



**Whole Effluent Toxicity Test Report:
City of Yakima**

June 2020 Chronic Testing

Report date: June 22, 2020

Submitted to:

City of Yakima
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1.0 INTRODUCTION

A chronic toxicity test was conducted using effluent samples collected from City of Yakima Wastewater Treatment Plant in June 2020. The bioassay was conducted using the test organism *Pimephales promelas* (fathead minnow). Testing was performed at Rainier Environmental Laboratory located in Tacoma, Washington.

2.0 METHODS

2.1 Sample Collection and Transport

Three 24-hr. composite effluent samples were collected into 10-liter (L) LDPE cubitainers by City of Yakima personnel. The samples were packed in a cooler containing ice and shipped overnight to Rainier Environmental. Appropriate chain-of-custody procedures were employed during collection and transport.

2.2 Sample Receipt

Upon arrival at Rainier Environmental, the coolers were opened, samples inspected, and the contents verified against information provided on the chain-of-custody forms. Receipt temperature was measured and recorded on the chain-of-custody form for each sample. Standard water quality parameters were measured and recorded on a sample check-in sheet (Appendix C). Samples were stored at 4°C in the dark until used for testing.

2.3 Test Methods

A chronic toxicity test was conducted according to procedures presented by USEPA (2002). The method is summarized in Table 1. This test involved a 7-day exposure and was evaluated for survival and growth.

Table 1. Summary of methods for the fathead minnow 7-day survival and growth test.

Test initiation date and time	6/2/2020; 1245h
Test termination date and time	6/9/2020; 1230h
Test organism	<i>Pimephales promelas</i>
Test organism source	Aquatic BioSystems; Fort Collins, CO
Test organism age	< 24 hours
Test type	Static renewal
Feeding	<i>Artemia</i> nauplii, twice daily
Test chamber	500 mL plastic cup
Test solution volume	250 mL
Test temperature	25 ± 1°C
Dilution water	Moderately hard synthetic water
Test concentrations (mg/L sample)	100, 53.8, 25, 12.5, 9.88, control
Number of organisms/chamber	10
Number of replicates	4
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test protocol	EPA-821-R-02-013
Test acceptability criteria for controls	≥ 80% survival; average dry weight ≥ 0.25 mg
Reference toxicant	Sodium chloride

3.0 RESULTS

Details of standard water quality measurements conducted upon receipt of samples are provided in Table 2.

Table 2. Sample information.

Sample ID	WET I	WET II	WET 3
Log-in Number	20-065	20-067	20-068
Collection date and time	6/1/2020; 0800h	6/3/2020; 0800h	6/4/2020; 0800h
Receipt date and time	6/2/2020; 1045h	6/4/2020; 1000h	6/5/2020; 1000h
Receipt temperature (°C)	2.5	2.7	3.9
Dissolved oxygen (mg/L)	8.5	7.9	7.8
pH	6.65	6.71	6.81
Conductivity (µS/cm)	510	631	552
Hardness (mg/L CaCO ₃)	124	120	112
Alkalinity (mg/L CaCO ₃)	52	48	60
Total Chlorine (mg/L)	<0.03	<0.03	<0.03
Total Ammonia (mg/L)	<1.0	<1.0	<1.0

Results for the chronic toxicity test are summarized in Table 3. The highest concentration with no observed effect (NOEC) was 100 percent effluent for both survival and growth (evaluated on the basis of dry weight divided by initial count for biomass and final count for dry weight) at the end of the exposure. There was no statistically significant difference between the control and the acute critical effluent concentration (ACEC) of 53.8 percent effluent or the chronic critical effluent concentration (CCEC) of 9.88 percent effluent. Statistical summaries for the test, copies of the laboratory bench sheets, control quality control plots, sample check-in sheets, and chain-of-custody forms, are provided in Appendices A through D.

Table 3. Summary of chronic test results.

Species	Endpoint	NOEC ^a (% effluent)	LOEC ^b (% effluent)
Fathead minnow	Survival	100	>100
	Biomass	100	>100
	Dry Weight	100	>100

^a No Observed Effect Concentration, ^b Lowest Observed Effect Concentration

4.0 QA/QC

Samples were received in good condition and within the temperature range specified by WDOE (2016). There were no deviations from the protocol and water quality parameters remained within the ranges specified in the test method throughout the test.

Results for the reference toxicant test used to monitor laboratory performance and test organism sensitivity are summarized in Table 4. The results for the reference toxicant test fell within the acceptable range of mean \pm two standard deviations of historical test results. The coefficients of variation (CVs) for the test are also shown in the table. Dilution water control mean and control CV for biomass were also within two standard deviations of the historical mean (Appendix B). Based on the reference toxicant and control results, test organisms appeared to be of an appropriate degree of sensitivity.

Table 4. Reference toxicant test results.

Species	Endpoint	Date initiated	EC ₅₀	Acceptable range (mean \pm 2 SD)	CV (%)
Fathead minnow	7d survival	6/2/2020	3.16 g/L NaCl	3.06 – 7.70	26.0
	7d growth	6/2/2020	2.55 g/L NaCl	2.49 – 7.28	30.8

REFERENCES

- Tidepool Scientific Software. 2000-2010. CETIS Comprehensive Environmental Toxicity Information System Software, Version 1.8.4.6.
- USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. EPA-821-R-02-013, pp. 141-196.
- WDOE. 2016. Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria. Washington State Department of Ecology. Water Quality Program. Publication number: WQ-R-95-80, Revised June 2016.

Appendix A
Fathead minnow Chronic Toxicity Test
Statistical Summaries and Raw Bench Sheets

CETIS Summary Report

Report Date: 21 Jun-20 13:29 (p 1 of 2)
Test Code: 2006-021 | 17-8657-9793

Fathead Minnow 7-d Larval Survival and Growth Test

Rainier Environmental Laboratory

Batch ID:	06-3302-1848	Test Type:	Growth-Survival (7d)	Analyst:	Eric Tollefson
Start Date:	02 Jun-20 12:45	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	09 Jun-20 12:30	Species:	Pimephales promelas	Brine:	
Duration:	7d	Source:	Aquatic Biosystems, CO	Age:	<24h
Sample ID:	02-2312-2286	Code:	20-065	Client:	Yakima
Sample Date:	01 Jun-20 08:00	Material:	POTW Effluent	Project:	
Receive Date:	02 Jun-20 10:45	Source:	Yakima (WA0024023)		
Sample Age:	29h (2.5 °C)	Station:			

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-3360-5517	7d Survival Rate	100	>100	NA	4.02%	1	Steel Many-One Rank Sum Test
15-0180-3228	Mean Dry Biomass-mg	100	>100	NA	24.3%	1	Dunnett Multiple Comparison Test
14-7247-3211	Mean Dry Weight-mg	100	>100	NA	24.3%	1	Dunnett Multiple Comparison Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-3360-5517	7d Survival Rate	Control Resp	0.975	0.8 - NL	Yes	Passes Acceptability Criteria
15-0180-3228	Mean Dry Biomass-mg	Control Resp	0.487	0.25 - NL	Yes	Passes Acceptability Criteria
15-0180-3228	Mean Dry Biomass-mg	PMSD	0.2425	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.975	0.9563	0.9937	0.9	1	0.025	0.05	5.13%	0.0%
9.88		4	1	1	1	1	1	0	0	0.0%	-2.56%
12.5		4	1	1	1	1	1	0	0	0.0%	-2.56%
25		4	1	1	1	1	1	0	0	0.0%	-2.56%
53.8		4	1	1	1	1	1	0	0	0.0%	-2.56%
100		4	1	1	1	1	1	0	0	0.0%	-2.56%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.487	0.4684	0.5056	0.418	0.531	0.02488	0.04977	10.22%	0.0%
9.88		4	0.4638	0.4322	0.4953	0.413	0.59	0.0422	0.08439	18.2%	4.77%
12.5		4	0.4502	0.4258	0.4747	0.398	0.546	0.03273	0.06546	14.54%	7.55%
25		4	0.494	0.4688	0.5192	0.416	0.579	0.03372	0.06744	13.65%	-1.44%
53.8		4	0.5322	0.515	0.5495	0.47	0.575	0.0231	0.04621	8.68%	-9.29%
100		4	0.5158	0.4817	0.5498	0.39	0.605	0.0456	0.09121	17.68%	-5.9%

Mean Dry Weight-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	0.5013	0.4767	0.5258	0.418	0.5711	0.03286	0.06573	13.11%	0.0%
9.88		4	0.4638	0.4322	0.4953	0.413	0.59	0.0422	0.08439	18.2%	7.49%
12.5		4	0.4502	0.4258	0.4747	0.398	0.546	0.03273	0.06546	14.54%	10.18%
25		4	0.494	0.4688	0.5192	0.416	0.579	0.03372	0.06744	13.65%	1.45%
53.8		4	0.5322	0.515	0.5495	0.47	0.575	0.0231	0.04621	8.68%	-6.18%
100		4	0.5158	0.4817	0.5498	0.39	0.605	0.0456	0.09121	17.68%	-2.89%

CETIS Summary Report

Report Date: 21 Jun-20 13:29 (p 2 of 2)
 Test Code: 2006-021 | 17-8657-9793

Fathead Minnow 7-d Larval Survival and Growth Test

Rainier Environmental Laboratory

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	0.9
9.88		1	1	1	1
12.5		1	1	1	1
25		1	1	1	1
53.8		1	1	1	1
100		1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.418	0.531	0.485	0.514
9.88		0.413	0.425	0.427	0.59
12.5		0.431	0.398	0.426	0.546
25		0.478	0.416	0.503	0.579
53.8		0.526	0.47	0.575	0.558
100		0.605	0.39	0.55	0.518

Mean Dry Weight-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	0.418	0.531	0.485	0.5711
9.88		0.413	0.425	0.427	0.59
12.5		0.431	0.398	0.426	0.546
25		0.478	0.416	0.503	0.579
53.8		0.526	0.47	0.575	0.558
100		0.605	0.39	0.55	0.518

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	10/10	10/10	10/10	9/10
9.88		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
53.8		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Rainier Environmental
Washington Laboratory

Client: City of Yakima
Sample ID: WET I
Test No: 2006-021
Log-In#: 20-065 20-067

Initial and Final Chemistries

Seven Day Chronic Freshwater Bioassay

Start Date & Time: 6/2/2020 1245
Stop Date & Time: 6/9/2020 1230
Test Species: Pimephales promelas
20-068

Conc. or % CON	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	7.42	7.92	7.69	7.92	7.64	7.79	7.65	7.67	7.67	7.98	7.73	7.55	7.91	7.81
DO (mg/l)	7.9	7.1	7.8	6.2	7.7	6.1	7.8	5.1	7.5	6.4	7.8	5.1	7.8	5.3
Cond. (µmhos-cm)	292	301	295	292	291	297	293	301	295	299	292	290	291	292
Temperature (°C)	25.3	25.4	25.2	25.4	25.0	25.2	24.7	25.3	24.8	25.2	25.1	25.1	24.7	25.1
9.98	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	7.55	7.91	7.65	7.78	7.61	7.74	7.65	7.72	7.65	7.62	7.71	7.52	7.72	7.82
DO (mg/l)	8.0	6.8	7.8	6.3	7.8	5.8	7.8	6.0	7.6	6.5	7.8	6.2	7.7	6.4
Cond. (µmhos-cm)	303	307	310	308	307	310	305	307	304	310	312	312	315	318
Temperature (°C)	25.2	25.4	25.2	25.5	25.1	25.1	24.6	25.4	25.0	25.2	25.1	25.2	24.8	25.2
12.5	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	7.55	7.97	7.58	7.81	7.55	7.77	7.61	7.71	7.62	7.64	7.70	7.57	7.72	7.75
DO (mg/l)	8.0	6.7	7.8	6.2	7.8	6.4	7.6	5.8	7.4	6.3	7.9	6.3	7.8	6.8
Cond. (µmhos-cm)	315	318	314	313	312	315	311	310	314	311	321	318	324	321
Temperature (°C)	25.2	25.4	25.1	25.5	25.1	25.1	24.6	25.4	24.9	25.2	25.3	25.2	24.5	25.3
25	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	7.42	7.85	7.43	7.83	7.38	7.72	7.42	7.70	7.61	7.67	7.59	7.63	7.63	7.68
DO (mg/l)	7.9	6.9	7.9	6.4	7.7	6.7	7.7	6.1	7.5	6.4	8.0	6.4	7.8	6.7
Cond. (µmhos-cm)	342	341	345	344	338	335	341	345	362	363	367	364	372	365
Temperature (°C)	25.1	25.3	25.1	25.5	25.0	25.0	24.9	25.2	25.1	25.2	25.0	25.1	25.1	25.2
53.8	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	7.15	7.92	7.20	7.85	7.12	7.79	7.17	7.74	7.21	7.71	7.22	7.61	7.24	7.04
DO (mg/l)	7.8	5.5	7.8	5.2	7.7	5.4	7.8	6.2	7.5	5.2	7.8	6.3	7.7	6.8
Cond. (µmhos-cm)	397	395	398	398	395	392	392	392	407	405	412	407	414	411
Temperature (°C)	25.2	25.3	25.0	25.5	24.8	25.2	25.1	25.4	25.2	25.2	24.8	25.0	25.3	25.0
100	Days													
	0		1		2		3		4		5		6	
	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final	init.	final
pH	6.65	7.98	6.71	7.87	6.72	7.91	6.57	7.78	6.82	7.83	6.73	7.67	6.81	7.61
DO (mg/l)	7.7	6.4	7.4	6.1	7.2	6.5	7.4	6.1	7.4	6.2	7.9	6.1	7.8	6.2
Cond. (µmhos-cm)	510	508	512	513	505	503	554	555	561	558	562	560	565	562
Temperature (°C)	25.1	25.4	25.1	25.5	24.5	25.2	25.3	25.4	25.4	25.2	24.5	25.1	25.2	25.1
Tech. Initials	ET	ET	ET	ET	ET	ET	ET	ET	ET	ET	ET	ET	ET	ET

Dilution Water Batch #: MHSW042
Test Chamber: VWR

QA Check: ET

Sample Description:

Animal Source: ABS

Comments:

Date Received: 6/2/20 Date of Hatch: 6/11/20

Rainier Environmental
Washington Laboratory
5013 Pacific Hwy. E., Suite 20
Tacoma, WA 98424

Raw Data Sheet
Fathead Minnow
(*Pimephales promelas*)
Larval Survival

Client Name: City of Pabina

Test No.: 2006-021

Sample ID: WET I

Rep.	Conc. or %	Cont.	Days								Mean % Survival
			0	1	2	3	4	5	6	7	
1	CON	15	10	10	10	10	10	10	10	10	
2		1	10	10	10	10	10	10	10	10	
3		22	10	10	10	10	10	10	10	10	
4		10	10	10	10	10	10	10	9	9	
1	9.85	14	10	10	10	10	10	10	10	10	
2		21	10	10	10	10	10	10	10	10	
3		5	10	10	10	10	10	10	10	10	
4		16	10	10	10	10	10	10	10	10	
1	12.5	2	10	10	10	10	10	10	10	10	
2		8	10	10	10	10	10	10	10	10	
3		23	10	10	10	10	10	10	10	10	
4		13	10	10	10	10	10	10	10	10	
1	25	3	10	10	10	10	10	10	10	10	
2		17	10	10	10	10	10	10	10	10	
3		9	10	10	10	10	10	10	10	10	
4		11	10	10	10	10	10	10	10	10	
1	53.8	19	10	10	10	10	10	10	10	10	
2		4	10	10	10	10	10	10	10	10	
3		24	10	10	10	10	10	10	10	10	
4		6	10	10	10	10	10	10	10	10	
1	100	18	10	10	10	10	10	10	10	10	
2		7	10	10	10	10	10	10	10	10	
3		12	10	10	10	10	10	10	10	10	
4		20	10	10	10	10	10	10	10	10	
1											
2											
3											
4											
1											
2											
3											
4											
Tech Initials			et	et	et	et	et	et	et	et	

Feeding Times: 0 1030 2 0730 3 0745 4 0745 5 0745 6 0600
1600 1545 1545 1545 1430 1400 1600

Comments: _____

QA Check: et

**Rainier Environmental
Washington Laboratory
5013 Pacific Hwy. E., Suite 20
Tacoma, WA 98424**

**Raw Data Sheet
Fish Weights
Seven Day Chronic Bioassay**

Client: City of Yakima

Test No: 2006-021

Sample ID: WET I

Species: Pimephales promelas

rep #	Conc. or %	cont #	pan wt. (gm)	pan + fish (gm)	fish wt. (mg)	# fish	avg. per fish (mg)	avg. per conc. (mg)
1	CON	15	0.04309	0.04727		10		
2		1	0.04272	0.04803		10		
3		22	0.04023	0.04508		10		
4		10	0.04380	0.04814		9		
1	9.88	14	0.04505	0.04918		10		
2		21	0.04167	0.04592		10		
3		5	0.04598	0.05025		10		
4		16	0.04128	0.04718		10		
1	12.5	2	0.04540	0.04971		10		
2		8	0.04432	0.04930		10		
3		23	0.03872	0.04299		10		
4		13	0.04121	0.04667		10		
1	25	3	0.04351	0.04829		10		
2		17	0.04283	0.04699		10		
3		9	0.04392	0.04895		10		
4		11	0.04557	0.05136		10		
1	53.6	19	0.04283	0.04809		10		
2		4	0.03718	0.04188		10		
3		24	0.04062	0.04637		10		
4		6	0.04281	0.04839		10		
1	100	18	0.04251	0.04856		10		
2		7	0.04334	0.04724		10		
3		12	0.04317	0.04867		10		
4		20	0.04416	0.04934		10		
1								
2								
3								
4								
Technician Initials:			U	U				

Date/Time in: 6/9/2020 1230 Oven temp. (°C): 66.0
Date/Time out: 6/11/2020 1230 Oven temp. (°C): 62.5

QA Check: U

Appendix B
Control Quality Assurance Plots

Fathead Minnow 7-d Larval Survival and Growth Test

Rainier Environmental Laboratory

Test Type: Growth-Survival (7d)

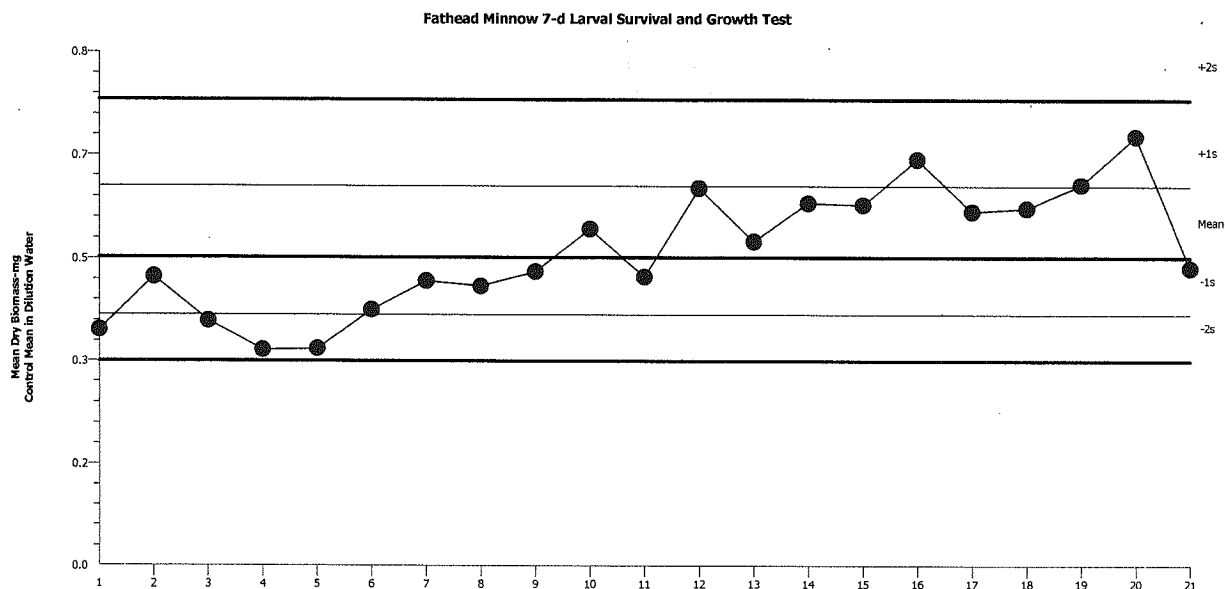
Organism: Pimephales promelas (Fathead Minn

Material: All Materials

Protocol: EPA/821/R-02-013 (2002)

Endpoint: Mean Dry Biomass-mg

Source: All SampleID Sources



Mean: 0.5042

Count: 20

-1s Warning Limit: 0.4107

-2s Action Limit: 0.3346

Sigma: NA

CV: 22.80%

+1s Warning Limit: 0.6189

+2s Action Limit: 0.7597

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2019	May	7	0.386	-0.1182	-1.303	(-)		01-5468-9042	
2		Jun	4	0.4727	-0.03149	-0.3146			11-0651-9917	
3			4	0.401	-0.1032	-1.117	(-)		13-7731-1269	
4		Jul	2	0.3532	-0.151	-1.736	(-)		12-0816-6330	
5			9	0.355	-0.1492	-1.711	(-)		15-1803-4507	
6		Sep	17	0.4188	-0.08539	-0.9052			19-6105-0333	
7			17	0.4658	-0.03839	-0.3863			19-9728-2867	
8		Oct	1	0.4573	-0.04689	-0.4762			15-2698-6242	
9		Dec	17	0.4813	-0.02289	-0.2267			02-9649-6518	
10	2020	Jan	7	0.5497	0.04551	0.4215			00-7834-0825	
11			7	0.4725	-0.03169	-0.3167			16-5140-8945	
12		Feb	4	0.6153	0.1111	0.9715			02-4478-7172	
13			4	0.5295	0.02531	0.2389			14-1810-3075	
14			11	0.5915	0.08731	0.7791			07-8074-1764	
15			25	0.5885	0.08431	0.7543			19-8493-6356	
16		Mar	24	0.6625	0.1583	1.332	(+)		01-9890-4819	
17			24	0.5778	0.07361	0.6647			15-3108-0465	
18		Apr	14	0.583	0.07881	0.7084			02-0722-4808	
19			15	0.6213	0.1171	1.019	(+)		12-7002-6861	
20		May	13	0.6998	0.1956	1.599	(+)		05-8643-2357	
21		Jun	2	0.487	-0.01719	-0.1692			17-8657-9793	

Fathead Minnow 7-d Larval Survival and Growth Test

Rainier Environmental Laboratory

Test Type: Growth-Survival (7d)

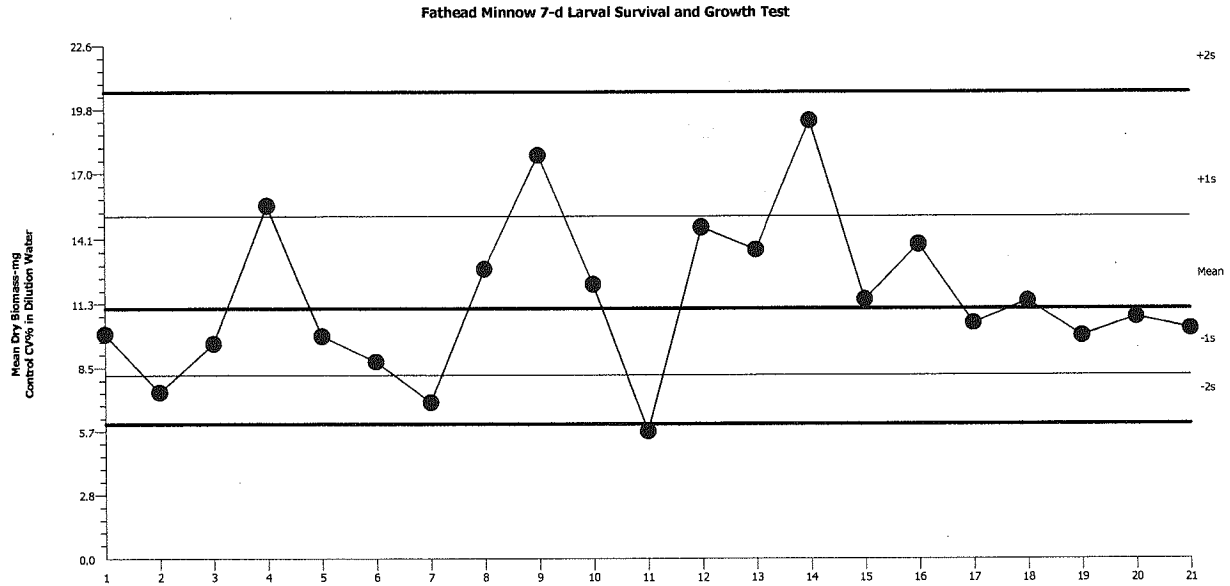
Organism: Pimephales promelas (Fathead Minn

Material: All Materials

Protocol: EPA/821/R-02-013 (2002)

Endpoint: Mean Dry Biomass-mg

Source: All SampleID Sources



Mean: 11.11

Count: 20

-1s Warning Limit: 8.164

-2s Action Limit: 5.998

Sigma: NA

CV: 36.10%

+1s Warning Limit: 15.12

+2s Action Limit: 20.59

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2019	May	7	9.982	-1.13	-0.3478			01-5468-9042	
2		Jun	4	7.401	-3.711	-1.318	(-)		11-0651-9917	
3			4	9.561	-1.551	-0.4875			13-7731-1269	
4		Jul	2	15.58	4.468	1.096	(+)		12-0816-6330	
5			9	9.893	-1.219	-0.3768			15-1803-4507	
6		Sep	17	8.756	-2.356	-0.7728			19-6105-0333	
7			17	6.945	-4.167	-1.524	(-)		19-9728-2867	
8		Oct	1	12.85	1.738	0.4714			15-2698-6242	
9		Dec	17	17.78	6.668	1.525	(+)		02-9649-6518	
10	2020	Jan	7	12.18	1.068	0.2977			00-7834-0825	
11			7	5.659	-5.453	-2.189	(-)	(-)	16-5140-8945	
12		Feb	4	14.65	3.538	0.8967			02-4478-7172	
13			4	13.68	2.568	0.6745			14-1810-3075	
14			11	19.3	8.188	1.791	(+)		07-8074-1764	
15			25	11.51	0.3983	0.1142			19-8493-6356	
16		Mar	24	13.92	2.808	0.7309			01-9890-4819	
17			24	10.47	-0.6417	-0.1929			15-3108-0465	
18		Apr	14	11.45	0.3383	0.09727			02-0722-4808	
19			15	9.903	-1.209	-0.3735			12-7002-6861	
20		May	13	10.73	-0.3817	-0.1134			05-8643-2357	
21		Jun	2	10.22	-0.8917	-0.2713			17-8657-9793	

Appendix C
Sample Check-In Sheet

Rainier Environmental
5013 Pacific Hwy East, Ste. 20
Tacoma, WA 98424

Client: YAKIMA

Tests Performed: PPA
Test ID No(s): 2006-021

Sample Check-In Information

Sample Description:

Sample ID:

Log-in No. (20-xxxx):

Sample Collection Date & Time:

Sample Receipt Date & Time:

Check-in Temperature (°C)

Temperature OK?

DO (mg/L)

pH (units)

Conductivity (µS/cm)

Salinity (ppt)

Tit. Vol / Sam. Vol. / Alkalinity (mg/L)*

Tit. Vol. / Sam. Vol. / Hardness (mg/L)*^a

Total Chlorine (mg/L)

Total Ammonia Nitrogen (mg/L)

Technician Initials

* = mg/L as CaCO₃, ^a = Measured for freshwater samples only, NA = Not Applicable,

NIM = Not Measured

Freshwater Tests:

Control/Dilution Water Source: test type: PP-6 8.2 (DMW) MHW Other: 042

Control/Dilution Water Source: test type: 8.2 (DMW) MHW Other:

Additional Control? Y N =

Marine Tests:

Control/Dilution Water Source: test type: ART SW NAT SW

Control/Dilution Water Source: test type: ART SW NAT SW

Additional Control? Y N =

Sample Salted w/ artificial salt? Y N If yes, what ppt? test type:

Sample salted w/brine? Y N If yes, what ppt? test type:

Comments: Temperature for grab sample must be 0-20°C if received within 1 hour of collection time, 0-12°C if effluent received within

4 hours of collection time, and 0-6°C for all other samples.

COC Complete? Y or N
1 Y 2 Y 3 Y

Filtration? Y N

Pore Size:
Organisms or Debris

Aeration? Y N

Length of Time:

Final DO:

Final pH:

Hardness Adjustment? Y N

If adjusted, please see worksheet for details.

Sub-samples for additional chemistry:

QC Check: Y

Appendix D
Chain-of-Custody Forms

Washington
5013 Pacific Highway East, Suite 200
Fife, WA 98424
Phone: 253.922.8898

Sample Collection By City Of Yakima

Wastewater Department

2220 E Viola Ave

Yakima, WA 98901

Terrie Thompson

509-249-6816

Fajne Thompson & Kinsman, 1911

Company

Address

City/State/Zip

Contact

Phone

Email

COMMENTS

29-Comp

Fathered Minnow

ANALYSES REQUIRED

Date 09/1/20 Page 1 of 1

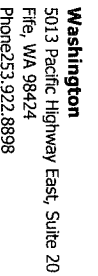
Receipt Temperature (°C)

[illegible]

Washington
5013 Pacific Highway East, Suite 20
Fife, WA 98424
Phone: 253.922.8898

Date 6/3/20 Page 1 of 1

[illegible]



Sample Collection By:			City Of Yakima			ANALYSES REQUIRED																				
Report to:			Wastewater Department			Invoice To:																				
Company			2220 E Viola Ave			Company																				
Address			Yakima, WA 98901			Address																				
City/State/zip						City/State/zip																				
Contact			Taine Thompson			Contact																				
Phone			509-249-6816			Phone																				
Email			Taine.Thompson@yakima.wa.gov			Email																				
SAMPLE ID			DATE			TIME			MATRIX			CONTAINER TYPE			NO. OF CONTAINERS			COMMENTS			RECEIVED BY (LABORATORY)					
1			WET III			6/3/20			8:00 AM			Waters			Plastic			1			WET #3 240 comp. X			39		
2						6/4/20			8:00 AM			Waters			Plastic						Chronic					
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
PROJECT INFORMATION			SAMPLE RECEIPT			RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)			RECEIVED BY (LABORATORY)														
Client:			City of Yakima			Total No. of Containers			1			Signature			Time			Signature			Time					
PO No.:			20-296			Received Good Condition?			Y			Printed Name			Date			Printed Name			Date					
Shipped Via:			Fed Ex			Matches Test Schedule?			Y			Company			City of Yakima			Company			Date					
SPECIAL INSTRUCTIONS/COMMENTS:			NPDES # WA0024023			Signature			Time			Signature			Time			Signature			Time					
						RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)			Signature			Time			Signature			Time					
						Printed Name			Date			Printed Name			Date			Printed Name			Date					
						Company			Date			Company			Date			Company			Date					
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