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**CERTIFICATE OF ANALYSIS**

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<b>Work Order</b>	: <b>WP2427611</b>		
<b>Client</b>	: <b>Municipality of Pangnirtung</b>	<b>Laboratory</b>	: ALS Environmental - Winnipeg
<b>Contact</b>	: Bhabesh Roy	<b>Account Manager</b>	:
<b>Address</b>	: P.O. Box 253	<b>Address</b>	: 1329 Niakwa Road East, Unit 12
	: Pangnirtung Nunavut Canada X0A 0R0		: Winnipeg MB Canada R2J 3T4
<b>Telephone</b>	: ----	<b>Telephone</b>	: +1 204 255 9720
<b>Project</b>	: ----	<b>Date Samples Received</b>	: 20-Dec-2024 12:45
<b>PO</b>	: ----	<b>Date Analysis Commenced</b>	: 23-Dec-2024
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 19-Mar-2025 13:27
<b>Sampler</b>	: ----		
<b>Site</b>	: ----		
<b>Quote number</b>	: 2025 Testing		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

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**Signatories**

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jeremy Byrnes	Senior Analyst	Limnology, Winnipeg, Manitoba



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Pan 3	----	----	----	----
					Client sampling date / time	16-Dec-2024 14:45	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	WP2427611-001	----	----	----	----	
					Result	----	----	----	----	
Bioassays										
Trout bioassay (pass/fail)	----	E861A/WP	-	-	Fail	----	----	----	----	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: WP2427611	Page	: 1 of 4
Client	: Municipality of Pangnirtung	Laboratory	: ALS Environmental - Winnipeg
Contact	: Bhabesh Roy	Account Manager	:
Address	: P.O. Box 253 Pangnirtung NU Canada X0A 0R0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: ----	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 20-Dec-2024 12:45
PO	: ----	Issue Date	: 19-Mar-2025 13:28
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 2025 Testing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### Summary of Outliers

#### Outliers : Quality Control Samples

- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

#### Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method			Method	Sampling Date	Extraction / Preparation			Analysis				
Container / Client Sample ID(s)					Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
						Rec	Actual			Rec	Actual	
Bioassays : Trout Bioassay Pass/Fail												
HDPE Pail Pan 3			E861A	16-Dec-2024	----	----	----		23-Dec-2024	5 days	6 days	✖ EHT

### Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



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## *Quality Control Parameter Frequency Compliance*

- No Quality Control data available for this section.



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Trout Bioassay Pass/Fail	E861A  ALS Environmental - Winnipeg	Water	EPS 1/RM/13, EPS 1/RM/9	Rainbow trout are introduced into a single 100% concentration of the test sample. When the sample is lethal to greater than 50% of the organisms, the sample fails to meet the toxicity criteria.

QUALITY CONTROL REPORT

Work Order	: WP2427611	Page	: 1 of 2
Client	: Municipality of Pangnirtung	Laboratory	: ALS Environmental - Winnipeg
Contact	: Bhabesh Roy	Account Manager	:
Address	: P.O. Box 253 Pangnirtung NU Canada X0A 0R0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.  
This Quality Control Report contains the following information:

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Jeremy Byrnes	Senior Analyst	Winnipeg Limnology, Winnipeg, Manitoba





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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

### Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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## **Rainbow Trout Bioassay Test Report - Pass/Fail**

Sample ID:	WP2427611-001
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### **Summary Results**

96-hour Pass/Fail:	FAIL
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### **Sample Information**

Sample Origin:	Municipality of Panguitong
Sample Description:	Pan 3
Sampling Date and Time:	16-Dec-24 14:45
Sampling Method:	Grab
Sampled By:	Client
Container(s) Description:	2 x 10L Polyethylene Pails
Sample Volume:	20L
Date and Time Received:	20-Dec-24 13:06
Transit Irregularities:	None
Storage Temperature (°C):	4

### **Test Information**

Test Organism:	Oncorhynchus mykiss
Test Description:	Acute, 96-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/13, 2nd Ed. Dec. 2000, with 2007, 2016, and 2023 amendments, Environment Canada EPS 1/RM/9, May 1996 with May 2007 amendments, Environment Canada
Performed By:	KS/JB
Starting Date and Time:	23-Dec-24 11:00
Deviations from Reference Method:	Sample past hold time. Analyzed at client's request.



### Initial Parameters

### Observations

Colour:	Black		
Odour:	Mild		
Turbidity:	Moderate		
Solids:	Low		
Hardness (mg/L):	1.3	mL Titration Solution/ 50	mL of Sample x 1000 = 26
Temperature (°C):	14.1	Thermometer	S/N 210615826
Dissolved Oxygen (mg/L):	10.58	YSI Dissolved Oxygen Meter	S/N 15M102668
Conductivity (µS/cm):	1095	VWR Portable Conductivity Meter	S/N 51071543
pH (5.5-8.5 pH units):	7.50	VWR SympHony pH Meter	S/N D01908
pH Adjustment:	Not Adjusted		
pH Adjustment Procedure:	n/a		

### Pre-Aeration

Aeration Time (min):	90	
Sample Test Concentration (v/v):	100%	0%
Aeration Rate (5.5-7.5 mL/min/L):	6.2±0.3	6.2±0.3
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	102.5	97.0
Average D.O. After Pre-Aeration (%):	99.9	99.2

### Test Organism Data

Lot Number:	06/11/24 T7
Weekly Mortality Preceding Test (%):	0
Sample Size:	10

### Conditions Common to All Concentrations During Test

Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water
Container Description:	20 L Polyethylene Pail with Liner
Aeration Method:	Compressed air bubbled through silica-glass air diffuser
Aeration Rate (5.5-7.5 mL/min/L):	(as set during pre-aeration above)
Test Solution Volume (L):	20
Test Solution Depth (cm):	34
Number of Test Organisms per Container:	10
Loading Density (g/L):	0.26



### Conditions During Test

Concentration (% v/v)	Temperature (°C) (15 ± 1°C)					Dissolved Oxygen (mg/L)					pH (pH units)				
	0h	24h	48h	72h	96h	0h	24h	48h	72h	96h	0h	24h	48h	72h	96h
0	14	n/a	n/a	n/a	15	10.13	n/a	n/a	n/a	9.95	7.33	n/a	n/a	n/a	7.38
100	14	n/a	n/a	n/a	15	10.32	n/a	n/a	n/a	10.03	7.66	n/a	n/a	n/a	8.15

Conc. (% v/v)	Conductivity (µS/cm)	Number of Fish Dead				Number of Fish Stressed			
	0h	24h	48h	72h	96h	24h	48h	72h	96h
0	295	0	n/a	n/a	0	0	n/a	n/a	0
100	1094	10	n/a	n/a	10	0	n/a	n/a	0

### Control Fish Information at End of Test

Mean Fork Length (mm):	39
Lower Range Fork Length (mm):	34
Upper Range Fork Length (mm):	45
Mean Wet Weight (g):	0.51

### Mortality and Stressed Behaviour Information

Conc. (% v/v)	Mean Number of Fish at End of Test		Mean Rate of Fish at End of Test (%)	
	Dead	Stressed	Dead	Stressed
0	0	0	0	0
100	10	0	100	0



### Reference Toxicant Test Results

Reference Toxicant:	Zinc Sulfate
Date Reference Toxicant Initiated:	09-Dec-24
Recent 96h Reference Toxicant Test LC50 (mg/L Zinc):	1.31
Lower 95% Confidence Limit (mg/L Zinc):	1.08
Upper 95% Confidence Limit (mg/L Zinc):	1.68
Historic Geometric Mean LC50 (mg/L Zinc):	0.66
Lower 95% Confidence Limit (mg/L Zinc):	0.25
Upper 95% Confidence Limit (mg/L Zinc):	1.76
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

### Sublethal Biological Effects

No Sublethal Biological Effect Observed.

### Observations/Comments

Toxicity Observed. 100% mortality observed in the 100% concentration.

## Chain of Custody (COC) / Analytical Request Form


COC Number: 22 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



<b>Report To</b> Contact and company name below will appear on the final report		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax b.roy@pangnirtung.ca Email 2 courtney.cox@pangnirtung.ca Email 3 SAO@pangnirtung.ca		<b>Turnaround Time (TAT) Requested</b> <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 1 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 4 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.		<b>AFFIX ALS BARCODE LABEL HERE</b> (ALS use only)	
<b>Company:</b> Municipality of Pangnirtung <b>Contact:</b> Bhabesh Roy <b>Phone:</b> (867)473-9953 Company address below will appear on the final report <b>Street:</b> PO# 253 <b>City/Province:</b> Pangnirtung, NU <b>Postal Code:</b> X0A 0R0		<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>Date and Time Required for all E&amp;P TATs:</b> For all tests with rush TATs requested, please contact your AM to confirm availability.			
<b>Company:</b> <b>Contact:</b>		<b>Invoice Recipients</b> Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		<b>NUMBER OF CONTAINERS</b>	
<b>Project Information</b> ALS Account # / Quote #: Pangnirtung Trout Job #: AFE/Cost Center: PO# PO / AFE: Major/Minor Code: Routing Code: LSD: Requisitioner: Location:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		<b>Trout Bioassay</b>		<b>SAMPLES ON HOLD</b>	
<b>ALS Lab Work Order # (ALS use only):</b>		<b>ALS Contact:</b>		<b>Sampler:</b>		<b>Environmental Division</b> <b>Winnipeg</b> <b>Work Order Reference</b> <b>WP2427611</b>  Telephone : +1 204 255 9720	
<b>ALS Sample # (ALS use only)</b> Pan 3		<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)		<b>Date</b> 16-Dec-24		<b>Time</b> 2:45pm	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Notes / Specify Limits for result evaluation by selecting from drop-down below</b> (Excel COC only)		<b>Cooling Method:</b> <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED		<b>Submission Comments identified on Sample Receipt Notification:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A		INITIAL COOLER TEMPERATURES °C	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO				54.0		FINAL COOLER TEMPERATURES °C	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b>		<b>FINAL SHIPMENT RECEPTION (ALS use only)</b>			
Released by: _____		Received by: <u>RS</u>		Received by: _____		Time: _____	
Date: _____		Date: <u>Dec 20/24</u>		Date: _____		Time: _____	
<b>REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION</b> Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy. 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.		WHITE - LABORATORY COPY YELLOW - CLIENT COPY		REB 2023 FRONT			



white: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy