

Our ref: 11192137-LTR-56

14 June 2024

**Ms. Lubna Hussain**  
**Director, West Central Region**  
**Ontario Ministry of the Environment**  
**119 King Street West, 12th floor**  
**Hamilton, ON**  
**L8P 4Y7**

### **LANXESS Canada Co./Cie (LANXESS) Progress Report May 2024**

Dear Ms. Hussain

This letter presents a summary of the May 2024 LANXESS Progress Report.

The following noteworthy items regarding the Combined Groundwater Collection and Treatment System (CTS) are discussed in the report text.

The average monthly pumping rates of PW4, PW5, W3R, W5A, W5B, and W9 were less than their Target Average pumping rates during May 2024. PW4 was slightly less than its Target Average pumping rate in May 2024 due to reduced flows and downtime related to a coupling failure on the UA effluent pump. PW5 continued operating at a reduced pumping rate in May 2024. Despite not meeting the Target Average pumping rate, hydraulic monitoring data indicate PW5 currently generates an effective groundwater capture zone. LANXESS is in the process of connecting the new replacement well PW6 to the existing treatment system infrastructure and is working towards bringing the well online. W3R began to experience erratic flows and several hundred hi-hi flow alarms on December 18, 2023 and was subsequently shut down. Intermittent well flow communication signal loss, due to compromised communication cables between former extraction well W4 and W3R, was identified as the cause. LANXESS installed new wireless equipment to replace the damaged communication cables and well W3R was restarted on May 24, 2024. The pumping rates of W5A and W5B were below their respective Target Average pumping rates in May 2024 due to downtime related to Rayox PLC issues and W4 system wireless communication losses. The wells were intermittently shutdown from May 22 until June 3, 2024. LANXESS has ordered replacement parts to correct the communication issues which should prevent further unexpected shutdowns on the Rayox system. W9 continued pumping at a reduced rate during May 2024. The well pump is running at maximum capacity, therefore, LANXESS believes that the decreased pumping rate is due to an issue with the pump/motor and/or decreased well efficiency. Due to delays with contractor availability, LANXESS has re-scheduled inspection of the pump/motor and possible video inspection of the well for June 2024, subject to contractor availability.

During May 2024, the CTS operated within the Effluent Limits and within the Effluent Objectives for all compounds.

Please refer to the detailed information in the Progress Report for further information on these items.

Regards



**Luis Almeida**

Project Manager

+1 519 340-3778

[luis.almeida@ghd.com](mailto:luis.almeida@ghd.com)

AB/kf/56

Encl.

Copy to: Jason Rice, MECP  
Helder Botelho, LANXESS  
Hadley Stamm, LANXESS  
LANXESS Public Distribution List

Esther Wearing, MECP  
Jamie Petznick, LANXESS  
Michelle Yantzi, LANXESS

**May 2024**  
**Progress Report**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

GHD has prepared this report on behalf of LANXESS Canada Co./Cie (LANXESS) and submitted it to the Ontario Ministry of the Environment, Conservation and Parks (MECP). This report complies with the administrative reporting requirements of the November 4, 1991 Control Order (Control Order), the Amended Environmental Compliance Approval (ECA) No. 0831-BX6JGD (Combined On-Site and Off-Site Groundwater Collection and Treatment Systems [CTS]), and Certificate of Approval (C of A) No. 4-0025-94-976 (E7/E9 Treatment Facility).

Unless otherwise stated, all data included in this report were collected in May 2024.

The Progress Report is organized as follows:

1. Monitoring and Analytical Data	Page 1
2. Correspondence, Meetings, and Events	Page 1
3. CTS Monitoring and Performance	Page 1
4. Remedial Action Plan	Page 4
5. E7 AOP	Page 4
6. Environmental Audit	Page 4
7. Remediation of Former Operating Pond Area	Page 4
8. Additional Work/Studies	Page 4

## **1. Monitoring and Analytical Data**

A summary of the LANXESS monitoring programs is provided in Table 1.

A summary of the analytical results for the CTS is presented in Attachment A.

A summary of the analytical results from the monthly May 2024 Environmental Appeal Board (EAB) monitoring of discharges to surface water through storm water outfalls 0200, 0400 and 0800, and the storm water drainage system (SWS), is included in Attachment B. Attachment B is not required under the Control Order but is provided for review.

A summary of the analytical results for surface water samples collected from Canagagigue Creek (the Creek), and groundwater and surface water elevation monitoring completed on May 2, 2024, as required by ECA No. 0831-BX6JGD Section 9, is presented in Attachment C. Further details related to this requirement are described in Section 8 of this report.

## **2. Correspondence, Meetings, and Events**

May 15, 2024	April 2024 Progress Report submitted to MECP West Central Region (WCR)
May 30, 2024	2023 Annual Environmental Report (AER) submitted to MECP WCR
May 31, 2024	LANXESS submitted "Response to MECP Comments" to MECP WCR in response to MECP's comments on Stantec's revised draft human health and ecological risk assessment (HHERA) for the Canagagigue Creek in Elmira, Ontario

## **3. CTS Monitoring and Performance**

A schematic process flow diagram of the CTS is provided on Figure A.1 (Attachment A).

The May 2024 average pumping rates for the CTS containment wells PW4 and PW5, the CTS extraction wells W3R, W5A, W5B, W6A, W6B, W8 and W9, the Upper Aquifer Containment System (UA CS) wells,

and E7, as compared to the target average pumping rates, are listed below, and shown graphically on Figures A.2 and A.3 (Attachment A).

<b>Average Daily Pumping Rates</b>		
<b>May 2024 (Litres/second [L/s])</b>		
<b>Containment and Extraction Wells</b>	<b>Target Average <sup>(1)</sup></b>	<b>Average</b>
<b>On Site Wells</b>		
PW4	2.9	2.8
PW5	1.8	0.6
Upper Aquifer Wells	--	0.8
<b>Off Site Wells</b>		
W3R	18.5	3.8
W5A	4.5	2.8
W5B	2.8 <sup>(2)</sup>	2.0
W6A	0.20	0.31
W6B	0.30	0.31
W8	0.05	0.08
W9	13.6	11.7
E7	23.9	24.4
Yara	--	0.3
Notes:		
(1) As wells and treatment system components require periodic downtime for maintenance, the Target Average pumping rate is set at 90% of the set point rate. GHD recommends that LANXESS maintain the target pumping rates greater than or equal to these rates.		
(2) The Target Average Pumping Rate for W5B has been temporarily reduced because a plume-wide decrease in groundwater elevations has limited the available drawdown and the corresponding well yield.		

With the exceptions discussed below, the containment and extraction wells, including the UA CS wells, are operating as intended.

PW4 was slightly less than its Target Average pumping rate in May 2024 due to reduced flows and downtime related to a coupling failure on the UA effluent pump.

PW5 continued operating at a reduced pumping rate in May 2024. The well is currently unable to maintain its Target Average pumping rate. The PW5 Target Average pumping rate is an internal operational guideline LANXESS uses when operating extraction/containment wells, which includes a significant safety factor. Despite not meeting the Target Average pumping rate, hydraulic monitoring data indicate PW5 currently generates an effective groundwater capture zone. LANXESS is in the process of connecting new replacement well PW6 to the existing treatment system infrastructure and is working towards bringing the well online. Excavation work and the installation of buried lines is expected to commence in June 2024.

W3R was shut down on December 18, 2023 due to well flow communication signal loss. The communication cables between former extraction well W4 and W3R are compromised at multiple locations north and south of air relief chamber #1 on Industrial Drive. The cables themselves were either pulled with the forcemain or laid down in trench excavations at the time of construction and are not encased in conduits. As a result, LANXESS cannot pull new lines with the infrastructure that is currently in place. LANXESS installed new wireless equipment to replace the damaged communication cables in May 2024. W3R was restarted on May 24, 2024.

The pumping rates of W5A and W5B were below their respective Target Average pumping rates in May 2024 due to downtime related to Rayox PLC issues and W4 system wireless communication losses. The wells were intermittently shutdown from May 22 until June 3, 2024. LANXESS has ordered replacement parts to correct the communication issues which should prevent further unexpected shutdowns on the Rayox system.

W9 continued pumping at a reduced rate during May 2024. The well pump is running at maximum capacity, therefore, LANXESS believes that the decreased pumping rate is due to an issue with the pump/motor and/or decreased well efficiency. Due to delays with contractor availability, LANXESS has re-scheduled inspection of the pump/motor and possible video inspection of the well for June 2024, subject to contractor availability.

**a) Bypass or Upset Conditions**

The bypass or upset conditions encountered in the CTS are summarized in Table A.1 (Attachment A).

**b) Data Summary and Interpretation**

Table A.2 (Attachment A) presents the analytical results for the CTS samples collected in May 2024 and summarizes the effluent pH and temperature. The discharge pH was between 7.08 and 7.24 Standard Units (su), which is within the ECA discharge limit pH range of 5.5 to 9.5 su. The effluent temperature was between 14.9 and 17.2 degrees Celsius (°C), which is less than the discharge limit of 25°C.

The ATS removed ammonia to concentrations that were less than those required by the ECA.

The Combined Discharge Effluent<sup>1</sup> met the Effluent Limits and Effluent Objectives for all indicator parameters in May 2024.

Table A.3 (Attachment A) summarizes the effluent discharge flow rates. The total flow rate of treated groundwater discharged to the Creek via SS+890 was 25.29 L/s. The total flow rate of additional treated groundwater discharged to the Creek via Shirt Factory Creek (at storm water outfall 0800) was 0.05 L/s. The total flow rate of the combined treated groundwater discharged to the Creek (SS+890 discharge plus Shirt Factory Creek discharge) was 25.33 L/s, which was less than the discharge Effluent Limit of 92.2 L/s.

**c) Supplementary Data**

As part of the ongoing monitoring of on-Site carbon treatment performance, on May 7, 2024, LANXESS collected samples from the carbon tower influent (GCI) and carbon tower effluent (GCE) for volatile organic compound (VOC) and base/neutral and acid extractable compound (BNA) analyses. Table A.4 (Attachment A) presents the GCI and GCE analytical results.

On May 7, 2024, LANXESS collected samples from the influent to and treated effluent from the portable carbon adsorbers installed to pre-treat groundwater from UA CS wells U+500 and U+560. ECA No. 0831-BX6JGD does not require the collection of groundwater samples from UA CS wells; however, LANXESS has been collecting these samples on a voluntary basis to monitor and improve the performance of the on-Site granular activated carbon (GAC) Tower. LANXESS analyzed the samples for VOCs and BNAs. Table A.4 (Attachment A) presents the analytical results for the influent and pre-treated effluent samples from the U+500 and U+560 containment wells.

**d) Routine Maintenance**

Routine maintenance tasks completed on the CTS in May 2024 are summarized in Table A.5 (Attachment A). These activities are completed by LANXESS personnel as part of on-going preventative maintenance and system inspections. These maintenance activities do not typically cause a system bypass or shutdown and are not required by the Control Order or ECA. This information is being provided to demonstrate LANXESS' commitment to proactively maintain the CTS and ensure continued operations.

---

<sup>1</sup> The Combined Discharge Effluent value was calculated by multiplying the average flow rates by the concentration of the analytes at the SS+890 GE outfall and the additional effluent discharge location via Shirt Factory Creek.

**e) Toxicity**

LANXESS collected a groundwater sample from the GE SS+890 discharge outfall and a sample from the SFE discharge outfall on April 30, 2024 and submitted the samples for chronic toxicity analyses. The laboratory results indicate that the groundwater samples were not chronically toxic to Fathead Minnow. The laboratory results indicate that the SFE groundwater samples were not chronically toxic to water fleas (*Ceriodaphnia dubia*), however the laboratory results for the GE groundwater samples were inconclusive for water fleas. LANXESS has scheduled re-sampling of the GE groundwater effluent for *Ceriodaphnia dubia* chronic toxicity testing in July 2024. All toxicity results have been included in Attachment A.

**f) Receiver Water Quality Data**

As per Amended ECA No-0831-BX6JGD, the receiver water quality monitoring program has been reduced from monthly to once every three (3) months. LANXESS will complete the next quarterly routine monitoring event in July 2024.

**Summary of Efforts Made and Results Achieved**

During May 2024, the CTS operated within the Effluent Limits and within the Effluent Objectives for all compounds.

**4. Remedial Action Plan**

There are no new activities to report for this item in May 2024.

**5. E7 AOP**

The average E7 pumping rate (24.4 L/s) was greater than its recommended Target Average pumping rate (23.9 L/s) during May 2024. Monthly samples from the E7 influent and effluent streams were collected in May 2024, however, due to delays with the data analysis, the results of the May 2024 sampling will be provided in the June Progress Report.

**6. Environmental Audit**

GHD submitted the 2023 Annual Environmental Report to the MECP on May 30, 2024.

**7. Remediation of Former Operating Pond Area**

There are no new activities to report for this item in May 2024.

**8. Additional Work/Studies**

ECA No. 0831-BX6JGD, Section 9 (Upper Aquifer Hydraulic Containment Requirements), states that LANXESS is to operate the UA CS with the requirement that the water level of the surface of the UA<sub>1</sub> in the southwest portion of the property along the west side of the Creek, is maintained at least one (1) centimetre (cm) below the surface water elevation of the Creek, except for periods of time less than one day. Exceptions to this requirement include periods of up to five days for routine maintenance and/or equipment repair, and periods greater than five days because of Creek water level fluctuations beyond the control of the Owner.

Figure C.1 (Attachment C) shows the continuous surface water and groundwater elevations measured at UOW+510 and USW+500 in 2024. The spring freshet and spring rains caused high surface water flows in the Creek and high Creek levels and the continuous monitoring data indicate a local loss of hydraulic containment in these areas. High surface water levels cause Creek bank storage effects. Bank storage effects refer to the inflow of surface water (from the Creek) into surrounding aquifer materials during periods of high levels, which results in a local increase in groundwater elevations. When the surface water elevation undergoes a rapid decrease, the response of the groundwater level in the Creek bank is to

decrease, but at a much slower rate than the surface water, resulting in a temporary loss of containment. This is a common occurrence near UOW+510/USW+500 during the spring freshet and other high flow events in the Creek.

The continuous monitoring data indicate that groundwater and surface water elevations increased in the afternoon on May 2, 2024 due to an increase in the flowrate from the GRCA dam, elevations gradually decreased until May 8, 2024, where there was a slight increase in flowrate, then gradually decreased again until there was another slight increase in flowrate on May 23, 2024. On May 27 and 28, 2024 there was significant rain fall with a corresponding increase in surface water flows/elevation, then the flowrate gradually decreased over the remainder of the month. Containment was not restored at UOW+510/USW+500 in May 2024.

When the required differential is not maintained due to Creek water level fluctuations, to demonstrate there are no practical alternatives to prevent the loss of containment, and document no adverse impact to surface water, LANXESS completes the following:

1. Collect manual water elevation measurements to confirm water elevation measurements from select stilling wells, creek bank monitoring wells, and surface water stake locations.
2. Confirm transducers are calibrated and functioning correctly at select continuous monitoring stations.
3. If routine surface water quality data are not available for the periods of time that the 1 cm differential is not maintained, collect monthly surface water monitoring samples along the west bank of the Creek at transect monitoring locations SS-110, SS+855, and the closest existing surface water sampling station to the area where the loss of containment occurred. Have these samples analyzed for the Primary Surface Water Quality Monitoring parameters in Schedule E.

LANXESS completed required groundwater and surface water elevation monitoring on May 2, 2024 and verified the functionality of the transducers. The elevation monitoring locations are presented on Figure C.2 (Attachment C). The difference between the manual surface water elevations and the manual groundwater elevations at the key monitoring pairs completed on May 2, 2024 have been plotted on Figure C.3 (Attachment C).

On May 2, 2024, LANXESS also collected surface water samples from SS-110 West, SS+770 West, and SS+855 West and analyzed the samples for the Schedule E list of parameters. The sampling locations are presented on Figure C.2 (Attachment C). Table C.1 (Attachment C) presents the analytical results for the surface water samples collected in May 2024. All the parameters analyzed as part of the May 2024 sampling event were either not detected at their respective reporting detection limits (RDLs) or were present at concentrations that were less than their respective Provincial Water Quality Objectives (PWQOs), Interim PWQOs (IPWQOs), and/or ECA Schedule E criterion.

Based on the surface water data collected, during the period when the differential was not maintained in May 2024, there are no adverse impacts to the surface water.

**Table 1**  
**Monitoring Program Summary**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

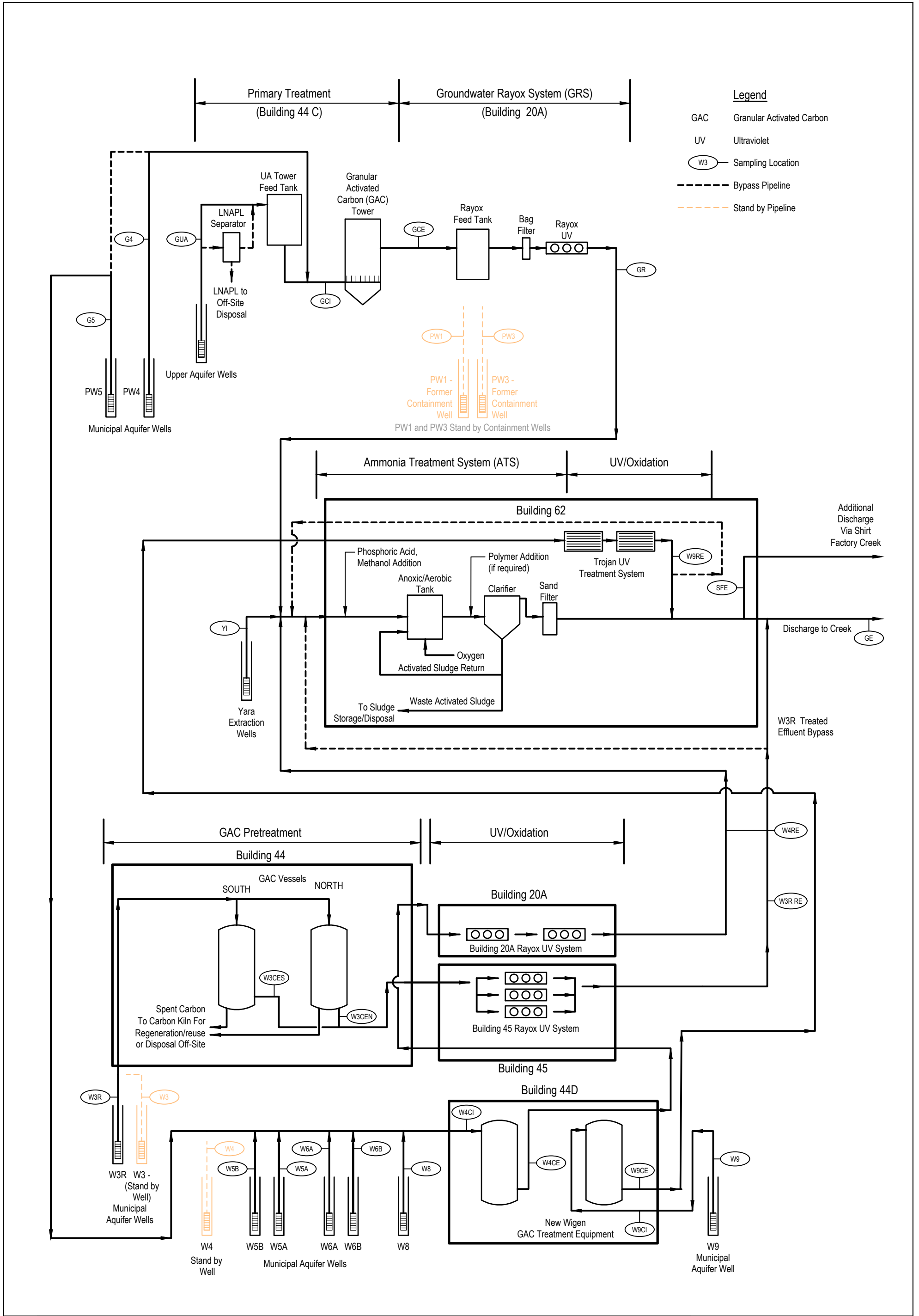
<b>Media and Sampling Program</b>	<b>Parameters</b>	<b>Frequency</b>	<b>May 2024 Results Location</b>
<b>Treatment System</b>			
Off-Site Groundwater Collection and Treatment System (Off-Site CTS) Influent	Offsite Broad Scan (Schedule D)	Annual	-
On-Site Groundwater Collection and Treatment System (On-Site CTS) Influent	Effluent Broad Scan (Schedule C)	Annual	-
Combined On-Site and Off-Site Groundwater Collection and Treatment Systems (CTS) Effluent	Indicator parameters	Monthly	Attachment A
	Effluent Broad Scan (Schedule C)	Quarterly	-
CTS Effluent - Acute Toxicity	Not applicable	Quarterly	-
CTS Effluent - Chronic Toxicity	Not applicable	Semi-annual	Attachment A
<b>Surface Water</b>			
Environmental Appeal Board (EAB) Sampling	Select VOCs, semi-volatile organic compounds (SVOCs), pesticides, general chemistry	Monthly	Attachment B
Primary Surface Water Quality Monitoring	Indicator parameters	Quarterly	-
	Effluent Broad Scan (Schedule C)	Quarterly	-
Secondary Surface Water Quality Monitoring	Indicator parameters	Quarterly	-
	Effluent Broad Scan (Schedule C)	Quarterly	-
Upper Aquifer Hydraulic Containment Requirement	Schedule E	As required	Attachment C
Receiver Biomonitoring Program – Clams	See Biomonitoring Reports	Biennial (Even Years)	-
Receiver Biomonitoring Program – Benthic		Biennial (Odd Years)	-
<b>Groundwater</b>			
Groundwater Elevation Monitoring Program (GEMP)	Elevation	Semi-annual	-
Upper Municipal Aquifer (MU) Sentry Well Monitoring Program	n-Nitrosodimethylamine (NDMA), chlorobenzene	Semi-annual	-
NAPL Monitoring Program (NMP)	Elevation	Annual	-
Creek Bank Groundwater Monitoring Program – Spring Round	NDMA, chlorobenzene	Annual	-
Creek Bank Groundwater Monitoring Program – Summer Round	Selected pesticides and volatile organic compounds (VOCs)	Annual	-
Off-Site Sentry Well Monitoring Program	NDMA +/- chlorobenzene	Annual	-
Off-Site Plume Monitoring Program	NDMA +/- chlorobenzene	Biennial (Odd Years)	-



# **Attachment A**

**Analytical Results**

**Collection and Treatment System**



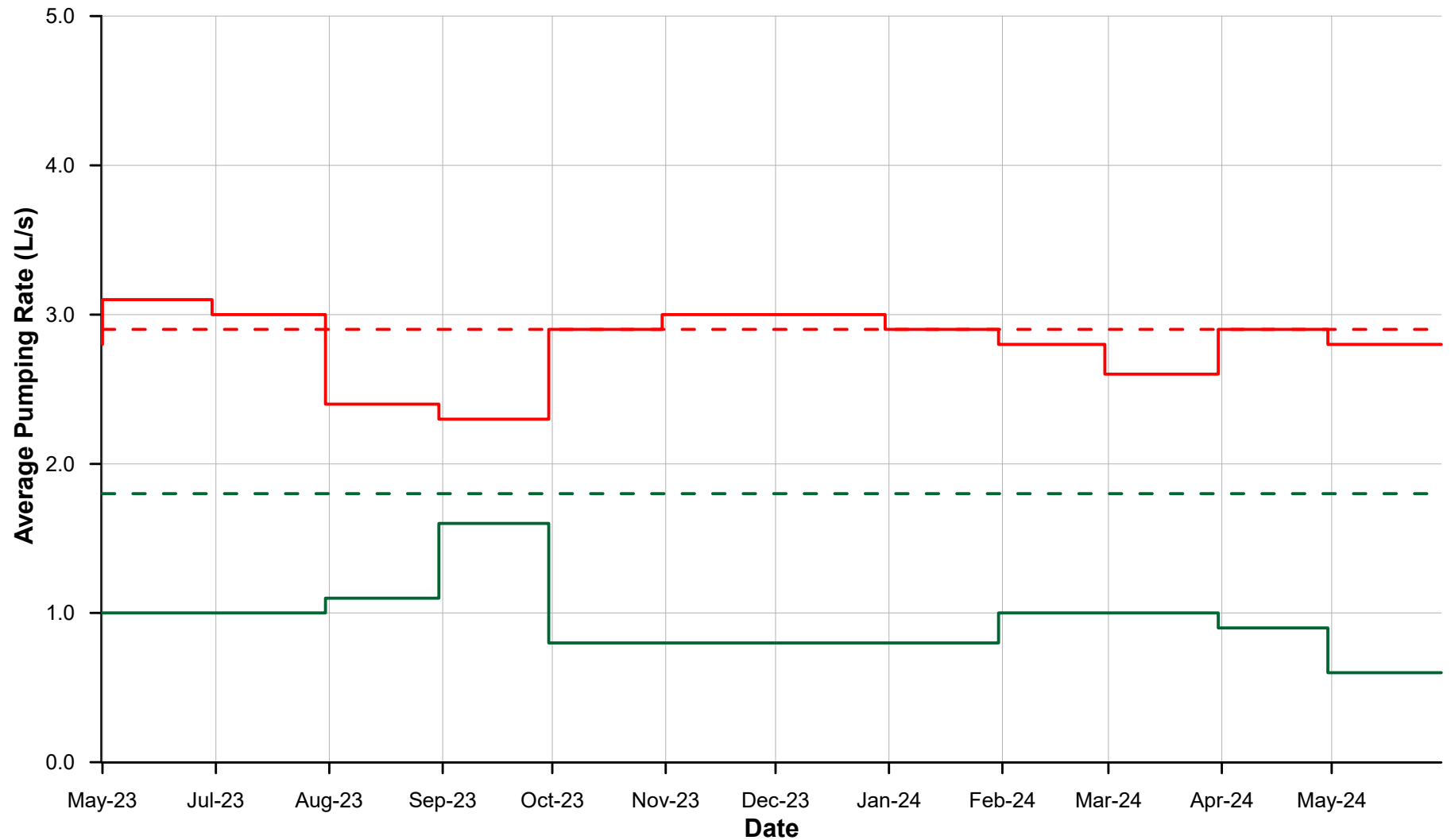
LANXESS CANADA CO./CIE  
ELMIRA, ONTARIO

Project No. 11192137  
Date May 2024



TREATMENT SYSTEM  
PROCESS FLOW SCHEMATIC

FIGURE A.1



- PW4
- - - Target PW4
- PW5
- - - Target PW5

### ON-SITE EXTRACTION WELL AVERAGE VS. TARGET PUMPING RATES

LANXESS CANADA CO./CIE

Elmira, Ontario

\*Note: Target pumping rates were updated based on the average daily pumping rates recommended in the 2015 Model Check Point Analysis (GHD, June 2016). The Target Average pumping rates are 90% of the recommended daily Set Point pumping rates since the wells and treatment system components require periodic downtime for maintenance.



figure A.2

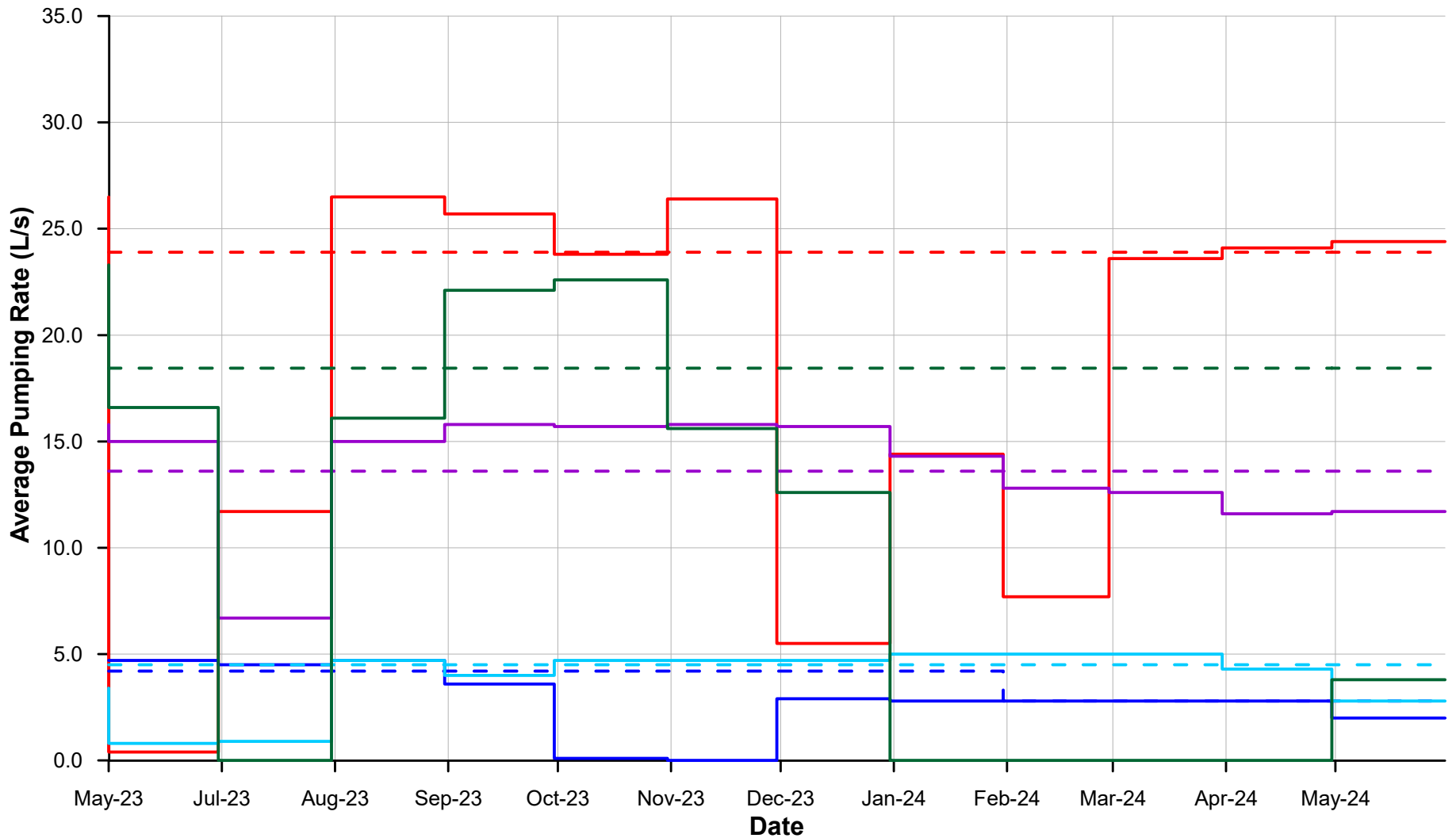


figure A.3a  
**OFF-SITE EXTRACTION WELL AVERAGE  
 VS. TARGET PUMPING RATES**  
 LANXESS CANADA CO./CIE  
 Elmira, Ontario



\*Note: Target pumping rates were updated based on the average daily pumping rates recommended in the 2015 Model Check Point Analysis (GHD, June 2016). The Target Average pumping rates are 90% of the recommended daily Set Point pumping rates since the wells and treatment system components require periodic downtime for maintenance.

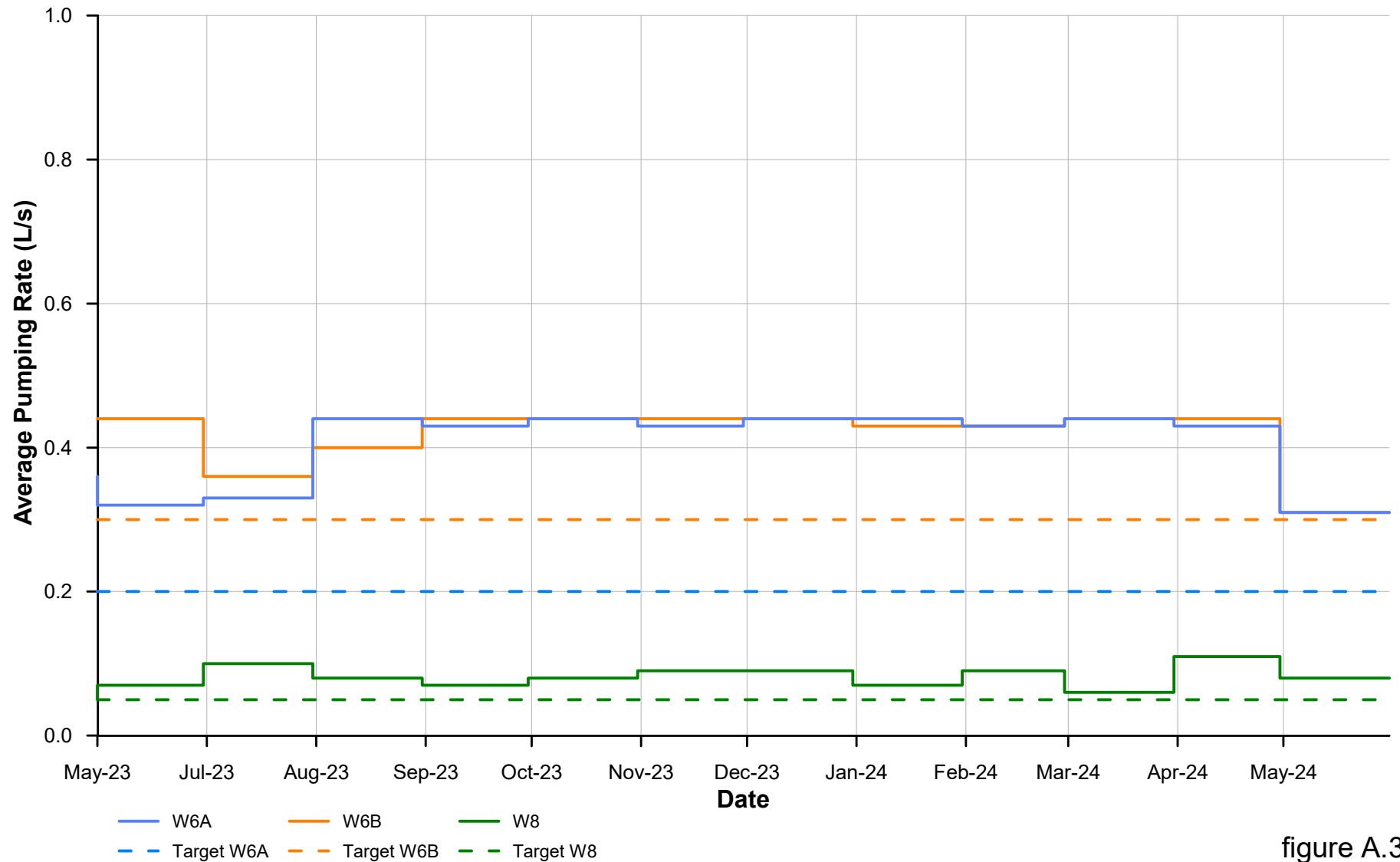


figure A.3b  
 OFF-SITE EXTRACTION WELL AVERAGE  
 VS. TARGET PUMPING RATES  
 LANXESS CANADA CO./CIE  
 Elmira, Ontario

\*Note: Target pumping rates were updated based on the average daily pumping rates recommended in the 2015 Model Check Point Analysis (GHD, June 2016). The Target Average pumping rates are 90% of the recommended daily Set Point pumping rates since the wells and treatment system components require periodic downtime for maintenance.

LANXESS has reduced the W6A and W6B target average pumping rates as a result of reduced well capacity.



Table A.1

**Performance - Combined On-Site and Off-Site Groundwater Collection and Treatment System  
Bypass/Upset Conditions - May 2024  
LANXESS Canada Co./Cie  
Elmira, Ontario**

**ON-SITE GROUNDWATER CONTAINMENT AND TREATMENT SYSTEM**

May 20	Shut down at 15:40 due to a power outage, and restarted at 16:40
May 29	Shut down at 07:15 due a coupling failure on the UA effluent pump, and restarted at 14:06

**OFF-SITE GROUNDWATER COLLECTION AND TREATMENT SYSTEM****W3R Groundwater Rayox System**

December 18	Shut down at 03:10 due to communication issues (communication signal cables have been compromised by roots and growth in the conduits between W3R and the W4 well hut), and restarted May 24, 2024 at 07:50
May 27	Shut down at 05:35 due to loss of communication, and restarted at 06:05
May 27	Shut down at 15:05 due to a PLC error, and restarted May 28, 2024 at 13:00
May 31	Shut down at 00:30 due to loss of communication, and restarted June 4, 2024 at 11:16

**W5A/W5B/W6A/W6B/W8 Groundwater Rayox System <sup>[1]</sup>**

May 13	Shut down at 16:00 due to possible communications issue, and restarted at 16:10
May 13	Shut down at 17:00 due to possible communications issue, and restarted at 17:50
May 20	Shut down at 15:40 due to a power outage, and restarted at 16:35
May 22	Shut down at 13:53 due to Rayox PLC issues, and restarted May 27, 2024 at 06:20
May 27	Shut down at 15:05 due to communication issues, and restarted June 3, 2024 at 15:45

**W9 Groundwater Trojan UV/Oxidation System**

May 20	Shut down at 15:40 due to a power outage, and restarted at 16:35
--------	--

Note:

[1] Groundwater pumped by PW5 is treated in the W5A/W5B/W6A/W6B/W8 Groundwater Rayox System and PW5 is, therefore, shut down when the W4/W5A/W5B/W6A/W6B/W8 system is shut down.

Table A.2

**Combined On-Site and Off-Site Groundwater Containment and Treatment System**  
**Analytical Results <sup>[1]</sup>**  
**May 2024**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

Sample Date	Parameter <sup>[2] [3]</sup>	Primary Treatment						Secondary Treatment			Tertiary Treatment		Combined Discharge Effluent <sup>[4]</sup>	Combined Discharge Effluent		
		W4 CI	W4 CE	W9 CI	W9 CE	GCI	GCE	W4 RE	W9 RE	GR	SFE	GE		Limit	Adjusted Limit <sup>[5]</sup>	Objective
7-May-24	Ammonia-N (mg/L)										0.0057	0.0381	0.038	0.84 <sup>[6]</sup>	0.84	0.62
7-May-24	Total Phosphorus (mg/L)										0.217	0.122	0.122	0.5	0.5	--
7-May-24	BOD <sub>5</sub> (mg/L)										ND(2.0)	ND(2.0)	ND(2.0)	15	15	--
7-May-24	Total Cyanide (µg/L)										ND(2)	ND(2)	ND(2)	14	14	ND(5)
7-May-24	Formaldehyde (µg/L)										ND(2.0)	ND(2.0)	ND(2.0)	24	24	ND(5)
7-May-24	pH (s.u.)										7.08	7.24	7.24	5.5 - 9.5	5.5 - 9.5	--
7-May-24	Temperature (°C)										17.2	14.9	14.9	<25	<25	--
7-May-24	Chlorobenzene (µg/L)	89.1	69.0	16.8	2.89	2660	8.75	24.2	1.40	10.3	ND(0.20)	0.21	0.15	10	18.2	ND(0.5)
21-May-24	Chlorobenzene (µg/L)							18.4	0.46	30.6	ND(0.20)	ND(0.20)				
7-May-24	Toluene (µg/L)					54.8	0.23				ND(0.20)	ND(0.20)	ND(0.20)	5	9.1	ND(0.4)
7-May-24	1,1-Dichloroethane (µg/L)					0.37	ND(0.20)				0.69	0.38	0.38	10	10	ND(1)
7-May-24	g-BHC (Lindane) (µg/L)										ND(0.0030)	ND(0.0030)	ND(0.0030)	0.14	0.25	ND(0.003)
21-May-24	n-Nitrosodimethylamine (NDMA) (µg/L)							ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	0.14	0.25	ND(0.01)
21-May-24	n-Nitrosodiethylamine (NDEA) (µg/L) <sup>[7]</sup>							ND(0.06)	ND(0.06)	ND(0.06)	ND(0.06)	ND(0.06)	ND(0.06)	4	4	ND(0.06)
21-May-24	Nitrosomorpholine (NMOR) (µg/L) <sup>[7]</sup>							ND(0.06)	ND(0.06)	0.10	ND(0.06)	ND(0.06)	ND(0.06)	4	7.3	ND(0.06)
7-May-24	Benzothiazole (µg/L)					114	ND(2.0)				ND(2.0)	ND(2.0)	ND(2.0)	4	7.3	ND(2)
7-May-24	Carboxin (µg/L)					49.2	0.142				ND(0.100)	ND(0.100)	ND(0.100)	7	12.7	ND(2)

SS+890 Discharge (GE) Flow Rate      25.29 L/s  
 Shirt Factory Creek Discharge (SFE) Flow Rate      0.05 L/s  
 Total Combined Discharge Effluent Flow      25.33 L/s

Table A.2

**Combined On-Site and Off-Site Groundwater Containment and Treatment System  
Analytical Results<sup>[1]</sup>  
May 2024  
LANXESS Canada Co./Cie  
Elmira, Ontario**

## Notes:

- [1] All samples analyzed by ALS Canada Ltd. unless otherwise noted.
- [2] "Parameters" are the parameters identified in ECA No. 0831-BX6JGD.
- [3] The Sample Locations are coded as follows:  
W4CI W4 Carbon Adsorber Influent. The influent may include influent from W5A, W5B, W6A, W6B, W8 and PW5.  
W4CE W4 Carbon Adsorber Effluent. The effluent may include effluent from W5A, W5B, W6A, W6B, W8 and PW5.  
W9CI W9 Carbon Adsorber Influent. W9CE W9 Carbon Adsorber Effluent.  
GCI On-Site Carbon Tower Influent. GCE On-Site Carbon Tower Effluent.  
W4 RE Effluent from the W4 UV system prior to treatment through the ATS. The effluent may include effluent from W5A, W5B, W6A, W6B, W8 and PW5.  
W9 RE Effluent from the W9 Trojan UV/oxidation system. GR On-Site Groundwater Rayox Effluent.  
SFE Additional Effluent Discharge via Shift Factory Creek. GE Effluent Discharge to Canagaguige Creek.
- [4] The Combined Discharge Effluent value is a calculated value determined by using average flow data from GE Effluent Discharge via SS+880 and Additional Effluent Discharge via Shift Factory Creek and monthly sample results from GE and SFE.
- [5] Adjusted Effluent Requirements are applicable to monthly average discharge flows greater than 46.0 L/s.
- [6] Total Ammonia Discharge Effluent Limit value is the greater of: calculated concentration, or 0.84 mg/L (May-October) or 2.4 mg/L (November-April) as per ECA No. 0831-BX6JGD.
- [7] Samples analyzed by the LANXESS lab, Elmira Ontario.
- ND(RDL) Not detected at the associated reporting detection limit.



**Table A.3**  
**Combined On-Site and Off-Site Groundwater Collection and Treatment System Flow Rates**  
**May 2024**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

Date	On-Site Flow Rate <sup>[1]</sup>	Off-Site Flow Rate <sup>[2]</sup>	ATS Influent Flow Rate <sup>[3]</sup>	W3R Bypass Flow Rate	W9 Bypass Flow Rate	SS+890 Discharge Flow Rate	Shirt Factory Creek Discharge Flow Rate	Total Combined Discharge Effluent Flow Rate <sup>[4]</sup>
	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)
5/1/2024	3.6	20.6	13.4	0.0	11.3	24.7	0.00	24.7
5/2/2024	3.7	21.1	13.3	0.0	11.9	25.1	0.00	25.1
5/3/2024	3.6	21.2	13.4	0.0	11.8	25.2	0.01	25.2
5/4/2024	3.7	21.1	13.4	0.0	11.7	25.1	0.00	25.1
5/5/2024	3.7	20.9	13.4	0.0	11.6	25.0	0.01	25.0
5/6/2024	3.7	20.8	13.5	0.0	11.4	24.9	0.00	24.9
5/7/2024	3.7	20.6	13.5	0.0	11.3	24.8	0.00	24.8
5/8/2024	3.6	20.7	13.5	0.0	11.3	24.8	0.00	24.8
5/9/2024	3.7	20.5	13.5	0.0	11.2	24.7	0.00	24.7
5/10/2024	3.6	20.5	13.1	0.0	11.2	24.3	0.00	24.3
5/11/2024	3.7	20.4	13.2	0.0	11.1	24.3	0.00	24.3
5/12/2024	3.7	20.4	13.2	0.0	11.0	24.2	0.00	24.2
5/13/2024	3.6	19.9	12.9	0.0	11.0	23.9	0.01	23.9
5/14/2024	3.7	20.3	13.3	0.0	10.9	24.2	0.00	24.2
5/15/2024	3.6	20.2	13.2	0.0	10.9	24.0	0.05	24.1
5/16/2024	3.6	19.7	12.7	0.0	10.8	23.5	0.00	23.5
5/17/2024	3.6	18.2	11.3	0.0	10.8	22.0	0.03	22.1
5/18/2024	3.5	17.7	10.8	0.0	10.7	21.5	0.00	21.5
5/19/2024	3.6	17.8	11.1	0.0	10.7	21.7	0.00	21.7
5/20/2024	3.4	16.3	9.1	0.0	10.9	20.0	0.00	20.0
5/21/2024	3.6	18.6	9.8	0.0	12.6	22.4	0.00	22.4
5/22/2024	3.6	15.1	6.2	0.0	12.6	18.8	0.00	18.8
5/23/2024	3.6	12.6	3.8	0.0	12.6	16.5	0.00	16.5
5/24/2024	3.6	23.1	3.9	10.5	12.6	26.9	0.01	26.9
5/25/2024	3.6	31.5	3.8	18.9	12.6	35.3	0.05	35.3
5/26/2024	3.6	31.5	3.8	18.9	12.6	35.3	0.05	35.4
5/27/2024	3.6	27.2	6.7	11.7	12.6	30.1	0.95	31.0
5/28/2024	3.7	21.7	3.8	9.0	12.6	25.4	0.02	25.5
5/29/2024	2.4	36.3	2.6	23.7	12.6	38.8	0.10	38.9
5/30/2024	3.4	36.3	3.6	23.7	12.6	39.7	0.14	39.9
5/31/2024	<u>3.6</u>	<u>13.1</u>	<u>3.7</u>	<u>0.5</u>	<u>12.6</u>	<u>16.8</u>	<u>0.00</u>	<u>16.8</u>
<b>Average</b>	<b>3.6</b>	<b>21.5</b>	<b>9.9</b>	<b>3.8</b>	<b>11.7</b>	<b>25.3</b>	<b>0.05</b>	<b>25.3</b>
<b>Minimum</b>	<b>2.4</b>	<b>12.6</b>	<b>2.6</b>	<b>0.0</b>	<b>10.7</b>	<b>16.5</b>	<b>0.00</b>	<b>16.5</b>
<b>Maximum</b>	<b>3.7</b>	<b>36.3</b>	<b>13.5</b>	<b>23.7</b>	<b>12.6</b>	<b>39.7</b>	<b>0.95</b>	<b>39.9</b>

## Notes:

L/s Litres per second

- [1] The ECA requires that the influent flow rate to the on-Site Treatment System be less than 5 L/s.  
[2] The ECA requires that the influent flow rate to the off-Site Treatment System be less than 87.2 L/s.  
[3] The ECA requires that the influent flow rate to the Ammonia Treatment System be less than 46 L/s.  
[4] The ECA requires that the monthly average effluent discharge flow rate be less than 92.2 L/s.

**Table A.4**  
**Supplementary Sample Analytical Results**  
**May 2024**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

<b>Sample Location:</b>	<b>UA500I</b>	<b>UA500CE</b>	<b>UA560I</b>	<b>UA560CE</b>	<b>GCI</b>	<b>GCE</b>
<b>Sample Date:</b>	<b>5/7/2024</b>	<b>5/7/2024</b>	<b>5/7/2024</b>	<b>5/7/2024</b>	<b>5/7/2024</b>	<b>5/7/2024</b>
<b>Parameter [µg/L]</b>						
<b>Volatile Organic Compounds (VOCs)</b>						
Benzene	14.1	1.20	10.2	23.9	9.13	ND(0.20)
Chlorobenzene	587	12.0	331	202	2660	8.75
1,1-Dichloroethane	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	0.37	ND(0.20)
Ethylbenzene	56.8	1.00	55.4	4.52	10.6	ND(0.20)
Toluene	3490	145	2480	2630	54.8	0.23
m/p-Xylenes <sup>[1]</sup>	96.1	1.63	134	6.42	6.14	ND(0.40)
o-Xylene <sup>[1]</sup>	61.6	1.15	76.6	4.15	4.32	ND(0.20)
<b>Base/Neutral and Acid Extractable Compounds (BNAs)</b>						
Aniline	595	111	629	1370	52.5	ND(2.0)
Benothiazole	929	15.9	64.4	6.2	114	ND(2.0)
Carboxin (Oxathiin)	1830	33.5	1060	16.1	49.2	0.142
2-Chlorophenol	8.72	0.46	1.11	16.0	2.12	ND(0.30)
2-Mercaptobenzothiazole	1910	32	112	ND(20)	253	ND(20)
2,4-Dichlorophenol	38.1	0.96	0.69	0.68	0.63	ND(0.20)
2,6-Dichlorophenol	2.82	ND(0.20)	0.49	0.36	0.76	ND(0.20)
2,4,5-Trichlorophenol	19.5	0.41	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
2,4,6-Trichlorophenol	4.03	ND(0.20)	0.45	ND(0.20)	ND(0.20)	ND(0.20)

**Notes:**

UA500I Influent to the installed UA500R portable carbon drum.  
UA500CE Effluent from the installed UA500R portable carbon drum.  
UA560I Influent to the installed UA560 portable carbon drum.  
UA560CE Effluent from the installed UA560 portable carbon drum.  
GCI Carbon Tower Influent.  
GCE Carbon Tower Effluent.  
ND(RDL) Not detected at the associated reporting detection limit.  
[1] Samples analyzed for m,p-Xylenes and o-Xylene only.  
No separate analysis for Total Xylenes.

Table A.5

**Maintenance Summary**  
**On-Site and Off-Site Groundwater Collection and Treatment System**  
**May 2024**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

<b>Start Date</b>	<b>Description</b>	<b>Work Type</b>
05/01/2024	Annual E7 South Compressor Preventative Maintenance	Mechanical
05/01/2024	Repair Leak on Bldg. #62 Polymer Line	Piping
05/13/2024	Repair Monitoring Well Hinges	Mechanical
05/15/2024	Clean 62-AIT-904 Probe Mid Month - Nitrification Tank Dissolved O <sub>2</sub>	Instrumentation
05/21/2024	Check 44-LSH-502 (44TA-12) - PW5 Well Level High Switch	Instrumentation
05/27/2024	Check 44-FIT-0843 (44PM-31) - U+540 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0853 (44-ICP-853) - U+500 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0838 (44-ICP-838) - U+560 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0828 (44PM-28) - U+630 (RPW8) Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0823 (44-ICP-823) - U+655 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-818 (44-ICP-818) - U+685 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0813 (44-ICP-813) - U+710 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0808 (44-ICP-808) - U+735 Well Flow Transmitter	Instrumentation
05/30/2024	Check 44-FIT-0803 (44PM-35) - PW4 Flow Transmitter	Instrumentation

Work Order : 254612

Sample Number : 82171

**SAMPLE IDENTIFICATION**

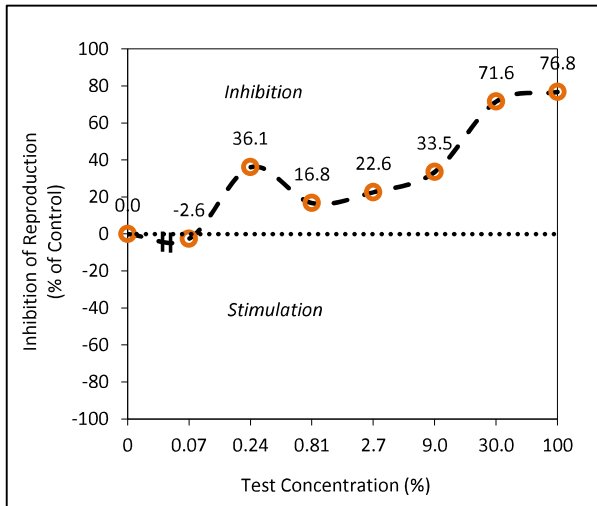
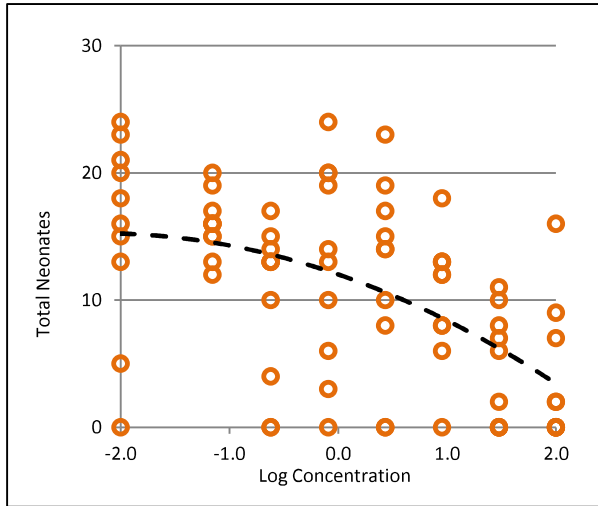
Company :	LANXESS Canada Co./Cie	Sampling Date :	2024-04-30
Location :	Elmira ON	Sampling Time :	09:15
Substance :	GE 043024	Date Received :	2024-04-30
Sampling Method :	Grab	Time Received :	11:30
Sampled By :	A. Norris	Temperature at Receipt :	14 °C
Sample Description :	Clear, colourless.	Date Tested :	2024-04-30

Test Method : Test of Reproduction and Survival using the Cladoceran *Ceriodaphnia dubia* . Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21, 2nd ed. (February 2007).

**8-DAY TEST RESULTS**

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Reproduction)	2.27%	0.30 – 7.68	Non-Linear Regression (CETIS) <sup>a</sup>
LC50	23.7%	0.07 – <sup>1</sup>	Nonlinear Interpolation (Stephan) <sup>c</sup>

The results reported relate only to the sample tested and as received.



**COMMENTS**

<sup>1</sup>The usefulness of any LC50 calculated from this data set is questionable because the concentration-effect relationship was not demonstrated over a reasonable range (i.e. <37 to >63 percent dead), and was not dose-related. A statistically valid upper 95% confidence limit could not be generated. At a confidence level of 95%, the binomial test shows that the LC50 is above 0.07%.

•All test validity criteria as specified in the test method cited above were satisfied.

Approved By :



Victoria (Tori) Carleton  
 I am approving this document  
 Nautilus Environmental  
 2024-05-28 18:08-04:00

Project Manager

Work Order : 254612

Sample Number : 82171

**TEST ORGANISM**

Test Organism :	<i>Ceriodaphnia dubia</i>	Range of Age (at start of test) :	05:30 h - 09:30 h
Organism Batch :	Cd24-04	Mean Brood Organism Mortality :	0% (previous 7 days)
Organism Origin :	Single in-house mass culture	Brood Organism Mean Young :	21.5 (first three broods)
Test Organism Origin :	Individual in-house cultures	Mean Young per Brood Organism :	12.6 (3rd or subsequent brood)
Ephippia in Culture :	None		

No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.

**TEST CONDITIONS**

Test Type :	Static renewal	Control/Dilution Water :	Well water <sup>2</sup>
Renewal Method :	Transferred to fresh solutions	Test Volume per Replicate :	15 mL
Renewal Frequency :	≤ 24 hours	Test Vessel :	20 mL glass vial
Sample Filtration :	None	Depth of Test Solution :	4 cm
Test Aeration :	None	Organisms per Replicate :	1
pH Adjustment :	None	Number of Replicates :	10
Hardness Adjustment :	None	Test Method Deviation(s) :	None

<sup>2</sup>no additional chemicals

**REFERENCE TOXICANT DATA**

Toxicant :	Sodium Chloride	Analyst(s) :	ET, AS, KP, SV, JW, XD
Date Tested :	2024-05-08	Test Duration :	6 days
IC25 (Reproduction) :	1.18 g/L	LC50 :	2.27 g/L
95% Confidence Limits :	0.54 - 1.39 g/L	95% Confidence Limits :	2.05 - 2.56 g/L
Statistical Method :	Linear Interpolation (CETIS) <sup>a</sup>	Statistical Method :	Linear Regression (MLE) (CETIS) <sup>a</sup>
Historical Mean IC25 :	1.00 g/L	Historical Mean LC50 :	2.00 g/L
Warning Limits (± 2SD) :	0.44 - 2.28 g/L	Warning Limits (± 2SD) :	1.05 - 3.84 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

**CUMULATIVE DAILY MORTALITY DATA**

Date	Test Day	Test Concentration (%)							
		Control	0.07	0.24	0.81	2.7	9	30	100
2024-05-01	1	0	0	0	0	0	0	0	0
2024-05-02	2	0	0	0	0	0	0	0	0
2024-05-03	3	0	0	0	0	0	0	0	0
2024-05-04	4	10	0	0	10	0	0	30	30
2024-05-05	5	10	0	10	20	0	10	30	40
2024-05-06	6	10	0	20	30	10	10	60	60
2024-05-07	7	10	0	20	30	10	10	60	60
2024-05-08	8	10	0	20	30	10	10	60	60
Total Mortality (%) :		<b>10</b>	<b>0</b>	<b>20</b>	<b>30</b>	<b>10</b>	<b>10</b>	<b>60</b>	<b>60</b>

**REFERENCES**
<sup>a</sup> CETIS™, © 2000-2022. v2.1.4.0 x64. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

<sup>b</sup> Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics*, 11:1-21.

<sup>c</sup> Stephan, C. E. 1977. Methods for calculating an LC50. pp 65-84 in : P. L. Mayer and J. L. Hamelink (eds.), Aquatic Toxicology and Hazard Evaluation. Amer. Soc. Testing and Materials, Philadelphia PA. ASTM STP 634.

Work Order : 254612  
Sample Number : 82171

**SURVIVAL AND REPRODUCTION**

Test Initiation Date : 2024-04-30  
Initiated By : JW  
Initiation Time : 15:30  
Test Completion Date : 2024-05-08

Control	Day	Replicate										Mean Young (±SD)	Analyst(s)	
		1	2	3	4	5	6	7	8	9	10			
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0	0	AJS (PC)
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0	0	JJ (AS)
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0	0	PG
2024-05-04	4	0	x	0	5	0	0	4	4	0	0	0	1.3	ET (JL)
2024-05-05	5	0	0	0	2	0	7	3	3	5	5	2.5	ET (MR)	
2024-05-06	6	0	2	0	0	0	0	0	0	0	8	1	JN (AS)	
2024-05-07	7	0	5	0	7	8	7	6	7	8	0	4.8	PG	
2024-05-08	8	0	9	0	12	7	-	-	10	11	10	5.9	XD	
Total		0	16	5	21	15	18	13	20	24	23	15.5 (±7.8)		

2.7%	Day	Replicate										Mean Young (±SD)	
		1	2	3	4	5	6	7	8	9	10		
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	4	0	0	3	0	5	4	1	0	0	2	1.5	
2024-05-05	5	0	0	0	0	0	10	0	0	3	0	1.3	
2024-05-06	6	0	0	0	0	x	0	0	3	0	0	0.3	
2024-05-07	7	3	0	4	0	5	9	5	4	3	4	3.7	
2024-05-08	8	5	0	7	0	9	-	8	6	8	9	5.2	
Total		8	0	14	0	19	23	17	10	14	15	12.0 (±7.6)	

0.07%	Day	Replicate										Mean Young (±SD)
		1	2	3	4	5	6	7	8	9	10	
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	4	0	6	0	2	0	1	3	0	0	0	1.2
2024-05-05	5	0	0	0	0	2	7	5	2	4	2	2.2
2024-05-06	6	0	0	0	0	0	5	0	0	0	8	1.3
2024-05-07	7	4	3	5	6	7	3	8	4	7	0	4.7
2024-05-08	8	8	6	10	9	7	-	-	7	8	10	6.5
Total		12	15	15	17	16	16	16	13	19	20	15.9 (±2.4)

9%	Day	Replicate										Mean Young (±SD)
		1	2	3	4	5	6	7	8	9	10	
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	4	0	0	4	0	3	2	0	2	0	3	1.4
2024-05-05	5	0	x	0	0	0	5	8	0	0	3	1.6
2024-05-06	6	0	0	0	0	4	0	3	0	0	0	0.7
2024-05-07	7	0	3	2	0	10	-	0	0	1	0	1.6
2024-05-08	8	0	3	6	8	-	-	8	6	9	10	5
Total		0	6	12	12	18	13	8	8	13	13	10.3 (±5.0)

0.24%	Day	Replicate										Mean Young (±SD)
		1	2	3	4	5	6	7	8	9	10	
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	4	0	0	0	2	0	4	0	0	4	4	1.4
2024-05-05	5	0	0	0	0	2	4	0	x	0	0	0.6
2024-05-06	6	0	0	0	2	x	0	0	0	0	6	0.8
2024-05-07	7	3	0	5	0	4	6	0	5	1	0	2.4
2024-05-08	8	7	0	8	0	7	0	0	10	8	7	4.7
Total		10	0	13	4	13	14	0	15	13	17	9.9 (±6.3)

30%	Day	Replicate										Mean Young (±SD)			
		1	2	3	4	5	6	7	8	9	10				
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0			
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0			
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0			
2024-05-04	4	0	x	0	2	0	0	x	3	0	0	2	2	x	0.9
2024-05-05	5	0	0	0	0	0	7	0	0	2	0	0.9			
2024-05-06	6	0	0	x	0	3	0	0	x	0	x	0	2	0	0.5
2024-05-07	7	0	0	2	0	0	0	0	0	0	-	0	0.2		
2024-05-08	8	0	0	7	4	0	0	0	8	-	0	1.9			
Total		0	0	11	7	0	10	0	8	6	2	4.4 (±4.5)			

0.81%	Day	Replicate										Mean Young (±SD)	
		1	2	3	4	5	6	7	8	9	10		
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0	
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0	
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0	
2024-05-04	4	0	0	2	0	0	6	0	2	0	3	x	1.3
2024-05-05	5	0	0	x	4	5	0	8	3	0	5	0	2.5
2024-05-06	6	1	0	0	x	7	0	0	0	0	0	0	0.8
2024-05-07	7	4	0	0	0	6	6	8	4	2	0	3	
2024-05-08	8	5	0	0	12	8	-	9	7	12	0	5.3	
Total		10	0	6	24	14	20	20	13	19	3	12.9 (±8.0)	

100%	Day	Replicate										Mean Young (±SD)			
		1	2	3	4	5	6	7	8	9	10				
2024-05-01	1	0	0	0	0	0	0	0	0	0	0	0			
2024-05-02	2	0	0	0	0	0	0	0	0	0	0	0			
2024-05-03	3	0	0	0	0	0	0	0	0	0	0	0			
2024-05-04	4	0	x	0	x	2	2	2	0	0	0	x	0	0.6	
2024-05-05	5	0	0	0	x	0	4	7	0	0	0	0	1.1		
2024-05-06	6	0	0	0	0	0	0	0	0	0	0	x	0	x	0
2024-05-07	7	0	0	0	3	0	6	0	0	0	0	0	0.9		
2024-05-08	7	0	0	0	4	1	3	2	0	0	0	1			
Total		0	0	2	9	7	16 <sup>3</sup>	2	0	0	0	3.6 (±5.4)			

NOTES : •All young produced by a test organism during its fourth and subsequent broods were discarded and not included in the above counts. The presence of two or more neonates in any test chamber, during any given day of the test, constitutes a brood.

<sup>3</sup> Outlier according to Grubbs Test<sup>b</sup>. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

x = test organism mortality  
\* = accidental test organism mortality  
- = 4th brood (see 'NOTES')

Work Order : 254612  
 Sample Number : 82171

**WATER CHEMISTRY DATA**

		Day 0 - 1	Day 1 - 2	Day 2 - 3	Day 3 - 4	Day 4 - 5	Day 5 - 6	Day 6 - 7	Day 7 - 8	
Date :		2024-04-30	2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06	2024-05-07	
<b>Initial Chemistry (100 %)</b>	Sub-sample Used	1	1	1	2	2	3	3	3	
	Temperature (°C)	26	24	24	24	24	24	24	24	
	Dissolved O <sub>2</sub> (mg/L)	9.0	8.3	8.5	8.7	8.8	8.3	8.7	8.4	
	Dissolved O <sub>2</sub> (% Sat.) <sup>4</sup>	120	103	107	110	110	105	110	106	
	pH	7.2	7.5	7.5	7.5	7.5	7.7	7.6	7.6	
	Conductivity (µmhos/cm)	1485	1450	1459	1456	1455	1461	1459	1463	
	Pre-aeration Time (min) <sup>5</sup>	20	20	20	20	20	20	20	20	
	Analyst(s)	Initial Final	ET (PC) AJS	NWP JJ	NWP PG	ASK (PC) MR	JN (JL) JN (MR)	JN (MR) JN (AS)	AA (AS) PG	ET (AS) XD
<b>Control</b>	Temperature (°C)	Initial Final	24 24	24 25	24 25	24 24	24 24	24 25	24 25	
	Dissolved O <sub>2</sub> (% Sat.) <sup>4</sup>	Initial	102	102	100	100	100	101	98	
	Dissolved O <sub>2</sub> (mg/L)	Initial Final	8.2 7.2	8.1 7.0	8.0 7.0	8.0 7.2	8.0 7.2	7.9 7.6	8.2 7.5	
	pH	Initial Final	8.4 8.1	8.4 8.2	8.4 8.1	8.4 8.2	8.3 8.2	8.5 8.3	8.4 8.2	
	Conductivity (µmhos/cm)	Initial	410	412	415	418	428	439	413	
	Hardness (mg/L as CaCO <sub>3</sub> )		200	-	-	-	-	-	-	
	<b>0.07 %</b>	Temperature (°C)	Initial Final	24 24	24 25	24 25	24 24	24 24	24 25	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial Final	7.9 6.7	7.7 6.9	7.8 6.6	8.0 7.3	7.9 7.2	7.7 7.5	8.1 7.4
pH		Initial Final	8.2 8.1	8.4 8.2	8.3 8.0	8.3 8.2	8.3 8.3	8.4 8.3	8.3 8.2	
Conductivity (µmhos/cm)		Initial	413	411	416	416	430	432	411	
<b>9 %</b>		Temperature (°C)	Initial Final	24 24	24 25	24 25	24 24	24 24	24 25	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial Final	8.0 6.6	7.8 6.9	7.8 6.6	8.0 7.2	7.9 7.3	7.8 7.5	8.1 7.4
	pH	Initial Final	8.1 8.1	8.3 8.3	8.3 8.1	8.2 8.2	8.3 8.3	8.3 8.3	8.3 8.2	
	Conductivity (µmhos/cm)	Initial	509	510	517	517	534	536	513	
	<b>100 %</b>	Temperature (°C)	Initial Final	24 24	24 25	24 25	24 24	24 24	24 25	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial Final	8.3 6.4	7.9 6.8	7.9 6.1	8.3 7.1	8.1 7.3	8.1 7.4	8.3 7.3
pH		Initial Final	7.3 8.1	7.7 8.4	7.9 8.1	7.7 8.3	7.7 8.3	7.6 8.2	7.8 8.1	
Conductivity (µmhos/cm)		Initial	1475	1460	1460	1465	1443	1461	1463	
Hardness (mg/L as CaCO <sub>3</sub> )			530	-	-	-	-	-	-	

"-" = not measured/not required

<sup>4</sup> adjusted for temperature and barometric pressure

<sup>5</sup> ≤100 bubbles/minute

 Test Data Reviewed By : SF

 Date : 2024-05-23

Work Order : 254612  
 Sample Number : 82171

**SAMPLE IDENTIFICATION**

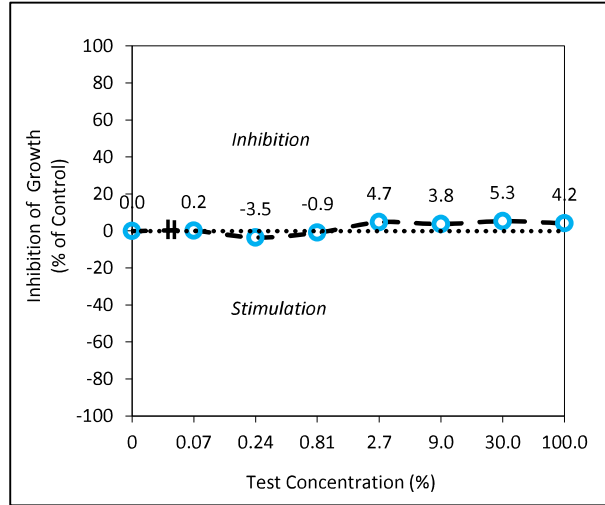
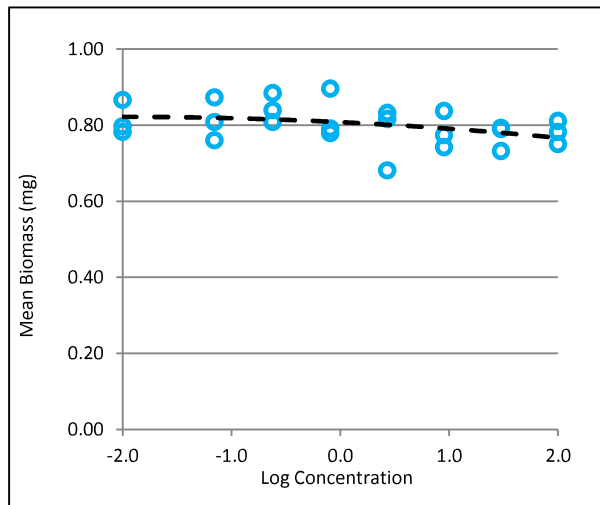
Company :	LANXESS Canada Co./Cie	Sampling Date :	2024-04-30
Location :	Elmira ON	Sampling Time :	09:15
Substance :	GE 043024	Date Received :	2024-04-30
Sampling Method :	Grab	Time Received :	11:30
Sampled By :	A. Norris	Temperature at Receipt :	14 °C
Sample Description :	Clear, colourless.	Date Tested :	2024-04-30

Test Method : Test of Larval Growth and Survival Using Fathead Minnows. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/22 , 2nd ed. (February 2011).

**7-DAY TEST RESULTS**

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Biomass) <sup>1</sup>	>100%	—	—
LC50	>100%	—	—

The results reported relate only to the sample tested and as received.



**COMMENTS**

<sup>1</sup> as a measure of Growth

- All test validity criteria as specified in the test method cited above were satisfied.

Approved By :   
 Victoria (Tori) Carleton  
 I am approving this document  
 Nautilus Environmental  
 2024-05-28 18:08-04:00  
 Project Manager



Work Order : 254612

Sample Number : 82171

---

**TEST ORGANISM**


---

Test Organism :	<i>Pimephales promelas</i>	Culture Mortality/Diseased :	0.56 % (previous 7 days)
Organism Batch :	Fm24-04	Organism Age :	~07:00 - 23:30 h at test start
Source :	In-house culture		

- No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.
- Inflated swim bladders were confirmed in all test organisms used in this test.

---

**TEST CONDITIONS**


---

Test Type :	Static Renewal	Control/Dilution Water :	Well water <sup>3</sup>
Renewal Method :	80-85% syphoned and replaced	Test Volume / Replicate :	300 mL
Renewal Frequency :	≤ 24 hours	Test Vessel :	420 mL polystyrene beaker
Sample Filtration :	None	Depth of Test Solution :	8 cm
Test Aeration :	None	Organisms per Replicate :	10
pH Adjustment :	None	Number of Replicates :	3
Hardness Adjustment :	None	Test Method Deviation(s):	None

<sup>3</sup>no additional chemicals

---

**REFERENCE TOXICANT DATA**


---

Toxicant :	Potassium Chloride	Analyst(s) :	ASK, NP, PG, AS
Date Tested :	2024-04-22	Test Duration :	7 days
IC25 (Biomass) <sup>1</sup> :	0.96 g/L	LC50 :	1.08 g/L
95% Confidence Limits :	0.87 - 1.03 g/L	95% Confidence Limits :	1.02 - 1.15 g/L
Statistical Method :	Linear Interpolation (CETIS) <sup>a</sup>	Statistical Method :	Linear Regression (MLE) (CETIS) <sup>a</sup>
Historical Mean IC25 :	1.06 g/L	Historical Mean LC50 :	1.19 g/L
Warning Limits (± 2SD) :	0.95 - 1.19 g/L	Warning Limits (± 2SD) :	1.07 - 1.32 g/L

<sup>1</sup>as a measure of Growth

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

---

**REFERENCES**


---

<sup>a</sup> CETIS™, © 2000-2022. v2.1.4.0 x64. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

<sup>b</sup>Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics*, 11 :1-21.

Work Order : 254612  
 Sample Number : 82171

**CUMULATIVE DAILY CONTROL MORTALITY AND IMPAIRMENT**

Date :	2024-04-30	2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06	2024-05-07
Mortality/Impairment :	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Standard Deviation :	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)

**CUMULATIVE DAILY MORTALITY**

Initiation Time : 16:30  
 Initiation Date : 2024-04-30  
 Completion Date : 2024-05-07

Concentration	Replicate	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Treatment Mean Mortality (± SD) %		
		2024-04-30		2024-05-01		2024-05-02		2024-05-03		2024-05-04		2024-05-05		2024-05-06		2024-05-07				
		ET (AS)		NWP		NM		NM		XD		XD		ASK (AS)		NM				
%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%		
Control	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.07	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.24	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.81	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2.7	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
100	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Aberrant behaviour or swimming impairment : None

Work Order : 254612

Sample Number : 82171

**DRY WEIGHT AND BIOMASS DATA**

Concentration %	Replicate	Number Exposed	Replicate Mean Dry Weight (mg)	Treatment Mean Biomass (mg)	Standard Deviation
<b>Control</b>	A	10	0.866	0.815	0.045
	B	10	0.797		
	C	10	0.782		
<b>0.07</b>	A	10	0.760	0.814	0.057
	B	10	0.808		
	C	10	0.873		
<b>0.24</b>	A	10	0.808	0.844	0.038
	B	10	0.839		
	C	10	0.884		
<b>0.81</b>	A	10	0.779	0.822	0.064
	B	10	0.791		
	C	10	0.896		
<b>2.7</b>	A	10	0.681	0.776	0.083
	B	10	0.816		
	C	10	0.832		
<b>9</b>	A	10	0.774	0.784	0.048
	B	10	0.742		
	C	10	0.837		
<b>30</b>	A	10	0.793	0.772	0.034
	B	10	0.790		
	C	10	0.732 <sup>4</sup>		
<b>100</b>	A	10	0.750	0.781	0.031
	B	10	0.782		
	C	10	0.811		

## NOTES :

- <sup>4</sup>Outlier according to Grubbs Test<sup>b</sup>. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.
- Control average dry weight per surviving organism = 0.815 mg

 Test Data Reviewed By : SF  
 Date : 2024-05-23

Work Order : 254612

Sample Number : 82171

WATER CHEMISTRY DATA								
		Day 0 - 1	Day 1 - 2	Day 2 - 3	Day 3 - 4	Day 4 - 5	Day 5 - 6	Day 6 - 7
		2024-04-30	2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06
<b>Initial Chemistry (100%)</b>	Sub-sample Used	1	1	1	2	2	3	3
	Temperature (°C)	26	24	24	24	24	24	24
	Dissolved O <sub>2</sub> (mg/L)	9.0	8.3	8.5	8.7	8.8	8.3	8.7
	Dissolved O <sub>2</sub> % Sat. <sup>5</sup>	120	103	107	110	110	105	110
	pH	7.2	7.5	7.5	7.5	7.5	7.7	7.6
	Conductivity (µmhos/cm)	1485	1450	1459	1456	1455	1461	1459
	Pre-aeration Time (min) <sup>6</sup>	20	20	20	20	20	20	20
Analyst(s) :	Initial	ET (PC)	NWP	NWP	ASK (PC)	JN (JL)	JN (MR)	AA (AS)
	Final	ET (PC)	NM	NM	XD	XD	ASK (AS)	NM
<b>Control</b>	Temperature (°C)	Initial	24	24	24	24	24	24
		Final	25	25	25	24	25	24
	Dissolved O <sub>2</sub> % Sat. <sup>5</sup>	Initial	102	102	100	100	100	100
	Dissolved O <sub>2</sub> (mg/L)	Initial	8.2	8.1	8.0	8.0	8.0	7.9
		Final	7.5	6.8	6.6	6.6	6.9	6.9
	pH	Initial	8.4	8.4	8.4	8.4	8.3	8.5
		Final	8.2	8.2	8.0	7.9	8.1	8.1
Conductivity (µmhos/cm)	Initial	410	412	415	418	428	439	
Hardness (mg/L as CaCO <sub>3</sub> )		200	-	-	-	-	-	
<b>0.07 %</b>	Temperature (°C)	Initial	24	24	24	24	24	24
		Final	25	25	25	24	25	24
	Dissolved O <sub>2</sub> (mg/L)	Initial	7.9	7.7	7.8	8.0	7.9	7.7
		Final	7.4	6.6	6.4	6.3	6.8	6.7
	pH	Initial	8.2	8.4	8.3	8.3	8.3	8.4
		Final	8.3	8.2	8.0	7.8	8.0	8.1
	Conductivity (µmhos/cm)	Initial	413	411	416	416	430	432
<b>9 %</b>	Temperature (°C)	Initial	24	24	24	24	24	24
		Final	25	25	25	24	25	24
	Dissolved O <sub>2</sub> (mg/L)	Initial	8.0	7.8	7.8	8.0	7.9	7.8
		Final	7.3	6.5	6.0	5.9	6.6	6.9
	pH	Initial	8.1	8.3	8.3	8.2	8.3	8.3
		Final	8.2	8.2	8.0	7.9	8.1	8.2
	Conductivity (µmhos/cm)	Initial	509	510	517	517	534	536
<b>100 %</b>	Temperature (°C)	Initial	24	24	24	24	24	24
		Final	25	25	25	24	25	24
	Dissolved O <sub>2</sub> (mg/L)	Initial	8.3	7.9	7.9	8.3	8.1	8.1
		Final	7.2	6.5	5.7	5.8	6.5	6.8
	pH	Initial	7.3	7.7	7.9	7.7	7.7	7.6
		Final	8.1	8.3	8.0	8.2	8.3	8.3
	Conductivity (µmhos/cm)	Initial	1475	1460	1460	1465	1443	1461
Hardness (mg/L as CaCO <sub>3</sub> )		530	-	-	-	-	-	

"-" = not measured/not required

<sup>5</sup> adjusted for temperature and barometric pressure

<sup>6</sup> ≤100 bubbles/minute

Test Data Reviewed By : SF

Date : 2024-05-23

CHAIN OF CUSTODY RECORD



Asset Tag / Tank Order No.

291612

Shipping Address: AquaTox Testing & Consulting Inc.  
 B-11 Nicholas Beaver Road  
 Puslinch, Ontario Canada N0B 2J0

Phone: (519) 763-4412 Fax: (519) 763-4419

P.O. Number: 900003378

Field Sampler Name (Print): Allan Norris

Signature: *AN*

Affiliate: LANXESS CANADA

Sample Storage (prior to shipping): ICE PACK

Custody Relinquished by: *MC*

Date/Time Shipped: APR 30/24 10:30

Client: LANXESS CANADA CO./CIE

25 ERB ST  
 ELMIRA ON  
 N3B 2T3

Phone: 519 669 1671

Fax: 519 669 3273

Contact: MICHELLE YANTZ

Sample Identification		Analysis Requested										Sample Method and Volume				
Date Collected (YYYY-MM-DD)	Time Collected (e.g. 14:30, 24 hr above)	AquaTox Sample Number	Temperature (°C)	Rainbow Trout Single Concentration	Rainbow Trout Single Concentration	Daphnia magna Single Concentration	Daphnia magna LC50	Freshwater Microsurvival & Growth	Contaminant Specific Survival & Growth	Reproduction	Lenora minor Growth	Pseudokirchneriella radiocincta Growth	Other (please specify below)	Grab	Composites	# of Containers and Volume (e.g. 2 x 1L, 3 x 10L, etc.)
2024-04-30	9:15	GE 043024	14°C	82172	82171			✓	✓	✓				✓		3 x 10L
2024-04-30	9:45	SFE 043024	14°C	82172	82171			✓	✓	✓				✓		3 x 10L

For Lab Use Only

Received By: JW/ASK

Date: 2024-04-30

Time: 11:30

Storage Location:

Storage Temp (°C):

Please list any special requests or instructions:

\* Grab samples as per pail labels. 2024-04-30 JW

CHRONIC TOXICITY

*JW*

Work Order : 254612

Sample Number : 82172

**SAMPLE IDENTIFICATION**

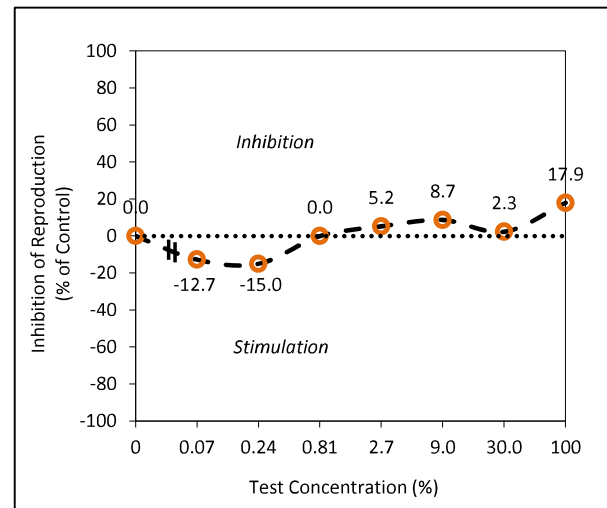
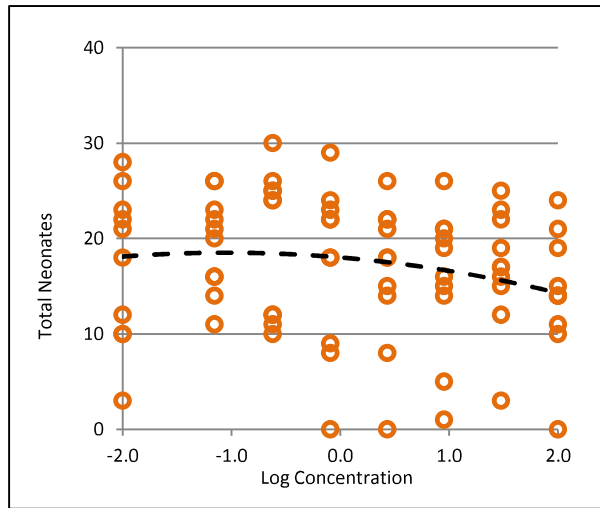
Company :	LANXESS Canada Co./Cie	Sampling Date :	2024-04-30
Location :	Elmira ON	Sampling Time :	09:45
Substance :	SFE 043024	Date Received :	2024-04-30
Sampling Method :	Grab	Time Received :	11:30
Sampled By :	A. Norris	Temperature at Receipt :	14 °C
Sample Description :	Clear, colourless.	Date Tested :	2024-05-01

Test Method : Test of Reproduction and Survival using the Cladoceran *Ceriodaphnia dubia*. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21, 2nd ed. (February 2007).

**6-DAY TEST RESULTS**

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Reproduction)	>100%	—	—
LC50	>100%	—	—

The results reported relate only to the sample tested and as received.



**COMMENTS**

•All test validity criteria as specified in the test method cited above were satisfied.

Approved By :  Victoria (Tori) Carleton  
 I am approving this document  
 Nautilus Environmental  
 2024-05-28 10:23-04:00  
 Project Manager

Work Order : 254612

Sample Number : 82172

**TEST ORGANISM**

Test Organism :	<i>Ceriodaphnia dubia</i>	Range of Age (at start of test) :	19:15 h - 23:55 h
Organism Batch :	Cd24-05	Mean Brood Organism Mortality :	2.5% (previous 7 days)
Organism Origin :	Single in-house mass culture	Brood Organism Mean Young :	21.9 (first three broods)
Test Organism Origin :	Individual in-house cultures	Mean Young per Brood Organism :	11.2 (3rd or subsequent brood)
Ephippia in Culture :	None		

No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.

**TEST CONDITIONS**

Test Type :	Static renewal	Control/Dilution Water :	Well water <sup>2</sup>
Renewal Method :	Transferred to fresh solutions	Test Volume per Replicate :	15 mL
Renewal Frequency :	≤ 24 hours	Test Vessel :	20 mL glass vial
Sample Filtration :	None	Depth of Test Solution :	4 cm
Test Aeration :	None	Organisms per Replicate :	1
pH Adjustment :	None	Number of Replicates :	10
Hardness Adjustment :	None	Test Method Deviation(s) :	None

<sup>2</sup>no additional chemicals

**REFERENCE TOXICANT DATA**

Toxicant :	Sodium Chloride	Analyst(s) :	ET, AS, KP, SV, JW, XD
Date Tested :	2024-05-08	Test Duration :	6 days
IC25 (Reproduction) :	1.18 g/L	LC50 :	2.27 g/L
95% Confidence Limits :	0.54 - 1.39 g/L	95% Confidence Limits :	2.05 - 2.56 g/L
Statistical Method :	Linear Interpolation (CETIS) <sup>a</sup>	Statistical Method :	Linear Regression (MLE) (CETIS) <sup>a</sup>
Historical Mean IC25 :	1.00 g/L	Historical Mean LC50 :	2.00 g/L
Warning Limits (± 2SD) :	0.44 - 2.28 g/L	Warning Limits (± 2SD) :	1.05 - 3.84 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

**CUMULATIVE DAILY MORTALITY DATA**

Date	Test Day	Test Concentration (%)							
		Control	0.07	0.24	0.81	2.7	9	30	100
2024-05-02	1	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0
2024-05-04	3	0	0	0	0	10	10	0	10
2024-05-05	4	0	10	0	0	10	10	0	10
2024-05-06	5	10	10	0	0	10	10	0	10
2024-05-07	6	10	10	0	0	10	10	0	10
Total Mortality (%) :		10	10	0	0	10	10	0	10

**REFERENCES**
<sup>a</sup> CETIS™, © 2000-2022. v2.1.4.0 x64. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

<sup>b</sup> Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics*, 11 :1-21.

Work Order : 254612

Sample Number : 82172

**SURVIVAL AND REPRODUCTION**

Test Initiation Date : 2024-05-01

Initiated By : NWP

Initiation Time : 9:55

Test Completion Date : 2024-05-07

Control	Replicate										Mean Young (±SD)	Analyst(s)	2.7%	Replicate										Mean Young (±SD)			
	Day	1	2	3	4	5	6	7	8	9				10	Day	1	2	3	4	5	6	7	8		9	10	
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0	JJ (AS)	2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0	AS	2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	3	3	3	0	4	4	3	4	5	0	3	2.9	MR	2024-05-04	3	4	0	2	4	5	0	2	2	3	0	x	2.2
2024-05-05	4	7	5	3	6	7	6	0	7	8	4	5.3	MR	2024-05-05	4	7	6	8	8	7	0	0	7	11	0	5.4	
2024-05-06	5	0	0	0	x	0	0	6	0	0	0	0.6	ASK (AS)	2024-05-06	5	0	12	0	0	0	4	6	0	0	0	2.2	
2024-05-07	6	0	14	0	13	15	12	0	16	4	11	8.5	RD	2024-05-07	6	7	0	11	10	14	11	0	13	0	0	6.6	
<b>Total</b>		<b>10</b>	<b>22</b>	<b>3</b>	<b>23</b>	<b>26</b>	<b>21</b>	<b>10</b>	<b>28</b>	<b>12</b>	<b>18</b>	<b>17.3 (±8.2)</b>		<b>Total</b>		<b>18</b>	<b>18</b>	<b>21</b>	<b>22</b>	<b>26</b>	<b>15</b>	<b>8</b>	<b>22</b>	<b>14</b>	<b>0</b>	<b>16.4 (±7.7)</b>	

0.07%	Replicate										Mean Young (±SD)	
	Day	1	2	3	4	5	6	7	8	9		10
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	3	3	3	0	4	5	0	2	5	5	4	3.1
2024-05-05	4	9	5	2	7	7	1	6	5	11	x	5.9
2024-05-06	5	0	12	9	0	11	2	0	0	0	0	3.4
2024-05-07	6	4	0	15	0	0	11	13	16	0	12	7.1
<b>Total</b>		<b>16</b>	<b>20</b>	<b>26</b>	<b>11</b>	<b>23</b>	<b>14</b>	<b>21</b>	<b>26</b>	<b>16</b>	<b>22</b>	<b>19.5 (±5.1)</b>

9%	Replicate										Mean Young (±SD)		
	Day	1	2	3	4	5	6	7	8	9		10	
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0	
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0	
2024-05-04	3	1	x	3	2	3	5	3	3	4	4	2	3
2024-05-05	4	0	5	8	0	9	3	9	9	7	7	5.7	
2024-05-06	5	0	0	0	2	0	0	0	0	0	0	0.2	
2024-05-07	6	0	12	11	0	7	9	4	13	3	10	6.9	
<b>Total</b>		<b>1</b>	<b>20</b>	<b>21</b>	<b>5</b>	<b>21</b>	<b>15</b>	<b>16</b>	<b>26</b>	<b>14</b>	<b>19</b>	<b>15.8 (±7.6)</b>	

0.24%	Replicate										Mean Young (±SD)	
	Day	1	2	3	4	5	6	7	8	9		10
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	3	4	3	4	5	5	3	0	5	3	4	3.6
2024-05-05	4	6	8	6	6	6	7	4	8	8	11	7
2024-05-06	5	0	0	1	1	0	0	8	0	0	0	1
2024-05-07	6	0	15	13	0	13	15	0	17	0	10	8.3
<b>Total</b>		<b>10</b>	<b>26</b>	<b>24</b>	<b>12</b>	<b>24</b>	<b>25</b>	<b>12</b>	<b>30</b>	<b>11</b>	<b>25</b>	<b>19.9 (±7.7)</b>

30%	Replicate										Mean Young (±SD)	
	Day	1	2	3	4	5	6	7	8	9		10
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	3	0	1	1	5	4	1	0	5	3	4	2.4
2024-05-05	4	3	4	5	7	7	4	1	7	9	12	5.9
2024-05-06	5	0	0	0	0	0	0	5	0	0	0	0.5
2024-05-07	6	0	10	13	4	11	12	11	13	0	7	8.1
<b>Total</b>		<b>3<sup>3</sup></b>	<b>15</b>	<b>19</b>	<b>16</b>	<b>22</b>	<b>17</b>	<b>17</b>	<b>25</b>	<b>12</b>	<b>23</b>	<b>16.9 (±6.3)</b>

0.81%	Replicate										Mean Young (±SD)	
	Day	1	2	3	4	5	6	7	8	9		10
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0
2024-05-04	3	0	0	4	0	3	4	4	5	5	3	2.8
2024-05-05	4	7	0	7	8	6	4	0	9	8	8	5.7
2024-05-06	5	7	0	1	0	0	0	5	0	0	0	1.3
2024-05-07	6	4	0	10	0	15	14	0	15	10	7	7.5
<b>Total</b>		<b>18</b>	<b>0</b>	<b>22</b>	<b>8</b>	<b>24</b>	<b>22</b>	<b>9</b>	<b>29</b>	<b>23</b>	<b>18</b>	<b>17.3 (±8.9)</b>

100%	Replicate										Mean Young (±SD)		
	Day	1	2	3	4	5	6	7	8	9		10	
2024-05-02	1	0	0	0	0	0	0	0	0	0	0	0	
2024-05-03	2	0	0	0	0	0	0	0	0	0	0	0	
2024-05-04	3	0	x	0	2	3	3	0	0	2	2	4	1.6
2024-05-05	4	0	4	0	8	3	0	0	8	6	7	3.6	
2024-05-06	5	0	0	0	0	0	3	3	0	0	0	0.6	
2024-05-07	6	0	10	8	0	8	11	12	14	13	8	8.4	
<b>Total</b>		<b>0</b>	<b>14</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>24</b>	<b>21</b>	<b>19</b>	<b>14.2 (±6.6)</b>	

NOTES : •All young produced by a test organism during its fourth and subsequent broods were discarded and not included in the above counts. The presence of two or more neonates in any test chamber, during any given day of the test, constitutes a brood.

•<sup>3</sup> Outlier according to Grubbs Test<sup>b</sup>. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

x = test organism mortality

\* = accidental test organism mortality

- = 4th brood (see 'NOTES')



Work Order : 254612

Sample Number : 82172

**WATER CHEMISTRY DATA**

		Day 0 - 1	Day 1 - 2	Day 2 - 3	Day 3 - 4	Day 4 - 5	Day 5 - 6	
Date :		2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06	
<b>Initial Chemistry (100 %)</b>	Sub-sample Used	1	1	1	2	2	3	
	Temperature (°C)	25	24	24	24	24	24	
	Dissolved O <sub>2</sub> (mg/L)	8.1	8.7	8.8	8.5	8.7	8.8	
	Dissolved O <sub>2</sub> (% Sat.) <sup>4</sup>	103	110	110	107	109	110	
	pH	7.5	7.5	7.6	7.5	7.5	7.6	
	Conductivity (µmhos/cm)	1569	1569	1557	1560	1569	1397	
	Pre-aeration Time (min) <sup>5</sup>	20	20	20	20	20	20	
	Analyst(s)	Initial Final	ET (PC) JJ	NWP AS	NP MR	JN (JL) JN (MR)	JN (MR) ASK (AS)	AA (AS) JN (SV)
<b>Control</b>	Temperature (°C)	Initial Final	24 25	24 25	24 24	24 24	24 25	
	Dissolved O <sub>2</sub> (% Sat.) <sup>4</sup>	Initial	102	100	100	100	101	
	Dissolved O <sub>2</sub> (mg/L)	Initial Final	8.1 7.1	8.0 6.8	8.0 7.2	8.0 7.2	7.9 7.5	8.2 7.2
	pH	Initial Final	8.4 8.2	8.4 8.0	8.4 8.3	8.3 8.2	8.5 8.3	8.4 8.1
	Conductivity (µmhos/cm)	Initial	412	415	418	428	439	413
	Hardness (mg/L as CaCO <sub>3</sub> )		200	-	-	-	-	-
	<b>0.07 %</b>	Temperature (°C)	Initial Final	24 25	24 25	24 24	24 24	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial Final	7.8 7.0	7.8 6.7	7.8 7.2	7.8 7.3	7.8 7.5
pH		Initial Final	8.4 8.2	8.3 8.1	8.3 8.3	8.4 8.3	8.5 8.3	8.3 8.2
Conductivity (µmhos/cm)		Initial	409	412	419	432	438	411
<b>9 %</b>		Temperature (°C)	Initial Final	24 25	24 25	24 24	24 24	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial Final	7.8 6.9	7.8 6.7	7.8 7.3	7.8 7.3	7.9 7.4
	pH	Initial Final	8.3 8.2	8.3 8.1	8.2 8.3	8.2 8.3	8.3 8.3	8.3 8.2
	Conductivity (µmhos/cm)	Initial	520	526	530	537	543	504
<b>100 %</b>	Temperature (°C)	Initial Final	24 25	24 25	24 24	24 24	24 25	
	Dissolved O <sub>2</sub> (mg/L)	Initial Final	7.9 6.7	7.9 6.7	8.1 7.2	8.1 7.3	8.4 6.8	8.3 7.1
	pH	Initial Final	7.7 8.4	7.9 8.4	7.8 8.4	7.6 8.4	7.6 8.3	7.8 8.1
	Conductivity (µmhos/cm)	Initial	1569	1566	1577	1577	1571	1394
	Hardness (mg/L as CaCO <sub>3</sub> )		590	-	-	-	-	-

"-" = not measured/not required

<sup>4</sup> adjusted for temperature and barometric pressure

<sup>5</sup> ≤100 bubbles/minute

 Test Data Reviewed By : SF

 Date : 2024-05-24

Work Order : 254612  
 Sample Number : 82172

**SAMPLE IDENTIFICATION**

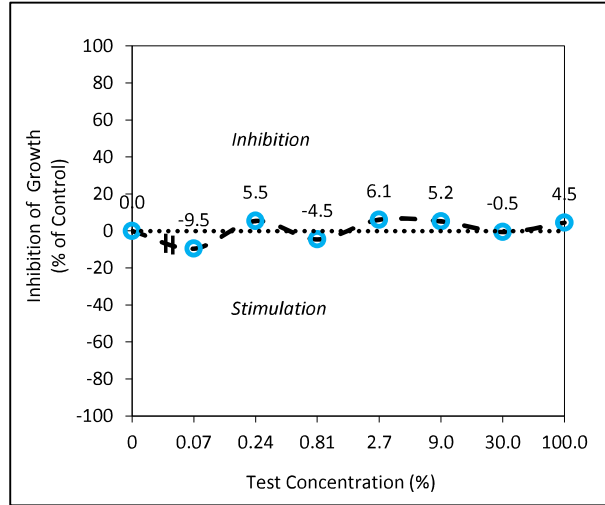
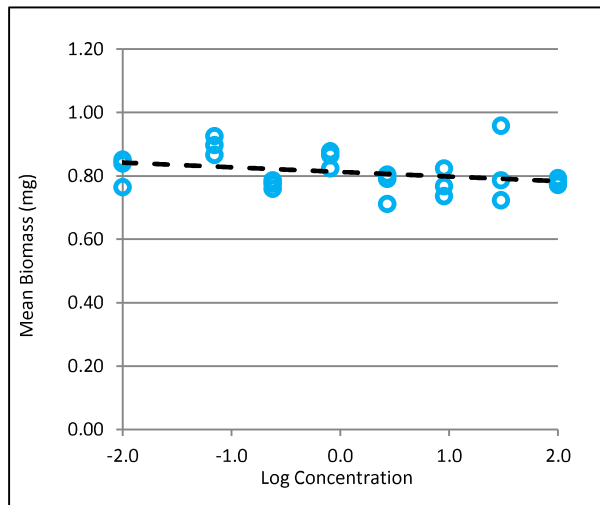
Company :	LANXESS Canada Co./Cie	Sampling Date :	2024-04-30
Location :	Elmira ON	Sampling Time :	09:45
Substance :	SFE 043024	Date Received :	2024-04-30
Sampling Method :	Grab	Time Received :	11:30
Sampled By :	A. Norris	Temperature at Receipt :	14 °C
Sample Description :	Clear, colourless.	Date Tested :	2024-05-01

Test Method : Test of Larval Growth and Survival Using Fathead Minnows. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/22 , 2nd ed. (February 2011).

**7-DAY TEST RESULTS**

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Biomass) <sup>1</sup>	>100%	—	—
LC50	>100%	—	—

The results reported relate only to the sample tested and as received.



**COMMENTS**

<sup>1</sup>as a measure of Growth

- All test validity criteria as specified in the test method cited above were satisfied.

Approved By :   
 Victoria (Tori) Carleton  
 I am approving this document  
 Nautilus Environmental  
 2024-05-28 10:23:04:00  
 Project Manager

Work Order : 254612

Sample Number : 82172

---

**TEST ORGANISM**


---

Test Organism :	<i>Pimephales promelas</i>	Culture Mortality/Diseased :	0.56 % (previous 7 days)
Organism Batch :	Fm24-05	Organism Age :	~07:00 - 21:50 h at test start
Source :	In-house culture		

- No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.
- Inflated swim bladders were confirmed in all test organisms used in this test.

---

**TEST CONDITIONS**


---

Test Type :	Static Renewal	Control/Dilution Water :	Well water <sup>3</sup>
Renewal Method :	80-85% syphoned and replaced	Test Volume / Replicate :	300 mL
Renewal Frequency :	≤ 24 hours	Test Vessel :	420 mL polystyrene beaker
Sample Filtration :	None	Depth of Test Solution :	8 cm
Test Aeration :	None	Organisms per Replicate :	10
pH Adjustment :	None	Number of Replicates :	3
Hardness Adjustment :	None	Test Method Deviation(s):	None

<sup>3</sup>no additional chemicals

---

**REFERENCE TOXICANT DATA**


---

Toxicant :	Potassium Chloride	Analyst(s) :	ASK, NP, PG, AS
Date Tested :	2024-04-22	Test Duration :	7 days
IC25 (Biomass) <sup>1</sup> :	0.96 g/L	LC50 :	1.08 g/L
95% Confidence Limits :	0.87 - 1.03 g/L	95% Confidence Limits :	1.02 - 1.15 g/L
Statistical Method :	Linear Interpolation (CETIS) <sup>a</sup>	Statistical Method :	Linear Regression (MLE) (CETIS) <sup>a</sup>
Historical Mean IC25 :	1.06 g/L	Historical Mean LC50 :	1.19 g/L
Warning Limits (± 2SD) :	0.95 - 1.19 g/L	Warning Limits (± 2SD) :	1.07 - 1.32 g/L

<sup>1</sup>as a measure of Growth

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

---

**REFERENCES**


---

<sup>a</sup> CETIS™, © 2000-2022. v2.1.4.0 x64. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

<sup>b</sup>Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics*, 11 :1-21.

Work Order : 254612  
 Sample Number : 82172

**CUMULATIVE DAILY CONTROL MORTALITY AND IMPAIRMENT**

Date :	2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06	2024-05-07	2024-05-08
Mortality/Impairment :	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Standard Deviation :	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)	(±0.0)

**CUMULATIVE DAILY MORTALITY**

Initiation Time : 10:50  
 Initiation Date : 2024-05-01  
 Completion Date : 2024-05-08

Concentration	Replicate	Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Treatment Mean Mortality (± SD) %	
		2024-05-01		2024-05-02		2024-05-03		2024-05-04		2024-05-05		2024-05-06		2024-05-07		2024-05-08			
		Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%		
Control	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.07	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.24	A	0	0	0	0	0	0	1	10	1	10	1	10	1	10	1	10	1	6.67
	B	0	0	0	0	0	0	0	0	0	0	1	10	1	10	1	10	1	(±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.81	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2.7	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	1	10	1	10		
100	A	0	0	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1	3.33
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Aberrant behaviour or swimming impairment : None

Work Order : 254612

Sample Number : 82172

**DRY WEIGHT AND BIOMASS DATA**

Concentration %	Replicate	Number Exposed	Replicate Mean Dry Weight (mg)	Treatment Mean Biomass (mg)	Standard Deviation
<b>Control</b>	A	10	0.764	0.818	0.047
	B	10	0.851		
	C	10	0.839		
<b>0.07</b>	A	10	0.866	0.896	0.030
	B	10	0.925		
	C	10	0.897		
<b>0.24</b>	A	10	0.775	0.773	0.014
	B	10	0.759		
	C	10	0.786		
<b>0.81</b>	A	10	0.865	0.855	0.028
	B	10	0.823		
	C	10	0.877		
<b>2.7</b>	A	10	0.711	0.768	0.050
	B	10	0.790		
	C	10	0.804		
<b>9</b>	A	10	0.736	0.775	0.044
	B	10	0.767		
	C	10	0.823		
<b>30</b>	A	10	0.958	0.822	0.122
	B	10	0.786		
	C	10	0.723		
<b>100</b>	A	10	0.779	0.781	0.011
	B	10	0.793		
	C	10	0.771		

**NOTES :**

- No outlying data points were detected according to Grubbs Test<sup>b</sup>.
- Control average dry weight per surviving organism = 0.818 mg

 Test Data Reviewed By : SF

 Date : 2024-05-24

Work Order : 254612

Sample Number : 82172

**WATER CHEMISTRY DATA**

		Day 0 - 1	Day 1 - 2	Day 2 - 3	Day 3 - 4	Day 4 - 5	Day 5 - 6	Day 6 - 7	
		2024-05-01	2024-05-02	2024-05-03	2024-05-04	2024-05-05	2024-05-06	2024-05-07	
<b>Initial Chemistry (100%)</b>	Sub-sample Used	1	1	1	2	2	3	3	
	Temperature (°C)	25	24	24	24	24	24	24	
	Dissolved O <sub>2</sub> (mg/L)	8.1	8.7	8.8	8.5	8.7	8.8	8.4	
	Dissolved O <sub>2</sub> % Sat. <sup>5</sup>	103	110	110	107	109	110	106	
	pH	7.5	7.5	7.6	7.5	7.5	7.6	7.7	
	Conductivity (µmhos/cm)	1569	1569	1557	1560	1569	1397	1394	
	Pre-aeration Time (min) <sup>6</sup>	20	20	20	20	20	20	20	
	Analyst(s) :	Initial ET (PC) Final NWP	NWP NP	NP XD	JN (JL) XD	JN (MR) ASK (AS)	AA (AS) ASK (SV)	ASK/JN (SV) ASK (VBC)	
<b>Control</b>	Temperature (°C)	Initial 24 Final 25	24 25	24 24	24 25	24 24	24 25	24 25	
	Dissolved O <sub>2</sub> % Sat. <sup>5</sup>	Initial 102	100	100	100	100	101	98	
	Dissolved O <sub>2</sub> (mg/L)	Initial 8.1 Final 7.2	8.0 6.3	8.0 6.9	8.0 7.0	7.9 7.1	8.2 6.3	7.7 6.9	
	pH	Initial 8.4 Final 8.2	8.4 7.9	8.4 8.0	8.3 8.1	8.5 8.1	8.4 8.0	8.4 8.1	
	Conductivity (µmhos/cm)	Initial 412	415	418	428	439	413	417	
	Hardness (mg/L as CaCO <sub>3</sub> )	200	-	-	-	-	-	-	
	<b>0.07 %</b>	Temperature (°C)	Initial 24 Final 25	24 25	24 24	24 25	24 24	24 25	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial 7.8 Final 7.0	7.8 6.1	7.8 6.7	7.8 6.8	7.8 7.1	8.1 6.3	7.1 6.7
pH		Initial 8.4 Final 8.2	8.3 7.9	8.3 8.0	8.4 8.1	8.5 8.2	8.3 7.9	8.2 8.1	
Conductivity (µmhos/cm)		Initial 409	412	419	432	438	411	423	
<b>9 %</b>		Temperature (°C)	Initial 24 Final 25	24 25	24 24	24 25	24 24	24 25	24 25
		Dissolved O <sub>2</sub> (mg/L)	Initial 7.8 Final 6.9	7.8 6.0	7.8 6.7	7.8 6.7	7.9 6.3	8.1 6.3	7.3 6.8
	pH	Initial 8.3 Final 8.2	8.3 7.9	8.2 8.0	8.2 8.1	8.3 8.0	8.3 8.0	8.2 8.2	
	Conductivity (µmhos/cm)	Initial 520	526	530	537	543	504	518	
<b>100 %</b>	Temperature (°C)	Initial 24 Final 25	24 25	24 24	24 25	24 24	24 25	24 25	
	Dissolved O <sub>2</sub> (mg/L)	Initial 7.9 Final 6.9	7.9 5.7	8.1 6.4	8.1 6.6	8.4 6.2	8.3 6.2	8.1 6.8	
	pH	Initial 7.7 Final 8.3	7.9 8.2	7.8 8.2	7.6 8.2	7.6 8.2	7.8 8.2	7.4 8.3	
	Conductivity (µmhos/cm)	Initial 1569	1566	1577	1577	1571	1394	1399	
	Hardness (mg/L as CaCO <sub>3</sub> )	590	-	-	-	-	-	-	

"-" = not measured/not required

<sup>5</sup> adjusted for temperature and barometric pressure

<sup>6</sup> ≤100 bubbles/minute

 Test Data Reviewed By : SF

 Date : 2024-05-24

CHAIN OF CUSTODY RECORD



Asset Tag / Tank Order No.

291612

Shipping Address: AquaTox Testing & Consulting Inc.  
B-11 Nicholas Beaver Road  
Puslinch, Ontario Canada N0B 2J0

Phone: (519) 763-4412 Fax: (519) 763-4419

P.O. Number: 900003378

Field Sampler Name (print): Allan Norris

Signature: *[Signature]*

Affiliate: LANXESS CANADA

Sample Storage (prior to shipping): ICE PACK

Custody Relinquished by: *[Signature]*

Date/Time Shipped: APR 30/24 10:30

Client: LANXESS CANADA CO./CIE

25 ERB ST  
ELMIRA ON  
N3B 2T3

Phone: 519 669 1671

Fax: 519 669 3273

Contact: MICHELLE YANTZ

Sample Identification		Analysis Requested										Sample Method and Volume				
Date Collected (YYYY-MM-DD)	Time Collected (e.g. 14:30, 24 hr abso)	AquaTox Sample Number	Temperature (°C)	Rainbow Trout Single Concentration	Rainbow Trout Single Concentration	Daphnia magna Single Concentration	Daphnia magna LC50	Freshwater Algae Survival & Growth	Contaminant data	Reproduction	Lemna minor Growth	Pseudokirchnerella	Other (please specify)	Grab	Composites	# of Containers and Volume (e.g. 2 x 1L, 3 x 10L, etc.)
2024-04-30	9:15	GE 043024	14°C	821714C				✓	✓					✓		3 x 10L
2024-04-30	9:45	SFE 043024	14°C	821724C				✓	✓					✓		3 x 10L

For Lab Use Only

Received By: JW/ASK

Date: 2024-04-30

Time: 11:30

Storage Location:

Storage Temp (°C):

Please list any special requests or instructions:

\* Grab samples as per pail labels. 2024-04-30 JW

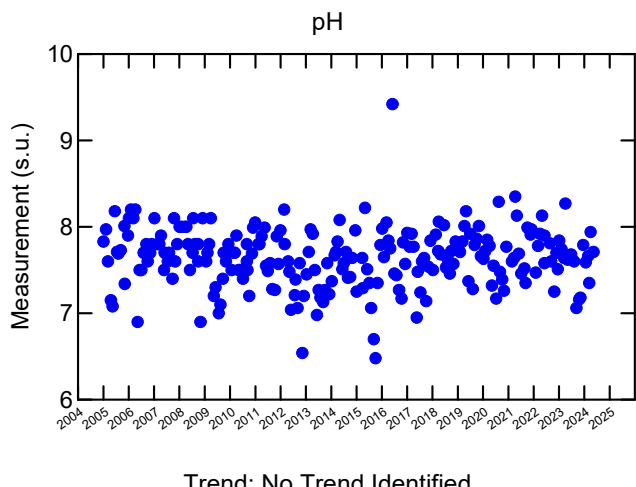
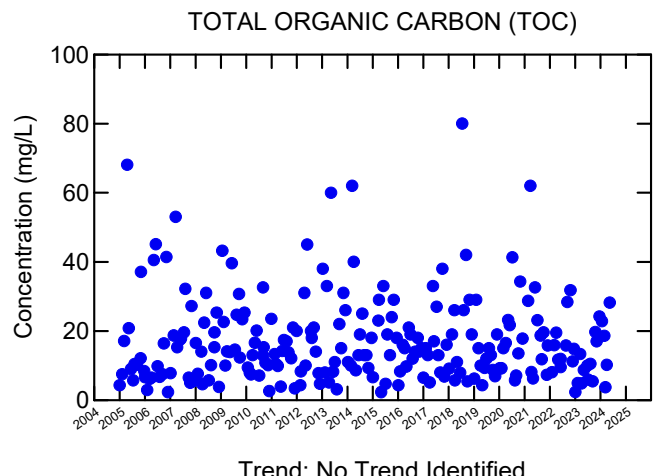
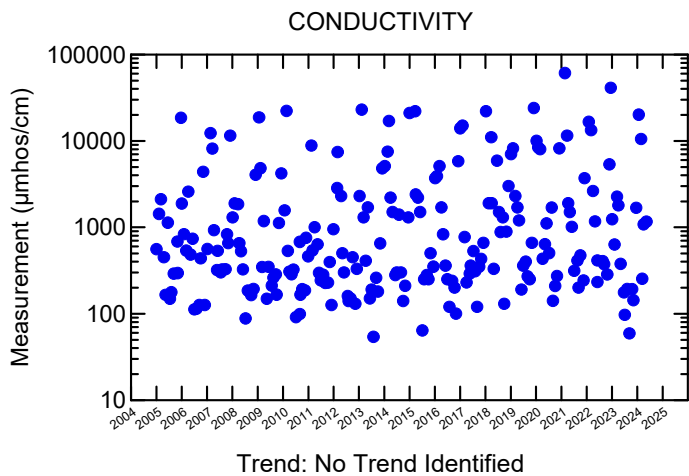
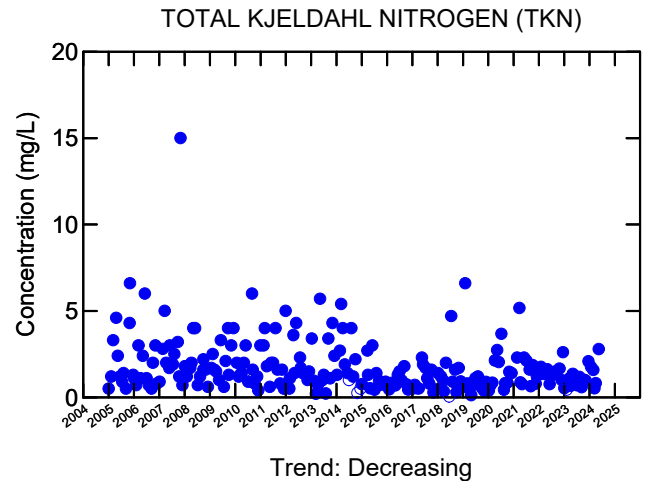
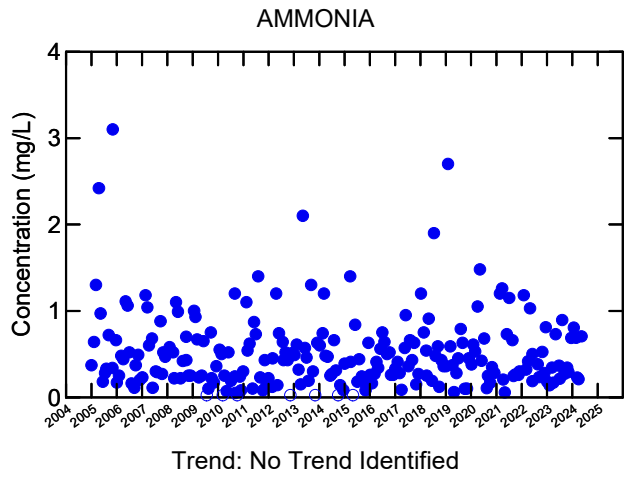
CHRONIC TOXICITY

*[Handwritten Signature]*

# Attachment B

## EAB Data





**Legend:**

- Detected Result
- Non-detect (plotted at one half the detection limit)

**Notes:**

Any detection limits elevated above target detection limit and/or detected values were not included in the trend analysis.

No Trend: trend analysis did not detect a significant trend above 95 percent confidence.

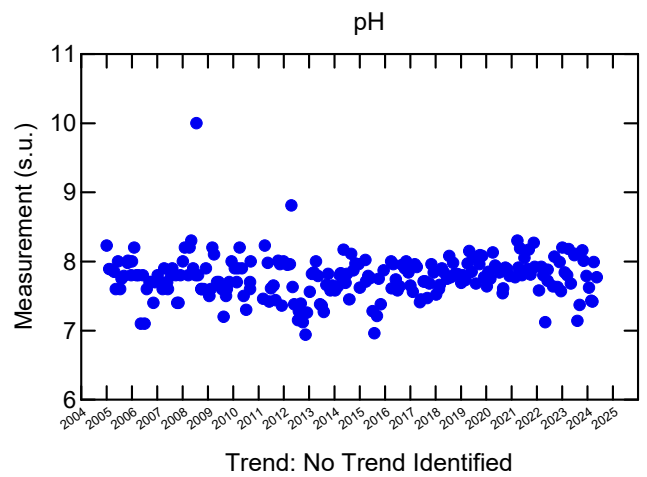
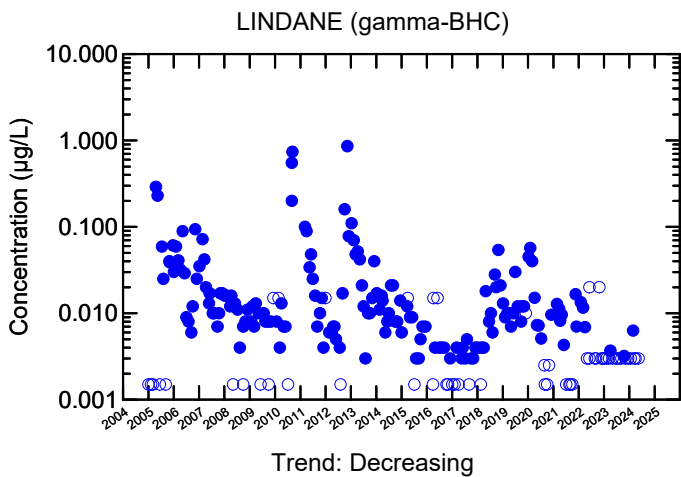
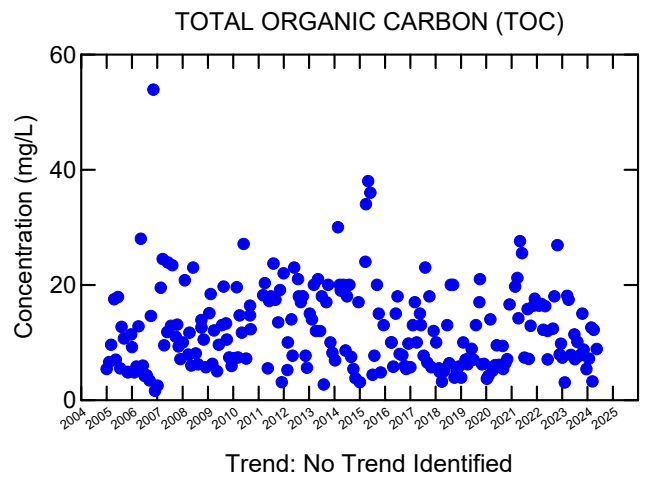
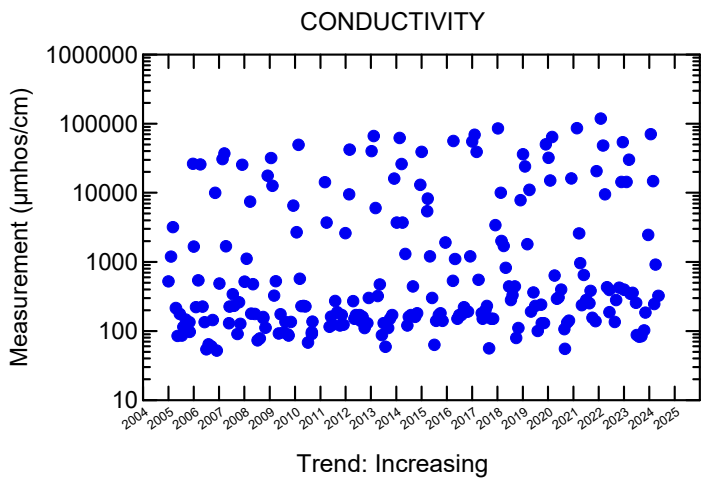
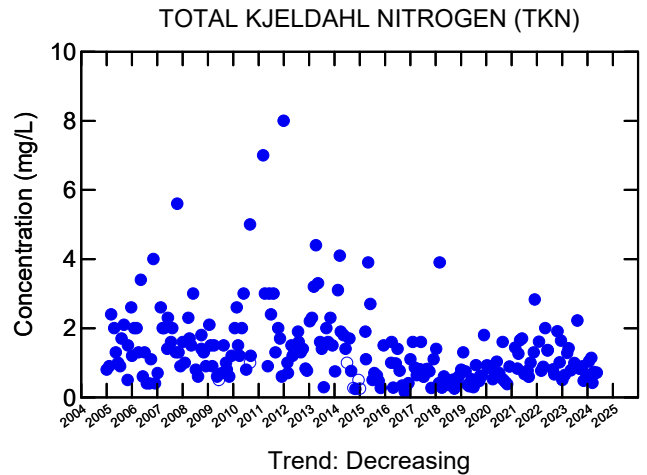
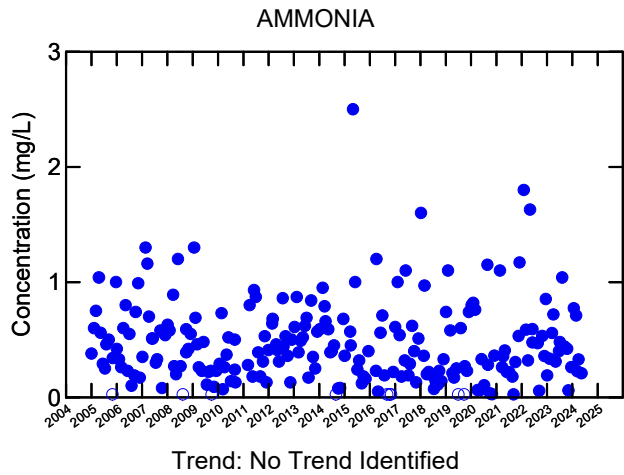


LANXESS Canada Co./Cie  
Elmira, Ontario

Project No. 11192137-38  
Date: June 5, 2024

**ANALYTE CONCENTRATION vs. TIME**  
**STORM WATER OUTFALL 0200**

**FIGURE B.1**



**Legend:**

- Detected Result
- Non-detect (plotted at one half the detection limit)

**Notes:**

Any detection limits elevated above target detection limit and/or detected values were not included in the trend analysis.  
 No Trend: trend analysis did not detect a significant trend above 95 percent confidence.

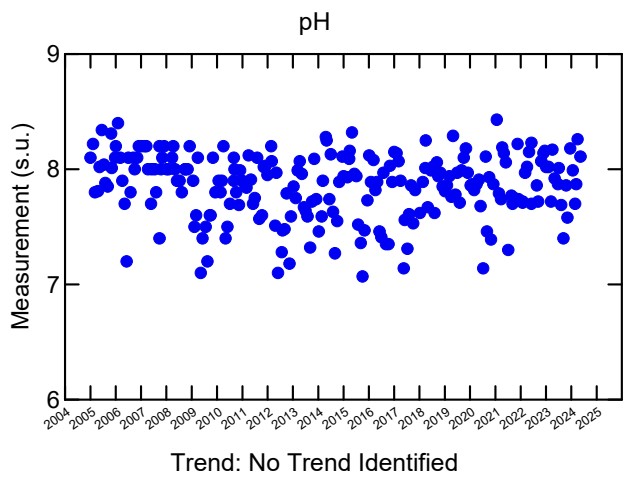
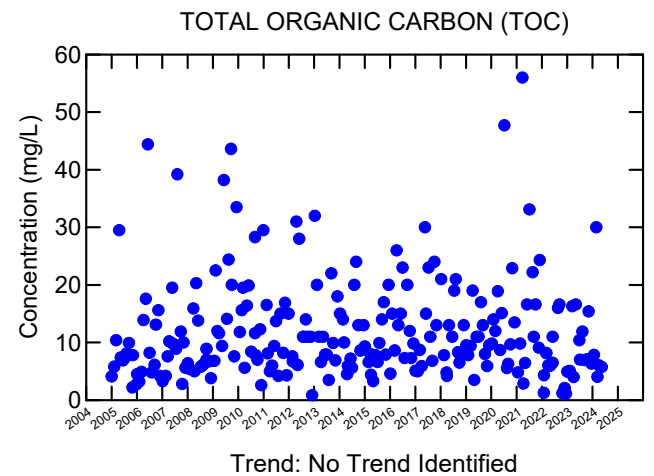
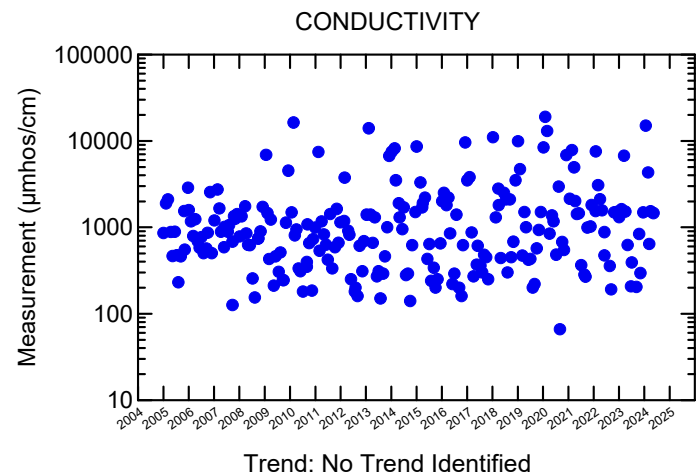
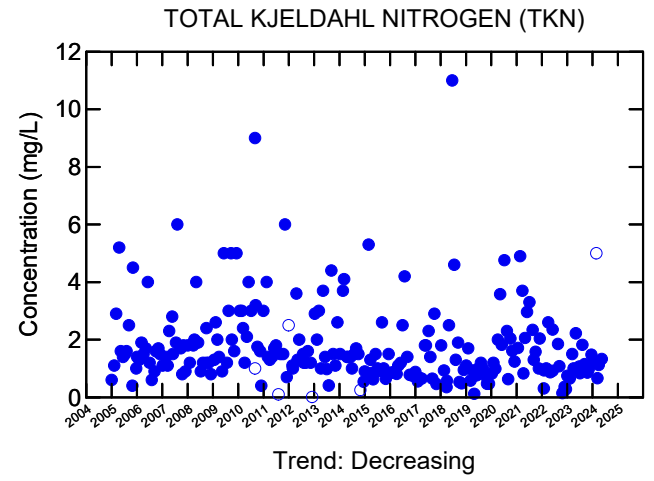
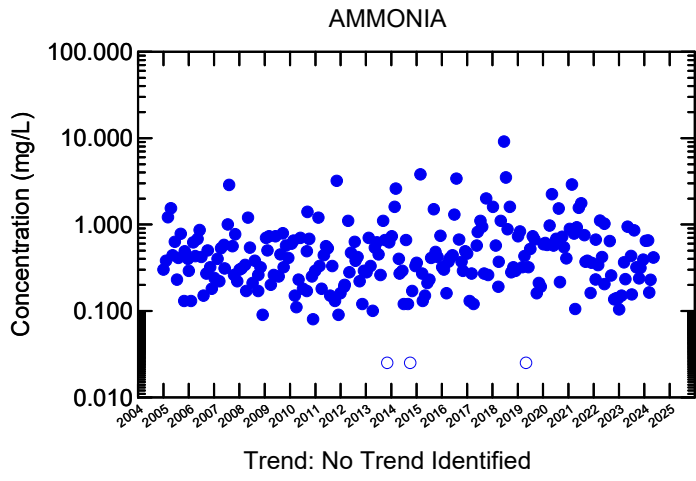


LANXESS Canada Co./Cie  
 Elmira, Ontario

**ANALYTE CONCENTRATION vs. TIME  
 STORM WATER OUTFALL 0400**

Project No. 11192137-38  
 Date: Jun 5, 2024

**FIGURE B.2**



**Legend:**  
 ● Detected Result  
 ○ Non-detect (plotted at one half the detection limit)

**Notes:**  
 Any detection limits elevated above target detection limit and/or detected values were not included in the trend analysis.  
 No Trend: trend analysis did not detect a significant trend above 95 percent confidence.

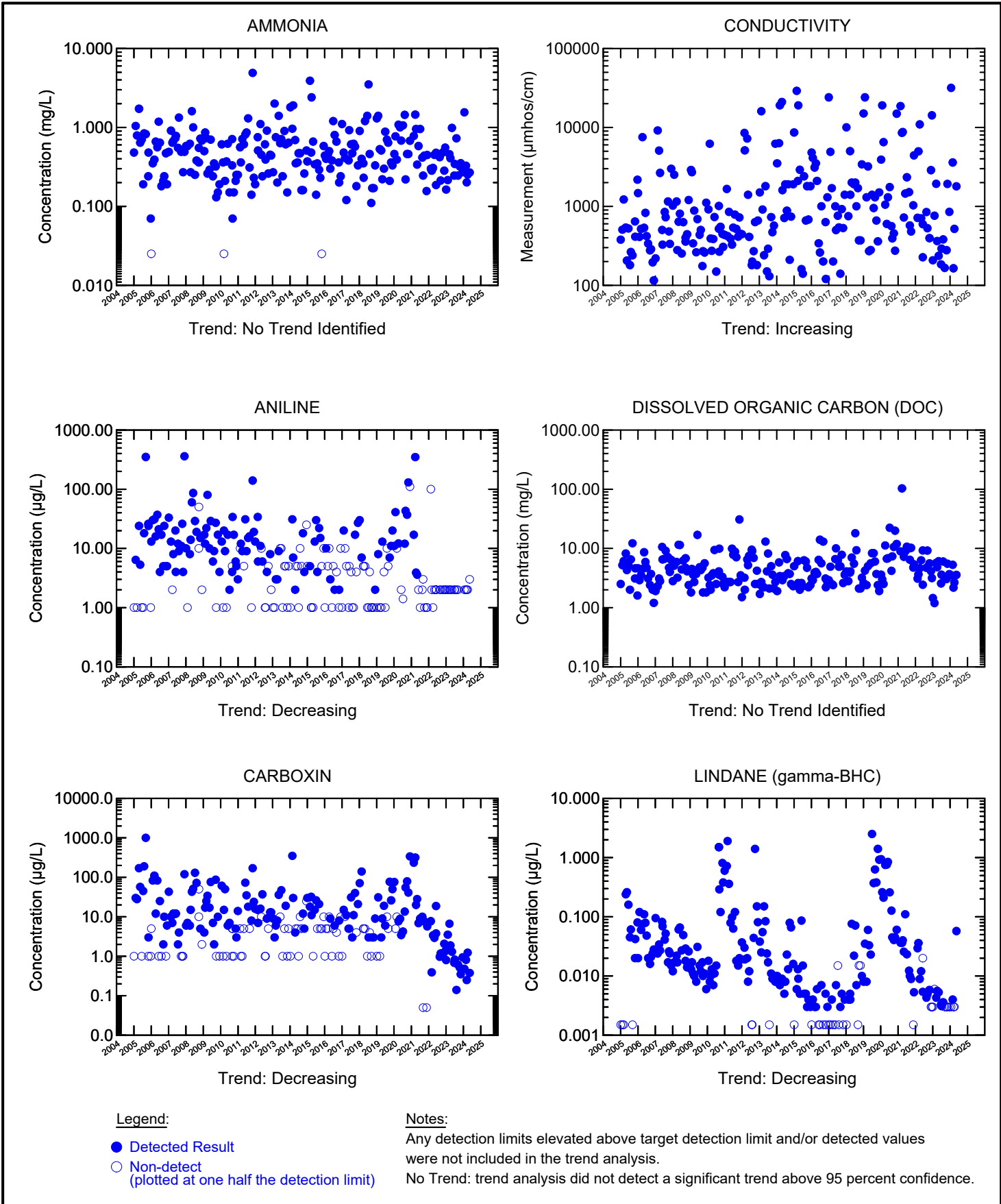


LANXESS Canada Co./Cie  
 Elmira, Ontario

Project No. 11192137-38  
 Date: June 5, 2024

## ANALYTE CONCENTRATION vs. TIME STORM WATER OUTFALL 0800

**FIGURE B.3**

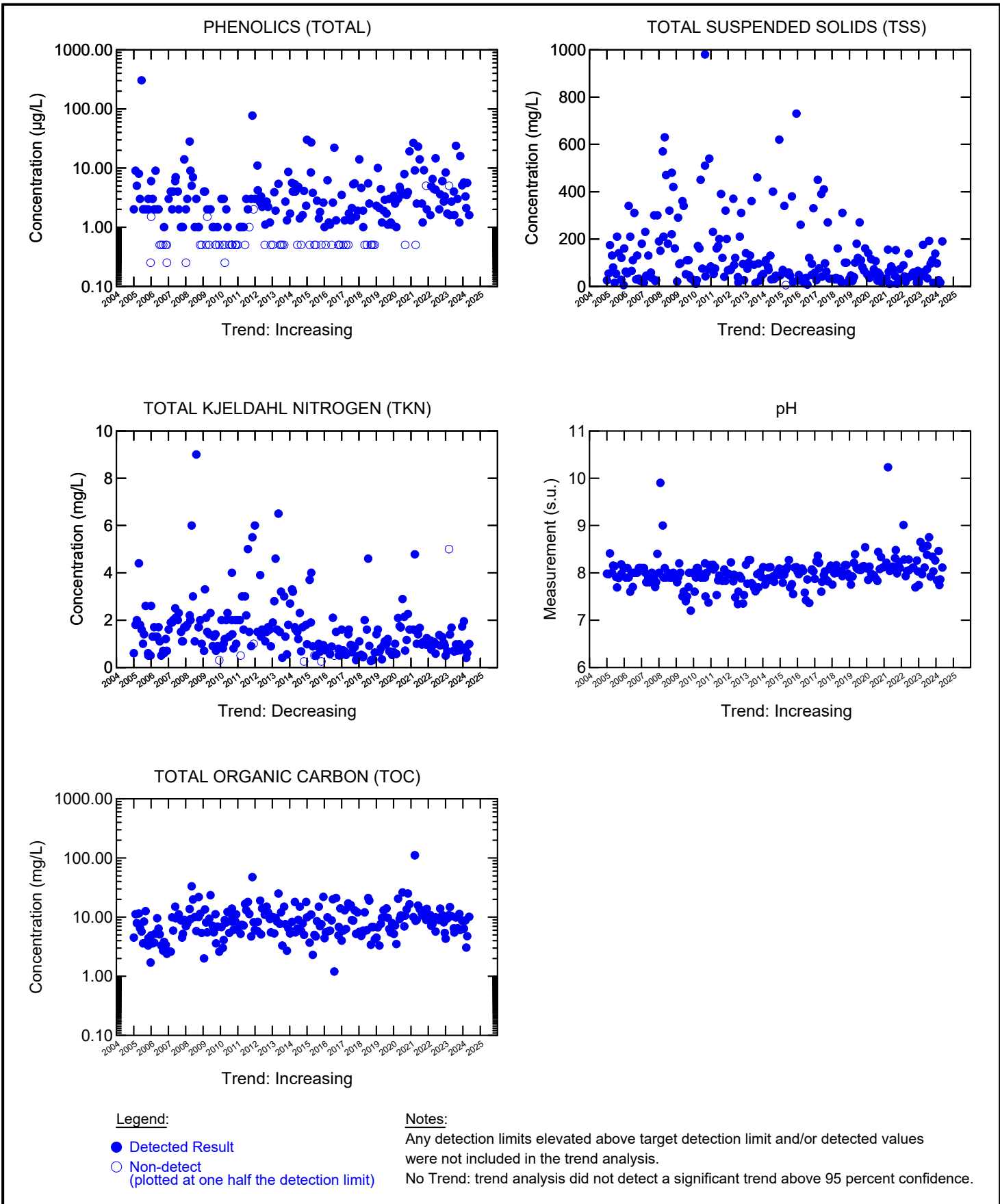


LANXESS Canada Co./Cie  
Elmira, Ontario

Project No. 11192137-38  
Date: June 5, 2024

**ANALYTE CONCENTRATION vs. TIME**  
**STORM WATER SEWER**

**FIGURE B.4**



LANXESS Canada Co./Cie  
 Elmira, Ontario

Project No. 11192137-38  
 Date: June 5, 2024

**ANALYTE CONCENTRATION vs. TIME**  
**STORM WATER SEWER**

**FIGURE B.5**

Table B.1

**Environmental Appeal Board (EAB)**  
**Analytical Results - May 2024**  
**LANXESS Canada Co./Cie**  
**Elmira, Ontario**

Sample Location: Sample ID: Sample Date:		Storm Water Sewer SWS 051424 5/14/2024	Storm Water Outfall 0200 0200 051424 5/14/2024	Storm Water Outfall 0400 0400 051424 5/14/2024	Storm Water Outfall 0800 0800 051424 5/14/2024
Parameters	Units				
<b>General Chemistry</b>					
Ammonia-N	mg/L	0.268	0.705	0.209	0.415
Conductivity	umhos/cm	1790	1160	323	1460
Cyanide (total)	mg/L	0.0118	0.0158	0.0124	0.0023
Dissolved organic carbon (DOC) (dissolved)	mg/L	3.57	--	--	--
pH, lab	s.u.	8.11	7.71	7.77	8.11
Phenolics (total)	mg/L	0.0016	--	--	--
Sulfide	mg/L	0.048	ND(0.010)	ND(0.010)	ND(0.010)
Total kjeldahl nitrogen (TKN)	mg/L	0.991	2.79	0.712	1.33
Total organic carbon (TOC)	mg/L	10.1	28.2	8.87	5.74
Total suspended solids (TSS)	mg/L	190	--	--	--
<b>Herbicides</b>					
2,4,5-TP (Silvex)	µg/L	ND(0.100)	ND(0.500)	ND(0.500)	ND(0.100)
2,4-DB	µg/L	ND(0.100)	ND(0.500)	ND(0.500)	ND(0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	µg/L	0.256	0.972	ND(0.500)	ND(0.100)
<b>Pesticides</b>					
gamma-BHC (lindane)	µg/L	0.0573	ND(0.0030)	ND(0.0030)	ND(0.0030)
<b>Semi-Volatiles</b>					
2-Mercaptobenzothiazole	µg/L	ND(20)	ND(20)	ND(20)	ND(20)
Aniline	µg/L	ND(3.0) UJ	ND(2.0) UJ	ND(2.0) UJ	ND(2.0) UJ
Benzothiazole	µg/L	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Carboxin	µg/L	0.377	ND(0.100)	ND(0.100)	ND(0.100)
N-Nitrosodimethylamine	µg/L	ND(0.00100)	ND(0.00460)	ND(0.00090)	ND(0.00128)
N-Nitrosodiphenylamine	µg/L	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
N-Nitrosodiphenylamine + Diphenylamine	µg/L	0.57	ND(0.40)	ND(0.40)	ND(0.40)
<b>Volatiles</b>					
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(20)	ND(20)	ND(20)	ND(20)
Ethylbenzene	µg/L	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
m&p-Xylenes	µg/L	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)
o-Xylene	µg/L	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Toluene	µg/L	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
<b>Misc</b>					
Oil and grease	mg/L	ND(5.0)	--	--	--
<b>Notes:</b>					
ND(RDL)	Not detected at the associated reporting detection limit.				
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.				
--	The parameter was not analyzed for.				

# **Attachment C**

## **Upper Aquifer Hydraulic Containment Requirements**

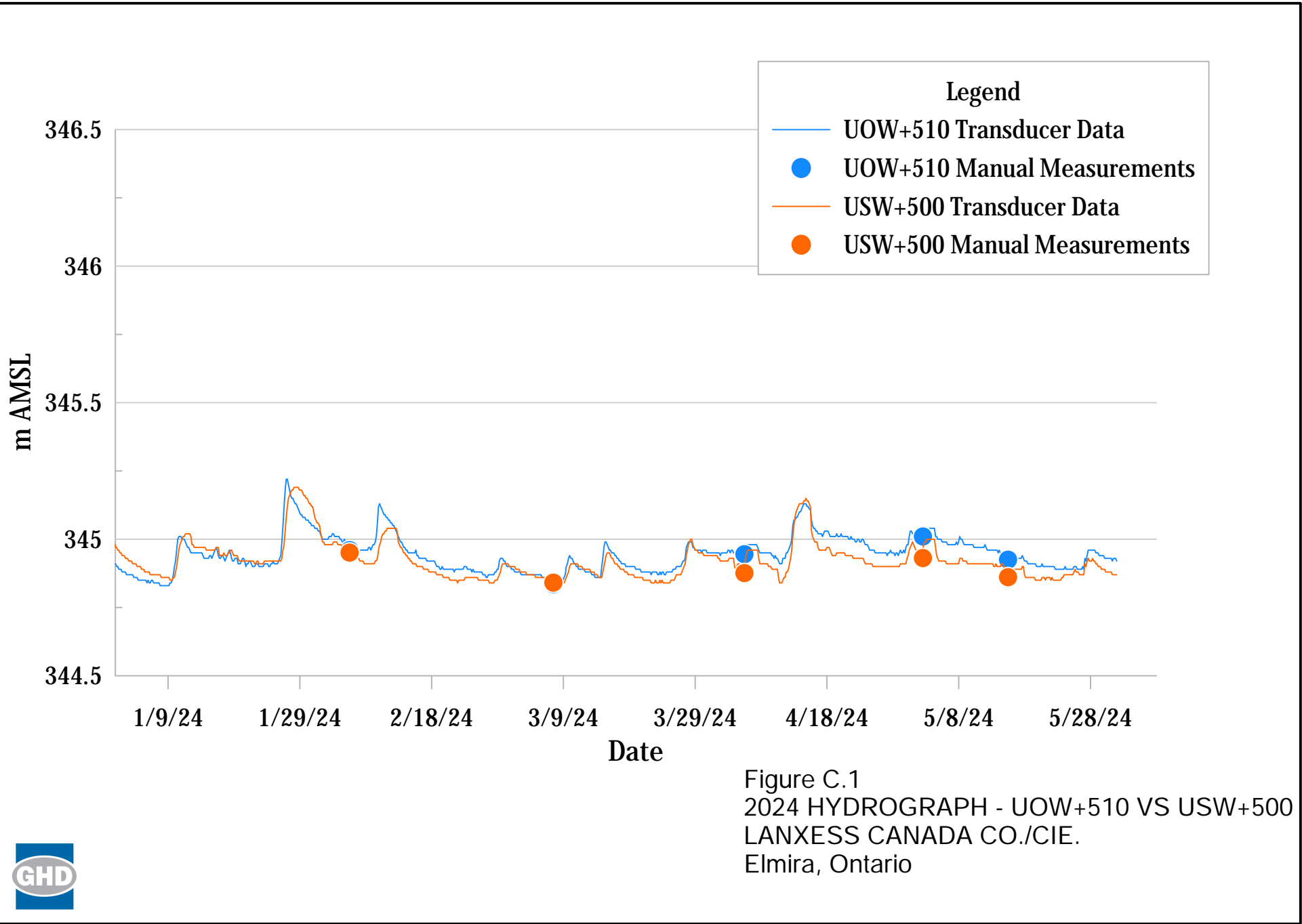
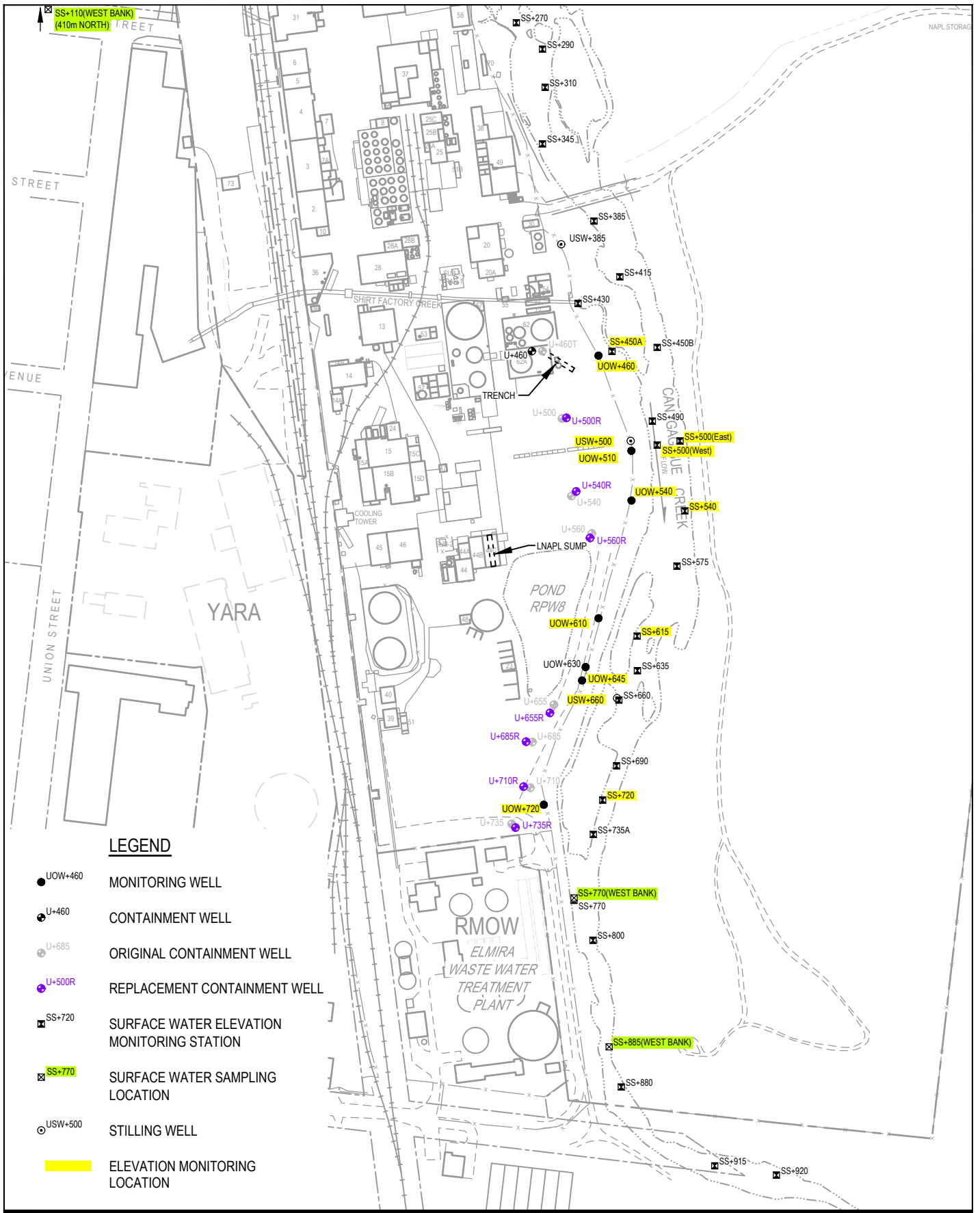


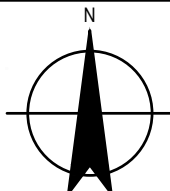
Figure C.1  
 2024 HYDROGRAPH - UOW+510 VS USW+500  
 LANXESS CANADA CO./CIE.  
 Elmira, Ontario







Coordinate System:  
UTM NAD 27



LANXESS CANADA CO./CIE  
ELMIRA, ONTARIO

Project No. 11192137  
Date May 2024

**SURFACE WATER SAMPLING AND  
ELEVATION MONITORING LOCATIONS**

**FIGURE C.2**

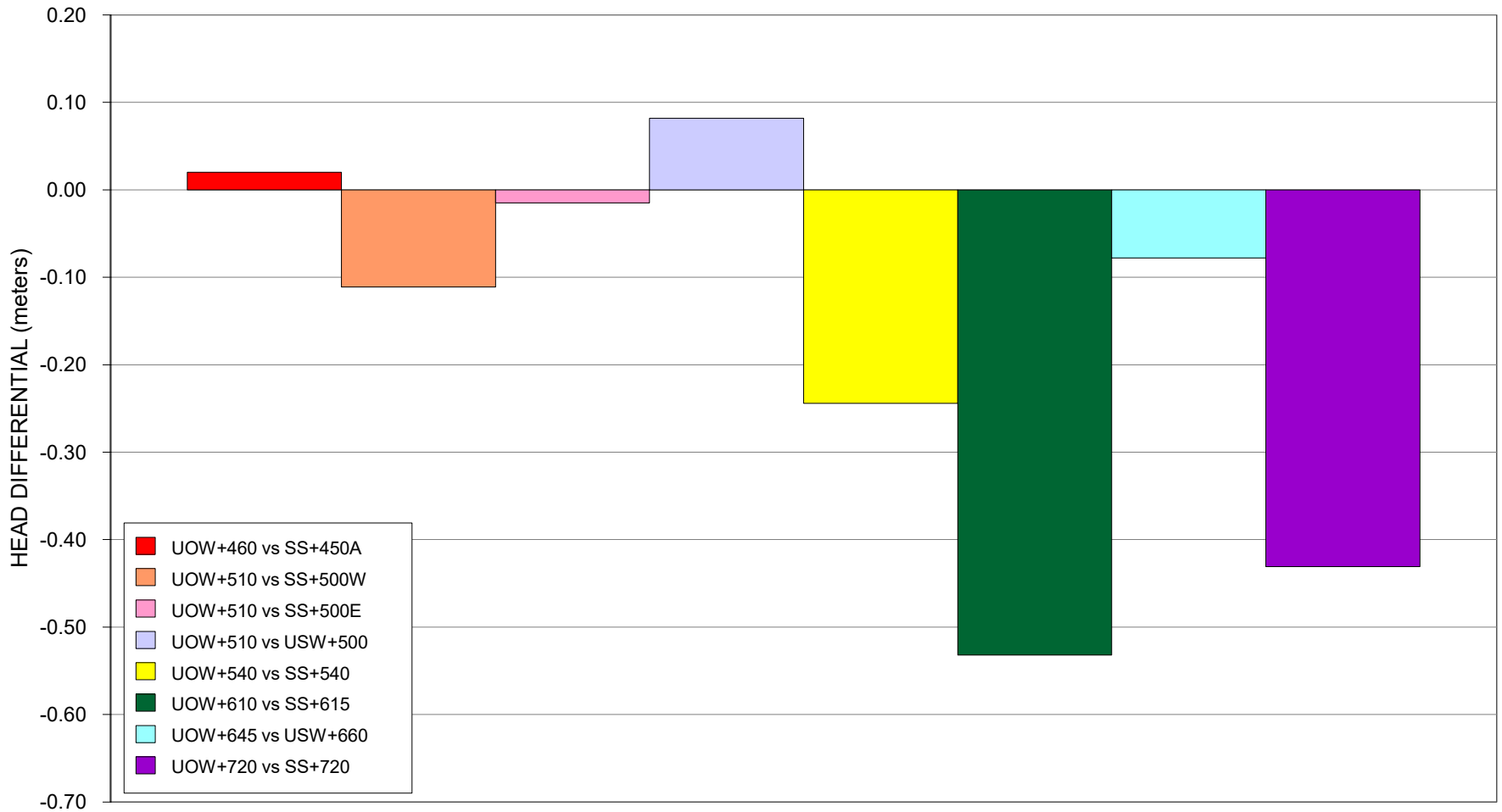


figure C.3  
 HEAD DIFFERENTIAL AT KEY MONITORING PAIRS - MAY 2, 2024  
 UPPER AQUIFER CONTAINMENT SYSTEM  
 LANXESS CANADA CO./CIE  
 Elmira, Ontario



**Table C.1**

**Summary of Detected Compounds in Surface Water  
May 2024 <sup>[1]</sup>  
LANXESS Canada Co./Cie  
Elmira, Ontario**

	Units	Sample Location			SS-110 West	SS+770 West	SS+855 West
		PWQO		ECA	(Upstream)		
		Status	Value	Schd. E Criteria			
Flow <sup>[2]</sup> = 2,040 L/s							
<b>General Chemistry</b>							
Ammonia as N	mg/L				0.252	0.228	0.212
Un-ionized Ammonia	mg/L	PWQO	0.020	0.016	0.0118	0.0103	0.0068
Temperature °C (Field)	°C				14.04	14.41	14.31
pH (Field)	su	PWQO	6.5-8.5		8.29	8.26	8.11
<b>Volatile Organic Compounds (VOCs)</b>							
All 7 VOCs Analyzed					ND	ND	ND
<b>Base, Neutral and Acid Extractable Compounds (BNAs)</b>							
All 17 BNAs Analyzed					ND	ND	ND
<b>Pesticides &amp; Herbicides</b>							
2,4-D	µg/L	PWQO	4	1.0	0.090	ND(0.050)	ND(0.050)
Remaining 1 Pesticide and Herbicide Analyzed					ND	ND	ND

Notes:

- [1] Samples were collected on May 2, 2024.  
Due to a contamination source discovered in the LANXESS NDMA laboratory, the May 2, 2024 NDMA/NMOR samples had to re-sample  
All three locations were re-sampled on May 15, 2024. LANXESS verified that the containment loss was still in effect on May 15, 2024.
- [2] Flow measurement was obtained from the Grand River Conservation Authority (GRCA) Elmira (Arthur Street) gauge.
- L/s Litres per second.
- PWQO Provincial Water Quality Objective, MOE, February 1999.
- ND Not detected at the associated reporting detection limit.