BIOASSAY REPORT

CHRONIC BIOASSAY
CONDUCTED
February 9 through 16, 2010

Prepared for

PIMA COUNTY - REGIONAL WASTEWATER RECLAMATION DEPARTMENT
TUCSON, ARIZONA

Sample ID: INA ROAD WRF- SECONDARY EFFL.- EAST PLANT

Prepared by

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INTRODUCTION

CH2M HILL conducted a chronic bioassay from February 9 through 16, 2010, on samples provided by the Pima County - Regional Wastewater Reclamation Department (RWRD) - Ina Road Wastewater Reclamation Facility (WRF), Tucson, Arizona. The tests were conducted using the water flea (*Ceriodaphnia dubia*).

Copies of the Raw Data Sheets are included in Appendix A. Copies of the Reference Toxicant Test results are included in Appendix B. Copies of the Chain of Custody (COC) forms and the Sample Receipt Record and Exception Report are included in Appendix C.

SUMMARY OF TEST RESULTS

Exhibit 1 provides a summary of the final test results.

EXHIBIT 1
Summary of Chronic Test Results

Species	Sample ID	NOEC	LOEC	IC_{25} (%)
C. dubia	Ina Road WRF – Secondary Effl.- East Plant	100	> 100	> 100

Note: acronyms are as defined below.

More detailed information is provided in the Chronic Results section.

ACRONYM DEFINITIONS (from EPA guidance):

NOEC = No Observed Effect Concentration: The highest test concentration that causes no observable adverse effects on the test organisms (i.e. no statistically significant reduction from the control).
LOEC = Low Observed Effect Concentration: The lowest test concentration that does cause an observable adverse effect on the test organisms (i.e. is statistically significant reduction from the control).
IC_{25} = Inhibition Concentration (25%): A point estimate of the test concentration that would cause a 25 percent reduction of a non-quantal biological measurement (i.e. growth, reproduction, etc.) for the test population.

SAMPLE INFORMATION

Exhibit 2 provides a summary of the sample conditions as received.

EXHIBIT 2
Sample Conditions on Receipt

Sample ID	**Ina Road WRF - Secondary Effl.- East Plant**		
CH2M HILL SDG + suffix	B2253		
	-11	-12	-13
Collection - Date and Time	02/08/2010 09:00	02/10/2010 09:00	02/12/2010 09:00
Receipt - Date and Time	02/09/2010 11:45	02/11/2010 11:50	02/13/2010 11:30
Temperature (oC)	1.5	2.1	1.2
pH	7.2	7.3	7.1
Total Residual Chlorine (mg/L)	0.03	0.04	0.02
Ammonia (mg/L as NH_3-N)	1.45	1.40	1.95
Total Hardness (mg/L as $CaCO_3$)	184	196	192
Total Alkalinity (mg/L as $CaCO_3$)	120	134	124

METHODS AND MATERIALS

TEST METHODS

The chronic test methods were performed according to:

- *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (2002), EPA-821-R-02-013.

Additional guidance was provided by:

- *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program*, (EPA February 2000), EPA 833-R-00-003.
- *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR Part 136), (EPA February 2000), EPA 821-B-00-004.

DEVIATIONS FROM PROTOCOLS

Deviations from required procedures in the test methods:

- None noted.

Deviations from recommended procedures in the test methods:

- None noted.

TEST ORGANISMS

The *C. dubia* were obtained from CH2M HILL's in-house cultures and were less than 24 hours old and within an 8-hour age range for the chronic test. All organisms tested were fed and maintained during culturing, acclimation, and testing as prescribed by the EPA. The test organisms appeared vigorous and in good condition prior to testing.

DILUTION WATER

The dilution water used was reconstituted, moderately hard water with a total hardness of 80 to 100 mg/L as $CaCO_3$ and an alkalinity of 60 to 70 mg/L as $CaCO_3$.

TEST CONCENTRATIONS

The concentrations for the chronic tests were 12.5, 25, 50, 75, and 100 percent prepared sample with dilution water for the control. For the chronic *C. dubia* test, 10 organisms per concentration were used with 10 test vessels per concentration and one organism per vessel.

SAMPLE COLLECTION

Samples were collected by Pima County - Ina Road WRF personnel on February 8, 10, and 12, 2010, and shipped via Federal Express to CH2M HILL's Corvallis Aquatic Toxicology Laboratory.

Upon receipt, the samples were stored in the dark at 0 to 6 °C until test solutions were prepared and tested. Chain of Custody for sample collection is provided in Appendix C.

SAMPLE PREPARATION

Samples were filtered through a 60 µm net upon arrival.

Prepared samples used during these tests were temperature adjusted prior to each daily renewal.

MONITORING OF BIOASSAY

On arrival, samples were monitored for temperature, pH, total residual chlorine, ammonia, hardness, and alkalinity.

For the *C. dubia* chronic test, pre- and post-renewal solutions were monitored for dissolved oxygen and pH daily in all the concentrations. Conductivity was measured each day a new native sample was received in the 100 percent concentration (following sample preparation) and in the control. *C. dubia* survival and neonate production was measured daily in the chronic test. According to EPA, *C. dubia* tests should be terminated when 60 percent or more of the surviving female *C. dubia* in the controls have produced their third brood and at least 15 neonates per adult are produced. Temperature was monitored in prerenewal solutions daily and in the incubator or waterbath continuously throughout the testing period.

DATA ANALYSIS

The effects measured during the *C. dubia* chronic test included survival and reproduction over the exposure period. The statistical analyses performed were those outlined in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, (2002), EPA-821-R-02-013, using CETIS version 1.7.0. The chronic NOEC and LOEC values were established by hypothesis testing as follows: Dunnett's Procedure or Bonferroni's T-Test was used to compare the survival, fecundity, or growth data between the control and each sample concentration. When the assumptions of normality or homogeneity of variance necessary for Dunnett's Procedure or T-test with Bonferroni Adjustment could not be met, Steel's Many-One Rank Test or Wilcoxon Rank Sum with Bonferroni Adjustment was used to analyze the data. The chronic point estimate values (IC_{25} values) were calculated for growth, reproduction and/or fecundity effects by use of the Linear Interpolation method.

CERTIFICATION STATEMENT AND SIGNATURE

I certify that this data package is in compliance with the referenced testing protocols and is in accordance with Arizona Administrative Code, Title 9, Chapter 14, Article 6, R9-14-617 Laboratory Records and Reports, both technically and for completeness. Any noted exceptions are detailed in the Deviations From Protocols section above. Release of the data contained in this data package has been authorized by the Laboratory Director or a designee, as verified by the following signature:

Brett Muckey

CH2M HILL ASL,
Bioassay Laboratory Manager

RESULTS AND DISCUSSION

CHRONIC BIOASSAY

The raw data sheets are presented in Appendix A.

Table 1 summarizes the survival and reproduction data for the *C. dubia* chronic test.

Table 1 - *C. dubia* Chronic Test Sample ID: Ina Road WRF Secondary Effl.- East Plant		
Summary of Results		
Sample Concentration (%)	**Percent Survival**	**Ave. No. Young Per Adult**
Laboratory Control	100	30.7
12.5	100	28.3
25	100	31.1
50	100	29.4
75	90	30.9
100	100	32.1
Test Acceptability Criteria (TAC)		
Variable	**Test Result**	**Acceptable Range**
Laboratory Control - Survival	100 %	80 % or Greater
Laboratory Control - % of surviving adults producing at least three broods	100 %	60 % or Greater
Laboratory Control - Average live young per surviving adult	30.7	15 or Greater
Percent Minimum Significant Difference (PMSD) - Reproduction	14.4	13 to 47

The *C. dubia* test resulted in no statistically significant reduction in survival or reproduction at any sample concentration tested when compared to the laboratory control. The NOEC and the LOEC were 100 and greater than 100 percent sample, respectively.

The IC_{25} value calculated on *C. dubia* reproduction was greater than 100 percent sample.

The test met all required Test Acceptability Criteria (TAC). The recommended review of the Concentration-Response Relationship indicated that the NOEC and LOEC values are "reliable and should be reported" (see EPA-821-R-02-013, section 10.2.6.2)

Water quality measurements during testing remained within test design limits as prescribed by EPA. The dissolved oxygen levels in the chronic test remained above the recommended minimum of 4 mg/L throughout the test periods and test temperatures remained within the recommended range of 25±1°C. The test proceeded without interruption or incidence that could have affected test results.

REFERENCE TOXICANT TEST

Reference toxicant (reftox) testing is performed to document both initial and ongoing laboratory performance of the test method(s). While the health of the test organisms is primarily evaluated by the performance of the laboratory control, reftox test results also may be used to assess the health and sensitivity of the test organisms. Reftox test results within their respective sensitivity range are indicative of consistent laboratory performance and normal test organism sensitivity.

The results of the reftox test conducted using sodium chloride indicate that the test organisms were within their respective sensitivity range based on EPA guidelines.

The data sheets for the reference toxicant test are provided in Appendix B and the reftox test results are summarized in Table 2, below.

Table 2
Chronic Reference Toxicant Test (g/L)

Species	IC_{25}	Control Chart Limits
C. dubia (survival)	0.52	0.06 to 2.41
C. dubia (reproduction)	0.42	0.03 to 0.69

APPENDIX A

RAW DATA SHEETS

CH2M HILL **TOXICITY TEST: SAMPLE, TEST ORGANISM, AND DILUTION WATER DATA**

Client: Pima County - Ina Road WRF — Test Initiation: Date 2-9-10

Contact: Jennifer Phillips — Test Termination: Date 2-16-10

Technician(s):

Native samples (As Received)									
Sample ID Number	Field ID	Collected Date (mm-dd-yy)	Collected Time	pH	Total Residual Chlorine (mg/l)	Ammonia (NH_3-N mg/l)	Hardness (mg/l as $CaCO_3$)	Alkalinity (mg/l as $CaCO_3$)
					/			
B 2328 -11	East Plant 2001-9725	02-08-10	09:00	7.2	0.03 / -	1.45	184	120
B -12	East Plant 2001-9725	02-10-10	09:00	7.3	0.04 / -	1.40	196	134
B -13	East Plant	2-12-10	09:00	7.1	0.02 / -	1.95	192	124
					/			
					/			
		Reporting Limits:		not applicable	0.02 mg/L	0.20 mg/L	4 mg/L	4 mg/L

Dilution Water	ID#	Hardness mg/l as $CaCO_3$	Alkalinity mg/l as $CaCO_3$	Comments: ☑ Indicates the action was taken, (☐= action not taken):
				☑ Sample(s) filtered through 60 µm mesh prior to use.
				☑ All samples treated daily for ammonia removal using zeolite.
Recon MH (FHM)	3294	88	62	

Test Species Information	Cd # 2441 *Ceriodaphnia dubia* Chronic				
Organism Age at Initiation	<24 hrs, all within an 8 hr window				
Test Container Size	30 ml				
Test Volume	15 ml				
Feeding: Type and Amount	0.10 ml Algae and 0.10 ml YCT daily				
Aeration: In Test Chambers via Slow Bubble :	☑ None ☐ Prior to use				
Acclimation Period	<24 hrs				
Organism Source	In-House				
Size	-				
Loading Rate	-				

Water Quality Meters Used/ID#: Dissolved Oxygen # 3 pH # 4 Conductivity # 2

Test Solution Preparation and Dilution Record

Client: Pima County - Ina Road WRF

Note: ☐ Indicates task not done, ☑ Indicates task was done. Temp adj. = Temperature adjusted

Ditto marks (' ') indicate that the same batch of dilution water or food as the previous day's entry was used.

Ceriodaphnia dubia - Chronic

Sample ID: **Final Effluent**

Ceriodaphnia dubia - Chronic

Sample ID: **East Plant**

Test Concentration (%)	Sample Volume (mls)		Final Volume (mls)
Control	0	→	200
12.5	25	→	200
25	50	→	200
50	100	→	200
75	150	→	200
100	200	→	200

Total Sample volume needed per day = 525 mls

Test Day	Sample ID Used	Daily Sample Preparation (prior to dilution)	Dilution Water Used	YCT ID Used	Algae ID Used	Date	Time	Initials
0 (Initiation)	B 2328-11	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-9-10	11:50	BM
1	B 2328-11	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-10-10	0730	UW
2	B 2328-12	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-11-10	1200	BM
3	B 2328-12	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-12-10	0750	UW
4	B 2328-13	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-13-10	1200	UW
5	B 11 - 13	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-14-10	1005	MM
6	B 2328-13	☐ Temp adj, ☐ Aerated	ID # 3294	# 840	# 839	2-15-10	0725	UW
7	B -	☐ Temp adj, ☐ Aerated	ID #	#	#			

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: Pima County - Ina Road WRF

Test Start Date: 2-9-10

Sample Description: East Plant

Initial Sample ID#: B 2328-11

Ceriodaphnia Lot#: Cd 2441

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Lab Control	27	26	30	32	32	35	30	~~2~~ 3rd 25	33	37	10	307
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
12.5 %	34	18	29	30	35	35	28	32	24	18	10	283
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
25 %	36	30	32	32	29	29	34	31	32	26	10	311
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
50 %	29	27	32	32	29	28	30	28	27	32	10	294
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		
75 %	30	33	33	35	30	32	36	17	31	32	9	309
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD?	AD?		
100 %	32	30	31	26	32	37	38	36	27	32	10	321
	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD?		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-600-4-91-002 and EPA-821-R-02-013, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

CH2M HILL

CERIODAPHNIA 7-DAY SURVIVAL AND REPRODUCTION DATA

Client: Pima County - Ina Road WRF — Test Initiation: Date: 2-9-10 Time: 1430

Sample Description: East Plant — Test Termination: Date: 2-16-10 Time: 1415

Initial Sample ID #: B2328-11 — Ceriodaphnia Lot#: Cd 2441

Technician: Day 0 DW, Day 1 DW, Day 2 BR, Day 3 DW, Day 4 MB, Day 5 MB, Day 6 JW, Day 7 DW

Time: Day 0 1430, Day 1 1315, Day 2 1400, Day 3 0950, Day 4 1405, Day 5 1330, Day 6 0945, Day 7 1415

Neonates were obtained from culture Board ID:	A	B	C	D	E	F	G	H	I	J
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Slot #:	4	5	6	8	13	19	21	22	28	32

Incubator Used: # 5

Random Template Used: 6 conc # 11

Percent	Day	A	B	C	D	E	F	G	H	I	J	No. Live Adults	Daily Total Live Young
		Daily Number of Live Young for each Replicate											
Lab Control	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	6	6	5	8	8	6	5	7	6	10	57
	5	4	7	8	10	9	11	9	7	12	8	10	77
	6	11	0	4/6	0	4/6	6	0	0	0	13	10	67
"1"	7	12	13	4/14	17	4/0	0	15	13	14	18	10	120
12.5 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	6	0	5	5	6	8	4	6	5	6	10	51
	5	0	7	12	11	12	12	9	9	7	10	10	80
	6	13	0	12	14	1/16	15	0	0	0	11	10	82
"2"	7	15	11	0	0	0	0	15	17	12	0	10	70
25 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	7	6	7	5	5	7	7	6	0	6	10	56
	5	0	9	10	10	8	9	10	0	0	7	10	63
	6	13	0	15	0	1/0	13	1/16	11	14	1/0	10	85
"3"	7	16	15	0	17	15	0	0	14	18	12	10	107
50 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	5	0	0	0	0	0	0	10	5
	4	5	5	6	0	5	5	6	5	5	4	10	46
	5	8	9	9	10	9	7	8	8	10	0	10	78
	6	0	0	13	17	15	0	16	0	0	12	10	73
"4"	7	16	13	4/0	0	0	16	0	15	12	16	10	92
75 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	5	8	7	7	5	5	6	5	7	10	59
	5	8	12	10	9	6	10	10	11	10	10	10	96
	6	1/0	16	0	2/10	1/16	0	21	AD	0	1/0	9	68
"5"	7	17	0	15	7/0	0	17	0	1	16	14	9	86
100 %	1	0	0	0	0	0	0	0	0	0	0	10	0
	2	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	10	0
	4	5	2	5	5	6	9	10	5	5	6	10	54
	5	10	9	11	2	10	11	12	12	4	9	10	90
	6	1/0	0	0	10	16	17	20	0	1/0	0	10	65
"6"	7	16	19	15	9/0	0	0	0	19	17	17	10	112

"AD" = Adult Dead, "AY" = Aborted young, "M" = male organism, " / " = split brood (carry-over brood / current day brood)
"Inj" = Adult Injured during test solution renewal, replicate removed from analysis. "AM" = Adult missing. "F" = Female

Footnote: As per EPA, *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

CH2M HILL

CERIODAPHNIA WATER QUALITY DATA

Client: Pima County - Ina Road WRF
Initiated Date: 2-9-10 Time: 1430
Adults Isolated Date: 2-8-10 Time: 2310
Sample Description: East Plant
Initial Sample ID #: B2328-11
Neo's Collected Date: 2-9-10 Time: 0700

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Technician	DW	DW	DW	DW	MB	MB	W	DW
Time	1430	1315	1405	1020	1405	1330	1020	1415
Therm. ID#	# 16	# 16	# 5	# 5	# 16	# 5	# 16	# 17

Percent	Dissolved Oxygen (mg/l) Day 0	1	2	3	4	5	6	7
Lab Control	8.0	7.7 / 7.5	8.2 / 8.0	7.8 / 8.0	7.6 / 7.9	7.4 / 7.8	7.7 / 7.9	7.6
12.5 %	8.0	7.7 / 7.4	8.2 / 8.0	7.8 / 7.9	7.8 / 8.0	7.5 / 8.0	7.7 / 7.8	7.6
25 %	7.9	7.7 / 7.3	8.2 / 8.0	7.8 / 7.8	7.9 / 8.0	8.0 / 8.0	7.8 / 7.9	7.6
50 %	7.8	7.7 / 7.3	8.2 / 8.0	7.9 / 7.9	8.0 / 8.0	8.0 / 8.1	7.6 / 8.0	7.6
75 %	7.6	7.9 / 7.3	8.2 / 8.0	7.9 / 7.9	7.8 / 8.1	7.9 / 8.1	7.9 / 8.2	7.7
100 %	7.9	7.8 / 7.3	8.2 / 8.1	8.0 / 7.9	7.8 / 8.2	7.8 / 8.2	7.8 / 8.2	7.7

Percent	pH Day 0	1	2	3	4	5	6	7
Lab Control	8.1	8.3 / 8.1	8.4 / 8.1	8.3 / 8.2	8.3 / 8.1	8.2 / 8.1	8.2 / 8.0	8.3
12.5 %	8.1	8.3 / 7.9	8.4 / 7.9	8.3 / 8.1	8.3 / 7.9	8.3 / 7.9	8.2 / 7.8	8.3
25 %	7.9	8.3 / 7.7	8.4 / 7.7	8.3 / 7.8	8.3 / 7.6	8.3 / 7.7	8.3 / 7.7	8.3
50 %	7.6	8.3 / 7.5	8.5 / 7.6	8.4 / 7.6	8.4 / 7.5	8.3 / 7.4	8.3 / 7.6	8.4
75 %	7.6	8.4 / 7.4	8.5 / 7.4	8.5 / 7.5	8.5 / 7.3	8.4 / 7.4	8.3 / 7.4	8.4
100 %	7.8	8.5 / 7.6	8.5 / 7.5	8.5 / 7.7	8.5 / 7.2	8.4 / 7.3	8.4 / 7.6	8.5

Percent	Temperature (°C) / Conductivity (µmhos/cm) Day 0	1	2	3	4	5	6	7
Lab Control	24.5 / 302	24.9	24.2 / 295	25.4	26.0 / 289	24.7	24.2	25.0
12.5 %	24.8 / -	24.6 / -	24.9 / -	25.3 / -	24.7 / -	24.9 / -	24.5 / -	25.1 / -
25 %	24.6 / -	24.6 / -	24.9 / -	24.8 / -	24.5 / -	24.7 / -	24.1 / -	25.2 / -
50 %	24.5 / -	24.7 / -	25.2 / -	25.3 / -	24.1 / -	24.6 / -	24.8 / -	25.3 / -
75 %	24.5 / -	24.6 / -	25.2 / -	25.1 / -	24.5 / -	24.6 / -	24.8 / -	25.1 / -
100 %	24.7 / 827	24.8	25.1 / 915	25.4	24.8 / 828	24.7	25.3	24.8

COMMENTS:

Note: All Day 0 data represents conditions at initiation. All other days: numerator represents pre-renewal conditions, denominator represents post-renewal conditions.

CETIS Summary Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Batch ID:	11-9412-2529	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	09 Feb-10 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	16 Feb-10 14:15	**Species:**	Ceriodaphnia dubia	**Brine:**	
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	00-8562-1056	**Code:**	B2328-11	**Client:**	
Sample Date:	08 Feb-10 09:00	**Material:**	POTW Effluent	**Project:**	
Receive Date:	09 Feb-10	**Source:**	Pima County		
Sample Age:	29h	**Station:**	Ina Road - Secondary Effl (East Plant)		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-8066-4719	7d Survival Rate	100	>100	N/A	N/A	1	Fisher Exact/Bonferroni-Holm Test
00-5855-3991	Reproduction	100	>100	N/A	14.4%	1	Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	Conc-%	95% LCL	95% UCL	TU	Method
08-0759-5932	Reproduction	IC25	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
08-8066-4719	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Result Within Limits
00-5855-3991	Reproduction	Control Resp	30.7	15 - NL	Yes	Result Within Limits
08-0759-5932	Reproduction	Control Resp	30.7	15 - NL	Yes	Result Within Limits
00-5855-3991	Reproduction	PMSD	0.144	0.13 - 0.47	Yes	Result Within Limits

7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	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	0.9	0.782	1	0	1	0.0577	0.316	35.1%	10.0%
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	Dilution Water	10	30.7	29.2	32.2	25	37	0.71	3.89	12.7%	0.0%
12.5		10	28.3	25.9	30.7	18	35	1.17	6.41	22.7%	7.82%
25		10	31.1	30.1	32.1	26	36	0.512	2.81	9.02%	-1.3%
50		10	29.4	28.6	30.2	27	32	0.367	2.01	6.84%	4.23%
75		10	30.9	28.9	32.9	17	36	0.96	5.26	17.0%	-0.65%
100		10	32.1	30.6	33.6	26	38	0.728	3.98	12.4%	-4.56%

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

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	Dilution Water	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		1	1	1	1	1	1	1	0	1	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	Dilution Water	27	26	30	32	32	35	30	25	33	37
12.5		34	18	29	30	35	35	28	32	24	18
25		36	30	32	32	29	29	34	31	32	26
50		29	27	32	32	29	28	30	28	27	32
75		30	33	33	35	30	32	36	17	31	32
100		32	30	31	26	32	37	38	36	27	32

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Analysis ID:	08-8066-4719	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	16 Feb-10 16:45	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Batch ID:	11-9412-2529	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	09 Feb-10 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	16 Feb-10 14:15	**Species:**	Ceriodaphnia dubia	**Brine:**	
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	00-8562-1056	**Code:**	B2328-11	**Client:**	
Sample Date:	08 Feb-10 09:00	**Material:**	POTW Effluent	**Project:**	
Receive Date:	09 Feb-10	**Source:**	Pima County		
Sample Age:	29h	**Station:**	Ina Road - Secondary Effl (East Plant)		

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)
Dilution Water		12.5	1	1.0000	Non-Significant Effect
		25	1	1.0000	Non-Significant Effect
		50	1	1.0000	Non-Significant Effect
		75	0.5	1.0000	Non-Significant Effect
		100	1	1.0000	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Result Within Limits

Data Summary

Conc-%	Control Type	No-Resp	Resp	Total
0	Dilution Water	10	0	10
12.5		10	0	10
25		10	0	10
50		10	0	10
75		9	1	10
100		10	0	10

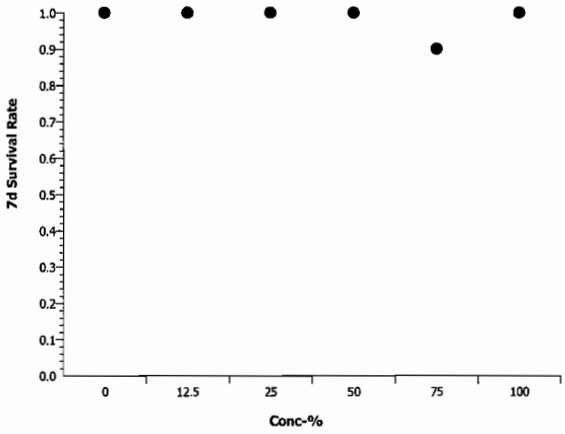
7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	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		1	1	1	1	1	1	1	0	1	1
100		1	1	1	1	1	1	1	1	1	1

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Analysis ID:	08-8066-4719	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	16 Feb-10 16:45	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Report Date:	16 Feb-10 16:46 (p 1 of 2)
Test Code:	20-1878-0926/B232811cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Analysis ID:	00-5855-3991	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	16 Feb-10 16:46	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Batch ID:	11-9412-2529	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	09 Feb-10 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	16 Feb-10 14:15	**Species:**	Ceriodaphnia dubia	**Brine:**	
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	00-8562-1056	**Code:**	B2328-11	**Client:**	
Sample Date:	08 Feb-10 09:00	**Material:**	POTW Effluent	**Project:**	
Receive Date:	09 Feb-10	**Source:**	Pima County		
Sample Age:	29h	**Station:**	Ina Road - Secondary Effl (East Plant)		

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	100	>100	N/A	1	14.4%

Steel Many-One Rank Test

Control	vs	Conc-%	Test Stat	Critical	Ties	P-Value	Decision(5%)
Dilution Water		12.5	96	75	3	0.5631	Non-Significant Effect
		25	107	75	3	0.8650	Non-Significant Effect
		50	94	75	3	0.4923	Non-Significant Effect
		75	113	75	4	0.9503	Non-Significant Effect
		100	115	75	5	0.9664	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	30.7	15 - NL	Yes	Result Within Limits
PMSD	0.144	0.13 - 0.47	Yes	Result Within Limits

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	91.28333	18.25667	5	0.981	0.4381	Non-Significant Effect
Error	1005.3	18.61667	54			
Total	1096.583	36.87333	59			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	13.5	15.1	0.0191	Equal Variances
Distribution	Shapiro-Wilk Normality	0.94		0.0054	Non-normal Distribution

Reproduction Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	30.7	29.2	32.2	25	37	0.722	3.89	12.7%	0.0%
12.5		10	28.3	25.9	30.7	18	35	1.19	6.41	22.7%	7.82%
25		10	31.1	30	32.2	26	36	0.521	2.81	9.02%	-1.3%
50		10	29.4	28.6	30.2	27	32	0.373	2.01	6.84%	4.23%
75		10	30.9	28.9	32.9	17	36	0.977	5.26	17.0%	-0.65%
100		10	32.1	30.6	33.6	26	38	0.74	3.98	12.4%	-4.56%

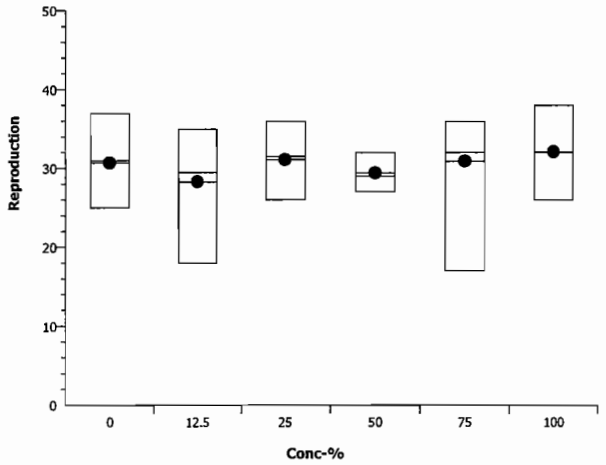
Ceriodaphnia 7-d Survival and Reproduction Test **CH2M Hill**

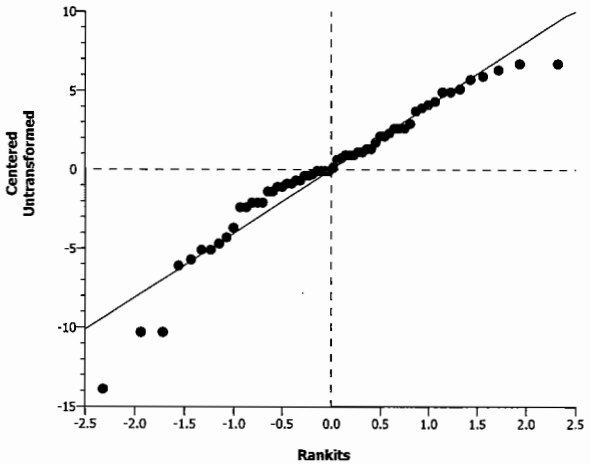
Analysis ID:	00-5855-3991	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	16 Feb-10 16:46	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

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	Dilution Water	27	26	30	32	32	35	30	25	33	37
12.5		34	18	29	30	35	35	28	32	24	18
25		36	30	32	32	29	29	34	31	32	26
50		29	27	32	32	29	28	30	28	27	32
75		30	33	33	35	30	32	36	17	31	32
100		32	30	31	26	32	37	38	36	27	32

Graphics





CETIS Analytical Report

Report Date:	16 Feb-10 16:46 (p 1 of 1)
Test Code:	20-1878-0926/B232811cdc

Ceriodaphnia 7-d Survival and Reproduction Test — **CH2M Hill**

Analysis ID:	08-0759-5932	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	16 Feb-10 16:46	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Batch ID:	11-9412-2529	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	09 Feb-10 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	16 Feb-10 14:15	**Species:**	Ceriodaphnia dubia	**Brine:**	
Duration:	7d	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	00-8562-1056	**Code:**	B2328-11	**Client:**	
Sample Date:	08 Feb-10 09:00	**Material:**	POTW Effluent	**Project:**	
Receive Date:	09 Feb-10	**Source:**	Pima County		
Sample Age:	29h	**Station:**	Ina Road - Secondary Effl (East Plant)		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Test Acceptability

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	30.7	15 - NL	Yes	Result Within Limits

Point Estimates

Level	Conc-%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	N/A	N/A	<1	N/A	N/A

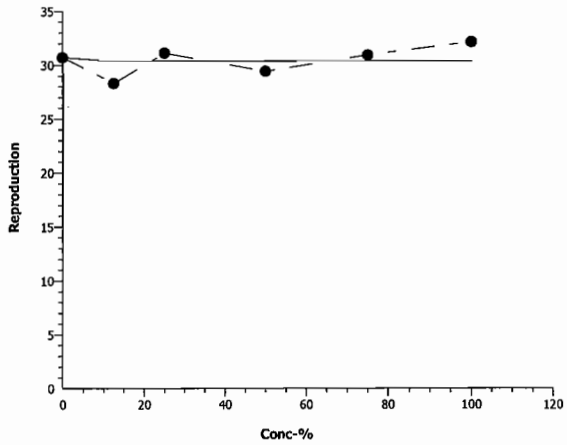
Reproduction Summary

			Calculated Variate						
Conc-%	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**Diff%**
0	Dilution Water	10	30.7	25	37	0.71	3.89	12.7%	0.0%
12.5		10	28.3	18	35	1.17	6.41	22.7%	7.82%
25		10	31.1	26	36	0.512	2.81	9.02%	-1.3%
50		10	29.4	27	32	0.367	2.01	6.84%	4.23%
75		10	30.9	17	36	0.96	5.26	17.0%	-0.65%
100		10	32.1	26	38	0.728	3.98	12.4%	-4.56%

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	Dilution Water	27	26	30	32	32	35	30	25	33	37
12.5		34	18	29	30	35	35	28	32	24	18
25		36	30	32	32	29	29	34	31	32	26
50		29	27	32	32	29	28	30	28	27	32
75		30	33	33	35	30	32	36	17	31	32
100		32	30	31	26	32	37	38	36	27	32

Graphics



APPENDIX B

REFERENCE TOXICANT DATA SHEETS

CH2M HILL

Ceriodaphnia dubia
Survival and Reproduction
Test Data Summary

Client: QA / QC

Test Start Date: 2-9-2010

Sample Description: NaCl (50 g/L stock)

Reagent ID#: 2B010-03

Ceriodaphnia Lot#: Cd 2441

Statistician: [illegible]

Percent or Concentration	Total Live Young Produced in First 3 Broods per Replicate										# Alive Adults	Total Live Young
	A	B	C	D	E	F	G	H	I	J		
Control	35	25	19	28	31	15	30	31	13	5	8	232
	AD?	AD?	AD?	AD?	AD?	AD? ✓	AD? ✓	AD?	AD?	AD?		
0.25 g/L	23	28	21	11	25	20	30	28	23	23	7	232
	AD? ✓	AD?	AD?	AD? ✓	AD?	AD? ✓	AD?	AD?	AD?	AD?		
0.50 g/L	8	10	10	12	22	10	19	28	21	11	7	151
	AD? ✓	AD? ✓	AD?	AD?	AD?	AD?	AD?	AD?	AD?	AD? ✓		
1.0 g/L	3	2	3	3	0	1	6	13	8	2	1	41
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD?	AD? ✓		
1.5 g/L	0	0	5	1	4	2	3	1	3	4	4	23
	AD? ✓	AD? ✓	AD?	AD? ✓	AD?	AD? ✓	AD?	AD? ✓	AD? ✓	AD?		
2.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		
4.0 g/L	0	0	0	0	0	0	0	0	0	0	0	0
	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓	AD? ✓		

Test Organism Mortality (Adult dead) = AD? ✓

Test Organism identified as Male = AD? M

Test Organism Injured during test = AD? I

# of Alive Adults = Number of test organism alive at termination (for WDOE only, = Number of test organisms alive at Day 7)

Total Live Young = Total neonates produced in first 3 broods

Footnote: As per EPA-821-R-02-013 (13.10.9.1), *Ceriodaphnia dubia* test should be terminated when 60% of the surviving control organisms have produced their third brood, or at the end of eight days, whichever occurs first.

Also as per EPA-821-R-02-013 (13.10.9.1), "In this three-brood test, offspring from fourth or higher broods should not be counted and should not be included in the total number of neonates produced during the test."

Endpoint	IC25	Cusum Chart Limits
Survival	0.52	0.06 to 2.41
Reproduction	0.42	0.03 to 0.63

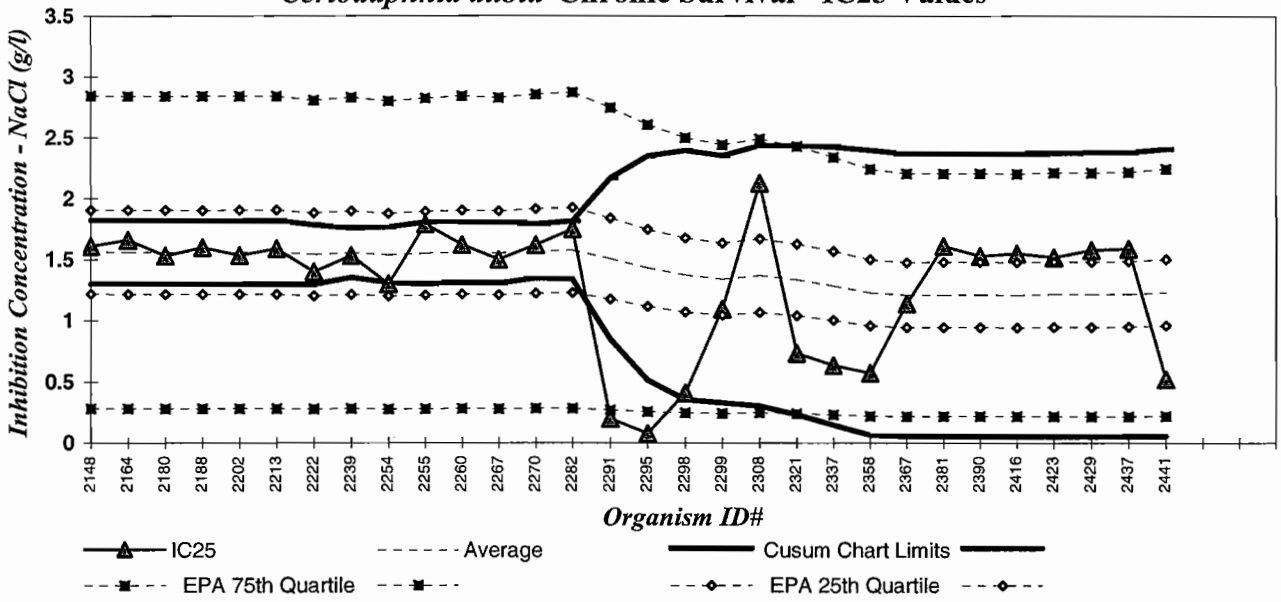
Task Manager: [signature]

Project Manager: [signature]

QA Officer: [signature]

REFERENCE TOXICANT CUMLATIVE SUMMARY (CUSUM) CHART

Ceriodaphnia dubia Chronic Survival - IC25 Values



Ceriodaphnia dubia - Chronic (EPA Test Method 1002.0)

SODIUM CHLORIDE (g/L)

Endpoint: Chronic Survival

Stats Method: Linear Interpolation

Test Conditions: Recon MH, 25 oC

From EPA 833-R-00-003:

10th Quartile CV (*control limit*) = 0.07

25th Quartile CV (*warning limit*) = 0.11

75th Quartile CV (warning *limit*) = 0.41

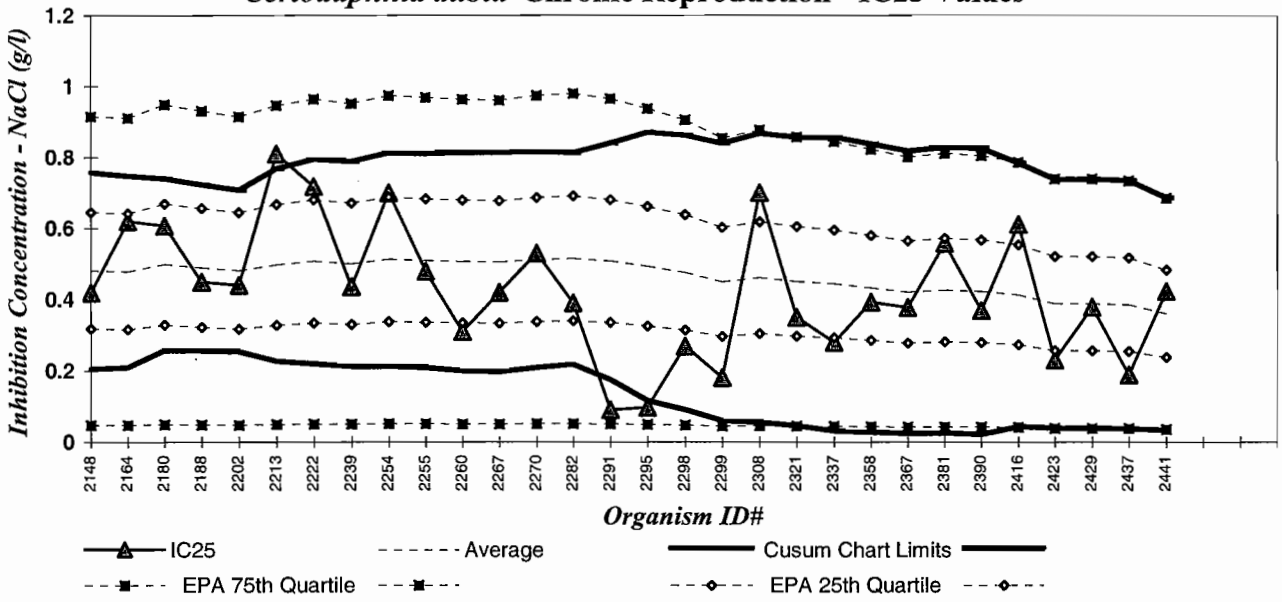
90th Quartile CV (*control limit*) = 0.81

*Intralab CV is compared to EPA **Warning limits** (25th and 75th CV's) and **Control limits** (10th and 90th CV's),*
If lab CV is outside EPA Control limits, the EPA Control limits are used to set Cusum chart limits.

Event #	Cerio ID #	Test Start Date	IC25	Running Average	Running SD	Cusum Chart Limits AVG-2SD	Cusum Chart Limits AVG+2SD	Intralab CV
202	2260	09/17/08	1.62	1.56	0.12	**1.31**	**1.81**	0.08
203	2267	09/30/08	1.50	1.55	0.12	**1.31**	**1.80**	0.08
204	2270	10/07/08	1.62	1.57	0.11	**1.35**	**1.79**	0.07
205	2282	10/28/08	1.75	1.58	0.12	**1.34**	**1.81**	0.08
206	2291	12/02/08	**0.20**	1.51	0.33	**0.85**	**2.17**	0.22
207	2295	12/12/08	**0.08**	1.43	0.46	**0.52**	**2.35**	0.32
208	2298	12/30/08	0.41	1.37	0.51	**0.35**	**2.39**	0.37
209	2299	01/06/09	1.10	1.34	0.51	**0.33**	**2.35**	0.38
210	2308	01/27/09	2.13	1.37	0.53	**0.30**	**2.43**	0.39
211	2321	03/04/09	0.73	1.33	0.55	**0.23**	**2.44**	0.41
212	2337	04/03/09	0.64	1.29	0.57	**0.15**	**2.42**	0.44
213	2358	06/03/09	0.57	1.23	0.58	**0.07**	**2.40**	0.47
214	2367	07/02/09	1.14	1.21	0.58	**0.05**	**2.37**	0.48
215	2381	07/28/09	1.61	1.21	0.58	**0.05**	**2.37**	0.48
216	2390	08/26/09	1.53	1.21	0.58	**0.05**	**2.37**	0.48
217	2416	10/16/09	1.55	1.21	0.58	**0.05**	**2.36**	0.48
218	2423	11/10/09	1.52	1.22	0.58	**0.06**	**2.38**	0.48
219	2429	12/01/09	1.58	1.22	0.58	**0.06**	**2.38**	0.48
220	2437	01/26/10	1.59	1.22	0.58	**0.05**	**2.38**	0.48
221	2441	02/09/10	0.52	1.23	0.59	**0.06**	**2.41**	0.51
222								
223								

REFERENCE TOXICANT CUMLATIVE SUMMARY (CUSUM) CHART

Ceriodaphnia dubia Chronic Reproduction - IC25 Values



Ceriodaphnia dubia - Chronic (EPA Test Method 1002.0)

SODIUM CHLORIDE (g/L)

Endpoint: Chronic Reproduction

Stats Method: Linear Interpolation

Test Conditions: Recon MH, 25 oC

From EPA 833-R-00-003:

10th Quartile CV (*control limit*) = 0.08

25th Quartile CV (*warning limit*) = 0.17

75th Quartile CV (warning *limit*) = 0.45

90th Quartile CV (*control limit*) = 0.62

*Intralab CV is compared to EPA **Warning limits** (25th and 75th CV's) and **Control limits** (10th and 90th CV's),*
If lab CV is outside EPA Control limits, the EPA Control limits are used to set Cusum chart limits.

Event #	Cerio ID #	Test Start Date	IC25	Running Average	Running SD	Cusum Chart Limits AVG-2SD	Cusum Chart Limits AVG+2SD	Intralab CV
202	2260	9/17/2008	0.31	0.51	0.15	**0.20**	**0.81**	0.30
203	2267	9/30/2008	0.42	0.51	0.15	**0.20**	**0.81**	0.30
204	2270	10/7/2008	0.53	0.51	0.15	**0.21**	**0.82**	0.30
205	2282	10/28/2008	0.39	0.52	0.15	**0.22**	**0.81**	0.29
206	2291	12/2/2008	**0.09**	0.51	0.17	**0.18**	**0.84**	0.33
207	2295	12/12/2008	**0.10**	0.49	0.19	**0.12**	**0.87**	0.38
208	2298	12/30/2008	0.27	0.48	0.19	**0.09**	**0.86**	0.40
209	2299	1/6/2009	0.18	0.45	0.19	**0.06**	**0.84**	0.43
210	2308	1/27/2009	0.70	0.46	0.20	**0.06**	**0.87**	0.44
211	2321	3/4/2009	0.35	0.45	0.20	**0.05**	**0.86**	0.45
212	2337	4/3/2009	0.28	0.44	0.21	**0.03**	**0.86**	0.46
213	2358	6/3/2009	0.39	0.43	0.20	**0.03**	**0.84**	0.47
214	2367	7/2/2009	0.38	0.42	0.20	**0.02**	**0.82**	0.47
215	2381	7/28/2009	0.56	0.43	0.20	**0.03**	**0.83**	0.47
216	2390	8/26/2009	0.37	0.42	0.20	**0.02**	**0.83**	0.47
217	2416	10/16/2009	0.61	0.41	0.19	**0.04**	**0.78**	0.45
218	2423	11/10/2009	0.23	0.39	0.17	**0.04**	**0.74**	0.45
219	2429	12/1/2009	0.38	0.39	0.17	**0.04**	**0.74**	0.45
220	2437	1/26/2010	0.19	0.39	0.17	**0.04**	**0.73**	0.45
221	2441	2/9/2010	0.42	0.36	0.16	**0.03**	**0.69**	0.45
222								
223								

APPENDIX C

CHAIN OF CUSTODY

CH2MHILL
Analytical Services

Sample Receipt Record

SDG Number: B2328 Client/Project Pima County - Ina Road WRF

VERIFICATION OF SAMPLE CONDITIONS (verify all items)

Observation	-11 YES	-11 NO	-11 NA	-12 YES	-12 NO	-12 NA	-13 YES	-13 NO	-13 NA
Was the cooler sealed on arrival to ASL? (✓ NA if hand delivered by client)	✓			✓			✓		
Were custody seals intact (on either the sample or the cooler)? (✓ NA if not used)	✓			✓			✓		
Was the Chain of Custody included?	✓			✓			✓		
Was the Chain of Custody properly filled out?	✓			✓			✓		
Were the sample containers in good condition?	✓			✓			✓		
Are all samples within 36 hours of collection? If not, contact LPM	✓			✓			✓		
Was there ice in the cooler?	✓			✓			✓		
Enter temperature (on arrival)	1.5 °C			2.1 °C			1.2 °C		
pH (as received)	7.2			7.3			7.1		
Login performed by:	[illegible]			[illegible]			[illegible]		
Date:	2-9-10			2-11-10			2-13-10		
Time:	11:45			1200			1130		

Sample Receipt Exception Report

The following exceptions were noted: Comments (write number of exception description and the impacted sample numbers)

	1. No custody seal as required by project	
	2. No chain-of-custody provided	
	3. Analysis, description, date of collection not provided	
	4. Samples broken or leaking on reciept.	
	5. Temperature of samples inappropriate for analysis requested. (EPA recommends 0-6 °C for WET testing)	
	6. Container inappropriate for analysis requested	
	7. Inadequate sample volume.	
	8. Preservation inappropriate for analysis requested	
	9. Samples received out of holding time for analysis requrested	
	10. Discrepancies between COC form and container labels.	
	11. Other.	

ACTION TAKEN (date/time):
Cient notified on (date/time):
Originator:
Client Contact:

CH2M HILL CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING

Client: Pima County Regional Wastewater R.D.
Address: 7101 N. Casa Grande Hwy, Tucson, AZ 85743
Contact Person: Nancy Powell
Phone: (520) 443-6100 / FAX # 520 443-6071
CH2M HILL Project #

NPDES#: AZ 0020001
Composite Sample Information
Samples/Hour: 24/1 Volume/Sample: 650 ml/24
Total Hours: 24 Hrs. Total Volume: 15600 mL
Initiated: Date 02/07/10 Time 0900 Hrs.
Ended: Date 02/08/10 Time 0900 Hrs.
Chilled During Collection: Yes ☒ No ☐

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160
P. O.#
Check Chlorine (Y/N)
Temp. Upon Arrival (°C): 1.5
Check Ammonia (Y/N) Dechlorinate (Y/N)

Analysis Required/Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
20001-9725	02/07/10-02/08/10	0900 Hrs.	X		1	B2328-11				X														Permit # AZ0020001
Ina Secondary Eff.																								Temp prior to shipping 4.4°C
Pima LIMS# 2010020474																								

Sampled By & Title (Please sign and print name)	Date/Time	Relinquished By (Please sign and print name)	Date/Time
Michael R. Silva Water Quality Inspector	02/08/10 0911 Hrs	Michael R. Silva	02/08/10 0911 Hrs
Received By (Please sign and print name)	**Date/Time**	**Relinquished By (Please sign and print name)**	**Date/Time**
Greg Spence	02-08-10 0911	Greg Spence	02-08-10 1117
Received By (Please sign and print name)	**Date/Time**	**Relinquished By (Please sign and print name)**	**Date/Time**
Thomas M. Berry	02/08/10 1117	Fed. Ex.	02/08/10 1530
Received By (Please sign and print name)	**Date/Time**	**Shipped Via**	**Shipping #**
Brett Mulkey	2/9/10 1145	UPS ___ Bus ___ Fed-Ex X Hand ___ Other ___	
Work Authorized By (Please sign and print name)	**Remarks**		

Rev. 10/97

PIMA COUNTY WASTEWATER MANAGEMENT
WATER QUALITY (443-6256)
CHAIN OF CUSTODY AND ANALYSIS REQUEST FORM

82328-11

SUBMITTER: CRAO / WQ (Organization) LAB ID: 2010020474

SAMPLERS: Silva, Goodman (Print Last Names Only) FACILITY-LOCATION ID: 20001-9725

SAMPLE DATE: 02/07/10 (MM / DD / YY) SAMPLE TIME: 0900 HRS (24 Hour Clock)

SAMPLE LOCATION: Ina Road WPCF - Secondary Effluent - East Plant

PERMIT TYPE:		
	☐ APP	☐ REUSE
	■ INVESTIGATION	☐ USFS
	☐ IWC	☐ 503
	☐ AZPDES - NPDES	☐ Other

SAMPLE MATRIX:
- ☐ Biosolids
- ☐ Groundwater
- ☐ Industrial Wastewater
- ☐ Soil
- ☐ Stormwater
- ☐ Surface Water
- ■ Wastewater
- ☐ Reclaimed Water

INDICATE ALL ANALYSES REQUIRED

Mark discrete (D) or composite (C) box corresponding to individual sample type

INORGANIC CHEMISTRY						ORGANIC CHEMISTRY			MICROBIOLOGY-WET CHEMISTRY		
METALS	D	C	METALS	D	C	PRIORITY POLLUTANTS	D	C		D	C
Aluminum	☐	☐	Thallium	☐	☐	Acrolein and Acrylonitrile	☐	☐	Alkalinity	☐	☐
Antimony	☐	☐	Tin	☐	☐	Dioxin GC/SIM/MS **Scan**	☐	☐	Bicarbonate	☐	☐
Arsenic	☐	☐	Titanium	☐	☐	Organochlorine Pesticides & PCBs	☐	☐	BOD	☐	☐
Barium	☐	☐	Vanadium	☐	☐	Purgeable Organics (GCMS)	☐	☐	Carbonate	☐	☐
Beryllium	☐	☐	Zinc	☐	☐	Semivolatile Organics (GCMS)	☐	☐	COD	☐	☐
Boron	☐	☐	ICP Scan *	☐	☐	Other	☐	☐	Coliform, Fecal ****	☐	☐
Cadmium	☐	☐	Priority Pollutant Metals **	☐	☐	MISCELLANEOUS METHODS	D	C	Coliform, Sediment	☐	☐
Calcium	☐	☐	TCLP Metals	☐	☐	Digester Gas	☐	☐	Coliform, Total ****	☐	☐
Chromium	☐	☐	503 Metals ***	☐	☐	Lindane	☐	☐	E-*coli* ****	☐	☐
Chromium^{+6}	☐	☐	WET METHODS	D	C	Oil and Grease	☐	☐	Conductivity	☐	☐
Cobalt	☐	☐	Ammonia as N	☐	☐	Organic Carbon, Total	☐	☐	Ignitability	☐	☐
Copper	☐	☐	Chloride	☐	☐	Organic Carbon, Dissolved	☐	☐	Oxygen, Dissolved	☐	☐
Hardness	☐	☐	Cyanide, Total	☐	☐	Organophosphorous Pesticides	☐	☐	pH	☐	☐
Iron	☐	☐	Cyanide, Amenable	☐	☐	TCLP Herbicides	☐	☐	Solids, Settleable	☐	☐
Lead	☐	☐	Fluoride	☐	☐	TCLP Pesticides	☐	☐	Solids, Total	☐	☐
Magnesium	☐	☐	Nitrate as N	☐	☐	TCLP Semivolatile Organics	☐	☐	Solids, Total Dissolved	☐	☐
Manganese	☐	☐	Nitrite as N	☐	☐	TCLP Volatile Organics	☐	☐	Solids, Total Suspended	☐	☐
Mercury	☐	☐	Nitrate & Nitrite as N	☐	☐	Total Petroleum Hydrocarbons	☐	☐	Solids, Total Volatile	☐	☐
Molybdenum	☐	☐	Nitrogen, Tot. Kjeldahl	☐	☐	Volatile Acids	☐	☐	Solids, Volatile Suspended	☐	☐
Nickel	☐	☐	Nitrogen, Total as N	☐	☐				Turbidity	☐	☐
Potassium	☐	☐	Orthophosphate as P	☐	☐	Whole Effluent Toxicity (WET) Testing			Other _____	☐	☐
Selenium	☐	☐	Phosphorus, Total as P	☐	☐	Chronic Toxicity *Pimephales promelas*		☐			
Silver	☐	☐	Sulfate	☐	☐	Chronic Toxicity *Ceriodaphnia dubia*		■	Other _____	☐	☐
Sodium	☐	☐	Sulfide	☐	☐	Chronic Tox. *Senenastrum capricomutum*		☐			
Strontium	☐	☐	Other	☐	☐	Other	☐	☐	Other	☐	☐

Notes: Sample to be sent to CH2MHILL

COMPLIANCE FIELD MEASUREMENTS

■ Chlorine	ND	mg/L	☐ Temperature		°C
☐ Oxygen (Dis.)		mg/L	☐ pH		SU
☐ Conductivity		µmhos/cm	☐ Other		

Sample Receiving Temp. ≤4°C IR Therm 605

Number of Sample Containers (1) 605

Sampled by:	Received by:	Date/Time 02-08-10 0911
Relinquished by:	Received by:	Date/Time 02-08-10 1117
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time

* Semiquantitative Results - NOT TO BE USED FOR COMPLIANCE TESTING

** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Thallium and Zinc by ICP. Mercury by Cold Vapor.

*** Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

**** Indicate date and time of all bacteria samples in the "Notes Box" if different than the information provided in heading.

CH2M HILL **CHAIN OF CUSTODY RECORD FOR NPDES COMPLIANCE BIOMONITORING**

Client: Pima County R.W.R.D.
Address: 7101 N. Casa Grande Hwy, Tucson, AZ 85743

Contact Person: Nancy Powell
Phone: (520) 443-6100 / FAX (520) 443-6071

CH2M HILL Project #

NPDES#: AZ0020001
Composite Sample Information
Samples/Hour: 1 Volume/Sample: 650 mL
Total Hours: 24 Total Volume: 15.6 L
Initiated: Date 02/09/10 Time 0900 Hrs.
Ended: Date 02/10/10 Time 0900 Hrs.
Chilled During Collection: yes

Ship Samples to:
PO#

CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271, ext. 3160
Message: (541) 758-0235, ext. 3160

Check Chlorine (Y/N)
Temp. Upon Arrival (°C): 2.1 °C
Check Ammonia (Y/N) Dechlorinated (Y/N)

Analysis Required / Comments

Sample ID	Date	Time	Sample Type: Comp.	Sample Type: Grab	# of Container	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentration and/or Comments
20001-9725 Ina Road WRF	02/10/10	0900	X		1					X														TRC - N.A.
Secondary Eff. East Plant																								Pima LIMS# 201002 0627
																								Temp prior to shipping ≤4°C

Sampled By & Title	(Please sign and print name)	Date/Time	Relinquished By	(Please sign and print name)	Date/Time
Michael R. Silva	Michael R. Silva Water Quality Inspector	02/10/10 0900	Michael R. Silva	Michael R. Silva	02/10/10 0933
Received By	**(Please sign and print name)**	**Date/Time**	**Relinquished By**	**(Please sign and print name)**	**Date/Time**
Greg Spence		02-10-10 0933		Greg Spence	02-10-10
Received By	**(Please sign and print name)**	**Date/Time**	**Relinquished By**	**(Please sign and print name)**	**Date/Time**
	Thomas M. Berry	02-10-10 1326	Fed. Ex.		02-10-10 1530
Received By	**(Please sign and print name)**	**Date/Time**	**Shipped Via**		**Shipping #**
	Brent Mulkey	2-11-10 1150	UPS Bis Fed-Ex X Hand Other		
Work Authorized By	**(Please sign and print name)**	**Remarks**			

PIMA COUNTY WASTEWATER MANAGEMENT
WATER QUALITY (443-6256)
CHAIN OF CUSTODY AND ANALYSIS REQUEST FORM

SUBMITTER: CRAO / WQ (Organization) LAB ID: 2010020627

SAMPLERS: Silva, Goodyear (Print Last Names Only) FACILITY-LOCATION ID: **20001-9725**

SAMPLE DATE: 02/09/10 (MM / DD / YY) SAMPLE TIME: 0900 Hrs (24 Hour Clock)

SAMPLE LOCATION: **Ina Road WPCF - Secondary Effluent - East Plant**

PERMIT TYPE:
- ☐ APP
- ■ INVESTIGATION
- ☐ IWC
- ☐ AZPDES - NPDES
- ☐ REUSE
- ☐ USFS
- ☐ 503
- ☐ Other

SAMPLE MATRIX:
- ☐ Biosolids
- ☐ Groundwater
- ☐ Industrial Wastewater
- ☐ Soil
- ☐ Stormwater
- ☐ Surface Water
- ■ Wastewater
- ☐ Reclaimed Water

INDICATE ALL ANALYSES REQUIRED

Mark discrete (D) or composite (C) box corresponding to individual sample type

INORGANIC CHEMISTRY						ORGANIC CHEMISTRY			MICROBIOLOGY-WET CHEMISTRY		
METALS	D	C	METALS	D	C	PRIORITY POLLUTANTS	D	C		D	C
Aluminum	☐	☐	Thallium	☐	☐	Acrolein and Acrylonitrile	☐	☐	Alkalinity	☐	☐
Antimony	☐	☐	Tin	☐	☐	Dioxin GC/SIM/MS **Scan**	☐	☐	Bicarbonate	☐	☐
Arsenic	☐	☐	Titanium	☐	☐	Organochlorine Pesticides & PCBs	☐	☐	BOD	☐	☐
Barium	☐	☐	Vanadium	☐	☐	Purgeable Organics (GCMS)	☐	☐	Carbonate	☐	☐
Beryllium	☐	☐	Zinc	☐	☐	Semivolatile Organics (GCMS)	☐	☐	COD	☐	☐
Boron	☐	☐	ICP Scan *	☐	☐	Other	☐	☐	Coliform, Fecal ****	☐	☐
Cadmium	☐	☐	Priority Pollutant Metals **	☐	☐	**MISCELLANEOUS METHODS**	D	C	Coliform, Sediment	☐	☐
Calcium	☐	☐	TCLP Metals	☐	☐	Digester Gas	☐	☐	Coliform, Total ****	☐	☐
Chromium	☐	☐	503 Metals ***	☐	☐	Lindane	☐	☐	E-*coli* ****	☐	☐
Chromium $^{+6}$	☐	☐	**WET METHODS**	D	C	Oil and Grease	☐	☐	Conductivity	☐	☐
Cobalt	☐	☐	Ammonia as N	☐	☐	Organic Carbon, Total	☐	☐	Ignitability	☐	☐
Copper	☐	☐	Chloride	☐	☐	Organic Carbon, Dissolved	☐	☐	Oxygen, Dissolved	☐	☐
Hardness	☐	☐	Cyanide, Total	☐	☐	Organophosphorous Pesticides	☐	☐	pH	☐	☐
Iron	☐	☐	Cyanide, Amenable	☐	☐	TCLP Herbicides	☐	☐	Solids, Settleable	☐	☐
Lead	☐	☐	Fluoride	☐	☐	TCLP Pesticides	☐	☐	Solids, Total	☐	☐
Magnesium	☐	☐	Nitrate as N	☐	☐	TCLP Semivolatile Organics	☐	☐	Solids, Total Dissolved	☐	☐
Manganese	☐	☐	Nitrite as N	☐	☐	TCLP Volatile Organics	☐	☐	Solids, Total Suspended	☐	☐
Mercury	☐	☐	Nitrate & Nitrite as N	☐	☐	Total Petroleum Hydrocarbons	☐	☐	Solids, Total Volatile	☐	☐
Molybdenum	☐	☐	Nitrogen, Tot. Kjeldahl	☐	☐	Volatile Acids	☐	☐	Solids, Volatile Suspended	☐	☐
Nickel	☐	☐	Nitrogen, Total as N	☐	☐				Turbidity	☐	☐
Potassium	☐	☐	Orthophosphate as P	☐	☐	**Whole Effluent Toxicity (WET) Testing**			Other _____	☐	☐
Selenium	☐	☐	Phosphorus, Total as P	☐	☐	Chronic Toxicity *Pimephales promelas*	☐				
Silver	☐	☐	Sulfate	☐	☐	Chronic Toxicity *Ceriodaphnia dubia*	■		Other _____	☐	☐
Sodium	☐	☐	Sulfide	☐	☐	Chronic Tox. *Senenastrum capricomutum*	☐				
Strontium	☐	☐	Other	☐	☐	Other	☐	☐	Other	☐	☐

Notes: **Sample to be sent to CH2MHILL**

605 02-10-10

COMPLIANCE FIELD MEASUREMENTS

■ Chlorine	ND	mg/L	☐ Temperature		°C
☐ Oxygen (Dis.)		mg/L	☐ pH		SU
☐ Conductivity		µmhos/cm	☐ Other		

Sample Receiving Temp. 6°C ~~4°C~~ IR Therm 605

Number of Sample Containers (1) 605

Sampled by:	Received by:	Date/Time 02-10-10 0933
Relinquished by:	Received by:	Date/Time 2-10-10 1326
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time

* Semiquantitative Results - NOT TO BE USED FOR COMPLIANCE TESTING

** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Thallium and Zinc by ICP. Mercury by Cold Vapor.

*** Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

**** Indicate date and time of all bacteria samples in the "Notes Box" if different than the information provided in heading.

CH2M .L CHAIN OF CUSTODY RECORD FOR NPDES CON)ANCE BIOMONITORING

Client Pima County R.W.R.D.
Address 7101 N. Casa Grande Hwy
Tucson, AZ 85743

Contact Person: Nancy Powell
Phone: 520-443-6100 / FAX# 520-443-6071

CH2M HILL Project #

NPDES#
Composite Sample Information
Samples/Hour 1 Volume/Sample 650 ml
Total Hours 24 Total Volume 15.6 L
Initiated: Date 02/11/10 Time 0900 Hrs.
Ended: Date 02/12/10 Time 0900 Hrs.
Chilled During Collection Yes ☒ No ☐

Ship Samples to: CH2M HILL, Inc.
Attention: Aquatic Toxicology Laboratory
2300 NW Walnut Blvd.
Corvallis, OR 97330
Phone: (541) 752-4271 Ext. 3160
Message: (541) 758-0235 Ext. 3160

P. O.#

Check Chlorine (Y/N)
Temp. Upon Arrival (°C)
Check Ammonia (Y/N) Dechlorinate (Y/N)

Analysis Required/Comments

Sample ID	Date	Time	Sample Type Comp.	Sample Type Grab	# of Containers	Lab ID#	Fathead Acute	Fathead Chronic	Cerio Acute	Cerio Chronic	Daphnia Acute	Trout Acute	SHM Acute	SHM Chronic	MB Acute	MB Chronic	MYS Acute	MYS Chronic	Algae	Haz Waste				Concentrations and/or Comments
20001-9725 Ina Rd. WPCF	02/12/10	0900	X		1	B2328-13				X														Pima LIMS# 2010020790
Secondary Effluent - East Plant																								Temp prior to shipping ≤4°C

Sampled By & Title (Please sign and print name) DAVID M GOODYEAR Damon Goodyear IND W/WATER INSPECTOR	Date/Time 02-12-10 0932	Relinquished By (Please sign and print name) Damon Goodyear DAVID M GOODYEAR	Date/Time 02-12-10 0932
Received By (Please sign and print name) Greg Spence	Date/Time 02-12-10 0932	Relinquished By (Please sign and print name) Greg Spence	Date/Time 02-12-10 1000
Received By (Please sign and print name) Thomas M. Barry	Date/Time 02-12-10 1000	Relinquished By (Please sign and print name) Fed Ex	Date/Time 02-12-10 1430
Received By (Please sign and print name) Dalen Wing	Date/Time 2-13-10 1130	Shipped Via UPS ___ Bus ___ Fed-Ex ___ Hand ___ Other ___	Shipping #
Work Authorized By (Please sign and print name)	Remarks		

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PIMA COUNTY WASTEWATER MANAGEMENT
WATER QUALITY (443-6256)
CHAIN OF CUSTODY AND ANALYSIS REQUEST FORM

SUBMITTER: **CRAO / WQ** (Organization) LAB ID: 201002 0790

SAMPLERS: Goodyear (Print Last Names Only) FACILITY-LOCATION ID: **20001-9725**

SAMPLE DATE: 02/11/10 (MM / DD / YY) SAMPLE TIME: 0900 Hrs. (24 Hour Clock)

SAMPLE LOCATION: **Ina Road WPCF - Secondary Effluent - East Plant**

PERMIT TYPE:
- ☐ APP
- ■ INVESTIGATION
- ☐ IWC
- ☐ AZPDES - NPDES
- ☐ REUSE
- ☐ USFS
- ☐ 503
- ☐ Other

SAMPLE MATRIX:
- ☐ Biosolids
- ☐ Groundwater
- ☐ Industrial Wastewater
- ☐ Soil
- ☐ Stormwater
- ☐ Surface Water
- ■ Wastewater
- ☐ Reclaimed Water

INDICATE ALL ANALYSES REQUIRED

Mark discrete (D) or composite (C) box corresponding to individual sample type

INORGANIC CHEMISTRY						ORGANIC CHEMISTRY			MICROBIOLOGY-WET CHEMISTRY		
METALS	D	C	METALS	D	C	PRIORITY POLLUTANTS	D	C		D	C
Aluminum	☐	☐	Thallium	☐	☐	Acrolein and Acrylonitrile	☐	☐	Alkalinity	☐	☐
Antimony	☐	☐	Tin	☐	☐	Dioxin GC/SIM/MS **Scan**	☐	☐	Bicarbonate	☐	☐
Arsenic	☐	☐	Titanium	☐	☐	Organochlorine Pesticides & PCBs	☐	☐	BOD	☐	☐
Barium	☐	☐	Vanadium	☐	☐	Purgeable Organics (GCMS)	☐	☐	Carbonate	☐	☐
Beryllium	☐	☐	Zinc	☐	☐	Semivolatile Organics (GCMS)	☐	☐	COD	☐	☐
Boron	☐	☐	ICP Scan *	☐	☐	Other	☐	☐	Coliform, Fecal ****	☐	☐
Cadmium	☐	☐	Priority Pollutant Metals **	☐	☐	**MISCELLANEOUS METHODS**	D	C	Coliform, Sediment	☐	☐
Calcium	☐	☐	TCLP Metals	☐	☐	Digester Gas	☐	☐	Coliform, Total ****	☐	☐
Chromium	☐	☐	503 Metals ***	☐	☐	Lindane	☐	☐	*E-coli* ****	☐	☐
Chromium^{+6}	☐	☐	**WET METHODS**	D	C	Oil and Grease	☐	☐	Conductivity	☐	☐
Cobalt	☐	☐	Ammonia as N	☐	☐	Organic Carbon, Total	☐	☐	Ignitability	☐	☐
Copper	☐	☐	Chloride	☐	☐	Organic Carbon, Dissolved	☐	☐	Oxygen, Dissolved	☐	☐
Hardness	☐	☐	Cyanide, Total	☐	☐	Organophosphorous Pesticides	☐	☐	pH	☐	☐
Iron	☐	☐	Cyanide, Amenable	☐	☐	TCLP Herbicides	☐	☐	Solids, Settleable	☐	☐
Lead	☐	☐	Fluoride	☐	☐	TCLP Pesticides	☐	☐	Solids, Total	☐	☐
Magnesium	☐	☐	Nitrate as N	☐	☐	TCLP Semivolatile Organics	☐	☐	Solids, Total Dissolved	☐	☐
Manganese	☐	☐	Nitrite as N	☐	☐	TCLP Volatile Organics	☐	☐	Solids, Total Suspended	☐	☐
Mercury	☐	☐	Nitrate & Nitrite as N	☐	☐	Total Petroleum Hydrocarbons	☐	☐	Solids, Total Volatile	☐	☐
Molybdenum	☐	☐	Nitrogen, Tot. Kjeldahl	☐	☐	Volatile Acids	☐	☐	Solids, Volatile Suspended	☐	☐
Nickel	☐	☐	Nitrogen, Total as N	☐	☐				Turbidity	☐	☐
Potassium	☐	☐	Orthophosphate as P	☐	☐	**Whole Effluent Toxicity (WET) Testing**			Other _____	☐	☐
Selenium	☐	☐	Phosphorus, Total as P	☐	☐	Chronic Toxicity *Pimephales promelas*	☐				
Silver	☐	☐	Sulfate	☐	☐	Chronic Toxicity *Ceriodaphnia dubia*	■		Other _____	☐	☐
Sodium	☐	☐	Sulfide	☐	☐	Chronic Tox. *Senenastrum capricomutum*	☐				
Strontium	☐	☐	Other	☐	☐	Other	☐	☐	Other	☐	☐

Notes: Sample to be sent to CH2MHILL

COMPLIANCE FIELD MEASUREMENTS

■ Chlorine	ND	mg/L	☐ Temperature		°C
☐ Oxygen (Dis.)		mg/L	☐ pH		SU
☐ Conductivity		µmhos/cm	☐ Other		

Sample Receiving Temp. 5°C IR Therm GOS

Number of Sample Containers (1) GOS

Sampled by: Daniel M Goodyear	Received by:	Date/Time 02-12-10 0932
Relinquished by:	Received by:	Date/Time 02-12-10 1000
Relinquished by:	Received by: Valerie Wing	Date/Time 2-13-10 1130
Relinquished by:	Received by:	Date/Time
Relinquished by:	Received by:	Date/Time

* Semiquantitative Results - NOT TO BE USED FOR COMPLIANCE TESTING

** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Thallium and Zinc by ICP. Mercury by Cold Vapor.

*** Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

**** Indicate date and time of all bacteria samples in the "Notes Box" if different than the information provided in heading.

FedEx Express US Airbill

8713 3280 6649

0200 Form ID No.

FedEx Retrieval Copy

1 From

Date 2/8/10 Sender's FedEx Account Number 125323006

Sender's Name Jennifer Phillips Phone 480 286-7126

Company CH2M HILL

Address

Dept./Floor/Suite/Room

City Tucson State AZ ZIP

2 Your Internal Billing Reference 374210 IR.08.WT

3 To

Recipient's Name Mike Stanaway Phone 541 768-3120

Company CH2M HILL Applied Services Lab

1 ☐ HOLD Weekday Print FedEx location address below. NOT available for FedEx First Overnight.

31 ☐ HOLD Saturday Print FedEx location address below. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Address 2300 NW Walnut Boulevard

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Print FedEx location address here if a HOLD option is selected.

City Corvallis State OR ZIP 97330

8713 3280 6649

4a Express Package Service * To most locations. *Packages up to 150 lbs.*

1 ☒ FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

5 ☐ FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.

6 ☐ FedEx First Overnight Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 ☐ FedEx 2Day Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 ☐ FedEx Express Saver Third business day.* Saturday Delivery NOT available.

4b Express Freight Service ** To most locations. *Packages over 150 lbs.*

7 ☐ FedEx 1Day Freight Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx 1Day Freight Booking No.

8 ☐ FedEx 2Day Freight Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

83 ☐ FedEx 3Day Freight Third business day.** Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

6 ☐ FedEx Envelope* 2 ☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. 3 ☐ FedEx Box 4 ☐ FedEx Tube 1 ☒ Other

6 Special Handling and Delivery Signature Options

3 ☐ **SATURDAY DELIVERY**

☐ No Signature Required Package may be left without obtaining a signature for delivery.

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. *Fee applies.*

34 ☒ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. *Fee applies.*

Does this shipment contain dangerous goods?

One box must be checked.

☒ No 4 ☐ Yes As per attached Shipper's Declaration. ☐ Yes Shipper's Declaration not required. 6 ☐ Dry Ice Dry ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

☐ Cargo Aircraft Only

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

Obtain Recip. Acct. No. ☐

1 ☒ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash/Check

[redacted]

Total Packages 2 Total Weight 69 lbs. [redacted] Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

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FedEx Express US Airbill [redacted] 0200 Form ID No. **FedEx Retrieval Copy**

From

Date 2/10/10 Sender's FedEx Account Number 125323006

Sender's Name Jennifer Phillips Phone 480 286-7126

Company CH2M HILL

Address

Dept./Floor/Suite/Room

City Tucson State AZ ZIP

Your Internal Billing Reference 374210 IR.08.WT

To

Recipient's Name Mike Stamawray Phone 541 768-3120

Company CH2M HILL Samuel Lab

HOLD Weekday: Print FedEx location address below. NOT available for FedEx First Overnight. 1 ☐

HOLD Saturday: Print FedEx location address below. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations. 31 ☐

Address 2300 NW Walnut Boulevard

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Print FedEx location address here if a HOLD option is selected.

City Corvallis State OR ZIP 97330

4a Express Package Service • To most locations. *Packages up to 150 lbs.*

1 ☒ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

5 ☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

6 ☐ FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 ☐ FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 ☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

4b Express Freight Service •• To most locations. *Packages over 150 lbs.*

7 ☐ FedEx 1Day Freight — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx 1Day Freight Booking No.

8 ☐ FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

83 ☐ FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

5 Packaging • Declared value limit $500.

6 ☐ FedEx Envelope*

2 ☐ FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.

3 ☐ FedEx Box 4 ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options

3 ☐ **SATURDAY DELIVERY**

☐ No Signature Required — Package may be left without obtaining a signature for delivery.

10 ☐ Direct Signature — Someone at recipient's address may sign for delivery. *Fee applies.*

34 ☒ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. *Fee applies.*

Does this shipment contain dangerous goods?

One box must be checked.

☒ No

4 ☐ Yes — As per attached Shipper's Declaration.

☐ Yes — Shipper's Declaration not required.

6 ☐ Dry Ice — Dry ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

☐ Cargo Aircraft Only

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

Obtain Recip. Acct. No. ☐

1 ☒ Sender — Acct. No. in Section 1 will be billed.

2 ☐ Recipient

3 ☐ Third Party

4 ☐ Credit Card

5 ☐ Cash/Check

[redacted]

Total Packages 1 Total Weight 20 lbs.

Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

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