



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

May 2024

Report date: June 11, 2025

Submitted to:

City of Everett
3200 Cedar Street
Everett, WA 98201

Rainier Environmental
5013 Pacific Hwy East
Suite 20
Tacoma, WA 98424

1.0 INTRODUCTION

An acute toxicity test was conducted using effluent samples collected from City of Everett's Port Gardner TF/SC System (SCE). Testing was conducted in May 2025 using the test organism *Ceriodaphnia dubia*. Testing was performed at Rainier Environmental Laboratory.

2.0 METHODS

2.1 Sample Collection and Transport

An effluent sample was collected into a LDPE cubitainer by City of Everett personnel. The sample was packed in a cooler containing ice and transported to Rainier Environmental the day of collection. Appropriate chain-of-custody procedures were employed during collection and transport.

2.2 Sample Receipt

Upon arrival at the laboratory, the cooler was 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 B). Samples were stored at 4°C in the dark until used for testing.

2.3 Test Methods

Acute toxicity tests were conducted using *C. dubia* according to procedures presented by USEPA (2002) and summarized in Table 1.

Table 1. Summary of conditions for the 48h *C. dubia* acute survival tests.

Test initiation date and time	SCE: 5/22/2025; 1415h
Test termination date and time	SCE: 5/24/2025; 1400h
Test organism	<i>Ceriodaphnia dubia</i>
Test organism source	In-house cultures
Test organism age	< 24 hours
Test duration	48 hours
Feeding	YTC:algal suspension during org. holding time. No feeding during test.
Test chamber and test solution volume	30 mL plastic cup, 25 mL
Test temperature	20 ± 1°C
Dilution water	Moderately Hard Synthetic Water
Test concentrations (% sample)	SCE: 100, 30, 10, 3.0, 0.64, laboratory control
Number of organisms/chamber	5
Number of replicates	4
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test protocol	EPA-821-R-02-012
Test acceptability criterion for controls	≥ 90% survival
Reference toxicant	Copper sulfate

3.0 RESULTS

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

Table 2. Sample information.

Sample ID	SCE
Rainier Log-In No.	25-102
Collection date and time	5/22/2025; 0700h
Receipt date and time	5/22/2025; 1315h
Receipt temperature (°C)	3.3
Dissolved oxygen (mg/L)	7.1
pH	7.32
Conductivity (µS/cm)	632
Hardness (mg/L CaCO ₃)	96
Alkalinity (mg/L CaCO ₃)	104
Total Chlorine (mg/L)	<0.03
Total Ammonia (mg/L)	18.4

Survival was evaluated in the acute toxicity test after 48 hours of exposure. Results are summarized in Table 3. Mean survival in the 100 percent effluent concentration for sample SCE was 100 percent. There was no significant difference between the controls and the acute critical effluent concentration (ACEC) of 0.64 percent effluent.

Table 3. Summary of results

Species	Concentration (%)	Survival (%)	NOEC ^a (% effluent)	LOEC ^b (% effluent)
Sample ID: SCE				
<i>Ceriodaphnia dubia</i>	0.0	100	100	>100
	0.64	100		
	3.0	100		
	10	100		
	30	100		
	100	100		

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

Individual statistical summaries for all tests and copies of the laboratory bench sheets, sample check-in sheets and chain of custody forms are provided in Appendices A through C.

4.0 QA/QC

All samples were received in good condition and within the temperature range specified by WDOE (2016). The toxicity tests met all acceptability criteria for performance of control organisms. All water quality parameters remained within the ranges specified in the corresponding test methods throughout the tests.

Results for the reference toxicant test used to monitor laboratory performance and test organism sensitivity are summarized in Table 4. Results for the reference toxicant test fell within the acceptable range of mean \pm two standard deviations of historical test results, indicating that the test organisms were of an appropriate degree of sensitivity. The coefficient of variation (CV) for the test is also shown in the table.

Table 4. Reference toxicant test results.

Species	Date initiated	Endpoint	LC ₅₀ (µg/L copper)	Acceptable Range (µg/L copper)	CV (%)
<i>Ceriodaphnia dubia</i>	5/21/2025	96h survival	18.3	8.05 – 34.0	43.4

REFERENCES

- Tidepool Scientific Software. 2000-2011. CETIS Comprehensive Environmental Toxicity Information System Software, Version 1.8.4.6.
- USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, pg. 53-54.
- 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
***Ceriodaphnia dubia* Acute Toxicity Test**
Statistical Summaries and Raw Bench Sheets

CETIS Summary Report

Report Date: 11 Jun-25 12:17 (p 1 of 1)
Test Code: 2506-024 | 11-2841-1144

Ceriodaphnia 48-h Acute Survival Test

Rainier Environmental Laboratory

Batch ID:	14-5860-3117	Test Type:	Survival (48h)	Analyst:	Eric Tollefson
Start Date:	22 May-25 14:15	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	24 May-25 14:00	Species:	Ceriodaphnia dubia	Brine:	
Duration:	48h	Source:	In-House Culture	Age:	<24h
Sample ID:	00-1482-9678	Code:	25-102	Client:	Everett
Sample Date:	22 May-25 07:00	Material:	POTW Effluent	Project:	
Receive Date:	22 May-25 13:15	Source:	Everett (WA0024490)		
Sample Age:	7h (3.3 °C)	Station:	SCE Outfall 100		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
18-6137-7986	48h Survival Rate	100	>100	NA	5.0%	1	Steel Many-One Rank Sum Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
18-6137-7986	48h Survival Rate	Control Resp	1	0.9 - NL	Yes	Passes Acceptability Criteria

48h Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	4	1	1	1	1	1	0	0	0.0%	0.0%
0.64		4	1	1	1	1	1	0	0	0.0%	0.0%
3		4	1	1	1	1	1	0	0	0.0%	0.0%
10		4	1	1	1	1	1	0	0	0.0%	0.0%
30		4	1	1	1	1	1	0	0	0.0%	0.0%
100		4	1	1	1	1	1	0	0	0.0%	0.0%

48h Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	1	1	1	1
0.64		1	1	1	1
3		1	1	1	1
10		1	1	1	1
30		1	1	1	1
100		1	1	1	1

48h Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	5/5	5/5	5/5	5/5
0.64		5/5	5/5	5/5	5/5
3		5/5	5/5	5/5	5/5
10		5/5	5/5	5/5	5/5
30		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5

Freshwater Acute 48 Hour Toxicity Test Data Sheet

Client: CITY OF EVERETT
 Sample ID: SCF
 Test #: 2506-024
 Log-In #: 25-b3

Start Date & Time: 5/22/2025 1415
 End Date & Time: 5/24/2025 1400
 Test Organism: Ceriodaphnia dubia

Rep. #	Conc. or %	Cont. #	Number of Live Organisms			Dissolved Oxygen (mg/L)			pH (units)			Cond (u/m-cm)			Temperature (°C)			Mean Percent Survival
			0	24	48	0	24	48	0	24	48	0	24	48	0	24	48	
1	CON	9	5	5	5	7.8	7.5	7.7	8.17	8.14	8.01	319	320	318	20.7	20.1	19.9	
2		19	5	5	5													
3		1	5	5	5													
4		22	5	5	5													
1	0.64	14	5	5	5	7.9	7.5	7.9	8.16	8.11	7.98	320	321	318	20.7	20.1	19.9	
2		2	5	5	5													
3		18	5	5	5													
4		15	5	5	5													
1	3	23	5	5	5	8.0	7.8	7.5	8.12	8.09	7.96	320	321	317	20.5	20.0	19.9	
2		8	5	5	5													
3		24	5	5	5													
4		10	5	5	5													
1	10	3	5	5	5	7.9	7.7	7.8	7.98	8.01	7.95	337	335	335	20.5	20.0	19.9	
2		16	5	5	5													
3		20	5	5	5													
4		20	5	5	5													
1	30	13	5	5	5	7.9	7.4	8.0	7.75	7.84	7.91	387	385	379	20.9	20.1	19.9	
2		6	5	5	5													
3		17	5	5	5													
4		11	5	5	5													
1	100	4	5	5	5	7.5	7.3	7.2	7.41	7.63	7.82	556	554	548	21.1	20.1	19.9	
2		21	5	5	5													
3		13	5	5	5													
4		5	5	5	5													
Technician Initials			4	4	4	4	4	4										

Dilution Water Batch #: MHSW059
 Test Chamber: RCOM2
 Animal Source: In House Culture
 Date Received:
 Sample Description:
 QA Check: 4

Comments: 0 hrs:
 24 hrs.
 48 hrs.

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

Appendix B
Sample Check-In Sheets

Client: CITY OF EVERETT

Tests Performed: cl-a
Test ID No(s): 2506-024

Sample ID:	<u>SCC</u>		
Log-in No. (20-xxxx):	<u>25-102</u>		
Sample Collection Date & Time:	<u>5/22/15</u>	<u>0700</u>	
Sample Receipt Date & Time:	<u>5/22/15</u>	<u>1315</u>	
Check-in Temperature (°C)	<u>3.3</u>		
Temperature OK?	<u>Y</u>	<u>N</u>	
DO (mg/L)	<u>7.1</u>		
pH (units)	<u>7.32</u>		
Conductivity (µS/cm)	<u>632</u>		
Salinity (ppt)	<u>6.3</u>		
Tit. Vol / Sam. Vol. / Alkalinity (mg/L)*	<u>2.6</u>	<u>1</u>	<u>25</u>
Tit. Vol. / Sam. Vol. / Hardness (mg/L)*	<u>2.4</u>	<u>1</u>	<u>25</u>
Total Chlorine (mg/L)	<u><0.03</u>		
Total Ammonia Nitrogen (mg/L)	<u>18.4</u>		
Technician Initials	<u>yu</u>		

* = mg/L as CaCO₃; ² = Measured for freshwater samples only, NA = Not Applicable,
NM = Not Measured

Freshwater Tests:

Control/Dilution Water Source: test type: cd-a 8:2 (DMW) MHW Other: -059 Alkalinity: 68 Hardness: 96
Control/Dilution Water Source: test type: 8:2 (DMW) MHW Other: Alkalinity: Hardness:
Additional Control? Y N = Alkalinity: Hardness:

Marine Tests:

Control/Dilution Water Source: test type: ART SW NAT SW Alkalinity: Salinity:
Control/Dilution Water Source: test type: ART SW NAT SW Alkalinity: Salinity:
Additional Control? Y N = Alkalinity: Salinity:
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.

Sample Description:

COC Complete? Y or N
1 1 2 3

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: 8

Appendix C
Chain-of-Custody Form

Sample Collection By: _____

Date _____ Page _____ of _____

Report to: Company <u>City of Everett</u> Address <u>3200 Cedar St</u> City/State/Zip <u>Everett WA 98201</u> Contact <u>Devek Kerke</u> Phone <u>425-257-6790</u> Email <u>Dkerke@everettwa.gov</u>				Invoice To: Company <u>Same</u> Address _____ City/State/Zip _____ Contact _____ Phone _____ Email _____			
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SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	ANALYSES REQUIRED										Receipt Temperature (°C)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
Client:		Total No. of Containers	1	(Signature)	<i>[Signature]</i>	(Signature)	
PO No.:		Received Good Condition?	Y	(Printed Name)	Scott Ford	(Printed Name)	
Shipped Via:	Just	Matches Test Schedule?	Y	(Company)	COE	(Company)	

RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
(Signature)		(Signature)	
(Printed Name)		(Printed Name)	
(Date)		(Date)	
(Company)		(Log in #)	

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