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Tennessee Valley Authority, Sequoyah Nuclear Plant, P.O. Box 2000, Soddy Daisy, TN 37384

June 15, 2022

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Subject: **Sequoyah Nuclear Plant, Discharge Monitoring Report (DMR), May 2022**

Attached is the May 2022 DMR for Sequoyah Nuclear Plant.

Respectfully,

A handwritten signature in black ink, appearing to read "T.R. Markum", is positioned above the printed name.

Travis R. Markum  
Environmental Scientist

DMR Copy of Record

Permit

Permit #:

TN0026450

Major:

Yes

Permittee:

Tennessee Valley Authority (TVA)

Permittee Address:

Sequoyah Access Road, PO Box 2000  
Soddy Daisy, TN 37379

Facility:

TVA SEQUOYAH NUCLEAR PLANT (SQN)

Facility Location:

SEQUOYAH ACCESS ROAD  
SODDY DAISY, TN 37379

Permitted Feature:

101  
External Outfall

Discharge:

101-G  
(no description)

Report Dates & Status

Monitoring Period:

From 05/01/22 to 05/31/22

DMR Due Date:

06/15/22

Status:

NetDMR Validated

Considerations for Form Completion

Primary discharge from Diffuser Pond.

Principal Executive Officer

First Name:

Thomas

Last Name:

Marshall

Title:

Vice President

Telephone:

423-843-7001

No Data Indicator (NODI)

Form NODI:

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Code	Parameter	Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00010	Temperature, water deg. centigrade	1 - Effluent Gross	0	--	Sample										=	39.9	04 - deg C		99/99 - Continuous	RC - Recorder (auto)
					Permit Req.											Req Mon DAILY MX	04 - deg C		99/99 - Continuous	RC - Recorder (auto)
					Value NODI															
00010	Temperature, water deg. centigrade	Z - Instream Monitoring	0	--	Sample										=	25.6	04 - deg C		99/99 - Continuous	CA - CALCTD
					Permit Req.										<=	30.5 DAILY MX	04 - deg C		99/99 - Continuous	CA - CALCTD
					Value NODI															
00016	Temp. diff. between samp. & upstrm deg. C	1 - Effluent Gross	1	--	Sample										=	1.7	04 - deg C		99/99 - Continuous	CA - CALCTD
					Permit Req.										<=	3.0 DAILY MX	04 - deg C		99/99 - Continuous	CA - CALCTD
					Value NODI															
50050	Flow, in conduit or thru treatment plant	1 - Effluent Gross	0	--	Sample	=	1726.3	=	1759.3	03 - MGD									99/99 - Continuous	RC - Recorder (auto)
					Permit Req.		Req Mon MO AVG		Req Mon DAILY MX	03 - MGD									99/99 - Continuous	RC - Recorder (auto)
					Value NODI															
50060	Chlorine, total residual	1 - Effluent Gross	0	--	Sample						<=	0.027 MO AVG			<=	0.047 DAILY MX	19 - mg/L		01/07 - Weekly	GR - GRAB
					Permit Req.															
					Value NODI							B - Below Detection Limit/No Detection				B - Below Detection Limit/No Detection				
82234	Temperature rate of change deg. C/hr	Z - Instream Monitoring	0	--	Sample			=	0.1	62 - deg C/hr									99/99 - Continuous	CA - CALCTD
					Permit Req.			<=	2.0 DAILY MX	62 - deg C/hr									99/99 - Continuous	CA - CALCTD
					Value NODI															
TRP3B	IC25 Static Renewal 7 Day Chronic Chrceriodaphnia	1 - Effluent Gross	0	--	Sample						>	100.0					23 - %		01/30 - Monthly	CP - COMPOS
					Permit Req.						>	69.0 MINIMUM					23 - %		01/30 - Monthly	CP - COMPOS
					Value NODI															
TRP6C	IC25 Static Renewal 7 Day Chronic Chrpimephales	1 - Effluent Gross	0	--	Sample						>	100.0					23 - %		01/30 - Monthly	CP - COMPOS
					Permit Req.						>	69.0 MINIMUM					23 - %		01/30 - Monthly	CP - COMPOS
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Method Detection Limit for Total Residual Chlorine is 0.05 mg/L.

Attachments

Name	Type	Size
SQN_May_2022_Biomonitoring_Report.pdf	pdf	4887351.0

Report Last Saved By

Tennessee Valley Authority (TVA)

User:	TRMARKUM
Name:	Travis Markum
E-Mail:	trmarkum@tva.gov
Date/Time:	2022-06-13 09:51 (Time Zone: -05:00)

Report Last Signed By

User:	TMCMUTUA
Name:	Tony McMutuary
E-Mail:	tmcmutuary@tva.gov
Date/Time:	2022-06-13 16:01 (Time Zone: -05:00)

DMR Copy of Record

Permit

Permit #:

TN0026450

Major:

Yes

Permittee:

Tennessee Valley Authority (TVA)

Permittee Address:

Sequoyah Access Road, PO Box 2000  
Soddy Daisy, TN 37379

Facility:

TVA SEQUOYAH NUCLEAR PLANT (SQN)

Facility Location:

SEQUOYAH ACCESS ROAD  
SODDY DAISY, TN 37379

Permitted Feature:

103  
Internal Outfall

Discharge:

103-G  
(no description)

Report Dates & Status

Monitoring Period:

From 05/01/22 to 05/31/22

DMR Due Date:

06/15/22

Status:

NetDMR Validated

Considerations for Form Completion

Internal Monitoring Point for various flows from Low Volume Waste Treatment Pond to Diffuser Pond, which eventually discharges through Outfall 101.

Principal Executive Officer

First Name:

Thomas

Last Name:

Marshall

Title:

Vice President

Telephone:

423-843-7001

No Data Indicator (NODI)

Form NODI:

--

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Tennessee Valley Authority (TVA)

User:

TRMARKUM

Name:

Travis Markum

E-Mail:

trmarkum@tva.gov

Date/Time:

2022-06-13 08:28 (Time Zone: -05:00)

Report Last Signed By

User:

TMCMUTUA

Name:

Tony McMutuary

E-Mail:

tmcmutuary@tva.gov

Date/Time:

2022-06-13 16:01 (Time Zone: -05:00)

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TN0026450

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Yes

Permittee:

Tennessee Valley Authority (TVA)

Permittee Address:

Sequoyah Access Road, PO Box 2000  
Soddy Daisy, TN 37379

Facility:

TVA SEQUOYAH NUCLEAR PLANT (SQN)

Facility Location:

SEQUOYAH ACCESS ROAD  
SODDY DAISY, TN 37379

Permitted Feature:

107  
Internal Outfall

Discharge:

107-G  
(no description)

Report Dates & Status

Monitoring Period:

From 05/01/22 to 05/31/22

DMR Due Date:

06/15/22

Status:

NetDMR Validated

Considerations for Form Completion

Metal Cleaning Waste Pond discharge. No monitoring required for stormwater decanting. Daily monitoring required only during dewatering events.

Principal Executive Officer

First Name:

Thomas

Last Name:

Marshall

Title:

Vice President

Telephone:

423-843-7001

No Data Indicator (NODI)

Form NODI:

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Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Tennessee Valley Authority (TVA)

User:

TRMARKUM

Name:

Travis Markum

E-Mail:

trmarkum@tva.gov

Date/Time:

2022-06-13 08:23 (Time Zone: -05:00)

Report Last Signed By

User:

TMCMUTUA

Name:

Tony McMutuary

E-Mail:

tmcmutuary@tva.gov

Date/Time:

2022-06-13 16:01 (Time Zone: -05:00)

DMR Copy of Record

Permit

Permit #:

TN0026450

Major:

Yes

Permittee:

Tennessee Valley Authority (TVA)

Permittee Address:

Sequoyah Access Road, PO Box 2000  
Soddy Daisy, TN 37379

Facility:

TVA SEQUOYAH NUCLEAR PLANT (SQN)

Facility Location:

SEQUOYAH ACCESS ROAD  
SODDY DAISY, TN 37379

Permitted Feature:

110  
External Outfall

Discharge:

110-G  
(no description)

Report Dates & Status

Monitoring Period:

From 05/01/22 to 05/31/22

DMR Due Date:

06/15/22

Status:

NetDMR Validated

Considerations for Form Completion

Outfall 110 is closed. Only active in the event the plant goes into closed mode.

Principal Executive Officer

First Name:

Thomas

Last Name:

Marshall

Title:

Vice President

Telephone:

423-843-7001

No Data Indicator (NODI)

Form NODI:

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Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Tennessee Valley Authority (TVA)

User:

TRMARKUM

Name:

Travis Markum

E-Mail:

trmarkum@tva.gov

Date/Time:

2022-06-13 08:25 (Time Zone: -05:00)

Report Last Signed By	
User:	TMCMUTUA
Name:	Tony McMutory
E-Mail:	tmcmutory@tva.gov
Date/Time:	2022-06-13 16:01 (Time Zone: -05:00)

DMR Copy of Record

Permit

Permit #:

TN0026450

Major:

Yes

Permittee:

Tennessee Valley Authority (TVA)

Permittee Address:

Sequoyah Access Road, PO Box 2000  
Soddy Daisy, TN 37379

Facility:

TVA SEQUOYAH NUCLEAR PLANT (SQN)

Facility Location:

SEQUOYAH ACCESS ROAD  
SODDY DAISY, TN 37379

Permitted Feature:

118  
External Outfall

Discharge:

118-G  
(no description)

Report Dates & Status

Monitoring Period:

From 05/01/22 to 05/31/22

DMR Due Date:

06/15/22

Status:

NetDMR Validated

Considerations for Form Completion

Principal Executive Officer

First Name:

Thomas

Last Name:

Marshall

Title:

Vice President

Telephone:

423-843-7001

No Data Indicator (NODI)

Form NODI:

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Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Tennessee Valley Authority (TVA)

User:

TRMARKUM

Name:

Travis Markum

E-Mail:

trmarkum@tva.gov

Date/Time:

2022-06-13 08:27 (Time Zone: -05:00)

Report Last Signed By

User:

TMCMUTUA

Name:

Tony McMutuary

E-Mail:

tmcmutuary@tva.gov

Date/Time:

2022-06-13 16:01 (Time Zone: -05:00)



**TENNESSEE VALLEY AUTHORITY  
TOXICITY TEST REPORT**

**INTRODUCTION / EXECUTIVE SUMMARY**

Report Date: May 26, 2022

1. Facility / Discharger: Sequoyah Nuclear Plant / TVA
2. County / State: Hamilton / Tennessee
3. NPDES Permit #: TN0026450
4. Type of Facility: Nuclear-Fueled Electric Generating Plant
5. Design Flow (MGD): 1,579
6. Receiving Stream: Tennessee River (TRM 483.6)
7. 1Q10: 2,456
8. Outfall Tested: 101
9. Dates Sampled: May 01 – 06, 2022
10. Average Flow on Days Sampled (MGD): 1751.774, 1751.317, 1747.124
11. Pertinent Site Conditions: Production / operation data will be provided upon request.
12. Test Dates: May 03 – 10, 2022
13. Test Type: Short-term Chronic Definitive
14. Test Species: Fathead Minnows (*Pimephales promelas*)  
Daphnids (*Ceriodaphnia dubia*)
15. Concentrations Tested (%):  
*Pimephales promelas*: UV treated Outfall 101: 17.25, 34.5, 69, 84.5, 100  
UV treated Intake: 100  
  
*Ceriodaphnia dubia*: Non-treated Outfall 101: 17.25, 34.5, 69, 84.5, 100  
Non-treated Intake: 100
16. Permit Limit Endpoint (%): Outfall 101: IC<sub>25</sub> = 69%
17. Test Results: Outfall 101: *Pimephales promelas*: IC<sub>25</sub> > 100%  
*Ceriodaphnia dubia*: IC<sub>25</sub> > 100%



18. Facility Contact: Travis Markum Phone #: (865) 748-3294
19. Consulting / Testing Lab: Environmental Testing Solutions, Inc.
20. Lab Contact: Jim Sumner Phone #: (828) 350-9364
21. TVA Contact: Rick Sherrard Phone #: (423) 876-6743
22. Notes: Exposures to samples collected May 01 – 06, 2022 from Outfall 101 resulted in no toxic effects to fathead minnows or daphnids. The resulting IC<sub>25</sub> values, for both species, were >100 percent. Exposure of minnows and daphnids to intake samples resulted in no significant differences from the controls during this study period.



## METHODS SUMMARY

### Samples:

1. Sampling Point: Outfall 101, Intake
2. Sample Type: Composite
3. Sample Information:

Sample ID	Date (MM-DD-YY) Time (ET) Collected	Date (MM-DD-YY) Time (ET) Received	Arrival Temp. (°C)	Initial TRC* (mg/L)	Date (MM-DD-YY) Time (ET) Last Used By
101	05-01-22 / 0700 to 05-02-22 / 0600	05-02-22 / 1301	0.9	<0.10	05-03-22 / 0922 05-04-22 / 0823
Intake	05-01-22 / 0700 to 05-02-22 / 0600	05-02-22 / 1301	1.1	<0.10	05-03-22 / 0922 05-04-22 / 0823
101	05-03-22 / 0700 to 05-04-22 / 0600	05-04-22 / 1240	1.3	<0.10	05-05-22 / 0826 05-06-22 / 0823
Intake	05-03-22 / 0700 to 05-04-22 / 0600	05-04-22 / 1240	1.6	<0.10	05-05-22 / 0826 05-06-22 / 0823
101	05-05-22 / 0700 to 05-06-22 / 0600	05-06-22 / 1355	1.7, 1.6 <sup>†</sup>	<0.10	05-07-22 / 0912 05-08-22 / 0820 05-09-22 / 0820
Intake	05-05-22 / 0700 to 05-06-22 / 0600	05-06-22 / 1355	1.3	<0.10	05-07-22 / 0912 05-08-22 / 0820 05-09-22 / 0820

\*TRC = Total Residual Chlorine

<sup>†</sup>Samples were collected in two 2.5 gallon cubitainers. Temperature was measured in each cubitainer upon arrival.

4. Sample Manipulation: Samples from Outfall 101 and intake were warmed to test temperature (25.0 ± 1.0°C) in a warm water bath.

Aliquots of Outfall 101 and Intake samples were UV-treated through a 40-watt Smart® UV Sterilizer (manufactured by Emperor Aquatics, Inc.) for 2 minutes.

	<i>Pimephales promelas</i>	<i>Ceriodaphnia dubia</i>
<u>Test Organisms:</u>		
1. Source:	<u>In-house Cultures</u>	<u>In-house Cultures</u>
2. Age:	<u>&lt; 24-hours old</u>	<u>&lt; 24-hours old</u>
<u>Test Method Summary:</u>		
1. Test Conditions:	<u>Static, Renewal</u>	<u>Static, Renewal</u>
2. Test Duration:	<u>7 days</u>	<u>Until at least 60% of control females have 3 broods</u>
3. Control / Dilution Water:	<u>Moderately Hard Synthetic</u>	<u>Moderately Hard Synthetic</u>
4. Number of Replicates:	<u>4</u>	<u>10</u>
5. Organisms per Replicate:	<u>10</u>	<u>1</u>
6. Test Initiation: (Date/Time):	<u>05-03-22 0720 ET</u>	<u>05-03-22 0922 ET</u>
7. Test Termination: (Date/Time):	<u>05-10-22 0627 ET</u>	<u>05-10-22 0826 ET</u>
8. Test Temperature: Outfall 101:	<u>Mean = 24.8°C</u> <u>(24.4 – 25.1°C)</u>	<u>Mean = 24.9°C</u> <u>(24.7 – 25.2°C)</u>
9. Physical / Chemical Measurements:	<u>Alkalinity, hardness, total residual chlorine, and conductivity were measured at the laboratory in each 100% sample. Daily temperatures were measured in one replicate for each test concentration. Pre- and post-exposure test solutions were analyzed daily for pH and dissolved oxygen.</u>	
10. Statistics:	<u>Statistics were performed according to methods prescribed by EPA using ToxCalc version 5.0 statistical software (Tidepool Scientific Software, McKinneyville, CA).</u>	

# **TOXICITY TEST RESULTS** (see Appendix C for Bench Sheets)

1. Results of a *Pimephales promelas* Chronic/ 7-day Toxicity Test.  
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2022 using effluent from Outfall 101.

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control, UV-treated	100	100	100	100	100	100	100
17.25%	100	100	100	100	100	100	100
34.5%	100	100	100	100	100	100	100
69%	100	100	100	100	100	100	100
84.5%	100	100	100	100	100	100	100
100.0%	100	100	100	100	100	100	100
Intake	100	100	100	100	100	100	100
Control, Non-treated	100	100	100	100	100	100	100

Test Solutions (% Effluent)	Mean Dry Weight (mg) (replicate number)				
	1	2	3	4	Mean
Control, UV-treated	0.858	0.868	0.931	0.794	0.863
17.25%	0.736	0.846	0.893	0.819	0.824
34.5%	0.753	0.782	0.732	0.970	0.809
69%	0.791	0.842	0.707	0.738	0.770
84.5%	0.827	0.860	0.751	0.817	0.814
100.0%	0.753	0.769	0.721	0.894	0.784
Intake	0.801	0.843	0.855	0.928	0.857
Control, Non-treated	0.841	0.917	0.788	0.886	0.858
IC <sub>25</sub> Value: <u>&gt; 100%</u> Permit Limit: <u>69%</u>  95% Confidence Limits: Upper Limit: <u>NA</u> Lower Limit: <u>NA</u>			Calculated TU Estimates: <u>&lt; 1.0 TUc*</u>  Permit Limit: <u>1.4 TUc</u>		

\*TUa = 100/LC<sub>50</sub>: TUc = 100/ IC<sub>25</sub>



TOXICITY TEST RESULTS (see Appendix C for Bench Sheets)

2. Results of a *Ceriodaphnia dubia* Chronic/ 7-day Toxicity Test.  
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2022 using effluent from Outfall 101.

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
17.25%	100	100	100	100	100	100	100
34.5%	100	100	100	100	100	100	100
69%	100	100	100	100	100	100	100
84.5%	100	100	100	100	100	100	100
100.0%	100	100	100	100	100	100	100

Test Solutions (% Effluent)	Reproduction (#young/female/7 days) Data (replicate number)										
	1	2	3	4	5	6	7	8	9	10	Mean
Control	28	32	30	31	28	31	29	34	31	31	30.5
17.25%	32	36	32	37	28	31	34	33	36	30	32.9
34.5%	32	33	34	34	34	31	33	36	33	31	33.1
69%	36	34	35	34	34	34	35	31	35	34	34.2
84.5%	40	37	37	32	40	33	38	37	33	35	36.2
100.0%	36	40	38	38	38	36	35	37	38	38	37.4
IC <sub>25</sub> Value: <u>&gt; 100%</u> Permit Limit: <u>69%</u>  95% Confidence Limits: Upper Limit: <u>NA</u> Lower Limit: <u>NA</u>						Calculated TU Estimates: <u>&lt; 1.0 TUc*</u>  Permit Limit: <u>1.4 TUc</u>					

\*TUa = 100/LC<sub>50</sub>; TUc = 100/ IC<sub>25</sub>



## TOXICITY TEST RESULTS (see Appendix C for Bench Sheets)

2. Results of a *Ceriodaphnia dubia* Chronic/ 7-day Toxicity Test.  
(Genus species) (Type / Duration)

Conducted May 03 – 10, 2022 using water from Intake

Test Solutions (% Effluent)	Percent Surviving (time interval used – days)						
	1	2	3	4	5	6	7
Control	100	100	100	100	100	100	100
Intake	100	100	100	100	100	100	100

Test Solutions (% Effluent)	Reproduction (#young/female/7 days) Data (replicate number)										
	1	2	3	4	5	6	7	8	9	10	Mean
Control	30	32	29	29	32	28	30	33	31	30	30.4
Intake	37	38	38	35	36	36	36	33	35	36	36.0
IC <sub>25</sub> Value: <u>&gt; 100%</u> Permit Limit: <u>N/A</u>  95% Confidence Limits: Upper Limit: <u>NA</u> Lower Limit: <u>NA</u>						Calculated TU Estimates: <u>&lt; 1.0 TUc*</u>  Permit Limit: <u>N/A</u>					

\*TUa = 100/LC<sub>50</sub>; TUc = 100/ IC<sub>25</sub>

## REFERENCE TOXICANT TEST RESULTS (see Appendix A and D)

Species	Date	Time	Duration	Toxicant	Results (IC <sub>25</sub> )
<i>Pimephales promelas</i>	May 03 – 10, 2022	0710	7 days	KCl	0.63 g/L
<i>Ceriodaphnia dubia</i>	May 03 – 10, 2022	0911	7 days	NaCl	1.09 g/L



# PHYSICAL/CHEMICAL SUMMARY

Water Chemistry Mean Values and Ranges for UV-treated *Pimephales promelas* and Non-treated *Ceriodaphnia dubia*, Sequoyah Nuclear Plant (SQN), Effluent Outfall 101 and Intake performed May 03-10, 2022.

Test	Sample ID	Temperature (°C)		Dissolved Oxygen (mg/L)		pH (S.U.)		Conductance (umhos/cm)	Alkalinity (mg/L CaCO <sub>3</sub> )	Hardness (mg/L CaCO <sub>3</sub> )	*Total Residual Chlorine (mg/L)
		Initial	Final	Initial	Final	Initial	Final				
<i>Pimephales promelas</i>	Control, Non-treated	24.8 24.7 - 24.9	24.7 24.4 - 24.9	7.7 7.7 - 7.8	7.1 5.5 - 7.9	7.73 7.66 - 7.80	7.53 7.33 - 7.73	300 288 - 310	62 60 - 63	87 86 - 88	-
	Control, UV-treated	24.8 24.7 - 24.8	24.7 24.5 - 24.9	7.9 7.7 - 8.0	7.1 5.7 - 7.9	7.83 7.79 - 7.98	7.55 7.41 - 7.78	305 292 - 317	61 61 - 61	86 84 - 88	-
	17.25%	24.8 24.7 - 24.9	24.7 24.6 - 25.1	7.9 7.7 - 8.0	7.1 5.7 - 7.9	7.84 7.79 - 7.99	7.51 7.33 - 7.72	282 271 - 290	-	-	-
	34.5%	24.8 24.7 - 24.9	24.7 24.6 - 24.9	7.9 7.8 - 8.0	7.1 5.7 - 7.9	7.83 7.75 - 7.99	7.54 7.45 - 7.70	259 248 - 270	-	-	-
	69%	24.9 24.8 - 25.0	24.8 24.6 - 24.9	7.9 7.8 - 8.1	7.0 5.6 - 8.0	7.82 7.69 - 7.99	7.50 7.35 - 7.64	213 205 - 221	-	-	-
	84.5%	24.9 24.8 - 25.0	24.7 24.4 - 25.1	8.0 7.9 - 8.1	7.0 5.6 - 8.0	7.81 7.66 - 7.98	7.49 7.33 - 7.64	186 176 - 193	-	-	-
	100%	25.0 24.9 - 25.0	24.7 24.4 - 24.9	8.0 8.0 - 8.1	7.1 5.5 - 8.0	7.80 7.64 - 7.97	7.49 7.32 - 7.64	168 156 - 176	66 65 - 67	70 69 - 71	<0.10
	Intake	25.0 24.9 - 25.0	24.8 24.6 - 24.8	8.1 8.0 - 8.2	7.2 5.8 - 8.2	7.79 7.72 - 7.95	7.50 7.32 - 7.64	164 156 - 170	65 64 - 68	70 67 - 76	<0.10
	Control, Non-treated	24.8 24.8 - 24.9	25.1 24.9 - 25.2	7.7 7.7 - 7.8	7.8 7.6 - 7.9	7.73 7.66 - 7.80	7.80 7.74 - 7.89	300 288 - 310	62 60 - 63	87 86 - 88	-
	17.25%	24.8 24.8 - 24.9	24.9 24.8 - 25.1	7.9 7.7 - 8.0	7.8 7.6 - 8.0	7.82 7.73 - 8.01	7.79 7.74 - 7.83	286 274 - 297	-	-	-
<i>Ceriodaphnia dubia</i>	34.5%	24.9 24.8 - 25.0	25.0 24.8 - 25.2	7.9 7.7 - 8.1	7.8 7.6 - 8.2	7.82 7.74 - 8.01	7.78 7.73 - 7.82	261 251 - 266	-	-	-
	69%	24.9 24.8 - 25.0	24.9 24.7 - 25.0	7.9 7.7 - 8.0	7.8 7.5 - 8.0	7.80 7.72 - 8.00	7.77 7.72 - 7.80	214 206 - 224	-	-	-
	84.5%	25.0 24.9 - 25.0	24.9 24.7 - 25.0	7.9 7.8 - 8.0	7.8 7.5 - 8.1	7.80 7.68 - 7.99	7.76 7.71 - 7.80	190 179 - 199	-	-	-
	100%	25.0 24.9 - 25.0	25.0 24.7 - 25.2	8.0 7.9 - 8.1	7.8 7.5 - 8.2	7.79 7.65 - 7.98	7.76 7.71 - 7.80	170 160 - 179	66 65 - 67	69 67 - 71	<0.10
	Intake	25.0 25.0 - 25.1	24.9 24.8 - 25.1	8.1 7.9 - 8.2	7.8 7.7 - 8.2	7.80 7.73 - 7.96	7.76 7.71 - 7.81	167 159 - 173	66 64 - 69	68 67 - 69	<0.10
	Intake	25.0 25.0 - 25.1	24.9 24.8 - 25.1	8.1 7.9 - 8.2	7.8 7.7 - 8.2	7.80 7.73 - 7.96	7.76 7.71 - 7.81	167 159 - 173	66 64 - 69	68 67 - 69	<0.10

\*Note: Total residual chlorine was performed on non-treated Outfall 101 and Intake samples.

Overall temperature (°C)		Average	Minimum	Maximum
<i>Pimephales promelas</i>		24.8	24.4	25.1
<i>Ceriodaphnia dubia</i>		24.9	24.7	25.2



## **SUMMARY / CONCLUSIONS**

Exposures to samples collected May 01 – 06, 2022 from Outfall 101 resulted in no toxic effects to fathead minnows or daphnids. The resulting  $IC_{25}$  values, for both species, were >100 percent. Exposure of minnows and daphnids to intake samples resulted in no significant differences from the controls during this study period.

