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September 12, 2019

Mr. Les Arnold ALS Environmental 3352 128th Avenue Holland, MI 49424



Reference: 0501867.0152

Subject: Whole Effluent Toxicity Test Results

Dear Les,

Enclosed please find the final results of the following Chronic Toxicity Tests performed on samples of the ArcelorMittal Burns Harbor Outfall 001 effluent.

- 19 August 2019, Chronic Ceriodaphnia dubia Toxicity Test
- 19 August 2019, Chronic Pimephales promelas Toxicity Test

If you have any questions concerning this report or if I can be of any further assistance to you, please feel free to contact me at (616) 738-7308 or via e-mail at bruce.rabe@erm.com.

Yours sincerely,

Bon G. Role

Bruce A. Rabe Director, Aquatic Toxicology Laboratory

BAR:km

Enclosure: Whole Effluent Toxicity Test Report

cc: Amanda Grzybowski Brandon Frye File

Permittee/Lo ArcelorMittal I 250 West U.S Burns Harbor	Burns Hart B. Hwy 12			Permit nur IN0000175			Outfall number: 001
Laboratory N Environmenta 3352 128 th Av Holland, MI 49	I Resource enue		nent	Report <u>Du</u> N/A	<u>e</u> Date:		Report Date: September 12, 2019
WETT Reporting Frequency or Type:	Monthly	Quarterly	Semi- annual	Annual	TRE	Post TRE	<u>First</u> (per Reporting Frequency)? <u>Re-take</u> (per Reporting Frequency)?

Test Organism	Test Type	Endpoint	Units	Result	Pass/ Fail	Limit	Reporting
Ceriodaphnia	7-day	NOEC	%	100		N/A	Laboratory
dubia	Survival and	Survival	TU₀	1.0		1.0	Report
	Reproduction	NOEC	%	100		N/A	
		Reproduction	TUc	1.0		1.0	
	Definitive	IC ₂₅	%	>100		N/A	
	Static-	Reproduction	TUc	1.0		1.0	
	Renewal	48 hr. LC ₅₀	%	>100		N/A	
			TUa	1.0		1.0	
		Toxicity (chronic)	TUc	1.0	Pass	1.0	Laboratory Report <u>and</u> NetDMR (Parameter Code 61426)
		Toxicity (acute)	TUa	1.0	Pass	1.0	Laboratory Report <u>and</u> NetDMR (Parameter Code 61425)
Pimephales	7-day Larval	NOEC	%	100		N/A	
promelas	Survival and	Survival	TUc	1.0		1.0	
	Growth	NOEC	%	100		N/A	
		Growth	TUc	1.0		1.0	Laboratory
	Definitive	IC ₂₅	%	>100		N/A	Report
	Static-	Growth	TUc	1.0		1.0	
	Renewal		%	>100		N/A	
		96 hr. LC ₅₀	TUa	1.0		1.0	
		Toxicity (chronic)	TUc	1.0	Pass	1.0	Laboratory Report <u>and</u> NetDMR (Parameter Code 61428)
		Toxicity (acute)	TUa	1.0	Pass	1.0	Laboratory Report <u>and</u> NetDMR (Parameter Code 61427)

FINAL REPORT

Chronic Toxicity Test Freshwater Invertebrate, *Ceriodaphnia dubia* EPA Test Method 1002.0

> Submitted To: ALS Environmental 3352 128th Avenue Holland, MI 49424

Sample: ArcelorMittal Burns Harbor, LLC - Outfall 001

Testing Period: 19 – 25 August 2019

Laboratory I.D. Number: 081919-2



Conducted By: Environmental Resources Management, Inc. 3352 128th Avenue Holland, Michigan 49424



081919-2 Cd Page 1 of 20

Test Overview



Permittee: Location:	ArcelorMittal Burns Harbor, LLC 250 West U.S. Hwy 12
Contact: Telephone #:	Burns Harbor, IN 46304 Robert Maciel 219.787.2120
NPDES Permit #: Permit Requirements:	Chronic Toxicity Limit = 1.0 TUc
Test Sample: Receiving Water:	Outfall 001 East Branch, Little Calumet River
Testing Date:	19 – 25 August 2019
Sample Date(s):	19 August 2019 21 August 2019 22 August 2019
Test/Method:	Daphnid, <i>Ceriodaphnia dubia</i> , Survival and Reproduction Test EPA 821-R-02-013 Method 1002.0.
QC Objectives:	Test data met all test acceptability criteria, except where noted below.
Data Qualifiers:	None

DATA SUMMARY

Effluent Concentrations (%)	Survival (%)	Reproduction (Average Young/Female)
Control	100	38.2
6	100	42.2
13	100	43.8
25	100	44.1
50	100	43.3
100	100	43.2

TEST RESULTS	
48-Hour LC ₅₀	>100%
NOEC (Survival & Reproduction)	100%
LOEC (Survival & Reproduction)	>100%
IC ₂₅	>100%
MSDp (Reproduction)	12.6%
TUa (100/LC ₅₀)	1.0
TUc (100/IC ₂₅)	1.0

TEST CONCLUSION

In accordance with the NPDES permit requirements for ArcelorMittal Burns Harbor, LLC, this toxicity test did not exceed either the acute or the chronic toxicity limit.

Bran G. Role

Bruce A. Rabe Director, Aquatic Toxicology Laboratory ERM Project No. 0501867.0152 Environmental Resources Management 3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616.399.3500 Fax: 616.399.3777



ERM Testing Method

Ceriodaphnia dubia – Survival and Reproduction Toxicity Test

Upon sample receipt, each effluent sample was analyzed for a suite of water quality parameters (Appendix A - Table 1). Where indigenous organisms were present, the sample was filtered through a 60 micron (μ m) NITEX® screen. All samples were maintained at 0 – 6 degrees Celsius (°C) until needed for testing.

A series of five effluent concentrations and a control solution were established for testing. All test solutions were prepared by mixing appropriate volumes of dilution water and effluent in the test containers. Dilution water consisted of reconstituted moderately hard water. The control solution consisted of 100 percent dilution water.

Ceriodaphnia dubia used to initiate this test were obtained from individual, in-house cultures and were less than 24-hours old, and had an age range of 0 to 8 hours at test initiation. Test organisms used to initiate this test were released from adults which met acceptable performance criteria (i.e., \geq 15 young/surviving female within 3 broods and obtained from a brood of at least 8 young) and were maintained in reconstituted moderately hard water prior to test initiation.

The Ceriodaphnia dubia test was conducted using 30-milliliter (mL) disposable polystyrene containers containing 15 mL of control water or test solution. One Ceriodaphnia dubia was added to each test chamber with ten replicate chambers per treatment. Each Ceriodaphnia dubia test chamber was fed a 0.2-mL suspension consisting of yeast-Cerophyll-trout chow (YCT) and green algae (*Raphidocelis subcapitata*) mixture daily.

The test solutions were renewed daily during the exposure by transferring the adult daphnid, by way of a wide bore pipette, into fresh control water or test solution.



Percent survival of exposed *Ceriodaphnia dubia* was determined by inspecting for adult mortality daily. Mortality was defined as no body or appendage movement after gentle prodding. Production of young was also determined by daily inspections and enumeration. When 60 percent of the surviving females in the control treatment produced three broods, mean reproduction was determined by calculating the average number of live young produced per female for each treatment.

The test was conducted at a temperature of $25 \pm 1^{\circ}$ C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark. Water quality measurements were performed on all control and test solutions prior to test initiation and on selected treatments daily thereafter, as indicated in the raw data (Appendix A - Table 2).

Following termination of the chronic toxicity test, No Observed Effect Concentrations (NOEC) and Lowest Observed Effect Concentrations (LOEC) were determined for Ceriodaphnia dubia survival and reproduction, and a 25 percent Inhibition Concentration (IC₂₅) was determined for Ceriodaphnia dubia reproduction. An NOEC is defined as the highest effluent concentration that does not produce any observed adverse effect to the exposed test organism. An LOEC is defined as the lowest effluent concentration that does produce an observed adverse effect to the exposed test organism. An adverse effect is determined as a statistically significant difference between the control and a given effluent concentration. Significant differences in Ceriodaphnia dubia survival were determined using the Fisher's Exact Test.

Prior to the determination of any significant differences in *Ceriodaphnia dubia* reproduction, the data were evaluated for normal distribution and homogeneity characteristics. Depending on the result and the number of test replicates per concentration, an analysis of variance test was performed followed by one of the following mean comparison tests: Dunnett's Procedure, Bonferroni t-Test, Steel's Many-One Rank Test, Wilcoxon Rank Sum Test, or the T-Test. For reporting purposes, a chronic toxic unit (TUc) is calculated and is defined as the most conservative of either 100/NOEC based on the more sensitive test endpoint or 100/IC₂₅.

To evaluate acute toxicity, a 48-hour LC₅₀ and corresponding 95 percent confidence interval was also calculated, where possible. The LC₅₀ value estimate was determined by using one of the following statistical methods: graphical, Spearman-Karber, Trimmed Spearman-Karber, or Probit. The method selected for reporting test results was determined by the characteristics of the data; that is, the presence or absence of 0 and 100 percent mortality and the number of concentrations in which mortalities between 0 and 100 percent occurred. For reporting purposes, the 48-hour LC₅₀ value was converted to an acute toxic unit (TUa) by 100/LC₅₀. All statistical analyses were performed using the CETISTM Version 1.9.4.3 software program.

The reference toxicant, sodium chloride, was used to monitor the sensitivity of the test organisms and the precision of the testing procedure. Chronic reference toxicant tests are performed at least monthly and the resulting IC_{25} are plotted to determine if the results are within prescribed limits (Appendix A - Standard Reference Toxicant Data). If the IC_{25} of a particular reference toxicant test does not fall within the expected range of \pm two standard deviations from the mean for a given test organism, the sensitivity of that organism and the overall credibility of the test system is suspect.

Reference:

USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Ed. U.S. Environmental Protection Agency, Office of Water, Washington, D.C., EPA-821-R-02-013.

Case Narrative



1.0 TEST PERFORMANCE CRITERIA

The quality control results achieved laboratory specifications.

2.0 MODIFICATIONS TO ERM'S STANDARD TEST METHOD

Test was performed in accordance with ERM's standard test method (see page 3).

Appendix A Supporting Documents

- Raw Test Data
- Statistical Analysis (if necessary)
- Chain-of-Custody Forms
- Standard Reference Toxicant Data

Ceriodaphnia dubia - Chronic Toxicity Test Initial Water Quality and Test Solution Preparation

Environmental Resources Management

Table 1 Page 1 of 1

Permittee/Client:	ArcelorMittal Burns	Harbor, LLC	Control/Dilution Water:	RMHW
Effluent/Location:	Outfall 001	Pus lin	Organism Batch #:	144-15
Lab I.D.#:	0-61919-2	58(Organism Age:	19-23,5405
Beginning Date:	08/19/19	Time: 1500 1700	QC Review:	KM
Ending Date:	08/25/19	Time: 1530	QC Review Date:	09/09/19

Initial Water Quality:

Parameter	Units	5 - 1	Effluent		5	Synthetic Wate	r
Sample #		1	2	3			
Lab I.D.#/ Batch #	<u> </u>	031919-2	082119-1	082319.3	96-19	99-19	8
Temperature	° C	5	3	V	-		
Dissolved Oxygen	mg / L	123	17.0	(0.7		4-	
pH	S.U.	7,9	7.1	77	746	7.9	•
Conductivity	umhos/cm	394	417	407	321	315	-
Alkalinity	mg / L CaCO ₃	110	108	104	GO	60	-
Hardness	mg / L CaCO ₃	156	160	160	gu	90	-
Total Ammonia	mg / L NH ₃	0,43	0.28	0,26			
Total Residual Chlorine	mg / L Cl ₂	20.01	20.01	20,01	LOW	10:01	~
Total mls of 7.0 g/L Sodium Thiosulfate added per liter	mL/L	-		E.	4		
Initials	10000	SPR	PH	SPR	SPR	SPR	-

Test Solution Preparation:

Test Solution Prepared For Both Species.

Treatment	Effluent	Dilution	Test		Effluent	Synthetic
(% Effluent)	(mL)	(mL)	Day	Initials	Sample #	Batch #
Control	0	1200	0	RWM	1	96-19
6%	72	1128	1	RUM	1	96-19
13%	156	1044	2	PI	2	96-19
25%	300	900	3	mb.	3	96-19
50%	600	600	4	em	-3	96-19
100%	1200	0	5	KMRH	er 3	99-19
			6	KM	3	99-19
		1	7			

Ceriodaphnia dubia - Chronic Toxicity Test Water Quality Data

Environmental Resources Management

Table 2 Page 1 of 1

Permittee/Client: Effluent/Location: Lab I.D.#: ArcelorMittal Burns Harbor, LLC Outfall 001 O&1919-2

Water Quality Data:

						Disso		ygen (n	ig/L)					
Meter #	5	>	5	15	5	5	Da	ay 5	31	3	5	3	5	
Treatment	0	2		~ 2	, _		3		1		5	E		7
And the second sec		F		F	1	F		F		F		F		F
(% Effluent) Control	70	q I	74	7,4	80	7.8	8.0	7.9	sig	81	8.1	81	8.0	-
6%	7.9	- 8-1	11	7.3		7.7	8,1	7.9	Sol	80	8.1	82	8.D	
	1.9	2.1	49		\$ið	7.7	8.1	7.8	54	22	8.2	81	8.0	-
13%	410 46.1	8,2	810	7.2	810		811	7.9	84	82	8.2	90	8.1	
25%		812	80		60		811	7.9	84	811	8.2	7.9	8.2	
50%	13.1	812	81	2.1	8.1	7.6	8r)	79	85	G.7	8.3	79	8.2	
100%	8,4	0,1	817	7.0	81	1.5	ori	7.1	3	46	0.3		0.2	
	I						pH (\$							
Meter #	10	8	10	9		9		10	9	8	10	8	10	
Treatment	0		1		2		3		4		5		3	7
(% Effluent)		F,		F		F		F	1	F	1	F		F
1	2.9	7.8	7.8		7,8	7.5	7.8	7.4	80	46	7.8	18	7.9	
Control 6%			40	7.6	10	7.6	10	7.6	8.0	78	1.0	510		1
		7.8						7.7		28		80		
13%		-nj		7.7	0.5	7.6		7.8		29		81		
25%		7.8		7.7		1.1		7.8	1.1	AG		81		-
50%		9.9	20	1.8		1.1	770	7.9	79	51	7.9	82	79	
100%	8.0	7.9	7.8	7.4	7,7	7.8	7.6	1.1	700	51	1.4	0.0	10	1
Meter #	4		гч		14	Cond	luctivity (D	umhos ay 	/ cm)		19		4	
	0	1	17	1	2		3		4	1	5	· · · · · · · · · · · · · · · · · · ·	6	7
Treatment	0	F	<u> </u>	F		F	Ŭ I	F	İ I	F	Ŭ T	F	1	F
(% Effluent)	220		212		323		326		313		315		313	
Control	323,		322		326		332		328	-	320		322	
00/	Dead				1 Soll A								1000	-
6%	326	(- +	327			Defici						-	379	
13%	332	1.344	332		332		338		534		326		329	-
13% 25%	332 340		332		332		338		334		326		336	
13% 25% 50%	332 340 363		332 341 362		332 342 366		338 349 377		234 243 364		326 335 357		336 359	
13% 25%	332 340		332		332		338		334		326		336	
13% 25% 50%	332 340 363		332 341 362		332 342 366		338 349 372 421		234 243 364 409		326 335 357		336 359	
13% 25% 50%	332 340 363		332 341 362		332 342 366		338 349 372 421 empera	 ture (° (ay	234 243 364 409		326 335 357		336 359	
13% 25% 50%	332 340 363 405		332 341 362		332 342 366	 T	338 349 377 421 empera	 ture (° (ay 5	734 743 764 1/09		326 335 357 402	 3	336 359 404	
13% 25% 50% 100%	332 340 363		332 341 362		335 342 366 414	 T	338 349 372 421 empera	 ture (° (ay 5	734 743 764 169	 	326 335 357 402	 3	336 359	
13% 25% 50% 100% Meter #	332 340 363 405	 3	332 341 369 404		33 <u>5</u> 342 366 414 414 2	 T	338 344 372 421 empera 5 3	 ture (° (ay 5	234 243 264 U09 2) 2) 4	 F	326 335 357 402 5 5	 S	336 369 404 5 6	
13% 25% 50% 100% Meter # Treatment	332 340 363 405	 3	332 341 362 404 404	 	33 <u>0</u> 342 366 414	 	338 349 377 421 empera	 ture (° (° ay 5 F 24	234 243 364 U09 2) 2) 2) 4 4	 5 F	326 335 357 402 5 5 5	 3 F 24	336 369 404 5 6 1 24	
13% 25% 50% 100% Meter # Treatment (% Effluent)	332 340 363 405 	 	332 341 362 404 104 1 1 24	 F	33 <u>2</u> 342 366 414 966 914 2 2 2	 T 5	338 344 372 421 6empera 0 5 3 1 2 4 2 4 3 4 3 4	 ture (° (° ay 5 F 24 24	734 764 109 2) 7 4 1 7 4	 	326 335 357 402 5 5 1 24 24	 	336 369 404 5 6 1 24 24 24	
13% 25% 50% 100% Meter # Treatment (% Effluent) Control 6%	332 340 363 405 5 0 1 24 24 24	 	332 341 362 404 404 1 2 1 2 1 2 4 2 4	 F 24	332 342 366 414 214 2 2 2 2 2 2 2 4 2 4	 	338 344 372 421 421 5 3 	 ture (° (° ay 5 F 24	734 764 164 209 2) 7 4 1 74 74 74 74 74 74	 5 F	326 335 357 402 5 5 1 24 24 24 24	 	336 369 404 5 6 1 24 24 24 24	
13% 25% 50% 100% Meter # Treatment (% Effluent) Control 6% 13%	332 340 363 405 5 0 - 24 24 24 24	 	332 341 362 404 404 1 2 1 2 4 2 4 2 4 2 4 2 4 2 4	 	33 <u>2</u> 342 366 414 966 914 2 2 2	 	338 344 372 421 6empera 0 5 3 1 2 4 2 4 3 4 3 4	 ture (° (° ay 5 F 24 24	734 764 109 2) 7 4 1 7 4	 	326 335 357 402 5 5 1 24 24 24 24 24 24	 	336 369 404 5 6 1 24 24 24	
13% 25% 50% 100% Meter # Treatment (% Effluent) Control 6% 13% 25%	332 340 363 405 5 0 - 24 24 24 24 24	 	332 341 362 404 404 1 	 	332 342 366 414 214 2 2 2 2 2 2 2 2 4 2 4 2 4 2 4 2	 	338 344 377 421 	 ture (° (ay 5 F 24 24 24	234 243 364 409 2) 3 4 1 24 24	 	326 335 357 402 5 5 1 24 24 24 24	 	336 369 404 5 6 1 24 24 24 24	
13% 25% 50% 100% Meter # Treatment (% Effluent) Control 6% 13%	332 340 363 405 5 0 - 24 24 24 24	 	332 341 362 404 404 1 2 1 2 4 2 4 2 4 2 4 2 4 2 4	 	332 342 366 414 414 2 2 2 2 2 2 4 24 24 24 24 24 24 24 24	 	338 344 372 421 421 5 3 	 ture (° (ay 5 F 24 24 24 24	734 764 164 209 2) 7 4 1 74 74 74 74 74 74		326 335 357 402 5 5 1 24 24 24 24 24 24		336 369 404 5 6 1 24 24 24 24 24 24	

Note: D.O. meter also used for temperature measurement unless otherwise noted.

Ceriodaphnia dubia - Chronic Toxicity Test Survival and Reproduction Data

Environmental Resources Management Table 3 Page 1 of 2

Permittee/Client: Effluent/Location: Lab I.D.#: ArcelorMittal Burns Harbor, LLC Outfall 001 081919-2

												Average	Number of Live	Averag Young
Treatment	Day		-			Repli	-	7	8	9	10	Young/	Adults (% Sur.)	Fema % C\
(% Effluent)	No.	1	2	3	4	5	6	/	8	9	10	Female	(% Sur.)	7000
	1												10	
	2							15.941-					10	
	3	-	6	7	-	~	.5	-	6	-	-		10	
Control	4	13	iv	13	817	10	17	ne	ilf	4	17	SPR	18	6
	6	21	24	20	71	21	23	20	23	16	19	0-3/21/19	10	9
	7	- 61	27	00	0.	0	5013,00h		00	ne		38,2	102	
otals:		40	44	40	46	38	4645	40	22	31	36	38-3	(100)	18.9
Broods (% 3rd	Brood)	3	3	3	3	3	3	3	3	3	3	(100)		
	1												10	
	2											1.2.1	10	20.00
6%	3	T	5	2	1	5	5	6	5	-	7	1.1	10	
070	5	14	12	15	16	14	17	15	19	16	19	1.1.1	10	
	6	21	18	70	14	19	23	24	23	1.5	19		10	
	7							~ `						
otals:		प	36	42	37	38	45	45	Y7	46	45	42.2	(100)	9,9
	1]	10]
	2					-			5				10	
13%	3	-		5	1p	5	9	4	2	7	(a	1000	10	
1570	5	15	12	iv	15	15	15	15	16	16	18		10	1
	6	17	16	20	22	24	19	rle	No	24	27	1.1.1	10	
fotals:	7	49	35	39	u	44	38	47	47	47	51	43.8	(100)	12.1
												1	10	1
	1												10	
	3	-	5	6	6	7	4	5	24	~	6		10	1
25%	4	7	-	-	4	5	5	(1.	(a		1.00	10	
	5	15	17	13	15	16	18	17	16	19	15		10	
	6	19	25	22	20	24	23	24	21	25	21		10	
otals:	7	41	47	41	41	47	45	you	41	50	42	44.1	(00)	7.5
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	1 2							sis					1D	
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50%	4	6	-	~	-	-	5	-	-	6	1		10	
	5	14	15	15	12	17	15	17	18	13	13		10	6
	6	21	24	26	23	W	22	25	22	19	22	h	10	S
otals:	7	41	45	47	40	44	42	48	46	38	42	43:3	(100)	7. 5
	1											1	10	1
	2												10	
	3	-	5	7	6	~	6	6	6	-	7		10	
100%	4	7	-	-	-	8	-	17	-	6	Ti		10	
	5	17	14	13	13	14	18	10	14	15	16		18	
	6	25	21	22	18	23	24	75	20	20	20		10	
otals:		49	YO	47,	37	45	48	47	40	41	43	43.2	(100)	9.1
0.4713/TEC 1				EAD ADU								OUNG REC		

1

Ceriodaphnia dubia - Chronic Toxicity Test Support Data

Table 3 Page 2 of 2

Permittee/Client:ArcelorMittal Burns Harbor, LLCEffluent/Location:Outfall 001Lab I.D.#:👁 8/9/19-2

Brood Board Information:

Replicate	1	2	3	4	5	6	7	8	9	10	Brood Board Date: 68/12/19
Chamber Number	2	7	8	17	18	27	28	41	43	56	Young Age Range: 14-23,5 hours

Test Information:

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
YCT Batch #:	16-19	16-19	16-19	17-19	17-19	17/19	17-19	
Algae Batch #:	17-19	17-19	18-19	18-19	18-19	18-19	18-19	
Observation Time:	170 1500	1430	1530	153D	1530	1530	1530	
Initials:	P	RH	MS	KM	KM	p.	m	
Date:	08/19/19	08-20-19	08/21/19	08/22/19	08/23/19	08/24/19	08/25/19	

Comment Section:

Comments	Initials	Date	Day
		1	
	1		
		+	

CETIS Analytical Report

Analysis ID:	02-70	71-9699	En	dpoint: Re	production			CETI	S Versio	on: CETISv1.	9.4	
Analyzed:		g-19 12:31		The second s	rametric-Cor	trol vs Trea	itments		is Level:			
Batch ID:	03-46	77-8939	Te	st Type: Re	production-S	urvival (7d)		Anal	yst: L	ab Tech		
Start Date:	19 Au	g-19 17:00) Pro	otocol: EP	A/821/R-02-	013 (2002)		Dilue	ent: F	Reconstituted W	later	
Ending Date:	25 Au	g-19 15:30) Sp	ecies: Ce	riodaphnia d	ubia		Brine	e:			
Test Length:				kon: Bra	anchiopoda	_		Sour	ce: li	n-House Culture	9	Age: <2
Sample ID:		93-0268		de: 671	ICA41C			Proje		VET Testing		
Sample Date:	: 19 Au	g-19 07:18		all and the second	ustrial Efflue	nt		Sour		ArcelorMittal Bui	rns Harbor	, LLC
Receipt Date:	: 19 Au	g-19 15:30	CA	S (PC):				Stati	on: C	Dutfall 001		
Sample Age:	10h (5	5 °C)	Cli	ent: Arc	celorMittal Bu	urns Harbor	, LLC					
Data Transfo	rm		Alt Hyp	· · · · ·				NOEL	LOEL	TOEL	TU	PMSD
Untransforme	d		C > T					100	>100	n/a	1	12.63%
Dunnett Mult	iple Co	mparison	Test									
	vs	Conc-%		Test Stat			P-Type	P-Value		on(α:5%)		
Lab Water		6		-1.898	2.289		CDF	0.9993		gnificant Effect		
		13		-2.657	2.289		CDF	1.0000		gnificant Effect		
		25		-2.799	2.289		CDF	1.0000		gnificant Effect		
		50		-2.42	2.289		CDF	0.9999		gnificant Effect		
		100		-2.372	2.289	4.825 18	CDF	0.9999	Non-Si	gnificant Effect	1. (and a second	
Test Accepta	bility C	riteria	TAC	Limits								
Attribute	1.1	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	1	38.2	15	>>	Yes	Passes C	riteria					
Caral Section of the												
ANOVA Table	•			10.15			100	1.1.77	2.1.			
		Sum Squ	ares	Mean Sqi	uare	DF	F Stat	P-Value		on(α:5%)		
Source		Sum Squ 239.533	ares	Mean Sq 47.9067	uare	DF 5	F Stat 2.157	P-Value 0.0725		on(α:5%) gnificant Effect	(
Source Between	_		ares		uare	5 54						
Source Between Error		239.533	ares	47.9067	uare	5						
Source Between Error Total		239.533 1199.4 1438.93	ares	47.9067	uare	5 54					<	
Source Between Error Total Distributiona	I Tests	239.533 1199.4 1438.93	ares	47.9067	uare	5 54	2.157	0.0725 - P-Value	Non-Si			
Source Between Error Total Distributiona Attribute	I Tests	239.533 1199.4 1438.93 Test		47.9067		5 54 59	2.157	0.0725	Non-Si Decisi	gnificant Effect		
Source Between Error Total Distributiona Attribute Variances	I Tests	239.533 1199.4 1438.93 Test Bartlett Ec	quality of V	47.9067 22.2111		5 54 59 Test Stat	2.157 Critical	0.0725 - P-Value	Non-Si Decisi Equal	ignificant Effect on(α:1%)		
Source Between Error Total Distributiona Attribute Variances Distribution	Il Tests	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W	quality of V	47.9067 22.2111		5 54 59 Test Stat 9.051	2.157 	0.0725 - P-Value 0.1071	Non-Si Decisi Equal	gnificant Effect on(α:1%) Variances		
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W	quality of V	47.9067 22.2111 ariance Test mality Test Mean		5 54 59 Test Stat 9.051 0.9554 95% UCL	2.157 Critical 15.09 0.9459 Median	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal Norma Max	gnificant Effect on(α:1%) Variances I Distribution Std Err	CV%	%Effect
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-%	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary	quality of V Vilk W Norr	47.9067 22.2111 ariance Test mality Test Mean 38.2		5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37	2.157 Critical 15.09 0.9459 Median 40	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal 1 Norma Max 46	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284	CV% 18.91%	0.00%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code	quality of V Vilk W Norr Count 10 10	47.9067 22.2111 ariance Test mality Test <u>Mean</u> 38.2 42.2	95% LCL 33.03 39.32	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08	2.157 Critical 15.09 0.9459 Median 40 43.5	0.0725 	Non-Si Decisi Equal 1 Norma Max 46 47	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272	CV% 18.91% 9.53%	0.00% -10.47%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code	quality of V /ilk W Norr <u>Count</u> 10 10 10	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8	95% LCL 33.03 39.32 40.02	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5	0.0725 P-Value 0.1071 0.0282 Min 22 36 35	Non-Si Decisi Equal ¹ Norma Max 46 47 51	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672	CV% 18.91% 9.53% 12.07%	0.00% -10.47% -14.66%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code	quality of V /ilk W Norr 10 10 10 10 10	47.9067 22.2111 ariance Test mality Test <u>Mean</u> 38.2 42.2 43.8 44.1	95% LCL 33.03 39.32 40.02 41.73	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal 1 Norma Max 46 47 51 50	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048	CV% 18.91% 9.53% 12.07% 7.52%	0.00% -10.47% -14.66% -15.45%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code	quality of V /ilk W Norr <u>Count</u> 10 10 10	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8	95% LCL 33.03 39.32 40.02 41.73 40.99	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5 43	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal ¹ Norma Max 46 47 51 50 48	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048 1.023	CV% 18.91% 9.53% 12.07% 7.52% 7.47%	0.00% -10.47% -14.66% -15.45% -13.35%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50	Il Tests n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code	quality of V /ilk W Norr 10 10 10 10 10	47.9067 22.2111 ariance Test mality Test <u>Mean</u> 38.2 42.2 43.8 44.1	95% LCL 33.03 39.32 40.02 41.73	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal 1 Norma Max 46 47 51 50	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048	CV% 18.91% 9.53% 12.07% 7.52%	0.00% -10.47% -14.66% -15.45% -13.35%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L	quality of V /ilk W Norr 10 10 10 10 10	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3	95% LCL 33.03 39.32 40.02 41.73 40.99	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5 43	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Decisi Equal ¹ Norma Max 46 47 51 50 48	gnificant Effect on(α:1%) Variances I Distribution <u>Std Err</u> 2.284 1.272 1.672 1.048 1.023 1.245	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12%	0.00% -10.47% -14.66% -15.45% -13.35% -13.09%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L I Code	uality of V Vilk W Norr 10 10 10 10 10 10 10	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 Rep 2	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4	2.157 Critical 15.09 0.9459 Median 40 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5 45.5	0.0725 - - - - - - - - - - - - - - - - - - -	Non-Si Equal 1 Norma Max 46 47 51 50 48 49 Rep 7	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.672 1.048 1.023 1.245 Rep 8	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9	0.00% -10.47% -14.66% -15.45% -13.35% -13.09%
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-%	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L	Quality of V Vilk W Norr 10 10 10 10 10 10 10 10 40	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 43.2 Rep 2 44	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3 40	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4 46	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5 43.5 43 42.5 Rep 5 38	0.0725 P-Value 0.1071 0.0282 Min 22 36 35 41 38 37 Rep 6 45	Non-Si Decisi Equal 1 Norma Max 46 47 51 50 48 49 8 49 Rep 7 40	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048 1.023 1.245 Rep 8 22	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9 31	0.00% -10.47% -14.66% -15.45% -13.35% -13.09% Rep 10 36
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-% 0	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L I Code	uality of V Vilk W Norr 10 10 10 10 10 10 10	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 Rep 2 44 36	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4 46 37	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 5 38.3 38.3 5	0.0725 P-Value 0.1071 0.0282 Min 22 36 35 41 38 37 Rep 6 45 45	Non-Si Equal V Norma Max 46 47 51 50 48 49 49 Rep 7 40 45	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048 1.023 1.245 Rep 8 22 47	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9 31 46	0.00% -10.47% -14.66% -15.45% -13.35% -13.09% Rep 10 36 45
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-% 0 6	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L I Code	Quality of V Vilk W Norr 10 10 10 10 10 10 10 10 40	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 43.2 Rep 2 44	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3 40	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4 46	2.157 Critical 15.09 0.9459 Median 40 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5	0.0725 P-Value 0.1071 0.0282 Min 22 36 35 41 38 37 Rep 6 45 45 38	Non-Si Equal 1 Norma Max 46 47 51 50 48 49 8 49 8 49 8 49 40 45 47	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.672 1.048 1.023 1.245 Rep 8 22 47 47	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9 31 46 47	0.00% -10.47% -14.66% -15.45% -13.35% -13.09% Rep 10 36 45 51
Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-% 0 6 13	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L I Code	quality of V Vilk W Norr 10 10 10 10 10 10 10 10 40 41	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 Rep 2 44 36	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3 40 42	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4 46 37	2.157 Critical 15.09 0.9459 Median 40 43.5 45.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 5 38.3 38.3 5	0.0725 P-Value 0.1071 0.0282 Min 22 36 35 41 38 37 Rep 6 45 45	Non-Si Equal V Norma Max 46 47 51 50 48 49 49 Rep 7 40 45	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.048 1.023 1.245 Rep 8 22 47 47 47 41	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9 31 46 47 50	0.00% -10.47% -14.66% -15.45% -13.35% -13.09% Rep 10 36 45 51 42
ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-% 0 6 13 25 50 100 Reproduction Conc-% 0 6 13 25 50	n Sumr	239.533 1199.4 1438.93 Test Bartlett Ec Shapiro-W nary Code L I Code	Quality of V Vilk W Norr 10 10 10 10 10 10 10 10 10 40 41 49	47.9067 22.2111 ariance Test mality Test Mean 38.2 42.2 43.8 44.1 43.3 43.2 Rep 2 44 36 35	95% LCL 33.03 39.32 40.02 41.73 40.99 40.38 Rep 3 40 42 39	5 54 59 Test Stat 9.051 0.9554 95% UCL 43.37 45.08 47.58 46.47 45.61 46.02 Rep 4 46 37 41	2.157 Critical 15.09 0.9459 Median 40 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5 44.5	0.0725 P-Value 0.1071 0.0282 Min 22 36 35 41 38 37 Rep 6 45 45 38	Non-Si Equal 1 Norma Max 46 47 51 50 48 49 8 49 8 49 8 49 40 45 47	gnificant Effect on(α:1%) Variances I Distribution Std Err 2.284 1.272 1.672 1.672 1.048 1.023 1.245 Rep 8 22 47 47	CV% 18.91% 9.53% 12.07% 7.52% 7.47% 9.12% Rep 9 31 46 47	0.00% -10.47% -14.66% -15.45% -13.35% -13.09% Rep 10 36 45 51

Analyst: W QA: SIR

CETIS Ana	alytical Report			Report Date: Test Code/ID:	28 Aug-19 12:31 (p 2 c 510AB0A7 / 13-5965-
Ceriodaphnia	a 7-d Survival and Rep	production T	est		E
Analysis ID: Analyzed:	02-7071-9699 28 Aug-19 12:31	Endpoint: Analysis:	Reproduction Parametric-Control vs Treatments	CETIS Version: Status Level:	CETISv1.9.4 1
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Analyst: UM QA: 50K

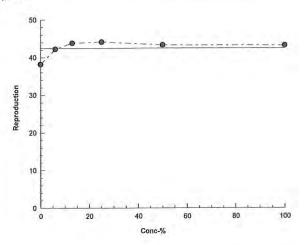
CETIS Analytical Report

Coriod	lanhnia	7-d Survival and	Doprodu	tion Te	het							ERM
								CE	TIS Version	: CETISV	194	
Analys Analyz		10-7912-2024 28 Aug-19 12:31		point: lysis:	Reproduction Linear Interpola	tion (ICPIN)			tus Level:	1	1.3.4	
Batch	ID:	03-4677-8939	Test	Type:	Reproduction-S	urvival (7d)		Ana	alyst: La	b Tech		
Start D	Date:	19 Aug-19 17:00	Prot	ocol:	EPA/821/R-02-0	013 (2002)		Dili	uent: Re	econstituted	Water	
Ending	g Date:	25 Aug-19 15:30	Spe	cies:	Ceriodaphnia d	ubia		Bri	ne:			
		5d 22h	Tax	on:	Branchiopoda			So	urce: In-	House Cultu	ure	Age: <2
Sample	e ID:	17-2993-0268	Cod	e:	671CA41C			Pro	ject: W	ET Testing		
Sample	e Date:	19 Aug-19 07:15	Mat	erial:	Industrial Efflue	nt		So		celorMittal B	lurns Harbor	, LLC
Receip	ot Date:	19 Aug-19 15:30	CAS	(PC):				Sta	tion: O	utfall 001		
Sample	e Age:	10h (5 °C)	Clie	nt:	ArcelorMittal Bu	irns Harbor, I	LC					
Linear	Interpo	lation Options										
X Tran	sform	Y Transform	See	d	Resamples	Exp 95% (8.207				
Log(X+	-1)	Linear	1089	9740	200	Yes	Two-	Point Inter	polation			
Test A	cceptab	ility Criteria	TAC L	mits								
Attribu	Ite	Test Stat	Lower	Uppe	r Overlap	Decision						
Control	I Resp	38.2	15	>>	Yes	Passes Cri	teria					
Point E	Estimate	es	1.27.2			100						
Level	%	95% LCL	95% UCL			95% UCL						_
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						
1.26		Summary					ulated Va		16-612.5			nic Variate
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0 6 13 25 50 100 Reproc	duction	Detail Code	10 10 10 10 10 10 Rep 1	42.2 43.8 44.1 43.3 43.2 Rep 2	36 35 41 38 37 2 Rep 3	47 51 50 48 49 Rep 4	4.022 5.287 3.315 3.234 3.938 Rep 5	9.53% 12.07% 7.52% 7.47% 9.12% Rep 6	-10.47% -14.66% -15.45% -13.35% -13.09% Rep 7	Rep 8	42.47 42.47 42.47 42.47 42.47 42.47 Rep 9	0.0% 0.0% 0.0% 0.0% Rep 10
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0 6 13 25 50 100 Reproc 0 6	duction	Detail Code	10 10 10 10 10 10 Rep 1 40 41	42.2 43.8 44.1 43.3 43.2 Rep 2 44 36	36 35 41 38 37 2 Rep 3 40 42	47 51 50 48 49 Rep 4 46 37	4.022 5.287 3.315 3.234 3.938 Rep 5 38 38	9.53% 12.07% 7.52% 7.47% 9.12% Rep 6 45 45	-10.47% -14.66% -15.45% -13.35% -13.09% Rep 7 40 45	Rep 8 22 47	42.47 42.47 42.47 42.47 42.47 42.47 Rep 9 31 46	0.0% 0.0% 0.0% 0.0% Rep 10 36 45
0 6 13 25 50 100 Reproc Conc- 9 0 6 13	duction	Detail Code	10 10 10 10 10 10 Rep 1 40 41 49	42.2 43.8 44.1 43.3 43.2 Rep 2 44 36 35	36 35 41 38 37 2 Rep 3 40 42 39	47 51 50 48 49 Rep 4 46 37 41	4.022 5.287 3.315 3.234 3.938 Rep 5 38 38 44	9.53% 12.07% 7.52% 7.47% 9.12% Rep 6 45 45 38	-10.47% -14.66% -15.45% -13.35% -13.09% Rep 7 40 45 47	Rep 8 22 47 47	42.47 42.47 42.47 42.47 42.47 2.47 2.47 31 46 47	0.0% 0.0% 0.0% 0.0% Rep 10 36 45 51
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0 6 13 25 50 100 Reproc Conc-9 0 6 13	duction	Detail Code	10 10 10 10 10 10 Rep 1 40 41 49	42.2 43.8 44.1 43.3 43.2 Rep 2 44 36 35	36 35 41 38 37 2 Rep 3 40 42 39	47 51 50 48 49 Rep 4 46 37 41 41 40	4.022 5.287 3.315 3.234 3.938 Rep 5 38 38 44	9.53% 12.07% 7.52% 7.47% 9.12% Rep 6 45 45 38	-10.47% -14.66% -15.45% -13.35% -13.09% Rep 7 40 45 47	Rep 8 22 47 47	42.47 42.47 42.47 42.47 42.47 2.47 2.47 31 46 47	0.0% 0.0% 0.0% 0.0% Rep 10 36 45 51

Analyst: VM QA: SIR

Analyzed:	28 Aug-19 12:31	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Analysis ID:	10-7912-2024	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.4
Ceriodaphnia	a 7-d Survival and R	eproduction Te	est		ERM
OF HO MIN	alf tion report			Test Code/ID:	510AB0A7 / 13-5965-5079
CETIS An	alytical Report			Report Date:	28 Aug-19 12:32 (p 2 of 2)

Graphics



Analyst: VM

QA: 5M

ERM

ENVIRONMENTAL RESOURCES MANAGEMENT 3352 128th Avenue Holland Michigan 40424 0263

AQUATIC TOXICITY LAB CHAIN OF CUSTODY FORM * 3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616- 399-3500 FAX: 616-399-3777

NAME:					CANAPTED						
					NEED THATWO						
ADDKESS:					PHONE NUMBER:						
SAMPLE DESCRIPTION (i.e. Outfall 001)	DATE (Begin End)	TIME (Begin End)	GRAB OR COMP	NUMBER AND SIZE OF CONTAINERS	FIELD PARAMETERS	SAMPLE ID NUMBER (Filled in by ERM)	INITIAL WATER UPON RECEIPT (filled in by ERM)	INITIAL WATER QUALITY PARAMETERS UPON RECEIPT BY LABORATORY (filled in by ERM)	TY PARAME ORATORY	TERS	
ceel	05/19/19	0715	0	(cubbre	pH= s.u. NH3= mg/L	2-215180	Temp. Son Ice	D.O. 12. Smg/L	H HUSCH	Cond 394	Cond 394 mmhos/cm
GII	0&119/19	0430	O	\$	pH= s.u. NH3= mg/L	٤,	Temp. (° C) Plon Ice	D.O. mg/L	PH Lysu.	Cond	umhos/cm
					pH= s.u. NH3= mg/L		Temp. (° C) 🗆 On Ice	D.O. mg/L	pH s.u.	Cond	umhos/cm
-					pH= s.u. NH₃= mg/L		Temp. (∘ C) □ On Ice	D.O. mg/L	pH s.u.	Cond	umhos/cm
					pH= s.u. NH3= mg/L		Temp. (∘ C) □ On Ice	D.O. mg/L	pH s.u.	Cond	umhos/cm
					pH= s.u. NH3= mg/L		Temp. (∘ C) □ On Ice	D.O. mg/L	.n.s	Cond	umhos/cm
ANALYSES REQUESTED [check item(s)]	Test Material: Water	aterial: Water/Wastewater Sediment Product	ewater	Test Type: Acute Other	Test Species: Ceriodaphnia dubia Daphnia magna Daphnia pulex Fathead minnow (ubia 1 ow (Pimephu	Trout (Oncor) ad minnow (i minnow (Mu as)	Rainbow Trout (Oncorhynchus mykiss) Sheepshead minnow (Cyprinodon variegatus) Silverside minnow (Menidia beryllina) ales promelas)Other	egatus)Other (write	Americamysis bahia Hyalella azteca Chironomus dilutus in comments sectio	is bahia ca dilutus s section)
COMMENT SECTION: See ANS COC 4159	SCTION: 50	re And a	OC 4158	1-512							
SAMPLE TRANSFERS	RANSFERS										
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See Instructions for Sample Collection on Back of Sheet

February 2018

081919-2 Cd Page 15 of 20

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Arc	Time Ma 715 / 7320 A	t Method Received by (Laboratory): Received by (Laboratory): Checked by (Laboratory): 6-NaHSO ₄ 7-0 been submitted to ALS I mitronmental are express
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ERM.

ENVIRONMENTAL RESOURCES MANAGEMENT 3352 128th Avenue Holland, Michigan 49424-9263

3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616- 399-3500 FAX: 616-399-3777

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* See Instructions for Sample Collection on Back of Sheet

February 2018

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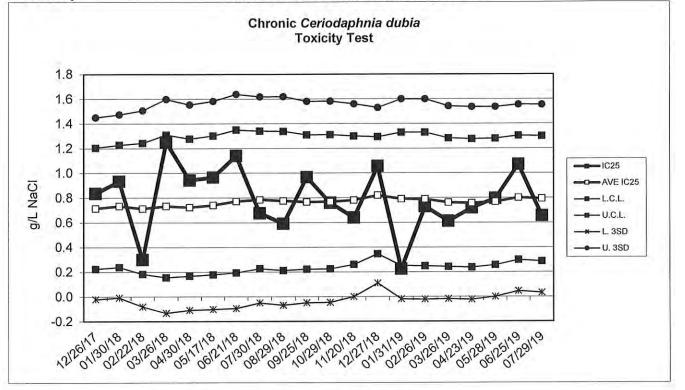
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3. The Chain of Custody is a legal document. All information must be completed accurately.



Environmental Resources Management

Standard Reference Toxicant Data



Chronic Ceriodaphnia dubi	ia Toxicity Test Data
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Date	IC25	AVE IC25	CONTRO	OL LIMIT	Survival	CONTROL Reproduction	cv
	(g/L NaCI)	(g/L NaCI)	Lower	Upper	(%)	(ave. young)	(%)
12/26/17	0.83	0.7	0.22	1.20	100	21.9	11.9
01/30/18	0.93	0.7	0.24	1.23	100	25.5	36.3
02/22/18	0.30	0.7	0.18	1.24	100	17.8	35.0
03/26/18	1.25	0.7	0.16	1.31	90	32.5	38.5
04/30/18	0.94	0.7	0.17	1.28	100	32.0	25.5
05/17/18	0.97	0.7	0.18	1.30	100	30.0	38.6
06/21/18	1.14	0.8	0.19	1.35	80	35.2	8.2
07/30/18	0.68	0.8	0.23	1.34	100	25.5	16.3
08/29/18	0.59	0.8	0.21	1.34	100	30.1	26.2
09/25/18	0.97	0.8	0.22	1.31	100	27.6	26.7
10/29/18	0.76	0.8	0.22	1.31	100	32.7	24.8
11/20/18	0.64	0.8	0.26	1.30	100	34.8	15.2
12/27/18	1.06	0.8	0.35	1.29	100	26.8	43.7
01/31/19	0.23	0.8	0.25	1.33	100	34.7	14.9
02/26/19	0.73	0.8	0.25	1.33	100	27.9	9.3
03/26/19	0.61	0.8	0.24	1.28	100	40.2	9.9
04/23/19	0.72	0.8	0.24	1.28	100	36.1	25.4
05/28/19	0.79	0.8	0.26	1.28	100	37.6	3.1
06/25/19	1.07	0.8	0.30	1.30	100	29.4	26.7
07/29/19	0.65	0.8	0.29	1.30	100	33.7	14.6

FINAL REPORT

Chronic Toxicity Test Freshwater Vertebrate, *Pimephales promelas* EPA Test Method 1000.0

> Submitted To: ALS Environmental 3352 128th Avenue Holland, MI 49424

Sample: ArcelorMittal Burns Harbor, LLC - Outfall 001

Testing Period: 19 – 26 August 2019

Laboratory I.D. Number: 081919-2



Conducted By: Environmental Resources Management, Inc. 3352 128th Avenue Holland, Michigan 49424



081919-2 Pp Page 1 of 22

Test Overview



Permittee:	ArcelorMittal Burns Harbor, LLC	DATA SUMMARY		
Location:	250 West U.S. Hwy 12	Effluent	Survival	Growth
	Burns Harbor, IN 46304	Concentrations	(%)	Average Wt./
Contact:	Robert Maciel	(%)		Organism (mg)
Telephone #:	219.787.2120	Control	100	0.521
NPDES Permit #:	IN0000175	6	100	0.504
	s: Acute Toxicity Limit = 1.0 TUa	13	95	0.506
r ennit rrequirement	Chronic Toxicity Limit = 1.0 TUc	25	97.5	0.508
Test Sample:	Outfall 001	50	95	0.493
Receiving Water:	East Branch, Little Calumet River	100	95	0.522
Testing Date: Sample Date(s):	19 – 26 August 2019 19 August 2019 21 August 2019	<u>TEST RESUL TS</u> 96-Hour LC₅₀		>100%
	22 August 2019	NOEC (Survival)		100%
Test/Method:	Fathead Minnow, Pimephales	LOEC (Survival)		>100%
rootmotriou.	promelas, Survival and Growth	IC ₂₅		>100%
	Test EPA 821-R-02-013 Method 1000.0.	MSDp (Survival)		16.7%
		TUa (100/LC₅₀)		1.0
QC Objectives:	Test data met all test	TUc (100/ NOEC	or IC ₂₅)	1.0
	acceptability criteria, except where noted below.			
Data Qualifiers:	None	TEST CONCLUS	ION	
		In accordance with		•

In accordance with the NPDES permit requirements for ArcelorMittal Burns Harbor, LLC, this toxicity test did not exceed either the acute or the chronic toxicity limit.

Bon G. Role

Bruce A. Rabe Director, Aquatic Toxicology Laboratory ERM Project No. 0501867.0152 Environmental Resources Management 3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616.399.3500 Fax: 616.399.3777



ERM Testing Method

Pimephales promelas – Survival and Growth Toxicity Test

Upon sample receipt, each effluent sample was analyzed for a suite of water quality parameters (Appendix A - Table 1). Where indigenous organisms were present, the sample was filtered through a 60 micron (μ m) NITEX® screen. All samples were maintained at 0 – 6 degrees Celsius (°C) until needed for testing.

A series of five effluent concentrations and a control solution were established for testing. All test solutions were prepared by mixing appropriate volumes of dilution water and effluent in the test containers. Dilution water consisted of reconstituted moderately hard water. The control solution consisted of 100 percent dilution water.

Pimephales promelas used to initiate this test were obtained from in-house cultures and were less than 24-hours old at test initiation. Test organisms were maintained in reconstituted moderately hard water prior to test initiation.

The Pimephales promelas test was conducted using 300 to 500-milliliter (mL) disposable polypropylene containers containing 250 mL of control water or test solution. Ten fish were randomly added to each test chamber with four replicate chambers per treatment. Each Pimephales promelas test chamber was fed 0.2 mL of a concentrated suspension of less than 24-hour old live brine shrimp nauplii (Artemia sp.) two times per day. Test solutions were renewed daily during the exposure by replacing approximately 90 percent of the 24-hour old solution with fresh control water or appropriate test solution. Prior to test solution renewal, uneaten and dead brine shrimp, along with other debris, were removed from the bottom of the test chambers.

Percent survival of exposed *Pimephales promelas* was determined daily by enumeration of live organisms. Mortality was defined as no body movement after gentle prodding. At the termination of the chronic test, larvae in each test chamber were counted, dried, and weighed to the nearest 0.01 milligram (mg) on an analytical balance.



The test was conducted at a temperature of $25\pm 1^{\circ}$ C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark. Water quality measurements were performed on all control and test solutions prior to test initiation and on selected treatments daily thereafter, as indicated in the raw data (Appendix A - Table 2).

Following termination of the chronic toxicity test, No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) were determined for both Pimephales promelas survival and growth and a 25 percent Inhibition Concentration (IC25) was determined for Pimephales promelas growth. The NOEC is defined as the highest effluent concentration which does not produce any observed adverse effect to the exposed test organism whereas the LOEC is defined as the lowest effluent concentration which does produce an observed adverse effect to the exposed test organism. An adverse effect is determined as a statistically significant difference between the control and a given effluent concentration.

Prior to the determination of any significant differences in *Pimephales promelas* survival and growth, the data were evaluated for normal distribution and homogeneity characteristics. Depending on the result and the number of test replicates per concentration, an analysis of variance test was performed, followed by one of the following mean comparison tests: Dunnett's Procedure, Bonferroni t-Test, Steel's Many-One Rank Test, Wilcoxon Rank Sum Test, or the T-Test.

For reporting purposes, a chronic toxic unit (TUc) is calculated and is defined as the most conservative of either 100/NOEC based on the most sensitive test endpoint or $100/IC_{25}$.

To evaluate acute toxicity, a 96-hour LC₅₀ and corresponding 95 percent confidence interval were also calculated, where possible. The LC₅₀ value estimate was determined by using one of the following statistical methods: graphical, Spearman-Karber, Trimmed Spearman-Karber, or Probit. The method selected for reporting test results was determined by the characteristics of the data; that is, the presence or absence of 0 and 100 percent mortality and the number of concentrations in which mortalities between 0 and 100 percent occurred. For reporting purposes, the 96-hour LC₅₀ value was converted to an acute toxic unit (TUa) by 100/LC₅₀. All statistical analyses were performed using the CETISTM Version 1.9.4.3 software program.

The reference toxicant, sodium chloride, was used to monitor the sensitivity of the test organisms. Chronic reference toxicant tests are performed at least monthly and the resulting Inhibition Concentrations (IC₂₅) are plotted to determine if the results are within prescribed limits (Appendix A - Standard Reference Toxicant Data). If the IC₂₅ of a particular reference toxicant test does not fall within the expected range of \pm two standard deviations from the mean for a given test organism, the sensitivity of that organism and the overall credibility of the test system is suspect.

Reference:

USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Ed. U.S. Environmental Protection Agency, Office of Water, Washington, D.C., EPA-821-R-02-013.

Case Narrative



1.0 TEST PERFORMANCE CRITERIA

The quality control results achieved laboratory specifications.

2.0 MODIFICATIONS TO ERM'S STANDARD TEST METHOD

Test was performed in accordance with ERM's standard test method (see page 3).

Appendix A Supporting Documents

- Raw Test Data
- Statistical Analysis (if necessary)
- Chain-of-Custody Forms
- Standard Reference Toxicant Data

Pimephales promelas - Chronic Toxicity Test Initial Water Quality and Test Solution Preparation Table 1 Page 1 of 1

Permittee/Client:	ArcelorMittal Burn	ns Harbor, LLC	Control/Dilution Wate	
Effluent/Location:	Outfall 001		Organism Batch #:	144-19
Lab I.D.#:	041919-2		Organism Age: 🗹 🏼	4 has del
Beginning Date:	03/19/19	Time:/730	QC Review:	KM
Ending Date:	04/26/19	Time: 1630	QC Review Date:	09/09/19

Initial Water Quality:

Parameter	Units		Effluent		8	Synthetic Water				
Sample #		1	2	3		-				
Lab I.D.#/ Batch #	-	0461419-2	082119-1	08231913	96-19	99-19	-			
Temperature	°C	5	3	V						
Dissolved Oxygen	mg / L	123	11.0	10.7			-			
pН	S.U.	7.9	7.1	ネゴ	7.5	7.6	•			
Conductivity	umhos/cm	394	417	407	321	315	-			
Alkalinity	mg / L CaCO ₃	110	104	104	60	60	~			
Hardness	mg / L CaCO ₃	156	160	160	454	80				
Total Ammonia	mg / L NH ₃	0.43	0,28	0.26			44			
Total Residual Chlorine	mg / L Cl ₂	10,01	10.01	10.01	20,01	20.0	+			
Total mls of 7.0 g/L Sodium Thiosulfate added per liter	mL/L			-	-		-			
Initials	1.44.0	SPR	NAS	SPR	SIR	SPR	-			

Test Solution Preparation:

Test Solution Prepared For Both Species.

Treatment	Effluent	Dilution	Test		Effluent	Synthetic
(% Effluent)	(mL)	(mL)	Day	Initials	Sample #	Batch #
Control	0	1200	0	RWM	1	96-19
6%	72	1128	1	RWM		96-19
13%	156	1044	2	RA	2	96-19
25%	300	900	3	MB	2	96-19
50%	600	600	4	pm	3	96-19
100%	1200	0	5	ŘH	3	99-19
			6	KM	3	99-19
			7	SPA		

Pimephales promelas - Chronic Toxicity Test Water Quality Data

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Table 2 Page 1 of 1

Permittee/Client:ArcelorMittal Burns Harbor, LLCEffluent/Location:Outfall 001Lab I.D.#: $\mathcal{O81919-2}$

Water Quality Data:

						Disso		xygen (r ay	ng/L)					
Meter #	5	3	5	5	5	5	5	3	3	5	5	3	5	3
Treatment	0		1	1.1	2		3		4		5		3	7
(% Effluent)		F		F	1	F	1	F	12.1	F	1	F	1	F
Control	7.9	7.3	7.9	leit	8.0	7.0	8.0	10.7	84	6.9	8.1	6.6	8.0	7.1
6%	7.9	7.2	19	62	8.0	6.8	81	les	34	7.0	8.1	leiz	8.0	72
13%	3.0	7.2	810	63	6.0	6.6	81	61	84	1.0	8.2	6.3	8.0	7.4
25%	93.1	7.3	810	103	8.0	6.6	81	Lay	84	6.6	8.2	6.2	8.1	70
50%	51	7.0	118	levo	8.1	6.5	8.1	loch	84	6.3	8.2	5.7	8.2	20
100%	9,4	7.1	8.2	5.7	81	6.5	81	61	85	6.1	8.3	Gil	8.2	7
							pH (S.U.)						
		-						ay Û Û		1.5	11.0	~	1.5	1
Meter #	10	8	10	10	10	4	10		9	10	10	8	10	8
Treatment	0		1		2		3		4		5		3	7
(% Effluent)		F		F	00	F		F	0 4	F		F		F
Control	7.9	7.5	7.8	75	7.8	15	7.8	-74	40	7.4	7.8	74	7.9	7.0
6%		7.6		75		7.5	()	24		7.5		73		74
13%		7.7		76		7.4		74	5-5 44 0 (7.5		74		7.0
25%		7.8		ネチ		7.5		25	44	7.6		ネチ		7.
50%		7.9	1	ネテ		7.6		20		7.7		74		7.
100%	8.0	8.0	7,8	78	7.7	7.7	7.6	7.8	79	7.8	7.9	7.6	7.9	7.0
Meter #	4		4		4		D 4	ay 	4	- 14-0-	4		4	
Treatment	d		1	6.575	2 '		3		4	1.23	5		6	7
(% Effluent)	1	F		F		F		F	1	F	$\{t_{i}, t_{i}\} \in \{t_{i}\}$	F		F
Control	323		322	1 e	323		326		323		315		313	
6%	326		327	1144 F	326		332		328		320		322	
13%	332		332	1. 14 1.	352		338	يبين ا	334		326		329	
25%	340		341	1	342	7-	349		343		335	1	336	
50%	363	100	3(0)		366		372		264	10	357		359	
100%	405	- 97	404		414		421	-	409		402		404	
	t							1.00	2.					
					1	1		ture(° (ay	5)			12		
Meter #	5	3	5	5	5	5	5	3	3	5	5	3	5	3
Treatment	0		1		2		3		4	-	5		6	7
(% Effluent)	I	F	1	F	1	F	1	F	1	F	1	F	El	F
	24	25	24	15	24	25	24	25	24	25	24	24	24	25
Control	24	25	24	15	24	25	24	25	Vel	25	24	24	24	25
Control 6%				15	24	25	24	25	24	25	24	24	24	24
the second se	24	25	di									01/		01
6%		25	24		24	25	24	175	24	25	24	24	24	25
6% 13%	24	25	24	-197	24	25	24	25	24	25	24	24	24	ショ
6% 13% 25%	24	25 25 25 25	24		24		24	15 15						

Note: D.O. meter also used for temperature measurement unless otherwise noted.

Pimephales promelas - Chronic Toxicity Test Survival Data

Environmental Resources Management

Permittee/Client:ArcelorMittal Burns Harbor, LLCEffluent/Location:Outfall 001Lab I.D.#: $\Im 8 1 9 19 - 2$

Survival Data:

		1		# Li	ve O	rgani	sms			1	1		# Li	ve Or	rgani	sms		1	96 Hou	r Surviva	al Summary
Treatment		1.1			D	ay								Da	ay	KM	14		Tota	Live	%
(% Effluent)	Rep.	0	1	2	3	4	5	6	7	Rep.	0	1	2	3	4	5	6	7	Initial	Final	Şurvival
Control	А	10	10	10	10	10	10	10	10	В	10	10	10	10	10	10	10	10	40	40	we
6%	А	10	10	10	10	Ŭ)	10	10	10	В	10	10	10	10	10	10	P	10	40	40	100
13%	А	10	10	10	10	9	9	9	9	В	10	ID	10	ID	10	ID	10	10	40	38	95
25%	Α	10	10	10	10	10	10	10	10	В	10	ID	101	ID	10	10	10	10	40	39	97.5
50%	Α	10	10	10	10	P	10	10	10	В	10	10	10	10	10	109	9	9	40	39	97.5
100%	Α	10	ID	W	10	ið	9	9	9	В	10	iV	10	9	9	9	9	Ģ	40	39	97.6
				# Li	ve O	rgani	sms	-	-				# Li	ve Or	rgani	sms			7 Day	Surviva	I Summary
Treatment					D	ay								Da	ay	1.1.			Tota	Live	%
(% Effluent)	Rep.	0	1	2	3	4	5	6	7	Rep.	0	1	2	3	4	5	6	7	Initial	Final	Survival
Control	С	10	10	0	10	10	10	10	10	D	10	10	10	10	10	10	10	10	40	40	100
6%	С	10	10	10	ID	10	10	10	10	D	10	10	NO	10	10	10	10	10	40	40	100
13%	С	10	10	10	10	10	10	10	10	D	10	10	10	10	9	9	9	9	40	346	95
25%	С	10	10	10	10	16	10	10	10	D	10	ID	NO	10	9	9	9	9	40	39	.97.5
50%	С	10	10	10	10	9	9	9	9	D	10	10	01	10	10	10	10	10	40	34	95
100%	С	10	10	D	iO	10	10	10	10	D	10	10	10	ID	10	ID	10	10	40	34	15
		-					P			100000000000000000000000000000000000000											

Test Information:

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Time:	1730	1500	(600	1600	1600	1600	1530	1630
Initials:	SPR	KM	ien	KM	kn	KM	Pm	SPR
Date:	oslighg	08/20/19	08/21/19	08/22/19	08/23/19	08/24/19	08/25/19	08/26/19

Feeding:

	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Batch #:	230-19	231-19	232-19	233-19	234-19	236-19	236-19	(- ⁶ 2 2) 0
Initials AM:	1.1	PN	nin	PAS	for	KM	KM '	
Initials PM:	RH	an	m	An	Ru	KM	Pr	

Oven:

Date In	Time In	Initials	Date Out Tim	ne Out Initials
05/26/19	1630	SPR	112210 11	20 1.

Comment Section:

Day	Date	Initials	Comments

Pimephales promelas - Chronic Toxicity Test Growth Data

Table 3 Page 2 of 2

Permittee/Client: Effluent/Location: Lab I.D.#: ArcelorMittal Burns Harbor, LLC Outfall 001 081919-2

Pan #	Conc. (% Effluent)	Replicate	Final Weight (mg)	Initial Weight (mg)	Larvae Weight (mg)	# of Initial Organisms	Avg. Wt./ Organism/ Replicate (mg)	Avg. Wt./ Organism/ Treatment (mg)	Avg. Wt./ Organism/ Treatment % CV
Date	1		8/27/2019	8/26/2019					
Analyst			km	km	1	and the second			
1	Control	А	25.69	20.83	4.86	10	0.486		
2	Control	В	26.73	21.85	4.88	10	0.488		
3	Control	С	24.13	18.81	5.32	10	0.532	1	
4	Control	D	27.14	21.35	5.79	10	0.579	0.521	8.4
5	6%	А	22.13	16.43	5.70	10	0.570		
6	6%	В	22.39	17.13	5.26	10	0.526		
7	6%	С	28.75	24.30	4.45	10	0.445		
8	6%	D	24.07	19.33	4.74	10	0.474	0.504	11.0
9	13%	А	22.80	18.03	4.77	10	0.477		
10	13%	В	21.99	16.97	5.02	10	0.502		
11	13%	С	23.25	18.11	5.14	10	0.514		
12	13%	D	26.45	21.15	5.30	10	0.530	0.506	4.4
13	25%	А	28.84	23.23	5.61	10	0.561		
14	25%	В	26.87	21.52	5.35	10	0.535		
15	25%	С	23.32	18.47	4.85	10	0.485	1	A
16	25%	D	23.01	18.51	4.50	10	0.450	0.508	9.8
17	50%	А	26.21	21.18	5.03	10	0.503		
18	50%	В	29.80	24.72	5.08	10	0.508		
19	50%	C	26.31	22.11	4.20	10	0.420		1.
20	50%	D	30.75	25.34	5.41	10	0.541	0.493	10.4
21	100%	A	30.27	24.52	5.75	10	0.575	5	
22	100%	В	26.31	21.99	4.32	10	0.432		1
23	100%	C	33.14	27.33	5.81	10	0.581		1.00
24	100%	D	36.36	31.38	4.98	10	0.498	0.522	13.5

uality A	ssurance				Final Wt. (r
25	Blank	A	15.84	15.82	0.02
26	Blank	В	22.13	22.1	0.03

* Biomass data were transferred directly to the spreadsheet using the data transfer function of the analytical balance.

	A8A12 / 19	719	Code/ID:	1000								Eathoad Min
ERN							st	d Growth Te	urvival ar	-d Larval S	now 7	atticad with
	9.4	CETISv1. 1	S Version: is Level:		reatments		Survival Rate			616-6693 .ug-19 12:31		Analysis ID: Analyzed:
		Tech	yst: Lab	Analy		(7d)	wth-Survival	st Type: Gro	Те	757-0902	17-4	Batch ID:
	ater	onstituted W	ent: Rec	Dilue			A/821/R-02-0			ug-19 17:30	19 A	Start Date:
			e:	Brine		melas	ephales pro	ecies: Pim	Sp	ug-19 16:30	26 /	Ending Date:
Age: <2		louse Culture	ce: In-H	Sour			inopterygii	xon: Acti				Test Length:
		T Testing	ect: WE	Proje			BA7B2	de: 6AF	Co	487-7362	17.0	Sample ID:
LLC	ns Harbor.	elorMittal Bur		Sour		nt	ustrial Efflue					Sample Date
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			on. ou	otati	LLC	rns Harbor.	elorMittal Bu			9770 BOL 1 1 1 1 1		Sample Age:
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									st	ank Sum Te	ne R	Steel Many-C
			Decision	P-Value	P-Type	Ties DF	Critical	Test Stat		Conc-%	vs	Control
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		ficant Effect	Non-Sign	0.3451	Asymp	1 6	10	14		13		
		ficant Effect	Non-Sign	0.6105	Asymp	1 6	10	16		25		
		ficant Effect	Non-Sign	0.3451	Asymp	1 6	10	14		50		
		ficant Effect	Non-Sign	0.3451	Asymp	1 6	10	14		100		
								Limits	TAC	Criteria	bility	Test Accepta
						Decision	Overlap	Upper	Lower	Test Stat		Attribute
					iteria	Passes Cr	Yes	>>	0.8	1		Control Resp
					W. Y.	T.A.A.M.C.V	1999				_	
											Э	ANOVA Table
			Decision	P-Value	F Stat	DF		Mean Squ		Sum Squa	1.4	Source
		ficant Effect	Non-Sign			5		0.0064185		0.0320925		
			non olgn	0.3663	1.16)	0.0055332				Between
			non olgn	0.3663	1.16	18			24	0.0995975		Error
				0.3663	-	18 23						
				0.3663	1.16					0.0995975 0.13169	I Tes	Error
		(α:1%)	Decision	0.3663 P-Value	-					0.0995975 0.13169	I Tes	Error Total
					-	23		ariance Test		0.0995975 0.13169 s Test	I Tes	Error Total Distributiona
		/ariances	Decision	P-Value	Critical	23 Test Stat		ariance Test v of Variance `	uality of V	0.0995975 0.13169 s Test Levene Ec	Il Tes	Error Total Distributiona Attribute
	on	/ariances	Decision Unequal	P-Value 2.7E-07	Critical 4.248	23 Test Stat 23.4			uality of V	0.0995975 0.13169 s Test Levene Ec Mod Leven	Il Tes	Error Total Distributiona Attribute Variances
	on	/ariances /ariances	Decision Unequal	P-Value 2.7E-07 0.0023	Critical 4.248 4.248	23 Test Stat 23.4 5.8		of Variance	uality of V	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W		Error Total Distributiona Attribute Variances Variances
%Effect	on CV%	/ariances /ariances	Decision Unequal	P-Value 2.7E-07 0.0023	Critical 4.248 4.248 0.884	23 Test Stat 23.4 5.8 0.8745		v of Variance ` nality Test	uality of V ne Equalit ilk W Nor	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W ummary		Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F
%Effect 0.00%		/ariances /ariances nal Distributio	Decision Unequal Unequal Non-Norr	P-Value 2.7E-07 0.0023 0.0064	Critical 4.248 4.248	23 Test Stat 23.4 5.8 0.8745	Test	of Variance	uality of V	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W		Error Total Distributiona Attribute Variances Variances Distribution
	CV%	/ariances /ariances nal Distributio Std Err	Decision Unequal Unequal Non-Norr	P-Value 2.7E-07 0.0023 0.0064 Min	Critical 4.248 4.248 0.884 Median	23 Test Stat 23.4 5.8 0.8745 95% UCL	Test 95% LCL	v of Variance nality Test Mean	uality of V ne Equalit ilk W Nor Count	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W ummary Code		Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-%
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0.00% 0.00%	CV% 0.00% 0.00%	Variances Variances nal Distributio Std Err 0.0000 0.0000	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000	Test 95% LCL 1.0000 1.0000	v of Variance mality Test <u>Mean</u> 1.0000 1.0000	uality of V ne Equalit ilk W Nor Count 4	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W ummary Code		Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-% 0 6 13
0.00% 0.00% 5.00%	CV% 0.00% 0.00% 6.08%	/ariances /ariances nal Distributio Std Err 0.0000 0.0000 0.0289	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000	Test 95% LCL 1.0000 1.0000 0.8581	v of Variance mality Test Mean 1.0000 1.0000 0.9500	uality of V ne Equalit ilk W Nor Count 4	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W ummary Code		Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-%
0.00% 0.00% 5.00% 2.50%	CV% 0.00% 0.00% 6.08% 5.13%	/ariances /ariances nal Distributio Std Err 0.0000 0.0000 0.0289 0.0250	Decision Unequal ¹ Unequal ¹ Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 1.0000	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000	95% LCL 1.0000 1.0000 0.8581 0.8954	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9750	uality of V ne Equality iilk W Nor Count 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Lever Shapiro-W ummary Code		Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-% 0 6 13 25 50
0.00% 0.00% 5.00% 2.50% 5.00%	CV% 0.00% 6.08% 5.13% 6.08%	/ariances /ariances nal Distributio Std Err 0.0000 0.0289 0.0250 0.0289	Decision Unequal ¹ Unequal ¹ Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 1.0000 0.9500	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000	95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581	Mean 1.0000 1.0000 0.9500 0.9750 0.9500 0.9500	uality of V ne Equality filk W Nor 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100
0.00% 0.00% 5.00% 2.50% 5.00% 5.00%	CV% 0.00% 6.08% 5.13% 6.08% 6.08%	/ariances /ariances nal Distributio Std Err 0.0000 0.0000 0.0289 0.0250 0.0289 0.0289 0.0289	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 1.0000 0.9500 0.9500	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	Test 95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9750 0.9500 0.9500 mary	Count Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Cor
0.00% 0.00% 5.00% 2.50% 5.00% 5.00%	CV% 0.00% 6.08% 5.13% 6.08% 6.08%	/ariances /ariances nal Distributio Std Err 0.0000 0.0289 0.0250 0.0289 0.0289 0.0289 Std Err	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 1.0000 0.9500 0.9500 0.9500	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 95% UCL	Test 95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581 0.8581 95% LCL	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 mary <u>Mean</u>	Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Con Conc-%
0.00% 0.00% 5.00% 2.50% 5.00% 5.00%	CV% 0.00% 6.08% 5.13% 6.08% 6.08% CV% 0.00%	/ariances /ariances nal Distributio Std Err 0.0000 0.0000 0.0289 0.0250 0.0289 0.0289 0.0289	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.90000 0.90000 0.90000 0.900000000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 0.9500 1.412	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	Test 95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581 0.8581 95% LCL 1.412	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 mary <u>Mean</u> 1.412	Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Con Conc-% 0
0.00% 0.00% 5.00% 5.00% 5.00% %Effect 0.00% 0.00%	CV% 0.00% 6.08% 5.13% 6.08% 6.08% CV% 0.00% 0.00%	/ariances /ariances nal Distributio Std Err 0.0000 0.0289 0.0250 0.0289 0.0289 0.0289 Std Err 0 0	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 1.412 1.412	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.412 1.412	Test 95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581 95% LCL 1.412 1.412 1.412	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 mary <u>Mean</u> 1.412 1.412	Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Con Conc-% 0 6
0.00% 0.00% 5.00% 5.00% 5.00% %Effect 0.00% 0.00% 5.77%	CV% 0.00% 6.08% 5.13% 6.08% 6.08% CV% 0.00% 0.00% 7.07%	/ariances /ariances nal Distributio Std Err 0.0000 0.0289 0.0289 0.0289 0.0289 Std Err 0 0 0.04705	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 1.0000 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 1.412 1.412 1.412 1.331	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.412 1.412 1.412 1.48	95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581 1.412 1.412 1.412 1.412 1.412	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 mary <u>Mean</u> 1.412 1.412 1.331	Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Con Conc-% 0 6 13
0.00% 0.00% 5.00% 5.00% 5.00% %Effect 0.00% 0.00%	CV% 0.00% 6.08% 5.13% 6.08% 6.08% CV% 0.00% 0.00%	/ariances /ariances nal Distributio Std Err 0.0000 0.0289 0.0250 0.0289 0.0289 0.0289 Std Err 0 0	Decision Unequal Unequal Non-Norr Max 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000	P-Value 2.7E-07 0.0023 0.0064 Min 1.0000 1.0000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000 0.9000	Critical 4.248 4.248 0.884 Median 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 1.412 1.412	23 Test Stat 23.4 5.8 0.8745 95% UCL 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.412 1.412	Test 95% LCL 1.0000 1.0000 0.8581 0.8954 0.8581 0.8581 95% LCL 1.412 1.412 1.412	v of Variance mality Test <u>Mean</u> 1.0000 1.0000 0.9500 0.9500 0.9500 0.9500 mary <u>Mean</u> 1.412 1.412	Count 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.0995975 0.13169 s Test Levene Ec Mod Leven Shapiro-W ummary Code L	Rate \$	Error Total Distributiona Attribute Variances Distribution 7d Survival F Conc-% 0 6 13 25 50 100 Angular (Con Conc-% 0 6

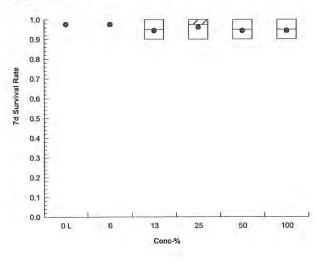
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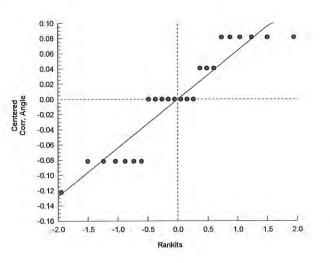
CETIS Ana	alytical Repo	rt				Report Date: Test Code/ID:	28 Aug-19 12:31 (p 2 of 2 719A8A12 / 19-0595-329
Fathead Mini	now 7-d Larval Su	urvival an	d Growt	n Test			ERM
Analysis ID: Analyzed:	01-2616-6693 28 Aug-19 12:31		dpoint: alysis:	7d Survival Ra Nonparametric	ate c-Control vs Treatments	CETIS Version: Status Level:	CETISv1.9.4 1
7d Survival F	Rate Detail	1.1					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4		
0	L	1.0000	1.000	1.0000	1.0000		
6		1.0000	1.0000	1.0000	1.0000		
13		0.9000	1.0000	1.0000	0.9000		
25		1.0000	1.0000	1.0000	0.9000		
50		1.0000	0.9000	0.9000	1.0000		
100		0.9000	0.900	1.0000	1.0000		
Angular (Cor	rected) Transform	ned Detai	i i	1.000			
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4		
0	L	1.412	1.412	1.412	1.412		

6		1.412	1.412	1.412	1.412	
13		1.249	1.412	1.412	1.249	
25		1.412	1.412	1.412	1.249	
50		1.412	1.249	1.249	1.412	
100		1.249	1.249	1.412	1.412	
7d Survival R	ate Binomials		1.00	1.1.1.1		
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	, Li la	10/10	10/10	10/10	10/10	
G		10/10	10/10	10/10	10/10	

a state of the second	10/10	10/10	10/10	10/10		
	10/10	10/10	10/10	10/10		
	9/10	10/10	10/10	9/10		
	10/10	10/10	10/10	9/10		
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	9/10	9/10	10/10	10/10		
	Ļ	10/10 9/10 10/10 10/10	10/10 10/10 9/10 10/10 10/10 10/10 10/10 9/10	10/1010/1010/109/1010/1010/1010/1010/1010/1010/109/109/10	10/10 10/10 10/10 10/10 9/10 10/10 10/10 9/10 10/10 10/10 10/10 9/10 10/10 9/10 9/10 10/10	10/10 10/10 10/10 10/10 9/10 10/10 10/10 9/10 10/10 10/10 10/10 9/10 10/10 9/10 9/10 10/10

Graphics





							Test	Code/ID:	71		
Fathead Minr	now 7-d Larval	Survival an	nd Growth	Test			_			_	ERM
Analysis ID: Analyzed:	09-9546-1868 28 Aug-19 12:3			Mean Dry Biom Parametric-Cor	Collector Collector and Collector	tments		S Version Is Level:	n: CETISv 1	1.9.4	
Batch ID:	17-4757-0902	Те	st Type:	Growth-Surviva	l (7d)		Anal	yst: La	b Tech		
Start Date:	19 Aug-19 17:3	30 Pr	otocol:	EPA/821/R-02-	013 (2002)		Dilue	ent: Re	constituted \	Nater	
Ending Date:	: 26 Aug-19 16:3	30 S p	pecies:	Pimephales pro	melas		Brine		State Street		0.00.13
Test Length:	6d 23h	Та	ixon:	Actinopterygii			Sour	ce: In-	House Cultu	re	Age: <2
Sample ID:	17-9487-7362	Co	ode:	6AFBA7B2			Proje	ect: W	ET Testing		
Sample Date	: 19 Aug-19 07:	15 M	aterial:	Industrial Efflue	nt		Sour	ce: Ar	celorMittal B	urns Harbor,	LLC
Receipt Date	: 19 Aug-19 15:	30 C/	AS (PC):				Stati	on: O	utfall 001		
Sample Age:	10h (5 °C)	CI	ient:	ArcelorMittal Bu	urns Harbor,	LLC					
Data Transfo	orm	Alt Hyp					NOEL	LOEL	TOEL	TU	PMSD
Untransforme	d	C > T					100	>100	n/a	1	16.66%
Dunnett Mult	tiple Compariso	n Test							1		
Control	vs Conc-%		Test S	tat Critical	MSD DF	P-Type	P-Value	Decisio	n(α:5%)		
Lab Water	6		0.485	2.407	0.087 6	CDF	0.6540		nificant Effect	:t	
	13		0.4296		0.087 6	CDF	0.6777	•	nificant Effect		
	25		0.3741		0.087 6	CDF	0.7007		nificant Effect		
	50		0.7829	2.407	0.087 6	CDF	0.5200	Non-Sig	nificant Effect	:t	
	100		-0.0069	93 2.407	0.087 6	CDF	0.8354	Non-Sig	nificant Effect	st.	
Test Accepta	bility Criteria	410	12.65								
10.00 CAL 10.00		TAC	limite								
Attribute	Test Sta		Limits Upper	Overlap	Decision						
10072 (A.S. 4007)	COLOR OF THE	TAC t Lower 0.25	Limits Upper >>	Overlap Yes	Decision Passes Ci	riteria					
Control Resp	0.5212	t Lower	Upper		a sa a sa sa s	riteria		_			
Control Resp	0.5212 e	t Lower 0.25	Upper >>	Yes	Passes Ci		Diverse	Desisis			
Control Resp ANOVA Table Source	0.5212 e Sum Sq	t Lower 0.25 uares	Upper >> Mean S	Yes Square	Passes Ci	F Stat	P-Value	Decisio			
Attribute Control Resp ANOVA Table Source Between	0.5212 e Sum Sq 0.00240	t Lower 0.25 uares	Upper >> Mean 3 0.0004	Yes Square 815	Passes Cr DF 5		P-Value 0.9646		n(α:5%) nificant Effec	st	
Control Resp ANOVA Table Source Between Error	0.5212 e Sum Sq 0.00240 0.04687	t Lower 0.25 uares 73	Upper >> Mean S	Yes Square 815	Passes Cr DF 5 18	F Stat				st	
Control Resp ANOVA Table Source Between Error Total	0.5212 e Sum Sq 0.00240 0.04687 0.04927	t Lower 0.25 uares 73	Upper >> Mean 3 0.0004	Yes Square 815	Passes Cr DF 5	F Stat				t	
Control Resp ANOVA Table Source Between Error Total Distributiona	0.5212 e Sum Sq 0.002403 0.04687 0.04927 al Tests	t Lower 0.25 uares 73	Upper >> Mean 3 0.0004	Yes Square 815	Passes Cr DF 5 18 23	F Stat 0.1849	0.9646	Non-Sig	nificant Effec	st	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute	0.5212 e Sum Sq 0.002403 0.04687 0.04927 al Tests Test	t Lower 0.25 uares 73 73	Upper >> Mean 3 0.0004 0.0026	Yes Square 815 0039	Passes Cr DF 5 18 23 Test Stat	F Stat 0.1849 Critical	0.9646 P-Value	Non-Sig Decisio	nificant Effec n(α:1%)	st	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances	0.5212 e Sum Sq 0.002403 0.04687 0.04927 al Tests Test Bartlett E	t Lower 0.25 uares 73 73 Equality of V	Upper >> Mean 3 0.0004 0.0026	Yes Square 815 0039 est	Passes Cr DF 5 18 23 Test Stat 3.096	F Stat 0.1849 	0.9646 P-Value 0.6852	Non-Sig Decisio Equal V	nificant Effec n(α:1%) ariances	st	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution	0.5212 e Sum Sq 0.00240 0.04687 0.04687 0.04927 al Tests Test Bartlett E Shapiro-	t Lower 0.25 uares 73 73 Equality of \ Wilk W Nor	Upper >> Mean 3 0.0004 0.0026	Yes Square 815 0039 est	Passes Cr DF 5 18 23 Test Stat	F Stat 0.1849 Critical	0.9646 P-Value	Non-Sig Decisio Equal V	nificant Effec n(α:1%)	st	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio	0.5212 e Sum Sq 0.002403 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum	t Lower 0.25 uares 73 73 Equality of \ Wilk W Nor mary	Upper >> Mean 3 0.0004 0.0026	Yes Square 815 039 est t	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534	F Stat 0.1849 Critical 15.09 0.884	0.9646 P-Value 0.6852 0.3198	Non-Sig Decisio Equal V Normal	nificant Effeo n(α:1%) ariances Distribution		%Effect
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-%	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code	t Lower 0.25 0.25 73 73 73 Equality of V Wilk W Nor mary Count	Upper >> Mean 3 0.0004 0.0026 /ariance Te rmality Tes Mean	Yes Square 815 039 est t 95% LCL	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL	F Stat 0.1849 Critical 15.09 0.884 Median	0.9646 P-Value 0.6852 0.3198 Min	Non-Sig Decisio Equal V Normal Max	nificant Effeo n(α:1%) ariances Distribution Std Err	CV%	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0	0.5212 e Sum Sq 0.002403 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum	t Lower 0.25 0.25 73 73 73 Equality of V Wilk W Nor mary Count 4	Upper >> Mean 3 0.0004 0.0026 /ariance Te rmality Tes Mean 0.5212	Yes Square 815 039 est t 95% LCL 2 0.4513	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912	F Stat 0.1849 Critical 15.09 0.884 Median 0.51	0.9646 P-Value 0.6852 0.3198 Min 0.486	Non-Sig Decisio Equal V Normal Max 0.579	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198		0.00%
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code	t Lower 0.25 0.25 73 73 Equality of V Wilk W Nor mary Count 4 4	Upper >> Mean 3 0.0004 0.0026 /ariance Te rmality Tes Mean 0.5212 0.5037	Yes Square 815 039 est t 95% LCL 0.4513 0.4155	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.592	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.5	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445	Non-Sig Decisio Equal V Normal Max 0.579 0.57	nificant Effeo n(α:1%) ariances Distribution Std Err	CV% 8.43%	
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code	t Lower 0.25 0.25 73 73 73 Equality of V Wilk W Nor mary Count 4	Upper >> Mean 3 0.0004 0.0026 /ariance Te rmality Tes Mean 0.5212 0.5037 0.5057	Yes Square 815 039 est t 95% LCL 0.4513 0.4155 0.4702	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.5 0.508	0.9646 P-Value 0.6852 0.3198 Min 0.486	Non-Sig Decisio Equal V Normal Max 0.579	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772	CV% 8.43% 11.01%	0.00% 3.36%
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code	t Lower 0.25 0.25 73 73 73 Equality of V Wilk W Nor mary Count 4 4 4 4	Upper >> Mean 3 0.0004 0.0026 /ariance Te rmality Tes Mean 0.5212 0.5037	Yes Square 815 039 est t 95% LCL 0.4513 0.4155 0.4702	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.592 0.5413	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.5	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53	nificant Effect n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117	CV% 8.43% 11.01% 4.42%	0.00% 3.36% 2.97%
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25 50	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code	t Lower 0.25 0.25 73 73 73 73 73 73 73 73 73 73 73 73 73	Upper >> Mean 3 0.0004 0.0026 /ariance Te mality Tes Mean 0.5212 0.5037 0.5057 0.5078	Yes Square 815 8039 est t 95% LCL 95% LCL 0.4513 0.4155 0.4702 0.4286 0.411	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.5912 0.5413 0.5869	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.5 0.508 0.51	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477 0.45	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53 0.561	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117 0.02488	CV% 8.43% 11.01% 4.42% 9.80%	0.00% 3.36% 2.97% 2.59%
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Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25 50 100 Mean Dry Bio	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code L	t Lower 0.25 0.25 73 73 73 Equality of V Wilk W Nor Wilk W Nor Mary Count 4 4 4 4 4 4 4 4 4 4 4 1	Upper >> Mean 3 0.0004 0.0026 //ariance To rmality Tes Mean 0.5212 0.5037 0.5057 0.5057 0.5078 0.493 0.5215	Yes Square 815 6039 est t 95% LCL 0.4513 0.4155 0.4702 0.4286 0.411 0.4091	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.5912 0.5912 0.5413 0.5869 0.575	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.508 0.508 0.51 0.5055	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477 0.45 0.42	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53 0.561 0.541	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117 0.02488 0.02575	CV% 8.43% 11.01% 4.42% 9.80% 10.45%	0.00% 3.36% 2.97% 2.59% 5.42%
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Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25 50 100 Mean Dry Bio Conc-% 0	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code L	t Lower 0.25 0.25 73 73 73 73 73 73 73 73 73 73 73 73 73	Upper >> Mean 3 0.0004 0.0026 /ariance Termality Tes Mean 0.5212 0.5037 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.5057 0.50215 0.50215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.5215 0.5078 0.493 0.5215 0.5078 0.493 0.5215 0.5078 0.493 0.5215 0.5078 0.493 0.5215 0.5078 0.493 0.5215 0.488	Yes Square 815 039 est t 95% LCL 0.4513 0.4155 0.4702 0.4286 0.411 0.4091 Rep 3 0.532	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.5912 0.592 0.5413 0.5869 0.575 0.6339 Rep 4	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.508 0.508 0.51 0.5055	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477 0.45 0.42	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53 0.561 0.541	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117 0.02488 0.02575	CV% 8.43% 11.01% 4.42% 9.80% 10.45%	0.00% 3.36% 2.97% 2.59% 5.42%
Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25 50 100 Mean Dry Bio Conc-% 0 6	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code L	t Lower 0.25 0.25 73 73 73 73 73 73 73 73 73 73 73 73 73	Upper >> Mean 3 0.0004 0.0026 /ariance Termality Tes Mean 0.5212 0.5037 0.5057 0.5057 0.5078 0.493 0.5215 Rep 2 0.488 0.526	Yes Square 815 039 est t 95% LCL 0.4513 0.4155 0.4702 0.4286 0.411 0.4091 Rep 3 0.532 0.445	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.5912 0.592 0.5413 0.5869 0.575 0.6339 Rep 4 0.579	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.508 0.508 0.51 0.5055	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477 0.45 0.42	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53 0.561 0.541	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117 0.02488 0.02575	CV% 8.43% 11.01% 4.42% 9.80% 10.45%	0.00% 3.36% 2.97% 2.59% 5.42%
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Control Resp ANOVA Table Source Between Error Total Distributiona Attribute Variances Distribution Mean Dry Bio Conc-% 0 6 13 25 50 100	0.5212 e Sum Sq 0.00240 0.04687 0.04927 al Tests Test Bartlett E Shapiro- omass-mg Sum Code L	t Lower 0.25 0.25 73 73 73 73 73 73 73 73 73 73 73 73 73	Upper >> Mean 3 0.0004 0.0026 /ariance Termality Tes Mean 0.5212 0.5037 0.5057 0.5057 0.5078 0.493 0.5215 Rep 2 0.488 0.526	Yes Square 815 039 est t 95% LCL 0.4513 0.4155 0.4702 0.4286 0.411 0.4091 Rep 3 0.532 0.445	Passes Cr DF 5 18 23 Test Stat 3.096 0.9534 95% UCL 0.5912 0.5912 0.592 0.5413 0.5869 0.575 0.6339 Rep 4 0.579 0.474	F Stat 0.1849 Critical 15.09 0.884 Median 0.51 0.50 0.508 0.51 0.5055	0.9646 P-Value 0.6852 0.3198 Min 0.486 0.445 0.477 0.45 0.42	Non-Sig Decisio Equal V Normal Max 0.579 0.57 0.53 0.561 0.541	nificant Effec n(α:1%) ariances Distribution Std Err 0.02198 0.02772 0.01117 0.02488 0.02575	CV% 8.43% 11.01% 4.42% 9.80% 10.45%	3.36% 2.97% 2.59% 5.42%

	alytical Report	(01/2)	201.02	Report Date: Test Code/ID:	28 Aug-19 12:30 (p 2 of 2) 719A8A12 / 19-0595-3298
Fathead Mini	now 7-d Larval Surviva	I and Grow	th Test		ERM
Analysis ID: Analyzed:	09-9546-1868 28 Aug-19 12:30	Endpoint: Analysis:	Mean Dry Biomass-mg Parametric-Control vs Treatments	CETIS Version: Status Level:	CETISv1.9.4 1
Graphics 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5		•	Reject Null Reject Null		
0.2	0L 6 13 Con	25	-0.02 -0.05 -0.07 -0.07 -0.07 -0.10 50 100 -2.0	-1.5 -1.0 -0.5 0.0 Rankits	0.5 1.0 1.5 2.0

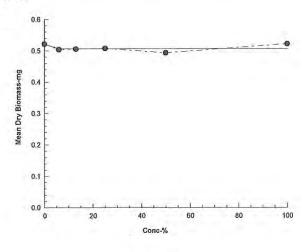
Analyst: KM QA: SPR

	28 Aug-19 12:30 719A8A12 / 19	rt Date: Code/ID:	Test Co					rt	ytical Repo	5 Anai	
ER						est	Growth	urvival and	w 7-d Larval Su	d Minno	Fathea
	CETISv1.9.4	6 Version:	CETIS V		ass-mg	ean Dry Biom	point: I	End)2-1580-4861	is ID:	Analys
	1	s Level:	Status L	_	tion (ICPIN)	near Interpola	ysis: I	Anal	28 Aug-19 12:30	ed:	Analyz
	Tech	st: Lab T	Analyst:		l (7d)	rowth-Surviva	Type:	Test	7-4757-0902	ID:	Batch
	onstituted Water	nt: Reco	Diluent:		013 (2002)	PA/821/R-02-0	ocol:	Prot	9 Aug-19 17:30	ate:	Start D
			Brine:		melas	mephales pro	ies:	Spec	6 Aug-19 16:30	Date:	Ending
Age: <:	ouse Culture	e: In-Ho	Source:			ctinopterygii	on: /	Тахо		ength:	
	Testing	ct: WET	Project:			FBA7B2	e: (Code	7-9487-7362	e ID:	Sample
, LLC	lorMittal Burns Harbor,		Source:		nt	dustrial Efflue	rial:	Mate	9 Aug-19 07:15		2.000
	all 001		Station:				(PC):		9 Aug-19 15:30		
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									ation Options	Interpo	Linear
			od	Meth	Exp 95% CL	esamples	n i	Seed	Y Transform		X Tran
		lation	Point Interpolati		Yes	00		1624	Linear		Log(X+
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							mits	TAC LI	lity Criteria	cceptab	lest A
					Decision	Overlap	Upper		Test Stat	197	Attribu
				L	Passes Criteria	Yes	>>	0.25	0.5212	Resp	Control
									s	Estimate	Point E
					95% UCL	95% LCL	TU	95% UCL	95% LCL	%	Level
					n/a	n/a	<1	n/a	n/a	>100	IC5
					n/a	n/a	<1	n/a	n/a	>100	IC10
					n/a	n/a	<1	n/a	n/a	>100	IC15
					n/a	n/a	<1	n/a	n/a	>100	IC20
					n/a	n/a	<1	n/a	n/a	>100	IC25
					n/a	n/a	<1	n/a	n/a	>100	IC40
					n/a	n/a	<1	n/a	n/a	>100	IC50
nic Variate	Isotoni		riate	ted Var	Calcula	-		ary	ass-mg Summ	Dry Bion	Mean I
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2.86%	0.5063	2.97%		2234	0.53 0.0	0.477	0.5057	4			13
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					3 A				ass-mg Detail	Dry Bion	Mean I
					Rep 4	Rep 3	Rep 2	Rep 1	Code	10	Conc-9
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					0.474	0.445	0.526	0.57			6
					0.53	0.514	0.502	0.477			13
					0.45	0.485	0.535	0.561			25
					0.541	0.42	0.508	0.503			50
					0.498	0.581	0.432				

Analyst: VM QA: SIR

lytical Report			Report Date: Test Code/ID:	28 Aug-19 12:30 (p 2 of 2) 719A8A12 / 19-0595-3298
iow 7-d Larval Surv	val and Growt	th Test		ERM
02-1580-4861	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.4
28 Aug-19 12:30	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
	100w 7-d Larval Survi 02-1580-4861	02-1580-4861 Endpoint:	ow 7-d Larval Survival and Growth Test 02-1580-4861 Endpoint: Mean Dry Biomass-mg	Test Code/ID: now 7-d Larval Survival and Growth Test 02-1580-4861 Endpoint: Mean Dry Biomass-mg CETIS Version:

Graphics



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ENVIRONMENTAL RESOURCES MANAGEMENT 3352 128th Avenue Holland, Michigan 49474-9763

AQUATIC TOXICITY LAB CHAIN OF CUSTODY FORM * 3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616- 399-3500 FAX: 616-399-3777

			/ umhos/cm	mhos/cm	umhos/cm	umhos/cm	umhos/cm	umhos/cm	Americamysis bahia Hyalella azteca Chironomus dilutus in comments section)			TIME	M 1530
		TERS	Cond 394	Cond	Cond	Cond	Cond	Cond	Americamysis Hyalella azteca Chironomus dil in comments s			DATE	81217
		TY PARAME) DRATORY	PH S.u.	PH LYSu	pH s.u.	pH s.u.	pH s.u.	pH s.u.	(write			ization	<
		INITIAL WATER QUALITY PARAMETERS UPON RECEIPT BY LABORATORY (filled in by ERM)	D.O. N. Smg/L	D.O. 5,2 mg/L	D.O. mg/L	D.O. mg/L	D.O. mg/L	D.O. mg/L	Rainbow Trout (Oncorhynchus mykiss) Sheepshead minnow (Cyprinodon variegatus) Silverside minnow (Menidia beryllina) dies promelas)Other			ire/Organi	(Eren
		INITIAL WATER UPON RECEIPT F (filled in by ERM)	Temp. (° C)	Temp. √ (∘ C) POn Ice	Temp. (° C) 🗆 On Ice	Temp. (∘ C) □ On Ice	Temp. (∘ C) □ On Ice	Temp. (∘ C) □ On Ice	Rainbow Trout (Oncorhynchus mykiss) Sheepshead minnow (Cyprinodon vari Silverside minnow (Menidia beryllina) des promelas)			3Y: Signatu	P
		SAMPLE ID NUMBER (Filled in by ERM)	2-216180	L.								ACCEPTED BY: Signature / Organization	NN NN
SAMPLER	PHONE NUMBER:	FIELD PARAMETERS	pH= s.u. NH3= mg/L	pH= s.u. NH3= mg/L	pH= s.u. NH3= mg/L	pH= s.u. NH3= mg/L	pH= s.u. NH3= mg/L	pH= s.u. NH3= mg/L	Test Species: — Ceriodaphnia dubia — Daphnia magna — Daphnia pulex — Fathead minnow (DATE TIME	
		NUMBER AND SIZE OF CONTAINERS	(cublened	\$					Test Type: Acute Chronic Other	-512			
2		GRAB OR COMP	0	0					water	C 4158		e / Orga	
		TIME (Begin End)	0715	0430					aterial: Water/Wastewater Sediment Product	e and co		Signatur	
		DATE (Begin End)	05/19/19	04/19/19					Test Material: Water Sedim Produ	CTION: 50	ANSFERS	HED BY:	
CLIENT NAME:	ADDRESS:	SAMPLE DESCRIPTION (i.e. Outfall 001)	030	GII					ANALYSES REQUESTED [check item(s)]	COMMENT SECTION: 500 MS COC 4153 -512	SAMPLE TRANSFERS	RELINQUISHED BY: Signature / Organization	

081919-2 Pp Page 17 of 22 February 2018

See Instructions for Sample Collection on Back of Sheet

E 15		
	F G H I J Hold F G H I J Hold Image: Second S	SW846/CLF Copyright 2012 by ALS Environmental.
WEIT (Acite + Uicrie - P		
Custody Form of D: 41581 Project Manager: Project Manager: Pr	ix Pres. # Bottles A B ALAT I-3gal X ALAT I-3gal X ALAT I-3.5 cc X DEAT I-3.5 cc I D 10 BD I 5 BD I D 10 BD I 5 BD II Cooler ID	1. Any changes much be made in writing once samples and COC Form have been submitted to ALS Environmental. 7-Other 8-4°C 9-5035 3. The Chain of Custody is a legal document. All information must be completed accurated. 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035
Projection 2	Fax Aail Address -19 0715 A& -19 0715 A& -10 0715 A& -	0.3 6-NaHSO4 7-Other ve been submitted to ALS Envi 5 Environmental are expressly I apleted accurated.
Everett, WA +1 425 356 2600 +1 570 490 1511 +1 425 356 2600 +1 616 399 607 +1 616 399 607 Project Number Project Number Bill To Company Invoice Attn Address City/State/Zip Phone	Fax e-Mail Address Date Bate 8-19-19 8-19-19 8-19-19 03000 Date Date Date Date Date Date Date Date	3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S, ng once samples and COC Form ha Leontract, services provided by ALS ument. All information must be con
ALC Customer Information der me fTo tTo Sss Zip	ress ress ress ress ress ress ress ress	 Any changes must be made in writin 3. The Chain of Custody is a legal doce

Purchase Order			11	Page	of	Ì		Middletown, PA	n, PA	Salt Lake City, UT	York, PA
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				AL	S Project	ALS Project Manager:			ALS N	ALS Work Order #: C	4081459
Purchase Order			Proje	Project Information	on			Param	eter/Meth	Parameter/Method Request for Analysis	
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Work Order		Project Number					8			-	
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Reimquished by:		Time:	Received by (L	by (Laboratory):			Cooler ID	ID Cooler Temp		QC Package: (Check One Box Below)	tox Below)
updeedby (Lapolaton) / C.O.V.	Date: DATE: 1-19	Time: 1100	Checked by (Laboratory):	aboratory):						Level II Std QC Level II Std QC/Raw Date Level IV SW846/CLP	L TRRP Checklist
Preservative Key: 1-HCI 2-HNO ₃ 3-	3-H2SO4 4-NaOH	OH 5-Na2S203	3 6-NaHSO4	O ₄ 7-Other	r 8-4°C	9-5035				Other	

ERM

ENVIRONMENTAL RESOURCES MANAGEMENT 3352 128th Avenue Holland, Michigan 49424-9263 Phone: 616- 399-3500 FAX: 616-399-3777

AQUATIC TOXICITY LAB CHAIN OF CUSTODY FORM *	Arcelor Mittal SAMPLER	PHONE NUMBER:	TIME GRAB NUMBER AND FIELD SAMPLE ID INITIAL WATER QUALITY PARAMETERS (Begin OR SIZE OF PARAMETERS NUMBER UPON RECEIPT BY LABORATORY (Bedin OR COMP CONTAINERS NUMBER UPON RECEIPT BY LABORATORY	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	0635 PH= s.u. NH3= mg/L V	pH= s.u. NH3= mg/L	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Test Type: Test Species: /Wastewater Acute Ceriodaphnia dubia Rainbow T Chronic Daphnia magna Sheepshea ent Other Silverside: Other Fathead minnow (Primephales promela)	COMMENT SECTION: 500 41578 - 592	S	-
AQUATIC TOXICITY			GRAB NUMBER AND OR SIZE OF COMP CONTAINERS				Hq HN	Hd NH	Hď	/WastewaterAcute entChronic ctOther	ALS COC 41578 -592		prosting / Organization DATE
@TATAT	CLIENT Arcelot	ADDRESS:	SAMPLEDATETDESCRIPTION(Begin(B(i.e. Outfall 001)End)E	001 06/22/19 06	G(1 05/22/19 06					ANALYSESTest Material:REQUESTEDWatery[checkSedimentitem(s)]Product	COMMENT SECTION: 500	SAMPLE TRANSFERS	RELINOUISHED RY: Signature / Organization

081919-2 Pp Page 20 of 22 * See Instructions for Sample Collection on Back of Sheet

February 2018

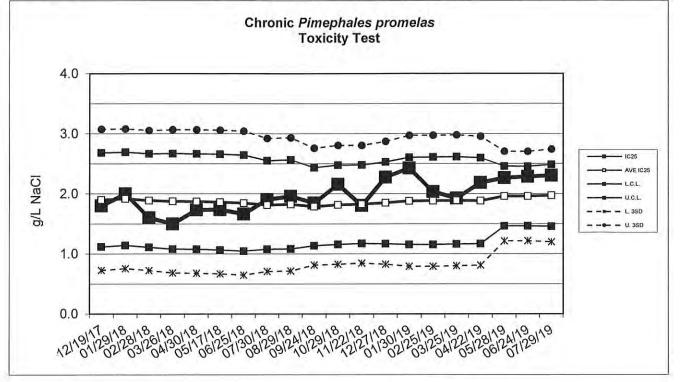
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100	Customer Information			Proj	Project Information	ation			Para	ameter/Mo	Parameter/Method Request for Analysis	st for An	alysis	
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	Sample Description		Date	Time	Matrix	Pres.	# Bottles	A	B	D	5	Н	L I	Hold
191 Outsell 201	OI COMP		8-23-19	0620	AQ	8	(2)-3gd.	\mathbf{X}						
0 y + 10 2 Pp 0-2 Pp 21 of 22	OII COMP		8-99-19	0635	Aa	Ø	(J)-3gal	×						
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Relinquished by:		Date:	Time:	Received by	Received by (Laboratory):	08201 682319 1430	9 1430	Cooler ID		Cooler Temp Q	QC Package: (Check One Box Below)	ck One Box	Below)	Checklist
Logged by (Laboratory):		Date:	Time:	Checked by	by (Laboratory):						 Level III Std QC/Raw Date Level IV SW846/CLP 	%Raw Date	TRRP	TRRP Level IV
Preservative Key: 1-HCI	2-HNO ₃ 3	3-H2SO4 4-NaOH	AOH 5-Na2S203	O ₃ 6-NaHSO4	SO4 7-Other	ther 8-4°C	9-5035				Other		1	

3. The Chain of Custody is a legal document. All information must be completed accurately.



Environmental Resources Management

Standard Reference Toxicant Data



Date	IC25	AVE IC25	CONTR	OL LIMIT	Survival	CONTROL Growth	cv
Date	(g/L NaCl)	(g/L NaCl)	Lower	Upper	(%)	(mg)	(%)
12/19/17	1.8	1.9	1.1	2.7	100	0.58	5.3
01/29/18	2.0	1.9	1.1	2.7	97.5	0.39	4.8
02/28/18	1.6	1.9	1.1	2.7	92.5	0.44	10.7
03/26/18	1.5	1.9	1.1	2.7	97.5	0.47	3.5
04/30/18	1.7	1.9	1.1	2.7	95	0.45	11.4
05/17/18	1.7	1.9	1.1	2.7	100	0.54	10.8
06/25/18	1.7	1.8	1.0	2.6	95	0.56	17.8
07/30/18	1.9	1.8	1.1	2.6	97.5	0.43	4.3
08/29/18	2.0	1.8	1.1	2.6	100	0.58	9.4
09/24/18	1.8	1.8	1.1	2.4	97.5	0.46	8.2
10/29/18	2.2	1.8	1.2	2.5	97.5	0.45	7.7
11/22/18	1.8	1.8	1.2	2.5	95	0.65	5.2
12/27/18	2.3	1.8	1.2	2.5	97.5	0.64	7.4
01/30/19	2.4	1.9	1.2	2.6	100	0.53	10.5
02/25/19	2.0	1.9	1.2	2.6	95	0.53	10.2
03/25/19	1.9	1.9	1.2	2.6	97.5	0.63	6.0
04/22/19	2.2	1.9	1.2	2.6	100	0.57	2.0
05/28/19	2.3	2.0	1.5	2.5	100	0.68	10.4
06/24/19	2.3	2.0	1.5	2.5	92.5	0.48	11.0
07/29/19	2.3	2.0	1.5	2.5	100	0.51	5.6

Chronic Pimephales promelas Toxicity Test Data