After 7 days exposure, the number of live fish in each replicate beaker was recorded. The fish from each replicate were then carefully euthanized in methanol, rinsed in de-ionized water, and transferred to a pre-dried and pre-tared weighing pan. These fish were then dried at 100°C for >24 hrs and re-weighed to determine the total weight of fish in each replicate; the total weight was then divided by the initial number of fish per replicate (n=10) to determine the "biomass value". The resulting survival and growth ("biomass value") data were analyzed to evaluate any impairment(s) caused by the effluent; all statistical analyses were performed using the CETIS® statistical software.

2.4.1 Reference Toxicant Testing of the Larval Fathead Minnows

In order to assess the sensitivity of the fish test organisms to toxic stress, a reference toxicant test was performed. The reference toxicant test was performed similarly to the effluent test except that test solutions consisting of Lab Control water spiked with copper (as $CuSO_4$) at test concentrations of 6.25, 12.5, 25, 50, and 100 μg/L were used instead of effluent dilutions. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., EC_{50}); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the 20 most recent previous reference toxicant tests performed by this lab.

3. RESULTS

3.1 Effects of Malaga Effluent on *Selenastrum capricornutum*

The results of this test are summarized below in Table 2. There was a mean final algal cell density of 2,630,000 cells/mL at the Lab Control treatment. There were ***no*** significant reductions in algal growth in the Malaga effluent; the NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

The test data and summary of statistical analyses for this test are provided as Appendix B.

Table 2. Effects of Malaga effluent on *Selenastrum capricornutum* growth.

Treatment	Mean Algal Cell Density (cells/mL x 10^6)
Lab Control	2.63
12.5% effluent	4.00
25% effluent	4.44
50% effluent	4.45
75% effluent	4.06
100% effluent	4.27
Summary of Statistics	
No Observable Effect Concentration (NOEC) =	100% effluent
TUc (where TUc = 100/NOEC) =	1.0
IC_{25} =	>100% effluent

3.1.1 Reference Toxicant Toxicity to *Selenastrum capricornutum*

The results of this test are summarized below in Table 3. There was a mean of 2,590,000 cells/mL in the Lab Control treatment. The IC_{50} was 1.6 gm/L NaCl.

These reference toxicant test results are consistent with previous *Selenastrum* reference toxicant tests, indicating that these organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix C.

Table 3. Reference toxicant testing: effects of NaCl on *Selenastrum capricornutum* growth.

NaCl Treatment (gm/L)	Mean Algal Cell Density (cells/mL x 10^6)
Lab Control	2.59
0.5	2.39
1	**1.75***
2	**0.983***
4	**0.173***
8	**0.027***
Summary of Statistics	
IC_{50} = 1.6 gm/L NaCl	

* Significantly less than the Lab Control treatment response ($p < 0.05$).

3.2 Effects of Malaga Effluent on *Ceriodaphnia dubia*

The results of this test are summarized below in Table 4. There was 100% survival at the Lab Control treatment. There were ***no*** significant reductions in survival in the Malaga effluent; the survival NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

There was a mean of 19.4 offspring per female in the Lab Control. There were significant reductions in reproduction in the Malaga effluent; the reproduction NOEC was 50% effluent, resulting in 2.0 TUc (where TUc = 100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix D.

Table 4. Effects of Malaga effluent on *Ceriodaphnia dubia* survival and reproduction.

Test Treatment	% Survival	Reproduction (# neonates/female)
Lab Control	100	19.4
12.5% effluent	100	20.1
25% effluent	100	19.7
50% effluent	100	18.4
75% effluent	80	**14.4***
100% effluent	100	**15.2***
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% effluent	50% effluent
TUc (100/NOEC) =	1.0	2.0
Survival EC_{25} or Reproduction IC_{25} =	could not be determined, can be assumed to be >100% effluent	74.9% effluent

* Significantly less than the Lab Control treatment response ($p < 0.05$).

3.2.1 Reference Toxicant Toxicity to *Ceriodaphnia dubia*

The results of this test are summarized below in Table 5. There was 100% survival and a mean of 28.5 offspring in the Lab Control treatment. The survival EC_{50} was 1720 mg/L NaCl, and the reproduction IC_{50} was 1260 mg/L NaCl.

These reference toxicant test results are consistent with previous *Ceriodaphnia* reference toxicant tests, indicating that these organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix E.

Table 5. Reference toxicant testing: effects of sodium chloride on *Ceriodaphnia dubia*.

NaCl Treatment (mg/L)	% Survival	Reproduction (# neonates/female)
Lab Control	100	28.5
250	80	26.0
500	100	27.1
1000	100	**19.3***
1500	100	a
2000	**0***	0
Summary of Statistics		
Survival EC_{50} or Reproduction IC_{50} =	1720 mg/L NaCl	1260 mg/L NaCl

* Significantly less than the Lab Control treatment response ($p < 0.05$).

a - Due to a technical error, reproduction was not counted for this test treatment; this treatment was omitted from statistical analysis.

3.3 Effects of Malaga Effluent on Fathead Minnows

The results of this test are summarized below in Table 6. There was 100% survival at the Lab Control treatment. There were ***no*** significant reductions in survival in the Malaga effluent; the survival NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

The mean biomass value was 0.42 mg at the Lab Control treatment. Statistical analysis of the growth endpoint shows an interrupted concentration-response with apparent significant reductions in growth indicated for the 12.5%, 25%, and 100% effluent treatments. However, the growth PMSD of 8.1% is less than the EPA's lower PMSD limit of 12%; as per EPA guidance, PMSD evaluation was applied to the individual test treatments, and indicated that the slight reductions in growth in the 12.5%, 25%, and 100% effluent treatments are not significant. As a result, the growth NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

The test data and the summary of statistical analyses for this test are presented in Appendix F.

Table 6. Effects of Malaga effluent on fathead minnow survival and growth.

Effluent Treatment	Mean % Survival	Mean Biomass Value (mg)
Lab Control	100	0.42
12.5% effluent	100	0.37[a]
25% effluent	97.5	0.38[a]
50% effluent	95.0	0.40
75% effluent	100	0.41
100% effluent	100	0.38[a]
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% effluent	100% effluent
TUc (100/NOEC) =	1.0	1.0
Survival EC_{25} or Growth IC_{25} =	could not be determined, can be assumed to be >100% effluent	>100% effluent

a - As per EPA guidance (see page 6-8 of EPA 833-R-00-003 and pages 51-52 of EPA 821-R-02-013), this sample should not be considered toxic even though the CETIS statistical summary sheets indicate that the sample is statistically less than the accompanying Control. The EPA guidance indicates that treatments with a very small relative difference from the Control treatment (i.e., smaller than the lower PMSD limit) are treated as though they do not differ significantly from the Lab Control (even if they do so statistically). The relative difference between the designated sample and the Lab Control is less than the Lower PMSD Bound of 8.1% established for the chronic *Selenastrum* test. The EPA established this approach to avoid false positives that might otherwise result due to the high degree of precision achieved by the testing lab, and further notes that the Lower PMSD Bound represents a practical limit to the sensitivity of the test method because few laboratories are able to achieve such precision on a regular basis and most do not achieve it even occasionally.

3.3.1 Reference Toxicant Toxicity to Fathead Minnows

The results of this test are summarized below in Table 7. There was 87.5% survival and a mean fish biomass value of 0.44 mg in the Lab Control treatment. The survival EC_{50} was 3.3 g/L NaCl and the growth IC_{50} was 2.7 g/L NaCl.

These reference toxicant test results are consistent with the responses from the respective databases of similar reference toxicant tests previously performed in our laboratory. The test data and summary of statistical analyses for this test are presented in Appendix G.

Table 7. Reference toxicant testing: effects of sodium chloride on fathead minnows.

NaCl Treatment (g/L)	Mean % survival	Mean Biomass Value (mg)
Lab Control	87.5	0.44
0.75	100	0.55
1.5	95	0.44
3	**60***	**0.20**
6	**0***	**0**
9	**0***	**0**
Summary of Statistics		
Survival EC_{50} or Growth IC_{50} =	3.3 g/L NaCl	2.7 g/L NaCl

* Significantly less than the Lab Control treatment response ($p < 0.05$).

4. SUMMARY AND CONCLUSIONS

Chronic Effects of Malaga Effluent on *Selenastrum capricornutum*
There were ***no*** significant reductions in algal growth in the Malaga effluent; the NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC).

Chronic Effects of Malaga Effluent on *Ceriodaphnia dubia*
There were significant reductions in *Ceriodaphnia* reproduction in the Malaga effluent; the NOEC was 50% effluent, resulting in 2.0 TUc (where TUc = 100/NOEC).

Chronic Effects of Malaga Effluent on Larval Fathead Minnows
There were ***no*** significant reductions in fathead minnow survival or growth in the Malaga effluent. The NOEC was 100% effluent, resulting in 1.0 TUc (where TUc = 100/NOEC) for both test endpoints.

4.1 QA/QC Summary

Test Conditions – Test conditions (pH, D.O., temperature, etc.) were all within acceptable limits. All analyses were performed according the laboratory Standard Operating Procedures.

Negative Control – The biological responses for the test organisms at the Lab Control treatments were within acceptable limits.

Positive Control – The results for the reference toxicant tests were consistent with the reference toxicant test databases, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – There were valid concentration-response relationships for the effluent and reference toxicant tests (EPA-821-B-00-004), which were determined to be acceptable for this testing.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the Malaga Effluent Water Samples

MOORE TWINING ASSOCIATES, INC.

California ELAP Certification # 1371

SUBCONTRACT ORDER - Purchase Order # 0280

MTA Project # 8L15015

Please reference these numbers on all reports and invoices:
We also request QC data be provided with final report.

SENDING LABORATORY:

Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721
Phone: (559) 268-7021
Fax: (559) 268-0740
Project Manager: Andrea Seruntine

RECEIVING LABORATORY:

Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sample Comments

Client Sample ID#: Tertiary Eff.

MTA Sample ID: 8L15015-01 Matrix: Water **Sampled: 12/15/08 10:30** **Report Due to Client: 12/30/08**

Requested Analysis: Bioassay - Chronic. Holding time expires: 12/17/08 10:30

Containers Supplied:
1G Cubitainer (A)

Released By	Date	Received By	Date
Aurelia Pang	12/15/08	M Melendez	12/16/08

Please fax copy of receipt with your assigned sample ID number to (559) 268-0740 Page 1 of 1

MOORE TWINING ASSOCIATES, INC.

California ELAP Certification # 1371

SUBCONTRACT ORDER - Purchase Order # 9242

MTA Project # 8L17018

Please reference these numbers on all reports and invoices:
We also request QC data be provided with final report.

SENDING LABORATORY:	RECEIVING LABORATORY:
Moore Twining Associates, Inc.	Pacific Ecorisk
2527 Fresno Street	2250 Cordelia Road
Fresno, CA 93721	Fairfield, CA 94534
Phone: (559) 268-7021	Phone :(707) 207-7760
Fax: (559) 268-0740	Fax: (707) 207-7916
Project Manager: Andrea Seruntine	

Sample Comments

Client Sample ID#: Tertiary Eff.

MTA Sample ID: 8L17018-01 Matrix: Water **Sampled: 12/17/08 10:30** **Report Due to Client: 01/02/09**

Requested Analysis: Bioassay - Chronic Holding time expires: 12/19/08 10:30

Containers Supplied:

1G Cubitainer (A) 1G Cubitainer (B)

Released By	Date	Received By	Date
V. Cowan	12-17-08		12/18/08
Released By	Date	Received By	Date

Please fax copy of receipt with your assigned sample ID number to (559) 268-0740 Page 1 of 1

MOORE TWINING ASSOCIATES, INC.

California ELAP Certification # 1371

SUBCONTRACT ORDER - Purchase Order # 6299

MTA Project # 8L19008

Please reference these numbers on all reports and invoices:
We also request QC data be provided with final report.

SENDING LABORATORY:

Moore Twining Associates, Inc.
2527 Fresno Street
Fresno, CA 93721
Phone: (559) 268-7021
Fax: (559) 268-0740
Project Manager: Andrea Seruntine

RECEIVING LABORATORY:

Pacific Ecorisk
2250 Cordelia Road
Fairfield, CA 94534
Phone :(707) 207-7760
Fax: (707) 207-7916

Sample Comments

Client Sample ID#: Tertiary Eff.

MTA Sample ID: 8L19008-01 Matrix: Water **Sampled: 12/19/08 10:45** **Report Due to Client: 01/06/09**

Requested Analysis: Bioassay - Chronic Holding time expires: 12/21/08 10:45

Containers Supplied:

1G Cubitainer (A) 1G Cubitainer (B)

Released By	Date	Received By	Date
[signature]	12-19-08	[signature]	12/20/08
Released By	Date	Received By	Date

Please fax copy of receipt with your assigned sample ID number to (559) 268-0740 Page 1 of 1

CHAIN OF CUSTODY - Purchase Order # 4210

TWINING ASSOCIATES, INC.

California ELAP Certification # 1371

MTA Project # 8L22015

Please reference these numbers on all reports and invoices:
We also request QC data be provided with final report.

SENDING LABORATORY:	RECEIVING LABORATORY:
Moore Twining Associates, Inc.	Pacific Ecorisk
2527 Fresno Street	2250 Cordelia Road
Fresno, CA 93721	Fairfield, CA 94534
Phone: (559) 268-7021	Phone :(707) 207-7760
Fax: (559) 268-0740	Fax: (707) 207-7916
Project Manager: Andrea Seruntine	

Sample Comments

Client Sample ID#: Tertiary Eff.

MTA Sample ID: 8L22015-01 Matrix: Water **Sampled: 12/22/08 10:45** **Report Due to Client: 01/07/09**

Requested Analysis: Bioassay - Chronic Holding time expires: 12/24/08 10:45

Containers Supplied:

1G Cubitainer (A) 1G Cubitainer (B)

Released By	Date	Received By	Date
Alicia Parry	12-22-08	Jessica Cadigan	12/23/08 0830

Please fax copy of receipt with your assigned sample ID number to (559) 268-0740 Page 1 of 1

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Malaga Effluent to *Selenastrum capricornutum*

CETIS Summary Report

Algal Growth Test — **Pacific EcoRisk**

Test Run No:	09-0010-4336	**Test Type:**	Cell Growth	**Analyst:**	John Jirasritumrong
Start Date:	16 Dec-08 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	20 Dec-08 13:30	**Species:**	Selenastrum capricornutum	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	In-House Culture	**Age:**	6

Sample No:	03-0745-8256	**Code:**	Eff	**Client:**	Moore Twining Associates, Inc.
Sample Date:	15 Dec-08 10:30	**Material:**	Effluent	**Project:**	14256
Receive Date:	16 Dec-08 09:30	**Source:**	Moore Twining Associates, Inc.		
Sample Age:	26h (5.1 °C)	**Station:**	Tertiary Effluent		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	Method
04-6848-2010	Cell Density	100	> 100	N/A	12.8%	Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis No	Endpoint	Effect-%	Conc-%	95% LCL	95% UCL	Method
08-1876-1816	Cell Density	2.5	> 100	N/A	N/A	Linear Interpolation (ICPIN)
		5	> 100	N/A	N/A	
		10	> 100	N/A	N/A	
		15	> 100	N/A	N/A	
		20	> 100	N/A	N/A	
		25	> 100	N/A	N/A	
		40	> 100	N/A	N/A	
		50	> 100	N/A	N/A	

Cell Density Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	2.63E+6	2.53E+6	2.72E+6	2.44E+6	2.99E+6	4.65E+4	2.55E+5	9.7%	0.0%
12.5		4	4.00E+6	3.96E+6	4.04E+6	3.84E+6	4.08E+6	2.04E+4	1.11E+5	2.78%	-52.3%
25		4	4.44E+6	4.41E+6	4.47E+6	4.35E+6	4.54E+6	1.43E+4	7.85E+4	1.77%	-68.9%
50		4	4.45E+6	4.41E+6	4.48E+6	4.32E+6	4.51E+6	1.60E+4	8.74E+4	1.97%	-69.2%
75		4	4.06E+6	4.01E+6	4.10E+6	3.93E+6	4.17E+6	2.29E+4	1.25E+5	3.09%	-54.4%
100		4	4.27E+6	4.14E+6	4.40E+6	3.85E+6	4.72E+6	6.56E+4	3.60E+5	8.42%	-62.5%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	2.44E+6	2.62E+6	2.99E+6	2.46E+6
12.5		4.08E+6	4.02E+6	4.07E+6	3.84E+6
25		4.35E+6	4.44E+6	4.42E+6	4.54E+6
50		4.32E+6	4.50E+6	4.51E+6	4.45E+6
75		4.17E+6	4.16E+6	3.97E+6	3.93E+6
100		4.19E+6	4.72E+6	4.32E+6	3.85E+6

CETIS Analytical Report

Algal Growth Test — **Pacific EcoRisk**

Analysis No:	04-6848-2010	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.6.5
Analyzed:	02 Jan-09 10:36	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	100	>100	N/A	1	12.8%

Dunnett's Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Control		12.5	-9.8	2.41	338000	1.0000	Non-Significant Effect
		25	-12.9	2.41	338000	1.0000	Non-Significant Effect
		50	-13	2.41	338000	1.0000	Non-Significant Effect
		75	-10.2	2.41	338000	1.0000	Non-Significant Effect
		100	-11.7	2.41	338000	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	9.380534E+12	1.876107E+12	5	47.7	0.0000	Significant Effect
Error	7.082E+11	39344440000	18			
Total	1.0088733606E+13	1.9154511176E+12	23			

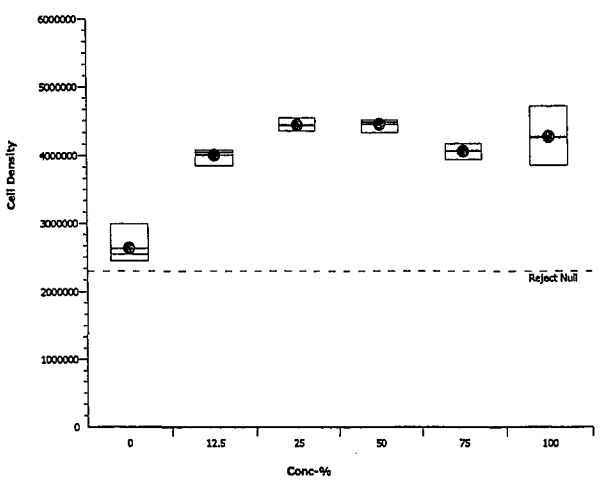
ANOVA Assumptions

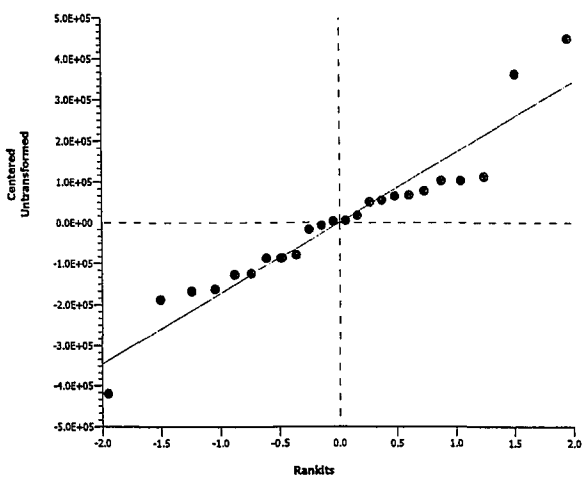
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	10.3	15.1	0.0673	Equal Variances
Distribution	Shapiro-Wilk Normality	0.929		0.0926	Normal Distribution

Cell Density Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	2.63E+6	2.53E+6	2.72E+6	2.44E+6	2.99E+6	4.73E+4	2.55E+5	9.7%	0.0%
12.5		4	4.00E+6	3.96E+6	4.04E+6	3.84E+6	4.08E+6	2.07E+4	1.11E+5	2.78%	-52.3%
25		4	4.44E+6	4.41E+6	4.47E+6	4.35E+6	4.54E+6	1.46E+4	7.85E+4	1.77%	-68.9%
50		4	4.45E+6	4.41E+6	4.48E+6	4.32E+6	4.51E+6	1.62E+4	8.74E+4	1.97%	-69.2%
75		4	4.06E+6	4.01E+6	4.11E+6	3.93E+6	4.17E+6	2.33E+4	1.25E+5	3.09%	-54.4%
100		4	4.27E+6	4.13E+6	4.41E+6	3.85E+6	4.72E+6	6.68E+4	3.60E+5	8.42%	-62.5%

Graphics





Algal Growth Test — **Pacific EcoRisk**

Analysis No:	08-1876-1816	**Endpoint:**	Cell Density	**CETIS Version:**	CETISv1.6.5
Analyzed:	02 Jan-09 10:36	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	5795186	280	Yes	Two-Point Interpolation

Point Estimates

Level	Conc-%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC2.5	>100	N/A	N/A	<1	N/A	N/A
IC5	>100	N/A	N/A	<1	N/A	N/A
IC10	>100	N/A	N/A	<1	N/A	N/A
IC15	>100	N/A	N/A	<1	N/A	N/A
IC20	>100	N/A	N/A	<1	N/A	N/A
IC25	>100	N/A	N/A	<1	N/A	N/A
IC40	>100	N/A	N/A	<1	N/A	N/A
IC50	>100	N/A	N/A	<1	N/A	N/A

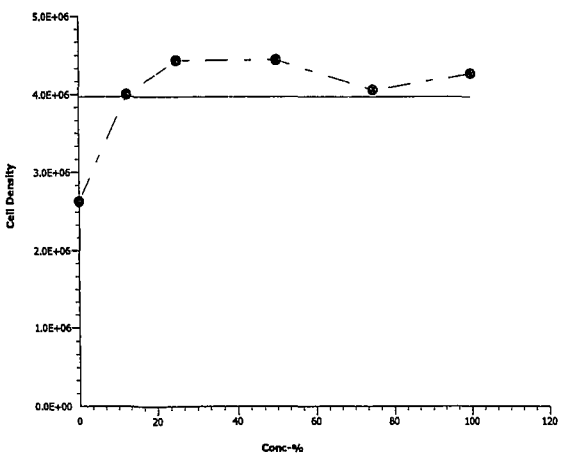
Cell Density Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	2.63E+6	2.44E+6	2.99E+6	4.65E+4	2.55E+5	9.7%	0.0%
12.5		4	4.00E+6	3.84E+6	4.08E+6	2.04E+4	1.11E+5	2.78%	-52.3%
25		4	4.44E+6	4.35E+6	4.54E+6	1.43E+4	7.85E+4	1.77%	-68.9%
50		4	4.45E+6	4.32E+6	4.51E+6	1.60E+4	8.74E+4	1.97%	-69.2%
75		4	4.06E+6	3.93E+6	4.17E+6	2.29E+4	1.25E+5	3.09%	-54.4%
100		4	4.27E+6	3.85E+6	4.72E+6	6.56E+4	3.60E+5	8.42%	-62.5%

Cell Density Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	2.44E+6	2.62E+6	2.99E+6	2.46E+6
12.5		4.08E+6	4.02E+6	4.07E+6	3.84E+6
25		4.35E+6	4.44E+6	4.42E+6	4.54E+6
50		4.32E+6	4.50E+6	4.51E+6	4.45E+6
75		4.17E+6	4.16E+6	3.97E+6	3.93E+6
100		4.19E+6	4.72E+6	4.32E+6	3.85E+6

Graphics



Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client: **Moore Twining Associates** Test ID #: 31212 Test Date: 12/16/08

Test Material: Composite Effluent Project #: 14256 Control/Diluent: Lab Water

Staff: RJS1

Test Treatment	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	24.5	7.57	8.0	89	Date: 12/16/08
12.5% Effluent	24.5	7.43	8.1	185	Sample ID: 210489
25% Effluent	24.5	7.62	8.5	278	Test Solution Prep: SA
50% Effluent	24.5	7.72	8.6	447	New WQ: DMP
75% Effluent	24.5	7.77	8.7	629	Innoculation Time: 1300
100% Effluent	24.5	7.79	9.0	793	Innoculation Signoff: SA
Meter ID:	33	PH12	DO10	EC04	
Lab Water Control	24.9	7.58			Date: 12/17/08
12.5% Effluent	24.9	7.50			WQ Time: 0845
25% Effluent	24.9	7.80			WQ Signoff: DMP
50% Effluent	24.9	8.02			
75% Effluent	24.9	8.11			
100% Effluent	24.9	8.15			
Meter ID:	33	PH12			
Lab Water Control	25.1	8.91			Date: 12/18/08
12.5% Effluent	25.1	8.79			WQ Time: 0910
25% Effluent	25.1	8.68			WQ Signoff: SL
50% Effluent	25.1	8.48			
75% Effluent	25.1	8.36			
100% Effluent	25.1	8.32			
Meter ID:	33	PH11			
Lab Water Control	24.7	9.97			Date: 12/19/08
12.5% Effluent	24.7	9.98			WQ Time: 1040
25% Effluent	24.7	10.06			WQ Signoff: DMP
50% Effluent	24.7	9.94			
75% Effluent	24.7	9.70			
100% Effluent	24.7	9.58			
Meter ID:	33	PH11			
Lab Water Control	24.1	10.28	11.2	1078 / 131	Date: 12/20/08
12.5% Effluent	24.1	10.59	12.9	230	Termination Time: 1330
25% Effluent	24.1	10.62	13.0	317	Termination Signoff: SA
50% Effluent	24.1	10.64	15.3	481	WQ Time: 0850
75% Effluent	24.1	10.54	13.4	635	WQ Signoff: DMP
100% Effluent	24.1	10.31	16.4	774	
Meter ID:	~~PH~~ 33	PH11	~~EC~~ DO12	EC04	

Initial Test Conditions	Alkalinity	Hardness	Light Intensity (ftc)
	108 ✓	156 ✓	382

Selenastrum capricornutum Cell Density Enumeration Data

Client: **Moore Twining Associates** Initial Count: 10,000 cells/mL

Test Material: Composite Effluent Enumerating Scientist: SA

Test Start Date: 12/16/08 Start Time: 1300 Project #: 14256

Test End Date: 12/20/08 End Time: 1330 Test ID #: 31212

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	2.44	2.62	2.99	2.46	2.63
12.5%	4.08	4.02	4.07	3.84	4.00
25%	4.35	4.44	4.42	4.54	4.44
50%	4.32	4.50	4.51	4.45	4.44
75%	4.17	4.16	3.97	3.93	4.06
100%	4.19	4.72	4.32	3.85	4.27
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of concern.	**Control Mean Density (cells/mL x 10^6)**	**% CV**	**Date:**	**Time:**	**Signoff:**
	2.63	9.7	12/20/08	1825	KO

Appendix C

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Selenastrum capricornutum*

CETIS Summary Report

Algal Growth Test — **Pacific EcoRisk**

Test Run No:	01-6025-6901	**Test Type:**	Cell Growth	**Analyst:**	Kevin Obad
Start Date:	16 Dec-08 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	20 Dec-08 14:00	**Species:**	Selenastrum capricornutum	**Brine:**	Not Applicable
Duration:	4d 1h	**Source:**	In-House Culture	**Age:**	6 d

Sample No:	02-9621-6074	**Code:**	NaCl	**Client:**	Reference Toxicant
Sample Date:	16 Dec-08 13:00	**Material:**	Sodium chloride	**Project:**	14267
Receive Date:	16 Dec-08 13:00	**Source:**	Reference Toxicant		
Sample Age:	N/A (25 °C)	**Station:**	In House		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-8052-6961	Cell Density	0.5	1	0.707	10.4%		Steel Many-One Rank Test

Point Estimate Summary

Analysis No	Endpoint	Level	Conc-g/L	95% LCL	95% UCL	TU	Method
00-3486-2164	Cell Density	IC2.5	0.166	0.0171	0.788		Linear Interpolation (ICPIN)
		IC5	0.331	0.0342	0.776		
		IC10	0.55	0.136	0.825		
		IC15	0.651	0.309	0.943		
		IC20	0.752	0.455	1.06		
		IC25	0.853	0.594	1.2		
		IC40	1.26	0.843	1.61		
		IC50	1.6	1.29	1.87		

Cell Density Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	2.59E+6	2.47E+6	2.70E+6	2.23E+6	2.87E+6	5.84E+4	3.20E+5	12.4%	0.0%
0.5		4	2.39E+6	2.35E+6	2.43E+6	2.32E+6	2.54E+6	1.90E+4	1.04E+5	4.35%	7.54%
1		4	1.75E+6	1.69E+6	1.81E+6	1.55E+6	1.96E+6	3.17E+4	1.73E+5	9.91%	32.3%
2		4	9.83E+5	9.58E+5	1.01E+6	9.04E+5	1.06E+6	1.23E+4	6.73E+4	6.84%	62.0%
4		4	1.73E+5	1.67E+5	1.78E+5	1.60E+5	1.93E+5	2.63E+3	1.44E+4	8.34%	93.3%
8		4	2.70E+4	8.77E+3	4.52E+4	0.00E+0	1.00E+5	8.91E+3	4.88E+4	181.0%	99.0%

Cell Density Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	2.84E+6	2.23E+6	2.87E+6	2.40E+6
0.5		2.38E+6	2.32E+6	2.54E+6	2.32E+6
1		1.55E+6	1.96E+6	1.80E+6	1.69E+6
2		9.04E+5	9.57E+5	1.01E+6	1.06E+6
4		1.93E+5	1.71E+5	1.60E+5	1.66E+5
8		0.00E+0	8.00E+3	1.00E+5	0.00E+0

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client: **Reference Toxicant** Test ID #: 31215 Shelf Zone #: R451

Test Material: NaCl Project #: 14267 Control/Diluent: Lab Water

Reference Toxicant Test Treatment (g/L NaCl)	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	24.5	7.57	8.4	88	Date: 12/16/08
0.5	24.5	7.74	7.9	1080	Test Solution Prep: SA
1	24.5	7.71	7.9	2140	New WQ: DAP
2	24.5	7.65	8.0	3940	Innoculation Time: 1300
4	24.5	7.60	8.0	7520	Innoculation Signoff: SA
8	24.5	7.55	8.0	14320	
Meter ID:	33	PH12	DO10	EC04	
Lab Water Control	24.9	7.87			Date: 12/17/08
0.5	24.9	7.92			WQ Time: 0845
1	24.9	7.85			WQ Signoff: DAP
2	24.9	7.80			
4	24.9	7.68			
8	24.9	7.61			
Meter ID:	33	PH12			
Lab Water Control	25.1	8.44			Date: 12/18/08
0.5	25.1	8.57			WQ Time: 0910
1	25.1	8.43			WQ Signoff: SL
2	25.1	8.12			
4	25.1	7.94			
8	25.1	7.75			
Meter ID:	33	PH11			
Lab Water Control	24.7	9.45			Date: 12/19/08
0.5	24.7	9.64			WQ Time: 1045
1	24.7	9.44			WQ Signoff: DAP
2	24.7	9.15			
4	24.7	8.08			
8	24.7	7.82			
Meter ID:	33	PH11			
Lab Water Control	24.1	10.06	10.8	107	Date: 12/20/08
0.5	24.1	10.07	11.0	1091	Termination Time: 1400
1	24.1	9.86	10.0	2147	Termination Signoff: SA
2	24.1	9.63	10.0	3930	WQ Time: 0855
4	24.1	9.01	8.8	7470	WQ Signoff: DAP
8	24.1	8.21	8.0	14280	
Meter ID:	33	PH11	DO12	EC04	

Initial Test Conditions			
Target: 16g NaCl in 2 L	**Alkalinity**	**Hardness**	**Light Intensity (ftc)**
Actual: 16.009	10 ✓	14 ✓	382

Selenastrum capricornutum Cell Density Enumeration Data

Client: **Reference Toxicant** Initial Count: 10,000 cells/mL

Test Material: NaCl Enumerating Scientist: SK

Test Start Date: 12/16/08 Start Time: 1300 Test ID #: 31215

Test End Date: 12/20/08 End Time: 1400 Project #: 14267

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control (w/EDTA)	2.84	2.23	2.87	2.40	2.59 ~~2.58~~ W
0.5	2.38	2.32	2.54	2.32	2.39
1	1.55	1.96	1.80	1.69	1.75
2	0.904	0.957	1.01	1.06	0.983
4	0.193	0.171	0.160	0.166	0.173 ~~0.172~~ V
8	0.000	0.008	0.100	0.000	0.027
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of concern.	**Control Mean Density (cells/mL x 10^6)**	**% CV**	**Date:**	**Time:**	**Signoff:**
	2.58	12.4	12/20/08	1825	KO

Appendix D

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Malaga Effluent to *Ceriodaphnia dubia*

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Test Run No:	11-1565-8627	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	John Jirasritumrong
Start Date:	16 Dec-08 16:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	23 Dec-08 14:30	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	In-House Culture	**Age:**	1

Sample No:	03-0745-8256	**Code:**	Eff	**Client:**	Moore Twining Associates, Inc.
Sample Date:	15 Dec-08 10:30	**Material:**	Effluent	**Project:**	14256
Receive Date:	16 Dec-08 09:30	**Source:**	Moore Twining Associates, Inc.		
Sample Age:	30h (5.1 °C)	**Station:**	Tertiary Effluent		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-5730-7214	7d Survival Rate	100	>100	N/A	N/A	1	Fisher Exact/Bonferroni-Holm Test
07-8191-0486	Reproduction	50	75	61.2	19.4%	2	Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis No	Endpoint	Level	Conc-%	95% LCL	95% UCL	TU	Method
12-9177-7731	Reproduction	IC2.5	33.5	4.12	52.8	2.98	Linear Interpolation (ICPIN)
		IC5	43	8.24	56.1	2.32	
		IC10	54.3	18.7	62.6	1.84	
		IC15	61.2	24.2	72.2	1.63	
		IC20	68.1	51	N/A	1.47	
		IC25	74.9	61.9	N/A	1.33	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	0.0%
50		10	1	1	1	1	1	0	0	0.0%	0.0%
75		10	0.8	0.643	0.957	0	1	0.077	0.422	52.7%	20.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	19.4	17.9	20.9	16	29	0.711	3.89	20.1%	0.0%
12.5		10	20.1	19.1	21.1	16	24	0.505	2.77	13.8%	-3.61%
25		10	19.7	17.9	21.5	8	27	0.874	4.79	24.3%	-1.55%
50		10	18.4	17.2	19.6	13	23	0.598	3.27	17.8%	5.15%
75		10	14.4	12.9	15.9	7	22	0.741	4.06	28.2%	25.8%
100		10	15.2	14.1	16.3	11	19	0.522	2.86	18.8%	21.6%

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control	1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
75		0	1	1	1	1	1	1	1	0	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control	18	21	17	29	19	16	18	16	22	18
12.5		21	21	20	20	16	17	17	24	21	24
25		20	21	18	20	20	20	23	8	20	27
50		19	22	17	21	20	13	14	18	17	23
75		11	16	16	22	14	18	14	14	7	12
100		16	17	19	16	16	11	18	11	16	12

CETIS Analytical Report

Report Date: 02 Jan-09 14:13 (p 1 of 1)
Test Code: 15-6512-5317/31213

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

Analysis No: 07-8191-0486 Endpoint: Reproduction CETIS Version: CETISv1.6.5
Analyzed: 02 Jan-09 14:12 Analysis: Parametric-Control vs Treatments Official Results: Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	50	75	61.2	2	19.4%

Dunnett's Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Control		12.5	-0.426	2.29	3.76	0.9300	Non-Significant Effect
		25	-0.182	2.29	3.76	0.8820	Non-Significant Effect
		50	0.608	2.29	3.76	0.5970	Non-Significant Effect
		75*	3.04	2.29	3.76	0.0079	Significant Effect
		100*	2.55	2.29	3.76	0.0273	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	301.1333	60.22667	5	4.46	0.0018	Significant Effect
Error	729.8	13.51481	54			
Total	1030.9333190918	73.7414798736572	59			

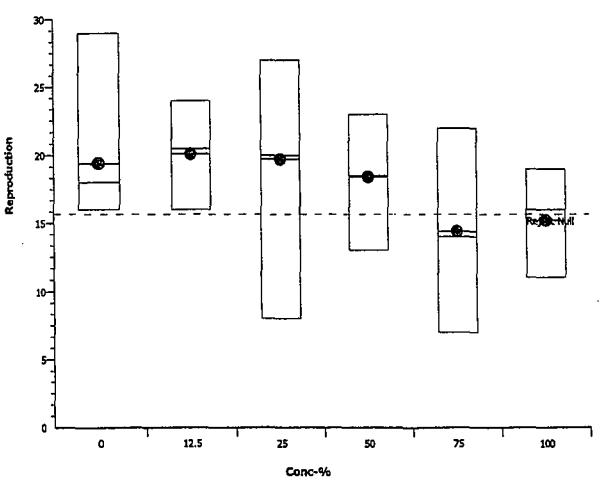
ANOVA Assumptions

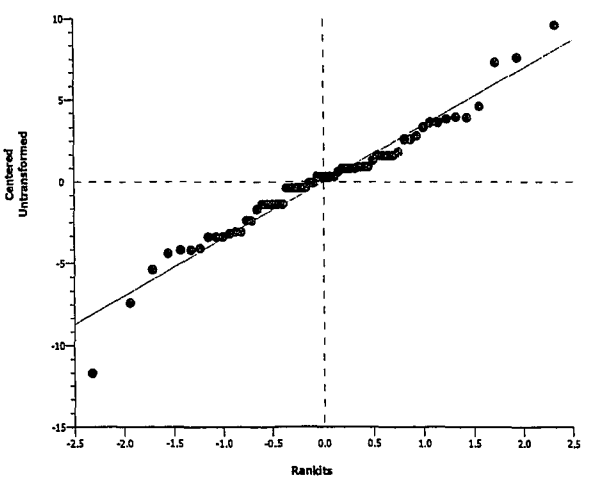
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	3.99	15.1	0.5510	Equal Variances
Distribution	Shapiro-Wilk Normality	0.967		0.1020	Normal Distribution

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	19.4	17.9	20.9	16	29	0.723	3.89	20.1%	0.0%
12.5		10	20.1	19	21.2	16	24	0.514	2.77	13.8%	-3.61%
25		10	19.7	17.9	21.5	8	27	0.889	4.79	24.3%	-1.55%
50		10	18.4	17.2	19.6	13	23	0.608	3.27	17.8%	5.15%
75		10	14.4	12.9	15.9	7	22	0.754	4.06	28.2%	25.8%
100		10	15.2	14.1	16.3	11	19	0.531	2.86	18.8%	21.6%

Graphics





Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Analysis No:	12-9177-7731	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.6.5
Analyzed:	02 Jan-09 14:12	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	3019480	280	Yes	Two-Point Interpolation

Point Estimates

Level	Conc-%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC2.5	33.5	4.12	52.8	2.98	1.89	24.3
IC5	43	8.24	56.1	2.32	1.78	12.1
IC10	54.3	18.7	62.6	1.84	1.6	5.36
IC15	61.2	24.2	72.2	1.63	1.38	4.13
IC20	68.1	51	N/A	1.47	N/A	1.96
IC25	74.9	61.9	N/A	1.33	N/A	1.62
IC40	>100	N/A	N/A	<1	N/A	N/A
IC50	>100	N/A	N/A	<1	N/A	N/A

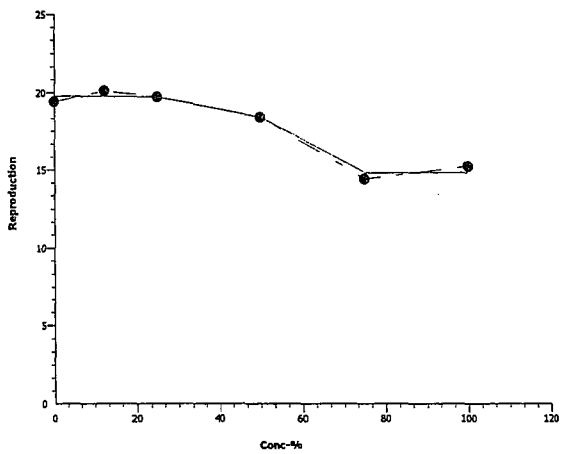
Reproduction Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	19.4	16	29	0.711	3.89	20.1%	0.0%
12.5		10	20.1	16	24	0.505	2.77	13.8%	-3.61%
25		10	19.7	8	27	0.874	4.79	24.3%	-1.55%
50		10	18.4	13	23	0.598	3.27	17.8%	5.15%
75		10	14.4	7	22	0.741	4.06	28.2%	25.8%
100		10	15.2	11	19	0.522	2.86	18.8%	21.6%

Reproduction Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control	18	21	17	29	19	16	18	16	22	18
12.5		21	21	20	20	16	17	17	24	21	24
25		20	21	18	20	20	20	23	8	20	27
50		19	22	17	21	20	13	14	18	17	23
75		11	16	16	22	14	18	14	14	7	12
100		16	17	19	16	16	11	18	11	16	12

Graphics



CETIS Analytical Report

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Analysis No:	08-5730-7214	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.6.5
Analyzed:	02 Jan-09 14:12	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

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

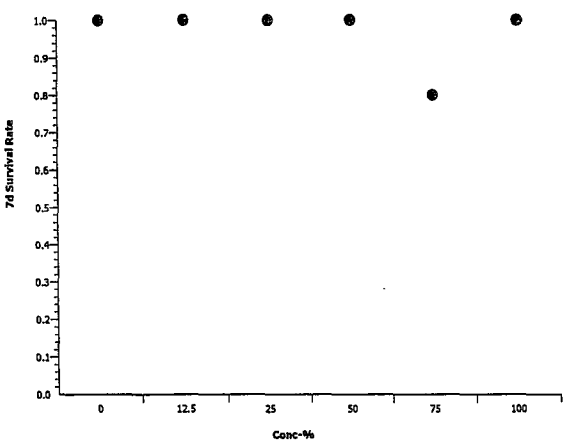
Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Value	Decision(0.05)
Control		12.5	1	1	Non-Significant Effect
		25	1	1	Non-Significant Effect
		50	1	1	Non-Significant Effect
		75	0.237	1	Non-Significant Effect
		100	1	1	Non-Significant Effect

Data Summary

Conc-%	Control Type	No-Resp	Resp	Total
0	Control	10	0	10
12.5		10	0	10
25		10	0	10
50		10	0	10
75		8	2	10
100		10	0	10

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Moore Twining Associates** Material: Effluent Test Date: 12/16/18

Project #: 14256 Test ID: 31213 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Control Water	0	8.23		7.6		220	25.3	0	0	0	0	0	0	0	0	0	0	Date: 12/14/18 New WQ: DAP Test Init.: DAP Sol'n Prep: JP Time: 1615
	1	8.45	8.49	8.7	8.1	226	25.2	0	0	0	0	0	0	0	0	6	0	Date: 12/17/18 New WQ: JMC Counts: JP Sol'n Prep: PA Old WQ: SM Time: 1530
	2	7.85	8.44	9.1	7.5	218	25.4	0	0	0	0	0	0	0	0	0	0	Date: 12/18/18 New WQ: SL Counts: JPE Sol'n Prep: JLR Old WQ: SL Time: 1550
	3	8.39	8.50	10.1	8.3	210	25.2	0	0	5	0	0	0	0	0	0	0	Date: 12/19/18 New WQ: MJM Counts: 1035 Sol'n Prep: KM Old WQ: MJM Time: JPE
	4	8.18	8.36	10.3	8.2	222	25.0	6	6	0	7	Ø4 EMC	Ø7 EMC	6	6	6	7	Date: 12/20/18 New WQ: JPM Counts: EMC Sol'n Prep: EMC Old WQ: SM Time: 1400
	5	8.15	8.31	10.5	8.7	226	25.4	11	8	12	8	12	9	10	0	0	0	Date: 12/21/18 New WQ: SL Counts: JPM Sol'n Prep: PA Old WQ: NW Time: 1300
	6	8.07	8.36	9.5	8.0	240	25.4	0	0	0	8	0	0	0	5	7	6	Date: 12/22/18 New WQ: MJM Counts: PA Sol'n Prep: RV/AP Old WQ: AP Time: 1000
	7	—	8.25	—	7.3	254	25.6	1	7	0	6	3	0	2	5	9	5	Date: 12/23/18 New WQ: — Counts: JLR Sol'n Prep: — Old WQ: MJM Time: 1430
	8																	Date: 12/24/18 New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
							Total=	18	21	17	29	19	16	18	16	22	18	Mean Neonates/Female = 19.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
12.5%	0	8.08		7.7		290	0	0	0	0	0	0	0	0	0	0
	1	8.26	8.44	8.9	8.4	289	0	0	0	0	0	0	0	0	0	0
	2	7.87	8.27	8.9	7.1	301	0	0	0	0	0	0	0	0	0	0
	3	8.34	8.44	9.9	8.1	307	0	0	0	0	4	6	0	0	0	0
	4	~~7.99~~ 7.99	8.27	9.8	8.0	309	6	6	5	5	0	7	6	5	5	6
	5	8.07	8.~~26~~ 26	10.1	8.5	299	12	13	11	12	11	10	11	0	0	0
	6	8.03	8.35	9.7	8.2	296	0	0	0	0	0	0	0	11	9	8
	7	—	8.28	—	7.2	354	3	2	4	3	1	0	0	8	7	10
	8															
							Total=	21	21	20	20	16	17	17	24	21	24	Mean Neonates/Female = 20.1

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Moore Twining Associates** Material: Effluent Test Date: 12/16/04

Project #: 14256 Test ID: 31213 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
25%	0	7.98		7.9		352	25.3	0	0	0	0	0	0	0	0	0	0	
	1	8.12	8.37	9.1	7.7	355	25.2	0	0	0	0	0	0	0	0	0	0	
	2	7.84	8.23	8.9	7.5	376	25.4	0	0	0	0	0	0	0	0	0	0	
	3	8.26	8.48	10.1	8.0	392	25.2	0	0	4	0	0	6	0	0	0	0	
	4	7.93	8.21	9.1	7.9	370	25.0	6	6	0	5	6	0	6	5	5	7	
	5	7.98	8.26	10.2	8.6	364	25.4	10	10	10	12	10	12	14	0	0	0	
	6	7.96	8.29	9.8	8.1	365	25.4	0	0	0	0	0	0	0	0	9	12	
	7	—	8.26	—	7.1	434	25.6	4	5	4	3	4	2	3	3	6	8	
	8																	
							Total=	20	21	18	20	20	20	23	8	20	27	Mean Neonates/Female = 19.7

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
50%	0	7.83		8.4		479	0	0	0	0	0	0	0	0	0	0	
	1	8.00	8.30	9.2	7.8	476	0	0	0	0	0	0	0	0	0	0	
	2	7.72	8.16	8.9	7.3	540	0	0	0	0	0	0	0	0	0	0	
	3	8.15	8.40	10.3	8.1	543	0	0	7	0	6	6	0	0	0	0	
	4	7.78	8.20	9.2	7.9	503	7	6	6	6	0	0	0	6	8	6	
	5	7.85	8.25	10.3	8.6	499	9	13	10	11	11	9	10	0	0	0	
	6	7.84	8.29	9.8	8.0	501	0	0	0	0	0	0	9	9	6	12	
	7	—	8.22	—	7.1	591	3	3	1	4	3	4	4	3	3	5	
	8																
							Total=	19	22	17	21	20	13	14	18	17	23	Mean Neonates/Female = 18.4

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Moore Twining Associates** Material: Effluent Test Date: 12/16/04

Project #: 14256 Test ID: 31213 Control Water: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
75%	0	7.73		8.7		606	25.3	0	0	0	0	0	0	0	0	0	0	
	1	7.90	8.27	9.9	7.1	601	25.2	0	0	0	0	0	0	0	0	0	0	
	2	7.73	8.07	9.3	7.5	667	25.4	0	0	0	0	0	0	0	0	0	0	
	3	8.09	8.38	10.3	7.9	695	25.2	0	0	4	0	4	0	0	0	0	0	
	4	7.66	8.24	9.1	7.8	634	25.0	6	5	0	6	0 Bent	5	5	6	7	5	
	5	7.74	8.25	10.8	8.6	634	25.4	5	10	10	10	10	10	6	5	X/0	4	
	6	7.72	8.24	10.1	8.3	639	25.4	X/0	0	0	0	0	0	0	0	-	0	
	7	—	8.19	—	7.0	734	25.6	-	1	2	6	0	3	3	3	-	3	
	8							-										
							Total=	X/11	16	16	22	14 10	18	14	14	X/7	12	Mean Neonates/Female = 14.0 14.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
100%	0	7.63		9.6		730		0	0	0	0	0	0	0	0	0	0	
	1	7.81	8.23	10.5	7.3	730		0	0	0	0	0	0	0	0	0	0	
	2	7.64	8.08	8.9	6.7	808		0	0	0	0	0	0	0	0	0	0	
	3	8.05	8.31	10.6	7.9	850		0	0	0	0	0	4	0	0	0	0	
	4	7.54	8.15	9.2	7.8	767		6	4	6	6	5	9	5	7	5	6	
	5	7.64	8.21	10.8	8.6	769		8	7	10	6	8	7	10	0	0	0	
	6	7.61	8.32	10.3	8.1	~~789~~ 779		0	0	0	0	0	0	0	0	5	0	
	7	—	8.13	—	7.0	907		2	6	3	4	3	0	3	4	6	6	
	8																	
							Total=	16	17	19	16	16	11	18	11	16	12	Mean Neonates/Female = 15.2

Appendix E

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*

Ceriodaphnia Survival and Reproduction Test — **Pacific EcoRisk**

Test Run No:	00-2371-4463	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	16 Dec-08 17:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	23 Dec-08 15:45	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	In-House Culture	**Age:**	1

Sample No:	17-5119-1923	**Code:**	NaCl	**Client:**	Reference Toxicant
Sample Date:	16 Dec-08 17:00	**Material:**	Sodium chloride	**Project:**	14100
Receive Date:	16 Dec-08 17:00	**Source:**	Reference Toxicant		
Sample Age:	N/A (25.2 °C)	**Station:**	In House		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	Method
17-0389-0256	7d Survival Rate	1500	2000	1730	N/A	Fisher Exact/Bonferroni-Holm Test
11-7985-1698	Reproduction	500	1000	707	4.82%	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis No	Endpoint	Effect-%	Conc-mg/L	95% LCL	95% UCL	Method
04-2417-1789	7d Survival Rate	50	1720	1680	1760	Trimmed Spearman-Kärber
00-5151-0031	Reproduction	2.5	91.3	46.1	520	Linear Interpolation (ICPIN)
		5	183	92.3	556	
		10	562	185	657	
		15	660	537	765	
		20	759	647	881	
		25	857	746	996	
		40	1110	1000	1200	
		50	1260	1170	1330	

7d Survival Rate Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	1	1	1	1	1	0	0	0.0%	0.0%
250		10	0.8	0.643	0.957	0	1	0.077	0.422	52.7%	20.0%
500		10	1	1	1	1	1	0	0	0.0%	0.0%
1000		10	1	1	1	1	1	0	0	0.0%	0.0%
1500		10	1	1	1	1	1	0	0	0.0%	0.0%
2000		10	0	0	0	0	0	0	0		100.0%

Reproduction Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	10	28.5	27.6	29.4	25	33	0.457	2.51	8.79%	0.0%
250		10	26	25	27	20	29	0.487	2.67	10.3%	8.77%
500		10	27.1	26.6	27.6	25	29	0.25	1.37	5.06%	4.91%
1000		10	19.3	18.1	20.5	15	25	0.603	3.3	17.1%	32.3%
2000		10	0	0	0	0	0	0	0		100.0%

Ceriodaphnia Survival and Reproduction Test — Pacific EcoRisk

7d Survival Rate Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control	1	1	1	1	1	1	1	1	1	1
250		0	1	1	1	1	1	0	1	1	1
500		1	1	1	1	1	1	1	1	1	1
1000		1	1	1	1	1	1	1	1	1	1
1500		1	1	1	1	1	1	1	1	1	1
2000		0	0	0	0	0	0	0	0	0	0

Reproduction Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Control	28	26	31	25	31	33	28	27	29	27
250		20	27	27	24	27	28	26	24	28	29
500		27	26	25	28	28	29	26	26	27	29
1000		20	21	23	21	15	18	17	18	15	25
1500											
2000		0	0	0	0	0	0	0	0	0	0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Reference Toxicant** Material: Sodium Chloride Test Date: 12/16/08

Project #: 14100 Test ID #: 30916 Control Water / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	SIGN-OFF
Lab Control	0	8.41		8.4		224	25.2	0	0	0	0	0	0	0	0	0	0	Date: 12/16/08 Time: 1706 Sol'n Prep: JR New WQ: DMP Test Loading: JC
	1	8.58	8.32	8.9	7.5	226	25.2	0	0	0	0	0	0	0	0	0	0	Date: 12/17/08 Time: 1505 Sol'n Prep: SLR New WQ: JNL Old WQ: SML Counts: JC
	2	7.78	8.24	8.8	7.9	213	25.4	0	0	0	0	0	0	0	0	0	0	Date: 12/18/08 Time: 1010 Sol'n Prep: JR New WQ: SL Old WQ: SL Counts: JPC
	3	8.25	8.35	10.1	8.0	214	25.2	0	2	0	0	0	0	0	0	6	0	Date: 12/19/08 Time: 1130 Sol'n Prep: JR New WQ: DMP Old WQ: DMP Counts: JR
	4	8.06	8.32	9.4	7.9	221	24.9	6	2	7	5	7	7	6	6	0	6	Date: 12/20/08 Time: 1230 Sol'n Prep: EKK New WQ: SML Old WQ: DMP Counts: EKK
	5	8.09	8.23	9.7	9.0	229	25.4	9	10	0	9	10	10	10	9	10	10	Date: 12/21/08 Time: 1300 Sol'n Prep: RV New WQ: SL Old WQ: SL Counts: RV
	6	8.21	8.27	8.7	7.8	228	25.5	0	12	10	0	0	0	12	0	13	0	Date: 12/22/08 Time: 1200 Sol'n Prep: RV New WQ: MML Old WQ: TM Counts: QD
	7	—	8.23	—	7.6	239	25.5	13	0	14	11	14	16	0	12	0	11	Date: 12/23/08 Time: 1545 Sol'n Prep: New WQ: — Old WQ: MEL Counts: JW
	8																	Date: Time: Sol'n Prep: New WQ: — Old WQ: Counts:
							Total =	28 ~~24~~ 26		31	25	31	33	28	27	29	27	X = ~~28.3~~ 28.5 spm

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
250 mg/L	0	8.20		8.5		708	0	0	0	0	0	0	0	0	0	0
	1	8.44	~~8.28~~	8.7	7.6	711	0	0	0	0	-	0	0	0	0	0
	2	7.82	8.22	8.9	7.7	693	0	0	0	0	0	0	0	0	0	0
	3	8.21	8.36	10.2	8.1	708	0	4	0	0	0	0	0	0	5	0
	4	8.05	8.32	8.5	7.8	768	7	0	5	5	6	5	5	5	0	6
	5	8.15	8.24	9.9	9.2	664	10	12	0	9	10	10	11	10	10	11
	6	8.17	8.25	8.6	7.7	761	0	11	11	0	0	0	10	0	13	0
	7	—	8.25	—	7.9	844	~~X~~ 3	0	11	0	11	13	~~X~~ 0	9	0	12
	8															
							Total =	~~20~~	27	27	24	27	29	~~26~~	24	20	29	X = 26.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Reference Toxicant** Material: Sodium Chloride Test Date: 12/16/04

Project #: 14100 Test ID #: 30916 Control Water / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
500 mg/L	0	8.25		8.7		1222	0	0	0	0	0	0	0	0	0	0	
	1	8.35	8.22	8.6	7.6	1199	0	0	0	0	0	0	0	0	0	0	
	2	7.86	8.20	8.9	7.6	1186	0	0	0	0	0	0	0	0	0	0	
	3	8.14	8.30	10.1	8.0	1186	0	5	0	0	0	0	0	0	0	0	
	4	8.04	8.30	9.0	7.9	1213	5	0	4	5	7	5	5	6	6	7	
	5	8.14	8.22	10.3	9.0	1104 ~~1097~~	8	11	9	11	10	10	9	9	8	8	
	6	8.14	8.23	8.6	7.6	1296	0	10	0	12	0	0	12	0	13	0	
	7	—	8.23	—	7.9	1412	14	0	12	0	11	14	0	11	0	14	
	8																
						Total =	27	26	25	28	28	29	26	26	27	29	X = 27.1

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J	
1000 mg/L	0	8.20		8.8		2148	0	0	0	0	0	0	0	0	0	0	
	1	8.27	8.20	8.5	7.6	2145	0	0	0	0	0	0	0	0	0	0	
	2	7.90	8.18	8.9	8.0	2120	0	0	0	0	0	0	0	0	0	0	
	3	8.13	8.30	10.4	8.0	2195	0	4	0	0	0	0	0	0	0	0	
	4	8.02	8.28	9.2	7.8	2142	2	1	4	3	3	0	4	5	3	3	
	5	8.15	8.17	9.9	9.1	2074 ~~1940~~	0	7	0	8	5	7	6	6	5	10	
	6	8.10	8.24	8.6	7.5	2281	9	9	10	10	0	0	7	0	0	0	
	7	—	8.22	—	7.8	2513	9	0	9	0	7	11	0	7	7	12	
	8																
						Total =	20	21	23	21	15	18	17	18	15	25	X = 19.3

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Reference Toxicant** Material: Sodium Chloride Test Date: 12/16/04

Project #: 14100 Test ID #: 30916 Control Water / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
1500 mg/L	0	8.14		8.3		3190	0	0	0	0	0	0	0	0	0	0
	1	8.22	8.17	8.7	7.5	3130	0	0	0	0	0	0	0	0	0	0
	2	7.96	8.14	8.9	7.8	3040	0	0	0	0	0	0	0	0	0	0
	3	8.06	8.24	10.3	8.0	3120	0	0	0	0	0	0	0	0	0	0
	4	8.03	8.27	9.4	7.5	3120	—	—	—	—	—	—	—	—	—	—
	5	8.15	8.29	8.2	9.3	3200	1	3	2	5	1	0	3	3	0	0
	6	8.08	8.21	8.6	7.5	3240	2	0	2	0	3	0	0	0	2	0
	7	—	8.21	—	7.9	3580	3	4	3	5	4	7	7	5	1	0
	8															
						Total =	~~X~~/0	/0	/0	/0	/0	/0	/0	/0	/0	/0	X = 0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	F	G	H	I	J
2000 mg/L	0	8.00		9.6		4050	0	0	0	0	0	0	0	0	0	0
	1	8.19	8.15	8.6	7.5	4060	0	0	0	0	0	0	0	0	0	0
	2	8.03	8.12	9.3	7.9	4010	X/0	0	X/0	X/0	X/0	X/0	0	X/0	0	X/0
	3	8.07	8.26	10.5	7.9	4030	—	X/0	—	—	—	—	X/0	—	X/0	—
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5						—	—	—	—	—	—	—	—	—	—
	6						—	—	—	—	—	—	—	—	—	—
	7						—	—	—	—	—	—	—	—	—	—
	8						—	—	—	—	—	—	—	—	—	—
						Total =	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	X = 0

Appendix F

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Malaga Effluent to Fathead Minnows

Chronic Larval Fish Survival and Growth Test — **Pacific EcoRisk**

Test Run No:	12-5675-2266	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	18 Dec-08 15:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	25 Dec-08 09:25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 18h	**Source:**	Aquatic Biosystems, CO	**Age:**	1

Sample No:	12-1051-1231	**Code:**	Eff	**Client:**	Moore Twining Associates, Inc.
Sample Date:	17 Dec-08 10:30	**Material:**	Effluent	**Project:**	14256
Receive Date:	18 Dec-08 10:25	**Source:**	Moore Twining Associates, Inc.		
Sample Age:	28h (0.7 °C)	**Station:**	Tertiary Effluent		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	Method
11-9470-5323	7d Survival Rate	100	> 100	N/A	2.5%	Equal Variance t Two-Sample Test
15-8798-9310	Mean Dry Biomass-mg	75	100	86.6	8.09%	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis No	Endpoint	Effect-%	Conc-%	95% LCL	95% UCL	Method
07-2153-2808	Mean Dry Biomass-mg	2.5	4.17	1.89	132	Linear Interpolation (ICPIN)
		5	8.35	3.78	N/A	
		10	> 100	N/A	N/A	
		15	> 100	N/A	N/A	
		20	> 100	N/A	N/A	
		25	> 100	N/A	N/A	
		40	> 100	N/A	N/A	
		50	> 100	N/A	N/A	

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	1	1	1	1	1	0	0	0.0%	0.0%
25		4	0.975	0.956	0.994	0.9	1	0.00913	0.05	5.13%	2.5%
50		4	0.95	0.928	0.972	0.9	1	0.0105	0.0577	6.08%	5.0%
75		4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	0.422	0.413	0.43	0.387	0.439	0.00427	0.0234	5.55%	0.0%
12.5		4	0.373	0.364	0.382	0.352	0.404	0.00434	0.0238	6.37%	11.5%
25		4	0.379	0.369	0.388	0.357	0.412	0.00452	0.0247	6.54%	10.2%
50		4	0.397	0.384	0.41	0.372	0.447	0.00627	0.0343	8.65%	5.87%
75		4	0.412	0.405	0.418	0.397	0.435	0.00299	0.0164	3.98%	2.37%
100		4	0.38	0.37	0.39	0.343	0.399	0.00478	0.0262	6.89%	9.85%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	1	1	1	1
12.5		1	1	1	1
25		1	1	1	0.9
50		0.9	1	1	0.9
75		1	1	1	1
100		1	1	1	1

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	0.387	0.439	0.43	0.43
12.5		0.357	0.352	0.404	0.379
25		0.412	0.357	0.382	0.363
50		0.372	0.378	0.447	0.39
75		0.435	0.397	0.406	0.408
100		0.343	0.398	0.38	0.399

Chronic Larval Fish Survival and Growth Test — **Pacific EcoRisk**

Analysis No:	15-8798-9310	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.5
Analyzed:	05 Jan-09 11:31	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	75	100	86.6	1.33	8.09%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Control		12.5*	2.91	1.94	0.0324	0.0135	Significant Effect
		25*	2.53	1.94	0.0331	0.0225	Significant Effect
		50	1.19	1.94	0.0404	0.1390	Non-Significant Effect
		75	0.7	1.94	0.0277	0.2550	Non-Significant Effect
		100*	2.37	1.94	0.0341	0.0279	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0077843	0.00155686	5	2.42	0.0758	Non-Significant Effect
Error	0.01156572	0.0006425399	18			
Total	0.01935001928359	0.00219940009993	23			

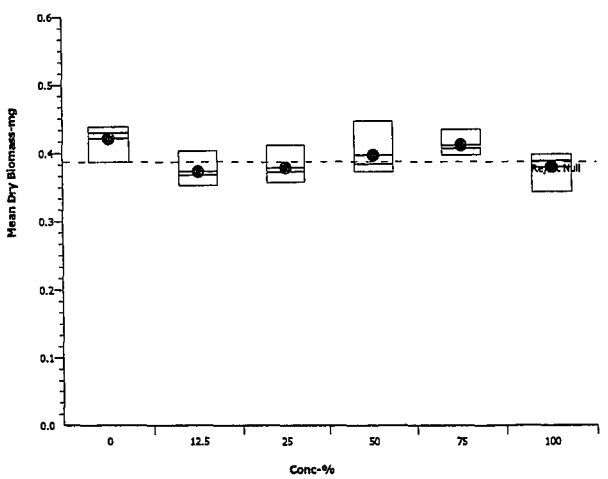
ANOVA Assumptions

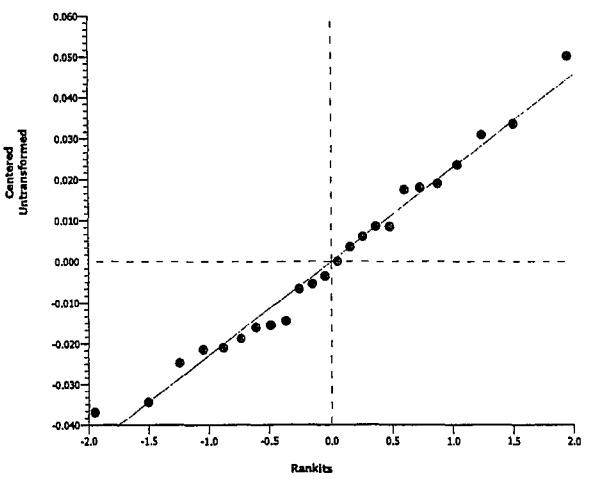
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	1.44	15.1	0.9200	Equal Variances
Distribution	Shapiro-Wilk Normality	0.977		0.8370	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	0.422	0.413	0.43	0.387	0.439	0.00434	0.0234	5.55%	0.0%
12.5		4	0.373	0.364	0.382	0.352	0.404	0.00441	0.0238	6.37%	11.5%
25		4	0.379	0.369	0.388	0.357	0.412	0.0046	0.0247	6.54%	10.2%
50		4	0.397	0.384	0.41	0.372	0.447	0.00637	0.0343	8.65%	5.87%
75		4	0.412	0.405	0.418	0.397	0.435	0.00304	0.0164	3.98%	2.37%
100		4	0.38	0.37	0.39	0.343	0.399	0.00486	0.0262	6.89%	9.85%

Graphics





Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Analysis No: 11-9470-5323 Endpoint: 7d Survival Rate CETIS Version: CETISv1.6.5
Analyzed: 05 Jan-09 11:30 Analysis: Parametric-Two Sample Official Results: Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run	100	>100	N/A	1	2.5%

Equal Variance t Two-Sample Test

Control	vs	Conc-%	Test Stat	Critical	MSD	P-Value	Decision(5%)
Control		12.5	0	1.94	0	0.5000	Non-Significant Effect
		25	1	1.94	0.0792	0.1780	Non-Significant Effect
		50	1.73	1.94	0.0914	0.0670	Non-Significant Effect
		75	0	1.94	0	0.5000	Non-Significant Effect
		100	0	1.94	0	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.02323942	0.004647883	5	1.8	0.1640	Non-Significant Effect
Error	0.04647883	0.002582157	18			
Total	0.06971824541688	0.00723004038446	23			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	4.2	4.25	0.0105	Equal Variances
Distribution	Shapiro-Wilk Normality	0.772		0.0001	Non-normal Distribution

7d Survival Rate Summary

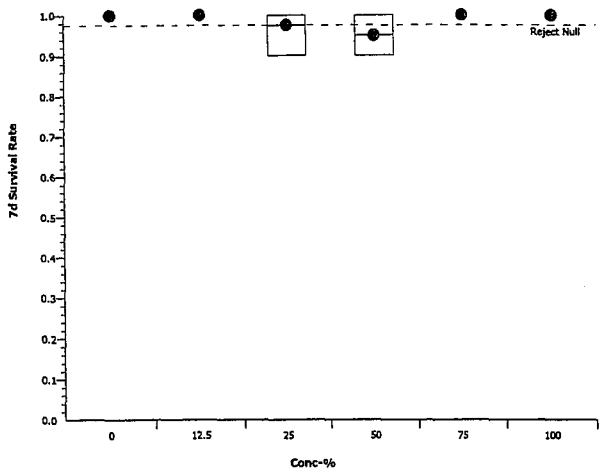
Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	1	1	1	1	1	0	0	0.0%	0.0%
12.5		4	1	1	1	1	1	0	0	0.0%	0.0%
25		4	0.975	0.956	0.994	0.9	1	0.00928	0.05	5.13%	2.5%
50		4	0.95	0.928	0.972	0.9	1	0.0107	0.0577	6.08%	5.0%
75		4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

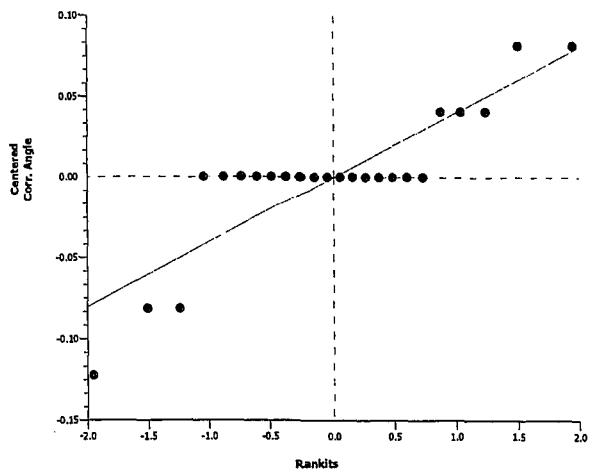
Angular (Corrected) Transformed Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
12.5		4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
25		4	1.37	1.34	1.4	1.25	1.41	0.0151	0.0815	5.94%	2.89%
50		4	1.33	1.29	1.37	1.25	1.41	0.0175	0.0941	7.07%	5.77%
75		4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%
100		4	1.41	1.41	1.41	1.41	1.41	0	0	0.0%	0.0%

Chronic Larval Fish Survival and Growth Test					Pacific EcoRisk
Analysis No:	11-9470-5323	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.6.5
Analyzed:	05 Jan-09 11:30	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Chronic Larval Fish Survival and Growth Test — **Pacific EcoRisk**

Analysis No:	07-2153-2808	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.6.5
Analyzed:	05 Jan-09 11:31	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	8714458	280	Yes	Two-Point Interpolation

Point Estimates

Level	Conc-%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC2.5	4.17	1.89	132	24	0.759	52.9
IC5	8.35	3.78	N/A	12	N/A	26.5
IC10	>100	N/A	N/A	<1	N/A	N/A
IC15	>100	N/A	N/A	<1	N/A	N/A
IC20	>100	N/A	N/A	<1	N/A	N/A
IC25	>100	N/A	N/A	<1	N/A	N/A
IC40	>100	N/A	N/A	<1	N/A	N/A
IC50	>100	N/A	N/A	<1	N/A	N/A

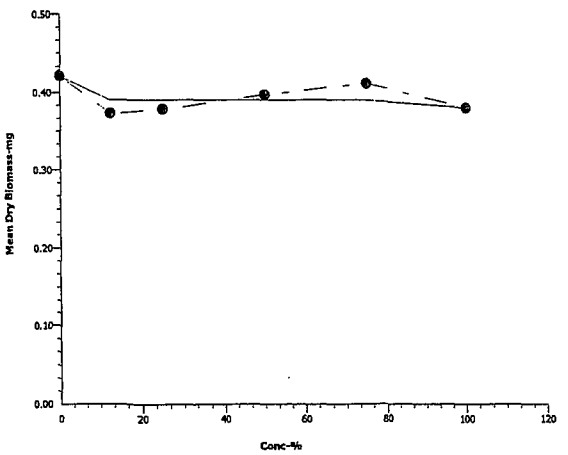
Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	0.422	0.387	0.439	0.00427	0.0234	5.55%	0.0%
12.5		4	0.373	0.352	0.404	0.00434	0.0238	6.37%	11.5%
25		4	0.379	0.357	0.412	0.00452	0.0247	6.54%	10.2%
50		4	0.397	0.372	0.447	0.00627	0.0343	8.65%	5.87%
75		4	0.412	0.397	0.435	0.00299	0.0164	3.98%	2.37%
100		4	0.38	0.343	0.399	0.00478	0.0262	6.89%	9.85%

Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	0.387	0.439	0.43	0.43
12.5		0.357	0.352	0.404	0.379
25		0.412	0.357	0.382	0.363
50		0.372	0.378	0.447	0.39
75		0.435	0.397	0.406	0.408
100		0.343	0.398	0.38	0.399

Graphics



7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Moore Twining Associates
Test Material: Effluent
Test ID#: 31214 Project #: 14256
Test Date: 12/18/08 Randomization: 4.6.7.
Organism Log#: 4302 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPA mod
Control Water Batch: 1155

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	25.2	8.08		8.5		280	10	10	10	10	Date: 12/18/08
12.5%	25.2	7.98		8.4		356	10	10	10	10	Sample ID: ~~21077~~ 21071
25%	25.2	7.88		8.5		426	10	10	10	10	Test Solution Prep: JLR
50%	25.2	7.85		8.5		566	10	10	10	10	New WQ: SL
75%	25.2	7.74		8.9		704	10	10	10	10	Initiation Time: 1500
100%	25.2	7.64		9.0		841	10	10	10	10	Initiation Signoff: JLR
Meter ID	11A	pH 11		DO 14		EC04					
Control	25.1	7.71	8.02	10.0	7.3	305	10	10	10	10	Date: 12/19/08
12.5%	25.1	7.79	7.96	10.1	7.3	362	10	10	10	10	Sample ID: 21071
25%	25.1	7.63	7.97	10.4	7.2	428	10	10	10	10	Test Solution Prep: JLR KM
50%	25.1	7.65	7.92	10.4	7.1	575	10	10	10	10	New WQ: DMP
75%	25.1	7.61	7.96	10.9	7.1	713	10	10	10	10	Renewal Time: 1000
100%	25.1	7.60	8.08	11.2	7.0	856	10	10	10	10	Renewal Signoff: JLR
Meter ID	11A	PH08	PH11	DO12	DO10	EC05					Old WQ: DMP
Control	25.1	8.04	7.83	9.8	7.6	279	10	10	10	10	Date: 12.20.08
12.5%	25.1	7.91	7.89	9.7	7.6	341	10	10	10	10	Sample ID: 21083
25%	25.1	7.82	7.82	9.6	7.5	406	10	10	10	10	Test Solution Prep: EKK
50%	25.1	7.69	7.80	9.6	7.5	529	10	10	10	10	New WQ: SM
75%	25.1	7.62	7.73	9.6	7.3	647	10	10	10	10	Renewal Time: 1445
100%	25.1	7.55	7.79	9.9	7.2	761	10	10	10	10	Renewal Signoff: SM
Meter ID	11A	pH12	pH12	DO10	DO10	EC01					Old WQ: SM
Control	25.2	7.97	8.02	9.8	8.3	300	10	10	10	10	Date: 12/21/08
12.5%	25.2	7.96	7.88	9.2	8.3	363	10	10	10	10	Sample ID: 21083
25%	25.2	7.91	7.81	8.8	8.4	422	10	10	10	10	Test Solution Prep: PA
50%	25.2	7.80	7.75	9.2	8.2	542	10	10	10	10	New WQ: AR
75%	25.2	7.71	7.72	9.4	8.2	653	10	10	10	10	Renewal Time: 1130
100%	25.2	7.63	7.72	9.4	8.0	773	10	10	10	10	Renewal Signoff: QP
Meter ID	11A	pH03	pH11	DO14	DO12	EC05					Old WQ: SL

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Moore Twining Associates
Test Material: Effluent
Test ID#: 31214 Project #: 14256
Test Date: 12/18/08 Randomization: 4.6.7.
Organism Log#: 4302 Age: < 48hrs
Organism Supplier: ABS
Control/Diluent: EPA mod
Control Water Batch: ~~1154~~ 1155

Treatment (% Effluent)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	25.6	7.97	7.70	9.5	6.4	305	10	10	10	10	Date: 12/22/08
12.5%	25.6	7.93	7.56	9.2	6.6	362	10	10	10	10	Sample ID: 21083
25%	25.6	7.86	7.60	9.3	6.4	421	10	10	10	10	Test Solution Prep: RV
50%	25.6	7.74	7.53	9.6	6.1	535	10	10	10	10	New WQ: MTM
75%	25.6	7.67	7.57	9.9	6.2	650	10	10	10	10	Renewal Time: 0915
100%	25.6	~~7.8~~ 7.66	7.62	10.1	6.1	768	10	10	10	10	Renewal Signoff: RV
Meter ID	11A	pH11	pH09	DO10	DO12	EC01					Old WQ: SL
Control	25.6	8.15	7.67	9.5	6.9	303	10	10	10	10	Date: 12/23/08
12.5%	25.6	7.98	7.60	9.4	6.6	356	10	10	10	10	Sample ID: 21088
25%	25.6	7.90	7.57	9.5	6.6	404	10	10	10	9	Test Solution Prep: PA
50%	25.6	7.80	7.89	9.8	6.6	513	10	10	10	10	New WQ: NW
75%	25.6	7.75	7.55	10.3	6.5	617	10	10	10	10	Renewal Time: 1030
100%	25.6	~~7.69 pH03~~ NW	7.53	~~10.5 DO14~~ NW	6.3	~~EC01~~ 721 NW	10	10	10	10	Renewal Signoff: JCR
Meter ID	11A	pH03	pH12	DO14	DO12	EC01					Old WQ: MTM
Control	25.6	8.33 ~~8.38~~	7.78	9.0	6.1	313	10	10	10	10	Date: ~~12/23/08~~ 12/24/08
12.5%	25.6	8.09	7.68	9.3	6.0	355	10	10	10	10	Sample ID: 21088
25%	25.6	7.97	7.64	9.5	6.1	413	10	10	10	9	Test Solution Prep: JL
50%	25.6	7.85	7.66	9.7	6.1	514	10	10	10	9	New WQ: QAP
75%	25.6	7.79	7.65	10.5	6.0	615	10	10	10	10	Renewal Time: 1045
100%	25.6	7.75	7.69	10.6	6.1	711	10	10	10	10	Renewal Signoff: KO
Meter ID	11A	pH12	pH03	DO10	DO10	EC04					Old WQ: QAP
Control	25.6		7.85		7.3	312	10	10	10	10	Date: 12/25/08
12.5%	25.6		7.84		7.3	367	10	10	10	10	Termination Time: 0925
25%	25.6		7.85		7.1	424	10	10	10	9	Termination Signoff: RV
50%	25.6		7.76		7.2	532	9	10	10	9	Old WQ: DGW
75%	25.6		7.83		7.0	642	10	10	10	10	
100%	25.6		7.91		6.9	748	10	10	10	10	
Meter ID	11A		pH03		DO10	EC05					

Fathead Minnow Dry Weight Data Sheet

Client: **Moore Twining Associates** Test ID #: 31214 Project # 14256

Sample: Effluent Tare Weight Date: 12-16-08 Sign-off: MC

Test Date: 12-18-08 Final Weight Date: 01-03-09 Sign-off: [illegible]

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Control	A	169.13	173.00	10	0.387
2		B	170.73	175.12	10	0.439
3		C	184.72	189.02	10	0.43
4		D	162.50	166.80	10	0.43
5	12.5	A	159.95	163.52	10	0.357
6		B	178.69	182.21	10	0.352
7		C	168.46	172.50	10	0.404
8		D	177.16	180.95	10	0.379
9	25	A	178.44	182.56	10	0.412
10		B	164.21	167.78	10	0.357
11		C	167.65	171.47	10	0.382
12		D	169.76	173.39	10	0.363
13	50	A	169.38	173.10	10	0.372
14		B	167.27	171.05	10	0.378
15		C	165.20	169.67	10	0.447
16		D	177.65	181.55	10	0.39
17	75	A	163.73	168.08	10	0.435
18		B	174.75	178.72	10	0.397
19		C	161.30	165.36	10	0.406
20		D	156.55	160.63	10	0.408
21	100	A	157.27	160.70	10	0.343
22		B	169.32	173.30	10	0.398
23		C	169.95	173.75	10	0.38
24		D	159.10	163.09	10	0.399
QA 1			167.00	167.00		
QA 2			162.91	162.90		
Balance ID			#1	#1		

Appendix G

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Fathead Minnows

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

Test Run No:	10-7335-6140	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jason Walker
Start Date:	18 Dec-08 16:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	25 Dec-08 10:00	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 17h	**Source:**	Aquatic Biosystems, CO	**Age:**	1

Sample No:	18-9026-2527	**Code:**	NaCl	**Client:**	Reference Toxicant
Sample Date:	18 Dec-08 16:30	**Material:**	Sodium chloride	**Project:**	14268
Receive Date:	18 Dec-08 16:30	**Source:**	Reference Toxicant		
Sample Age:	N/A (25.2 °C)	**Station:**	In House		

Comparison Summary

Analysis No	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
13-8090-7568	7d Survival Rate	1.5	3	2.12	13.4%		Equal Variance t Two-Sample Test
19-7631-8079	Mean Dry Biomass-mg	1.5	3	2.12	12.4%		Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis No	Endpoint	Level	Conc-g/L	95% LCL	95% UCL	TU	Method
16-4472-1508	7d Survival Rate	EC50	3.3	2.97	3.67		Spearman-Kärber
01-3014-9474	Mean Dry Biomass-mg	IC2.5	0.94	0.757	1.94		Linear Interpolation (ICPIN)
		IC5	1.13	0.764	1.93		
		IC10	1.5	0.781	1.91		
		IC15	1.65	0.934	2.03		
		IC20	1.8	1.09	2.15		
		IC25	1.95	1.24	2.28		
		IC40	2.4	2.01	2.68		
		IC50	2.7	2.44	2.97		

7d Survival Rate Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	0.875	0.828	0.922	0.7	1	0.023	0.126	14.4%	0.0%
0.75		4	1	1	1	1	1	0	0	0.0%	-14.3%
1.5		4	0.95	0.913	0.987	0.8	1	0.0183	0.1	10.5%	-8.57%
3		4	0.6	0.57	0.63	0.5	0.7	0.0149	0.0816	13.6%	31.4%
6		4	0	0	0	0	0	0	0		100.0%
9		4	0	0	0	0	0	0	0		100.0%

Mean Dry Biomass-mg Summary

Conc-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Control	4	0.438	0.417	0.459	0.382	0.515	0.0102	0.0558	12.7%	0.0%
0.75		4	0.547	0.53	0.563	0.487	0.591	0.00796	0.0436	7.98%	-24.9%
1.5		4	0.444	0.41	0.477	0.321	0.514	0.0164	0.0897	20.2%	-1.37%
3		4	0.197	0.187	0.207	0.17	0.231	0.00501	0.0274	13.9%	55.1%
6		4	0	0	0	0	0	0	0		100.0%
9		4	0	0	0	0	0	0	0		100.0%

Chronic Larval Fish Survival and Growth Test — Pacific EcoRisk

7d Survival Rate Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	1	0.9	0.7	0.9
0.75		1	1	1	1
1.5		1	1	0.8	1
3		0.6	0.5	0.6	0.7
6		0	0	0	0
9		0	0	0	0

Mean Dry Biomass-mg Detail

Conc-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Control	0.515	0.423	0.382	0.431
0.75		0.487	0.591	0.549	0.56
1.5		0.507	0.514	0.321	0.433
3		0.231	0.18	0.17	0.206
6		0	0	0	0
9		0	0	0	0

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log#: 4302 Age: <48hrs

Test Material: Sodium Chloride Organism Supplier: ABS

Test ID#: 31216 Project #: 14268 Control/Diluent: EPAMH

Test Date: 12/18/08 Randomization: 4.6.7 Control Water Batch: 1155

Treatment (g/L)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	25.5	8.13	7.73	8.5	6.6	305	10	10	7	9	Date: 12/22/08
0.75	25.5	8.02	7.56	8.4	6.1	1743	10	10	10	10	Test Solution Prep: RV
1.5	25.5	8.01	7.52	8.4	6.6	3110	10	10	9	10	New WQ: MDM
3	25.5	7.96	7.55	8.5	6.8	5940	6	7	10	7	Renewal Time: 1125
6	–	–	–	–	–	–	–	–	–	–	Renewal Signoff: RV
9	–	–	–	–	–	–	–	–	–	–	Old WQ: SL
Meter ID	11A	pH11	pH03	DO10	DO12	EC01					
Control	25.6	8.43	7.72	9.6	7.2	305	10	10	7	9	Date: 12/23/08
0.75	25.6	8.23	7.61	8.7	6.9	1707	10	10	10	10	Test Solution Prep: JPC
1.5	25.6	8.13	7.57	9.2	6.9	3190	10	10	8	10	New WQ: AR
3	25.6	8.03	7.55	9.1	~~7.71~~	5960	6	7	9	7	Renewal Time: 1025
6	–	–	–	–	–	–	–	–	–	–	Renewal Signoff:
9	–	–	–	–	–	–	–	–	–	–	Old WQ: DAP
Meter ID	11A	pH03	PH03	DO14	DO14	EC01					
Control	25.6	8.14	7.72	8.7	6.7	309	10	10	7	9	Date: 12/24/08
0.75	25.6	8.09	7.67	8.8	7.0	1892	10	10	10	10	Test Solution Prep: RV
1.5	25.6	8.05	7.63	8.8	6.0	3260	10	10	8	7	New WQ: DMP
3	25.6	8.01	7.64	9.0	6.3	6030	6	6	7	7	Renewal Time: 0910
6	–	–	–	–	–	–	–	–	–	–	Renewal Signoff:
9	–	–	–	–	–	–	–	–	–	–	Old WQ:
Meter ID	11A	PH03		DO10		EC05					
Control	~~25.6~~ ~~7.72~~	~~7.95~~	~~7.75~~ ~~6.7~~	7.6	6.7	~~311~~ 318	10	9	7	9	Date: 12/25/08
0.75	25.4	~~7.99~~	~~7.67~~	7.8	~~7.05~~	~~1776~~ 1919	10	10	10	10	Termination Time: 1000
1.5	25.4		7.85		7.4	3360	10	10	8	10	Termination Signoff: RV
3	25.4		7.85		7.4	6150	6	5	6	7	Old WQ: DW
6	–		–		–	–	–	–	–	–	
9	–		–		–	–	–	–	–	–	
Meter ID	11A		PH03		DO10	EC05					

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log#: 4302 Age: 48 hrs

Test Material: Sodium Chloride Organism Supplier: ABS

Test ID#: 31216 Project #: 14268 Control/Diluent: EPAMH

Test Date: 12/18/08 Randomization: 4.6.7 Control Water Batch: 1155

Treatment (g/L)	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Control	25.2	8.23		9.1		286	10	10	10	10	Date: 12/18/08
0.75	25.2	8.11		9.2		1823	10	10	10	10	Test Solution Prep: JPC
1.5	25.2	8.06		9.1		3230	10	10	10	10	New WQ: MJM
3	25.2	8.03		9.1		6000	10	10	10	10	Initiation Time: 1630
6	25.2	7.96		9.2		11440	10	10	10	10	Initiation Signoff: JT
9	25.2	7.92		9.3		16450	10	10	10	10	
Meter ID	11A	PH12		DO12		EC05					
Control	25.2	8.25	7.99	9.2	7.5	276	10	10	7	10	Date: 12/19/08
0.75	25.2	8.18	7.93	9.6	7.3	1715	10	10	10	10	Test Solution Prep: JPC
1.5	25.2	8.13	7.92	10.3	7.3	3160	10	10	10	10	New WQ: DMP
3	25.2	8.08	7.89	10.3	7.3	5860	10	10	10	9	Renewal Time: 1030
6	25.2	8.01	7.86	10.4	7.3	11220	10	10	10	10	Renewal Signoff: SLR
9	25.2	7.98	7.82	10.6	7.3	16180	0	0	0	0	Old WQ: DMP
Meter ID	11A	PH11	PH11	DO10	DO10	EC04					
Control	24.9	8.09	7.99	10.0	8.0	281	10	10	7	10	Date: 12/20/08
0.75	24.9	8.05	7.91	9.6	7.9	1517	10	10	10	10	Test Solution Prep: JPC
1.5	24.9	7.87	7.86	9.7	7.9	3210	10	10	10	10	New WQ: SM
3	24.9	7.80	7.85	9.6	7.9	5840	10	10	10	9	Renewal Time: 1300
6	24.9	7.55	7.81	9.9	7.9	11070	10	10	10	10	Renewal Signoff: EKK
9	—	—	—	—	—	—	—	—	—	—	Old WQ: SM
Meter ID	11A	pH12	pH12	DO10	DO10	EC01					
Control	25.4	7.99	8.18	9.3	7.8	305	10	10	7	10	Date: 12/21/08
0.75	25.4	7.97	~~8.08~~ AR	9.6	7.3	1676	10	10	10	10	Test Solution Prep: RV
1.5	25.4	7.96	7.73	9.9	7.3	3150	10	10	10	10	New WQ: SL
3	25.4	7.93	7.60	10.0	7.0	5790	8	9	10	9	Renewal Time: 1150
6	25.4	7.87	7.70	9.9	8.1	11180	0	0	0	0	Renewal Signoff: RV
9	—	—	—	—	—	—	—	—	—	—	Old WQ: AR
Meter ID	11A	pH11	pH13	DO12	DO14	EC01					

TWINING LABORATORIES, INC.

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ANALYTICAL CHEMISTRY - ENVIRONMENTAL SERVICES
GEOTECHNICAL ENGINEERING - SAMPLING SERVICES
CONSTRUCTION INSPECTION & MATERIALS TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

2527 FRESNO STREET - FRESNO, CA 93721 - PHONE (559) 268-7021 - FAX: (559) 268-0740

WORK ORDER #: 8L15015
PAGE 1 **OF** 1

REPORT TO: ☐ **INVOICE TO:** ☐ **REPORT COPY TO:**

REPORT TO:	INVOICE TO:
ATTENTION: Tony Morales	ATTENTION: Laurie Cortez
NAME: Malaga County Water District	NAME: Malaga County Water District
ADDRESS: 3580 S. Frank Fresno, Ca 93725	ADDRESS: 3580 S. Frank Fresno, Ca 93725
PHONE: 485-7353	PHONE: 485-7353
FAX: 495-1070	FAX: 485-7319

REPORTING:
- ☐ STANDARD PRINTED REPORT
- ☐ WRITE-ON (STATE FORM/EDD/EDT) (please include system ID#)
- ☐ GEOTRACKER/COELT (LUFT)
- ☐ County DHS:
- ☐ Environmental Health Agency
- ☐ OTHER:

SAMPLE INFORMATION
SAMPLED BY (PRINT): Tony Morales
SIGNATURE: Tony Morales
- ☐ PUBLIC SYSTEM
- ☐ PRIVATE WELL
- ☐ OTHER
- ☒ ROUTINE
- ☐ REPEAT
- ☐ REPLACEMENT

TURN AROUND TIME: ☒ STANDARD ☐ RUSH, DUE ON:

SAMPLE TYPES:
SOLID:
BS - BIOSOLID
CR - CERAMIC
SL - SOIL/SOLID
LIQUID:
DW - DRINKING WATER
GW - GROUND WATER
OL - OIL
SF - SURFACE WATER
ST - STORM WATER
WW - WASTE WATER

PROJECT INFORMATION
CONTRACT/P.O. NO.:
PROJECT NAME: Malaga sewer plant
PROJECT NUMBER:
PROJECT MANAGER:

LAB USE
NOTES ON RECEIVED CONDITION:
☐ CUSTODY SEAL(S) BROKEN ☐ SAMPLE(S) DAMAGED
☐ ON ICE ☐ AMBIENT TEMP. ☐ INCORRECT PRESERVATION
5.6

ANALYSIS REQUESTED

CLIENT SAMPLE ID	DATE	TIME	TYPE	Chronic Toxicity Testing	LAB USE
Tertiary Eff →	12-14-08	10:30 AM	WW	X	Quantimer
	12-15-08	10:30 AM			
		24 hr composite			

COMMENTS/ADDITIONAL INSTRUCTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
Tony Morales	Malaga County Water District	12-15-08	13:35	UPS	MTA

TWINING LABORATORIES, INC.

EST. 1933

ANALYTICAL CHEMISTRY - ENVIRONMENTAL SERVICES
GEOTECHNICAL ENGINEERING - SAMPLING SERVICES
CONSTRUCTION INSPECTION & MATERIALS TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

2527 FRESNO STREET - FRESNO, CA 93721 - PHONE (559) 268-7021 - FAX: (559) 268-0740

WORK ORDER #: 8L17018
PAGE 1 OF 1

REPORT TO:

ATTENTION: Tony Morales
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank Fresno, Ca 93725
PHONE: 485-7353
FAX: 495-1070

INVOICE TO:

ATTENTION: Laurie Cortez
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank Fresno, Ca 93725
PHONE: 485-7353
FAX: 485-7319

REPORT COPY TO:

REPORTING:

- ☐ STANDARD PRINTED REPORT
- ☐ WRITE-ON (STATE FORM/EDD/EDT) (please include system ID#)
- ☐ GEOTRACKER/COELT (LUFT)
- ☐ County DHS:
- ☐ Environmental Health Agency
- ☐ OTHER:

SAMPLE INFORMATION

SAMPLED BY (PRINT): Tony Morales
SIGNATURE: Tony Morales

- ☐ PUBLIC SYSTEM
- ☐ PRIVATE WELL
- ☐ OTHER
- ☒ ROUTINE
- ☐ REPEAT
- ☐ REPLACEMENT

TURN AROUND TIME:
- ☒ STANDARD
- ☐ RUSH, DUE ON:

SAMPLE TYPES:

SOLID:
- BS - BIOSOLID
- CR - CERAMIC
- SL - SOIL/SOLID

LIQUID:
- DW - DRINKING WATER
- GW - GROUND WATER
- OL - OIL
- SF - SURFACE WATER
- ST - STORM WATER
- WW - WASTE WATER

PROJECT INFORMATION

CONTRACT/P.O. NO:
PROJECT NAME: Malaga sewer plant
PROJECT NUMBER:
PROJECT MANAGER:

LAB USE

NOTES ON RECEIVED CONDITION:
- ☐ CUSTODY SEAL(S) BROKEN
- ☐ SAMPLE(S) DAMAGED
- ☐ ON ICE
- ☐ AMBIENT TEMP.
- ☐ INCORRECT PRESERVATION

T= 4.0

ANALYSIS REQUESTED

CLIENT SAMPLE ID	DATE	TIME	TYPE	CHRONIC Toxicity testing	LAB USE
Tertiary Eff	12-16-08	10:30 AM	WW	X	2 X 2.5 Gallon
→	12-17-08	10:30 AM 24HR COMP Sample			

COMMENTS/ADDITIONAL RESTRICTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
Tony Morales	Malaga County Water District	12-17-08	13:48	AP	MTA

TWINING LABORATORIES, INC.

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GEOTECHNICAL ENGINEERING - SAMPLING SERVICES
CONSTRUCTION INSPECTION & MATERIALS TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

2527 FRESNO STREET - FRESNO, CA 93721 - PHONE (559) 268-7021 - FAX: (559) 268-0740

WORK ORDER #: 7L19008
PAGE 1 OF 1

REPORT TO:

ATTENTION: Tony Morales
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank
Fresno, ca 93725
PHONE: 485-7353
FAX: 495-1070

INVOICE TO:

ATTENTION: Laurie Cortez
NAME: Malaga County Water District
ADDRESS: 3580 S. Frank
Fresno, ca 93725
PHONE: 485-7353
FAX: 485-7319

REPORT COPY TO:

REPORTING:

- [ ] STANDARD PRINTED REPORT
- [ ] WRITE-ON (STATE FORM/EDD/EDT) (please include system ID#)
- [ ] GEOTRACKER/COELT (LUFT)
- [ ] County DHS:
- [ ] Environmental Health Agency
- [ ] OTHER:

SAMPLE INFORMATION

SAMPLED BY (PRINT): Tony Morales
SIGNATURE: Tony Morales

- [ ] PUBLIC SYSTEM
- [ ] PRIVATE WELL
- [ ] OTHER
- [X] ROUTINE
- [ ] REPEAT
- [ ] REPLACEMENT

TURN AROUND TIME:
- [X] STANDARD
- [ ] RUSH, DUE ON:

SAMPLE TYPES:

SOLID:
BS - BIOSOLID
CR - CERAMIC
SL - SOIL/SOLID
LIQUID:
DW - DRINKING WATER
GW - GROUND WATER
OL - OIL
SF - SURFACE WATER
ST - STORM WATER
WW - WASTE WATER

PROJECT INFORMATION

CONTRACT/P.O. NO:
PROJECT NAME: Malaga sewer plant
PROJECT NUMBER:
PROJECT MANAGER:

LAB USE

NOTES ON RECEIVED CONDITION:
- [ ] CUSTODY SEAL(S) BROKEN
- [ ] SAMPLE(S) DAMAGED
- [ ] ON ICE
- [ ] AMBIENT TEMP.
- [ ] INCORRECT PRESERVATION

10.4

ANALYSIS REQUESTED

CLIENT SAMPLE ID	DATE	TIME	TYPE	Chronic Toxicity testing	LAB USE
Tertiary Eff	12-18-08	10:45 AM	WW	X	
→	12-19-08	10:45 AM	24 hr comp. sample		

COMMENTS / ADDITIONAL INSTRUCTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
Tony Morales	Malaga County Water District	12-19-08	13:35	[illegible]	MTL