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AGENDA FOR REGULAR COUNCIL MEETING
Tuesday July 14th, 2026 – 6:00 p.m.

Join Zoom Meeting: https://us02web.zoom.us/j/82220904152?pwd=cmaayLSsyM4cYpOGGvTK5BxDIJRZIG.1
Meeting ID: 822 2090 4152
Passcode: 651200

1. CALL TO ORDER

Land Acknowledgement

2. APPROVAL OF AGENDA

Recommendation: BE IT RESOLVED THAT the agenda for the Regular Council Meeting of July 14th, 2026 be approved as circulated. (Alternatively, amendments to be noted; with approval as amended.)

3. DECLARATIONS OF PECUNIARY INTEREST

4. TOWN HALL SEGMENT

5. DEPUTATIONS

None for this meeting.

6. MINUTES OF PREVIOUS MEETINGS

6.1 Minutes – Open Session Regular Council Meeting – June 23rd, 2026

Recommendation: BE IT RESOLVED THAT the Minutes of the Open Session of the Regular Council Meeting held on June 23rd, 2026, be approved as circulated. (Alternatively, corrections to be noted; with approval as amended.)

7. DISBURSEMENT LIST

7.1 Payroll Report
7.2 Payment Register

Recommendation: BE IT RESOLVED THAT Council approve the disbursements represented by electronic bank payments and cheque numbers 7919 to 7941 totalling $130,591.91.

8. REPORTS FROM MUNICIPAL OFFICERS (as available)

8.1 Clerk's Report
8.2 Treasurer's Report (verbal)
8.3 Public Works Report
8.4 Fire Chief's Report
8.5 Council Member Reports (verbal)
8.6 Reports from Other Agencies: as listed in the Clerk's Report

Recommendation: BE IT RESOLVED THAT Council receive the reports presented as listed in Section 8 of this evening's agenda. (Alternatively, directions to Administration as per Council's determination)

9. NEW BUSINESS

9.1 2025 Asset Management Plan
9.1-1 Report to Council
9.1-2 2025 Asset Management Plan – PSD Citywide

Recommendation: BE IT RESOLVED THAT That Council adopt the Township of Conmee 2025 Asset Management Plan prepared by PSD Citywide Inc.; AND THAT Council acknowledge the completion of the Asset Management Plan project; AND THAT the Clerk be authorized to execute and return the Project Closeout and Assessment Report to PSD Citywide Inc.

9.2 Landfill Attendant Operating Policy
9.2-1 Report to Council
9.2-2 Draft Landfill Attendant Operating Policy

Recommendation: BE IT RESOLVED THAT Council approve Policy No. 2026-00X, being the Landfill Attendant Operating Policy. (Alternatively, direction to Administration as per Council's determination.)

9.3 North Rock Water Monitoring Report – 2023 to 2025
9.3-1 Report to Council
9.3-2 North Rock Water Monitoring Report

Recommendation: BE IT RESOLVED THAT Council receive the 2023–2025 Water Quality Assessment Report for the Conmee Waste Disposal Site prepared by North Rock Engineering Inc. for information; AND THAT Council direct Administration and Public Works to review and implement the recommendations contained within the report, as appropriate.

9.4 Highway 11/17 Widening and Rerouting Project
9.4-1 Report to Council
9.4-2 Oliver Paipoonge Council Presentation – WSP and MTO

Recommendation: BE IT RESOLVED THAT Council discuss the Ministry of Transportation's Highway 11/17 Widening and Rerouting Project and provide direction regarding a municipal response prior to the July 18, 2026 comment deadline.

10 BYLAWS

None for this meeting.

11 CORRESPONDENCE

List of Resolution Support Requests from other municipalities, agencies & the provincial government:

11.1-1 Town of Whitby Resolution – Provincial Review of the Ontario Land Tribunal
11.1-2 Peterborough County Resolution – Provincial Review of the Accuracy of the Municipal Voters List
11.1-3 Township of North Stormont Resolution – Call to Return to the Property Tax Reassessment Cycle
11.1-4 City of Mississauga Resolution – Provincial Review of Funding for Women's Shelters
11.1-5 Town of Caledon Resolution – Provincial Support & Funding to Combat Tick Borne Diseases

Recommendation: BE IT RESOLVED THAT Council receive the correspondence presented as listed in Section 11 of this evening's agenda. (Alternatively; directions to Administration as per Council's determination).

12 UPCOMING MEETING DATES

Regular Council Meetings: August 11th, September 8th & 22nd, October 13th, November 10th & 17th (Inaugural), December 1st & 15th, 2026.

13 CLOSED SESSION

Recommendation: BE IT RESOLVED THAT, at ___ p.m., Council move into Closed Session pursuant to Section 239 of the Municipal Act, 2001, S.O. 2001, c. 25, as amended, to consider; Item 13.1, being the Closed Session minutes of the Regular Council meeting held June 9th, 2026, under the same authority as the original meeting; and Item 13.2, being human resources and employment-related matters, including personal matters about identifiable individuals, pursuant to Section 239(2)(b) of the Municipal Act, 2001.

13.1 Minutes – Closed Session Regular Council Meeting – June 23rd, 2026
13.2 Human Resources and Employment Matters
13.2-1 Report to Council – HR Matters

Recommendation: BE IT RESOLVED THAT, the time being ___ p.m., Council rise from Closed Session and report in Open Session.

14 BUSINESS ARISING FROM CLOSED SESSION

Recommendation: BE IT RESOLVED THAT the Minutes of the Closed Session of the Regular Council Meeting held on June 23rd, 2026, be approved as circulated. (Alternatively, corrections to be noted; with approval as amended.) AND THAT Administration be authorized to proceed in accordance with the direction provided in Closed Session.

15 CONFIRMING BYLAW

By-law 2026-024 – To Confirm the Proceedings of the Meeting

Recommendation: BE IT RESOLVED THAT By-law 2026-024 be passed, and FURTHER, THAT the Mayor and the Clerk be authorized on behalf of the Township of Conmee to affix their signatures to By-law No. 2026-024, being a By-law to confirm the proceedings of this evening's meeting.

16 ADJOURN

Recommendation: There being no further business to conduct, the Mayor declares the meeting to be adjourned at ___ p.m.

Conmee TOWNSHIP
Healthy Living Naturally!

MINUTES - REGULAR COUNCIL MEETING

Tuesday June 23rd, 2026 – 6:00 pm

PRESENT	Mayor Sheila Maxwell
	Councillor David Maxwell
PRESENT VIRTUALLY	Councillor Grant Arnold
REGRETS	Councillor Chris Kresack
	Councillor David Halvorsen
ALSO PRESENT	Karen Paisley, Clerk
	Leanne Maxwell, Treasurer
	Len Arps, Public Works Manager
	Robb Day, Fire Chief
PRESENT VIRTUALLY	Olabisi Akinsanya-Hutka, HR Assistant

1. CALL TO ORDER

Mayor Maxwell called the meeting to order at 6:00 p.m.

2. APPROVAL OF AGENDA

Council added item 9.3 – Fire Department Certification Compliance and Service Level Risk

RESOLUTION 2026–127
Moved by: Councillor Arnold
Seconded by: Councillor Maxwell
BE IT RESOLVED THAT the agenda for the regular council meeting of June 23, 2026, be approved as amended.

CARRIED

3. DECLARATIONS OF PECUNIARY INTEREST

None declared.

4. TOWN HALL SEGMENT

No members of the public were present.

5. DEPUTATIONS

5.1 Financial Statement Audit Presentation (MNP)
Council received a presentation regarding the 2025 Draft Financial Statements and Audit Findings.

6. MINUTES OF PREVIOUS MEETING(S)

6.1 Minutes – Regular Council Meeting – June 9, 2026
Council reviewed the minutes of the June 9, 2026 Regular Council Meeting. No amendments were requested.
RESOLUTION 2026–128
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT the minutes for the open session of the regular council meeting of June 9, 2026, be approved as circulated.

CARRIED

7. DISBURSEMENT LIST

7.1. Payroll Report

There was no payroll report presented this meeting.

7.2. Payment Register

Council reviewed the payment register, including electronic bank payments and cheque disbursements. The Treasurer responded to questions from Council.

RESOLUTION 2026-129
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT Council approve the disbursements represented by cheque numbers 7891 to 7918 and electronic payments totalling $81,368.74.

CARRIED

8. REPORTS FROM MUNICIPAL OFFICERS

8.1. Clerk's Report

The Clerk provided updates on ongoing administrative matters, including coordination of upcoming IMS 300 training and review of legislative changes under Bill 97.
Updates were provided regarding the Briggs Pit excess soil matter. Council was advised that a proposed approach has been submitted to the Ministry of the Environment, Conservation and Parks for review, including relocation of material to the Sovereign Road landfill expansion area. Work is ongoing with the Township's environmental consultant, and further direction is pending from the Ministry.
The Clerk also provided updates on staffing, including onboarding for the Deputy Clerk-Treasurer Intern and summer students. Preparations are underway to support orientation and training.
Council was advised of coordination efforts related to the upcoming FireSmart event, including engagement with the Ontario Provincial Police and other partners.
Additional updates were provided regarding internet network improvements at the municipal office.

8.2. Treasurer's Report

The Treasurer provided updates regarding completion of the Asset Management Plan and finalization of the annual audit process.
Council was advised that parking lot maintenance work has been completed.
The Treasurer also provided an update regarding potential grant opportunities, including an application related to Hydro One wildfire mitigation funding.
Discussion included general financial matters, including tax arrears and trends. No significant changes were identified, and arrears were noted to be primarily associated with vacant land properties.

8.3. Public Works Report

Council reviewed the Public Works Report. Updates were provided on ongoing road maintenance and grading activities, including progress to date and continued work required due to seasonal conditions.

The Public Works Manager reported on culvert and drainage maintenance, including beaver activity impacting roadway function in certain areas.
Updates were also provided on landfill operations, equipment usage, and material placement, including gravel application and calcium treatment on municipal roads.
Discussion included equipment maintenance matters, signage replacement and visibility, and increasing costs associated with road maintenance materials.

Public Works Manager left the meeting at 6:56 p.m.

8.4. Fire Chief's Report
No formal report was presented at this time. Fire Department matters were discussed later in the meeting under New Business.

8.5. Council Member Reports
Mayor Maxwell reported on recent participation in FireSmart activities and community engagement efforts, including coordination with Fire Department operations and logistics associated with the FireSmart event held June 20, 2026. Updates were also provided regarding support for municipal equipment use and event setup where required.

Councillor Maxwell reported on continued involvement with Fire Department operations, including assisting with equipment and vehicle coordination. Councillor Maxwell also noted participation in recent FireSmart activities and ongoing support to departmental operations and emergency preparedness initiatives.

Councillor Arnold reported on participation in Human Resources interviews held June 12, 2026, as well as attendance at the Thunder Bay District Health Unit meeting on June 17, 2026. Councillor Arnold advised of upcoming meetings, including Lakehead Region Conservation Authority discussions scheduled for June 24, 2026, and provided general updates on regional engagement activities.

General discussion also included operational matters related to Fire Department coordination, community activities, and flag protocol considerations.

8.6. Other Agencies' Reports
Council reviewed correspondence and reports received from other agencies as listed in the Clerk's Report.

RESOLUTION 2026-130
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT Council receive the reports presented as listed in Section 8 of this evening's agenda, AND THAT Administration is authorized to proceed in accordance with Council's direction.

CARRIED

9. NEW BUSINESS

9.1 2025 Draft Financial Statements

Council reviewed the 2025 Draft Financial Statements and Audit Findings Report presented by MNP.

RESOLUTION 2026-131
Moved by: Councillor Arnold
Seconded by: Councillor Maxwell
BE IT RESOLVED THAT Council approve the 2025 Draft Financial Statements as presented.

CARRIED

Chief Day joined the meeting at 7:04 p.m.
Treasurer left the meeting at 7:06 p.m.

9.2 Website Platform Agreement

Council reviewed a report regarding the Township's website platform and proposed transition to a revised service agreement with Catalis.

RESOLUTION 2026-132
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT Council approve the website platform agreement as presented and authorize Administration to proceed.

CARRIED

9.3 Fire Department Certification Compliance and Service Level Risk

Council received a presentation from Fire Chief Day regarding upcoming firefighter certification requirements and the potential impacts on service delivery, training obligations, mutual aid participation, recruitment, retention, and municipal liability.
Discussion included legislative requirements, training timelines, equipment and certification costs, recruitment challenges, and potential advocacy efforts with provincial representatives.

RESOLUTION 2026-133
Moved by: Councillor Arnold
Seconded by: Councillor Maxwell
BE IT RESOLVED THAT Council receive the Fire Chief's report regarding certification compliance and service level risk and authorize Administration to proceed as discussed.

CARRIED

Chief Day left the meeting at 8:24 p.m.

10. BY-LAWS

10.1 By-law 2026-022 – Burn Permit and Fireworks By-law

Council reviewed By-law 2026-022, being a by-law to regulate open air burning and fireworks within the Township of Conmee. Discussion regarding the by-law had previously occurred at the June 9, 2026 Regular Council Meeting. No further concerns were raised.

RESOLUTION 2026-134
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT By-law No. 2026-022, be passed, being a by-law to regulate open air burning and fireworks within the Township of Conmee.

CARRIED

11. CORRESPONDENCE
Council reviewed correspondence from the Township of South Stormont regarding food insecurity, the Town of Halton Hills regarding invasive plant rules, and the Town of Plympton-Wyoming regarding concerns with the DCRP. Council expressed support for all three resolutions and directed the Clerk to issue letters of support on behalf of the Township.

RESOLUTION 2026-135
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT Council support the correspondence items presented under Section 11 of the June 23, 2026 Regular Council Meeting agenda and direct the Clerk to issue letters of support as appropriate.

CARRIED

12. UPCOMING MEETING DATES
Council reviewed the list of upcoming meeting dates. No changes were proposed.

13. CLOSED SESSION

RESOLUTION 2026-136
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT, at 8:25 p.m., Council move into Closed Session pursuant to Section 239 of the Municipal Act, 2001, S.O. 2001, c. 25, as amended, to consider Item 13.1, being the Closed Session minutes of the Council meeting held June 9, 2026 under the same authority as the original meeting; and Item 13.2, to consider Human Resources and Employment matters under Section 239(2)(b), being personal matters about identifiable individuals of the same legislation.

CARRIED

During closed session, the following procedural resolution was passed:

RESOLUTION 2026-137
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT, the time being 8:50 p.m., Council rise from closed session and report in open session.

CARRIED

Open session resumed.

14. REPORT FROM CLOSED SESSION

RESOLUTION 2026-138
Moved by: Councillor Maxwell
Seconded by: Councillor Arnold
BE IT RESOLVED THAT the Closed Minutes of the Regular Council Meeting held on June 9, 2026, be approved; AND THAT Administration be authorized to proceed as directed during Closed Session.

CARRIED

15. CONFIRMING BY-LAW

By-law 2026-023
RESOLUTION 2026-139
Moved by: Councillor Arnold
Seconded by: Councillor Maxwell
BE IT RESOLVED THAT By-law 2026-023 be passed; AND THAT the Mayor and Clerk be authorized on behalf of the Township of Conmee to affix their signatures to By-law No. 2026-023, being a By-law to confirm the proceedings of this evening's meeting.

CARRIED

16. ADJOURNMENT
There being no further business to conduct, the Mayor declared the meeting adjourned at 8:50 p.m.

_____
Mayor Sheila Maxwell

_____
Clerk Karen Paisley

Staff Payroll - June 5, 2026
-June 19, 2026
Council Payroll -June 30, 2026

	Administration and Public Works	Other	Total
Wages	20,561.24	5,824.35	26,385.59
EI	469.20	132.90	602.10
CPP	1,143.30	167.35	1,310.65
RRSP	717.97		717.97
mileage	117.89	0.00	117.89
total	23,009.60	6,124.60	29,134.20

Township of Conmee
Payment Register

Report Date

Batch: 2026-00099 to 2026-00107 2026-07-09 10:19 AM

Bank Code: GEN - TD Operating Account

Payment #	Vendor	Amount	
7919	BMO RRSP	159.08	
7920	Hymers Agricultural Society	75.00	advertising
7921	Minister of Finance	8,179.00	
7922	Technical Standards & Safety Authority	279.00	elevator license
7923	Thunder Bay Area Zone One	693.06	annual equip rental - fire dept
7924	NorthRock Engineering	4,009.61	
7925	Fort Garry Industries	3,678.10	fire truck inspection
7926	GFL Environmental Inc	669.54	portapotty
7927	Lakehead Cleaners	129.72	tablecloths
7928	Maxim Truck & Trailer	167.42	
7929	Minister of Finance	65.00	
7930	MNP	3,559.50	audit
7931	MPAC	3,516.32	2nd installment
7932	Sea Hawk	2,977.78	fire hoses
7933	Seven Oaks Creative	300.00	fie dept
7934	Spectrum Telecom Group Ltd	855.41	
7935	Select Signs Inc	30,755.78	
7936	Thunder Bay DSSAB	3,426.00	
7937	Toodaloo Pest and Wildlife	110.74	
7938	Triton Canada Inc	29.38	
7939	Ultramar	3,583.50	
7940	WSIB	2,050.96	
7941	PDR Contracting Thunder Bay Ltd	57,015.55	NOHFC project
	Total Cheques	126,285.45	
123	Manulife	1,541.57	
A3K6R3	TBayTel	405.07	
HH465	TD Visa	864.39	
HH572	TD Visa	1,146.72	
HI200	TD Visa	267.26	
qwe	Thunder Bay Xerographix Inc	81.45	
	Total EFT	4,306.46	
	Total Payments	130,591.91	

The Corporation of the Township of Conmee
Administrative Report

Date: **July 14, 2026**

To: **Mayor and Council**

Subject: **Administrative Activity Report**

File Number: **01-C10-0000 Administrative Activity Reports**

Submitted by: **Karen Paisley Clerk**

RECOMMENDATION:
For Council's information and direction as required.

BACKGROUND:
This report provides Council with an update on recent administrative activities and projects.

DISCUSSION:
On June 20, 2026, the Township hosted a FireSmart Family Readiness Fair at the Conmee Community Centre. The event included participation from the Ministry of Natural Resources, the Ontario Provincial Police, and the Conmee Volunteer Fire Department. Emergency vehicles and equipment were on display, and information was available on wildfire preparedness, emergency kits, and FireSmart practices. While attendance was lower than anticipated, residents who attended had an opportunity to learn more about emergency preparedness and wildfire risk reduction.

On July 7, 2026, the Township conducted an emergency management tabletop exercise based on a prolonged winter power outage scenario. Participants included the Mayor, some members of Council, the Clerk, the Deputy Clerk-Treasurer Intern, the Fire Chief, representatives from the Ontario Provincial Police, and the Township's Emergency Management Field Officer. The exercise focused on emergency communications, warming centre operations, municipal service continuity, emergency declarations, and recovery activities. Several opportunities for improvement were identified and will be reviewed as part of an After-Action Report and Improvement Plan. During the debrief, the Emergency Management Field Officer commented positively on the Township's Emergency Response Plan and noted the inclusion of a continuity of operations framework.

Administration recently circulated the Township's Flag Protocol Policy to Council following discussion at the June 23, 2026 Council meeting. Under the current policy, the automatic lowering of the flag for Ontario Provincial Police members is limited to officers serving the District of Thunder Bay who die while on active duty. As the recent circumstances did not meet the requirements of the policy, the flag was not lowered. If Council wishes to amend the policy, administration can bring forward options for consideration.

A fire occurred on June 24, 2026, at the municipal landfill site's household garbage pit. The Conmee Volunteer Fire Department and Public Works Department responded to the incident over a two-day period. Public Works staff assisted firefighting efforts by excavating and exposing burning material to help extinguish the fire. Immediately following a debriefing with the Fire Chief on June 26, administration reported the incident to the Ministry of the Environment, Conservation and Parks' Spill Action Centre and the local MECP representative. No off-site impacts have been identified.

Staff recently met with representatives of the Ministry of the Environment, Conservation and Parks regarding the Briggs Pit excess soil matter. The Ministry reviewed the relocation plan prepared by the Township's consultant and supports the proposed approach. Administration is discussing next steps with the party responsible for the project and will bring a future report to Council when additional information becomes available.

Administration continues preparations for the 2026 Association of Municipalities of Ontario (AMO) Conference. Staff have been advised that a delegation meeting with the Ministry of Infrastructure has been scheduled for August 17, 2026. Additional details will be provided once the meeting time has been confirmed.

The Ministry of Energy and Mines is reviewing the Municipal Energy Plan Program and is seeking municipal feedback until August 22, 2026 – Item 8.6-12, Other Agency Reports. The program provides funding to municipalities to develop community-wide energy plans. Conmee Township currently complies with provincial Broader Public Sector Energy Reporting and Conservation and Demand Management Plan requirements. A Municipal Energy Plan would be much broader in scope and could be challenging for a municipality the size of Conmee. Council may provide direction if it wishes administration to respond to the Ministry's consultation.

The Clerk will be out of the office from July 20 to July 24, 2026, and will return on July 27, 2026.

Other Agency Reports – 8.6

1. Certificate of Appreciation – Royal Canadian Legion
2. NOMA Board of Directors Meeting Minutes – March 25 2026
3. NOMA/FONOM – National Interest Projects – Highway 11/17
4. Ontario Human Rights Commission 2025-26 Annual Report
5. TBDSSAB Board Newsletter June 26, 2026
6. ROMA June 2026 Board Meeting Recap
7. OPP Annual Report – June 30 2026
8. MMAH – Regulation under the *Planning Act*
9. NOMA – Northern Sheild Energy Corridor Announcement
10. Ministry of Northern Economic Development & Mines – NOHFC Funding
11. Tribunals Ontario Memorandum – July 7 2026
12. Ministry of Energy & Mines – Municipal Energy Plan Program Review

Pubic Works Managers Report July 14-26

Roads

- Grading
- Work at landfill - 190 - 350
- Haul gravel and spread
- Brushing + weed waking
- Clean out culvert - Pokki Rd - Beaver
- Garbage to landfill

Equipment

Public Works Report - Township of Conmee

Reporting Period: June 23 – July 14

Prepared by: Kyle

Date Submitted: July 10/26

1. **Work Completed (Summary)**

See written report

Road Name	Work Done (Full / Spot)	Date	Notes
Wolf Rd	Spreading Gravel	June 23	3 Loads
Olson Rd	Spreading Gravel	June 23	5 Loads
Enders	Grade	June 24	From Holland to Mckinnon
Pokiri	Grade	June 24	Grade
Hume East	Spreading Gravel	June 25	8 Loads
mckinnon west	Spreading Gravel	June 26	6 Loads
Mckinnon west	Spreading Gravel	June 27	6 Loads
Holland west	Grade	June 30	From Hwy to enders
Lundstrum East/W	Grade	June 30	Grade
Mckinnon west	Spreading Gravel	July 1	7 Loads
marwell south	Spreading Gravel	July 2	4 Loads
Holland East	Spreading Gravel	July 2	7 Loads
Holland East	Spreading Gravel	July 8	7 Loads
Torri	Grade	July 6	Grade
Lundstrum East	Spreading Gravel	July 7	7 Loads
Lundstrum East	Spreading Gravel	July 8	5 Loads
Mckinnon west	Spot Grade	July 8	Spot Grade
Holland west	Grade	July 9	Hwy Marwell
Lundstrum East	Spreading Gravel	July 9	3 Loads
Lundstrum East	Grade	July 7	Grade

(roads are being worked through in multiple passes)

Hours graded / gravelled – 120 hours
~~Approx km graded~~:

4. Other Work Done
(ditch work, brushing, signage, calcium, landfill, etc.)

See written report

5. Issues / Delays
(weather, breakdowns, anything slowing work)

Dry / Hot

6. Planned Work

More grading & gravelling, meet with North Rock - landfill expansion

Fire Chiefs Report

June 2026

For the month of June, Conmee Emergency Services has received 3 medical and 1 fire related requests for service.

This month, all of our apparatus have been safetied and routine services done. R-74 has been out of service for the month and as of July 10th, remains out of service. It did not pass the safety and has needed work done on the suspension. Unfortunately, many parts are no longer available for this truck and they are being fabricated by a local shop.

As our apparatus age, I believe is it crucial to form a financial plan to replace apparatus before they are taken out of service for costly repairs on a regular basis. Right now, all of our apparatus are well over the NFPA best practices recommendation of a 15 year service life. While it is common to extend the service life of emergency vehicles in small rural communities, it is not common and is strongly discouraged to rely on apparatus as old as ours.

A form 210 has been filled out and returned to the MNRF for billing purposes regarding the THU003 fire at Shabaqua in May.

This month I attended the Thunder Bay Zone meeting where I was informed that Conmee Emergency Services may not be eligible for mutual aid as we have limited certified personnel, no significant water shuttle capability, and only one certified officer.

Conmee has since assisted another department with mutual aid and this conversation will be ongoing.

A reliable and sufficient water supply continues to be an urgent concern. This was demonstrated this month again as the town dump was on fire. An estimated 12000 gallons of water were used to extinguish this fire. Our main attack pumper, P-76, holds 1000 Gal. P-75 holds 1200gal. With a pump capacity of 1500 gpm, this can empty the truck, with only one handline pulled, within 6 minutes. It is known that for an initial attack on a residential home 3000 gallons are commonly required immediately to have any significant impact on fire suppression. It is my recommendation that the municipality urgently acquire a tanker capable to carrying 2000-3000 gallons as well as establish a year around water supply used solely for fire suppression. A standpipe that connects to a well, creek, river, or a reservoir holding enough water to refill apparatus multiple times is urgently needed. The truck and

water supply cannot be shared with members of the public or public works, as emergency resourced may be needed at a moment's notice.

Conmee Emergency Services will continue to recruit and train as much as possible to maintain a response, when able, for the residents of Conmee.

Certificate of Appreciation

Legion
Manitoba and Northwestern Ontario Command

Presented to

Legion
Manitoba and Northwestern Ontario Command

Township of Conmee

For supporting the **Military Service Recognition Book – Volume 17**, a digital publication by **The Royal Canadian Legion Manitoba and Northwestern Ontario Command.** Your recognition and support for Veterans in Manitoba and Northwestern Ontario is sincerely appreciated. Thank you for your participation.

Robert Cutbush
President

2026

Cohen Rutledge
Executive Director

THE ROYAL CANADIAN LEGION MANITOBA AND NORTHWESTERN ONTARIO COMMAND

"LEST WE FORGET"

noma
Northwestern Ontario
Municipal Association

Board of Directors Meeting Minutes

Date: Wednesday, March 25, 2026
Time: 9:00 a.m. – 12:50 p.m.
Location: Hybrid
Absent: Jon Hall, Wendy Brunetta

1.0 Call to Order

Meeting called to order at **9:00 a.m.** by **Vice President Eric Pietsch**.
Mayor Dumas was absent for the beginning of the meeting – Councillor Pietsch chaired

Mayor Dumas returned at 10:10 am to resume as Chair for the remaining agenda

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2.0 Approval of Agenda

Moved by: Andrew Poirier
Seconded by: Roger Nesbitt
Decision: Approved

3.0 Approval of Minutes – Pervious Meeting, January 27, 2026

Moved by: Kevin Kahoot
Seconded by: Fred Mota
Decision: Approved

4.0 In Camera Session

Session not required

5.0 Financial Report

- Executive Coordinator (EC) Jason Veltri presented the financial report.

Motion: THAT the Financial Report be received and approved as presented.
Moved by: Lisa Teeple
Seconded by: Roger Nesbitt
Decision: Approved

6.0 Executive Coordinator's Report (Pages 7-11)

Motion: THAT the Executive Coordinator Report be received and approved as presented.
Moved by: Jason Young
Seconded by: Kerri Marshall

Northwestern Ontario Municipal Association

Decision: Approved

7.0 President's Report – Rick Dumas – (Pages 12-15)

Motion: THAT the President's Report be received and approved as presented.

Moved by: Eric Pietsch

Seconded by: Jason Young

Decision: Approved

8.0 New Business

8.1 Presentation from Norm Gale of Norm Gale Strategies.

8.2 Presentation from Dustin Mauro of LinkWell Insurance

8.3 Presentation from Peter Collins and Chi Mino Ozhitoowin.

8.4 Review of NOMA Organizational policies: A004 and A005
NOMA's board directed Executive Coordinator to correct and amend the policy and bring back revised documents to June 2026 board meeting for review and discussion.

8.5 A discussion was held relative to reviewing the Northern Ontario Highway Task Force Report, co-chaired by Past President Wendy Landry and Past FONOM President Danny Whalen. The board was briefed on the report as a refresher and asked to ensure it was shared to all levels of government as the guiding document for Northern Ontario Highway improvements, expansion and modernization.

8.5 A discussion was held, led by President Dumas on the meeting with the Globe and Mail Editorial Board in Toronto during PDAC. It was noted that the meeting with the Globe, FONOM and RedBrick Communications went very well, lasted over an hour, editors were very engaged with the topic and following the meeting an article was developed immediately. Continuing support from RedBrick Communications and FONOM are ongoing.

8.6 Discussions were held on the 2026 Fiscal Year NOMA Budget and Travel accounts. EC Veltri provided an overview of the budget to be presented at the AGM.

8.7 A discussion and review of NOMA's nominations for the Thunder Bay Chamber of Commerce Business Excellence Awards was held. NOMA was nominated for the Not-For-Profit and Changemaker Awards and EC Veltri was nominated for the Equity, Inclusion and Diversity Award. Ticket requests were made and will be purchased for board members who are available to attend.

9.0 District Updates

- Updates were received from all three district municipal associations.

10. 0 Issue Tracker & Advocacy Updates (If any)

Forestry & Softwood Lumber Tariffs – **Rick Dumas & Wendy Landry**	Police Costs – **Andrew Poirier & Roger Nesbitt**
Highways 11/17 – 2+1 Highway – **Rick Dumas & Eric Pietsch & Andrew Poirier**	Rural Building Faster Fund – **Fred Mota & Rick Dumas & Roger Nesbitt**
OMPF – Rick Dumas	Housing – **Kristen Oliver**
Immigration – **Rick Dumas & Fred Mota**	Healthcare – **Wendy Brunetta**
Mining – **Rick Dumas and Fred Mota**	Nuclear Waste MGMT Org – **Kevin Kahoot & Jason Young & Roger Nesbitt**
Land Use Planning & Energy – **Jim Vezina**	

11.0 Next Meeting

Date: August 16, 2026
Time: 3PM to 5PM
Location: Westin Hotel Ottawa, ON

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11. Adjournment

- Meeting adjourned at **12:50 a.m.**
- **Motion to adjourn:** Fred Mota

Minutes prepared by:
Jason Veltri, Executive Coordinator

Date approved by NOMA Board: June 17, 2026

Northwestern Ontario Municipal Association (NOMA)
Executive Coordinator Report
Reporting Period: December 1, 2025 – March 24, 2026
Prepared by: Jason Veltri, Executive Coordinator

---

1. Overview

This reporting period has been focused on advancing NOMA's strategic advocacy priorities, strengthening relationships across all levels of government, and delivering on key organizational initiatives, including preparations for the 2026 NOMA Conference and AGM.

Significant progress has been made in elevating NOMA's profile provincially and federally, reinforcing partnerships with key stakeholders, and ensuring strong operational and financial management of the organization.

---

2. Advocacy & Government Relations

Advocacy efforts have remained highly active and aligned with NOMA's core priorities:

- **Northern Ontario Highways (11, 17, and 11/17 Corridor)**
  Continued strong advocacy positioning these highways as critical national infrastructure.
    - Advanced discussions on **dual-use designation** (transportation and national defense)
    - Ongoing engagement with federal and provincial ministers and staff
    - Emphasis on safety, reliability, redundancy, and nation-building opportunities
- **Northern Ontario Hill Days (Ottawa – December 1–2, 2025)**
  Coordinated and participated alongside FONOM in a series of productive federal meetings with:
    - Members of Parliament
    - Parliamentary Secretaries
    - Federal Ministers and senior staff
      Discussions focused on highways, immigration, workforce development, and housing.

- **ROMA Conference (Toronto – January 2026)**
  Supported and coordinated meetings with provincial ministers and senior officials, advancing:
    - Highway safety and infrastructure
    - Immigration and workforce solutions
    - Rural and remote housing supports
- **PDAC Convention (Toronto – March 2026)**
  Represented NOMA in key discussions with:
    - Federal and provincial ministers
    - Industry leaders and stakeholders
    - Media, including engagement with the Globe and Mail Editorial Board
      Focus remained on resource development, transportation corridors, and economic growth in Northwestern Ontario.
- **Ongoing Ministerial Engagement**
  Continued outreach and relationship-building with key provincial and federal ministries, working to position NOMA as a constructive partner in advancing northern priorities.

---

3. Partnerships & Stakeholder Engagement

- Strengthened collaboration with **FONOM**, reinforcing a unified Northern Ontario voice on shared priorities
- Continued engagement with:
    - Thunder Bay Community Economic Development Commission (CEDC)
    - Good Roads
    - Provincial and federal ministries
- Expanded outreach to Indigenous partners, including work to support meaningful participation at the 2026 Conference

---

4. NOMA 2026 Conference & AGM (April 22–24, 2026)

Planning for the 2026 Conference is well advanced and remains a primary operational focus.

- **Theme:** Resilience
- **Location:** Valhalla Hotel & Conference Centre, Thunder Bay

Key updates:

- Strong registration momentum, with early bird rates successfully concluded
- Sponsorship uptake has exceeded expectations
- Trade show exhibitor space is fully sold out
- Program development finalized, including keynote speakers and panel sessions
- Delegation requests and scheduling are underway
- Ongoing outreach to Ministers and senior officials for participation, including the Bear Pit/Ministers' Forum

Significant effort has been dedicated to ensuring a high-quality, engaging, and impactful conference experience for members and partners.

---

5. Communications & Media

- Continued development and distribution of:
    - Media releases
    - Advocacy letters
    - Social media content
- Strengthened messaging around:
    - Northern highways as a national priority
    - Workforce and immigration needs
    - Economic development and resource opportunities
- Increased visibility through:
    - Media engagement (including national outlets)
    - Conference promotion campaigns

- Timely responses to provincial and federal announcements

---

6. Operations & Administration

- Ongoing improvements to organizational processes and financial management
- Implementation and continued use of **SAGE 50** for financial tracking and reporting
- Coordination of:
  - Board and Executive meetings
  - Travel logistics and cost management
  - Sponsorship and exhibitor administration
- Continued focus on cost control and efficient use of organizational resources

---

7. Financial Overview (High-Level)

NOMA remains in a strong financial position.

Key notes during this period:

- One-time administrative costs including:
  - Source deduction catch-up
  - T4 preparation
  - Legal expenses
  - Equipment purchase (projector)
- Travel aligned with Board-approved activities (Hill Days, ROMA, PDAC, regional conferences, Invest ON Forum)
- Conference revenue (sponsorship and registration) performing strongly

Overall, financial management remains stable, proactive, and aligned with Board direction.

---

8. Priorities – Next Reporting Period

- Final execution of the **2026 NOMA Conference & AGM**
- Continued advocacy on:
    - Highway 11/17 modernization and dual-use designation
    - Immigration and workforce development
    - Rural and remote housing
- Strengthening federal and provincial engagement, including potential high-level meetings
- Continued partnership development with FONOM and other stakeholders
- Ongoing operational and financial oversight

---

9. Closing

This has been a highly productive period for NOMA, with meaningful progress made across advocacy, partnerships, and organizational priorities. The momentum built continues to position NOMA as a strong and respected voice for Northwestern Ontario.

I look forward to continuing this work with the Board and our partners in the months ahead.

Respectfully submitted,
Jason Veltri
Executive Coordinator
Northwestern Ontario Municipal Association (NOMA)

Northwestern Ontario Municipal Association (NOMA)
President's Report
Reporting Period: December 1, 2025 – March 24, 2026
Prepared by: Rick Dumas, President

---

1. Message from the President

Over the past several months, NOMA has continued to strengthen its voice as a unified and credible advocate for Northwestern Ontario. Our region faces unique challenges, but we are also positioned with tremendous opportunity. Through collaboration, persistence, and a clear focus on our priorities, we are ensuring that the needs of our 37 member municipalities are being heard at both Queen's Park and in Ottawa.

This period has been defined by strong advocacy, growing partnerships, and meaningful engagement with decision-makers at all levels of government.

---

2. Advocacy Highlights

NOMA has remained focused on advancing key priorities that are critical to the long-term sustainability and growth of Northwestern Ontario:

- **Trans-Canada Highway System (Highways 11 & 17)**
  Our advocacy continues to emphasize the importance of treating Northern Ontario's highways as essential national infrastructure. These corridors are lifelines for our communities and the country.
  We have continued to push for:
    - Increased safety and reliability
    - Strategic investments, including 2+1 and twinning opportunities
    - Recognition of these corridors as nation-building infrastructure, including exploration of dual-use designation
- **Immigration & Workforce Development**
  Labour shortages remain one of the most pressing challenges facing our communities. NOMA has continued to advocate for targeted immigration pathways and supports that reflect the realities of rural and northern municipalities.

- **Housing & Community Infrastructure**
  We continue to call for a dedicated rural and remote approach to housing and infrastructure funding that recognizes the higher costs and capacity challenges faced by smaller communities.
- **Economic Development & Resource Opportunities**
  Northwestern Ontario plays a critical role in Canada's economic future, particularly in mining, forestry, and energy. NOMA continues to advocate for policies and infrastructure that unlock this potential.

---

3. Government Relations & Engagement

This reporting period included several important opportunities to engage directly with provincial and federal partners:

- **Northern Ontario Hill Days (Ottawa)**
  In partnership with FONOM, NOMA participated in a coordinated series of meetings with federal ministers, Members of Parliament, and senior staff. These discussions reinforced the importance of Northern Ontario to Canada's economic and strategic future.
- **ROMA Conference (Toronto)**
  NOMA leadership met with provincial ministers and officials to advance key priorities, particularly around transportation, housing, and workforce development.
- **PDAC Convention (Toronto)**
  Engagement with industry leaders and government officials highlighted the critical role of Northwestern Ontario in resource development and the need for supporting infrastructure and workforce strategies.

These engagements continue to build momentum and position NOMA as a trusted and solutions-focused partner.

---

4. Strengthening Partnerships

A key focus during this period has been strengthening relationships across the North and beyond:

- Continued collaboration with **FONOM**, demonstrating that Northern Ontario is strongest when we speak with a united voice

- Engagement with municipal leaders, industry partners, and economic development organizations
- Ongoing efforts to build and strengthen relationships with Indigenous communities, recognizing the importance of partnership and shared progress

---

5. NOMA 2026 Conference & AGM

Planning for the 2026 Conference and AGM is well underway and shaping up to be a highly successful event.

With the theme of **Resilience**, the conference will bring together municipal leaders, partners, and decision-makers to focus on the challenges and opportunities facing our region.

I want to acknowledge the significant work being done to deliver a strong program, secure sponsorships, and ensure a meaningful experience for all attendees. The strong response from members and partners reflects the value of this annual gathering.

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6. Organizational Strength

NOMA continues to operate from a position of strength:

- Clear and focused advocacy priorities
- Strong engagement with members and partners
- Effective operational and financial management
- A growing profile at both the provincial and national level

I would like to recognize the efforts of the Board of Directors for their leadership and commitment, as well as the work of Executive Coordinator Jason Veltri, whose dedication and professionalism continue to elevate the organization.

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7. Looking Ahead

As we move into the next reporting period, our focus will remain on:

- Delivering a successful 2026 Conference and AGM

- Continuing to advance our advocacy priorities with both levels of government
- Strengthening partnerships across Northern Ontario
- Ensuring our municipalities are well-represented and supported

---

8. Closing

Northwestern Ontario has a strong and determined voice through NOMA. By continuing to work together, we are ensuring that our region is not only heard, but that we are actively shaping the decisions that impact our communities and our future.

Thank you to our members, partners, and colleagues for your continued support and collaboration.

Respectfully submitted,
Rick Dumas
President
Northwestern Ontario Municipal Association (NOMA)

FONOM
Federation of Northern Ontario Municipalities

noma
Northwestern Ontario Municipal Association

FOR IMMEDIATE RELEASE

Federal Review of DGR as Potential National Interest Project Highlights Need for Highway 11 and 17 Investment

June 24, 2026, Thunder Bay, ON & Kapuskasing, ON – The Northwestern Ontario Municipal Association (NOMA) and the Federation of Northern Ontario Municipalities (FONOM) welcome the federal government's decision to initiate the process toward potential listing of the proposed Deep Geological Repository (DGR) in Ignace as a project of national interest.

While the project has not yet been designated, the announcement recognizes the potential national significance of Canada's long-term strategy for managing used nuclear fuel. NOMA and FONOM stress that the project must continue through a rigorous regulatory, environmental, scientific, and Indigenous consultation process before any final decisions are made.

"The federal government's announcement reinforces an important reality: nation-building projects require nation-building infrastructure," said NOMA President Rick Dumas. "Whether we are talking about critical minerals, national defence, energy development, or the future transportation of used nuclear fuel, Highway 11 and Highway 17 remain essential to connecting Northern Ontario and Canada."

FONOM President Dave Plourde added that planning for future infrastructure demands cannot wait until projects are approved.

"Major highway projects take years to plan, design, permit, and build," said Plourde. "If governments believe these projects are important to Canada's future, then they must also recognize the importance of investing now in the transportation corridors that will support them."

NOMA and FONOM note that the federal government is also advancing the Mackenzie Valley Highway Project and the Grays Bay Road and Port Project through the same national interest review process. These projects recognize the importance of strategic transportation infrastructure in supporting Canada's economic development, northern growth, sovereignty, and long-term national interests.

The same conversation must occur around Highway 11 and Highway 17.

Highway 11 and Highway 17 form Canada's primary east-west transportation corridor through Northern Ontario, serving as a critical link for trade, supply chains, emergency services, resource development, and community connectivity. They are also the lifeline for hundreds of communities across the North.

Recent discussions involving NOMA, FONOM, Premier Doug Ford, Minister George Pirie, and federal Transport Minister Steven MacKinnon have reinforced the importance of Highway 11 and Highway 17 as strategic national infrastructure. Following meetings with both provincial and

FONOM
Federation of Northern Ontario Municipalities

noma
Northwestern Ontario Municipal Association

federal leaders this month, municipal leaders have renewed calls for the corridor to be recognized as a national priority for expansion, modernization, and long-term investment.

Should the Deep Geological Repository ultimately proceed, transportation associated with the project could occur on Northern Ontario highways within the coming decades. Preparing for that future requires a highway system that is safe, reliable, resilient, and capable of supporting nationally significant projects.

NOMA and FONOM continue to call on the Government of Ontario and the Government of Canada to work together to identify and advance priority segments for expansion, twinning, and safety improvements along Highway 11 and Highway 17.

-30-

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705-335-1615 | fonom.info@gmail.com

Rick Dumas, President, NOMA
(807) 229-6842 | admin@noma.on.ca

View in Browser

Ontario Human Rights Commission
Commission ontarienne des droits de la personne

OHRC releases its 2025–26 annual report: *65 Years of Leadership: Sustaining Democratic Values by Advancing Human Rights*

June 25, 2026

TORONTO – Today, the Ontario Human Rights Commission (OHRC) released its 2025–2026 annual report entitled *65 Years of Leadership: Sustaining Democratic Values by Advancing Human Rights*. This report provides an overview of the OHRC's efforts to fulfil its mandate and serve the people of Ontario.

This year marks a significant milestone for the OHRC: 65 years of advancing human rights in Ontario. As we celebrate this anniversary, the rise in hate-speech and other hate-action threaten our democratic values, and questions about rights, equality, accountability, and belonging are top of mind for Ontarians.

Over the past year, the Commission has focused on advancing human rights in today's context, with education being foundational. Central to the Commission's work in education are students' experiences in the education system. A major urgency continues to be the *Right to Read*. In 2025–2026, the Commission continued its efforts to engage with education-sector duty-holders to help ensure all students realize their right to read. Many school boards have embraced the inquiry report, taking concrete steps to adopt or update their literacy practices. Together with its work in education, the Commission marked the one-year anniversary of *Dreams Delayed: Addressing Systemic Anti-Black Racism and Discrimination in Ontario's Public Education System*.

Advancing human rights also requires meaningful collaboration, partnership, and relationship-building. Over the past year, the Commission strengthened its partnerships with Indigenous communities to address longstanding and widespread Indigenous-specific discrimination in Ontario's healthcare system, retail settings, and hiring practices. The Commission collaborated with policing services to advance human rights and mitigate systemic discrimination in policing and law enforcement systems. Additionally, the Commission engaged across provincial, federal, and international forums, making submissions on a wide range of issues, including artificial intelligence, education, housing, and racism.

In addition, throughout 2025–2026, the Commission advanced responsible, human rights-based approaches to artificial intelligence (AI), including co-creating and releasing the *Principles for the Responsible Use of Artificial Intelligence*, in collaboration with the Information and Privacy Commissioner of Ontario, as well as through its contribution to Canada's renewed AI Strategy.

"To the people of Ontario,16.1 million strong, who have made Ontario home: every day, you place trust in the promise of dignity, fairness, and respect," said the OHRC Chief Commissioner Patricia DeGuire. "Thank you for recognizing that human rights are vital to everyone's daily lives. The OHRC's work is grounded in your lived realities and carries that trust forward with purpose and pragmatism, working to uphold rights, address inequities, and advance justice."

Learn More: Ontario Human Rights Commission Business Plan 2024-25 – 2026-27

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Media contact: Media@ohrc.on.ca

For 65 years the OHRC has been promoting that it is public policy to recognize the dignity and worth of every person and provide equal rights and opportunities without discrimination.

La CODP publie son rapport annuel 2025-26: *65 ans de leadership : promouvoir les droits de la personne et défendre les valeurs démocratiques*

25 juin 2026

TORONTO – Aujourd'hui, la Commission ontarienne des droits de la personne (CODP) a publié son rapport annuel 2025-26, *65 ans de leadership : promouvoir les droits de la personne et défendre les valeurs démocratiques*. Le rapport donne un aperçu des efforts déployés par la CODP pour remplir son mandat et être au service de la population de l'Ontario.

Cette année marque un jalon important pour la CODP, qui fait la promotion des droits de la personne en Ontario depuis maintenant 65 ans. Cet anniversaire coïncide avec un moment où les discours haineux et d'autres actes de haine menacent nos valeurs démocratiques et où les droits, l'égalité, la responsabilisation et l'appartenance revêtent une importance capitale pour la population ontarienne.

Au cours de la dernière année, le travail de la Commission en matière d'éducation a beaucoup porté sur l'expérience vécue par les élèves dans le système d'éducation dès la maternelle et le jardin d'enfants. L'une de ses priorités demeure *Le droit de lire*. En 2025-2026, la Commission a poursuivi ses démarches auprès des titulaires d'obligations du secteur de l'éducation pour veiller à ce que tous les élèves puissent exercer leur droit de lire. De nombreux conseils scolaires ont souscrit à ce rapport d'enquête et pris des mesures concrètes en vue d'adopter des pratiques de littératie ou de mettre à jour celles qu'ils avaient déjà établies. Parallèlement à son action dans le domaine de l'éducation, la Commission a célébré le premier anniversaire de *Rêves repoussés : faire face au racisme*

et à la discrimination envers les Noirs dans le système d'éducation publique en Ontario.

Pour promouvoir les droits de la personne, il faut aussi favoriser la collaboration, les partenariats et l'établissement de relations. Au cours de la dernière année, la Commission a renforcé ses partenariats avec des communautés autochtones en vue de lutter contre la discrimination répandue et de longue date envers les Autochtones dans le système de santé, les commerces de détail et les pratiques d'embauche en Ontario. La Commission a également collaboré avec le Service de police de Toronto, la Police régionale de Peel et leurs commissions respectives pour promouvoir les droits de la personne et lutter contre la discrimination systémique dans les services policiers et les systèmes de maintien de l'ordre. Par ailleurs, la Commission a participé à divers forums provinciaux, fédéraux et internationaux, où elle a présenté des mémoires sur un large éventail de sujets, notamment l'intelligence artificielle, l'éducation, le logement et le racisme.

De plus, tout au long de 2025-2026, la Commission a préconisé des approches responsables et fondées sur les droits de la personne en matière d'intelligence artificielle, notamment en publiant les *Principes pour l'utilisation responsable de l'intelligence artificielle* élaborés en collaboration avec le Commissaire à l'information et à la protection de la vie privée de l'Ontario (CIPVP) et en contribuant à la stratégie renouvelée du Canada en matière d'intelligence artificielle.

« Aux 16,1 millions d'individus qui ont fait de l'Ontario leur foyer : chaque jour, vous accordez votre confiance à la promesse de dignité, d'équité et de respect, » a dit la Commissaire en chef Patricia DeGuire. « Merci de reconnaître que les droits de la personne sont essentiels à notre vie quotidienne. Le travail de la CODP s'appuie sur vos réalités quotidiennes et porte cette confiance de l'avant avec détermination et pragmatisme, en œuvrant pour défendre les droits, lutter contre les inégalités et faire progresser la justice. »

Pour en savoir davantage: Commission ontarienne des droits de la personne Plan d'activités de 2024-2025 à 2026-2027

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Relations avec les médias: Media@ohrc.on.ca

Depuis 65 ans, la CODP fait valoir que la reconnaissance de la dignité et de la valeur de chaque personne, ainsi que la garantie de l'égalité des droits et des chances sans discrimination, constituent une politique publique.

The Ontario Human Rights Commission promotes and enforces human rights
to create a culture of human rights accountability.

La Commission ontarienne des droits de la personne promeut et met en œuvre les droits de la personne, afin de créer une culture de responsabilité en matière de droits de la personne.

All personal information we hold is governed by the *Freedom of Information and Protection of Privacy Act*

Ontario Human Rights Commission
180 Dundas Street West, 9th Floor, Toronto, Ontario, M7A 2G5
Canada

For all inquiries, please contact us at: communications@ohrc.on.ca

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THE DISTRICT OF THUNDER BAY
SOCIAL SERVICES ADMINISTRATION BOARD

Update from the Board

TBDSSAB Board Newsletter | June 26, 2026

Click Here to Download as PDF

- Message from the Chair
- Next Meeting
- TBDSSAB Advocating for local service system at the 2026 AMO Conference
- Board Reports: June 18, 2026
- Feedback

Message from the Chair

Please find below the latest issue of Update from The Board, the monthly newsletter from the Board of Directors of The District of Thunder Bay Social Services Administration Board.

Please circulate to members of your respective Municipal Councils and Local Roads Boards.

about TBDSSAB activities by providing an overview of TBDSSAB Board information and reports following all monthly meetings.

Some highlights from the May meeting:

- The Board received a presentation from Human Resources about staffing initiatives.
- The Board approved 2026-27 investment plans for COCHI-OPHI (Canada-Ontario Community Housing Investment and Ontario Priority Housing Initiatives) and HPP (Homelessness Prevention Programs).
- The Board received operational updates related to records retention and the first quarter financial report.
- The Board reviewed the proposed 2027 budget schedule, with updates related to budget preparation for the year following a municipal election.

During this meeting, the Board passed a resolution to cancel the July Board meeting. The Board will convene again in September.

Thank you,

Jim Vezina
Chair, TBDSSAB

This edition of Update from the Board covers TBDSSAB's Board meeting on **June 18, 2026**, as well as key initiatives taking place in this time span.

Our aim is to provide an overview of TBDSSAB Board information and reports in a timely manner following all monthly meetings.

Next Meeting

The next Board meeting will be held **Thursday, September 17, 2026 at 10:00am.**

about Board meetings, please visit the Board Meetings page on our website.

TBDSSAB has partnered with three organizations to add 118 new licensed spaces through the Canada-Wide Early Learning and Child Care (CWELCC) program in Thunder Bay and Terrace Bay.

Click here to read the full media release.

TBDSSAB Advocating for local service system at the 2026 AMO Conference

Representatives from TBDSSAB will be joining more than 2,500 participants at the Association of Municipalities of Ontario's (AMO) 2026 Conference in Ottawa from August 16-19.

The annual conference is an opportunity for municipal officials and service system managers to work together on solutions to today's big challenges, to learn, and to create new opportunities that benefit communities. In addition to the conference program, attendees will take part in hundreds of delegation meetings with provincial ministries.

TBDSSAB has requested delegation meetings with Ministers to discuss four advocacy position papers at the 2026 AMO Conference. Delegation meetings have yet to be confirmed.

TBDSSAB's advocacy topics include:

1. Increasing Housing Stock to Support Indigenous Peoples Experiencing Homelessness in the District of Thunder Bay
2. Growing Supportive Housing with Increased Mental Health & Addictions Supports
3. COCHI-OPHI Investments for the Future of Housing in the District of

TBDSSAB's advocacy position papers can be viewed on our website: https://www.tbdssab.ca/board/reports/#advocacy

"We appreciate having opportunities like the AMO conference to speak to Ministry officials on their turf while advocating for our local needs. It's a great opportunity to bring forward issues and opportunities that are important to us in the District of Thunder Bay." **– Jim Vezina Chair, TBDSSAB**

Board Reports: June 18, 2026

Memo: Signing Authority for Summer Months
MEMO Signing Authority for Summer Months (PDF)

Memo: Cancellation of July 2026 Board Meeting
MEMO Cancellation of July Board Meeting (PDF)

Report: Ontario Priorities Housing Initiative (OPHI) and Canada-Ontario Community Housing Initiative (COCHI) – Investment Plan 2026-27
RPT OPHI and COCHI - Investment Plan 2026-27 (PDF)

Report: Homelessness Prevention Program – Investment Plan 2026-27
RPT HPP - Investment Plan 2026-27 (PDF)

Report: Records Retention Schedules Updates
RPT Records Retention Schedules Updates (PDF)

Report: Proposed 2027 Budget Schedule
RPT Proposed 2027 Budget Schedule (PDF)

Report: 2026 First Quarter Financial Report
RPT 2026 First Quarter Financial Report (PDF)

Board reports for past meetings are available on our website:

Feedback

We appreciate feedback and comments regarding the content of this newsletter.

Contact: Larissa Jones (she/her), Communications Assistant
E: Larissa.Jones@tbdssab.ca T: 807-766-4704

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Want to change how you receive these emails?
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From: ROMA Communications
To: Conmee Clerk
Subject: June 2026 Board Meeting Recap
Date: June 26, 2026 10:00:37 AM

Rural Ontario Municipal Association

ROMA June Board Meeting Highlights

Hello Karen,

ROMA's June Board meeting was held in Oxford and Norfolk Counties. Thank you to Deputy Mayor Dave Beres, ROMA Zone 3 Rep, for hosting us in his home community and for guiding us on a tour that gave Board members a valuable on-the-ground perspective on local priorities and opportunities for their own communities.

Here are a few highlights from Friday's board meeting:

- **Rural Health Strategy**
  - The Board received an update on progress on the development of a Rural Health Strategy, including a recap of a round table discussion that brought together senior representatives from key health sector organizations to help chart a strategic path forward. More updates to come.
- **Blue Box Transition Challenges**
  - The ROMA Board welcomed Allen Langdon, CEO of Circular Materials, to discuss their early thinking on what a small industrial, commercial, and institutional (IC&I) strategy for the blue box program might look like in Ontario. We look forward to further opportunities to collaborate and ensure that the program works for the realities of rural municipalities.
- **ROMA Communications and Advocacy**

The Board reviewed a draft of ROMA's first brand narrative and strategic direction for future communications. This new approach moves from reactive updates to proactive, focused advocacy and aims to be supported by practical tools for members. The Board will continue advancing this work over the summer.

READ THE FULL UPDATE

If you have any questions, please contact **roma@roma.on.ca.**

Keep up to date with the rural municipal voice

of the province, on social media.

Wish to Opt Out of ROMA Communications | Opt Out

155 University Ave Suite 800 | Toronto, ON M5H 3B7 CA

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CONSEIL DU DÉTACHEMENT DE LAKEHEAD
DE LA POLICE PROVINCIALE

THUNDER BAY OPP DETACHMENT
DÉTACHEMENT DE THUNDER BAY DE LA POLICE PROVINCIALE

ANNUAL REPORT
June 30, 2026

Board Governance Section

Prepared in accordance with the
Community Safety and Policing Act, 2019

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MESSAGE FROM THE CHAIR

On behalf of the Lakehead OPP Detachment Board, I am pleased to present the Board's Annual Report for the period ending June 30, 2026.

This past year represents an important stage in the Board's development as we move beyond initial establishment and strengthen our role in providing civilian governance and oversight of policing services within our communities. Working in partnership with the Thunder Bay OPP Detachment, the Board has focused on fulfilling its responsibilities under the Community Safety and Policing Act, 2019 (CSPA) by supporting accountability, transparency, and effective service delivery.

Throughout the reporting period, the Board has reviewed detachment reports, monitored trends in enforcement and community safety, and discussed issues of importance to our member municipalities and First Nations. These discussions have included matters such as traffic safety, policing visibility, and emerging trends affecting our communities.

A key priority this year has been participation in the development and monitoring of the Detachment Action Plan. The Board has provided input into both the current and future plan to help ensure that local priorities are reflected in policing objectives.

The Board has also taken steps to strengthen its governance practices, including advancing work on a Detachment Commander performance management framework and addressing matters related to Board effectiveness and composition.

I would like to thank my fellow Board members for their commitment and engagement, and the members of the Thunder Bay OPP for their continued professionalism and dedication to public safety.

Respectfully submitted,

Don Smith, Chair

INTRODUCTION

The Lakehead OPP Detachment Board (the “Board”) was established under the Community Safety and Policing Act, 2019 (CSPA) to provide civilian oversight of policing within the detachment area served by the Thunder Bay OPP Detachment.

The Board operates within a governance framework that distinguishes its role as strategic oversight and not operational policing responsibilities, which remain under the authority of the Ontario Provincial Police.

This report summarizes the Board’s governance activities for the period of July 1, 2025 to June 30, 2026, in accordance with Section 68(1)(f) of the CSPA.

The Board’s report should be read in conjunction with the Thunder Bay OPP Detachment Annual Report, which provides detailed information on policing operations, performance results, and statistical data for the reporting period.

BOARD COMPOSITION AND GOVERNANCE FRAMEWORK

The Lakehead OPP Detachment Board serves as a governance body that connects the Ontario Provincial Police with the communities they serve. The Board's mandate includes:

- Determining local objectives and priorities for policing
- Advising the Detachment Commander
- Monitoring the performance of policing services
- Reviewing reports provided by the OPP
- Ensuring that policing services reflect community needs

The Board does not direct operational policing decisions but provides oversight and strategic guidance within the framework established by the CSPA.

The Lakehead OPP Detachment Board is composed in accordance with Ontario Regulation 135/24 under the CSPA and consists of:

- **Seven members appointed by participating municipalities and First Nations**, being one member from each of the following who is a member of the council of the municipality or the band council of the First Nation:
    - Township of Conmee
    - Township of Gillies
    - Kiashke Zaaging Anishinaabek First Nation (Gull Bay)
    - Lac Des Mille Lacs First Nation
    - Municipality of Neebing
    - Township of O'Connor
    - Municipality of Shuniah
- **Three community representatives,** who are not members of Council or Band Council and are not employees of the participating municipalities or First Nations, and who are jointly appointed by the participating municipalities and First Nations
- **Three provincial representatives,** appointed by the Minister

The Board is supported administratively by the Secretary and operates in accordance with its procedural by-law and applicable legislation.

BOARD MEMBERSHIP

The Lakehead OPP Detachment Board was comprised of the following thirteen members during the reporting period:

Municipal and First Nation Representatives:

- David Halvorsen, Township of Conmee
- Wendy Wright, Township of Gillies
- Wilfred King, Kiashke Zaaging Anishinaabek (Gull Bay)
- Clarke Chapman, Lac Des Mille Lacs
- Brian Wright, Municipality of Neebing
- John Sobolta, Township of O'Connor
- Don Smith, Municipality of Shuniah

Community Representatives:

- Ralph Falcioni
- Lisa Laitinen-Egbuchulam
- Rox-Anne Moore

Provincial Representatives:

- Karen Cameron-Powell
- Caleb Garrow-Ledoux
- Kelly Walsh

OPP Representation (Non-voting):

- Robert Michelizzi, Detachment Commander
- Christopher Bortolin, Operations Manager - Staff Sergeant

Secretary:

- Erika Kromm

Chair: Don Smith
Vice Chair: Brian Wright

KEY GOVERNANCE ACTIVITIES AND INITIATIVES

During the reporting period, the Board transitioned from initial establishment to a more active governance role. Key activities included:

Oversight of Policing Services

The Board regularly reviewed reports from the Thunder Bay OPP Detachment, including information on crime trends, traffic enforcement, and calls for service. Discussions addressed issues such as impaired driving, speeding, and community safety concerns.

Action Plan Development and Monitoring

The Board reviewed and provided input into the Detachment Action Plan and participated in discussions supporting the development of the upcoming 2026–2029 Action Plan.

Community-Driven Policing Priorities

Community concerns raised by member municipalities informed Board discussions. Concerns included traffic safety, enforcement visibility, and highway safety trends. These discussions supported alignment between policing services and community needs.

Governance and Accountability

The Board initiated development of a Detachment Commander performance management framework and established a sub-committee to support governance functions.

Improving Transparency and Reporting

The Board passed a resolution advocating for improved clarity in OPP statistical reporting and reviewed reporting formats to better support oversight responsibilities.

Advocacy and Board Development

The Board advocated to the Province regarding delays in the appointment of provincial representatives, recognizing the impact on quorum and governance effectiveness.

Communications and Public Engagement

Efforts were made to improve transparency through the circulation of annual reports, development of media communications, review of public access to Board meetings, and the regular posting of information on the Board’s webpage.

PRIORITIES AND STRATEGIC ALIGNMENT

The Board worked with the Detachment Commander to support and monitor policing priorities reflected in the 2023–2025 Action Plan and contributed to discussions for the 2026–2029 Action Plan. Through this work, the Board ensured that local community needs and concerns were reflected in policing priorities.

Priority areas included crime prevention and enforcement, traffic and roadway safety, and community well-being.

FINANCIAL OVERVIEW

The Board approved the 2026 operating budget, reflecting adjustments from the 2025 budget to align with evolving governance needs and Board priorities. Overall, the budget remained stable, with changes primarily related to a reduction in the number of meetings and the removal of OAPSB membership, along with associated meeting and conference expenses. Variances between the years reflect efforts to maintain cost efficiency while supporting the Board's responsibilities under the CSPA.

A summary comparison of the 2025 and 2026 budgets is provided below:

Category	2025 Budget	2026 Budget	Variance
Member Remuneration	30,139	16,255	(13,884)
Administration	3,352	3,100	(252)
Insurance	4,463	4,463	-
Training and Conferences	10,246	0	(10,246)
Memberships	1,072	0	(1,072)
Total	**49,272**	**23,818**	**(25,454)**

The overall variance reflects the Board's decision not to renew the OAPSB membership and to align meeting-related expenses with a revised quarterly meeting schedule.

In 2025, actual expenditures were approximately $20,969 below budget, primarily due to the Board not being fully appointed for the duration of the year, which resulted in lower member remuneration and meeting-related costs.

FUTURE PRIORITIES (2026–2027)

Looking ahead, the Board will focus on supporting the implementation of the 2026–2029 Action Plan, enhancing oversight of performance reporting, and continuing to develop policies that clarify governance processes.

The Board will also prioritize strengthening engagement with participating municipalities and First Nations to ensure that policing services remain responsive to community needs.

These priorities will support the continued evolution of the Board's governance role and its ability to respond to emerging community safety needs.

CONCLUSION

The Lakehead OPP Detachment Board remains committed to fulfilling its governance and oversight responsibilities under the CSPA.

Throughout the reporting period, the Board continued to strengthen its role in monitoring policing services, supporting accountability, and ensuring that community priorities are reflected in policing objectives.

As the Board moves forward, it will build on this progress by enhancing governance processes, strengthening engagement with member municipalities and First Nations, and supporting the ongoing implementation of the Detachment Action Plan.

The Board remains committed to working collaboratively with the Thunder Bay OPP Detachment and its partners to support safe and well-served communities.

Through this work, the Board will continue to contribute to safe, sustainable, and responsive communities across the detachment area.

CONTACT INFORMATION

The Lakehead OPP Detachment Board can be contacted through:

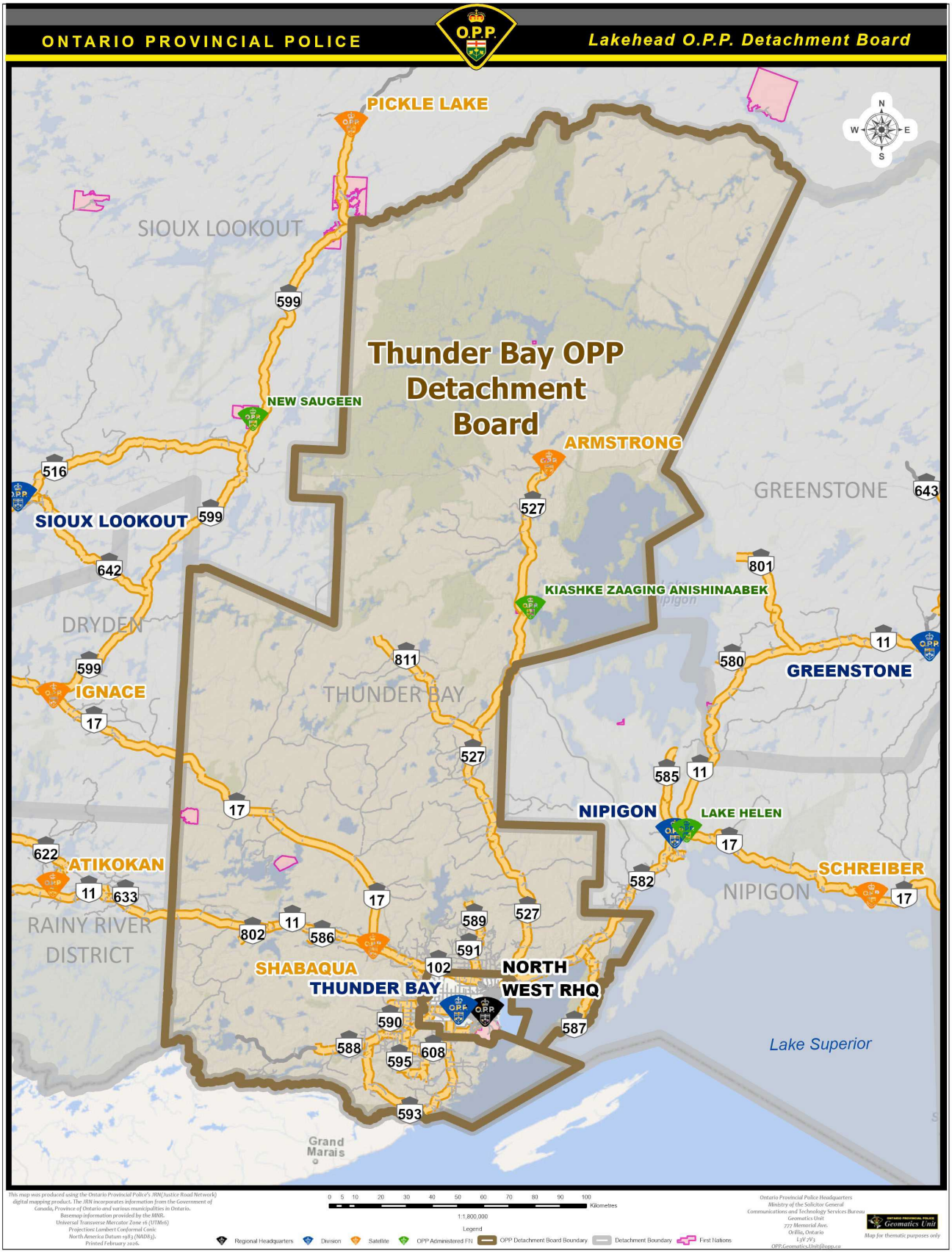
c/o Municipality of Neebing
4766 Highway 61
Neebing, ON P7L 0B5

Email: clerk@neebing.org
Phone: 807-474-5331

For additional information, including meeting agendas and minutes, please visit:
www.neebing.org/oppboard

THUNDER BAY DETACHMENT

2025 DETACHMENT BOARD ANNUAL REPORT


ONTARIO PROVINCIAL POLICE
O.P.P.
Lakehead O.P.P. Detachment Board
PICKLE LAKE
SIOUX LOOKOUT
599
Thunder Bay OPP Detachment Board
NEW SAUGEEN
ARMSTRONG
516
SIOUX LOOKOUT
599
527
GREENSTONE
643
642
801
KIASHKE ZAAGING ANISHINAABEK
DRYDEN
599
811
580
11
GREENSTONE
IGNACE
THUNDER BAY
17
527
585
11
NIPIGON
LAKE HELEN
17
622
ATIKOKAN
582
SCHREIBER
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633
17
NIPIGON
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RAINY RIVER DISTRICT
802
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586
589
527
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SHABAQUA
102
NORTH
THUNDER BAY
WEST RHQ
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S
0 5 10 20 30 40 50 60 70 80 90 100 Kilometres
1:1,800,000
Legend
Regional Headquarters
Division
Satellite
OPP Administered FN
OPP Detachment Board Boundary
Detachment Boundary
First Nations
Geomatics Unit
Map for thematic purposes only

2023-2025 STRATEGIC PLAN

Priorities and Commitments

PEOPLE

A healthy and resilient OPP

We will strive to support all members in achieving their professional and personal best.

WORK

A responsive and evolving OPP

We will empower our members to ensure the best possible policing services are delivered to Ontarians.

COMMUNITIES

A collaborative and progressive OPP

We will partner and build relationships with a shared vision for safety and well-being.

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Message from the Detachment Commander

I am pleased to present the Thunder Bay Detachment - 2025 Detachment Board Annual Report. This report includes crime, traffic enforcement and community well-being data, and highlights initiatives and successes from the past year. 2025 was the last year of the 2023-2025 Thunder Bay Detachment Action Plan and this report will provide a final update and progress results from that plan.

I am proud of the work undertaken by our detachment.
In 2025, we saw a rise in the amount of illicit drug charges and investigations compared to the previous year due in part to the excellent work and actioning investigations by our Community Street Crime Unit (CSCU) and officers trained in Criminal Interdiction. Through these investigations our charges increased by 300% with respect to CDSA Possession and a 47.4% increased in CDSA Trafficking. We maintained our commitment to traffic safety and commercial motor vehicle (CMV) enforcement in the Thunder Bay area by issuing 4115 Big 4 offences, which include speeding, distracted driving, seatbelts and impaired driving. Officers laid 6447 total charges for Highway Traffic Act offences, 2015 non traffic offences. Our officers issued over 1231 CMV charges, and 417 warnings. Our detachment members also committed to RIDE programs in the area, conducting 996 programs which attributed to our officers charging 154 impaired drivers during RIDE and non-RIDE investigations.

Based on concerns from community members, we increased our community patrol in the First Nation Territory of Whitesand, Municipality of Shuniah, Municipality of Neebing and a concentrated traffic enforcement effort centred on Hwy 102. This resulted in several investigations where charges were laid involving illicit drugs, impaired drivers, property crime and traffic related charges.

- We continued to leverage technology, including in-car cameras, automated licence plate recognition (ALPR), and body worn cameras new in 2025 to support the collection of evidence, assist with investigations, increase transparency and enhance public and officer safety.

- We worked alongside our policing partners, the Anishinabek Police Service, Nishnawbe-Aski Police Service, Gull Bay Police Service, to support cross-jurisdictional initiatives such as support for calls for service, major incident investigation, offender transport, and bail and warrant support. We also supported these policing partners with training and assistance in combating the illicit drug trade that has plagued the area and multiple First Nation Territories.

- We partnered with community-based organizations, such as Dilico and Canadian Mental Health Association, to develop/implement co-response models that enhance our ability to respond to mental health-related calls and support vulnerable people.

- We continued to engage with groups and organizations in our area to build relationships and promote community safety and well-being. We attended the community of Whitesand First Nation with Dilico, NorWest Community Health and Whitesand First Nation Health. These service organizations, together with uniform members, went door to door and provided NARCAN as part

of our harm reduction strategy and provided education and literature on the Crimestoppers program.

In 2026, we will release our new 2026-2029 Thunder Bay Detachment Action Plan. This is the first action plan developed under the *Community Safety and Policing Act* (CSPA). We are working closely with the Lakehead OPP Detachment Board and engaging with community members to ensure the needs of our communities are reflected in the commitments we make for the next four years.

Development of the 2026-2029 Thunder Bay Detachment Action Plan will coincide with the creation of the 2026-2029 OPP Strategic Plan creating organizational alignment.

As we look ahead to emerging challenges and new opportunities in policing and community safety, our detachment members remain committed to our mission to serve our communities, protect our citizens, uphold the law, and preserve public safety.

Robert A. Michelizzi
Detachment Commander
Thunder Bay Detachment

Summary of Commitments

Through analysis and consultation, the following areas of focus were identified for the years 2023-2025.

Crime	Roadways, Waterways and Trails	Community Well-Being
Offender compliance, apprehension and return (if necessary) of high-risk offenders where warrants exist. Prevent and solve violent crime while taking a victim-centered approach. Prevent and solve property crime while taking a victim-centered approach. Interdiction of illicit substances and weapons with a focus on the Trans-Canada Highway / Thunder Bay Airport / Rail.	Increased efforts in traffic enforcement around the “Big Four”. Commercial motor vehicle enforcement/education. Increased presence on our waterways and trails. Daily participation on Reduce Impaired Driving Everywhere (RIDE).	Establish and build capacity within Court Case Management and Offender Transport Unit for the district of Thunder Bay. Support for members personal and professional development. Continue to work towards correspondence models that focus on prevention, harm reduction and risk intervention strategies.

2025 Crime Progress Results

Commitment	Progress Results
Offender compliance, apprehension and return (if necessary) of high-risk offenders where warrants exist.	Thunder Bay detachment conducted 395 compliance checks on offenders on bail. Officers also executed 182 warrants with offenders taken into custody.
Prevent and solve violent crime while taking a victim-centered approach.	Thunder Bay Detachment has strengthened its response to violent crime by supporting the current Crime Unit with additional resources and enhanced training for officers in Criminal Investigations, Warrant Writing, Intimate Partner Violence Investigations (IPVI), Sexual Assault Investigations, and interviewing techniques. In addition, a full-time detective constable position was added to the Crime Unit to increase capacity for investigating complex occurrences. The Detachment Abuse Issues Investigator (DAII) program supported the Thunder Bay Detachment and its surrounding communities by identifying and reviewing 362 abuse-related occurrences, ensuring investigations were thorough and that victims were connected with the supports they needed. Of these, 284 occurrences involved IPV, all of which were reviewed by the DAII to ensure appropriate investigative steps were followed for completeness.
Prevent and solve property crime while taking a victim-centered approach.	Thunder Bay Detachment continues to commit its resources fully to the prevention of property crime through patrol, community engagement, criminal investigation, other sources of investigative tools such as social media, and other investigative tactics. Our victims are a priority and supporting them through their ordeal is paramount. We are fully committed to ensuring victim supports are offered and we assist victim support agencies in this area. Thunder Bay Detachment is 100% compliance with the offering of victim support services through our investigations.
Interdiction of illicit substances and weapons with a focus on the Trans-Canada Highway/Thunder Bay Airport/Rail.	In 2025, Thunder Bay Detachment utilized Criminal Detection and Enforcement Program (CDEP)-trained members to detect and intercept criminal operations traveling through the region. This member provided specialized training and mentoring to other uniform officers and played a key role in seizing more than 25 kg of cocaine, 1 kg of methamphetamine, three offence-related vehicles, and over $30,000 in proceeds of crime from vehicles traveling on the Trans-Canada Highway.

2025 Roadways, Waterways and Trails Progress Results

Commitment	Progress Results
Increased efforts in traffic enforcement around the “Big Four”.	Thunder Bay Detachment continues its commitment to Big 4 enforcement and works on maintaining success. In 2025 OPP members issued 4115 Big 4 offences notices, and 1250 Big 4 warnings.
Commercial motor vehicle enforcement/education.	2025 saw Thunder Bay members lay 1231 CMV charges, and 417 CMV warnings.
Increased presence on our waterways and trails.	Thunder Bay Detachment and its satellite detachments continue their commitment on the waterways and trails through enforcement of the specified Acts, education and the use of social media to bring awareness to marine, MSV, and ATV safety.
Daily participation on Reduce Impaired Driving Everywhere (RIDE).	Thunder Bay’s standard is two RIDE programs every shift when officers are able. In 2025, officers conducted 996 RIDE programs laying 154 impaired driving charges.

2025 Community Well-Being Progress Results

Commitment	Progress Results
Establish and build capacity within Court Case Management and Offender Transport Unit for the district of Thunder Bay.	In 2025, the court unit saw a loss of a member who accepted a position of provincial constable. In the fall of 2025, the Thunder Bay Detachment was in a hiring process for two new special constables for the unit.
Support for members personal and professional development.	The Thunder Bay detachment is continually developing our members by providing educational and learning development opportunities both formally through Ontario Police College and Provincial Police Academy training. We also continue to ensure member evaluations are meaningful and up to date with member driven learning objectives and career aspirations.
Continue to work towards correspondence models that focus on prevention, harm reduction and risk intervention strategies.	Thunder Bay Detachment continues to analyze data and crime trends, victim support and other alternative responses to prevent crime and harm to the public. The command team works closely with regional intelligence analysts to support and guide operational police functions.

Other Community Updates

- Based on current crime trends and/or requests from the community, Thunder Bay Detachment led crime prevention initiatives focused on drug trafficking and harm reduction. We worked alongside community partners Dilico, Norwest Health and Whitesand First Nation Health to increase awareness and education about combating drug trafficking by providing literature about the Crimestoppers program, as well as providing NARCAN to Whitesand First Nation Community members.

- Based on concerns from community members regarding speeding and driving complaints on Municipality of Neebing roads, Thunder Bay Detachment engaged an OPP regional analyst to assess the traffic volume data the municipality provided. The analyst was able to identify specific times when traffic violations were occurring, and enforcement actions were targeted to those times. This resulted in numerous Highway Traffic Act offences being investigated as well as criminal driving offences. This targeted enforcement even gained the attention of local media and residents.

- Thunder Bay Detachment attended Mackenzie Public School to engage with youth and staff to promote school safety. Our liaison officer received positive feedback from both the teachers and students regarding all interactions with our uniform members. Building relationships with youth and providing them with information about school safety are essential aspects of community safety and well-being.

- Building and strengthening relationships with First Nation communities remain a priority for the OPP and Thunder Bay/Armstrong Detachment. In 2025, we attended Whitesand First Nation community pow wows, participated in preparing community breakfasts and assisted with the continued development with the community roundtable.

- Officers from Armstrong Detachment and Gull Bay Police also hosted detachment days where officers showcased the detachment, the officers themselves and equipment used by police to the students at Armstrong Public School.

Calls for Service

Table 1.1

All CAD Events*	Immediate Police Response Required**
16,635	4,278

* This represents all Computer Aided Dispatch (CAD) event types created for each detachment area. Not all CAD events are dispatched to a frontline OPP detachment officer. Some events may have been actioned by another OPP member, diverted to another unit, or deemed a non-OPP event. This does not include officer or detachment generated events that have not been reported through the PCC, or any online reporting events.

** This represents the total number of CAD events prioritized for an immediate police response, indicating the potential for extreme danger, catastrophic circumstances, injury, the threat of injury, death, and/or crime in progress.

Crime and Clearance

Violent Crimes **Table 2.1**

Offences	2023	2024	2025	Clearance Rate
01 - Homicide	0	0	1	100.00%
02 - Other Offences Causing Death	0	0	0	--
03 - Attempted Murder	0	0	0	--
04 - Sexual Offences	20	18	24	66.67%
05 - Assaults/Firearm Related Offences	51	60	85	88.24%
06 - Offences Resulting in the Deprivation of Freedom	1	3	2	100.00%
07 - Robbery	0	1	1	100.00%
08 - Other Offences Involving Violence or the Threat of Violence	25	28	24	79.17%
09 - Offences in Relation to Sexual Services	0	0	0	--
10 - Total Violent Crime	97	110	137	83.21%

Property Crimes **Table 2.2**

Offences	2023	2024	2025	Clearance Rate
01 - Arson	0	1	3	33.33%
02 - Break and Enter	29	10	13	23.08%
03 - Theft Over	14	13	8	62.50%
04 - Theft Under	26	39	16	18.75%
05 - Have Stolen Goods	6	1	2	100.00%
06 - Fraud	42	43	34	17.65%
07 - Mischief	33	35	28	21.43%
08 - Total Property Crime	150	142	104	25.00%

Other Criminal Code **Table 2.3**

Offences	2023	2024	2025	Clearance Rate
01 - Illegal Gaming and Betting	0	0	0	--
02 - Offensive Weapons - Careless use of firearms	5	10	8	87.50%
03 - Failure to Comply - Judicial Orders/Unlawfully at Large	43	53	53	86.79%
04 - Disturb the Peace	2	9	2	50.00%
05 - Child Pornography	0	1	2	50.00%
06 - Other Criminal Code (Ex. Traffic)	9	11	7	71.43%
07 - Total Other Criminal Code	59	84	72	83.33%

Drugs **Table 2.4**

Offences	2023	2024	2025	Clearance Rate
01 - CDSA Possession	5	2	8	100.00%
02 - CDSA Trafficking	16	19	28	96.43%
03 - CDSA Importation & Production	0	0	0	--
04 - Cannabis Possession	0	1	0	--
05 - Cannabis Distribution	1	0	2	100.00%
06 - Cannabis Sale	0	0	1	0.00%
07 - Cannabis Importation & Exportation	0	0	0	--
08 - Cannabis Production	0	0	0	--
09 - Other Cannabis Violations	0	0	0	--
10 - Total Drugs	22	22	39	94.87%

Federal Statutes **Table 2.5**

Offences	2023	2024	2025	Clearance Rate
Federal Statutes	18	31	5	40.00%

Traffic Violations **Table 2.6**

Offences	2023	2024	2025	Clearance Rate
01 - Dangerous Operation	5	8	12	100.00%
02 - Flight from Peace Officer	11	8	9	11.11%
03 - Operation while Impaired/Low Blood Drug Concentration Violations	44	49	37	100.00%
04 - Failure or Refusal to Comply with Demand	1	5	1	100.00%
05 - Failure to Stop after Accident	0	6	6	0.00%
06 - Operation while Prohibited	3	5	11	100.00%
07 - Total	64	81	76	81.58%

Youth Crime **Table 2.7**

Disposition Type	2023	2024	2025
Bail	0	0	0
Conviction	0	3	1
Diversion	0	0	0
Non-Conviction	11	29	1
Not Accepted	0	2	1
POA Ticket	4	8	6
NULL	4	25	18
Total	19	67	27

Victim Referrals **Table 2.8**

Offences	2023	2024	2025
Sum of Offered	331	405	554
Sum of Accepted	95	84	130
Sum of Total	426	489	684
Sum of % Accepted	22.30%	17.18%	19.01%

Traffic and Road Safety

Motor Vehicle Collisions (MVC) by Type **Table 3.1**

(Includes roadway, off-road and motorized snow vehicle collisions)

Offences	2023	2024	2025
Fatal Injury Collisions	9	5	7
Non-Fatal Injury Collisions	41	70	59
Property Damage Only Collisions	514	505	538
Alcohol-Related Collisions	27	36	23
Animal-Related Collisions	212	198	193
Speed-Related Collisions	73	57	63
Inattentive-Related Collisions	58	54	45
Persons Killed	11	6	7
Persons Injured	49	96	74

Primary Causal Factors in Fatal MVCs on Roadways **Table 3.2**

Offences	2023	2024	2025
Fatal Roadway Collisions where Causal is Speed Related	5	2	2
Fatal Roadway Collisions where Causal is Alcohol/Drug Related	1	1	1
Persons Killed in Fatal Roadway Collisions where lack of Seatbelt/Helmet use is a Factor	1	0	1
Fatal Roadway Collisions where Causal is Inattentive Related	1	0	1
Fatal Roadway Collisions where Causal is Animal Related	1	0	0

Fatalities in Detachment Area **Table 3.3**

Fatality Type	Category	2023	2024	2025
Roadway	Fatal Incidents	9	5	6
Roadway	Persons Killed	11	6	6
Roadway	Alcohol/Drug Related Incidents	1	1	1
Marine	Fatal Incidents	0	1	0
Marine	Persons Killed	0	1	0
Marine	Alcohol/Drug Related Incidents	0	0	0
Off-Road Vehicle	Fatal Incidents	0	0	1
Off-Road Vehicle	Persons Killed	0	0	1
Off-Road Vehicle	Alcohol/Drug Related Incidents	0	0	0
Motorized Snow Vehicle	Fatal Incidents	0	0	0
Motorized Snow Vehicle	Persons Killed	0	0	0
Motorized Snow Vehicle	Alcohol/Drug Related Incidents	0	0	0

Big 4 **Table 3.4**

Offences	2023	2024	2025
Distracted (HTA 78.1)	180	39	87
Impaired (CCC 320.14 & 320.15)	138	181	154
Seatbelt (HTA 106)	326	157	166
Speeding (HTA 128)	4,392	2,787	3,708

Charges **Table 3.5**

Offences	2023	2024	2025
HTA	8,437	5,358	6,447
Criminal Code Traffic	166	235	210
Criminal Code Non-Traffic	463	669	910
LLCA	81	73	76
Controlled Drug and Substance Act	50	114	188
Federal Cannabis Act	3	3	16
Provincial Cannabis Act	51	64	76
Other	451	381	539

Policing Hours

The OPP has developed a Service Delivery Model (SDM) in response to several reviews and audit recommendations. The SDM is designed to:

- Promote officer wellness through balanced workloads
- Determine adequate staffing levels at each detachment
- Ensure the continued delivery of adequate and effective policing services in accordance with the *Community Safety and Policing Act (CSPA*)

To support SDM implementation, the OPP is undertaking a multi-year staffing strategy to address required increases in detachment personnel. This model supports the OPP's ability to:

- Respond effectively to increasing calls for service
- Maintain safe communities through proactive patrols and community engagement
- Meet municipal expectations for police visibility

To monitor progress and guide detachment-level planning, the OPP has established time allocation targets for provincial constables (Figure 1). These targets reflect how time should ideally be distributed by the end of the SDM staffing strategy.

The targets are based on a provincial average, and variations are expected between detachments due to differences in geography, operational structure, recruitment and leave of absence rates.

Detachments may face challenges in achieving these targets, but progress is expected as scheduling, data quality and strategic deployment continue to improve.

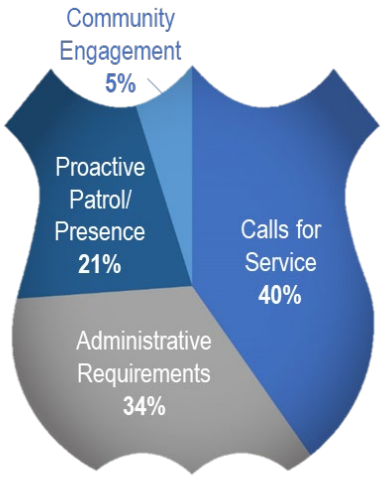

Figure 1: Service Delivery Model Provincial Target

Service Delivery Activity Allocations **Table 4.1**

Calls for Service	Administrative Requirements	Proactive Patrol	Community Engagement
36.4%	43.6%	19.3%	0.7%

Hours (Field Personnel) **Table 4.2**

	2023	2024	2025
TOTAL FRONTLINE HOURS	107,330	101,906	122,352

Endnotes

Tables 2.1, 2.2, 2.3, 2.4, 2.5, 2.6
Source: Niche Records Management System (RMS), (2026/02/24)

Note:

- Statistics Canada's Uniform Crime Reporting Survey was designed to measure the incidence of crime in Canadian society and its characteristics.
- Reported, Unfounded, Actual, Not Cleared, Cleared by Charge and Cleared Otherwise counts (2023, 2024 and 2025) and Clearance Rate for 2025 included.
- Actual counts and Clearance Rate (2023, 2024 and 2025) included.
- The most serious violation methodology (MSV) is used, which is the same as Statistics Canada's methodology. The MSV counts only the first of up to four offences per incident that occurred in the specific time range.
- First Nation population is not included.
- UCR Statistics Canada Verified (green checkmark) only.

Table 2.1 Violent Crimes
Corresponding Violation Description

01 Murder 1st Degree, Murder 2nd Degree, Manslaughter, Infanticide

02 Criminal Negligence Causing Death, Other Related Offences Causing Death

03 Attempted Murder, Conspire to Commit Murder

04 Sexual offence which occurred prior to January 4, 1983, Sexual Assault, Level 3, Aggravated, Sexual Assault, Level 2, Weapon or Bodily Harm, Sexual Assault, Level 1, Sexual Interference, Invitation to Sexual Touching, Sexual Exploitation, Sexual Exploitation of a Person with a Disability, Incest, Corrupting Morals of a Child, Making Sexually Explicit Material Available to Children, Parent or Guardian Procuring Sexual Activity, Householder Permitting Sexual Activity, Luring a Child via Computer, Agreement or Arrangement - Sexual Offence Against a Child, Bestiality - Commits, Compels Another Person, Bestiality in, Presence of, or Incites, a Child, Voyeurism, Non-Consensual Distribution of Intimate Images

05 Assault Level 3, Aggravated, Assault Level 2, Weapon/Bodily Harm, Assault Level 1, Unlawfully Causing Bodily Harm, Discharge Firearm with Intent, Using firearm/Imitation of Firearm in the Commission of an Offence, Pointing a Firearm, Assault, Peace-Public Officer, Assault Against Peace Officer with a Weapon or Causing Bodily Harm, Criminal Negligence Causing Bodily, Harm, Trap Likely to or Causing Bodily Harm, Other Assaults

06 Kidnapping, Forcible Confinement, Hostage Taking, Trafficking in Persons, Abduction Under 14, Not Parent/Guardian, Abduction Under 16, Removal of Children from Canada, Abduction Under 14 Contravening a Custody Order, Abduction Under 15 by Parent/Guardian

07 Robbery, Robbery to Steal Firearm

08 Extortion, Intimidation of a Justice System Participant or a Journalist, Intimidation of a Non-justice System Participant, Criminal Harassment, Indecent/Harassing Communications, Utter Threats to Person, Explosives Causing Death/Bodily Harm, Arson - Disregard for Human Life, Other Violations Against the Person, Failure to Comply with Safeguards (MAID), Forging/Destruction of Documents (MAID)

09 Obtaining Sexual Services for Consideration, Obtaining Sexual Services for Consideration from Person Under the Age of 18 Years, Material Benefit from Sexual Services, Material Benefit from Sexual Services Provided by Person Under the Age of 18 Years, Procuring, Procuring a Person Under the Age of 18 Years, Advertising Sexual Services

Table 2.2 Property Crimes
Corresponding Violation Description

01 Arson

02 Break & Enter, Break & Enter to Steal a Firearm, Break & Enter a Motor Vehicle (Firearm)

03 Theft over $5000, Theft over $5000 from a Motor Vehicle, Shoplifting over $5000, Motor Vehicle Theft

04 Theft $5000 or Under, Theft under $5000 from a Motor Vehicle, Shoplifting $5000 or Under

05 Trafficking in Stolen Goods over $5000, Possession of Stolen Goods over $5000, Trafficking in Stolen Goods $5000 and Under, Possession of Stolen Goods $5000 and Under

06 Fraud, Identity Theft, Identity Fraud

07 Mischief, Mischief to Cultural Property, Hate-motivated mischief relating to property used by identifiable group, Mischief Relating to War Memorials, Altering/Destroying/Removing a Vehicle Identification Number (VIN)

Table 2.3 Other Criminal Code
Corresponding Violation Description

01 Betting House, Gaming House, Other Violations Related to Gaming and Betting

02 Offensive Weapons: Explosives, Weapons Trafficking, Possession and Distribution of Computer Data (Firearm), Altering Cartridge Magazine, Weapons Possession Contrary to Order, Possession of Weapons, Unauthorized Importing/Exporting of Weapons, Firearms Documentation/Administration, Unsafe Storage of Firearms

03 Failure to Comply – Judicial Orders/Unlawfully at Large: bail violations, escape custody, fail to attend court, breach of probation

04 Disturb the Peace

05 Child Pornography: including making or distributing

06 Public Communications to Sell Sexual Services, Offences Related to Impeding Traffic to Buy or Sell Sexual Services, Counterfeiting, Indecent Acts, Voyeurism (Expired), Corrupting Morals, Lure child via Computer (Expired), Obstruct Public/Peace Officer, Trespass at Night, Threatening/Harassing Phone Calls (Expired), Utter Threats Against Property or Animals, Advocating Genocide, Public Incitement of Hatred, Promoting or Advertising Conversion Therapy, Unauthorized Recording of a Movie/Purpose of Sale, Rental, Commercial, Distribution, Offences Against Public Order (Part II CC), Property or Services for Terrorist Activities, Freezing of Property, Disclosure, Audit, Participate in Activity of Terrorist Group, Facilitate Terrorist Activity, Instruction/Commission of Act of Terrorism, Hoax – Terrorism, Advocating/Promoting Terrorism, Firearms and Other Offensive Weapons (Part III CC), Leave Canada to Participate in Activity of a Terrorist Group, Leave Canada to Facilitate Terrorist Activity, Leave Canada to Commit Offence for Terrorist Group, Leave Canada to Commit Offence that is Terrorist Activity, Harbour/Conceal Terrorist (Max = Life), Harbour/Conceal Terrorist (Max Does Not = Life), Harbour/Conceal Person Likely to Carry Out Terrorist Activity, Offences Against the Administration of Law and Justice (Part IV CC). Sexual Offences, Public Morals and Disorderly Conduct (Part V CC), Invasion of Privacy (Part VI CC), Failure to Comply with Regulations / Obligations for Medical Assistance in Dying (MAID), Other Offences Against the Person and Reputation, Offences Against the Rights of Property (Part IX CC), Fraudulent Transactions, Relating to Contracts and Trade (Part X CC), Offences Related to Currency, Proceeds of Crime (Part XII.2 CC), Attempts, Conspiracies, Accessories, Instruct Offence for Criminal Organization, Commit Offence for Criminal Organization, Participate in Activities of Criminal Organization, Recruitment of Members by a Criminal Organization, All Other Criminal Code (includes Part XII.1 CC)

Table 2.4 Drugs

Corresponding Violation Description

01 Possession – Heroin, Possession – Cocaine, Possession - Other Controlled Drugs and Substances Act, Possession - Methamphetamine (Crystal Meth), Possession - Methylenedioxyamphetamine (Ecstasy), Possession – Opioid (other than heroin)

02 Trafficking – Heroin, Trafficking – Cocaine, Trafficking - Other Controlled Drugs and Substances Act, Trafficking - Methamphetamine (Crystal Meth), Trafficking - Methylenedioxyamphetamine (Ecstasy), Trafficking – Opioid (other than heroin)

03 Import / Export – Heroin, Import / Export – Cocaine, Import / Export - Other Controlled Drugs and Substances Act, Import / Export - Methamphetamines (Crystal Meth), Import / Export - Methylenedioxyamphetamine (Ecstasy), Import/Export – Opioid (other than heroin), Production – Heroin, Production – Cocaine, Production - Other Controlled Drugs & Substances Act, Production - Methamphetamines (Crystal Meth), Production - Methylenedioxyamphetamine (Ecstasy), Production – Opioid (other than heroin), Possession, sale, etc., for use in production of or trafficking in substance

04 Possession of illicit or over 30g dried cannabis (or equivalent) by adult, Possession of over 5g dried cannabis (or equivalent) by youth, Possession of budding or flowering plants, or more than four cannabis plants, Possession of cannabis by organization

05 Distribution of illicit, over 30g dried cannabis (or equivalent), or to an organization, by adult, Distribution of cannabis to youth, by adult, Distribution of over 5g dried cannabis (or equivalent), or to an organization, by youth, Distribution of budding or flowering plants, or more than four cannabis plants, Distribution of cannabis by organization, Possession of cannabis for purpose of distributing

06 Sale of cannabis to adult, Sale of cannabis to youth, Sale of cannabis to an organization, Possession of cannabis for purpose of selling

07 Importation and exportation of cannabis, Possession of cannabis for purpose of exportation

08 Obtain, offer to obtain, alter or offer to alter cannabis, Cultivate, propagate or harvest cannabis by adult, Cultivate, propagate or harvest cannabis by youth or organization

09 Possess, produce, sell, distribute or import anything for use in production or distribution of illicit cannabis, Use of young person in the commission of a cannabis offence, Other Cannabis Act

Table 2.5 Federal Statutes

Corresponding Violation Description

Bankruptcy Act, Income Tax Act, Canada Shipping Act, Canada Health Act, Customs Act , Competition Act, Excise Act, Youth Criminal Justice Act (YCJA), Immigration and Refugee Protection Act, Human Trafficking (involving the use of abduction, fraud, deception or use of threat), Human Smuggling fewer than 10 persons, Human Smuggling 10 persons or more, Firearms Act, National Defence Act, Emergencies Act, Quarantine Act, Other Federal Statutes

Table 2.6 Traffic Violations

Corresponding Violation Description

01 Dangerous Operation Causing Death, Dangerous Operation Causing Bodily Harm, Dangerous Operation

02 Flight from Peace Officer

03 Operation - low blood drug concentration, Operation while impaired causing death (alcohol), Operation while impaired causing death (alcohol and drugs), Operation while impaired causing death (drugs), Operation while impaired causing death (unspecified), Operation while impaired causing bodily harm (alcohol), Operation while impaired causing bodily harm (alcohol and drugs), Operation while impaired causing bodily harm (drugs), Operation while impaired causing bodily harm (unspecified), Operation while impaired (alcohol), Operation while impaired (alcohol and drugs), Operation while impaired (drugs), Operation while impaired (unspecified)

04 Failure or refusal to comply with demand (alcohol), Failure or refusal to comply with demand (alcohol and drugs), Failure or refusal to comply with demand (drugs), Failure or Refusal to Comply with Demand (unspecified), Failure or refusal to comply with demand, accident resulting in bodily harm (alcohol), Failure or refusal to comply with demand, accident resulting in bodily harm (alcohol and drugs), Failure or refusal to comply with demand, accident resulting in bodily harm (drugs), Failure or refusal to comply with demand, accident resulting in bodily harm (unspecified), Failure or refusal to comply with demand, accident resulting in death (alcohol), Failure or refusal to comply with demand, accident resulting in death (alcohol and drugs), Failure or refusal to comply with demand, accident resulting in death (drugs), Failure or refusal to comply with demand, accident resulting in death (unspecified)

05 Failure to stop after accident resulting in death, Failure to stop after accident resulting in bodily harm, Failure to stop after accident, Operation while prohibited

06 Operation while Prohibited

Table 2.7 Youth Crime

Source: Niche Records Management System (RMS), (2026/03/06)

Note:

- Youth Charges by Disposition Type
- Only charges that have had a disposition type recorded in the OPP Niche RMS application are included.
- Youth charges without a disposition type are not included which may result in under stating the actual youth charges.
- “NULL” represents blanks, or where officers did not indicate the Disposition Type, however charges were applied.

Table 2.8 Victim Referrals

Source: Niche Records Management System (RMS), (2026/03/06)

Note:

- Number of Referrals to Victim Service Agencies

Table 3.1 Motor Vehicle Collisions (MVC) by Type

Source: Ontario Provincial Police, Collision Reporting System (CRS), (2026/02/24)

Note:

- Total Motor Vehicle Collisions (Fatal Injury, Non-Fatal Injury and Property Damage Only): Reportable Fatal Injury, Non-Fatal Injury and Property Damage Only Collisions entered into the eCRS for All Motorized Vehicles (MVC-Roadway, MSV- Snowmobile and ORV-Off Road Report Type) regardless of completion/approval status.
- Alcohol/Drug Related Collisions: Reportable MVC collisions where Alcohol/Drug Involved field indicated as Yes OR Contributing Factor scored as Ability Impaired (Alcohol or Drug) OR Driver Condition reported as Had Been Drinking or Ability Impaired.
- Animal Related Collisions: Reportable MVC collisions where Contributing Factor scored as Animal OR Wildlife Involved was an Animal OR Sequence of Events was an Animal.
- Speed Related Collisions: Reportable MVC collisions where Contributing Factor scored as Excessive Speed or Speed Too Fast For Conditions OR Driver Action reported as Exceeding Speed Limit or Speed Too Fast For Conditions.
- Inattentive Related Collisions: Reportable MVC collisions where Contributing Factor scored as Inattentive OR Driver Condition reported as Inattentive.
- Persons Killed or Injured: Number of Persons Injured or Killed in Reportable MVC collisions.

Table 3.2 Primary Causal Factors in Fatal MVCs on Roadways

Source: Ontario Provincial Police, Collision Reporting System (CRS), (2026/02/24)

Note:

- Fatal Roadway Collisions where Causal is Speed Related: Reportable Fatal Roadway Collisions where Contributing Factor scored as Excessive Speed or Speed Too Fast For Conditions OR Driver Action reported as Exceeding Speed Limit or Speed Too Fast For Conditions.
- Fatal Roadway Collisions where Causal is Alcohol/Drug Related: Reportable Fatal Roadway Collisions where Contributing Factor where Alcohol/Drug Involved field indicated as Yes OR Contributing Factor scored as Ability Impaired (Alcohol or Drug) OR Driver Condition reported as Had Been Drinking or Ability Impaired.
- Persons Killed in Fatal Roadway Collisions where lack of Seatbelt/Helmet use is a Factor: Persons Killed in Reportable Fatal Roadway Collisions where Victim is fatally injured AND a vehicle occupant AND where safety equipment reported to be not used but available.
- Fatal Roadway Collisions where Causal is Inattentive Related: Reportable Fatal Roadway Collisions where Contributing Factor scored as Inattentive OR Driver Condition reported as Inattentive.
- Fatal Roadway Collisions where Causal is Animal Related: Reportable Fatal Roadway Collisions where Contributing Factor scored as Animal OR Wildlife Involved was an Animal OR Sequence of Events was an Animal.

Table 3.3 Fatalities in Detachment Area

Source: Ontario Provincial Police, Collision Reporting System (CRS), (2026/02/24)

Note:

- Fatal Incidents: Reportable Fatal Collisions by Report Type (Roadway, Marine, Off-Road Vehicle, Motorized Snow Vehicle).
- Persons Killed: Number of Involved Persons where Injury is fatal by Report Type (Roadway, Marine, Off-Road Vehicle, Motorized Snow Vehicle).
- Alcohol/Drug Related Incidents: Reportable Fatal Collisions by Report Type (Roadway, Marine, Off-Road Vehicle, Motorized Snow Vehicle) where Alcohol/Drug Involved field indicated as Yes OR Contributing Factor scored as Ability Impaired (Alcohol or Drug) OR Driver Condition reported as Had Been Drinking or Ability Impaired.

Table 3.4 Big 4

Source: Niche Records Management System (RMS) & eTicket, (2026/02/24)

Note:

- Speeding (HTA 128): Charges are based on date charged. Speeding = HTA s.128 charges.
- Seatbelt (HTA 106): Charges are based on date charged. Seatbelt = HTA s.106 charges.
- Distracted (HTA 78.1): Charges are based on date charged. Distracted = HTA s.78.1 charges.
- Impaired (CCC 320.14 & 320.15): Charges are based on date charged. Impaired = CCC s.320.14 & 320.15 charges.

Table 3.5 Charges

Source: Niche Records Management System (RMS) & eTicket, (2026/02/24)

Note:

- HTA: Charges are based on date charged. Highway Traffic Act Statute charges.
- Criminal Code Traffic: Charges are based on date charged. Criminal Code Traffic (CCC s320.13, 320.14, 320.15, 320.16, 320.17 & 320.18) charges.
- Criminal Code Non-Traffic: Charges are based on date charged. All CCC charges not included in the Criminal Code Traffic section above.
- LLCA: Charges are based on date charged. Liquor Licence and Control Act charges.
- Federal Cannabis Act: Charges are based on date charged. Cannabis Act charges.
- Provincial Cannabis Act: Charges are based on date charged. Cannabis Control Act charges.
- Controlled Drug and Substance Act: Charges are based on date charged. Controlled Drug and Substance Act charges.
- Other: Charges are based on date charged. "Other" charges is comprised of CAIA, Other Provincial & Federal Offences not already captured in sections above.

Table 4.1 Service Delivery Activity Allocations

Source: Daily Activity Reporting (DAR) System

Date: January 12, 2026

Note: Activity allocation percentages are based on the total reported hours of detachment provincial constables performing duties within their home detachment location.

Table 4.2 Hours (Field Personnel)

Source: Daily Activity Reporting (DAR) System

Date: March 06, 2026

Note:

- Total reported hours, excluding paid duties.
- Includes Provincial Constable to Sergeant ranks only.
- Excludes First Nations badge numbers.
- Excludes administrative accounts and joint services accounts.
- Excludes incomplete DAR entries and those with errors.
- Excludes General Headquarters location codes.

CONTACT THE OPP

Know your location - be ready to describe the situation and your location. Look for addresses, landmarks and buildings that may help identify your location.

REACH THE OPP BY PHONE

- Call 9-1-1 if there is an immediate risk to someone's life or property
  - to stop or report a crime in progress
  - to report a fire
  - to report a life-threatening medical emergency
  - Don't hang up, stay on the line
- To report non-life-threatening incidents that require a police response, use the non-emergency line (1-888-310-1122) or go to opp.ca/reporting
- TTY 1-888-310-1133 or agent 511 for registered subscribers may be used for individuals in the Deaf, Hard of Hearing and Speech Impaired (DHHSI) community to contact police
- For all administrative inquiries or to schedule an appointment, find contact information for your local detachment at opp.ca/detachments

PROVIDE AN ANONYMOUS TIP

- Call Crime Stoppers at 1-800-222-8477 (TIPS) or visit www.crimestoppers.ca

REPORT AN INCIDENT ONLINE

- The OPP offers online reporting for minor, non-emergency occurrences in areas of OPP jurisdiction. opp.ca/reporting allows you to submit a report without visiting or calling.
- Use the online reporting tool for:
  - Theft Under $5,000
  - Mischief / Damage to Property Under $5,000
  - Mischief / Damage to Vehicle Under $5,000
  - Theft from Vehicle Under $5,000
  - Lost / Missing Property Under $5,000, including a licence plate(s) or validation sticker(s)
  - Driving Complaints

If you are reporting an emergency, call 9-1-1.

#KNOWWHENTOCALL

9-1-1 is for emergencies only: If there is an immediate risk to someone's life or property.

- ✔ a crime in progress
- ✔ a fire
- ✔ a life-threatening medical emergency

Dialed 9-1-1 accidentally? #Be911Ready. Don't hang up, stay on the line and speak with an OPP Communicator to confirm there's no emergency.

The misuse of 911 ties up emergency lines, communicators and officers, which can result in a slower response to a real emergency and risks the safety of people who may need urgent help.

It is against the law to call 9-1-1 as a joke. Prank 9-1-1 calls can be dangerous and waste valuable emergency resources.

DETACHMENT BOARD ANNUAL REPORT

2025

THUNDER BAY DETACHMENT

3267 Highway 130
ROSSLYN, ON
P7K 0B1

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Follow us on

Ministry of Municipal Affairs and Housing

Office of the Minister

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Tel.: 416 585-7000

Ministère des Affaires municipales et du Logement

Bureau du ministre

777, rue Bay, 17e étage
Toronto (Ontario) M7A 2J3
Tél. : 416 585-7000

Ontario

234-2026-2403

June 30, 2026

Dear Head of Council,

I am writing to provide an update that the government has amended a regulation under the *Planning Act* to support a new framework for developer-identified parkland dedication.

Specifically, amendments to the regulation prescribes requirements to support:

- The identification of land
- Notice to owners
- Record to the Ontario Land Tribunal, and
- Land suitability criteria

The changes affect the following regulation:

- O. Reg. 509/20: Community Benefits Charges and Parkland

The amending regulation supports the government's plan to support increased housing supply, job creation, and economic activity in Ontario.

Please see the links below to the amending regulation: O. Reg. 207/26: Community Benefits Charges and Parkland
Updates will also be noted on the ERO posting: *Proposed Changes to Support Standardizing of Parkland Requirements Under the Planning Act*

These changes were filed on June 26, 2026, and will come into force on July 1, 2026.

Sincerely,

Robert J. Flack
Minister of Municipal Affairs and Housing

c. Municipal Chief Administrative Officer and/or Treasurer
Robert Dodd, Chief of Staff to the Minister of Municipal Affairs and Housing
Martha Greenberg, Deputy Minister of Municipal Affairs and Housing
Laurie Miller, Assistant Deputy Minister, Local Government Division, Municipal Affairs and Housing

Northwestern Ontario Municipal Association

FOR IMMEDIATE RELEASE

NOMA Welcomes Northern Shield Energy Corridor Announcement

July 6, 2026 – THUNDER BAY, ON - The Northwestern Ontario Municipal Association (NOMA) welcomes today's announcement by the Government of Ontario identifying the proposed route for the Northern Shield Energy Corridor, recognizing it as another important step toward strengthening Canada's energy security, advancing critical minerals development, and building the infrastructure needed to support a stronger, more self-reliant economy.

"Today's announcement reinforces the vital role Northwestern Ontario will play in Canada's economic future," said NOMA President Rick Dumas. "Our region is home to the critical minerals, energy resources and strategic transportation corridors that will help power Canada's next generation of growth."

As planning for the Energy Corridor moves forward, NOMA encourages both the provincial and federal governments to continue investing in the infrastructure that will support its long-term success. This includes the modernization and expansion of Highways 11 and 17, workforce development, housing, broadband, and community infrastructure needed to attract investment and support growing communities.

"The Northern Shield Energy Corridor is an important piece of Canada's nation-building agenda, but its success depends on complementary investments throughout Northwestern Ontario," added Dumas. "Reliable highways, skilled workers and strong communities will be essential to unlocking the full economic potential of this corridor."

NOMA also recognizes the importance of meaningful partnerships with Indigenous communities and looks forward to working collaboratively with all levels of government, Indigenous partners, industry and municipalities to ensure the benefits of this historic initiative are shared across Northwestern Ontario.

As Canada continues to invest in nation-building infrastructure, NOMA remains committed to advocating for the strategic investments that will strengthen Northwestern Ontario's economy, improve regional connectivity, and position the region as a leader in Canada's critical minerals and energy future.

-30-

Northwestern Ontario Municipal Association

Media Contacts:

Rick Dumas
President, NOMA
(807) 229-6842
admin@noma.on.ca

Ministry of Northern Economic Development and Growth

Office of the Minister

16th Floor, Suite 1600
438 University Avenue
Toronto ON M5G 2K8

Ministère du Développement et de la croissance économique du Nord

Bureau du ministre

16e étage, bureau 1600
438, avenue University
Toronto ON M5G 2K8

Ontario

774-2026-202

July 7, 2026

Her Worship Sheila Maxwell
Mayor
Township of Conmee
smaxwell@conmee.com

Dear Mayor Maxwell,

Thank you for your continued leadership and the dedicated work you do every day to support your residents and help build strong communities across Northern Ontario. The success of our region is rooted in your commitment to local priorities and the people you serve.

As we face economic and trade challenges, the path forward is clear. It is more important than ever that we work together to ensure that economic development efforts create resilience and long-term prosperity across our region.

Last year, we announced a strategic refocusing of the Northern Ontario Heritage Fund Corporation to ensure these resources are concentrated on projects that create jobs and can be economic catalysts for your communities and regions.

As Minister of Northern Economic Development and Growth and Chair of the Northern Ontario Heritage Fund Corporation (NOHFC), I have witnessed first-hand the meaningful impact strategic NOHFC investments can have. From supporting local businesses to unlocking new opportunities for growth and innovation, NOHFC-supported projects are helping to create good-paying jobs, contribute to long-term economic development and move our region forward in a tangible way.

As leaders in your communities and regions, you understand where these opportunities are emerging, where challenges are limiting prosperity and where targeted investments can accelerate growth.

I ask you to work with your partners and bring these types of prospective proposals forward to the NOHFC. Whether it is helping local businesses grow or pursuing new economic opportunities, our team is ready to work with you to help advance strong projects that create jobs and strengthen your regions.

…/2

One strong example of what can be achieved through collaboration is the growing success of the Northern Ontario tourism campaign. Working with municipalities, local tourism partners and community organizations, we've been promoting your submitted outdoor adventures and must-see destinations to help draw more visitors to the North and support local economies. It shows that we can accomplish great things when we pursue a shared goal.

As a proud northerner. I am honoured to serve as a voice for Northern Ontario and appreciate the potential of our region. I am confident that by working together we can align your local knowledge and leadership with our government's support and continue to establish a more resilient, self-reliant and prosperous North for generations to come.

Sincerely,

The Honourable George Pirie
Minister of Northern Economic Development and Growth
Chair, Northern Ontario Heritage Fund Corporation

c: Karen Paisley, Clerk, Township of Conmee, conmee@conmee.com

Ontario

Tribunals Ontario
Assessment Review Board

Tribunaux décisionnels Ontario
Commission de révision de l'évaluation foncière

MEMORANDUM

TO: Municipalities

FROM: Kelly Triantafilou, Registrar

DATE: July 7, 2026

SUBJECT: **Improvements to the Assessment Review Board Process for Sickness and Extreme Poverty Appeals and Applications (Inability to Pay)**

The Assessment Review Board (ARB) is pleased to provide an update regarding upcoming changes to the ARB's process for handling Sickness and Extreme Poverty (Inability to Pay - ITP) appeals and applications. Applications can be filed to the ARB under **section 323(1)(e) of the *City of Toronto Act,* 2006, S.O. 2006, c. 11, Sched. A or section 357(1)(d.1) of the *Municipal Act,* 2001, S.O. 2001, c. 25.** Appeals can be filed to the ARB under **section 323(7) or 323(8) of the *City of Toronto Act,* 2006, S.O. 2006, c. 11, Sched. A, or section 357(7) or 357(8) of the *Municipal Act,* 2001, S.O. 2001, c. 25.** The ARB's improvements are intended to streamline the appeal/application experience while enhancing administrative efficiency and timeliness for municipalities and the ARB.

How the ARB receives these applications or appeals:

1. Where there is no by-law delegation to the ARB: Applicants must file directly with the municipality. Once a decision has been issued or September 30th of the year following the year in respect of which the application is made, applicants can file an **appeal** with the ARB.
2. Where there is by-law delegation to the ARB: Applicants can file an **application** directly with the ARB.

Why Change the Process:

As the ARB continues to modernize and improve process, it has identified opportunities to clarify the process to ensure:

- More consistent application intake
- Improved communication between applicants, municipalities, and the ARB
- Reduced administrative burden
- Faster and more predictable timelines for decisions
- Improved clarity and consistency in decision making
- Statistically driven definition of Extreme Poverty
- Additional resources and tools

The ARB is implementing process enhancements to address these goals.

Key Process Improvements

1. Standardized Application Requirements

The ARB is adopting a more structured and uniform set of requirements for ITP appeals/applications. This includes clearer guidance on the documentation applicants must provide to support claims of sickness or extreme poverty. Municipalities will receive updated process instructions to ensure consistency across jurisdictions.

2. Introduction of a New Financial Information Form

To support more consistent and transparent assessments of financial hardship, the ARB is developing a new standardized Financial Information Form. Applicants will be required to complete this form as part of their appeal/application. The form will outline income, expenses, assets, and other relevant financial details to assist the ARB in evaluating claims of extreme poverty.

Municipalities will receive the finalized form, and the ARB recommends that this new form be integrated into their application intake processes. The ARB is also requesting that the municipalities continue to assist individuals, where required, to help with the completion of this form and filing of their appeal/application.

3. Transition to Written Hearings

The ARB will be moving away from video hearings to written hearings as the standard format for these appeals/applications. Written hearings will streamline adjudication, reduce scheduling delays, and provide a more accessible process for applicants who may face barriers attending live hearings.

The ARB will provide guidance on how written hearings will be conducted, including expectations for municipal submissions and timelines for responding to ARB requests, if required.

4. Next Steps:

- Review the forthcoming ARB guidance package once released
- Contact the Board with any additional questions or to seek clarification or support after review
- Prepare to update municipal websites, forms, and public-facing materials to reflect the new process

Prepare for hearings scheduled for Fall 2026.

Conclusion

These improvements are designed to create a more efficient, transparent, and user-friendly process across Ontario. Municipal participation and readiness will be essential to ensuring a smooth transition and continued support for applicants experiencing significant hardship.

Thank you,

Kelly Triantafilou
Registrar

Ministry of Energy and Mines

Distribution, Conservation and Innovation Policy Division

77 Grenville Street, 5th Floor
Toronto ON M7A 2C1

Ministère de l'Énergie et des Mines

Division des politiques relatives à la distribution, la conservation et l'innovation

77, rue Grenville, 5e étage
Toronto ON M7A 2C1

Ontario

Subject: Municipal Energy Plan Program Review – Invitation to Provide Feedback

July 8, 2026

Greetings,

The Ministry of Energy and Mines is undertaking a review of the Municipal Energy Plan Program and is seeking input from municipalities across Ontario.

The Municipal Energy Plan Program is a voluntary application-based grant program that offers matched funding to municipalities to develop or enhance community energy plans. These plans identify opportunities for community-wide energy efficiency and cost savings. They both inform, and are informed by, land-use, transportation, housing, and economic planning priorities.

Through this review, we are exploring how the program could better support communities in advancing energy infrastructure, strengthening integrated energy planning, improving energy system resilience and reliability, and supporting economic growth.

We are inviting municipalities to participate through the following engagement opportunities to inform the program review and any future program changes:

A survey to gather municipal perspectives

- The survey is open from July 8 to August 22, 2026
- Your municipality can access and fill out the survey at this link.

An Environmental Registry of Ontario (ERO) posting outlining objectives for a renewed Municipal Energy Plan grant program

- The posting is open for feedback from July 8 to August 22, 2026
- The links to the posting are found here:
    - English: Review of Ontario's Municipal Energy Plan Grant Program | Environmental Registry of Ontario
    - French: Examen du Programme des plans énergétiques municipaux | Registre environnemental de l'Ontario

Thank you for your continued collaboration and leadership in advancing municipal energy planning in Ontario. Your input will help shape the future of the Municipal Energy Plan Program.

If you have any questions, please contact us at MEP@ontario.ca.

Sincerely,

Mike Smith
Assistant Deputy Minister
Distribution, Conservation and Innovation Policy Division
Ministry of Energy and Mines

The Corporation of the Township of Conmee
Administrative Report

Date: **July 14, 2026**

To: **Mayor and Council**

Subject: **Adoption of 2025 Asset Management Plan**

File Number: **01-F03-2025 - Asset Management Plan 2025**

Submitted by: **Karen Paisley Clerk**

RECOMMENDATION:
That Council adopt the Township of Conmee 2025 Asset Management Plan, prepared by PSD Citywide Inc., as presented; And That Council acknowledge the completion and closeout of the Asset Management Plan project.

The 2025 Asset Management Plan represents a significant milestone in the Township's asset management program and provides a foundation for long-term financial sustainability and informed decision-making.

It is recommended that Council adopt the plan and acknowledge the completion of the project.

BACKGROUND:
Ontario Regulation 588/17 under the Infrastructure for Jobs and Prosperity Act, 2015 requires municipalities to prepare and maintain an Asset Management Plan (AMP) to support the sustainable delivery of municipal services. The regulation established phased requirements, including the July 1, 2025 deadline for municipalities to develop a comprehensive plan addressing both core and non-core assets and establishing proposed levels of service.

The Township previously prepared an Asset Management Plan in 2024 to meet earlier phased requirements under the regulation. The 2025 Asset Management Plan builds upon this work and represents a comprehensive update to achieve full compliance with the July 1, 2025 requirements, including proposed levels of service and expanded asset categories.

The Township of Conmee retained PSD Citywide Inc. to prepare its 2025 Asset Management Plan. The project commenced in September 2025 and was completed in June 2026. The final plan has been delivered to the Township, and the project has been formally closed by PSD Citywide.

The AMP has been completed in compliance with the requirements of Ontario Regulation 588/17.

DISCUSSION:

The 2025 Asset Management Plan provides a comprehensive assessment of the Township's infrastructure assets, including roads, bridges and culverts, buildings, land improvements, vehicles, and machinery and equipment. The plan identifies a total replacement value of approximately $17.4 million and establishes the Township's current condition, lifecycle needs, and long-term financial requirements.

The plan identifies that while approximately 73% of assets are in fair or better condition, the Township faces a significant infrastructure funding gap. The estimated annual capital requirement to sustain assets is approximately $778,000, while current funding levels are approximately $152,000 annually, resulting in an annual shortfall of approximately $625,000.

To address this gap, the AMP outlines several funding scenarios and recommends a phased approach to achieving sustainable funding levels. The recommended strategy includes gradual increases to capital funding over time, prioritization of high-risk and critical assets, and continued reliance on external funding sources such as the Ontario Community Infrastructure Fund and Canada Community-Building Fund.

The AMP is a strategic planning document and does not commit Council to any immediate financial decisions. Rather, it provides a framework to guide future budget deliberations, capital planning, and infrastructure investment decisions. The financial strategies outlined in the plan will be considered by Council through the annual budget process.

Adoption of the Asset Management Plan demonstrates the Township's commitment to responsible infrastructure planning and ensures continued alignment with provincial requirements, which is essential for ongoing eligibility for infrastructure funding programs.

Asset Management Plan 2025

Township of Conmee

May 2026

psdcitywide

This Asset Management Plan was prepared by:

Empowering your organization through advanced asset management, budgeting & GIS solutions

Key Statistics

$17.4 m	2024 Replacement Cost of Asset Portfolio
$55 k	Replacement Cost of Infrastructure Per Household
73%	Percentage of Assets in Fair or Better Condition
78%	Percentage of Assets with Assessed Condition Data
$625 k	Annual Capital Infrastructure Deficit
15 Years	Recommended Timeframe for Eliminating Annual Infrastructure Deficit (Tax-Funded)
4.47%	Target Investment Rate
0.87%	Actual Investment Rate

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1. Executive Summary

Municipal infrastructure delivers critical services that are foundational to the economic, social, and environmental health and growth of a community. The goal of asset management is to enable infrastructure to deliver an adequate level of service in the most cost-effective manner. This involves the ongoing review and update of infrastructure information and data alongside the development and implementation of asset management strategies and long-term financial planning.

1.1 Scope

This Asset Management Plan (AMP) identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Township of Conmee can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP include the following asset categories:

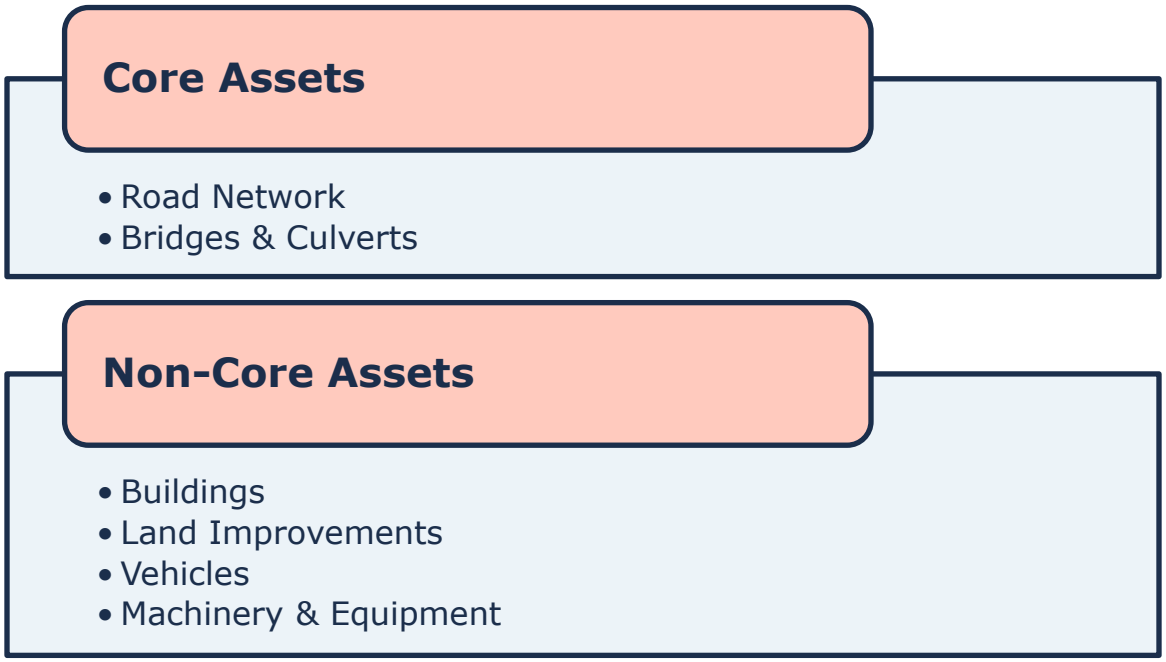


Figure 1 Core and Non-Core Asset Categories

1.2 Compliance

With the development of this AMP the Township of Conmee has achieved compliance with July 1, 2025, requirements under O. Reg. 588/17. This includes requirements for proposed levels of service and inventory reporting for all asset categories.

1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $17.4 million. 73% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 48% of assets. For the remaining 52% of assets, assessed condition data was unavailable, and asset age was used to approximate condition. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $777 thousand. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $152 thousand towards capital projects or capital reserves per year. As a result, there is currently an annual funding gap of $625 thousand.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Township. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

1.4 Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Township's infrastructure deficit based on a 15-year plan for tax-funded assets:

Figure 2 Proposed Tax/Rate Changes

Recommendations to guide continuous refinement of the Township's asset management program. These include:

- Review data to update and maintain a complete and accurate dataset
- Develop a condition assessment strategy with a regular schedule
- Review and update lifecycle management strategies
- Development and regularly review short- and long-term plans to meet capital requirements
- Measure current levels of service and proposed levels of service

2. Introduction & Context

2.1 Community Profile

Census Characteristic	Township of Conmee	Ontario
Population 2021	798	14,223,942
Population Change 2016-2021	-2.6%	5.8%
Total Private Dwellings	317	5,929,250
Population Density	4.8/km2	15.9/km^2
Land Area	167.65 km2	892,411.76 km^2

Table 1 Township of Conmee Community Profile

The Township of Conmee is a rural municipality located in the Thunder Bay District of Northwestern Ontario. The Township is characterized by its scenic countryside, rolling hills, forests, agricultural lands, and significant natural heritage features that contribute to its rural character and quality of life. Its proximity to the City of Thunder Bay provides residents with access to regional employment, services, and amenities while maintaining a predominantly rural lifestyle.

Conmee has a strong agricultural and resource-based heritage, with agriculture, forestry, and mineral aggregate extraction continuing to play important roles in the local economy. The Township's land use and development patterns are shaped by its natural environment, rural road network, and dispersed population, all of which influence the delivery and management of municipal services and infrastructure.

According to the 2021 Census, the Township has a population of 798 residents, with population levels remaining relatively stable in recent years. Like many rural municipalities, Conmee is experiencing demographic changes associated with an aging population, which will influence future service and infrastructure needs. Demand for rural residential properties is expected to continue, with future growth remaining modest and focused on maintaining the Township's rural character while supporting the long-term needs of residents.

2.2 Asset Management Overview

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

The acquisition of capital assets accounts for only 10-20% of their total cost of ownership. The remaining 80-90% comes from operations and maintenance. This AMP focuses its analysis on the capital costs to maintain, rehabilitate and replace existing municipal infrastructure assets.

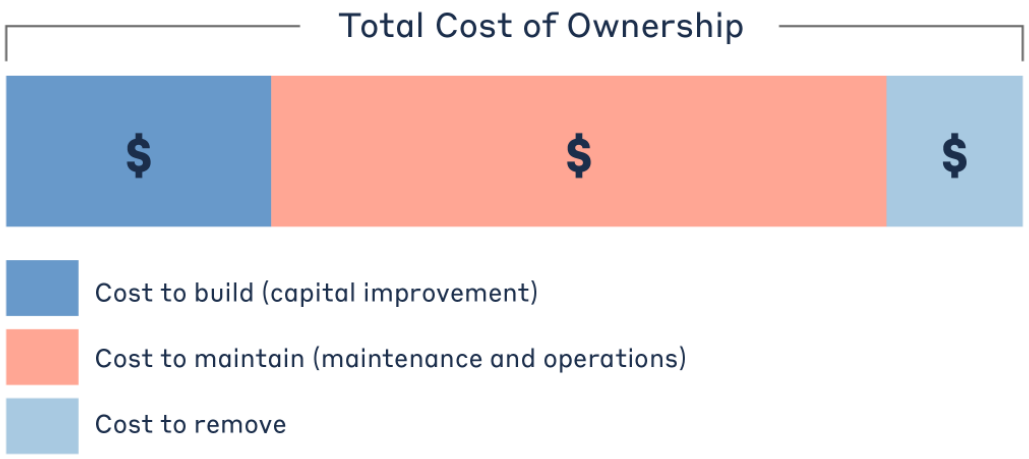


Figure 3 Total Cost of Asset Ownership

These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

2.2.1 Foundational Asset Management Documentation

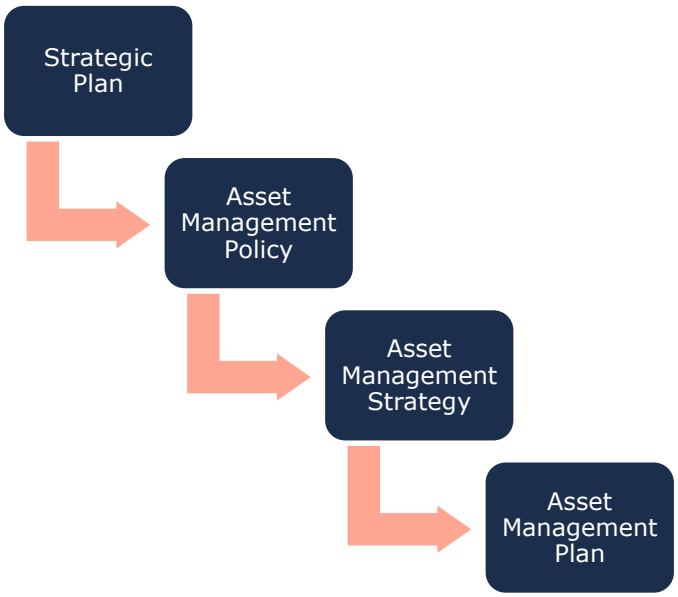


Figure 4 Foundational Asset Management Documents

A practical asset management program typically follows an industry-standard framework that begins with a Strategic Plan, followed by an Asset Management Policy, an Asset Management Strategy, and ultimately an Asset Management Plan.

As defined by the Institute of Asset Management (IAM), this framework emphasizes the alignment of asset management activities with the organization's strategic objectives. The Strategic Plan serves as the foundation, guiding decision-making and establishing a clear line of sight between corporate goals and asset management planning, investment, and reporting.

Asset Management Policy

An Asset Management Policy establishes the principles that guide the Township of Conmee's approach to asset management. It formalizes the Township's commitment to managing infrastructure assets in a manner that supports strategic goals, service delivery, risk management, financial sustainability, and long-term community needs. The policy provides direction to Council, management, and staff in carrying out asset management responsibilities and decision-making activities.

The Township of Conmee adopted Policy No. 71, Strategic Asset Management Policy, on December 11, 2018, to support a consistent and transparent approach to infrastructure planning and asset management.

The objectives of the policy include:

- Forward looking, taking a long-term view of infrastructure needs while considering demographic and economic trends.
- Budgeting and planning, integrating asset management with budgeting, financial planning, and investment decision-making.
- Prioritizing infrastructure needs to guide resource allocation and capital investments.
- Transparency and accountability, ensuring decisions are evidence-based and communicated openly to stakeholders.
- Environmentally conscious practices minimize environmental impacts, support climate resilience, and promote sustainability.
- Community focused decision-making that enhances community well-being through accessible and effective infrastructure services.
- Innovation and integration, encouraging the use of innovative technologies and aligning asset management with broader municipal plans and strategies.

The policy also emphasizes stakeholder engagement, climate change considerations, financial sustainability, and continuous improvement to ensure municipal assets continue to support the Township's service delivery objectives now and in the future.

Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the Township plans to achieve asset management objectives through planned activities and decision-making criteria.

The Township's Asset Management Policy contains many of the key components of an asset management strategy and may be expanded on in future revisions or as part of a separate strategic document.

Asset Management Plan

The asset management plan (AMP) presents the outcomes of the Township's asset management program and identifies the resource requirements needed to achieve a defined level of service. The AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service (Current & Proposed)
- Financial Strategies

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Township to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

2.2.2 Key Concepts in Asset Management

Effective asset management integrates several key components, including lifecycle management, risk & criticality, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement. The following table provides a description of each type of activity and the general difference in cost.

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

Lifecycle Activity	Cost	Typical Associated Risks
Maintenance Activities that prevent defects or deteriorations from occurring	**$**	• Balancing limited resources between planned maintenance and reactive, emergency repairs and interventions. • Diminishing returns associated with excessive maintenance activities, despite added costs.

Lifecycle Activity	Cost	Typical Associated Risks
		♦ Intervention selected may not be optimal and may not extend the useful life as expected, leading to lower payoff and potential premature asset failure.
Rehabilitation/ Renewal Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	**$$$**	♦ Useful life may not be extended as expected. ♦ May be costlier overall when assessed against full reconstruction or replacement. ♦ Loss or disruption of service, particularly for underground assets.
Replacement/ Reconstruction Asset end-of-life activities that often involve the complete replacement of assets	**$$$$$**	♦ Incorrect or unsafe disposal of existing asset. ♦ Costs associated with asset retirement obligations. ♦ Substantial exposure to high inflation and cost overruns. ♦ Replacements may not meet capacity needs for a larger population. ♦ Loss or disruption of service, particularly for underground assets.

Table 2 Lifecycle Management: Typical Lifecycle Interventions

The Township's approach to lifecycle management is described within each asset category outlined in this AMP. Staff will continue to evolve and innovate current practices for developing and implementing proactive lifecycle strategies to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

Risk & Criticality

Asset risk and criticality are essential building blocks of asset management, integral in prioritizing projects and distributing funds where they are needed most based on a variety of factors. Assets in disrepair may fail to perform their intended function, pose substantial risk to the community, lead to unplanned expenditures, and create liability for the municipality. In addition, some assets are simply more important to the community than others, based on their financial significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (i.e. low, medium,

high) or quantitative measurement (i.e. 1-5), that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

Formula to Assess Risk of Assets

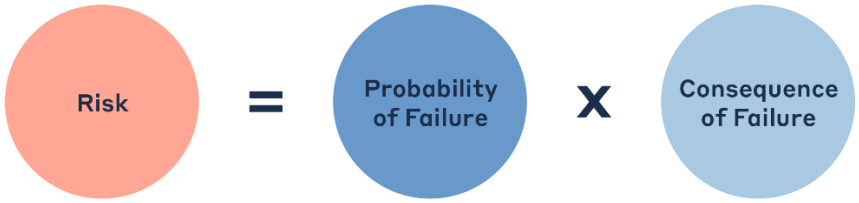


Figure 5 Risk Equations

The approach used in this AMP relies on a quantitative measurement of risk associated with each asset. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk index of 1 for the lowest risk assets, and a maximum risk index of 25 for the highest risk assets.

Probability of Failure

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure, including its condition, age, previous performance history, and exposure to extreme weather events, such as flooding and ice jams—both a growing concern for municipalities in Canada.

Consequence of Failure

Estimating criticality also requires identifying the types of consequences that the organization and community may face from an asset's failure, and the magnitude of those consequences. Consequences of asset failure will vary across the infrastructure portfolio; the failure of some assets may result primarily in high direct financial cost but may pose limited risk to the community. Other assets may have a relatively minor financial value, but any downtime may pose significant health and safety hazards to residents.

Table 3 illustrates the various types of consequences that can be integrated in developing risk and criticality models for each asset category and segments within. We note that these consequences are common, but not exhaustive.

Type of Consequence	Description
Direct Financial	Direct financial consequences are typically measured as the replacement costs of the asset(s) affected by the failure event, including interdependent infrastructure.

Type of Consequence	Description
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, business closures, service disruptions, etc. Whereas direct financial impacts can be seen immediately or estimated within hours or days, economic impacts can take weeks, months and years to emerge, and may persist for even longer.
Socio-political	Socio-political impacts are more difficult to quantify and may include inconvenience to the public and key community stakeholders, adverse media coverage, and reputational damage to the community and the Municipality.
Environmental	Environmental consequences can include pollution, erosion, sedimentation, habitat damage, etc.
Public Health and Safety	Adverse health and safety impacts may include injury or death, or impeded access to critical services.
Strategic	These include the effects of an asset's failure on the community's long-term strategic objectives, including economic development, business attraction, etc.

Table 3 Risk Analysis: Types of Consequences of Failure

This AMP includes a high-level evaluation of asset risk and criticality. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation and replacement strategies for critical assets.

Levels of Service

A level of service (LOS) is a measure of what the Town is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Town as worth measuring and evaluating. The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories as applicable (Roads, Water & Wastewater) the province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the

impact of the Township's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories as applicable the province, through O. Reg. 588/17, has also provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Township plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Township. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Township must identify a lifecycle management and financial strategy which allows these targets to be achieved.

2.3 Scope & Methodology

2.3.1 Asset Categories for this AMP

This asset management plan for the Township of Conmee is produced in compliance with O. Reg. 588/17. The July 2025 deadline under the regulation—the second of three AMPs—requires analysis of core and non-core asset categories.

The AMP summarizes the state of the infrastructure for the Township's asset portfolio, establishes current & proposed levels of services, outlines lifecycle strategies for optimal asset management & performance, and provides financial strategies to reach sustainability for the asset categories listed below.

Figure 6 Tax Funded and Rate Funded Asset Categories

2.3.2 Data Effective Date

It is important to note that this plan is based on data as of **December 2024**; therefore, it represents a snapshot in time using the best available processes, data, and information at the Township. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates and dedicated data management resources.

2.3.3 Deriving Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:

User-Defined Cost and Cost Per Unit

Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience.

Cost Inflation / CPI Tables

Historical costs of the assets are inflated based on Consumer Price Index or Non-Residential Building Construction Price Index.

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Township incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3.4 Estimated Useful Life (EUL)

The estimated useful life (EUL) of an asset is the period over which the Township expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

2.3.5 Reinvestment Rate

As assets age and deteriorate, they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost.

By comparing the actual vs. target reinvestment rate the Township can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

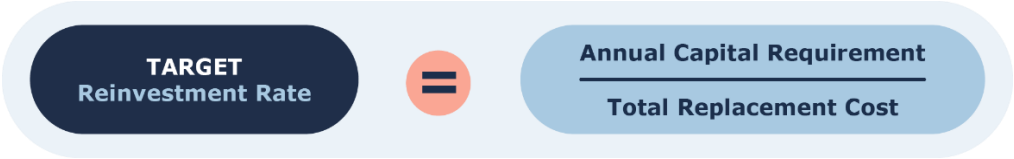


Figure 7 Target Reinvestment Rate Calculation

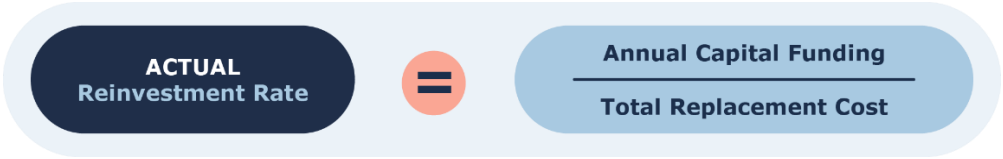


Figure 8 Actual Reinvestment Rate Calculation

2.3.6 Deriving Asset Condition

An incomplete or limited understanding of asset condition can mislead long-term planning and decision-making. Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life.

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Township's asset portfolio. The table below outlines the condition rating system used in this AMP to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well-maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-80
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-60
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, substantial portion of system exhibits significant deterioration	20-40
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-20

Table 4 Standard Condition Rating Scale

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition.

2.4 Ontario Regulation 588/17

As part of the Infrastructure for Jobs and Prosperity Act, 2015, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17)[1]. Along with creating better performing organizations, more livable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

Figure 9 below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

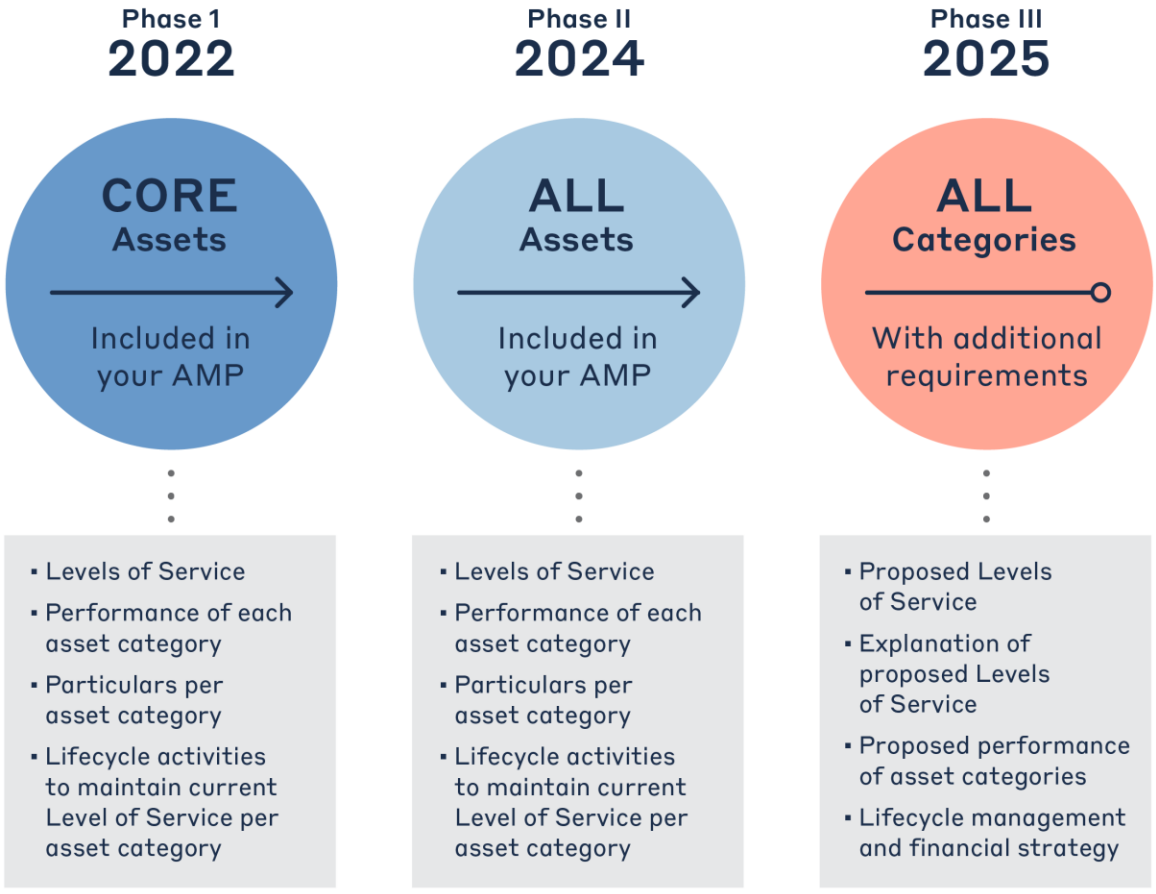


Figure 9 O. Reg. 588/17 Requirements and Reporting Deadlines

[1] O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure https://www.ontario.ca/laws/regulation/170588

3. Portfolio Overview – State of the Infrastructure

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Township's infrastructure portfolio. These details are presented for all core and non-core asset categories.

3.1 Asset Hierarchy & Data Classification

Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Key category details are summarized at asset segment level.

Figure 10 Asset Hierarchy and Data Classification

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The seven asset categories analyzed in this Asset Management Plan have a total current replacement cost of $17.4 million. This estimate was calculated using user-defined costing, as well as inflation of historical or original costs to current date. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today. Figure 11 illustrates the replacement cost of each asset category. Road Network and Buildings represent the largest share of the Township's portfolio, at 40% each.

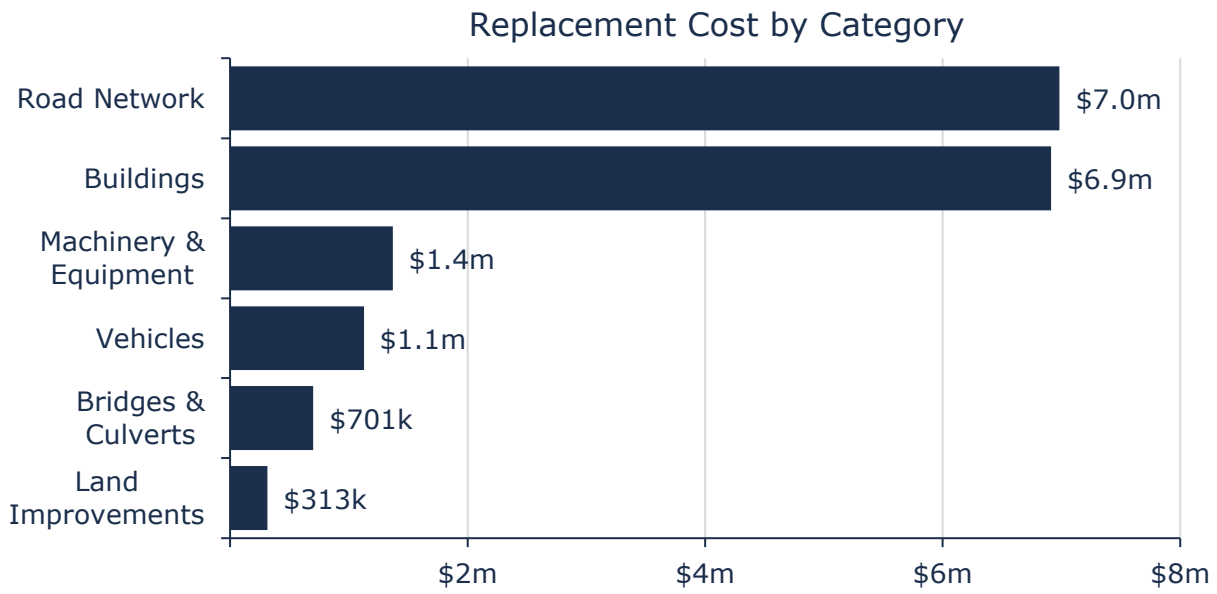


Figure 11 Current Replacement Cost by Asset Category

3.2.2 Target vs. Actual Reinvestment Rate

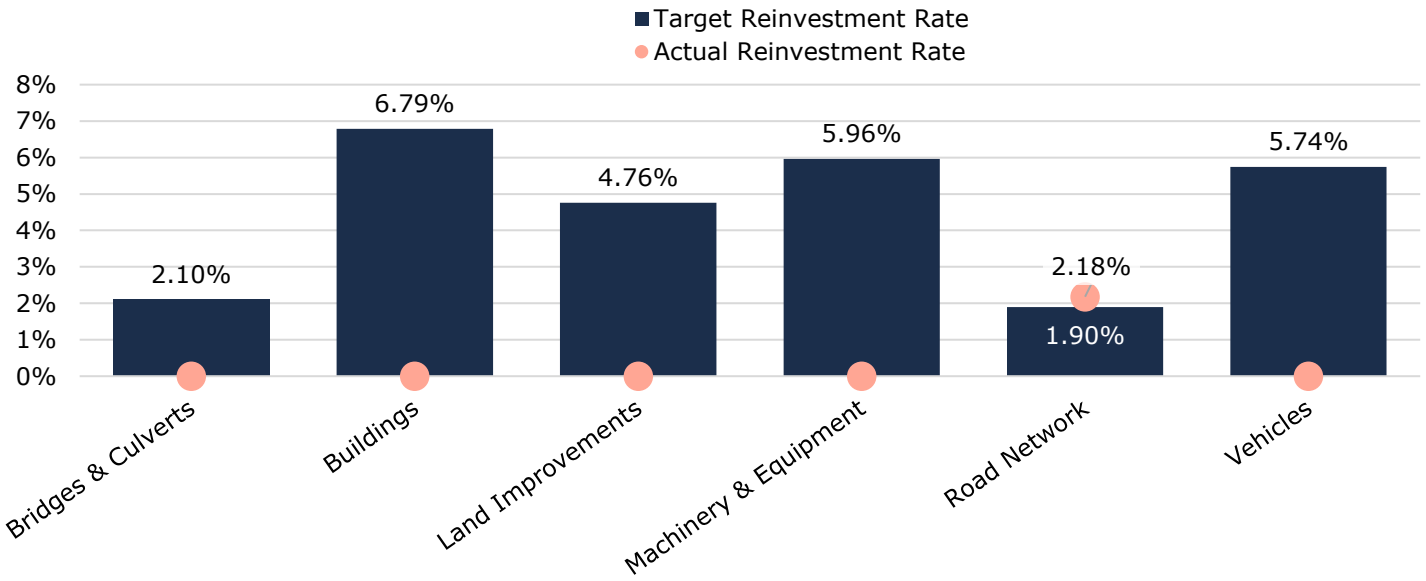


Figure 12 Current Vs. Target Reinvestment Rate

The graph above depicts funding gaps by comparing the target to the current reinvestment rate. To meet the existing long-term capital requirements, the Town requires an annual capital investment of $625 thousand, for a target portfolio reinvestment rate of 4.47%. Currently, annual investment from sustainable revenue source is $152 thousand, for a current portfolio reinvestment rate of 0.87%. Target and current re-investment rates by asset category are detailed below.

3.2.3 Condition of Asset Portfolio

Figure 13 and Figure 14 summarize asset condition at the portfolio and category levels, respectively. Based on both assessed condition and age-based analysis, 73% of the Township's infrastructure portfolio is in fair or better condition, with the remaining 27% in poor or worse condition. Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates for immediate intervention, including potential replacement or reconstruction.

Similarly, assets in fair condition should be monitored for disrepair over the medium term. Keeping assets in fair or better condition is typically more cost-effective than addressing assets needs when they enter the latter stages of their lifecycle or decline to a lower condition rating, e.g., poor or worse.

Condition data was available for majority of the assets. For all remaining assets, age was used as an approximation of condition. Further, when assessed condition data was available, it was projected to current year-end (2024). This 'projected condition' can generate lower condition ratings than those established at the time of the condition assessment. The rate of this deterioration will also depend on lifecycle curves used to project condition over time.

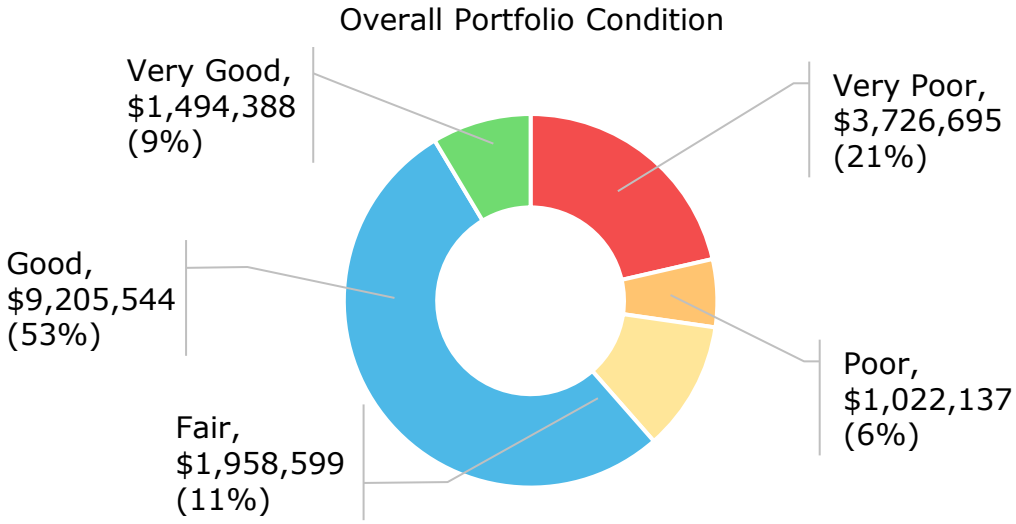


Figure 13 Asset Condition: Portfolio Overview

As further illustrated in Figure 14 at the category level, the majority of road network is in fair or better condition, based on in-field condition assessment data. On the contrary, most machinery & equipment assets are in poor or worse condition. See Table 5 for details on how condition data was derived for each asset segment.

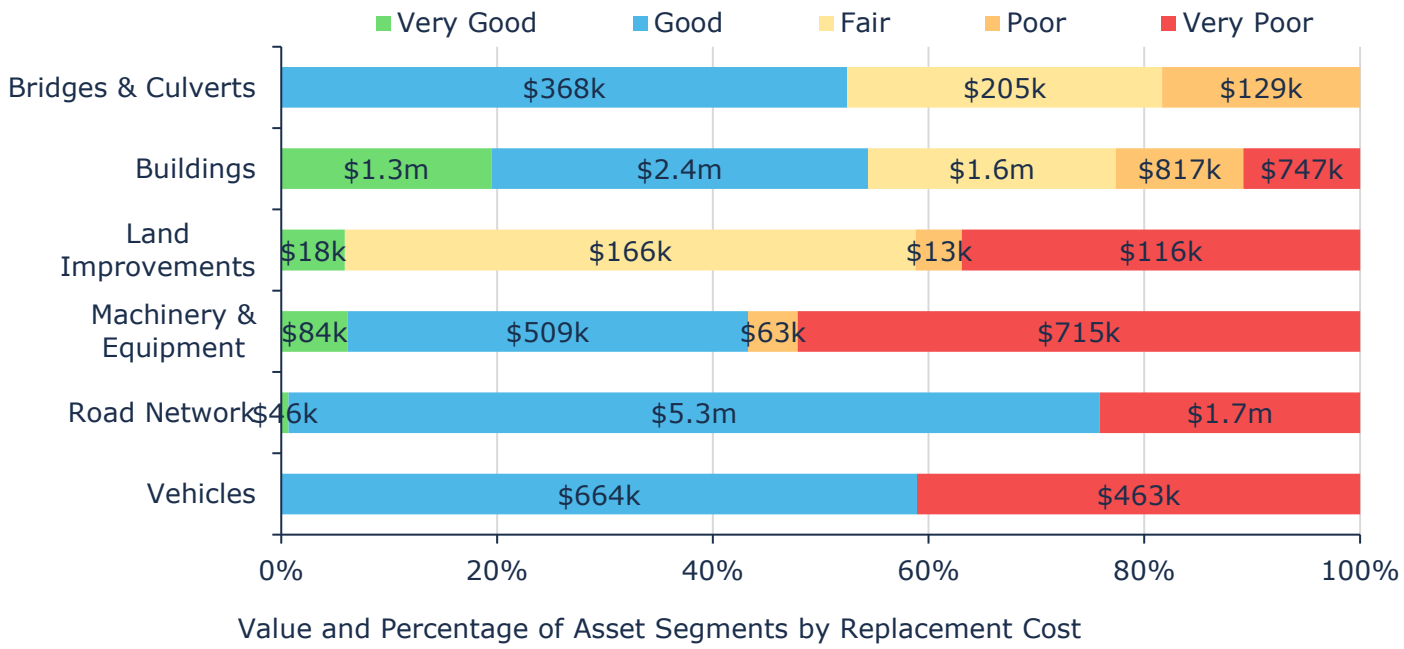


Figure 14 Asset Condition by Asset Category

As outlined previously, buildings and facilities are not componentized into their individual major elements and components. This limits the validity of current condition estimates as they are presented only at the 'parent' asset level.

Source of Condition Data

This AMP relies on assessed condition for 78% of assets, based on and weighted by replacement cost. For the remaining assets, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. Table 5 below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment(s)	% of Assets with Assessed Conditions	Source of Condition Data
Road Network	Road Surface	100%	Staff Assessments (2020)
	Road Sub-surface	0%	Age-based
Bridges & Culverts	All	100%	OSIM Reports (2025&2024)
Buildings	All	100%	ABSI Assessments (2020)
Land Improvements	All	0%	Age-based
Vehicles	Emergency Services	8%	Staff Assessments (2025)
	Public Service	100%	Staff Assessments (2025)
Machinery & Equipment	All	0%	Age-based

Table 5 Source of Condition Data

3.2.4 Risk Matrix

Using the risk equation and preliminary risk models, Figure 15 shows how assets across the different asset categories are stratified within a risk matrix.

1 - 4 Very Low $2,132,924 (12%)	5 - 7 Low $3,003,361 (17%)	8 - 9 Moderate $4,825,588 (28%)	10 - 14 High $3,512,395 (20%)	15 - 25 Very High $3,933,095 (23%)

Figure 15 Risk Matrix: All Assets

The analysis shows that based on current risk models, approximately 23% of the Township's assets, with a current replacement cost of approximately $3.9 million, carry a risk rating of 15 or higher (red) out of 25. Assets in this group may have a high probability of failure based on available condition data and age-based estimates and were considered to be most essential to the Township.

As new asset attribute information and condition assessment data are integrated with the asset register, asset risk ratings will evolve, resulting in a redistribution of assets within the risk matrix. Staff should also continue to calibrate risk models.

We caution that since risk ratings rely on many factors beyond an asset's physical condition or age, assets in a state of disrepair can sometimes be classified as low risk, despite their poor condition rating. In such cases, although the probability of failure for these assets may be high, their consequence of failure ratings were determined to be low based on the attributes used and the data available.

Similarly, assets with very high condition ratings can receive a moderate to high-risk rating despite a low probability of failure. These assets may be deemed as highly critical to the Township based on their costs, economic importance, social significance, and other factors. Continued calibration of an asset's criticality and regular data updates are needed to ensure these models more accurately reflect an asset's actual risk profile.

3.2.5 Forecasted Capital Requirements

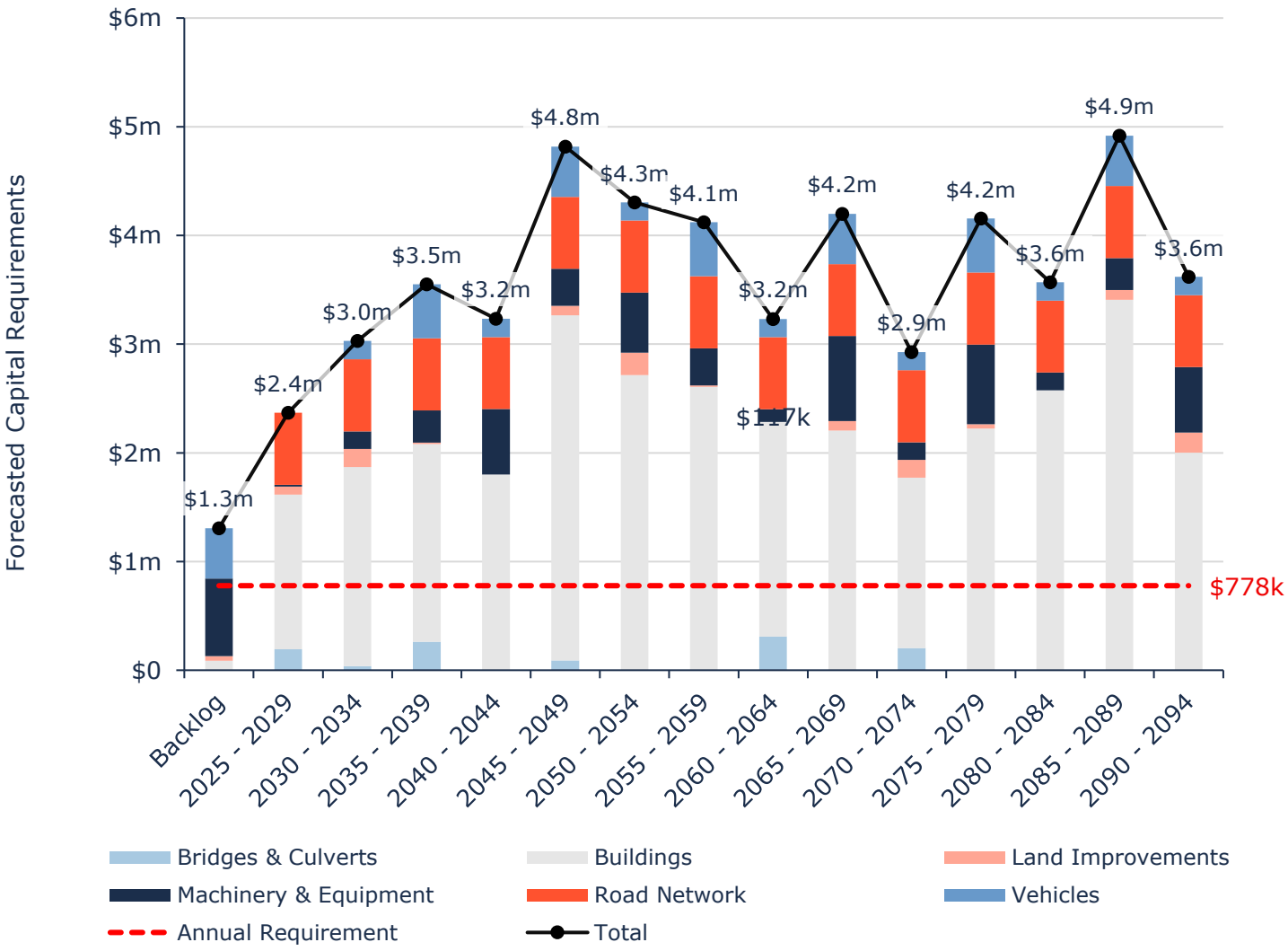


Figure 16 Capital Replacement Needs: Portfolio Overview 2025-2094

Aging assets require maintenance, rehabilitation, and replacement. Figure 16 above illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed in this AMP over a 70-year time horizon. On average, $778 thousand is required each year to remain current with capital replacement needs for the Township's asset portfolio (red dotted line). Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure relies on age and available condition data.

The chart also illustrates a backlog of more than $1.3 million, comprising assets that remain in service beyond their estimated useful life. It is unlikely that all such assets are in a state of disrepair, requiring immediate replacements. This makes continued and expanded targeted and consistent condition assessments integral. Risk frameworks, proactive lifecycle strategies, and levels of service targets can then be used to prioritize projects, continuously refine estimates for both backlogs and ongoing capital needs, and help select the right treatment for each asset. In addition, more effective componentization of buildings will improve these projections, including backlog estimates.

Strategies

4. Growth

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Township to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

4.1 Conmee Official Plan (December 1981)

The Town of Conmee has an Official Plan from 1981. The Official Plan serves as a development guide for the Conmee planning area. The Plan makes several assumptions for growth based on historical population figures. The Conmee planning area has experienced notable changes since the Plan was developed, therefore, the assumptions in the plan are no longer reliable.

To analyze growth, the following table was developed using census data from 2001 to 2021.

Historical Figures	2001	2006	2011	2016	2021
Population	363	390	387	313	355
Population Percentage Change	5.2%	7.4%	-0.8%	-19.1%	13.4%
Private Dwellings	183	191	202	227	206

Historically, the Town experienced fluctuating population levels with no clear growth trend. However, with the population recently surpassing 798 (2021 Census), this older data no longer reflects the community's trajectory. Updated growth studies are now essential to capture this recent expansion and ensure infrastructure keeps pace with demand.

4.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Township’s asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

Planning for forecasted population growth may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Township’s AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Township will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

5. Financial Strategy

For an asset management plan to be effective and meaningful, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow the Township of Conmee to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

1. The financial requirements for:
    a. Existing assets
    b. Existing service levels
    c. Requirements of contemplated changes in service levels (none identified for this plan)
    d. Requirements of anticipated growth (none identified for this plan)
2. Use of traditional sources of municipal funds:
    a. Tax levies
    b. User fees
    c. Debt
    d. Development charges
3. Use of non-traditional sources of municipal funds:
    a. Reallocated budgets
    b. Partnerships
    c. Procurement methods
4. Use of Senior Government Funds:
    a. Canada Community-Building Fund (CCBF)
    b. Annual grants

Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is wholly dependent on receiving a one-time grant, the replacement cost included in the financial strategy is the net of such grant being received.

Only reliable and predictable sources of capital funding are used to benchmark funds that may be available on any given year. The funding sources used in this financial strategy include:

- Revenue from taxation allocated for capital purposes
- Revenue from water and wastewater rates allocated for capital purposes
- The Ontario Community Infrastructure Fund (OCIF)
- The Canada Community Benefits Fund (CCBF), formerly the Federal Gas Tax Fund

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:
    a. If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.
    b. Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

5.1 Annual Requirements & Capital Funding

5.1.1 Annual Requirements

This financial strategy is designed around two key elements: the average annual capital requirement, and the average annual capital funding currently available. The annual requirement is calculated based on the replacement cost and service life of each asset, and where possible, includes lifecycle modeling through proposed levels of service. These values are then aggregated to determine category-level funding needs.

The Town of Conmee currently lacks a formal lifecycle strategy, so annual requirements are calculated based on a Replacement Only scenario. In this model capital costs are incurred only at the initial construction and final replacement of each asset.

Developing specific lifecycle management strategies would be beneficial. Through strategic rehabilitation and renewal of the Town's main assets Conmee could identify potential capital cost avoidances while maintaining desired levels of service.

The difference between the two scenarios is outlined below:

- **Replacement Only Scenario:** Assumes assets deteriorate without regularly scheduled rehabilitation and are replaced at the end of their service life.
- **Lifecycle Strategy Scenario:** Assumes activities are performed at strategic intervals to extend the service life of assets until replacement is required.

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability based on the proposed levels of service outlined in Section 4.

The table below compares the system-generated total replacement cost of each asset category with the total average annual capital requirements for existing assets in each category, based on the proposed levels of service. The total replacement cost divided by the average annual capital requirements provides the equivalent target reinvestment rates for the proposed levels of service for each category. With a total replacement cost of $17.4 million, the estimated annual capital requirement across all asset categories is approximately $778 thousand. The cumulative target reinvestment for these categories is estimated at 4.47%.

Table 6: Target Re-investment Rate by Asset Category

Asset Category	Replacement Cost	Annual Capital Requirements	Target Reinvestment Rate
Bridges & Culverts	$700,941	$14,733	2.10%
Buildings	$6,911,798	$469,102	6.79%
Land Improvements	$313,125	$14,910	4.76%
Machinery & Equipment	$1,370,492	$81,692	5.96%
Road Network	$6,983,991	$132,500	1.90%
Vehicles	$1,127,016	$64,745	5.74%
Total	**$17,407,363**	**$777,683**	**4.47%**

5.1.2 Annual Funding Available

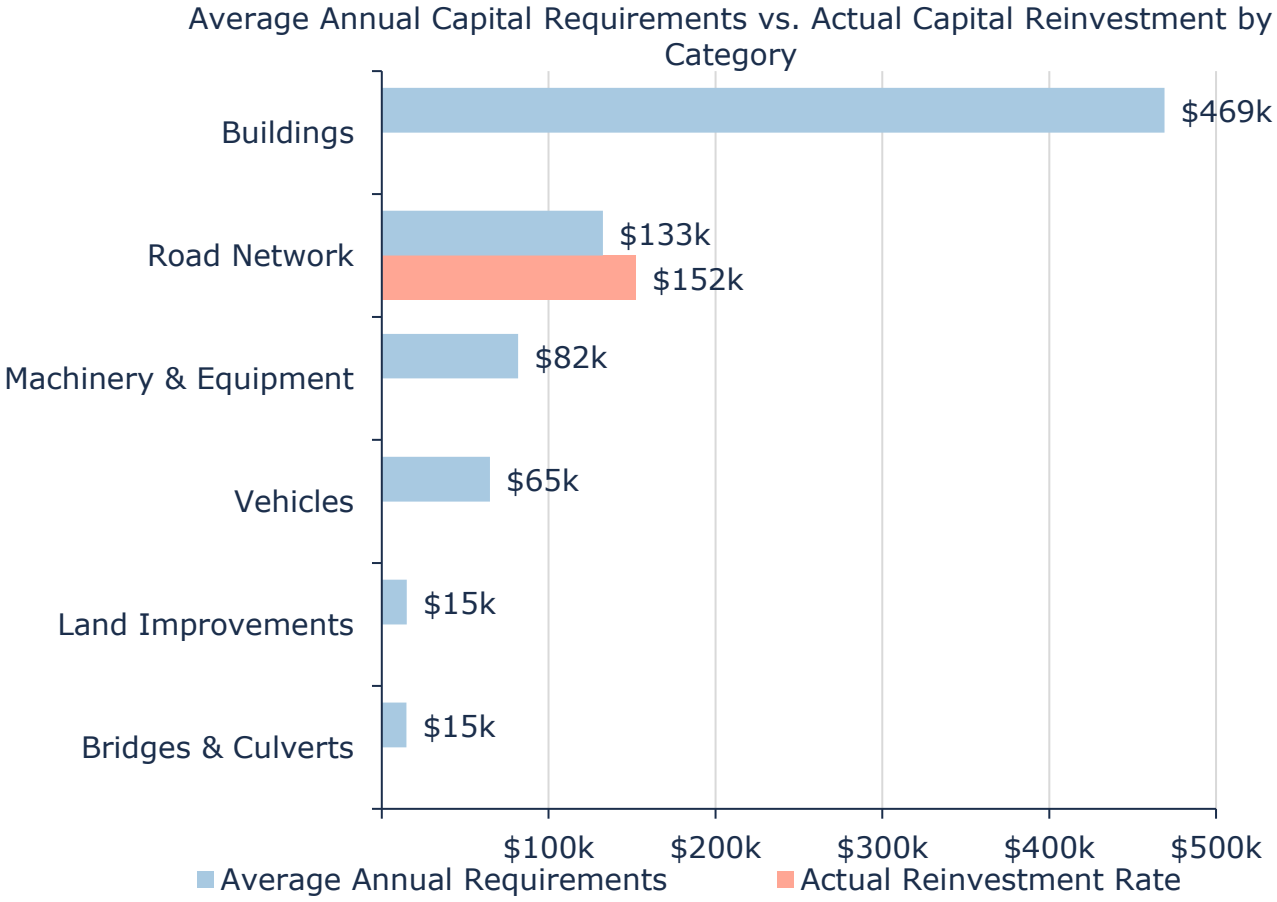


Figure 17 Annual Requirements vs. Capital Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $152 thousand towards roads per year. Given the annual capital requirement of $778 thousand, there is currently a funding gap of $626 thousand annually.

5.2 Financial Profile: Tax Funded Assets

5.2.1 Current Funding Position

The following tables show, by asset category, Conmee's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement (PLOS)	Annual Funding Available				Annual Deficit
		Taxes	CCBF	OCIF	Total Available	
Bridges & Culverts	$14,733	-		-	-	$14,733
Buildings	$469,102	-	-	-	-	$469,102
Land Improvements	$14,910	-	-	-	-	$14,910
Machinery & Equipment	$81,692	-	-	-	-	$81,692
Road Network	$132,500	-	$52,269	$100,000	$152,269	-$19,769
Vehicles	$64,745	-	-	-	-	$64,745
Total	**$777,683**					**625,414**

Table 7 Annual Available Funding for Tax Funded Assets

The average annual investment requirement for the above categories is $778 thousand. Annual revenue currently allocated to these assets for capital purposes is $152 thousand leaving an annual deficit of $626 thousand. Put differently, these infrastructure categories are currently only funded at 19.6% of their long-term requirements.

5.2.2 Full Funding Requirements

In 2024, Conmee had annual tax revenues of $1.19 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding of the proposed levels of service would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Bridges & Culverts	1.2%
Buildings	38.4%
Land Improvements	1.2%
Machinery & Equipment	6.7%
Road Network	-1.6%
Vehicles	5.3%
Total	**51.2%**

Table 8 Tax Increase Requirements for Full Funding

The table below presents several phase-in period lengths for achieving the proposed levels of service:

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	625,414	625,414	625,414	625,414
Change in Debt Costs	n/a	n/a	n/a	n/a
Resulting Infrastructure Deficit:	**625,414**	**625,414**	**625,414**	**625,414**
Tax Increase Required	51.2%	51.2%	51.2%	51.2%
Annually:	**8.7%**	**4.3%**	**2.8%**	**2.1%**

Table 9 Tax Increase Options 5-20 Years

5.2.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

a) When realized, reallocating the debt cost reductions of $625,414 to the infrastructure deficit as outlined above.
b) increasing tax revenues by 2.8% each year for the next 15 years solely for the purpose of phasing in the proposed levels of service for asset categories covered in this section of the AMP.
c) allocating the current CCBF and OCIF revenue as outlined previously.
d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[2].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding of the proposed levels of service on an annual basis in 15 years, and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may be required otherwise.

[2] The Township should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

5.3 Use of Debt

Debt can be strategically utilized as a funding source within the long-term financial plan. The benefits of leveraging debt for infrastructure planning include:

a) the ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors
b) equitable distribution of the cost/benefits of infrastructure over its useful life
c) a secure source of funding
d) flexibility in cash flow management

Debt management policies and procedures with limitations and monitoring practices should be considered when reviewing debt as a funding option. In efforts to mitigate increasing commodity prices and inflation, interest rates have been rising. Sustainable funding models that include debt need to incorporate the now current realized risk of rising interest rates

The revenue options outlined in this plan allow Conmee to fully fund its long-term infrastructure requirements without further use of debt.

5.4 Use of Reserves

5.4.1 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirement

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Town should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should consider when determining their capital reserve requirements include:

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period towards achieving the proposed levels of service. This allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

6. Proposed Levels of Service

6.1 Overview

6.1.1 O. Reg. 588/17 Proposed Levels of Service Requirements

The third iteration of municipal Asset Management Plans required under O. Reg. 588/17 requires the evaluation of levels of service (LOS) that includes:

- Proposed LOS options (i.e. increase, decrease, or maintain current LOS) and the risks associated with these options.
- How the proposed LOS may differ from current LOS.
- Whether the proposed LOS are achievable; and
- The municipality's ability to afford proposed LOS.

Additionally, a lifecycle management and financial strategy to support the proposed LOS must be identified for a period of 10 years with specific reporting on:

- Identification of lifecycle activities needed to provide the proposed LOS.
- Annual costs over the next 10 years to achieve the proposed LOS; and
- Identification of proposed funding projected to be available.

6.1.2 Considerations

Proposed LOS for the Township have been developed through comprehensive engagement with Township staff, and public engagement through a publicly available satisfaction survey. In order to achieve any target LOS goal, careful consideration of the following should be given to the following:

Financial Impact Assessments

- Assess historical expenditures/budget patterns to gauge feasibility of increasing budgets to achieve increased service levels
- Consider implications of LOS adjustments on other services and other infrastructure programs (i.e. trade-offs)

Infrastructure Condition Assessments

- Regularly assess the condition of critical infrastructure components
- Use standardized condition assessment protocols (where possible) to quantify the state of the infrastructure
- Identify non-critical components where maintenance could potentially be deferred without causing severe degradation
- Use current condition metrics as benchmarks to gauge feasibility of large adjustments to LOS

Service Metrics

- Measure user satisfaction, response times, and other relevant indicators for specific services

Service Impact Assessments

- Evaluate potential impacts on user satisfaction and service delivery due to changes in infrastructure condition

Key Lifecycle Activities

- Implement routine maintenance and inspections to ensure infrastructure reaches its optimal useful life
- Monitor and optimize operational processes for efficiency
- Regularly review and update preventive maintenance schedules
- Prioritize critical infrastructure components for maintenance
- Implement cost-saving measures without compromising safety or compliance
- Develop strategies for managing and communicating service impacts to stakeholders
- Invest in technology and process improvements to enhance maintenance efficiency
- Upgrade critical infrastructure components to improve overall reliability
- Explore opportunities for innovation and efficiency gains

Risk Management

- Identify potential risks to infrastructure and service quality resulting from adjusted service levels
- Develop contingency plans to address unforeseen challenges without compromising service quality
- Monitor performance closely to ensure that the target investment translates to the desired infrastructure condition

Infrastructure Condition Enhancements

- Identify areas for improvement and increased maintenance to enhance overall infrastructure condition

Timelines

- Although O. Reg. 588/17 requires evaluation of expenditures for a 10-year period in pursuit of proposed LOS, it does not require municipalities to achieve the LOS within this 10-year timeframe (ex. a municipality may have a goal to reach X% condition by 2050, the AMP is required to review the first 10 years of the strategy to reach this goal)
- Careful consideration should be given to setting realistic targets for when proposed service levels can be achieved.

Stakeholder Engagement

- It is recommended to ensure adjustments to LOS are not made in isolation and without consultation of various stakeholders. This could include, but is not limited to:
    - Department Heads/Infrastructure Managers
    - Residents
    - Service Users
    - Council
- Efforts should be made to communicate changes to LOS transparently to all affected stakeholders

Flexibility

- Priorities may change over time due to a variety of factors, such as:
  - Financial state of the municipality
  - Availability of grants
  - Significant increases or decreases in population
  - Changes in political priorities
  - Changes in resident priorities
  - New technologies
  - Changes in legislation
- Any proposed changes to LOS should be flexible and able to adapt to changes listed above, and other unforeseen circumstances

6.2 Stakeholder Engagement

In order to determine appropriate levels of service, the Town of Conmee engaged with their staff and residents, to solicit feedback on areas of focus/improvement. These engagement activities took place throughout fall 2025. Summaries of stakeholder engagement results can be found in the following sections.

6.2.1 Public Engagement

The following summary synthesizes feedback from a total of 18 resident questionnaires (14 digital submissions and 4 paper responses) collected during the Autumn of 2025. This input highlights community priorities for the Township of Conmee, offering qualitative and quantitative data to guide the 2025 Asset Management Plan in accordance with Ontario Regulation 588/17.

Feedback on current service levels

- Residents consistently identified core services such as roads, waste management, and emergency services as having high importance to their households.
- Opinions regarding the maintenance and safety of roads revealed a significant divide, with some respondents reporting high satisfaction with seasonal maintenance while others noted concerns regarding potholes and slippery conditions during inclement weather.
- A strong theme regarding technical road improvements emerged, as residents suggested that exploring higher quality gravel or alternative surface treatments could prevent washboard conditions and dust issues.
- Feedback on emergency services was largely positive, with a unified preference to maintain or increase service levels to ensure community safety remains a top priority.
- Opinions on soft services such as recreation and community programs were mixed, as some participants valued these facilities while others felt these areas should be supported by users rather than general tax increases.
- Specific calls for improvement were noted for the waste management site, particularly regarding the efficiency of recycling monitoring and the consistency of attendant supervision.
- There remains an interest in the progression of long-term economic projects, which are viewed by some as essential for the future growth and affordability of the community.

Financial Sentiment

- Opinions on financial strategy and willingness to pay for improvements revealed a divide in resident sentiment regarding how to prioritize limited resources.
- While there is a clear willingness to fund enhancements for essential infrastructure like roads and emergency response, residents expressed significant caution regarding increased spending for land use planning or administrative services.
- Some respondents indicated that the Township should prioritize operational efficiencies and essential needs to avoid further tax burdens on the community.
- A specific suggestion for fiscal management included reviewing the funding model for community centers and recreation to ensure costs are balanced fairly against resident usage.

6.2.2 Staff Engagement

Engagement with Township staff provided an essential perspective on the current state of municipal assets. The following is a high-level summary of the feedback received, organized by asset category, along with an analysis of the key themes that emerged from the discussion.

Road Network: Staff report high satisfaction with the reliability and availability of the network. There are no current concerns regarding road closures or detours. The existing network successfully meets community needs. Lifecycle activities are sufficient because all roads recently received new gravel. Maintenance is currently performed on an as-needed basis to address reactive issues. Staff noted that additional funding would be beneficial for future management.

Bridges & Culverts: Staff report that bridges and culverts generally meet the needs of the community. Recent inspections identified that the bridge on Enders Road requires replacement. The Township is currently evaluating a conversion to a culvert or a modular bridge for this location. Maintenance follows the standards recommended in the Ontario Structure Inspection Manual (OSIM). This approach ensures that reactive issues are managed through established provincial guidelines.

Buildings: Staff report that general municipal buildings, particularly the municipal hall, are adequate and effectively meet community needs for governance and communication. In contrast, emergency services facilities lack sufficient investment and fail to meet industry standards for equipment storage or maintenance. The fire station requires a significant upgrade, as it currently lacks a formal lifecycle or maintenance plan. To address these gaps, staff recommend increasing reinvestment rates to ensure all municipal buildings reach a reliable level of service.

Land Improvements: Staff report that land improvements and public spaces are generally maintained at a satisfactory level. Service levels for parks and outdoor infrastructure are considered adequate to meet the basic needs of the community. Repairs to playgrounds, fencing, and signage are handled responsively to ensure these assets remain in good condition.

Vehicles: There are ongoing challenges regarding the reliability and availability of emergency vehicles. The fire department's current fleet includes several older pieces of fire equipment. Due to their age, these assets require increased downtime for repairs, making it challenging to consistently align with industry best practices. Additionally, current maintenance resources are stretched, and rising repair costs have created budgetary pressures. While the township continues to actively manage and address issues as they arise, a transition toward a formalized

lifecycle plan and structured maintenance program is recommended to ensure long-term reliability, alongside strategic investments to update the emergency apparatus.

Machinery & Equipment: The current inventory of machinery and equipment is considered sufficient to meet the Township's operational demands. Assets are generally well-maintained, ensuring they remain reliable for day-to-day municipal tasks. The existing strategy of budgeting for as-needed repairs is viewed as an effective approach for managing these tools in a small-town context.

6.3 Proposed Levels of Service Scenarios

The three scenarios outlined in the following section were analyzed as options for proposed service levels for all categories included in this Asset Management Plan.

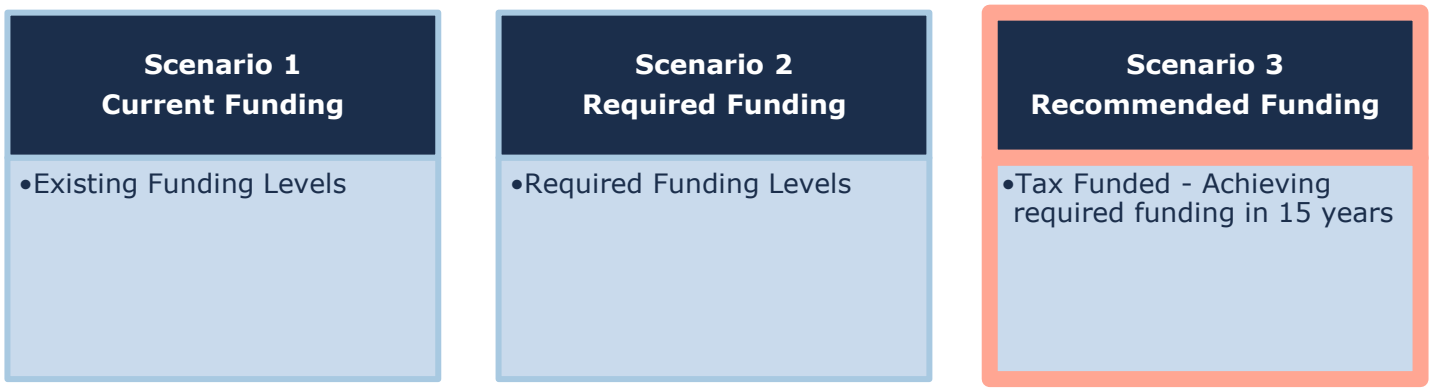


Figure 18: PLOS Scenario Overview

6.3.1 Scenario 1: Maintain Current Funding

This scenario assumes no tax and rate increases and maintains existing spending levels (no funds were redistributed; therefore, some categories are funded more than others).

Lifecycle Changes Required for Scenario 1

This scenario represents the status quo, where the Municipality continues with current lifecycle strategies and funding levels without implementing any changes.

Affordability/Achievability of Scenario 1

While this scenario appears affordable in the short term due to zero tax or rate increases, it is not financially sustainable as it creates a massive infrastructure deficit that will require exponentially higher funding in the future.

This is the easiest scenario to implement immediately as it requires no additional financial contribution from residents.

Changes to Community and Technical Levels of Service for Scenario 1

The Town of Conmee does not anticipate any changes to qualitative community levels of services for any of the asset categories included within this AMP. All asset categories will see adjustments

to their technical levels of service over time, particularly relating to capital reinvestment rate and average condition of assets. Refer to each asset category for more details.

Risks Associated with Scenario 1

There is an increased risk of service interruptions in core infrastructure, such as unplanned water main repairs or road defects, which may require emergency response.

As assets age, the Municipality faces a higher likelihood of operational challenges. Managing a network with lower condition ratings requires more frequent inspection and reactive maintenance to mitigate liability and safety risks.

Aging water and wastewater systems will require careful monitoring to ensure they continue to meet provincial environmental standards and performance targets.

6.3.2 Scenario 2: Achieve Optimal Funding (Immediate Term)

This scenario assumes immediate tax and rate increases to meet the average annual requirements.

- Annual Tax Increase ~51.2%

Lifecycle Changes Required for Scenario 2

- This scenario allows for the immediate implementation of optimal lifecycle strategies, where interventions occur exactly at the right time to maximize asset life.
- The Municipality could immediately address the accumulated backlog of deferred maintenance, upgrading assets to a high standard within a short timeframe.

Affordability/Achievability of Scenario 2

- The required increases are likely unaffordable for the average household and would place an immense financial strain on residents and local businesses.
- Implementing triple-digit rate increases immediately is rarely politically or socially feasible and would likely face strong opposition from the community.

Changes to Community and Technical Levels of Service for Scenario 2

The Township of Conmee does not anticipate any changes to qualitative community levels of services for any of the asset categories included within this AMP. All asset categories will see adjustments to their technical levels of service over time, particularly relating to capital reinvestment rate and average condition of assets. Refer to each asset category for more details.

Risks Associated with Scenario 2

The substantial immediate tax and rate increases required for this scenario are not financially feasible for the community.

6.3.3 Scenario 3: Achieve Optimal Funding (Recommended Term)

This scenario assumes gradual tax and rate increases, stabilizing at 100% of the average annual requirements in recommended time frame.

- Annual Tax Increase ~2.8% (15 years)

Lifecycle Changes Required for Scenario 3

- This scenario supports a gradual shift from reactive to proactive management, focusing on high-risk assets first while slowly moving toward preventative maintenance as funding stabilizes over the 15-to-20-year timeline.
- Lifecycle events are prioritized based on risk and criticality, ensuring critical assets like water mains and arterial roads are addressed first.

Affordability/Achievability of Scenario 3

- The proposed increases are manageable and align more closely with inflation and cost of living adjustments, smoothing the financial impact on households over two decades.
- This approach strikes a balance between fiscal responsibility and asset needs, making it the most realistic path for Council to adopt and for residents to accept.

Changes to Community and Technical Levels of Service for Scenario 3

The Township of Conmee does not anticipate any changes to qualitative community levels of services for any of the asset categories included within this AMP. All asset categories will see adjustments to their technical levels of service over time, particularly relating to capital reinvestment rate and average condition of assets. Refer to each asset category for more details.

Risks Associated with Scenario 3

- While mitigating the financial impact on residents, taking 15 to 20 years to reach target funding levels means a prolonged period of sub-optimal asset management. Being unable to immediately complete all strategic interventions may result in reduced reliability and the potential for costly unbudgeted repairs to maintain services during the transition.
- Without the immediate implementation of mid-lifecycle interventions, such as asphalt overlays or sewer lining, the Municipality risks missing opportunities to extend asset lifespans at a lower cost. Relying on existing replacement strategies during the funding ramp-up may result in higher total ownership costs compared to a fully optimized preservation model.

Appropriateness of Scenario 3 to Meet Conmee's Needs

- Stakeholder engagement confirmed a desire to maintain service levels within financial constraints. Scenario 3 was selected as the most appropriate option, as recommended tax and rate increases offer a manageable investment that balances affordability with network stabilization.
- This strategy avoids the financial shock of the Optimal Scenario while preventing the service gaps predicted in the Current Funding model. By committing to a gradual increase, the Town reduces reliance on reactive repairs and external grants, creating a stable financial foundation to support long term goals.

Appendices

7. Recommendations & Key Considerations

7.1 Financial Strategies

1. Review the feasibility of adopting a full-funding scenario to achieve 100% of average annual funding requirement for the asset categories analyzed. This includes:
    a. Increasing taxes by 2.8% per year over a period of 15 years.
2. Continued allocation of OCIF and CCBF funding as previously outlined.
3. Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
4. Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
5. Continue to apply for project specific grant funding to supplement sustainable funding sources.

7.2 Asset Data

1. Continuously review, refine, and calibrate lifecycle and risk profiles to better reflect actual practices and improve capital projections. In particular:
    a. the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs
    b. the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings
2. Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. Material and labor costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. Accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be used. Staff judgement and historical data can help attenuate extreme and temporary fluctuations in cost estimates and keep them realistic.
3. Like replacement costs, an asset's established serviceable life can have dramatic impacts on all projections and analyses, including condition, long-range forecasting, and financial recommendations. Periodically reviewing and updating these values to better reflect in-field performance and staff judgement is recommended.

7.3 Risk & Levels of Service

1. Risk models and matrices can play an important role in identifying high-value assets, and developing an action plan which may include repair, rehabilitation, replacement, or further evaluation through condition assessments. As a result, project selection and the development of multi-year capital plans can become more strategic and objective. Initial models have been built into Citywide for all asset groups. These models reflect current data, which was limited. As the data evolves and new attribute information is obtained, these models should also be refined and updated.
2. Available data on current performance should be centralized and tracked to support any calibration of service levels ahead of O. Reg. 588's 2025 requirements on proposed levels of service.
3. Staff should monitor evolving local, regional, and environmental trends to identify factors that may shape the demand and delivery of infrastructure programs. These can include population growth, and the nature of population growth; climate change and extreme weather events; economic conditions and the local tax base. This data can also be used to review service level targets.

Appendix A - Road Network

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's road network inventory.

Inventory & Valuation

Table 10 summarizes the quantity and current replacement cost of the Township's various road network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Road Surface	70,456	Meters	$5,251,355	Not planned for replacement
Road Subsurface (including culverts)	70,456	Meters	$1,732,636	Not planned for replacement
TOTAL			**$6,983,991**	

Table 10 Detailed Asset Inventory: Road Network

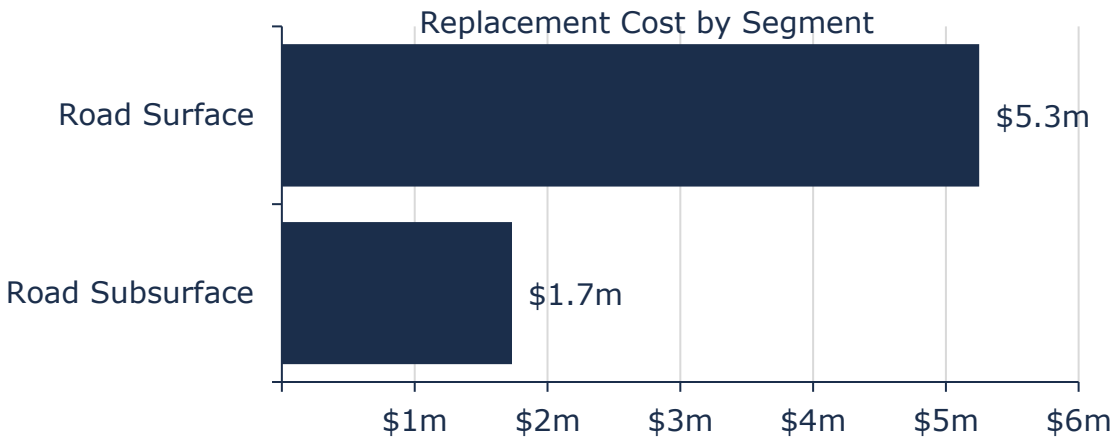


Figure 19 Portfolio Valuation: Road Network

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition

Figure 20 summarizes the replacement cost-weighted condition of the Township's road network. Based on assessed data, 76% of assets are in fair or better condition; the remaining 24% of assets are in poor condition. This condition data was projected from inspection date to current year to estimate their condition today.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term

and should be monitored for further degradation in condition. As illustrated in Figure 20, the majority of the Township's road network assets are in fair or better condition.

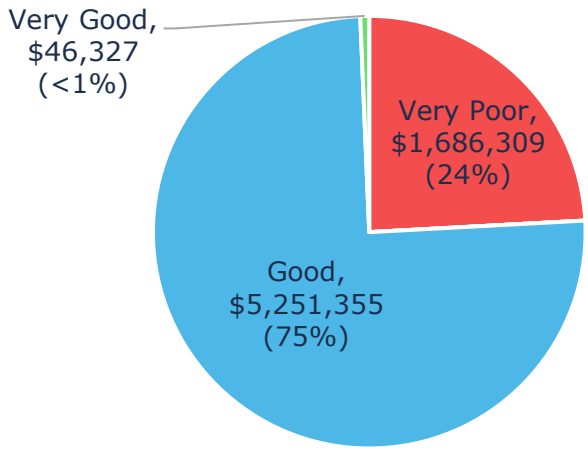


Figure 20 Asset Condition: Road Network Overall

As illustrated in Figure 21, All roads surfaces are in good condition.

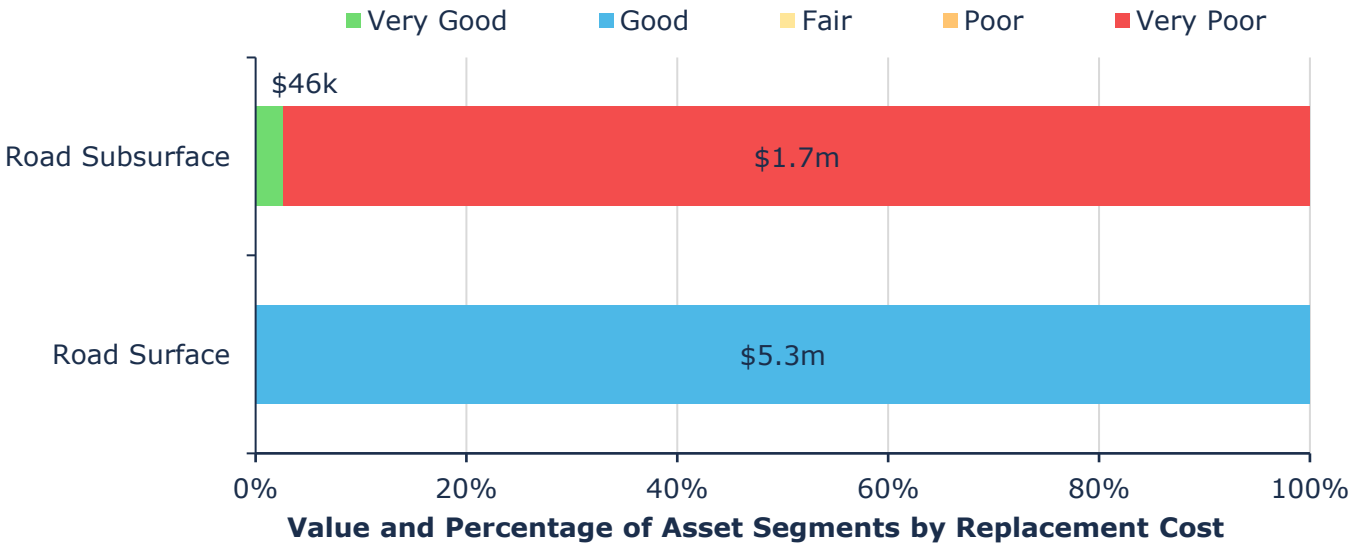


Figure 21 Asset Condition: Road Network by Segment

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Figure 22 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

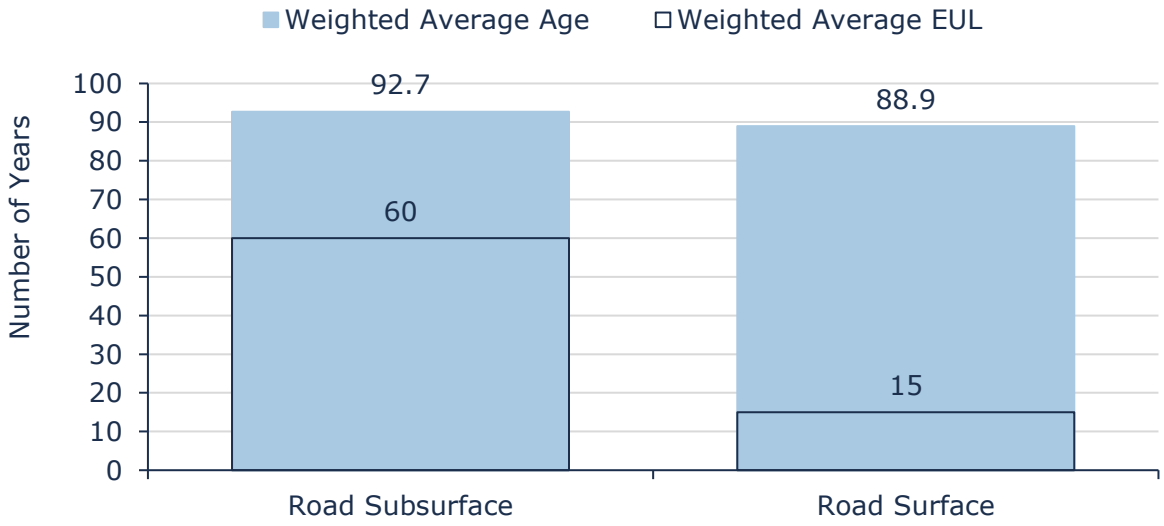


Figure 22 Estimated Useful Life vs. Asset Age: Road Network

Age analysis shows that gravel roads continue to remain in service well beyond their expected useful life. Gravel roads can be maintained on a perpetual cycle through the operational maintenance budget with a regular roadway granular replacement program.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

Current Approach to Lifecycle Management

Gravel roads typically have poor base construction. This can lead to wheel track rutting in wet weather, and traffic will continually displace gravel from the surface to the shoulder and ditch areas during wet and dry weather. Maintaining the shape of the road surface and shoulder is essential to ensure proper performance and to provide a sufficient level of service for the public.

Therefore, the management of gravel roads is not through major rehabilitation and replacement, but rather through good perpetual maintenance and some minor rehabilitation which depend on a few basic principles: proper techniques and cycles for grading; the use and upkeep of good surface gravel; and dust abatement and stabilization.

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including asset's characteristics, location, utilization, maintenance history and environment. Instead of allowing the roads to deteriorate until replacement is required, strategic maintenance and rehabilitation is expected to extend the service life of roads at a lower total cost.

The following lifecycle strategies in Table 11 have been documented to illustrate the perpetual maintenance and rehabilitation required to keep gravel roads in a good state of repair.

Table 11: Proposed Lifecycle Management Strategies: Gravel Roads

Event Name	Event Class	Event Trigger
Gravelling	Rehabilitation	5 Yr Plan Approx. 6km/Yr.
Ditching / Culvert Replacements	Rehabilitation	Aligned with Gravelling 5yr Plan Approx. 6km/Yr.
Grading	Preventative Maintenance	As Needed
Dust Abatement	Maintenance	Seasonal Approx. 30-40 km/Yr.

Forecasted Long-Term Replacement Needs

Based on the lifecycle strategies identified previously for gravel roads, and assuming gravel roads are never planned for replacement, the following graph forecasts the annual capital requirements for the Road Network in 5-year blocks.

The annual capital requirement represents the average amount per year that the Township should allocate towards funding road rehabilitation and end of life replacement for road culverts to meet future capital needs. In addition to the Township's commitment to capital projects, an estimated $132,500 is required annually to sustain the Township's current maintenance program for all roads.

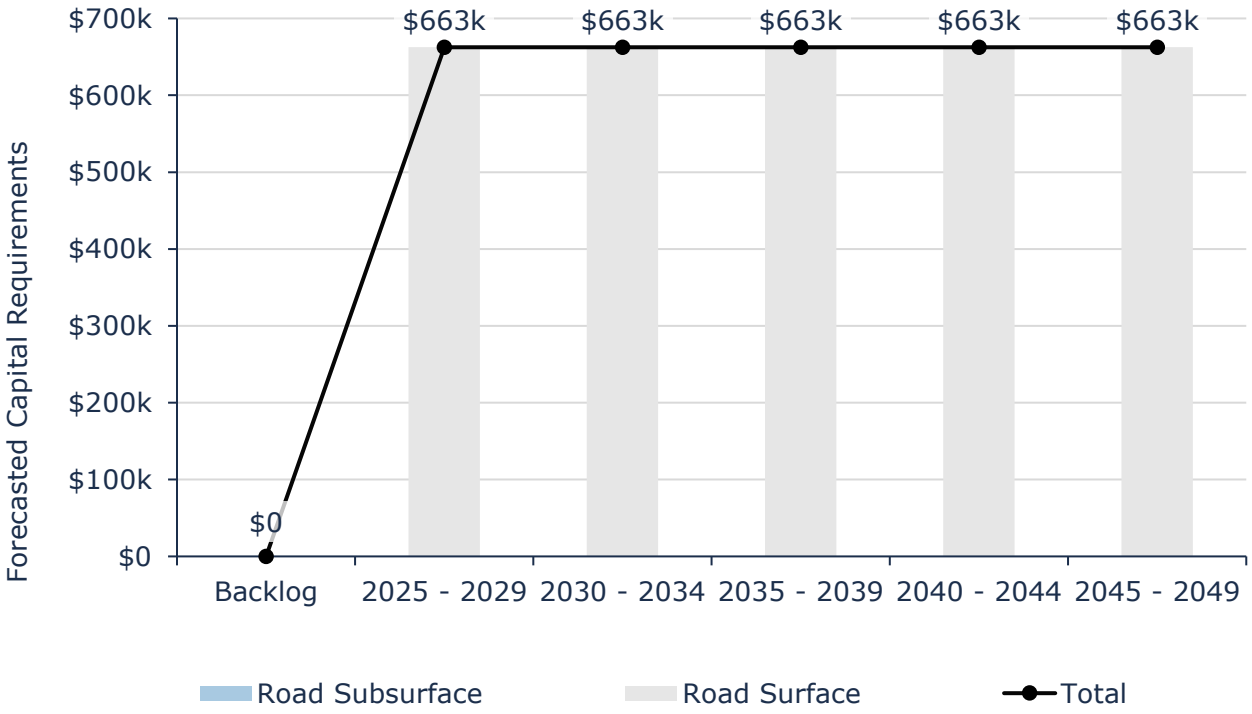


Figure 23 Forecasted Capital Replacement Needs: Road Network 2024-2059

A summary of the 10-year replacement forecast can be found in Appendix G – 10-Year Capital Requirements.

Risk Analysis

The risk matrix below is generated using available asset data, including condition, material and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$195,033 (3%)	$1,601,348 (23%)	$2,914,075 (42%)	$753,656 (11%)	$1,519,879 (22%)

Figure 24 Risk Matrix: Road Network

Levels of Service

The tables that follow summarize the Township's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17.

Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2025)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	The road network serving Conmee Township is comprised of MMS Class 5 & 6 Local Roads. These local roads connect residence and business to the Trans Canada Hwy which serve as the Township's lifeline to critical services and supplies from neighbouring centers and the City of Thunder Bay. These roads also provide access to individual properties, natural resources, utilities, and MNR service trails. Refer to Appendix H – Level of Service Maps & Photos for a map of the Township's road network.
Quality	Description or images that illustrate the different levels of road class pavement condition	**Very Good** • No surface distress manifestation **Good** • Intermittent to isolated pothole and distorted sections • Generally good travelling road surface **Fair** • Mixture of properly shaped roadway surface and improperly shaped areas • Various surface distress manifestations such as potholes to moderate class **Poor** • Majority of roadway improperly shaped • Various roadway surface distress manifestations making travel unpleasant due to potholes, wash-boarding, distortions and poor drainage **Very Poor** • Severe roadway surface distress • Severe distorted areas • Very rough on vehicular traffic

Table 12 O. Reg. 588/17 Community Levels of Service: Road Network

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2025)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	N/A
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	N/A
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	2.4 lane-km/km2
Quality	Average pavement condition index for paved roads in the Township	N/A
	Average surface condition for unpaved roads in the Township (e.g. excellent, good, fair, poor)	Good (63%)
Performance	Reinvestment rate	2.18%

Table 13 O. Reg. 588/17 Technical Levels of Service: Road Network

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town's ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in Section 4. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for Road Network are analyzed using three funding models: Current Funding, Optimal Funding, and Recommended Funding[3].

1. The Current Funding scenario is based on the current available funding.
2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

[3] Optimal funding scenario represents the budgeted allocation for the maintenance of gravel roads. For road network, optimal and recommended funding scenarios are the same.

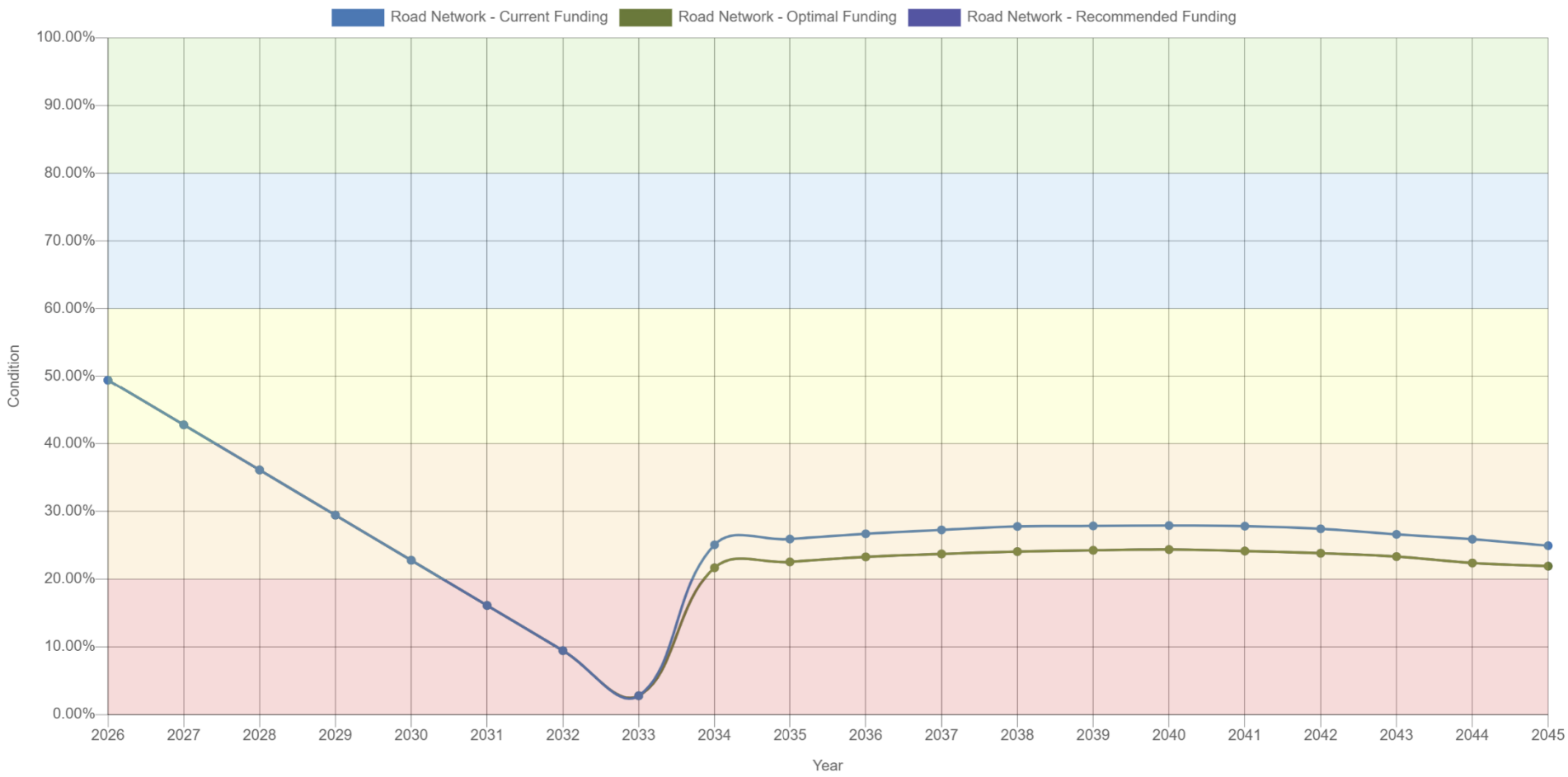


Figure 25: PLOS: Road Network – Current vs Optimal vs Recommended Funding (20-year Forecast)

Figure 25 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of road network assets.

- The Current Funding scenario, which utilizes the $152,269 allocation from OCIF and CCBF, results in the highest condition trend over the 20-year period. After a steep decline from 50% to a critical low of 3% by 2033, this funding level allows the network to stabilize at approximately 28% for the remainder of the forecast.
- The Recommended and Optimal Funding scenarios involve a lower annual investment of $132,500. While these scenarios follow the same initial downward trajectory as the current funding, they result in a lower condition plateau, with the network level of service stabilizing at approximately 22% to 24% after 2034.
- The figure demonstrates that the road network reaches a critical condition threshold by 2033 regardless of the funding model. The recommended scenario accepts a slightly lower long-term condition than the current funding level to facilitate the strategic re-allocation of grant resources to other municipal asset categories.

Recommendations

- Strategically re-allocate $19,769 of the existing OCIF and CCBF funding from the road network to other infrastructure categories. This ensures that the 2.8% tax hike is supported by a more balanced distribution of grant capital across the entire municipal portfolio.
- Adopt the budgeted funding level of $132,500 for the road network as part of the 15-year financial strategy. This level of investment is required to address the 3% condition low and maintain the projected 24% plateau.
- Monitor the network condition annually to ensure the 2034 stabilization occurs as projected. Given that all scenarios show a critical low in 2033, consistent application of the $132,500 is necessary to support the perpetual maintenance requirements of the gravel network.
- Coordinate the road network budget with the long-term financial plan to ensure the municipality can sustain the 22% to 24% condition level over the 20-year forecast period.

Risk for Not Maintaining Acceptable LOS

- The most significant risk involves the substantial accumulation of deferred maintenance leading up to 2033. If the recommended funding is not consistently applied, the municipality may lack the resources to achieve projected stabilization, resulting in a severe loss of serviceability across the gravel network.
- Re-allocating $19,769 from the road network increases the likelihood that the average condition will remain in a Poor state for over a decade. This lower level of service may result in higher vehicle operating costs for residents compared to the current funding scenario.
- Operating the network at a 22% to 24% condition plateau leaves very little margin for inflationary increases or emergency repairs. Any shortfall in the $132,500 budget could push the network into the Very Poor category, where safety risks and municipal liabilities are highest.
- Lower levels of service directly correlate to an increase in surface defects. Maintaining the network at the recommended level rather than the current level increases the probability of frequent maintenance issues that impact the daily travel of residents.

Appendix B - Bridges & Culverts

Bridges & Structural Culverts represent a critical portion of the transportation services provided to the community. The Township's bridge and structural culvert portfolio is comprised of five bridges and one structural culvert. The Public Works Department is responsible for the maintenance and repair of these assets. All bridge and structural culverts (>=3m in span) are subject to biennial inspections as per the Ontario Bridge Inspection Manual (OSIM).

Inventory & Valuation

Table 14 summarizes the quantity and current replacement cost of the Township's various bridges & culverts assets as managed in its primary asset management register, Citywide Assets.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Bridge	5	Assets	$496,265	CPI
Culvert	1	Assets	$204,676	CPI
TOTAL			**$700,941**	

Table 14 Detailed Asset Inventory: Bridges & Culverts

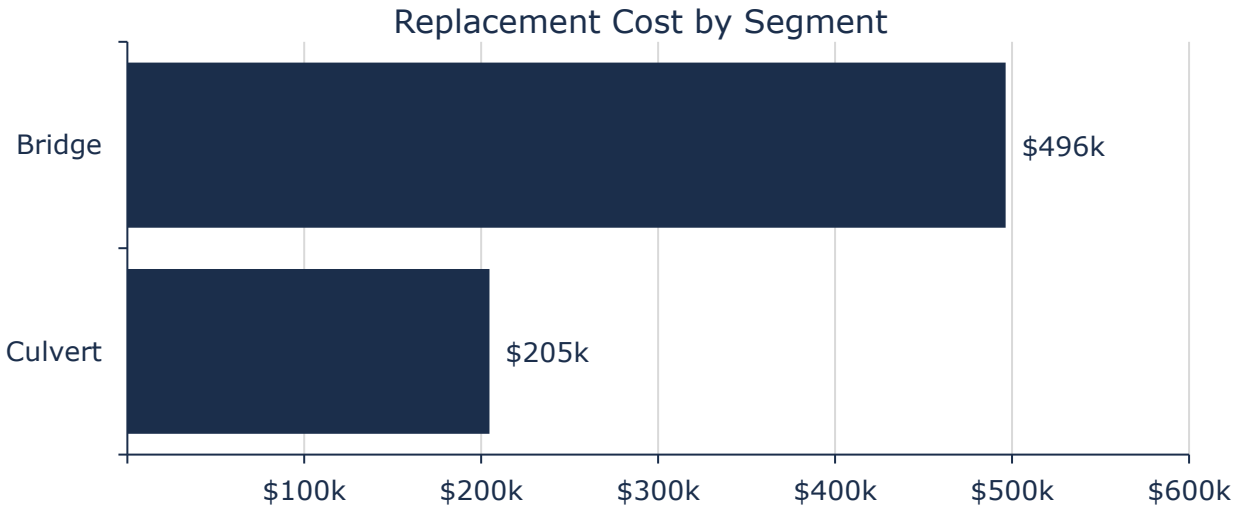


Figure 26 Portfolio Valuation: Bridges & Culverts

Asset Condition

Figure 27 summarizes the replacement cost-weighted condition of the Township's bridges & culverts. Based on OSIM reports, majority of bridges and culverts (~81%) are in fair or better condition. Condition data was projected from inspection date to current year to estimate their condition today.

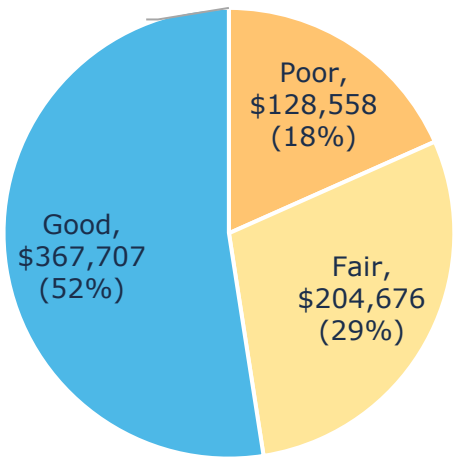


Figure 27 Asset Condition: Bridges & Culverts Overall

Figure 28 further provides a condition breakdown by asset segments. All Culverts are in fair condition.

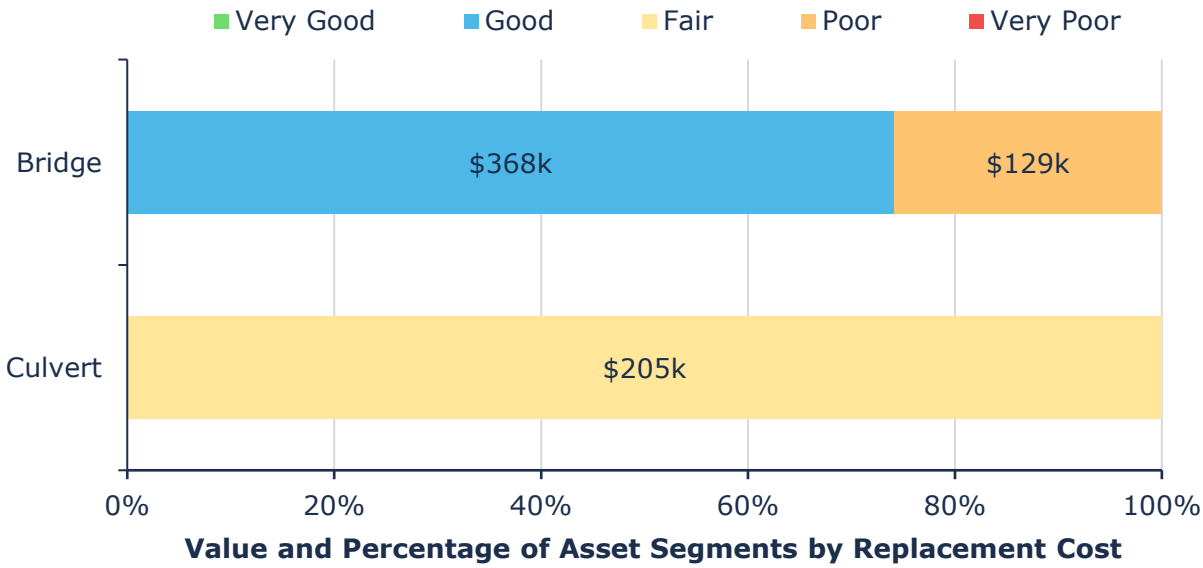


Figure 28 Asset Condition: Bridges & Culverts by Segment

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Figure 29 illustrates that bridges are well within their expected useful lives, and culvert remain in service beyond its designed service life.

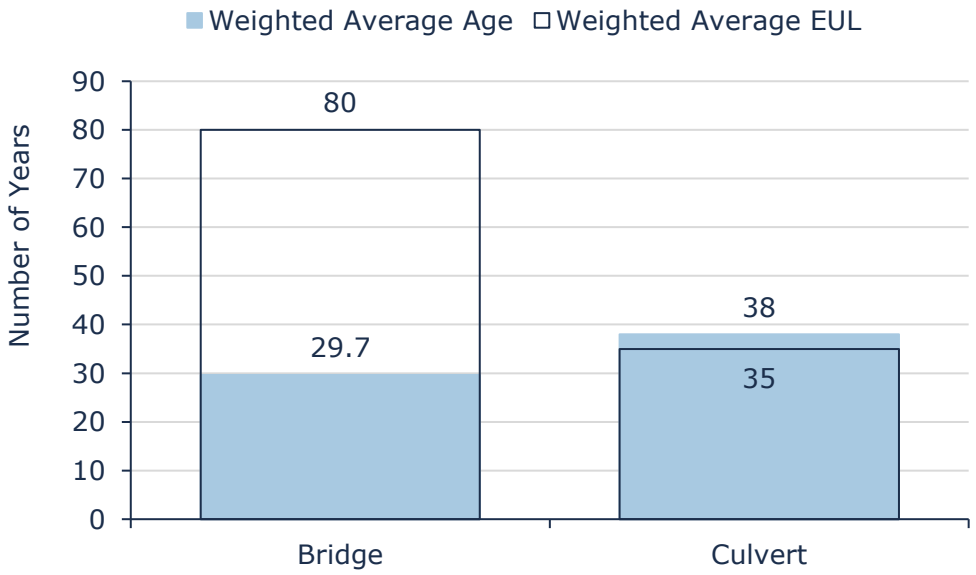


Figure 29 Estimated Useful Life vs. Asset Age: Bridges & Culverts

Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Township staff perform annual deck surface cleaning, periodic debris removal, and annual spring culvert steaming.
Rehabilitation & Replacement	All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspections were completed in 2024/2025

Table 15 Lifecycle Management Strategy: Bridges & Culverts

Forecasted Long-Term Replacement Needs

Figure 30 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township's bridges & culverts. This analysis was run until 2064 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $15,000 for all assets in the bridges & culverts. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates fluctuating capital needs for the forecast period. Notable expenditure is expected at $311 thousand between 2060-2064, and at $262 thousand between 2035-2039. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

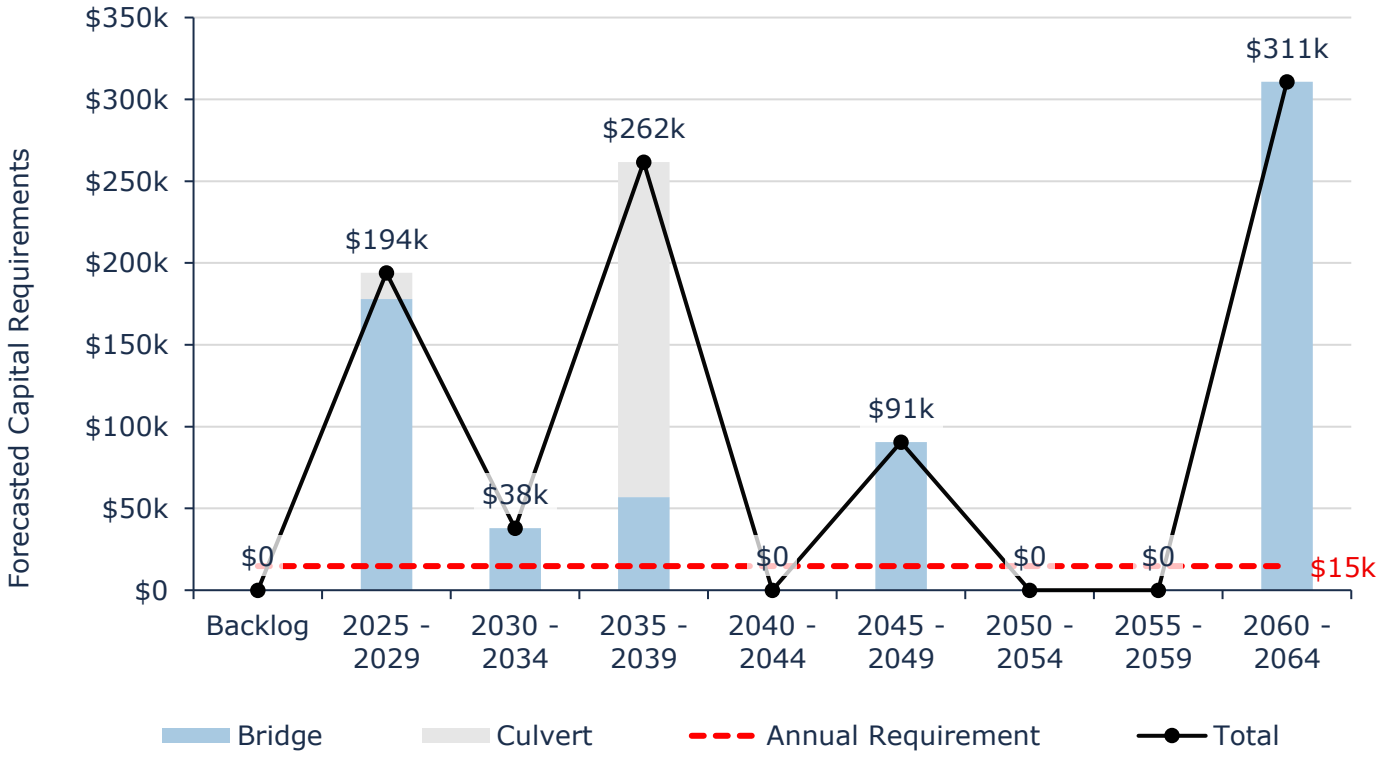


Figure 30 Forecasted Capital Replacement Needs: Bridges & Culverts 2024-2059

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. Regular condition assessments and a robust risk framework will ensure that high-critical assets receive proper and timely lifecycle intervention, including replacements.

A summary of the 10-year replacement forecast can be found in Appendix G – 10-Year Capital Requirements.

Risk Analysis

The risk matrix below is generated using available asset data, including condition, replacement costs, and pipe size. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$185,508 (26%)	- (0%)	- (0%)	$310,757 (44%)	$204,676 (29%)

Figure 31 Risk Matrix: Bridges & Culverts

Levels of Service

The tables that follow summarize the Township's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17 as well as any additional performance measures that the Township has selected for this AMP.

Community Levels of Service

Service Attribute	Key Performance Indicator	Current LOS (2025)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	The Township's structures are designed in accordance with the Public Transportation and Highway Improvement Act, R.S.O. 1990, c.P.50, Ontario Regulation 104/97 Standards for Bridges and provide access to different users according to the structure class and crossing over type. The Township's uses of these assets range from farm equipment, heavy commercial, passenger vehicles, emergency vehicles, and recreational off-highway vehicles.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges.	Refer to Appendix H

Service Attribute	Key Performance Indicator	Current LOS (2025)
	Description or images of the condition of culverts and how this would affect use of the culverts.	

Table 16 O. Reg. 588/17 Community Levels of Service: Bridges & Culverts

Technical Levels of Service

Service Attribute	Key Performance Indicator	Current LOS (2025)
Scope	Percentage of bridges in The Township with loading or dimensional restrictions	26%
	Percentage of culverts in the municipality with loading or dimensional restrictions.	0%
Quality	For bridges in the municipality, the average bridge condition index value.	72%
	For structural culverts in the municipality, the average bridge condition index value.	70%

Table 17 O. Reg. 588/17 Technical Levels of Service: Bridges & Culverts

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town's ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in Section 4. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for Bridges & Culverts are analyzed using three funding models: Optimal Budget, Current Funding, and Recommended Funding.

1. The Current Funding scenario is based on the current available funding.
2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

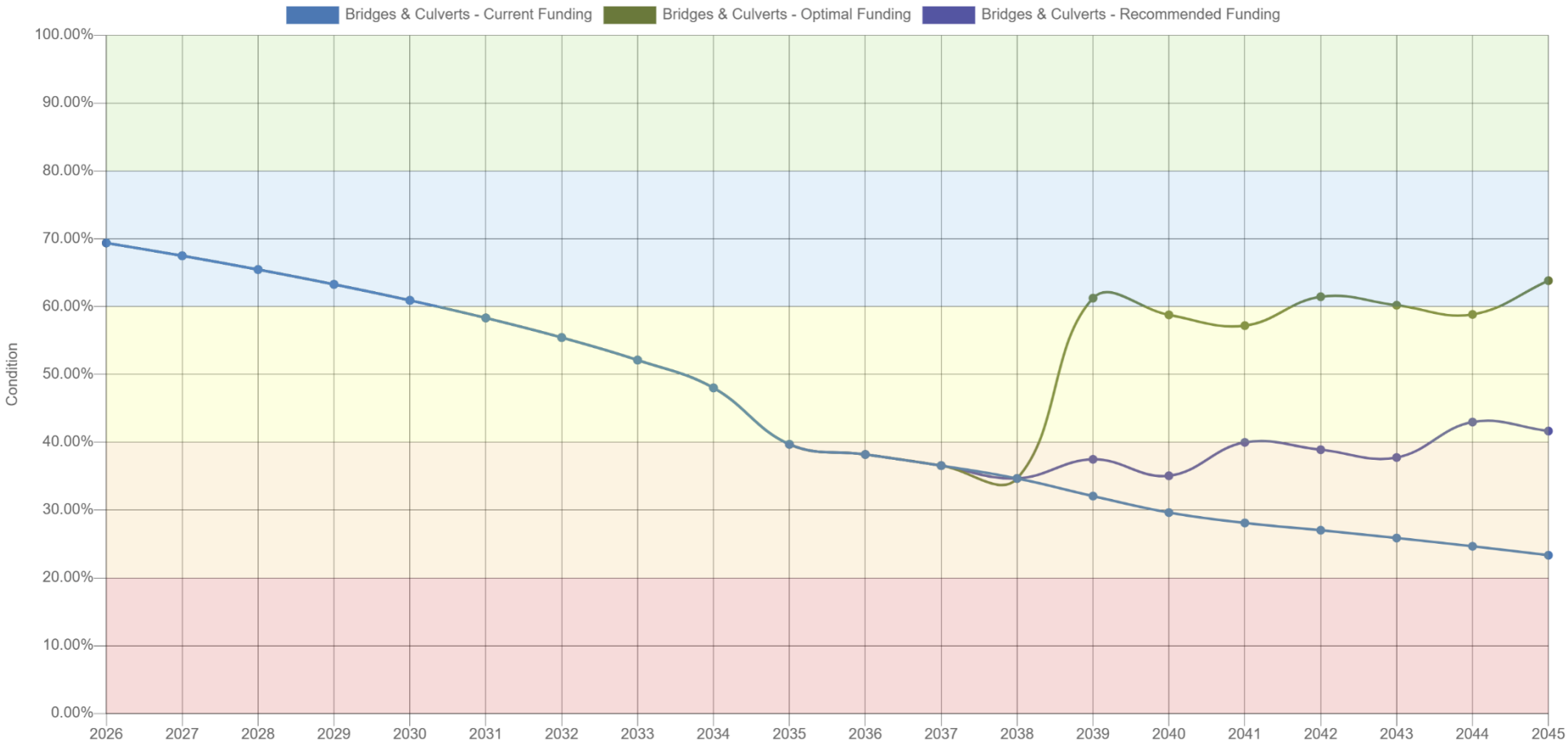


Figure 32: PLOS: Bridges & Culverts Network – Current vs Optimal vs Recommended Funding (20-year Forecast)

Figure 32 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of Water Network assets.

- The Current Funding scenario for bridges and culverts illustrates a continuous downward trend in average condition. From a starting point of approximately 70% in 2026, the network is projected to decline steadily to approximately 23% by 2045 if funding remains at current levels.
- The Optimal Funding scenario models the investment level required to return the network to a Good condition. While it follows the same decline as other scenarios initially, the model shows a sharp improvement beginning in 2038, with the condition rising above 60% for the remainder of the forecast.
- The Recommended Funding scenario, which incorporates the 2.8% tax hike, represents the investment level needed to stabilize the network in the Fair range. This model shows the condition leveling off starting in 2038, maintaining an average state between 35% and 43% through 2045.

Recommendations

- Implement the recommended 2.8% tax increase over the next 15 years to close the capital funding gap. This steady approach ensures the municipality accumulates the reserves necessary to fund the major structural renewals projected for 2038 and beyond.
- Prioritize structural rehabilitations based on the results of mandated Ontario Structure Inspection Manual (OSIM) inspections. Using this data to identify structural defects early will help target the recommended funding toward the most critical assets to maximize their service life.
- Leverage provincial and federal infrastructure grants specifically for bridge and culvert replacement. Pursuing these external funding streams will help offset the costs of large-scale projects and address the backlog of deferred maintenance.

Risk for Not Maintaining Acceptable LOS

- A continued decline in the condition of bridges and culverts without the recommended tax increase will lead to a significant accumulation of deferred maintenance. This places a higher financial burden on the municipality in the long term as reactive structural repairs are typically more costly than planned rehabilitations.
- Relying on current funding levels increases the operational risk that structural issues identified in OSIM inspections cannot be addressed in a timely manner. This increases the likelihood of unexpected service disruptions, such as weight scale restrictions, which could impact local transportation and emergency routes.
- Although the bridge and culvert network is currently monitored through legislated inspections, a deteriorating inventory will eventually strain the municipal capacity to maintain service levels. This poses a risk to overall network reliability given the critical nature of maintaining safe and open crossing points for the community.

Appendix C - Buildings

Township of Conmee owns and maintains several facilities that provide key services to the community. These include:

- Administration
- Ambulance
- Fire
- Landfill
- Public works garages and storage sheds
- Recreation

Inventory & Valuation

Table 18 summarizes the quantity and current replacement cost of all buildings assets available in the Township's asset register. The majority of buildings are not componentized. The quantity listed represents the number of asset records currently available for each department.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Administration	1	Quantity	$3,105,759	CPI
Emergency Services	2	Quantity	$1,379,648	CPI
Public Services	4	Quantity	$2,426,391	CPI
TOTAL			**$6,911,798**	

Table 18 Detailed Asset Inventory: Buildings

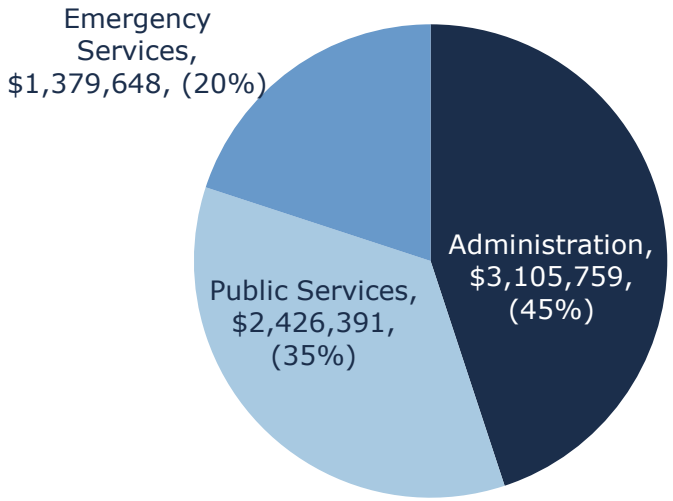


Figure 33 Portfolio Valuation: Buildings

Asset Condition

Figure 34 summarizes the replacement cost-weighted condition of the Township's buildings portfolio. Based on and assessed conditions, 77% of buildings assets are in fair or better condition; however, the remaining 23% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As buildings are not componentized, condition data is presented only at the site level, rather than at the individual element or component level within each building.

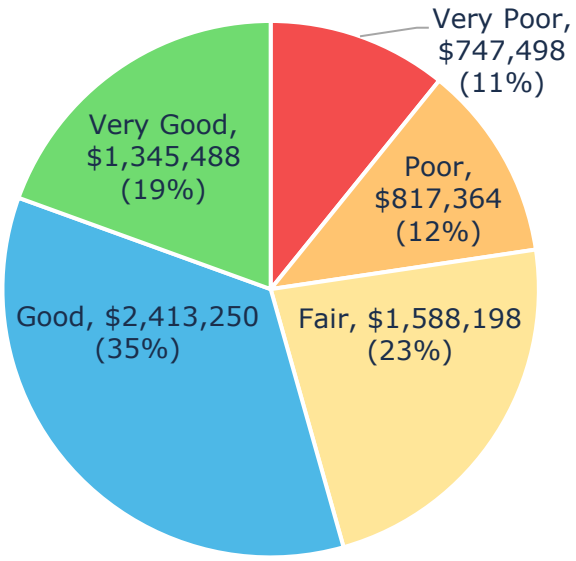


Figure 34 Asset Condition: Buildings Overall

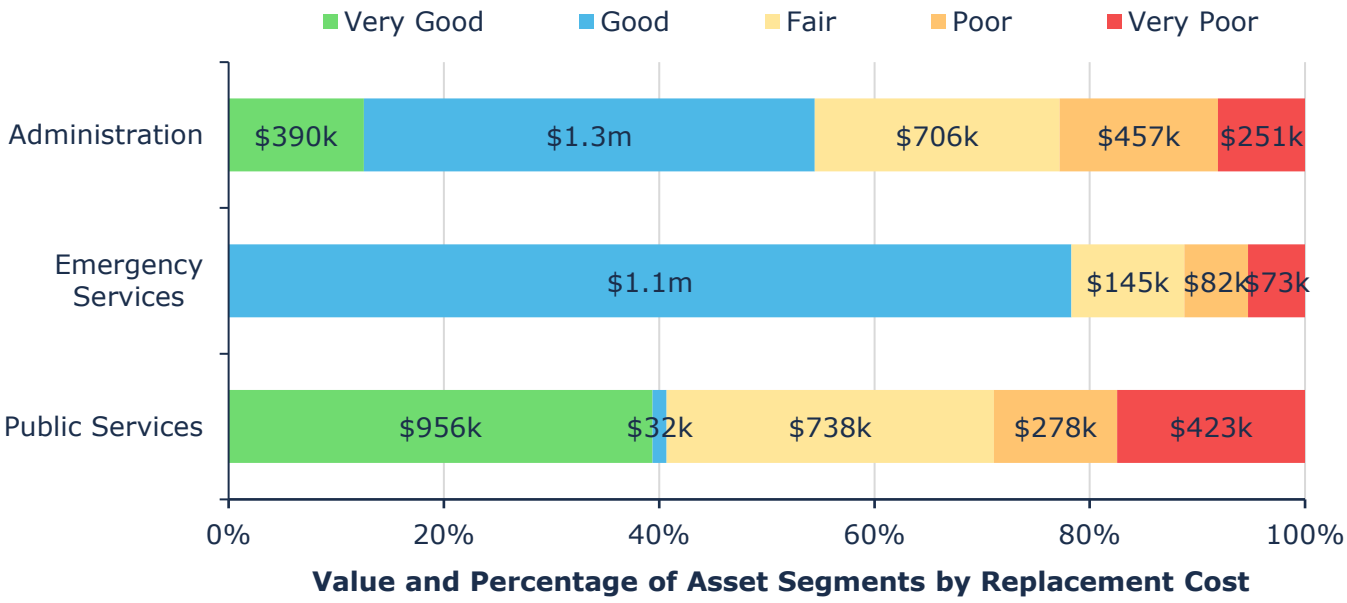
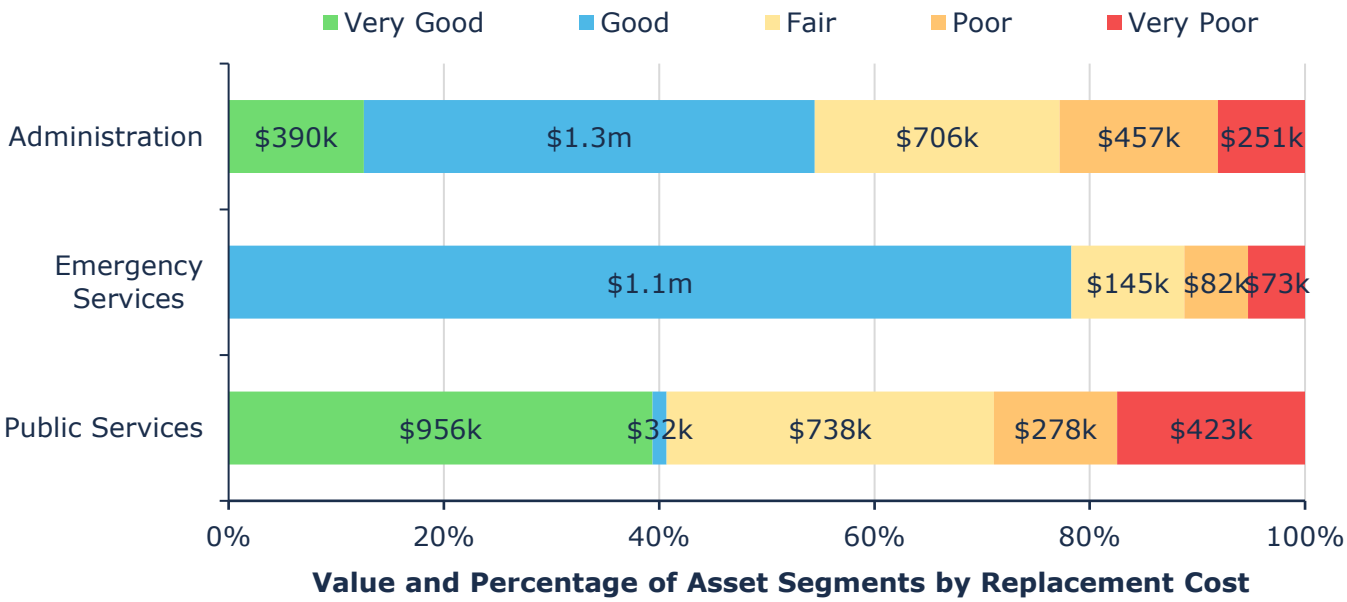


Figure 35 Asset Condition: Buildings by Segment



Value and Percentage of Asset Segments by Replacement Cost

Figure 35 summarizes the age-based condition of buildings by segments. Approximately $423 thousand worth of public services assets are in poor to worse condition. However, in the absence of componentization, this data has limited value. Componentization of assets and integration of condition assessments will provide a more accurate and reliable estimation of the condition of various facilities.

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 36 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

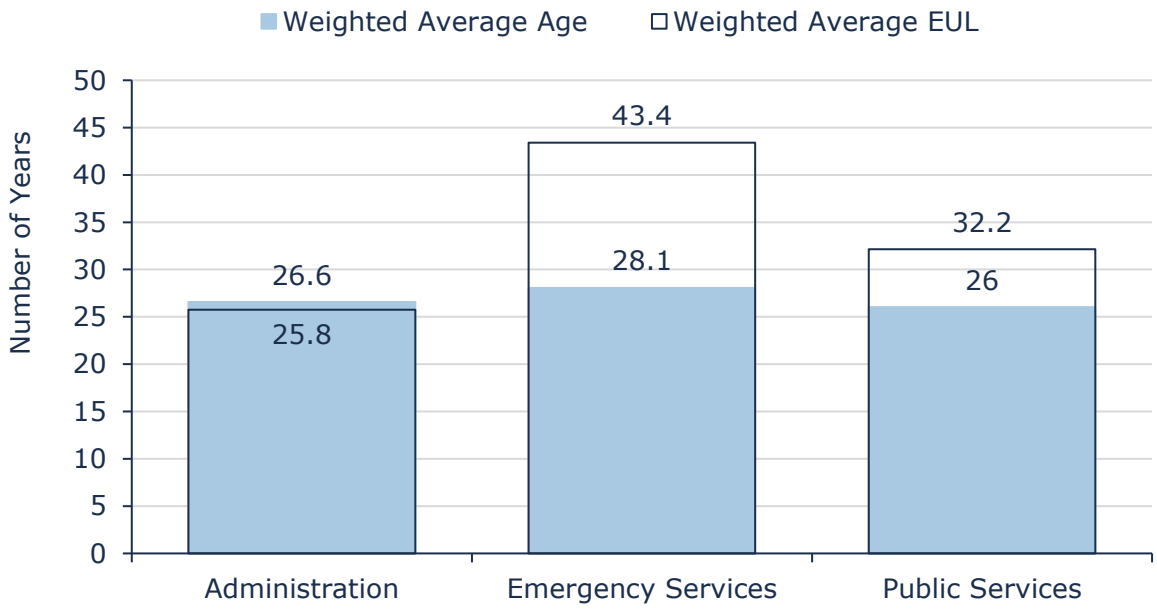


Figure 36 Estimated Useful Life vs. Asset Age: Buildings

Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 19 outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance/ Repair/ Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
	Critical buildings such as fire stations have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis
Replacement	As a supplement to the knowledge and expertise of municipal staff the Township recently completed a comprehensive assessment of each building to inform replacements, rehabilitation, and repairs over the next 10 years

Table 19 Lifecycle Management Strategy: Buildings

Forecasted Long-Term Replacement Needs

Figure 37 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's buildings portfolio. This analysis was run until 2094 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average

annual requirements (red dotted line) total $469 thousand for all buildings. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to rise over the next 70 years, reaching $3.4 million between 2085 and 2089. The chart also illustrates a backlog of more than $88 thousand, dominated by public services' assets, and comprising assets that have reached the end of their useful life but still remain in operation. These projections and estimates are based on current asset records, their replacement costs, and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements. In the case of buildings and facilities, detailed componentization is necessary to develop more reliable lifecycle forecasts that reflect the needs of individual elements and components.

A summary of the 10-year replacement forecast can be found in Appendix A – 10-Year Capital Requirements.

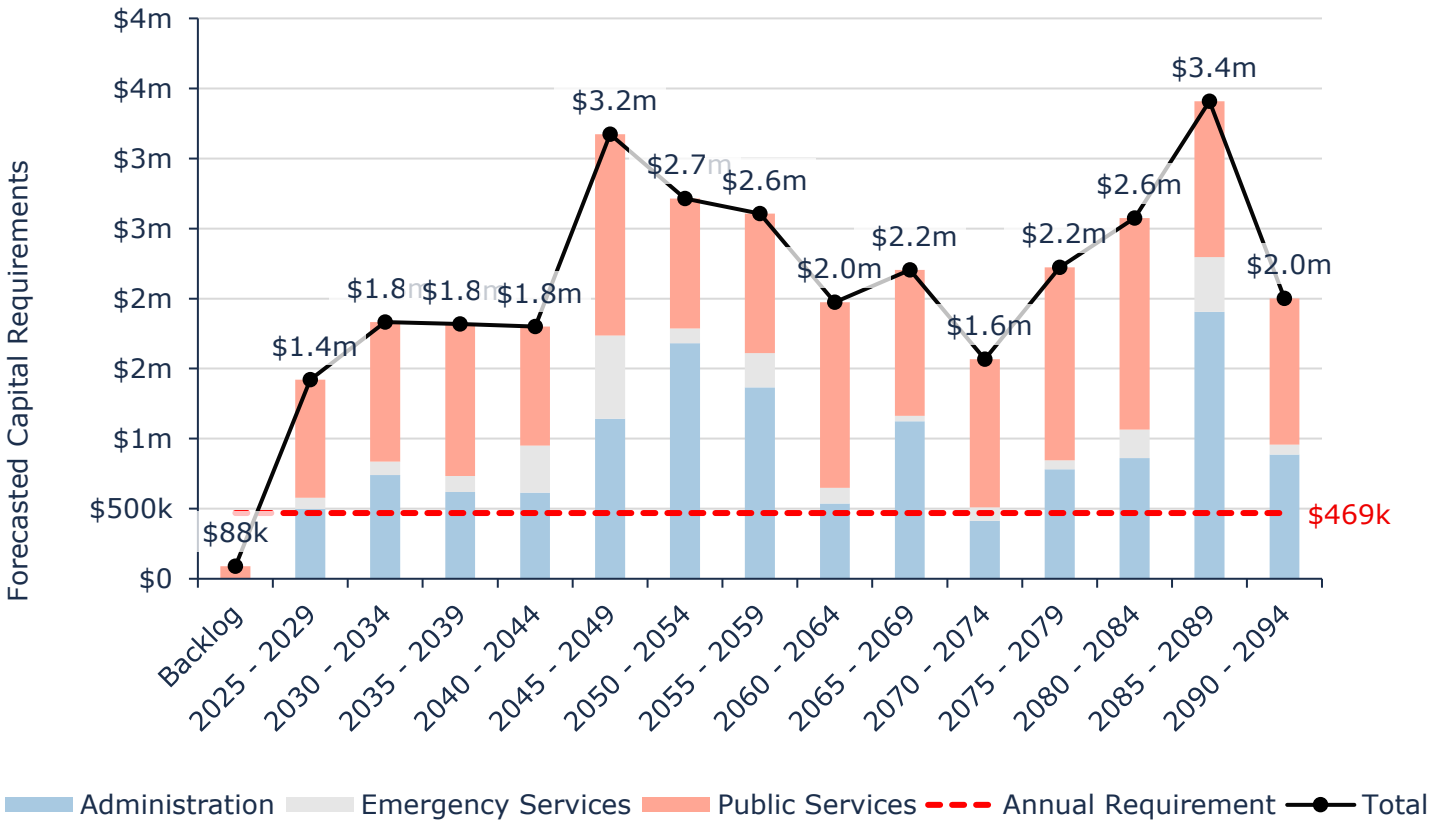


Figure 37 Forecasted Capital Replacement Needs Buildings 2024-2094

Risk Analysis

The risk matrix below is generated using available asset data, condition and replacement costs.

The matrix classifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$1,588,629 (23%)	$1,391,705 (20%)	$1,245,150 (18%)	$1,911,957 (28%)	$774,357 (11%)

Figure 38 Risk Matrix: Buildings

Levels of Service

The tables that follow summarize the Township's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Township has selected for this AMP.

Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2024)
Scope	Description, which may include maps of the types of facilities that the municipality operates and maintains	The qualitative descriptions that determine the community levels of service provided by municipal facilities are based on the types of facilities outlined below: • Administrative • Emergency Services • Landfill • Public Works

Table 20 Community Levels of Service: Buildings

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2024)
Quality	Average Condition of Facilities in the Municipality	57%
Performance	Capital reinvestment rate	0%

Table 21 Technical Levels of Service: Buildings

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town’s ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in Section 4. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for Buildings & Facilities are analyzed using three funding models: Optimal Budget, Current Funding, and Recommended Funding.

1. The Current Funding scenario is based on the current available funding.
2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

Figure 39 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of Buildings & Facilities assets.

- The Current Funding scenario for buildings shows a continuous decline in average condition. Starting at 50% in 2026, the condition drops steadily over the 20 year period, falling into the very poor range by 2040 and reaching a low of approximately 13% by 2045.
- The Optimal Funding scenario models an investment level that maintains the building portfolio within the fair and good ranges. This scenario shows fluctuations as major components are renewed, with the condition remaining between 40% and 54% throughout the entire forecast.
- The Recommended Funding scenario, which includes the 2.8% tax hike, shows an initial decline until 2036 where the condition plateaus at 31% in the poor range. After 2036, this funding level supports a gradual improvement, bringing the average building condition back to 40% in the fair range by the end of the forecast period.

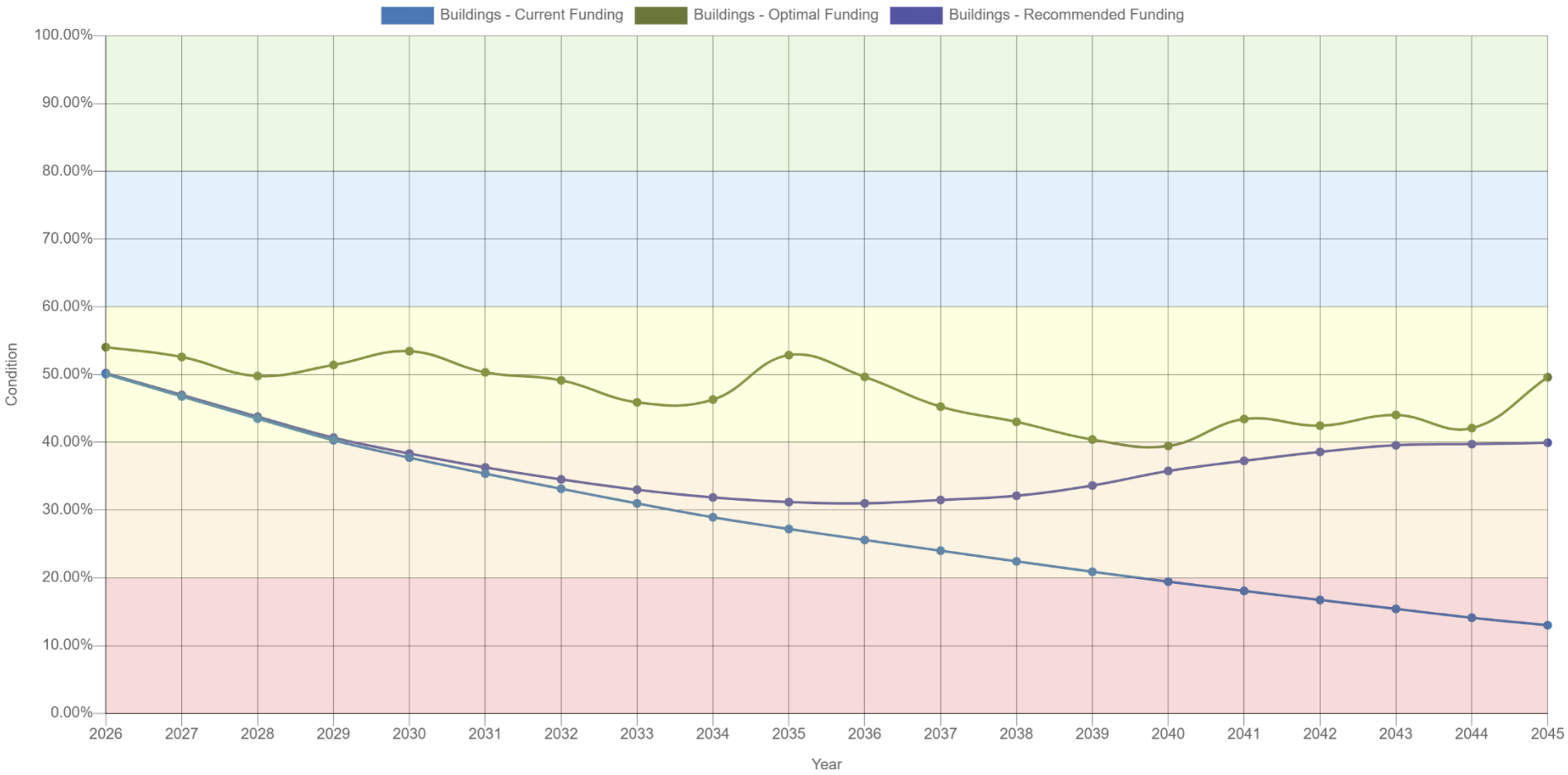


Figure 39: PLOS: Buildings – Current vs Optimal vs Recommended Funding (20-year Forecast)

Recommendations

- Implement the recommended 2.8% tax increase over the next 15 years to secure the capital required for building renewals. This gradual approach allows the municipality to build reserves that will be necessary to reverse the downward trend projected after 2036.
- Prioritize major building component renewals, such as roofing and HVAC systems, based on upcoming Building Condition Assessments (BCA). Using real condition data to time these projects will ensure the recommended funding is used to extend the life of the facilities most efficiently.
- Leverage provincial and federal green infrastructure grants to offset the costs of energy efficient upgrades. Incorporating these grants into the long-term plan helps the 2.8% tax hike go further while reducing the long-term operational and utility costs of the building portfolio.

Risk for Not Maintaining Acceptable LOS

- A continued decline in building condition without the recommended tax increase will lead to a significant accumulation of deferred maintenance. This places a higher financial burden on the municipality as reactive repairs to failing building envelopes or mechanical systems are typically more costly than planned renewals.
- The current reliance on 2020 assessment data creates an operational risk where building components may reach their end of life earlier than anticipated. This increases the likelihood of service disruptions, such as facility closures for emergency repairs, which could impact community access to municipal services.
- Although staff currently manage facility needs through available resources, a deteriorating building portfolio will eventually strain the capacity to maintain a safe and functional environment. This poses a risk to service reliability and could lead to increased liability if building standards are not maintained.

Appendix D - Land Improvements

Conmee Township owns a small number of assets that are considered Land Improvements. This category includes:

- Parking lots for municipal facilities
- Columbarium
- Fencing and signage
- Playground structures
- Miscellaneous landscaping and other assets

Inventory & Valuation

Table 22 summarizes the quantity and current replacement cost of all land improvements assets available in the Township's asset register.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Land Improvements	8	Assets	$313,125	CPI
TOTAL			**$313,125**	

Table 22 Detailed Asset Inventory: Land Improvements

Asset Condition

Figure 40 summarizes the replacement cost-weighted condition of the Township's land improvements portfolio. Based on assessed data, 59% of assets are in fair or better condition, the remaining 41% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

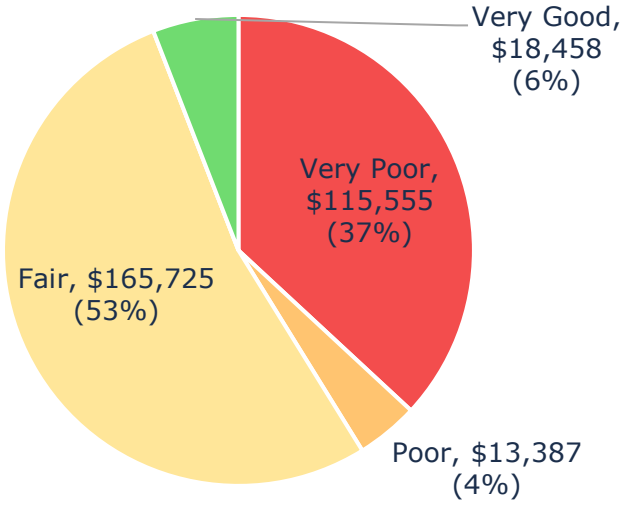


Figure 40 Asset Condition: Land Improvements Overall

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 41 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

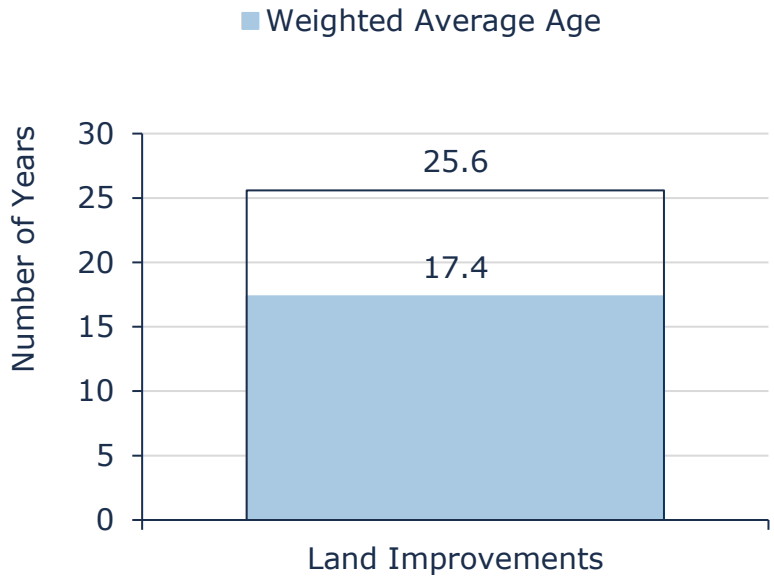


Figure 41 Estimated Useful Life vs. Asset Age: Land Improvements

Current Approach to Lifecycle Management

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place for land improvements

Table 23 outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation, and Replacement	The Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis

Table 23 Lifecycle Management Strategy: Land Improvements

Forecasted Long-Term Replacement Needs

Figure 42 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's land improvements portfolio. This analysis was run until 2094 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $15 thousand for all land improvements. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to fluctuate over the 70-year time horizon, peaking at $207 thousand between 2050 and 2054 as assets reach the end of their useful life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

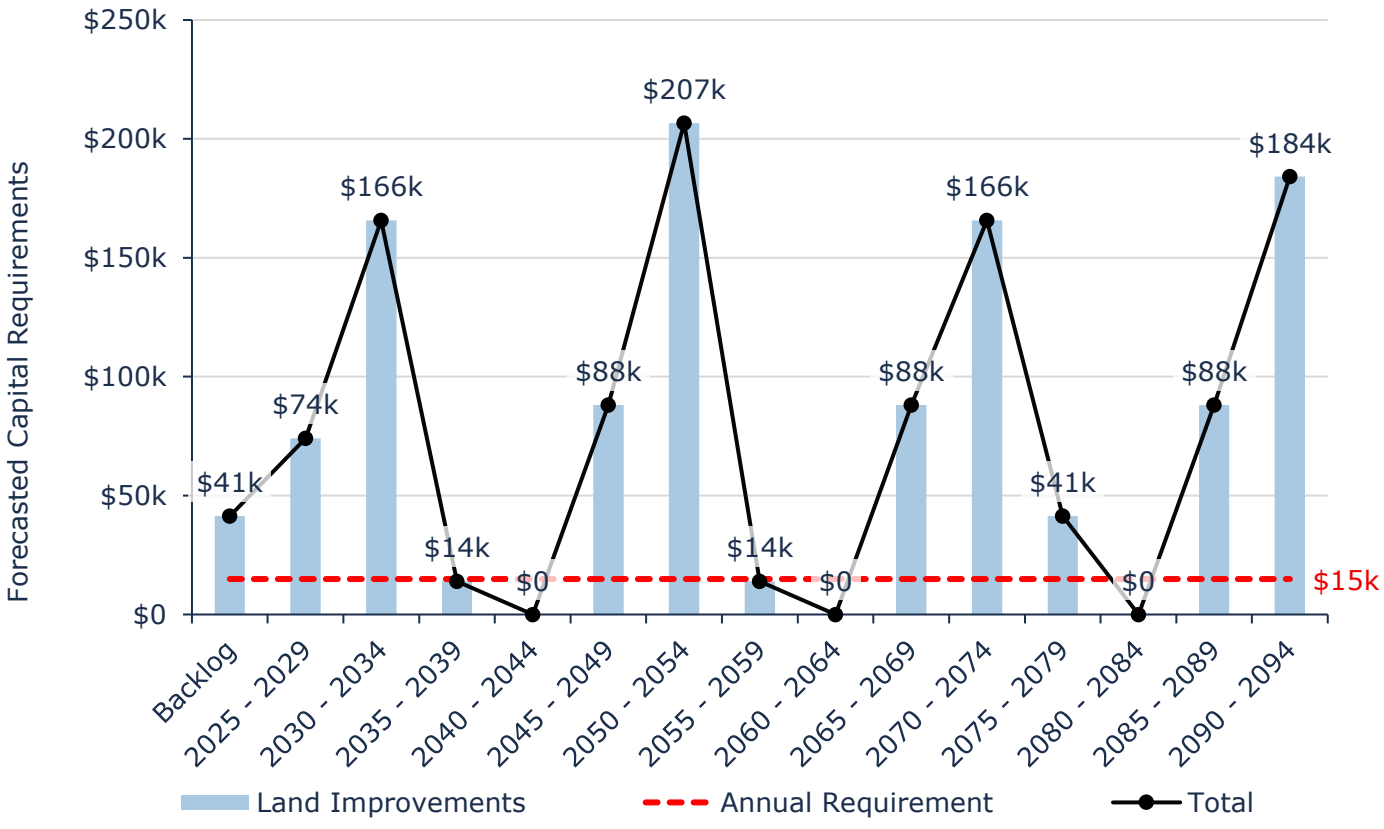


Figure 42 Forecasted Capital Replacement Needs: Land Improvements 2024-2064

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

A summary of the 10-year replacement forecast can be found in Appendix G – 10-Year Capital Requirements.

Risk Analysis

The risk matrix below is generated using available asset data, including condition and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$18,458 (6%)	- (0%)	$13,387 (4%)	$50,495 (16%)	$230,785 (74%)

Figure 43 Risk Matrix: Land Improvements

Levels of Service

The tables that follow summarize the Township's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Township has selected for this AMP.

Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2024)
Scope	Description of land improvements assets that the municipality operates and maintains	Using age-based condition, land improvement assets range in condition from very poor to very good and are in average in fair condition. Land improvement assets include active and passive parkland. Wherever possible, assets are designed to serve a wide range of users.

Service Attribute	Qualitative Description	Current LOS (2024)
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Land improvement asset investment decisions are predominantly based on asset condition and expected future utility alongside existing rate of use and relevant Master Plan findings. Land improvement capital investment projects are formally and publicly identified one year in advance and internally identified several years in advance.

Table 24 Community Levels of Service: Land Improvements

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2024)
Quality	Average condition of outdoor recreation facilities and land improvements in the municipality	33%
Performance	Capital reinvestment rate	0%

Table 25 Technical Levels of Service: Land Improvements

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town's ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in Section 4. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for Land Improvements are analyzed using three funding models: Optimal Budget, Current Funding, and Recommended Funding.

1. The Current Funding scenario is based on the current available funding.
2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

Figure 44 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of Land Improvements assets.

- The Current Funding scenario for land improvements shows a continuous decline in average condition over the 20-year period. Starting at approximately 25% in 2026, the condition drops into very poor range by 2031 and remains near 4% for the remainder of the forecast.
- The Optimal Funding scenario models the investment required to move the asset category into a better state of repair. While it experiences initial fluctuations, this scenario shows a significant upward trend after 2032, reaching the fair range and ending the forecast at approximately 56%.
- The Recommended Funding scenario, which includes the 2.8% tax hike, shows a period of stabilization in the very poor range until 2036. After this point, the increased investment supports an improvement in condition, allowing the assets to reach the poor range and end the forecast at approximately 37%.

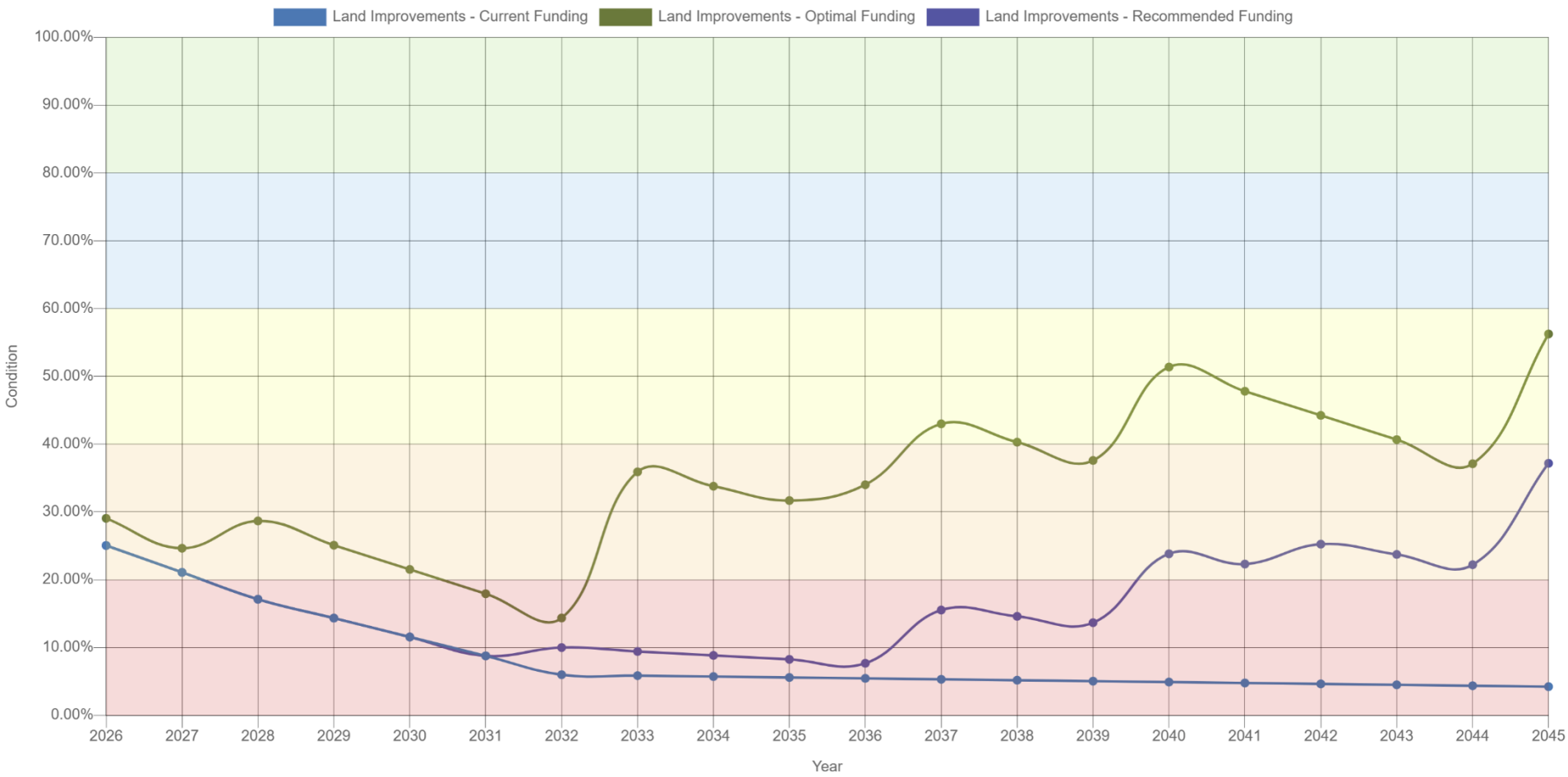


Figure 44: PLOS: Land Improvements – Current vs Optimal vs Recommended Funding (20-year Forecast)

Recommendations

- Implement the recommended 2.8% tax increase over the next 15 years to provide the capital necessary for land improvement renewals. This steady funding approach is required to move these assets out of the very poor condition range projected in the initial years of the forecast.
- Conduct periodic inspections of land improvement assets, such as parking lots, fences, and park structures, to identify components requiring immediate attention. Updated condition data will help staff target the recommended funding toward the most utilized community spaces to maximize their service life.
- Leverage available provincial and federal community-infrastructure grants to supplement municipal funding for large-scale land improvement projects. Utilizing external funding sources helps the 2.8% tax hike address a larger portion of the deferred-maintenance backlog identified in the 20-year plan.

Risk for Not Maintaining Acceptable LOS

- A continued decline in land improvement condition without the recommended tax increase will lead to a significant accumulation of deferred maintenance. This places a higher financial burden on the municipality in the long term as replacing failed assets is typically more expensive than planned rehabilitations.
- Relying on current funding levels creates an operational risk where community assets may become unusable due to safety concerns or structural degradation. This increases the likelihood of service disruptions, such as the closure of public spaces or recreational areas, impacting resident access to municipal amenities.
- Although land improvements are currently managed with available resources, a deteriorating inventory will eventually strain the capacity to maintain functional and safe public assets. This poses a risk to community standards and could lead to increased liability if assets in the very poor range are not addressed in a timely manner.

Appendix E - Vehicles

Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Tandem axle trucks for winter control activities
- Fire rescue vehicles to provide emergency services
- Pick-up trucks to support the maintenance of critical infrastructure

Inventory & Valuation

Table 26 summarizes the quantity and current replacement cost of all vehicles assets available in the Township's asset register, citywide assets.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Emergency Services	2	Quantity	$501,103	CPI
Public Services	3	Quantity	$625,913	CPI
TOTAL			**$1,127,016**	

Table 26 Detailed Asset Inventory: Vehicles

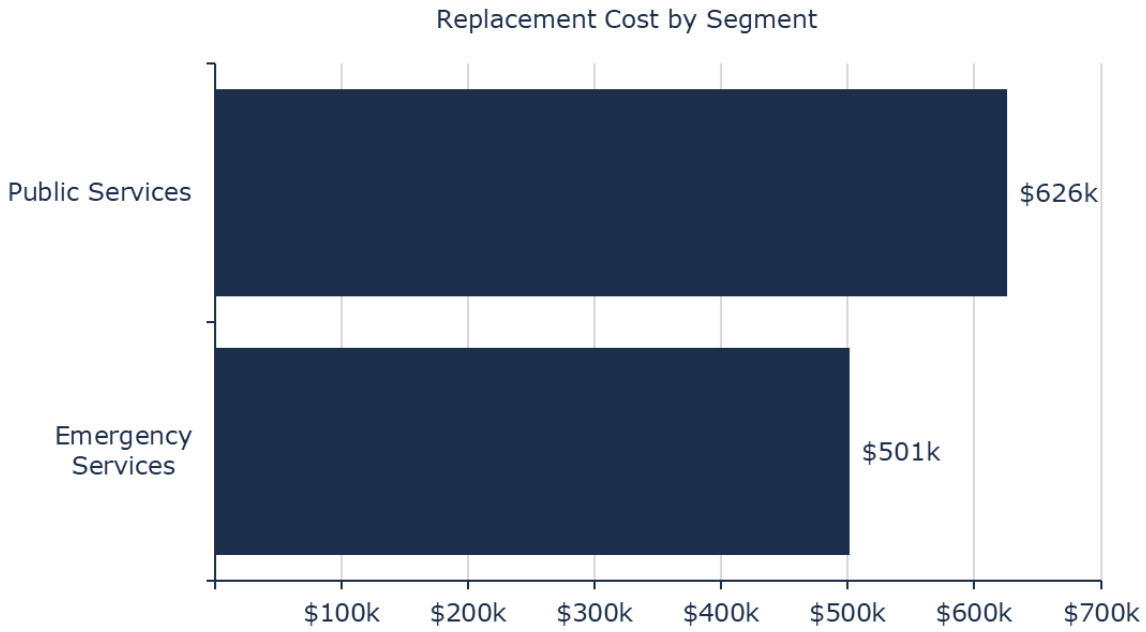


Figure 45 Portfolio Valuation: Vehicles

Asset Condition

Figure 46 summarizes the replacement cost-weighted condition of the Township's vehicles portfolio. Based on age-based condition data, 41% of vehicles are in very poor condition, with the remaining 59% in good condition. These assets may be candidates for replacement in the

short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

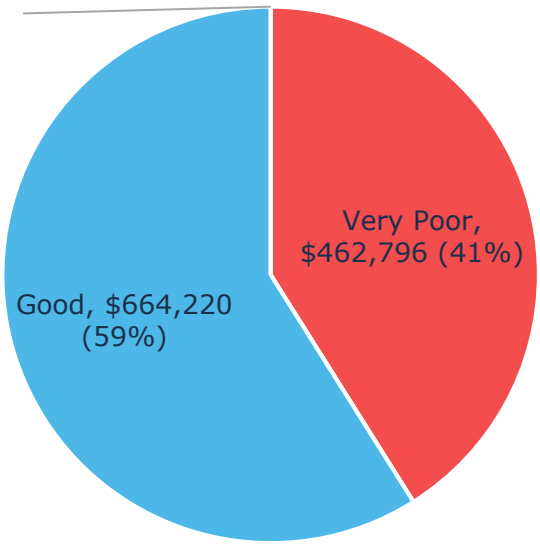


Figure 46 Asset Condition: Vehicles Overall

Figure 47 summarizes the condition of vehicles by each department. Based on age-based data, majority of emergency services vehicles are in very poor condition.

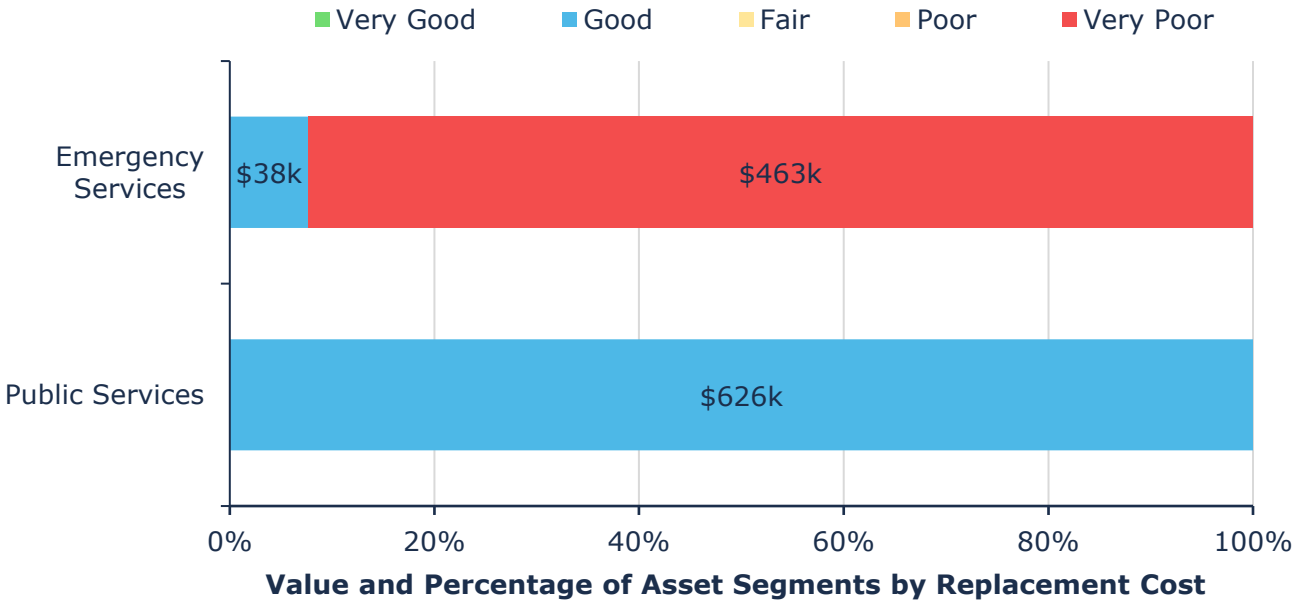


Figure 47 Asset Condition: Vehicles by Segment

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As

assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 48 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

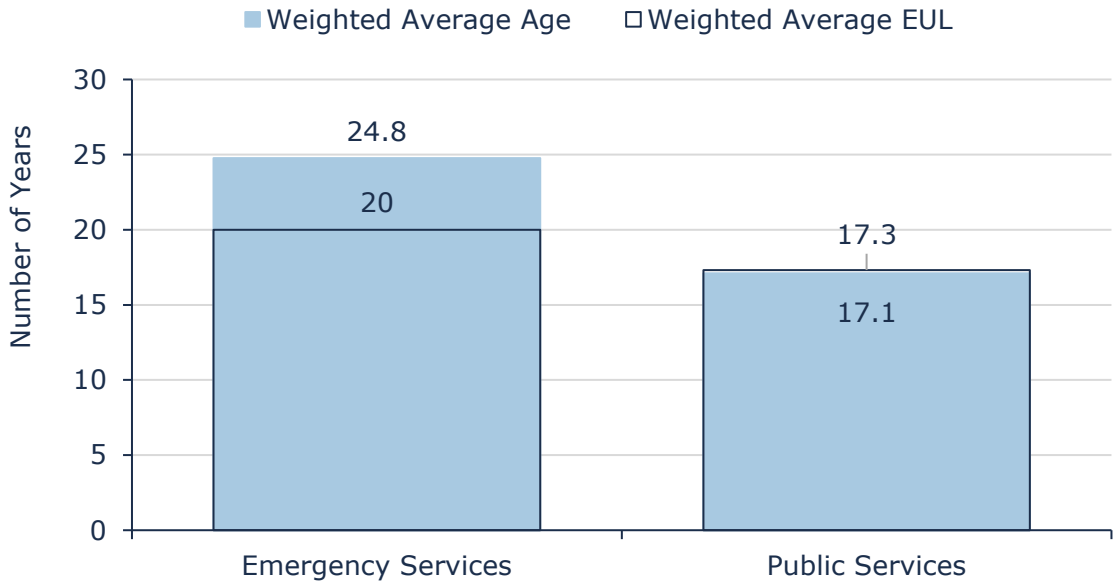


Figure 48 Estimated Useful Life vs. Asset Age: Vehicles

Age analysis reveals that public services vehicles are approaching their expected useful lives. Moreover, Emergency services vehicles have exhausted their estimated useful lives.

Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	• Visual inspections completed and documented daily; fluids inspected at every fuel stop; tires inspected monthly • Every 4-7000km includes a detailed inspection; tires are rotated and oil changed • Annual preventative maintenance activities include system components check and additional detailed inspections

Activity Type	Description of Current Strategy
Replacement	• Vehicle replacements are based on the Township's Capital Asset Policy (Policy No. 34) • Vehicle age, kilometers and annual repair costs are taken into consideration when determining appropriate replacement options
Inspections	• Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation • The mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition except for the Fire Department

Table 27 Lifecycle Management Strategy: Vehicles

Forecasted Long-Term Replacement Needs

Figure 49 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's vehicles portfolio. This analysis was run until 2039 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $65,000 for all vehicles. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to rise considerably in the next decade, peaking at $496 thousand by from 2035-2039 as vehicles reach the end of their useful life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

A summary of the 10-year replacement forecast can be found in Appendix G – 10-Year Capital Requirements.

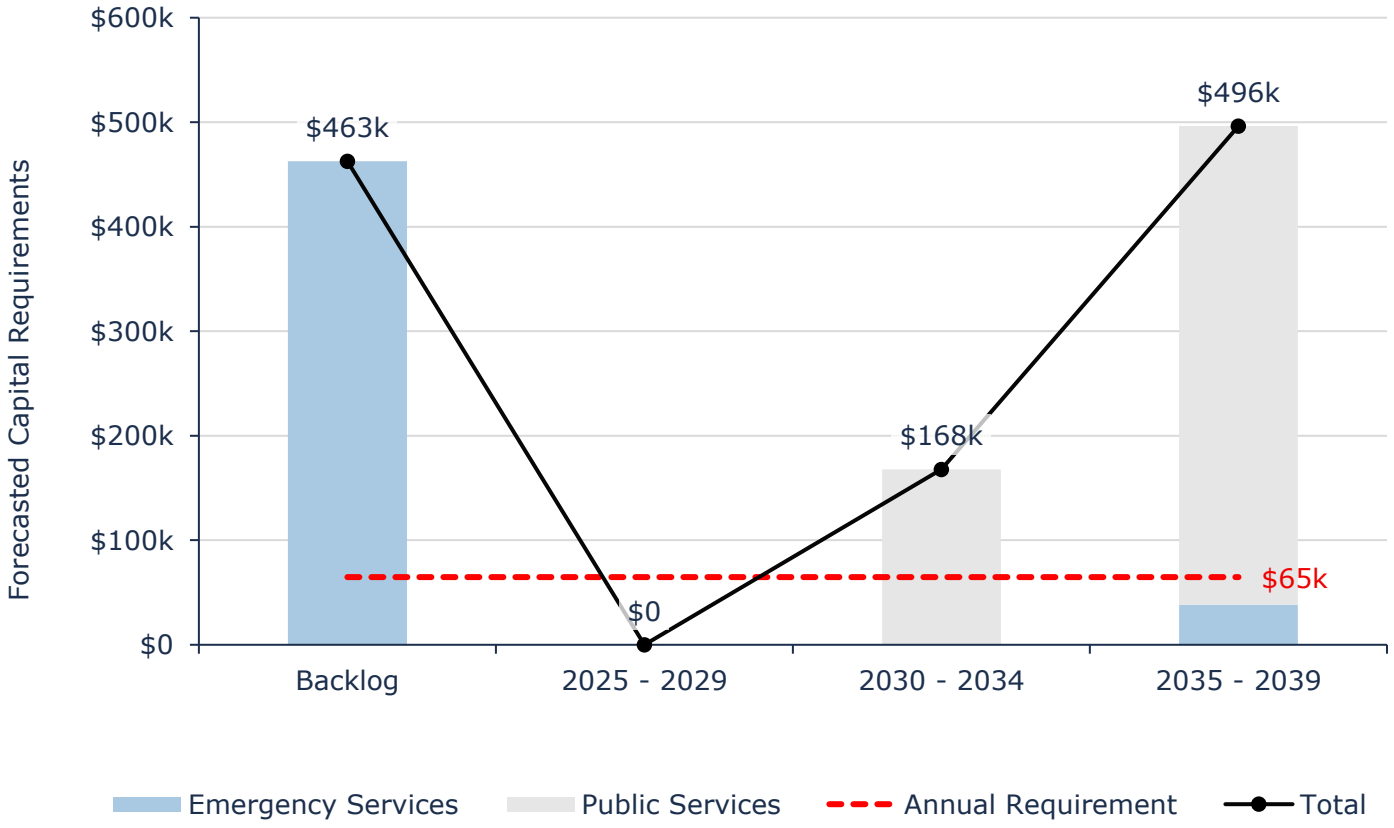


Figure 49 Forecasted Capital Replacement Needs: Vehicles 2025-2039

Risk Analysis

The risk matrix below is generated using available asset data, including condition and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $38,307 (3%)	5 - 7 **Low** - (0%)	8 - 9 **Moderate** $625,913 (56%)	10 - 14 **High** - (0%)	15 - 25 **Very High** $462,796 (41%)

Figure 50 Risk Matrix: Vehicles

Levels of Service

The tables that follow summarize the Township's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Township has selected for this AMP.

Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2024)
Scope	Description, which may include images, of the types of vehicles (i.e. light, medium, and heavy duty) that the municipality operates and the services that they help to provide to the community	• Fire vehicles include a pumper and a rescue van. • Public Works vehicles, such as snowplows and pick-up trucks, are vital for ensuring safe road conditions and managing infrastructure during inclement weather and construction projects.

Table 28 Community Levels of Service: Vehicles

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2024)
Quality	Average condition of vehicles	42%
Performance	Capital reinvestment rate	0%

Table 29 Technical Levels of Service: Vehicles

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town's ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in Section 4. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for vehicles are analyzed using three funding models: Optimal Budget, Current Funding, and Recommended Funding.

1. The Current Funding scenario is based on the current available funding.
2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

Figure 51 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of Vehicle assets.

- The Current Funding scenario for vehicles shows a continuous decline that begins at approximately 32% in 2026. Under this model, the fleet condition drops into the very poor range by 2031 and reaches 0% by 2039, where it remains for the rest of the forecast period.
- The Optimal Funding scenario models the investment required to maintain the fleet in a functional state of repair. Following an initial dip, the model shows significant recovery phases starting in 2032 and 2038, allowing the average condition to fluctuate between the fair and good ranges for the majority of the 20-year period.
- The Recommended Funding scenario, which incorporates the 2.8% tax hike, shows the fleet condition remaining in the very poor range until 2038. After this point, the increased funding supports a recovery phase, bringing the average condition into the poor range by 2039 and reaching the fair range at approximately 41% by the end of the forecast.

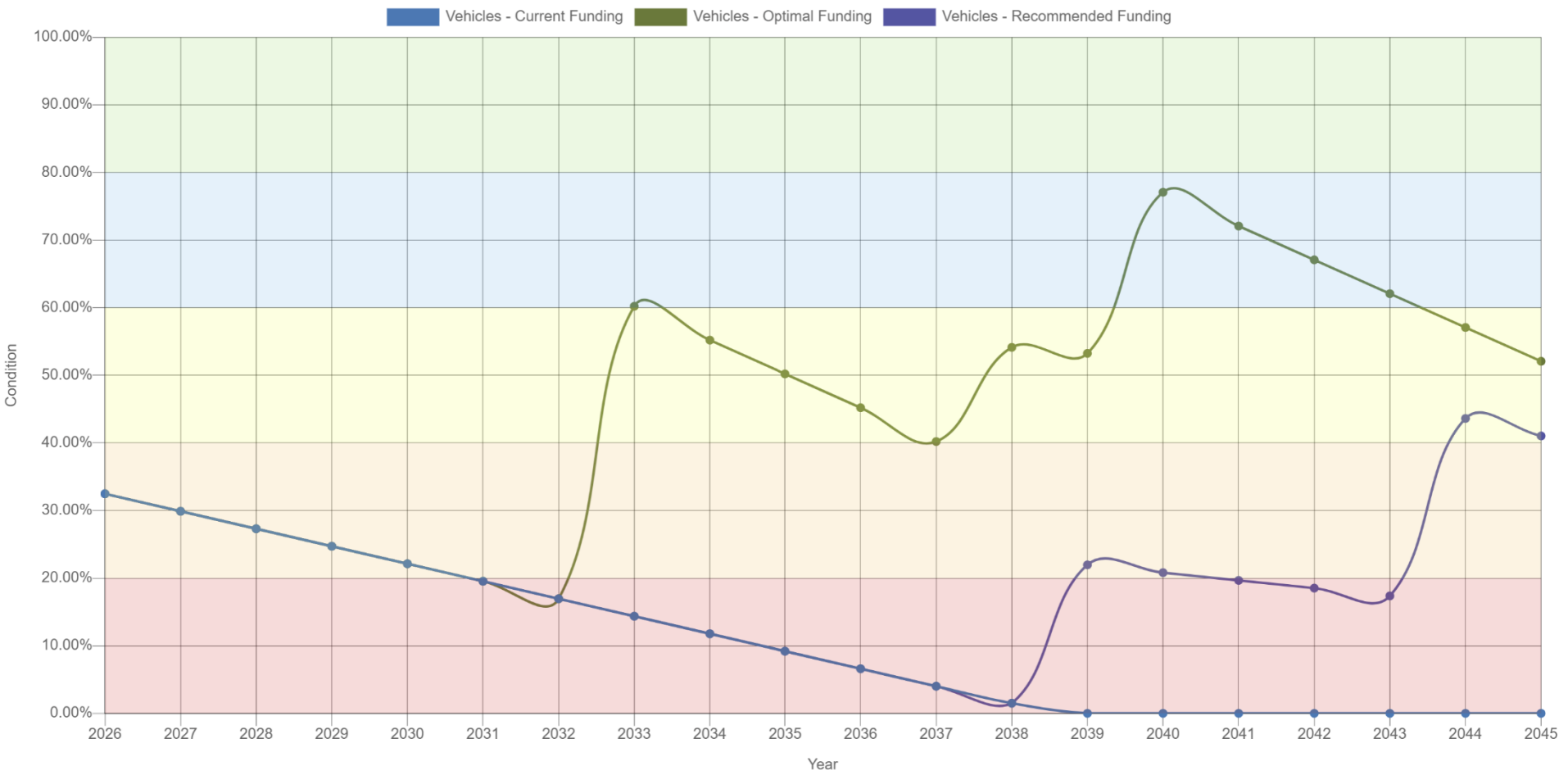


Figure 51: PLOS: Vehicles – Current vs Optimal vs Recommended Funding (20-year Forecast)

Recommendations

- Implement the recommended 2.8% tax increase over the next 15 years to establish a sustainable capital replacement fund for the municipal fleet. This funding is necessary to move the vehicle inventory out of the very poor condition range projected for the first decade of the forecast.
- Develop a formal fleet-replacement schedule based on the age and usage of individual units. Aligning the recommended funding with specific replacement windows will help the municipality manage the spikes in deferred maintenance and ensure critical vehicles are cycled out before they reach a state of total depreciation.
- Explore the use of specialized vehicle-leasing programs or provincial procurement contracts to optimize capital expenditures. Utilizing these strategies can help the 2.8% tax hike go further by reducing the upfront costs of new units and lowering the overall average age of the fleet.

Risk for Not Maintaining Acceptable LOS

- A continued decline in fleet condition without the recommended tax increase will lead to a significant accumulation of deferred maintenance. This places a higher financial burden on the municipality in the long term as maintaining aging vehicles typically results in exponentially higher repair costs compared to planned replacements.
- Relying on current funding levels creates an operational risk where critical vehicles may experience frequent breakdowns or fail to pass safety inspections. This increases the likelihood of service disruptions, such as delays in road maintenance or emergency response, impacting the municipal capacity to meet core service requirements.
- Although the fleet is currently managed with available resources, a deteriorating inventory will eventually strain the capacity of staff to maintain a reliable and safe vehicle network. This poses a risk to workplace safety and could lead to increased liability if units in the very poor range are kept in service beyond their safe operating life.

Appendix F - Machinery & Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, Township staff own and employ various types of machinery and equipment. This includes:

- Office and administrative equipment
- Fire equipment to support the delivery of emergency services
- Plows and sand hoppers to provide winter control activities

Keeping machinery & equipment in an adequate state of repair is important to maintain a high level of service.

Inventory & Valuation

Figure 52 summarizes the quantity and current replacement cost of all machinery and equipment assets available in the Township's asset register.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Machinery	9	Quantity	$1,021,556	CPI
Office Equipment	7	Quantity	$276,256	CPI
Operational Equipment	5	Quantity	$72,680	CPI
TOTAL			**$1,370,492**	

Table 30 Detailed Asset Inventory: Machinery & Equipment

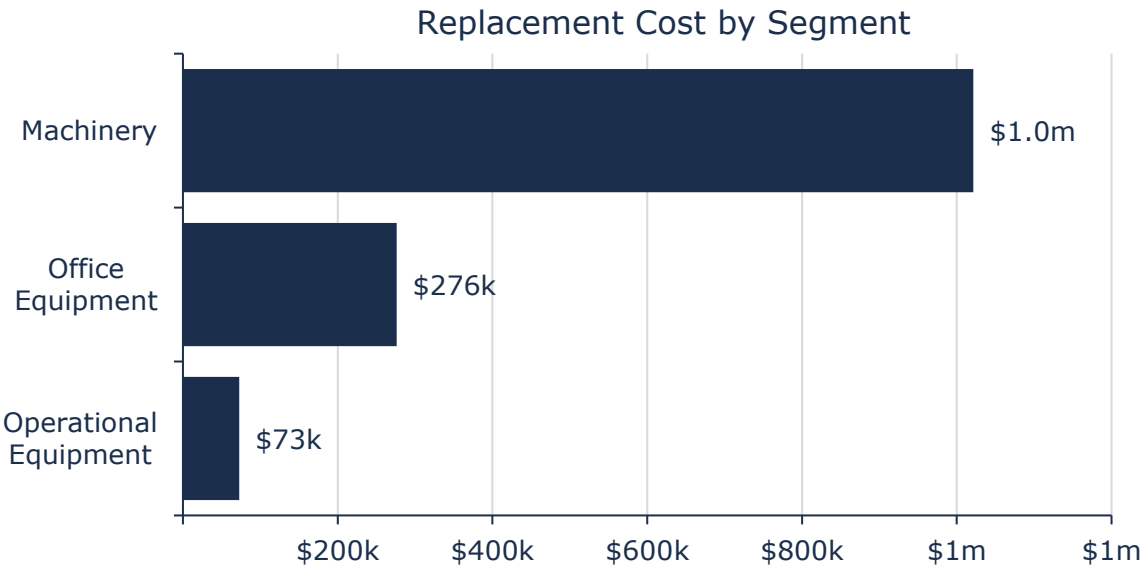


Figure 52 Portfolio Valuation: Machinery & Equipment

Asset Condition

Figure 53 summarizes the replacement cost-weighted condition of the Township's machinery and equipment portfolio. Based only on age data, 43% of assets are in fair or better condition; the remaining 57% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

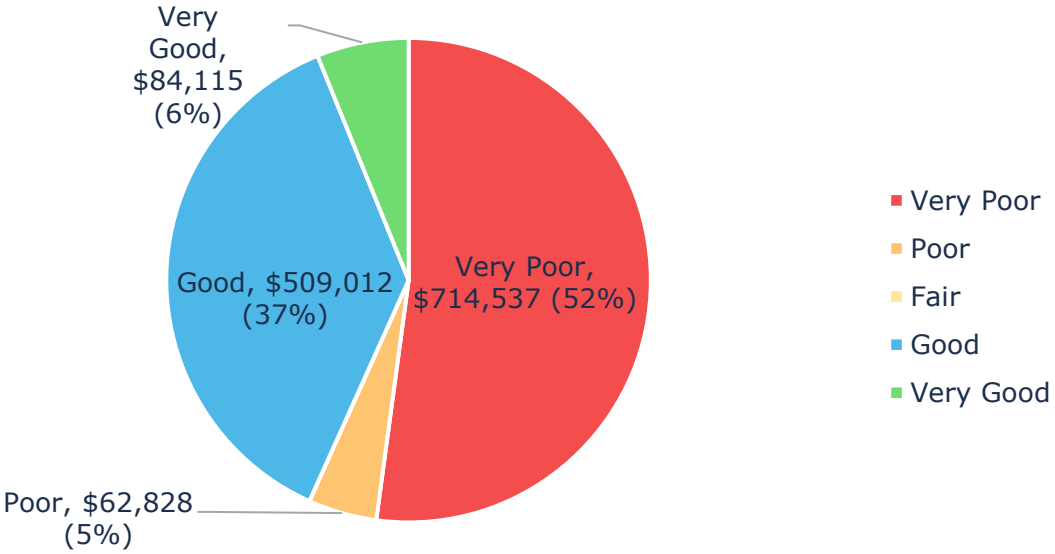


Figure 53 Asset Condition: Machinery & Equipment Overall

Figure 54 summarizes the age-based condition of machinery and equipment by each department. Assets in poor or worse condition are concentrated primarily in machinery, office equipment, and operational equipment.

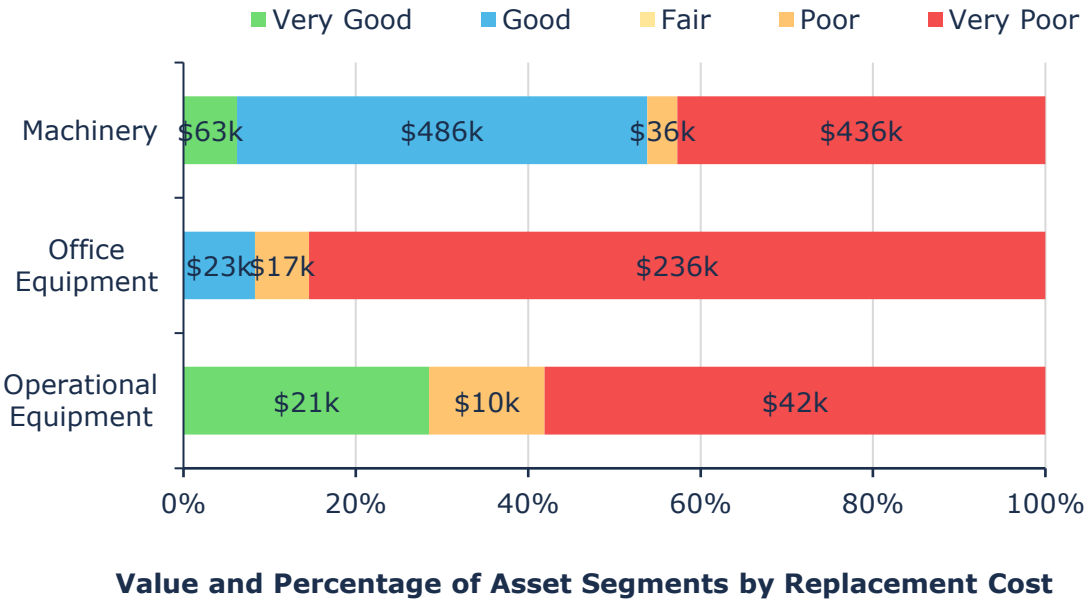


Figure 54 Asset Condition: Machinery & Equipment by Segment

Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 55 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

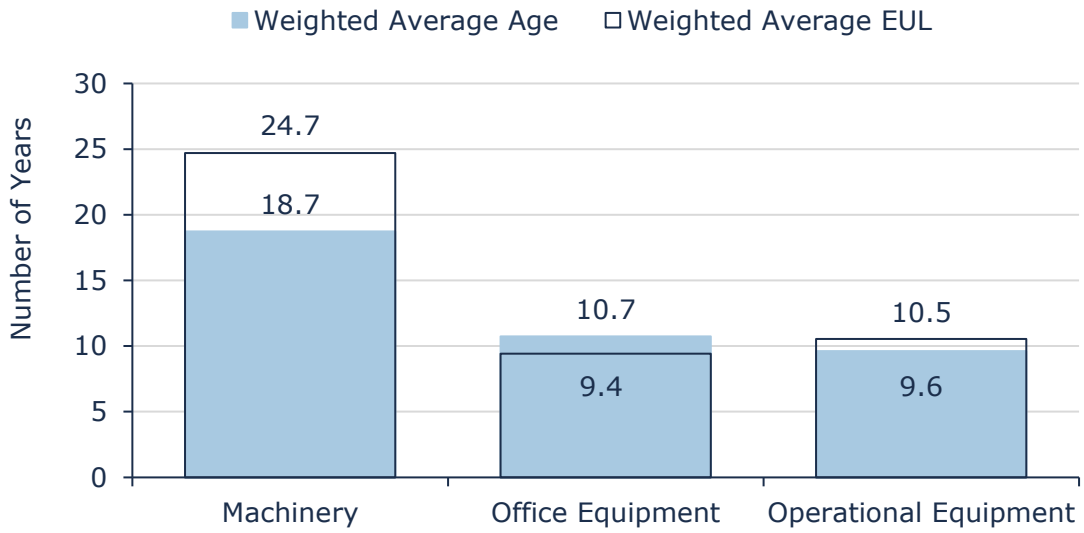


Figure 55 Estimated Useful Life vs. Asset Age: Machinery & Equipment

Age analysis reveals that machinery and operational equipment are approaching their designed service life. Office equipment remain in-service beyond their estimated useful life.

Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	• Maintenance program varies by department • Fire Protection Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments • Machinery & equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	• The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks

Table 31 Lifecycle Management Strategy: Machinery & Equipment

Forecasted Long-Term Replacement Needs

Figure 56 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's machinery and equipment portfolio. This analysis was run until 2049 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $100 thousand for all machinery and equipment. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to increase from 2030, peaking at $603,000 between 2040-2044. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

A summary of the 10-year replacement forecast can be found in Appendix G – 10-Year Capital Requirements.

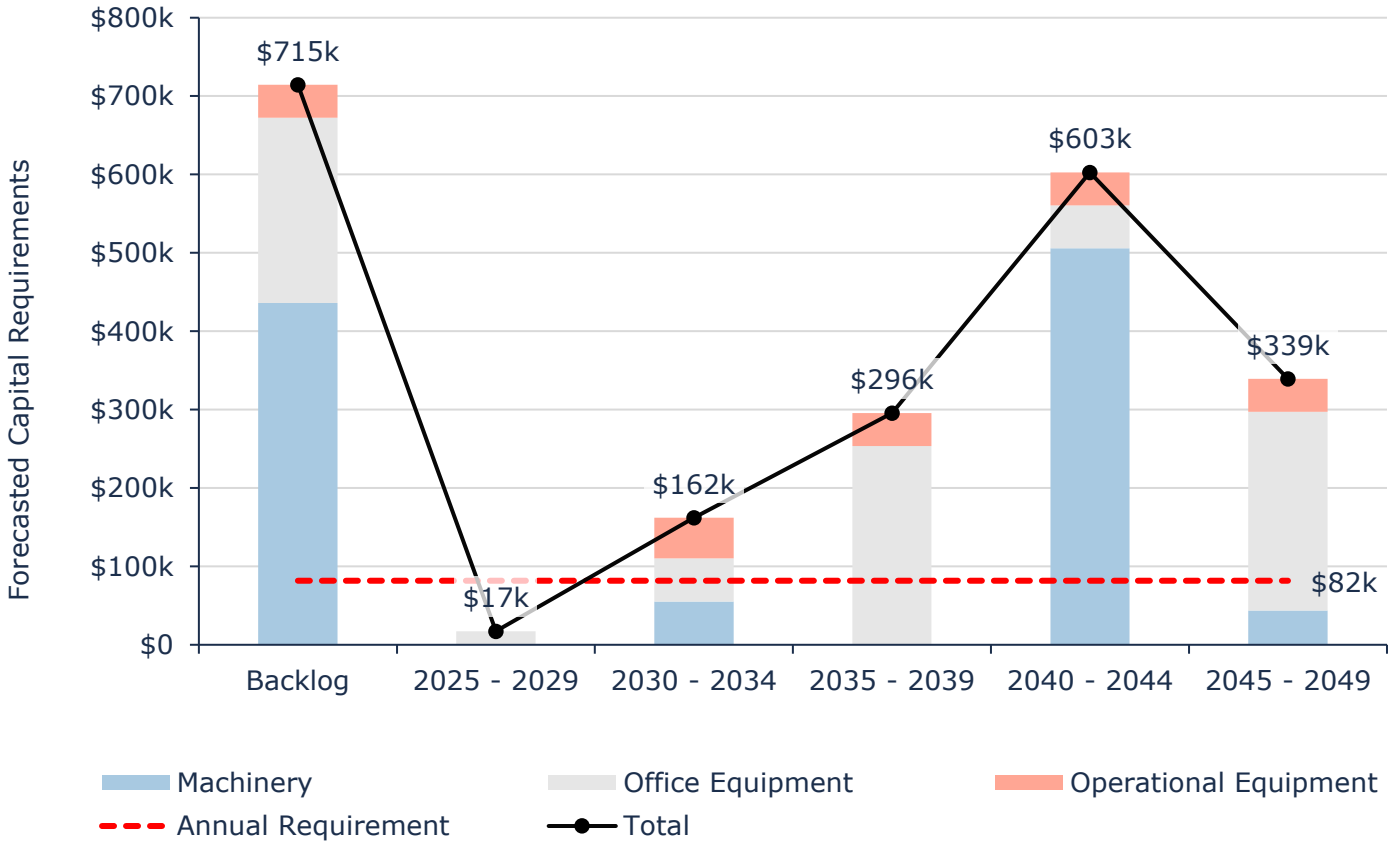


Figure 56 Forecasted Capital Replacement Needs: Machinery & Equipment 2025-2049

Risk Analysis

The risk matrix below is generated using available asset data, including condition and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Township may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $106,989 (8%)	5 - 7 **Low** $10,308 (<1%)	8 - 9 **Moderate** $27,063 (2%)	10 - 14 **High** $485,530 (35%)	15 - 25 **Very High** $740,602 (54%)

Figure 57 Risk Matrix: Machinery & Equipment

Levels of Service

The tables that follow summarize the Township's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Township has selected for this AMP.

Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2024)
Scope	Description, which may include images of the types of equipment that the municipality operates and the services that they help to provide to the community	In order to maintain the high quality of public infrastructure and support the delivery of core services, Township staff own and employ various types of machinery and equipment. This includes: • Snowplows for winter maintenance of roads • Fire equipment to support the delivery of emergency services • Computers and technical equipment in municipal offices

Table 32 Community Levels of Service: Machinery & Equipment

Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2024)
Quality	Average condition of equipment	33%
Performance	Capital reinvestment rate	0%

Table 33 Technical Levels of Service: Machinery & Equipment

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Town's ability to afford the PLOS.

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for machinery & equipment. Further PLOS analysis at the portfolio level can be found in Section 6. Proposed Levels of Service Analysis.

Proposed Levels of Service Scenarios

The scenarios for machinery & equipment are analyzed using three funding models: Optimal Budget, Current Funding, and Recommended Funding.

1. The Current Funding scenario is based on the current available funding.

2. The Optimal Funding scenario represents the average annual funding required to maintain or improve the network's condition, allowing for proactive asset management
3. The Recommended Budget scenario is a financial strategy designed to gradually close the funding gap over the next 15 years, which includes a 2.8% yearly tax increase.

Figure 58 compares current, optimal & recommended budget scenarios, and provides a forecast of corresponding average condition of Machinery & Equipment assets.

- The Current Funding scenario for machinery and equipment shows a consistent downward trend. Starting at approximately 26% in 2026, the asset condition declines steadily, entering the very poor range by 2030 and reaching 0% by 2042.
- The Optimal Funding scenario models the investment required to maintain the inventory in a functional state. This scenario shows the condition fluctuating between the poor and fair ranges for most of the forecast before ending in the good range at 60% in 2045.
- The Recommended Funding scenario, which incorporates the 2.8% tax hike, shows the condition remaining in the very poor range for over a decade. After 2037, the increased funding allows the condition to stabilize and eventually improve, ending the 20-year period at approximately 29% in the poor range.

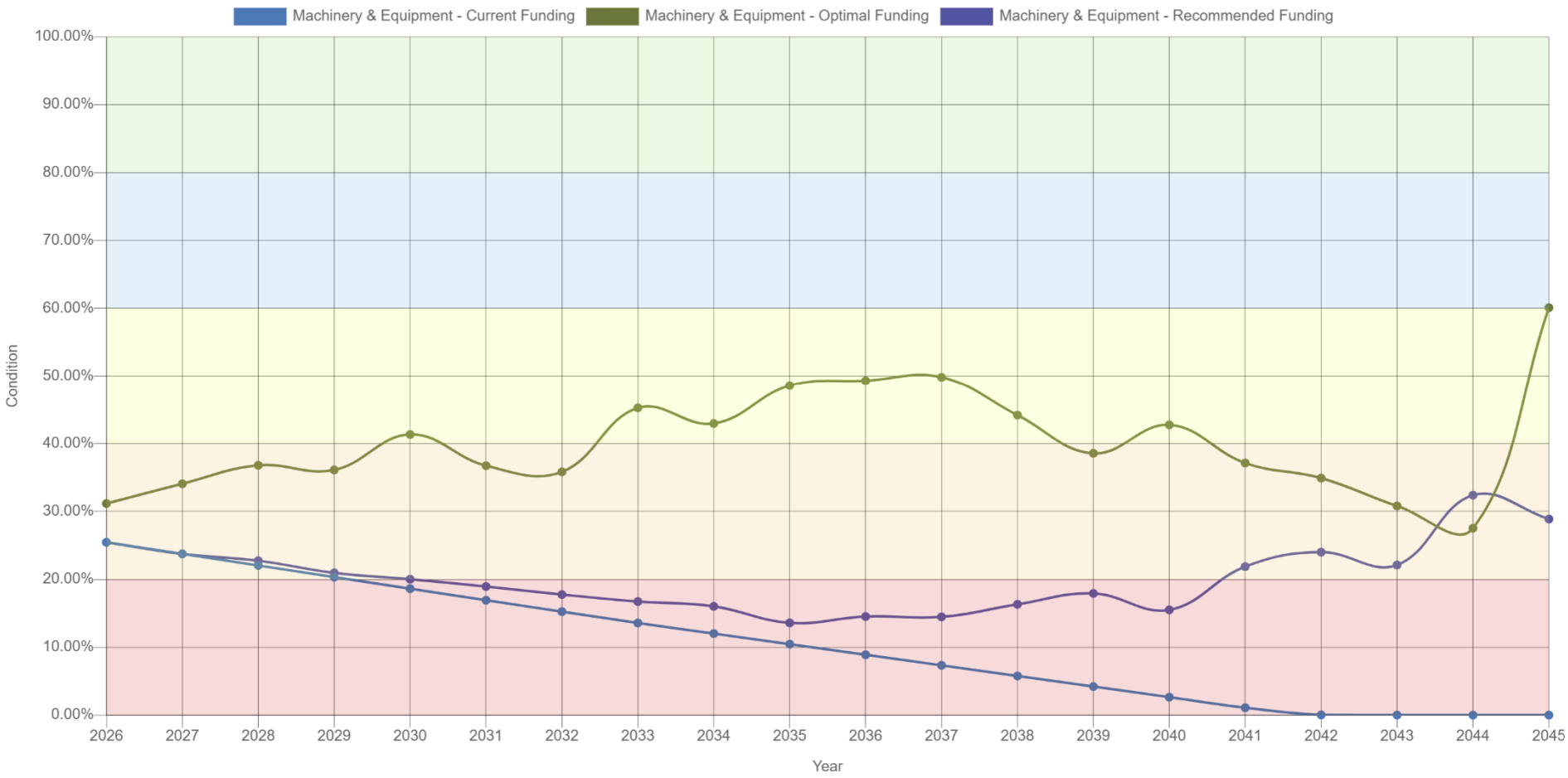


Figure 58: PLOS: Machinery & Equipment – Current vs Optimal vs Recommended Funding (20-year Forecast)

Recommendations

- Implement the recommended 2.8% tax increase over the next 15 years to provide the capital necessary for machinery and equipment renewals. This funding is essential to move these assets out of the very poor condition range projected for the first half of the forecast.
- Develop a prioritized replacement schedule for high-use equipment based on service hours and maintenance history. Aligning the recommended funding with the lifecycle of critical machinery will help reduce the accumulation of deferred maintenance and prevent long-term service interruptions.
- Explore opportunities for cooperative purchasing or joint procurement with neighboring municipalities. Utilizing these partnerships can help the 2.8% tax hike go further by securing better pricing on specialized equipment and ensuring the municipality can maintain a reliable inventory of essential tools.

Risk for Not Maintaining Acceptable LOS

- A decline in equipment condition directly impacts operational efficiency across the municipality. If machinery is frequently down for repairs due to age, staff cannot perform their duties effectively, leading to delays in service delivery for residents.
- Similar to the vehicle fleet, aging equipment becomes increasingly more costly to maintain. Without the capital turnover provided by the recommended budget, the municipality may face higher operating costs to keep older machinery running as parts become harder to source and breakdowns become more frequent.
- Operating with an inventory in the very poor condition range increases the likelihood of sudden equipment failure during critical tasks. This poses a risk to service reliability and could lead to increased downtime as more assets reach the end of their functional life without a funded replacement strategy.

Appendix G – 10-Year Capital Requirements (Proposed Levels of Service)

The tables below summarize the projected costs of lifecycle activities (rehabilitation and replacement) expected over the next 15 years (for tax funded assets) to support the proposed levels of service. These projections are based on a 2.8% annual tax increase for tax-funded assets. The estimates are generated using Citywide, drawing from data in the asset register.

Where available, condition assessments and replacement costs were used to forecast asset replacement needs. For assets lacking condition data, age-based estimates were applied. Projected needs were then compared to available funding, and any shortfalls are reflected as backlog—indicating overdue investment at the time of analysis.

These projections may differ from actual capital forecasts. Ongoing updates to condition data, replacement costs, and lifecycle models will improve alignment between system-generated requirements and the City's capital planning.

Road Network

Table 34: PLOS - 10 Year Capital Requirements: Road Network

Segment	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Road Surface	-	-	-	-	-	-	-	-	$1.2m	$133k
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	$1.2m	$133k

Bridges & Culverts

No Forecasted requirements over the next 10 years.

Buildings

Table 35: PLOS - 10 Year Capital Requirements: Buildings & Facilities

Name	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Buildings	$13k	$16k	$21k	$27k	$35k	$46k	$59k	$77k	$99k	$129k
Emergency Services	-	-	$4k	$5k	-	$26k	$41k	$11k	$37k	-
Public Services	$5k	$3k	$7k	$9k	$3k	$6k	$8k	$25k	$7k	$15k
Total	**$18k**	**$19k**	**$32k**	**$41k**	**$39k**	**$78k**	**$108k**	**$113k**	**$144k**	**$144k**

Land Improvements

Table 36: PLOS - 10 Year Capital Requirements: Land Improvements

Name	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Land Improvements	-	-	-	-	-	-	$14k-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**$14k-**	**-**	**-**	**-**

Vehicles

No Forecasted requirements over the next 10 years.

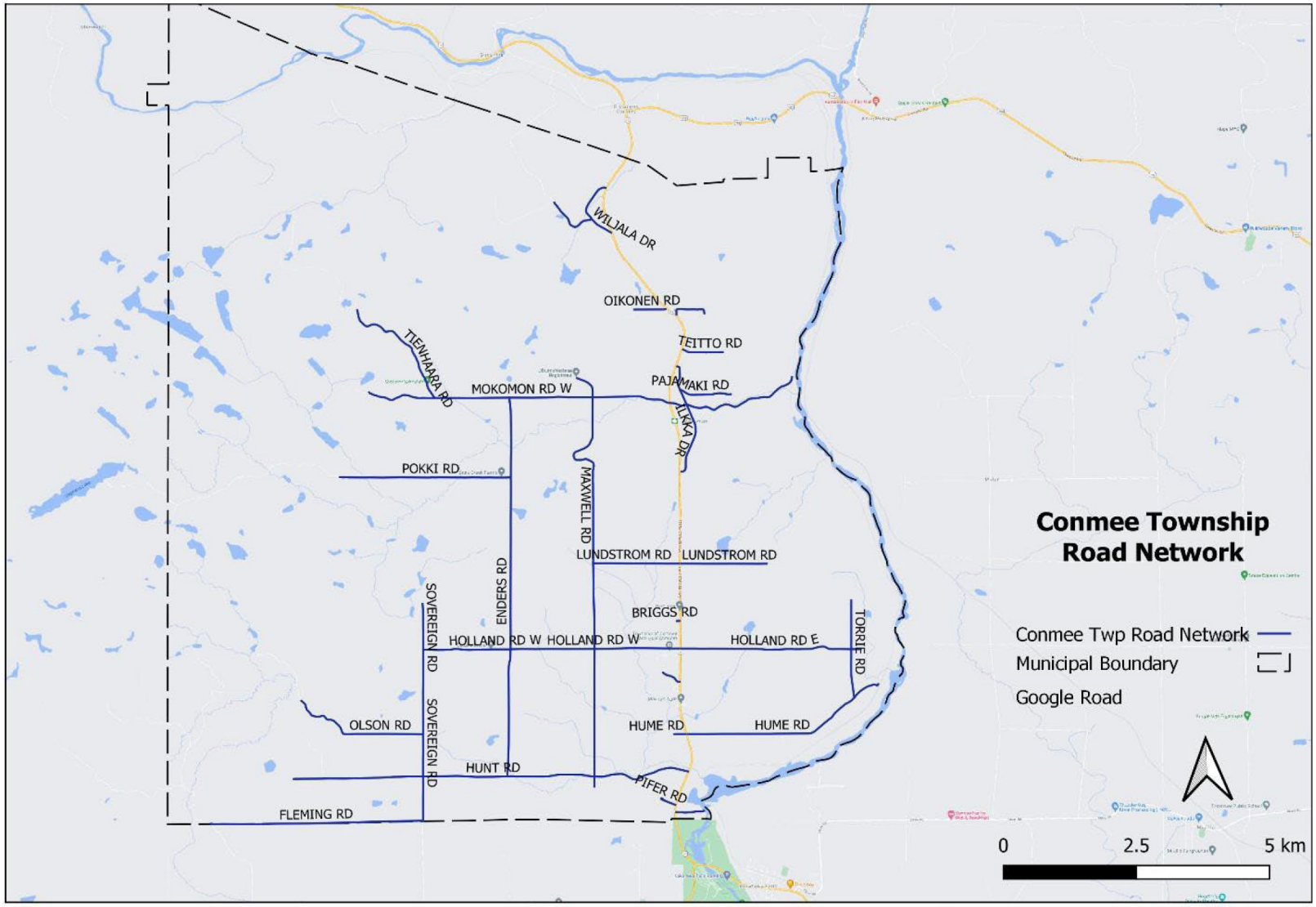
Machinery & Equipment

Table 37: PLOS - 10 Year Capital Requirements: Machinery & Equipment

Name	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Operational Equipment	$13k	$16k	$21k	$27k	$35k	$46k	$59k	$77k	$99k	$129k
Office Equipment	-	-	$4k	$5k	-	$26k	$41k	$11k	$37k	-
Machinery	$5k	$3k	$7k	$9k	$3k	$6k	$8k	$25k	$7k	$15k
Total	**$18k**	**$19k**	**$32k**	**$41k**	**$39k**	**$78k**	**$108k**	**$113k**	**$144k**	**$144k**

Appendix H – Level of Service Maps & Photos

Road Network Connectivity



Bridges & Culverts – Location

Bridges & Culverts – Condition

Example of a bridge in good condition – Maxwell Bridge – BCI: 79

Photo 1: North approach.

Photo 3: Upstream elevation.

Photo 7: South abutment.

Photo 8: Underside of bridge from north abutment.

Photo 11: Deck cross-section.

Photo 12: Northwest embankment.

Example of a bridge in poor condition – Enders Road Bridge – BCI: 57

Photo 1: North approach.

Photo 3: Upstream elevation looking west.

Photo 5: Deck cross-section.

Photo 16: Southwest embankment.

Photo 17: Severe rot at wearing surface planks.

Photo 19: Medium abrasion at curb.

Example of a culvert in good condition – Ilkka Drive Culvert– BCI: 71

Photo 1: North approach.

Photo 3: Upstream elevation.

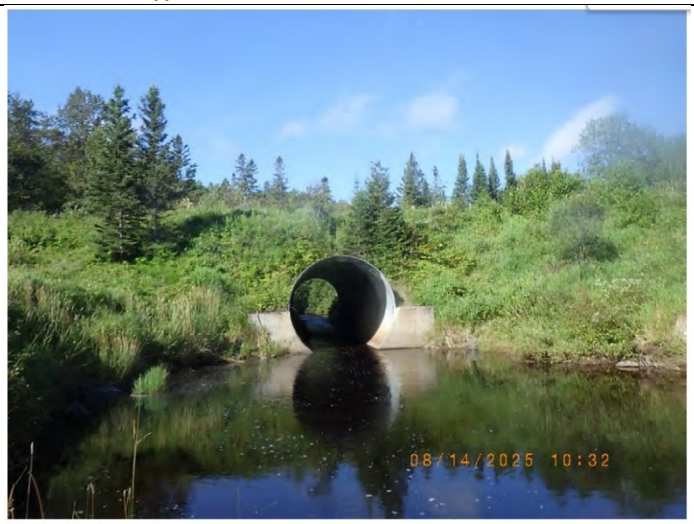


Photo 4: Downstream elevation.

Photo 5: Upstream view.

Photo 11: Scaling at downstream headwall.

Photo 9: Light corrosion at top of barrel.

Appendix I – Risk Rating Criteria

Probability of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
All assets	Economic (100%)	Condition	80 - 100	1
			60- 79	2
			40 - 59	3
			20 - 39	4
			0 - 19	5

Table 38: Probability of Failure: All Assets

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
All Assets	Economic (100%)	Replacement Cost (100%)	0-$10,000	1
			$10,001 - $250,000	2
			$250,001 - $50,0000	3
			$500,001 - $1,000,000	4
			$1,000,001+	5

Table 39: Consequence of Failure: All Assets

The Corporation of the Township of Conmee
Administrative Report

Date: **July 14, 2026**

To: **Mayor and Council**

Subject: **Draft Landfill Attendant Operating Policy**

File Number: **01-A07 – 0000 - Policy Manual**

Submitted by: **Karen Paisley Clerk**

RECOMMENDATION:
That Council approve the Landfill Attendant Operating Policy as presented.

BACKGROUND:
At its regular meeting of April 14, 2026, Council discussed an incident that occurred at the Township Landfill Site and directed staff to determine whether a formal operating policy existed for landfill attendants. Council further directed that, if no policy was in place, a draft policy be prepared for Council's consideration.

The Clerk reviewed the Township's existing policies and procedures and confirmed that while policies are in place respecting bear encounters, fire procedures, and working alone at the landfill site, there is currently no formal operating policy governing routine landfill operations.

DISCUSSION:
The attached Landfill Attendant Operating Policy has been developed to establish consistent operating practices for the safe operation of the Township of Conmee Landfill Site. The policy outlines attendant responsibilities and provides guidance respecting site opening procedures, monitoring activities during operating hours, working alone requirements, emergency response procedures, documentation requirements, and site closing procedures.

The proposed policy formalizes existing operational practices and establishes minimum expectations for site inspections, hazard identification, communication, wildlife monitoring, and reporting of incidents and concerns. It also provides a standardized closing procedure that includes a final inspection of the site and confirmation that all residents, visitors, and vehicles have exited the property before the site is secured.

Prior to presentation to Council, the draft policy was provided to the Public Works Manager for review and comment to ensure the proposed procedures are practical and reflective of landfill operations. Establishing written operating procedures promotes consistency, supports employee and public safety, and provides clear direction for landfill attendants carrying out their duties. The policy is intended to complement the Township's existing Bear Procedures Policy, Conmee Landfill Fire Safety Plan, and Working Alone at the Landfill Site Policy.

Policy No.: 2026-00X Date Approved: Approving Resolution: 2026-xxx Review Date:	Policy: **Landfill Attendant Operating Policy**

Purpose

The purpose of this policy is to establish consistent operating practices for the safe opening, operation, and closing of the Township of Conmee Landfill Site, located at 588 Sovereign Road, and to ensure the safety of employees, residents, and visitors. This policy shall be read in conjunction with the Township's Bear Procedures Policy and Working Alone at the Landfill Site Policy.

Responsibilities

- The Landfill Attendant is responsible for:
- Opening and closing the landfill site.
- Monitoring waste disposal activities.
- Ensuring compliance with landfill rules.
- Maintaining a safe environment for residents and visitors.
- Reporting hazards, incidents, and maintenance concerns.
- Carrying a charged cell phone while on duty.
- Following all applicable Township policies and procedures.

Opening Policy

1. Arrive at the landfill site prior to opening hours.
2. Conduct a drive-through or visual inspection of the site before permitting public access.
3. Check for hazards including:
    - Bears or other wildlife;
    - Fires or smouldering materials;
    - Unauthorized dumping;
    - Vandalism or property damage;
    - Unsafe site conditions.
4. If bears or other wildlife are present, follow the Bear Procedure Policy before opening the site to the public.
5. Ensure a charged cell phone is available and operational.
6. Unlock the entrance gate and open the site to the public at the designated operating time.
7. Report any safety concerns or maintenance issues to the Public Works Supervisor or Roads Liaison.

Operating Policy

During operating hours, the Landfill Attendant shall:

- Monitor all persons entering and using the landfill site.
- Direct residents to the appropriate disposal or recycling locations.
- Observe waste materials being deposited and advise residents of proper disposal requirements.
- Maintain a safe distance from moving vehicles and equipment.
- Wear suitable personal protective equipment, including high-visibility clothing and safety footwear.
- Monitor the site for wildlife activity and implement the Bear Procedure Policy when required.
- Keep the entrance and disposal areas reasonably clear and safe for public use.
- Immediately report any accidents, injuries, threats, fires, or unsafe conditions.
- Refuse acceptance of materials that are prohibited by Township policy or applicable regulations.

Working Alone

The Landfill Attendant shall comply with the Township's Working Alone at the Landfill Site Policy. The attendant shall maintain communication using a cell phone and notify the designated Township contact at the beginning and end of each shift.
If assistance is required due to a medical emergency, threatening behaviour, or other safety concern, emergency services shall be contacted immediately.

Closing Policy

1. Advise any remaining residents that the landfill site is closing.
2. Conduct a final inspection of the entire site.
3. Confirm that all residents, visitors, and vehicles have exited the landfill property before securing the site.
4. Inspect disposal and recycling areas for:
    - Fires or smouldering materials;
    - Wildlife activity;
    - Property damage;
    - Security concerns.
5. Secure the attendant shack and any Township equipment.
6. Lock all entrance gates.
7. Notify the designated Township contact that the shift has ended in accordance with the Working Alone at the Landfill Site Policy.
8. Report any incidents, hazards, complaints, or maintenance concerns before leaving the site.

Emergency Situations

Fire

- Direct all residents to leave the site.
- Contact 9-1-1 immediately.
- Notify the Public Works Supervisor or Roads Liaison.
- Do not place yourself at risk attempting to extinguish a fire.

Wildlife Incident

- Do not approach wildlife.
- Follow the Bear Procedure Policy.
- Suspend public access if public safety is at risk.

Medical Emergency

- Contact 9-1-1 immediately.
- Provide the location of the landfill site.
- Notify Township management as soon as practical.

Threatening Behaviour

- Withdraw to a safe location.
- Contact the OPP or 9-1-1 if required.
- Report the incident to Township management.

Documentation

The Landfill Attendant shall document and report:

- Accidents and injuries;
- Wildlife encounters;
- Resident complaints;
- Property damage;
- Fires;
- Unauthorized dumping;
- Any safety concerns identified during inspections.

Failure to follow this policy may result in disciplinary action and could place the health and safety of employees and the public at risk.

The Corporation of the Township of Conmee
Administrative Report

Date: **July 14, 2026**

To: **Mayor and Council**

Subject: **2023–2025 Water Quality Assessment Report – Conmee Waste Disposal Site – Sovereign Road Landfill**

File Number: **13-E02-2025 – Water Quality Reports**

Submitted by: **Karen Paisley Clerk**

RECOMMENDATION:
That Council receive the 2023–2025 Water Quality Assessment Report for the Conmee Waste Disposal Site prepared by North Rock Engineering Inc. for information.

BACKGROUND:
The Township's Environmental Compliance Approval requires regular groundwater monitoring and reporting for the Waste Disposal Site. North Rock Engineering Inc. completed the required monitoring activities for 2023, 2024 and 2025 and has submitted the attached comprehensive report.

The report has already been submitted to the Ministry of the Environment, Conservation and Parks in order to meet the required reporting deadline.

DISCUSSION:
Overall, the report contains positive findings. North Rock concluded that groundwater conditions remain generally consistent with previous years and that no significant new environmental concerns were identified. No contingency response actions are required at this time.

The report indicates that groundwater monitoring will continue to be required and recommends that the Township maintain its regular monitoring program. North Rock recommends continuing groundwater monitoring three times annually in 2026, 2027 and 2028, with summary monitoring reports submitted in 2027 and 2028 and a new comprehensive assessment report prepared following the 2026–2028 monitoring period.

North Rock estimates that the landfill has approximately 7,482 cubic metres of remaining capacity, representing an estimated remaining lifespan of approximately eight years based on current disposal rates. The consultant recommends that the Township continue planning for future landfill expansion or closure requirements to ensure long-term waste disposal capacity.

A 2025 survey identified several areas requiring regrading and noted a small area of waste placement outside the approved landfill footprint. Administration has discussed this matter

with North Rock Engineering, who advised that such situations are not uncommon and can typically be addressed through future landfill design work. As the Township continues to evaluate future landfill expansion options, administration will work with North Rock Engineering and Public Works to ensure the area is addressed as part of ongoing landfill planning.

Groundwater monitoring and reporting are ongoing requirements of the Waste Disposal Site and future costs may be associated with landfill expansion planning, monitoring infrastructure, and any corrective work arising from future operational reviews.

The report concludes that the Conmee Waste Disposal Site is operating without significant environmental concerns and that groundwater conditions remain generally consistent with historical monitoring results. Administration will continue to monitor the recommendations contained within the report and advise Council of any future actions required.

2023 - 2025 WATER QUALITY ASSESSMENT

Conmee Waste Disposal Site

Township of Conmee, Ontario

Prepared By:

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1 INTRODUCTION

North Rock Engineering Inc. (North Rock) was retained by Conmee Township (Conmee) to complete the 2023 to 2025 water quality monitoring and comprehensive monitoring report for the Waste Disposal Site (WDS) located on Sovereign Road in Conmee Township, Ontario (Figure 1), hereinafter referred to as the "Site".

The purpose of the work was to provide Conmee with a current assessment of water quality conditions at the Site in accordance with the Ontario Ministry of the Environment, Conservation, and Parks (MECP) Environmental Compliance Approval (ECA) No. 8454-4Z8J3V dated December 19, 2016 (Appendix A).

1.1 Background

The Site is governed under MECP ECA No. 8454-4Z8J3V, dated December 19, 2016 (Appendix A). This ECA replaced and revoked the previous ECA issued on October 10, 2001, and Notice Nos. 1 through 3. The current ECA approves the use and operation of a 1.0-hectare (ha) landfilling area within a 17.5 ha total site area to be used for the landfilling of domestic, solid, non-hazardous waste and for use as a waste transfer facility.

1.2 Scope of Work

The scope of work for the 2023 to 2025 comprehensive report is as follows:

- Record static groundwater levels from seven groundwater monitoring wells (BH5, BH6, BH7, BH8, BH9, BH10 and BH11) and standpipe (SP03) three times per year (spring, summer, and fall).
- Complete groundwater monitoring and sampling from seven groundwater monitoring wells (BH5, BH6, BH7, BH8, BH9, BH10 and BH11) three times per year (spring, summer, and fall) in 2023, 2024, and 2025, and submit the samples to an accredited laboratory for analysis of the required parameters.
- Prepare a comprehensive monitoring report in 2025 documenting the monitoring and sampling in 2023, 2024 and 2025 documenting field data, laboratory analytical data, historical results, water quality trends over time, ECA compliance. Where required, provide recommendations for consideration. The report is to be issued to the District Manager.

This report satisfies Condition 6(6) – Monitoring Report of the ECA.

2 SITE SETTING

2.1 Location

The Site is located at the terminus of Sovereign Road in the Township of Conmee, approximately 8 km northwest of Kakabeka Falls, Ontario (Figure 1). The waste disposal site (WDS) footprint is surrounded by vacant, forested land to the north and south; Holland Road to the west; and Enders Road to the east. The boundaries of the Site and the contaminant attenuation zone (CAZ) are shown on Figure 1.

2.2 Topography

The elevation of the Site is approximately 429 metres above sea level (masl) according to the Ontario Ministry of Natural Resources and Forestry Land Information Ontario (LIO). Sovereign Road is at an elevation of approximately 465 masl.

The topography of the Site peaks along the orientation of the access road to the landfill and slopes away from the disposal area to the northwest and towards the disposal area to the southwest. The slope towards the landfill on the southwest slope is estimated to be approximately 7%.

2.3 Geology

Based on Ontario Geological Survey (OGS) 2000. Quaternary Geology, Seamless Coverage of the Province of OGS, Data Set 14---Revised. (Scale 1:100,000), overburden geology consists of undifferentiated igneous and metamorphic rock, exposed at surface or covered by a discontinuous, thin layer of drift.

Based on OGS 2011. (Scale 1:250 000), Bedrock Geology of Ontario; OGS, Miscellaneous Release---Data 126-Revision 1, the bedrock geology at the Site consists of mafic and ultramafic rocks as well as felsic to intermediate metavolcanic rocks Dacitic and andesitic flows, tuffs, and breccias.

Based on a review of available borehole logs for the monitoring wells installed at the Site, subsurface soil conditions generally consist of a thin layer of topsoil (approximately 0.06 m to 0.15 m thick) underlain by clay. The clay ranged in thickness from 0.65 m to 2.9 m. In two locations (BH02 and BH03), the topsoil was underlain by a sand layer approximately 1 m thick. Underlying this clay and sand in boreholes BH01 to BH04 is a layer of sandy till to the maximum depth of investigation of 5.0 metres below ground surface (mbgs). In all remaining locations, with the exception of BH07, the clay layer was underlain by silt or sandy silt. Monitoring well BH07 was the only location where topsoil was not found; shallow stratigraphy at BH07 consisted of peat underlain by clay.

2.4 Hydrology

The nearest waterbodies are swamps, with the closest swamp approximately 50 m northwest of monitoring well BH07. Surface water drainage from the access road and lands north and west of the waste disposal area flows to the

northwest, eventually reporting to Brule Creek, which drains to the Kaministiquia River. Surface water drainage from the waste disposal area and lands to the south and east of the access road flows southeast to a wetland feature located approximately 800 m southeast of the Site.

The Ontario Watershed Information Tool (OWIT) was consulted to investigate sub-watershed catchment delineations on the Site. Consistent with historical interpretations, OWIT indicates that the Site is situated on a local watershed divide, with the entrance road reporting to the west-northwest and eventually to an unnamed creek. Drainage from the waste disposal area and lands to the south/east of the access road reports to a wetland feature approximately 800 m southeast of the Site. The overall watershed for the wetland feature has a catchment area of 3,765 hectares (ha) and encapsulates the entire landfill area. The catchment area was defined by selecting a pour point on an unnamed creek, approx. 300m upstream of the Kakabeka Falls Dam. The tool (OWIT) identified a watershed running in a northeasterly direction in line with the landfill access road. The second catchment area was created by selecting a pour point contingent on the outflow of Brule Creek, which drains to the Kaministiquia River. This watershed indicates that the entrance road and lands north and west of the WDS report to this location. This larger catchment (5,615 ha) shares the divide with the smaller catchment on its southeastern extents, with the divide running along the ridge directly west of the waste disposal area. This watershed divide is consistent with the annual groundwater contours for the Site as shown in Figures 2, 3, and 4. Figure 7 provides a graphic delineation of the local sub-watersheds discussed.

2.5 Hydrogeology

Based on *OGS, Ministry of Northern Development and Mines, and Northeast Science and Information Section, Ministry of Natural Resources, 2005. Digital Northern Ontario Engineering Geology Terrain Study (NOEGTS); OGS, Miscellaneous Release--Data 160*: the landfill property is located on a low-relief ground moraine composed of till, with mixed wet and dry drainage.

The primary pathway for groundwater flow at the Site is through the overburden materials as well as upper weathered bedrock or through the overburden bedrock contact sediments. Groundwater likely migrates southeast through the overburden towards an identified surface water feature. The actual groundwater flow direction on the east side of the Site, as derived from groundwater elevations, is to the southeast.

3 METHODOLOGY

3.1 Site Operations

North Rock requested the following site operations information from the Township of Conmee for the years 2023, 2024, and 2025:

- Operational difficulties and/or complaints, and
- Waste volume disposal estimates.

3.2 Monitoring Well Installation

On February 1, 2024, one borehole was completed as a monitoring well (BH11) and was installed approximately 100 m northwest of BH10. Multiple attempts were made to install the new well adjacent to BH10, but all attempts were abandoned due to refusal on shallow bedrock and/or dry overburden conditions. The decision was made to adjust the well location to an area with sufficient overburden material and available groundwater to be able to better characterize downgradient leachate migration.

An experienced North Rock environmental field technician supervised the drilling and logged the borehole to document the soil conditions encountered (e.g., soil type, texture, moisture, colour, odour, etc.) and depth to the apparent groundwater table. No soil samples were collected as part of this well installation. The borehole was completed as a groundwater monitoring well, installed to a total depth of 3.86 m below ground surface (mbgs) in the overburden.

The installation of BH11 addresses ECA Condition 8(15), which required the Owner to assess the need for replacement of BH10 and the adequacy of the groundwater monitoring program. BH11 has been incorporated into the regular groundwater monitoring program as a replacement downgradient monitoring location.

3.3 Monitoring Program

Groundwater sampling was completed at seven locations across the Site in the spring, summer and fall of 2023, 2024, and 2025 (Figure 1). Borehole logs are provided in Appendix B, and field notes are summarized in Table 1.

Table 3-1: 2023-2025 Monitoring and Sampling Locations

Sample IDs	Description
BH5, BH6, BH7, BH8, BH9, BH10, BH11	Sampled wells
SP03	Standpipe – static water level measured

In 2023, 2024, and 2025, BH10 could not be sampled due to insufficient water volume in the well. In 2024, BH11 had insufficient water volumes during the spring (June 4) and fall (October 2) sampling events and was not sampled; a

sample was successfully collected during the summer (August 2) event only. BH11 was found to have insufficient water during all events in 2025.

In 2024 and 2025, additional sampling locations were included in the monitoring program to prepare for the Township of Conmee's proposed landfill expansion. In 2024 and 2025, monitoring wells BH5, BH7 and BH8 were sampled three times per year in spring, summer and fall.

3.4 Groundwater Monitoring and Sampling Protocol

The following groundwater monitoring and sampling protocols were used during all sampling events.

For each monitoring event, a monitoring well inventory was completed, and the conditions of the monitoring wells were assessed and documented. Where the need for well repairs was identified, recommendations for repair were made. Static water level measurements were made relative to the top of the riser pipes using an electronic water level meter.

Following static water level measurements, standing water was purged from the monitoring wells to obtain fresh formation water for collection and analysis. Dedicated inertial foot valves and polyethylene tubing were used to purge approximately three well casing volumes of groundwater prior to sample collection. While purging, the groundwater was physically assessed for evidence of leachate impact, such as colour and/or odour; this information was documented in the field notes. Field chemistry parameters of pH, temperature and conductivity were measured at regular intervals before, during and after purging. Once field chemistry parameters had stabilized within acceptable tolerances, as described in the Canadian Council of Ministers of the Environment (CCME) document *Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment , Volume 3, Suggested Operating Procedures* (2016), sampling was completed. Stabilization was considered to have occurred when three consecutive readings of pH were within 0.1 units, three consecutive readings of conductivity were within 3%, and three consecutive temperature readings were within 0.2 degrees Celsius.

Samples were collected directly from the dedicated sampling equipment into laboratory-supplied sample bottles. Groundwater samples for major anions, major cations and dissolved metals were field-filtered using 0.45-micron inline filters directly into the laboratory-supplied bottles. Where applicable, sample bottles were pre-charged by the laboratory with preservative.

All collected samples were stored and shipped in coolers equipped with ice packs to maintain a consistent temperature during shipping. One blind duplicate groundwater sample was collected for each sampling event to assess sampling and/or laboratory bias.

3.5 Laboratory Analysis

Chemical analysis of the water samples was conducted by two accredited independent laboratories: ALS Canada Ltd. (ALS Environmental – Thunder Bay) analyzed samples for the 2023 and 2024 events as well as the 2025 spring sampling

event. Testmark Laboratories Ltd. (Thunder Bay) analyzed samples for the 2025 summer and fall sampling events. Analyses were performed following recognized standard methodologies. Laboratory Certificates of Analysis are provided in Appendix E.

The 2023 to 2025 analytical program for groundwater was generally consistent with Schedule B of the ECA and is summarized below:

Table 3-2: 2023 to 2025 Analytical Program

Sample Year	Matrix	Sample ID	Frequency	Parameters
2023	Groundwater	BH6, BH9, BH10	Twice annually (Spring and Fall)	Column 2 of Schedule 5 (Indicator List) of the Landfill Standards
			Once annually (Summer)	Column 1 of Schedule 5 (Comprehensive List) of the Landfill Standards
		BH5, BH7, BH8	Twice annually (Spring and Fall)	Column 2 of Schedule 5 (Indicator List) of the Landfill Standards
2024/ 2025	Groundwater	BH5, BH6, BH7, BH8, BH9, BH10, BH11	Twice annually (Spring and Fall)	Column 2 of Schedule 5 (Indicator List) of the Landfill Standards
			Once annually (Summer)	Column 1 of Schedule 5 (Comprehensive List) of the Landfill Standards

3.6 Quality Assurance/Quality Control (QA/QC)

Field QA/QC was established by following procedures outlined in the MECP manual *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, 1996 (MECP, 1996) and the Canadian Council of Ministers of the Environment (CCME) *Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 1, Guidance Manual* (2016).

Dedicated sampling equipment was used to sample each well to prevent sample cross-contamination. New, clean disposable nitrile gloves were worn during purging and sampling and then discarded and replaced between sample locations to prevent cross-contamination and to maintain sample integrity.

Following sampling, sample containers were carefully packaged to prevent breakage and placed in chilled coolers equipped with ice packs. The coolers were delivered under Chain of Custody (COC) to the analytical laboratory for analysis.

The following field duplicate samples were also collected for groundwater and submitted to the laboratory for quality control purposes to check analytical consistency. Results for internal laboratory QC analyses (such as duplicate samples, standards, blanks and matrix spikes) were requested and reviewed.

Blind duplicate samples were collected for quality control purposes and to verify analytical consistency from groundwater sampling locations as follows:

Table 3-3: Groundwater Duplicate Samples

Sampling Event	2023		2024		2025	
Sampling Event	Sample ID	Duplicate ID	Sample ID	Duplicate ID	Sample ID	Duplicate ID
Spring	BH9	BH20	BH9	Duplicate	BH5	Duplicate
Summer	BH9	DUP	BH6	Duplicate	BH9	Dup
Fall	BH9	DUP	BH6	Duplicate	BH5	GW Dup

Relative Percent Difference (RPD) was used to calculate the analytical precision of the duplicate samples collected at the Site. A conservative RPD value of 20%, in accordance with guidance provided in the MECP document *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act* (2011), was selected to trigger an assessment of the original and duplicate results.

RPD was calculated based on the following formula:

$$RPD\% = \left| \frac{(X_1 - X_2)}{\left(\frac{X_1 + X_2}{2}\right)} \right| x\ 100$$

where X_1 and X_2 are the original and duplicate concentrations being compared.

Ion balances for groundwater were calculated and reported by the laboratory and compared to the acceptable difference outlined in Standard Methods (American Public Health Association, APHA, 2017) as a check on the analytical results.

Results for internal laboratory quality control (QC) analyses (such as duplicate samples, standards, blanks and matrix spikes) were also requested and reviewed (Appendix C).

3.7 Water Quality Assessment Criteria

The groundwater data have been referenced to criteria calculated based on methods outlined in MECP Guideline B-7, commonly known as the *Reasonable Use Guideline* (RUG). RUG allows off-site impact from disposal sites within

established guidelines based on the reasonable use of the downgradient groundwater now or in the future to allow for attenuation of impacts while protecting existing and potential downgradient groundwater users. Typically, the reasonable use of the groundwater is for drinking water purposes and the criteria are calculated based on the *Ontario Drinking Water Quality Standards* (ODWQS). When based on the ODWQS, the guideline allows for increases of up to 25 or 50 percent of the difference between background concentrations and the ODWQS for health-related and non-health related parameters, respectively.

For compliance purposes, the RUG criteria apply only in groundwater at the designated boundary (typically the property or attenuation zone boundary). As used historically, RUG criteria have been calculated based on background levels considered to be represented by the average of the median of results from the past five years of monitoring results from BH06.

3.8 Water Characterization Plots

Time series graphs were completed for various parameters including pH, conductivity, nitrate, total dissolved solids (TDS), dissolved organic carbon (DOC), iron, manganese, and sulphate for on-site groundwater to assess water quality trends over time (Appendix D).

Durov plots were prepared to provide quantitative water quality characterization of historical groundwater results from each monitoring well (Zaporozec, 1972). The Durov plots are provided in Appendix E.

3.9 Trigger and Contingency Plan

A groundwater trigger program and contingency plan were developed to evaluate the necessity of implementing remedial actions if downgradient potable groundwater aquifers are impacted by the Site. Monitoring wells BH06 and BH09 were selected as the trigger locations for the Site, and a summary of the trigger parameters and criteria is provided in the following table.

Table 3-4: Groundwater Trigger Program

Parameters	Trigger Criteria (mg/L)
Chloride	103
Sodium	125

A trigger response is required if any of the trigger criteria are exceeded for any sampling event. The first step in the contingency plan will involve a comprehensive review of the long-term trends at the triggered locations, as well as a comprehensive assessment of site activities and conditions that could be contributing to the apparent impacts. This process would involve a detailed written report prepared in consultation with the MECP that identifies, to the extent possible, the causes of the impact(s) and potential mitigation strategies. The report would also outline the response from the environment that could be expected from the mitigation efforts, including the timeline for measurable improvement. Recommendations for further assessment and response (such as site-specific risk assessment, site-specific criteria development, aquatic biological assessment, etc.) would be addressed by this report.

4 RESULTS

4.1 Site Operations

No significant operational difficulties or public complaints related to the Site were reported by Conmee for 2023, 2024 or 2025.

In 2024, one public complaint was received by Conmee regarding access to the recyclable waste area. The complaint was brought to the attention of the public works supervisor and was immediately rectified.

4.2 Waste Volume Survey

The ECA-approved site volume is 25,750 m^3. In December 2025, a detailed topographical survey was completed by North Rock utilizing the same geodetic benchmarks previously established to determine the remaining waste capacity at the Site. The total remaining waste capacity was calculated to be 7,482 m^3. Based on the difference in the *in-situ* volume from 2022 to 2025 (4 years), the annual fill rate was estimated to be approximately 879 m^3/year. A cut/fill drawing is provided as Figure 6.

Based on this annual fill rate (879 m^3/year), the remaining waste capacity at the Site as of December 2025 was calculated to be 7,482 m^3, with a remaining lifespan of approximately 8 years. It is recommended that the Site undergo an annual volumetric survey to ensure accurate reporting of the remaining waste capacity, and to ensure that waste and final cover placement align with the final approved closure design. Based on the December 2025 topographical survey, there are several areas that require regrading, as they are over the approved final closure design. In addition, an area of waste placement was identified outside of the approved footprint, on the northeast portion of the Site.

4.3 Field Testing

4.3.1 Monitoring Well Conditions

Groundwater monitoring wells were generally found to be in good condition between 2023 and 2025 with the following exceptions:

2023

- In May 2023, it was noted that the Waterra foot valves and polyethylene tubing inside BH07 and BH08 would require replacement if the wells were to continue to be sampled. New, dedicated Waterra equipment was subsequently installed prior to the summer 2023 sampling event.
- BH10 could not be sampled during any of the three 2023 sampling events (May, July, and September) due to insufficient water volumes in the well. A static water level was recorded in May and July 2023; however, the well was found to be dry in September 2023.

- An attempt was made in May 2023 to install a replacement monitoring well (BH11) for BH10; however, due to significant rainfall in the days leading up to the installation, the drill rig was unable to travel the access path to the installation location. The decision was made to defer the installation until frozen ground conditions could be achieved.
- SP04 remained out of service, having been damaged in May 2021; the riser inside the protective casing was no longer visible, and the inside of the casing appeared burnt. Static water levels could not be obtained from SP04.

2024

- On February 1, 2024, a new monitoring well (BH11) was successfully installed by RPM Drilling, an MECP-licensed driller, at a total depth of 3.86 m below ground surface (mbgs). BH11 was installed approximately 100 m northwest of BH10, as multiple attempts to install the replacement well adjacent to BH10 were abandoned due to the shallow depth of bedrock and lack of available groundwater in that area. BH11 was equipped with dedicated sampling equipment consisting of new, clean polyethylene Waterra tubing and an inertial foot valve.
- BH10 remained dry during all three 2024 sampling events (June, August, and October), and no samples or static water levels could be obtained.
- BH11 had insufficient water to sample during the spring (June 4) and fall (October 2) 2024 events; a sample was successfully collected during the summer (August 2) event only.
- BH8 had insufficient water to collect a sample during the fall (October 2) 2024 event.
- The Waterra foot valves and polyethylene tubing in BH8 were noted to require replacement and were sent to the laboratory for cleaning and re-installation (F&P in lab) during the summer 2024 event.
- SP04 continued to be out of service; static water levels could not be obtained.

2025

- During the spring 2025 sampling event (May 26, 2025), BH10 and BH11 were not sampled. BH10 has remained consistently dry, and BH11 continued to have insufficient water volumes to collect a representative sample.
- All other active monitoring wells (BH5, BH6, BH7, BH8, and BH9) were in good condition and successfully sampled during the spring 2025 event.
- SP04 remained out of service.

4.3.2 Groundwater Levels

The 2023 to 2025 groundwater elevations are summarized in Table 1 and the historical groundwater data is provided in Appendix E. A summary of the range of groundwater elevations from 2023 to 2025 is provided below.

Table 4-1: 2023 – 2025 Groundwater Elevations (masl)		
Year	**Min**	**Max**
2023	440.86 (BH10 - Jul)	460.82 (SP03 - May)
2024	447.16 (BH7 – Oct)	460.40 (SP03 – Jun)
2025	447.22 (BH11 – Jul)	460.47 (SP03 – Jul)

When plotted on a plan and contoured, the water level elevations indicate the general shape of the groundwater table. A groundwater divide is present west of the waste disposal area, with groundwater on the west side of the fill area flowing to the northwest and groundwater on the east side of the fill area flowing to the southeast toward a surface water feature, as shown on Figures 2, 3, and 4.

The horizontal hydraulic gradient was calculated for each monitoring year using groundwater elevations measured at SP03 (upgradient) and BH9 (downgradient), representing the primary southeast flow path across the waste area over an approximate distance of 110 m. The calculated average annual hydraulic gradients are summarized below:

- 2023: Average hydraulic gradient ≈ 0.074 (range: 0.071–0.077 across spring, summer, and fall events)
- 2024: Average hydraulic gradient ≈ 0.077 (range: 0.076–0.079 across spring, summer, and fall events)
- 2025: Average hydraulic gradient ≈ 0.081 (range: 0.076–0.086 across spring, summer, and fall events)

The hydraulic gradient remained relatively consistent across the 2023–2025 monitoring period, with a slight increasing trend observed from 2023 to 2025. Note that BH10 was dry during all sampling events from 2023 to 2025 and could not be used for gradient calculations during this period.

Assuming a hydraulic conductivity of 0.05 m/day and an effective porosity of 0.50 for clay (Freeze & Cherry, 1979), the estimated horizontal groundwater velocity across the Site ranged from approximately 0.007 to 0.008 m/day (2.7 to 2.9 m/year) over the 2023 to 2025 monitoring period, indicating very slow groundwater movement consistent with the low-permeability clay/till overburden at the Site.

4.3.3 Field Testing Results

Field testing results for groundwater are provided in Tables 2, 3, and 4. Field testing results for pH, temperature, and conductivity are summarized below for the years 2023 to 2025:

Table 4-2: Groundwater Field Testing Results		
Field Parameter	**Min**	**Max**
2023		
pH	7.19 (BH7 - May)	8.88 (BH6 – Jul)
Temperature (°C)	8.0 (BH5 – Sep)	12.7 (BH6 – May)
Conductivity (µS/cm)	89 (BH9 – May)	1690 (BH9 – Sep)
2024		
pH	6.66 (BH8 - Aug)	8.46 (BH5 – Jun)
Temperature (°C)	9.2 (BH9 – Jun)	15.8 (BH8 – Aug)
Conductivity (µS/cm)	120 (BH8 – Jun)	1533 (BH9 – Oct)
2025		
pH	6.35 (BH8 – May)	7.93 (BH5 – Jul)
Temperature (°C)	6.4 (BH5 – May)	14.5 (BH8 – 14.5)
Conductivity (µS/cm)	108 (BH8 – May)	1306 (BH9 – Sep)

Field testing results measured in 2023, 2024, and 2025 are within historical ranges. Field chemistry results were also generally consistent with laboratory values, indicating confidence in field measurements.

4.4 Water Quality

Analytical results for the year 2023 through to 2025 have been summarized in Tables 2, 3, and 4. The Laboratory Analytical Reports are provided in Appendix D. Historical Analytical Results are presented in Appendix E. In addition, time series graphs of selected indicator parameters to illustrate water quality characteristics over time are presented in Appendix C.

4.4.1 Background Water Quality

Background water quality is characterized by water from BH6 and BH7.

RUG criteria exceedances were variously measured for iron, DOC and dichloromethane in BH6 and BH7, as follows:

Table 4-3: Summary of RUG Exceedances – Background Water Quality 2023 – 2025 Comprehensive Report						
Parameter	**BH6**			**BH7**		
	2023	**2024**	**2025**	**2023**	**2024**	**2025**
Iron	●□◆	□	□◆	●		
DOC			◆			
Notes: ● - spring; □ - summer; ◆ - fall						

Only iron exceeded the calculated RUG criterion in BH7 in spring of 2023. No other RUG criteria exceedances were measured at BH7.

Iron exceeded its calculated RUG criterion at BH6 fairly consistently. DOC also exceeded the calculated RUG criterion at BH6 in the fall of 2025.

The results confirm that BH6 and BH7 are considered to reasonably represent background unimpacted groundwater quality at the Site.

4.4.2 Source Groundwater

Source groundwater conditions are best represented by SP03 and BH9, located immediately downgradient of the toe of the waste disposal site. No analytical data exists for SP03.

Water quality at BH9 exhibits the highest concentrations of leachate-indicator parameters when compared to water quality at all other groundwater monitoring wells. Leachate-impacted groundwater is characterized by RUG criteria exceedances for TDS, DOC, and iron, and elevated concentrations of conductivity, alkalinity, chloride and sulphate.

RUG criteria exceedances were measured at BH9 for the following:

Table 4-4: Summary of RUG Exceedances – Background Water Quality 2023 – 2025 Comprehensive Report

Parameter	BH9		
	2023	2024	2025
TDS	☐◆	☐◆	☐◆
DOC	●☐◆	●☐◆	●☐◆
Iron	●		◆
Manganese			☐
Notes: ● - spring; ☐ - summer; ◆ - fall			

4.4.3 Downgradient or Cross-Gradient Groundwater

Monitoring well BH5 is located west of the disposal area and is considered to capture cross-gradient groundwater on the north side of the groundwater divide.

Monitoring wells BH8 and BH11 are located northeast and southwest of the disposal area and represent cross-gradient groundwater quality on the south side of the groundwater divide. BH10, located south to southeast of the fill area, represents downgradient groundwater quality at the Site.

BH10 is perpetually dry and groundwater samples could not be collected at this location in 2023, 2024 or 2025. BH11 was samples in spring and summer of 2024 but has been dry since the fall of 2024 and could not be sampled in 2025.

RUG criteria exceedances were variously measured for DOC, iron and manganese at BH8 and BH11, as shown below.

Table 4-5: Summary of RUG Exceedances – Cross and Downgradient Water Quality 2023 – 2025 Comprehensive Report

Parameter	BH8			BH11		
	2023	2024	2025	2023	2024	2025
Iron	●	●□	●□	-	□	-
DOC		●□	□◆	-		-
Manganese		□		-		-

Notes: ● - spring; □ - summer; ◆ - fall
"-" – not sampled; well installed in 2024 and dry in 2025.

The results indicate some leachate influence at BH8, although concentrations of leachate-indicator parameters were generally lower than those measured at BH9, located immediately downgradient of the toe of the disposal site.

A summary of the observed trends from 2023 to 2025 is provided in the table below.

Table 4-6: 2023 to 2025 Time Series Trends

Parameters	BH5	BH6	BH7	BH8	BH9
DOC	↓	X	↑	↑	X
pH	X	X	X	X	X
Sulphate	↑	X	X	↓	↓
Iron	--	X	↓	↓	--
Manganese	↑	↑	↓	↓	↑
Nitrate	↓	--	X	--	X
Conductivity	↑	X	--	↑	X
TDS	X	X	↑	↑	X

↑ = Increasing, ↓ = Decreasing, X = No Trend, -- = Stable

BH5 and BH7 were added to the monitoring program in 2023; trend assessments for these wells are based on limited data spanning the 2023–2025 monitoring period only. Iron concentrations at BH9 have remained consistently elevated above the RUG criteria throughout the 2023–2025 monitoring period with no clear directional trend.

4.5 Trigger and Contingency Plan

From 2023 to 2025, there were no trigger criteria exceedances during any of the sampling events. Based on these groundwater results, no trigger response or contingency response is required at this time.

4.6 QA/QC

4.6.1 Field Duplicates

Duplicate results are summarized in Tables 5, 6, and 7 for groundwater. Blind duplicates for groundwater were collected from well BH9 during all three events in 2023, from BH9 during the spring and BH6 during the summer and fall in 2024, and from BH5 during the spring and fall and BH9 during the summer in 2025. Relative percent difference (RPD) calculations of the duplicates were completed using a 20% RPD threshold between the two values as a trigger to evaluate potential sampling or water quality issues.

A summary of RPD exceedances in 2023, 2024, and 2025 for groundwater are provided below.

Table 4-7: RPD Exceedances

Parameter	2023	2024	2025
TSS	□	□◆	◆
TDS			□
DOC			●
COD		◆	●
Alkalinity			●
Nitrate			●
Sulfate	●	●◆	
Calcium	□		
Chloride			
Barium		◆	
Iron	●	◆	◆
Magnesium	□		
Manganese	□	□	
Sodium	□		

RPD outliers are likely related to sample inhomogeneity and or laboratory bias.

4.6.2 Ionic Balance

Based on the Standard Methods, the acceptable percent difference for ion balances with the anion concentrations present in these samples is 2% to 5%, dependent on the anion concentration. Since these standards are difficult, in practice, to meet due to the highly variable nature and matrices of field samples, 10% is generally considered acceptable. However, the chemistry of groundwater affected by leachate can be complex and should not necessarily be expected to meet this electrochemical balance, since other charged ions not considered may have a significant impact on the balance. Therefore, only the anion-cation balances of background monitoring wells are considered in detail, or where the sources of error were identified.

In 2023, the ion balance percent differences were less than 10% for all groundwater samples, with the exception of BH5 in May (−20.9%), BH6 in July (−24.3%) and September (−22.9%), BH8 in September (−55.9%), BH9 in May (−20.6%), and the duplicate of BH9 in May (−36.2%).

In 2024, the ion balance percent differences were less than 10% for all groundwater samples, with the exception of BH7 in May (−21.7%), July (−18.3%), and September (−21.8%), BH9 in May (−26.0%) and July (8.99%), and the duplicate of BH9 in May (−19.4%).

In 2025, the ion balance percent differences were less than 10% for all groundwater samples, with the exception of BH5 in May (−12.0%), BH9 in July (−21.1%), and the duplicates of BH5 in May (−20.9%) and BH9 in July (−18.7%).

These ion balance exceedances are likely due to not all parameters required to complete the calculation being analyzed. Based on the ion balances, the results are considered to be valid and acceptable for assessing groundwater quality at the site.

It should be noted that the spring and fall sampling events were primarily the events where ion balance differences were greater than 10%. This may be related to the analysis of only indicator parameters as opposed to comprehensive parameters, and the lack of data for certain anions and cations.

4.6.3 Laboratory Hold Times

All groundwater samples collected during the 2023, 2024, and 2025 sampling events were submitted to ALS Environmental (Thunder Bay) in 2023, 2024 and for the spring event in 2025. Samples in the summer and fall of 2025 were submitted to Testmark Laboratories Ltd. (Thunder Bay). Samples were transported to the respective laboratories under cooled conditions and received within acceptable timeframes.

A review of the Quality Control Interpretive Reports (QCI) for all ALS submissions confirmed that all samples were analyzed within the recommended holding times for each analytical parameter, with one exception:

- 2024 Spring (TY2405650): The DOC preparation for BH8 exceeded the ALS recommended preparation holding time of 3 days (actual: 6 days), flagged with the qualifier "EHT" (Exceeded Holding Time prior to analysis). The analysis date itself was within the 28-day analytical holding time. This exceedance is noted for transparency;

however, given that the analysis was completed within the overall analytical holding time, the impact on data quality is considered minimal.

For the Testmark Laboratories submissions (2025 summer WO588914 and 2025 fall WO598678), the QC data confirmed that all samples were received and analyzed within acceptable holding times for all parameters, consistent with Testmark's internal QC protocols.

4.6.4 Laboratory Blanks and Process Recoveries

Laboratory quality control data, including Method Blanks (MB), Laboratory Control Samples (LCS), and Matrix Spikes (MS), were reviewed for all nine sampling events across the 2023–2025 reporting period.

For all ALS submissions (TY2303987, TY2306580, TY2308973, TY2405650, TY2408393, TY2405749, TY2411156, TY2505339), method blank results were below the Limit of Reporting (LOR), LCS recoveries were within method-specific acceptance criteria, and matrix spike recoveries were within acceptable limits for all parameters and all events. One administrative note was recorded for the 2023 Spring event (TY2303987), where laboratory duplicate frequency for chloride, conductivity, pH, and sulfate fell below the 5% minimum threshold due to large batch processing; LCS and method blank frequencies for these parameters were unaffected and met requirements.

For both Testmark submissions (WO588914, WO598678), laboratory reagent blank results were below applicable MDLs, LFB recoveries were within specified control limits, and LFSM (matrix spike) recoveries for all parameter groups were within the 70–130% acceptance criteria.

Overall, the laboratory QC data for all nine sampling events demonstrate that the analytical results are of acceptable quality and suitable for use in the assessment of groundwater quality at the Site.

5 DISCUSSION/CONCLUSIONS

5.1 Operations

From 2023 to 2025, no significant operational difficulties or public complaints related to the WDS were reported by Conmee or observed by North Rock. Based on the average waste deposition rate of 879 m^3/year and the remaining waste capacity of 7,482 m3, a remaining life span of approximately 8 years was calculated.

5.2 Hydrogeology

The hydraulic gradient remained relatively consistent across the 2023–2025 monitoring period, with average annual gradients of approximately 0.074 m/m (2023), 0.077 m/m (2024), and 0.081 m/m (2025), indicating a slight increasing trend. Assuming a hydraulic conductivity of 0.05 m/day and an effective porosity of 0.50 for clay (Freeze & Cherry, 1979), the estimated horizontal groundwater velocity across the Site ranged from approximately 0.007 to 0.008 m/day (2.7 to 2.9 m/year), indicating very slow groundwater movement consistent with the low-permeability clay/till overburden at the Site.

5.3 Water Quality

5.3.1 Background Groundwater Quality

Background groundwater quality, represented by monitoring well BH6, is generally characterized by RUG criteria exceedances for DOC and iron. Concentrations of DOC and iron were generally higher at BH6 than at BH7, located farther northwest of BH6, and no RUG criteria exceedances were measured at BH7. Concentrations of DOC and iron between 2023 and 2025 were generally within the range of historical results at this location.

Groundwater quality at BH6 generally exhibits the lowest concentrations of anions, cations, general chemistry parameters, and metals on the Site, and continues to adequately represent background groundwater quality at the Site. It should be noted, however, that a groundwater divide is interpreted to exist on the Site near BH6. Should it be confirmed to exist, BH6 could actually receive leachate-impacted groundwater from the northern portion of the divide. For this reason, BH7 is also thought to be a reasonable candidate for background groundwater quality for the Site as it is located farther away from the apparent divide.

With the exception of iron in the spring of 2023, no RUG criteria exceedances were measured at BH7 and, as a result, BH7 also appears to adequately represent background water quality for the Site. Continued monitoring of BH7 is recommended to further assess its suitability as a background well in support of the proposed landfill expansion.

5.3.2 Cross-Gradient Groundwater Quality

Monitoring wells BH5 and BH8 are interpreted to represent cross-gradient groundwater quality at the Site.

With the exception of iron in the fall of 2025, no RUG criteria exceedances were measured in groundwater from BH5. RUG criteria exceedances were measured at BH8 in the spring of 2023 for iron; for DOC and iron in the spring and summer of 2024, and for manganese in the summer of 2024; and for DOC in the summer and fall and for iron in the

spring and summer of 2025. In most cases, concentrations were similar to those measured at background well MW6, suggesting that BH5 and BH8 mark the outer limits of the leachate plume from the disposal site. Concentrations were generally within historical concentrations and no significant trends were noted.

5.3.3 Source Groundwater Quality

Source groundwater quality at BH9 is characterized by RUG exceedances for TDS, DOC, iron, and/or manganese from 2023 to 2025. These parameters are typical leachate-indicator parameters for domestic non-hazardous waste landfills. Groundwater quality at BH9 generally exhibited among the highest concentrations of general chemistry parameters, anions, cations, and dissolved metals, consistent with historical observations.

Time series graphs for BH9 indicated no significant trends for TDS, DOC, manganese or iron.

5.3.4 Downgradient Groundwater Quality

Monitoring well BH10 is the farthest downgradient monitoring well at the Site; however, this well has not been sampled since May 2018 as it has had insufficient water to permit sampling. BH10 was dry during all sampling events from 2023 to 2025, and no samples were collected. As a result, trends at BH10 could not be assessed.

In response to ECA Condition 8(15), a new monitoring well (BH11) was installed on February 1, 2024, approximately 100 m northwest of BH10, to better characterize downgradient leachate migration south of the landfill. In 2024, BH11 was sampled during the summer event, and a partial sample was collected during the spring event; however, the well had insufficient water volume during the fall event. In 2025, BH11 had insufficient water volume during all three sampling events and could not be sampled. RUG exceedances for manganese and iron were observed at BH11 during the 2024 summer sampling event. Given the limited data available, trends at BH11 cannot yet be assessed, and continued monitoring is recommended.

5.4 Trigger and Contingency Plan

No trigger criteria exceedances for chloride or sodium were observed at BH6 or BH9 during any of the 2023 to 2025 sampling events. No trigger response or contingency response is required at this time.

5.5 Overall Assessment

The results from 2023 to 2025 are generally consistent with historical results, with no significant new trends or environmental concerns identified. No exceedances of health-related parameters were observed at any downgradient monitoring location. When sufficient groundwater exists to permit sampling, BH11 does not appear to suggest that impacted groundwater is migrating off-site to the southeast. Additional data is required to further assess water quality at the farthest downgradient monitor.

The approved attenuation zone for the Site appears to be sufficient for the attenuation of impacted groundwater prior to discharging from the Site..

6 RECOMMENDATIONS

The following recommendations are provided for consideration based on the results of the 2023 to 2025 water quality assessment:

- Based on the 2025 waste volume survey, the remaining waste capacity at the site is approximately 7,482 m^3, representing approximately 8 years of remaining lifespan at the current average annual fill rate of 879 m^3/year. It is recommended that the Township of Conmee continue to advance planning for landfill expansion or closure in order to ensure uninterrupted waste disposal services for the community.
- Groundwater monitoring at the Site should continue three times annually (spring, summer, and fall) in 2026, 2027, and 2028 for all active monitoring wells (BH5, BH6, BH7, BH8, BH9, and BH11) in accordance with the analytical program outlined in Table 3-2. A summary water quality monitoring letter report should be completed for each intervening year (2026 and 2027) and submitted to the MECP by June 30 of the following year. A comprehensive water quality assessment report should be completed by a qualified person for the 2026 to 2028 monitoring period in accordance with the MECP ECA requirements and submitted to the MECP by June 30, 2029.
- Continue to use BH6 as the background groundwater monitoring well and use data from BH6 to calculate RUG criteria for the Site.
- Continue to include BH11 in the regular groundwater monitoring program. BH11 had insufficient water volume during all three 2025 sampling events and could not be sampled. It is recommended that the adequacy of BH11 as a replacement downgradient monitoring location be re-evaluated in consultation with the MECP. If BH11 continues to be dry, consideration could be given to evaluating bedrock topography downgradient of the fill area to assist in siting overburden monitoring wells downgradient of the Site.
- Monitoring wells BH5, BH7, and BH8 should continue to be sampled three times annually (spring, summer, and fall) in 2026, 2027, and 2028 in support of Conmee's proposed landfill expansion, using the same parameters listed in the analytical program.
- An annual topographic volumetric survey of the waste disposal area should be completed each year to accurately report the remaining waste capacity, track the annual fill rate, and ensure ongoing compliance with the ECA-approved landfilling area and final closure design. Based on the 2025 survey, several areas of the site require regrading, as they exceed the approved final closure design elevations, and one area has been identified outside of the approved waste footprint. It is recommended that the Township address these non-conformances in consultation with the MECP.
- Standpipe SP04 has been out of service since May 2021. It is recommended that SP04 be inspected and either repaired or formally decommissioned, and a determination made as to whether a replacement standpipe is required to maintain adequate hydraulic monitoring coverage across the Site.

7 LIMITATIONS

This report was prepared for the exclusive use of the Client to whom it is addressed, and any use by any third party is prohibited. North Rock disclaims any liability or responsibility for losses, damages, liabilities or claims of any kind whatsoever, including direct or consequential financial effects on transactions, property values, or requirements for follow-up actions and costs from third-party use of this report.

The report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. It is based on data and information collected during the course of the investigation and is based solely on the conditions of the Site encountered at the time the work was completed, supplemented by historical information reviewed by North Rock or provided by others as described in this report. There are no assurances regarding the accuracy and completeness of this information. All information received from the Client or third parties in the preparation of this report has been assumed by North Rock to be correct. North Rock assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the property that was assessed at the time the work was conducted. Activities conducted on the property subsequent to North Rock's assessment may have significantly altered the property's condition. North Rock cannot comment on other areas of the property that were not assessed.

North Rock makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described in this report, if any, including hydroelectric services, conduits, water or sewer mains, or other surface or sub-surface utilities or structures are not guaranteed. If future work is planned, the exact location of all such utilities and structures should be confirmed and North Rock assumes no liability for damage to any of them.

The conclusions made in this report are based on the site conditions encountered by North Rock at the time the work was completed. North Rock does not warrant against undiscovered environmental liabilities. As the purpose of this report is to identify site conditions which may pose an environmental risk, the identification of non-environmental risks to structures or people on the property is beyond the scope of this assessment. If additional information becomes available which differs significantly from our understanding of conditions presented in this report, North Rock disclaims any obligation to update this report with respect to information or activities that occurred after the time of publication of this report.

8 CLOSURE

We trust that the above report meets with your current requirements. If you have any questions or require clarifications, please contact the undersigned.

NORTH ROCK ENGINEERING INC.

Prepared by:

Paula Sdao, P.Eng.
Principal, Environmental Services
psdao@nrock.ca

This report has been prepared by North Rock Engineering ("North Rock") for the purposes of the client to whom it is prepared for and addressed. The data and information contained in this report represents North Rock's best professional judgment in consideration of the knowledge and information available to North Rock at the time of the report preparation. Except as required by law, this report and all contained herein are to be treated as confidential and may be used and relied upon only by the client, its officers, and employees. North Rock denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this report or any of its contents without the express written consent of North Rock and the client.

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FIGURES

N.T.S.

This drawing may not be drawn to any particular scale.

KEYPLAN

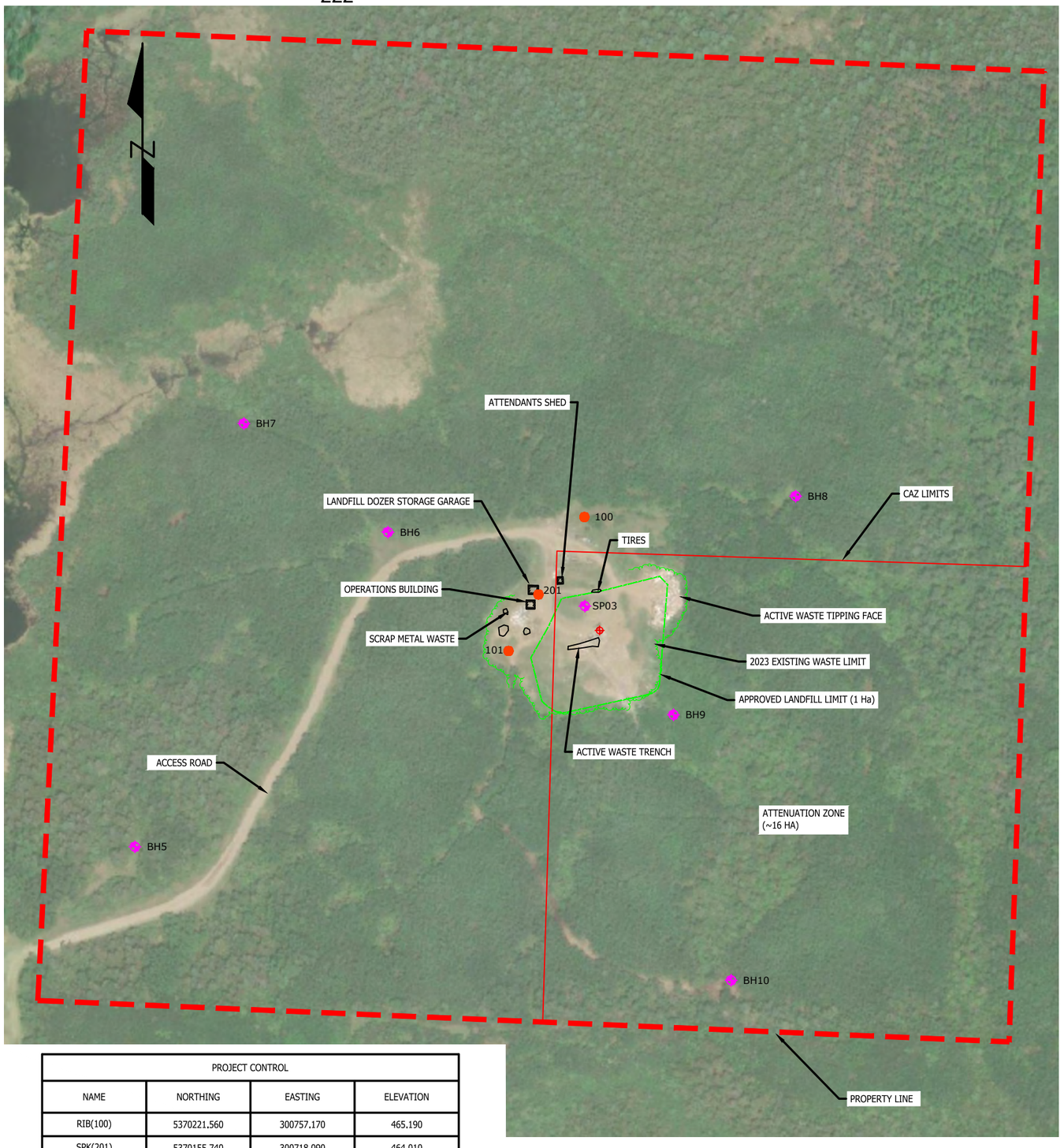
ONTARIO, CANADA

N.T.S.

This drawing may not be drawn to any particular scale.

SITE LOCATION PLAN

CONMEE, ONTARIO, CANADA



PROJECT CONTROL			
NAME	NORTHING	EASTING	ELEVATION
RIB(100)	5370221.560	300757.170	465.190
SPK(201)	5370155.740	300718.090	464.010
CC(101)	5370107.691	300692.613	462.464

UTM with NAD83 datum, Zone 16, Meter; Central Meridian 87d W
All elevations provided are in units of (MASL)

LEGEND

- 100 (RIB) BENCHMARK LOCATION
- MONITORING WELL "MW" LOCATION
- PROPERTY BOUNDARY
- CAZ LIMITS
- APPROVED LANDFILL LIMITS (1ha)

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

NORTH ROCK ENGINEERING
70 Secord St.
Thunder Bay, ON, P7B 3C9
Tel:807-626-0962
www.nrock.ca

CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
SITE LAYOUT PLAN

PROJECT NO. E25-015-04
DATE 2026.01.05
REV NO. 0
DRAWING NO. 01

LEGEND

- 100 (RIB) BENCHMARK LOCATION
- MONITORING WELL "MW" GROUNDWATER ELEVATION (masl)
- 2025 ACTIVE WASTE LIMIT
- APPROX. GROUNDWATER DIVIDE
- 450 GROUNDWATER CONTOUR ELEVATIONS (masl)
- GROUNDWATER FLOW DIRECTION

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

NORTH ROCK ENGINEERING
70 Secord St.
Thunder Bay, ON, P7B 3C9
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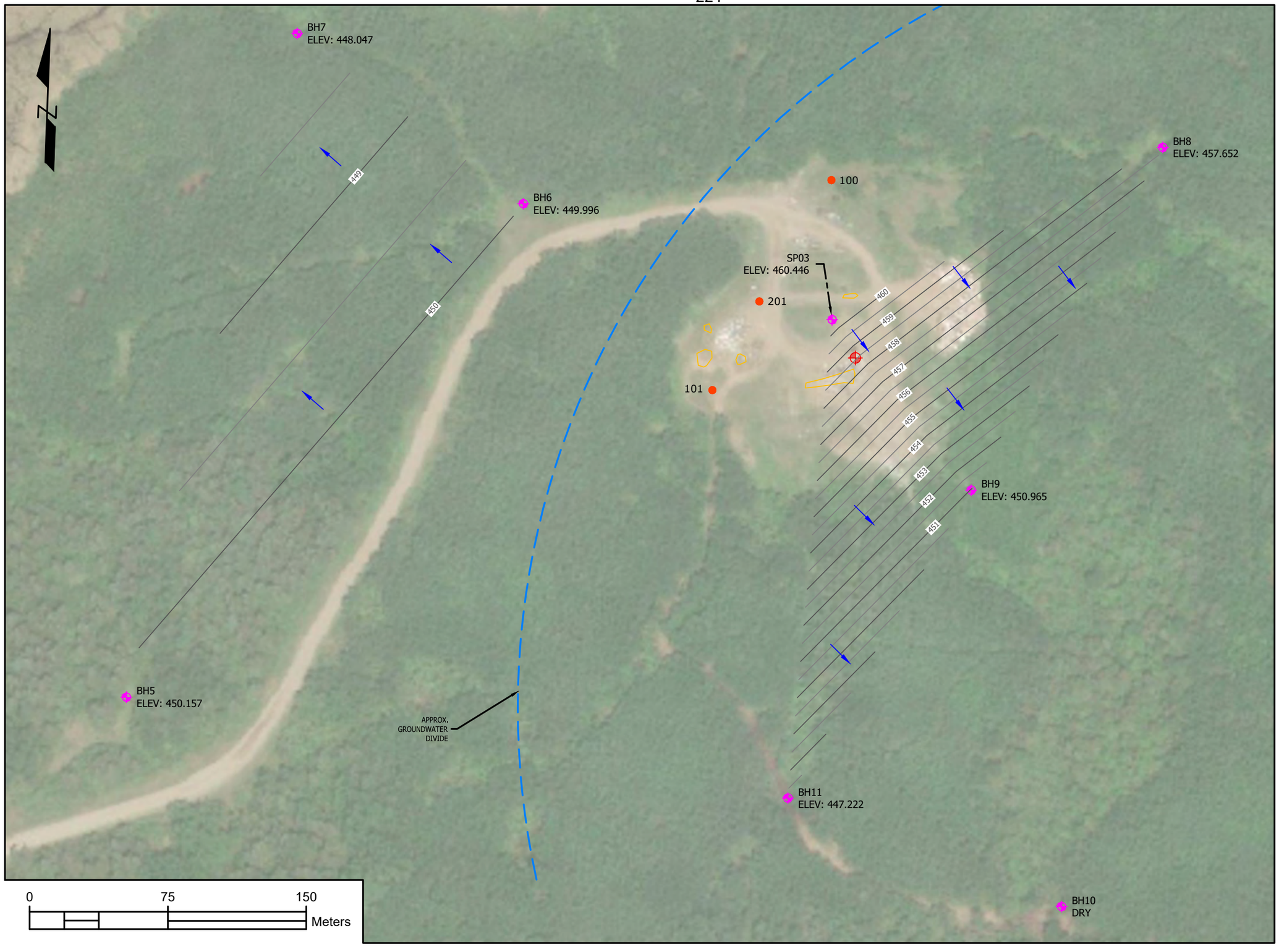
CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
GROUNDWATER CONTOURS MAY 2025

PROJECT NO.	DATE
E25-015-04	2026.01.05
REV NO.	DRAWING NO.
0	02



LEGEND

- 100 (RIB) BENCHMARK LOCATION
- MONITORING WELL "MW" GROUNDWATER ELEVATION (masl)
- 2025 ACTIVE WASTE LIMITS
- APPROX. GROUNDWATER DIVIDE
- 450 GROUNDWATER CONTOUR ELEVATIONS (masl)
- GROUNDWATER FLOW DIRECTION

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

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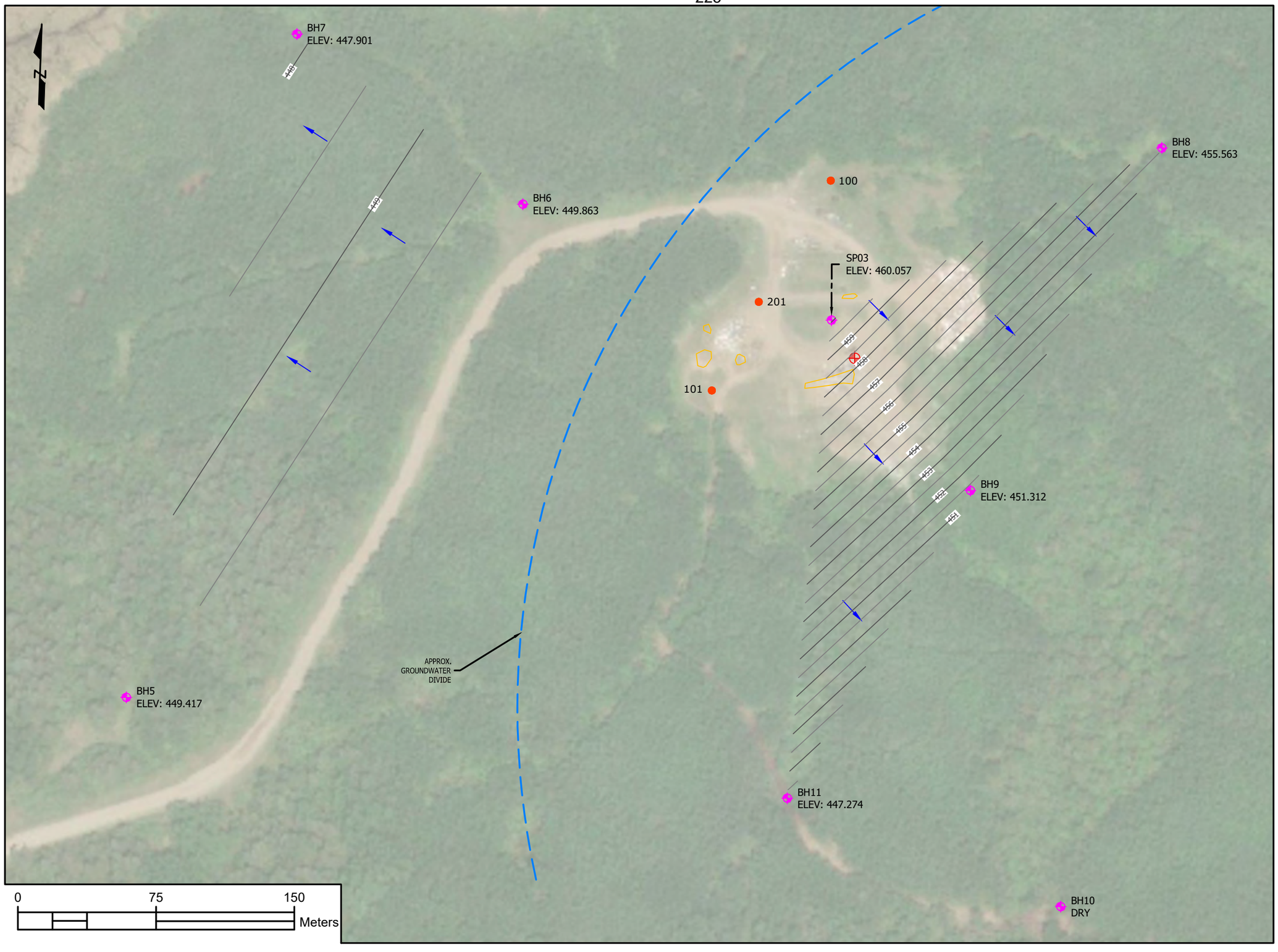
CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
GROUNDWATER CONTOURS JULY 2025

PROJECT NO.	DATE
E25-015-04	2026.01.05
REV NO.	DRAWING NO.
0	03

225



LEGEND

- 100 (RIB) BENCHMARK LOCATION
- MONITORING WELL "MW" GROUNDWATER ELEVATION (masl)
- 2025 ACTIVE WASTE LIMIT
- APPROX. GROUNDWATER DIVIDE
- 450 GROUNDWATER CONTOUR ELEVATIONS (masl)
- GROUNDWATER FLOW DIRECTION

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

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CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
GROUNDWATER CONTOURS SEPTEMBER 2025

PROJECT NO.	DATE
E25-015-04	2026.01.05
REV NO.	DRAWING NO.
0	04

LEGEND

- 100 (RIB) BENCHMARK LOCATION
- MONITORING WELL "MW"
- APPROVED LANDFILL LIMIT
- 2025 ACTIVE WASTE AREAS
- TREELINE
- GRAVEL OUTLINE
- 450 TOPOGRAPHIC CONTOUR LABEL (masl)

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

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Thunder Bay, ON, P7B 3C9
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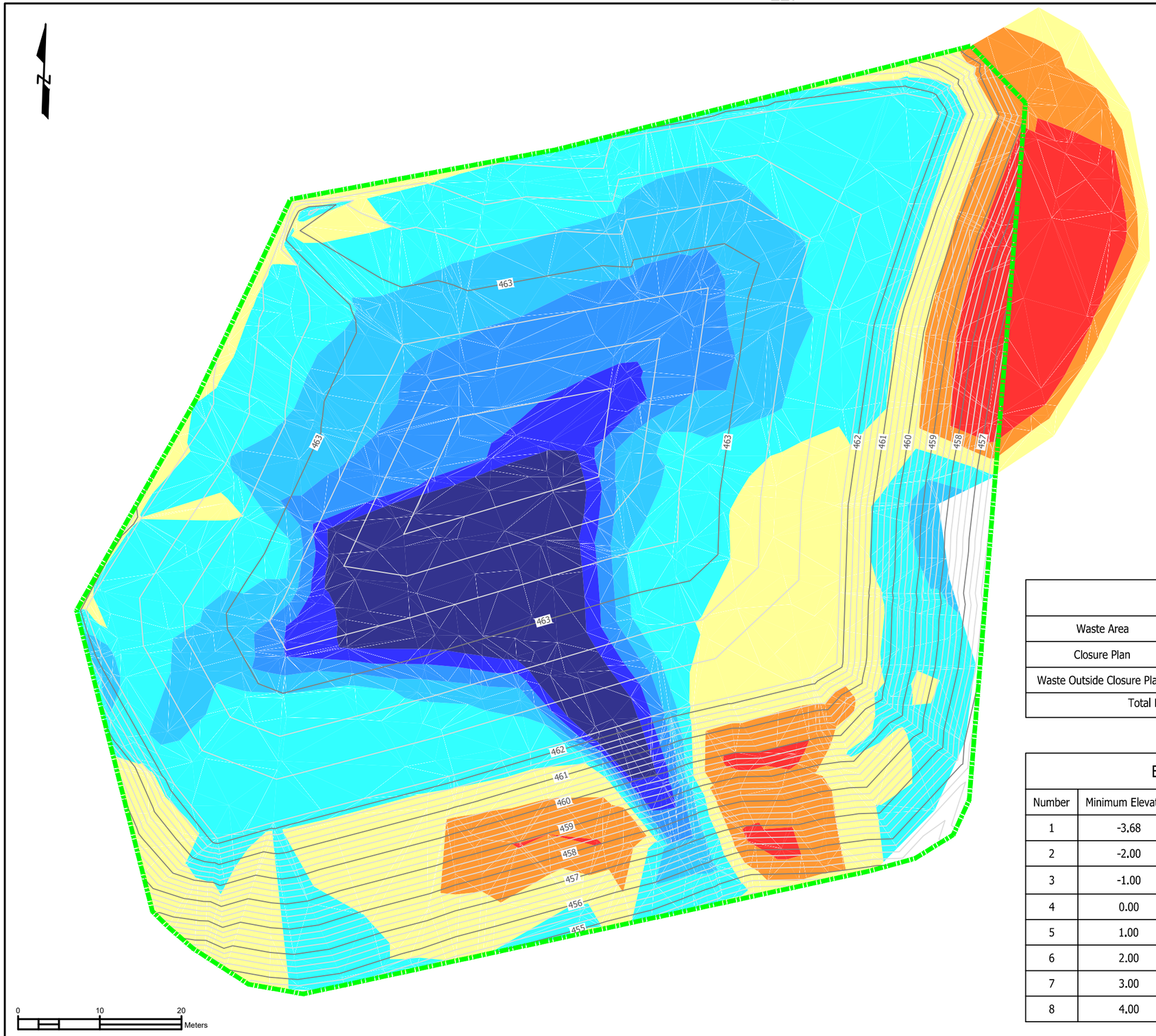
www.nrock.ca

CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
2025 ANNUAL WASTE SURVEY

PROJECT NO.	DATE
E25-015-04	2026.01.05
REV NO.	DRAWING NO.
0	05



Volume Table

Waste Area	Cut Volume (m³)	Fill Volume (m³)
Closure Plan	2,235	11,068
Waste Outside Closure Plan	1,351	0
Total Remaining Capacity = 7,482 m³		

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Area	Color
1	-3.68	-2.00	215.30	
2	-2.00	-1.00	649.39	
3	-1.00	0.00	2020.23	
4	0.00	1.00	3496.49	
5	1.00	2.00	1403.34	
6	2.00	3.00	881.15	
7	3.00	4.00	358.39	
8	4.00	6.24	759.07	

LEGEND

450 — CLOSURE CONTOUR LABEL (masl)

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

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CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

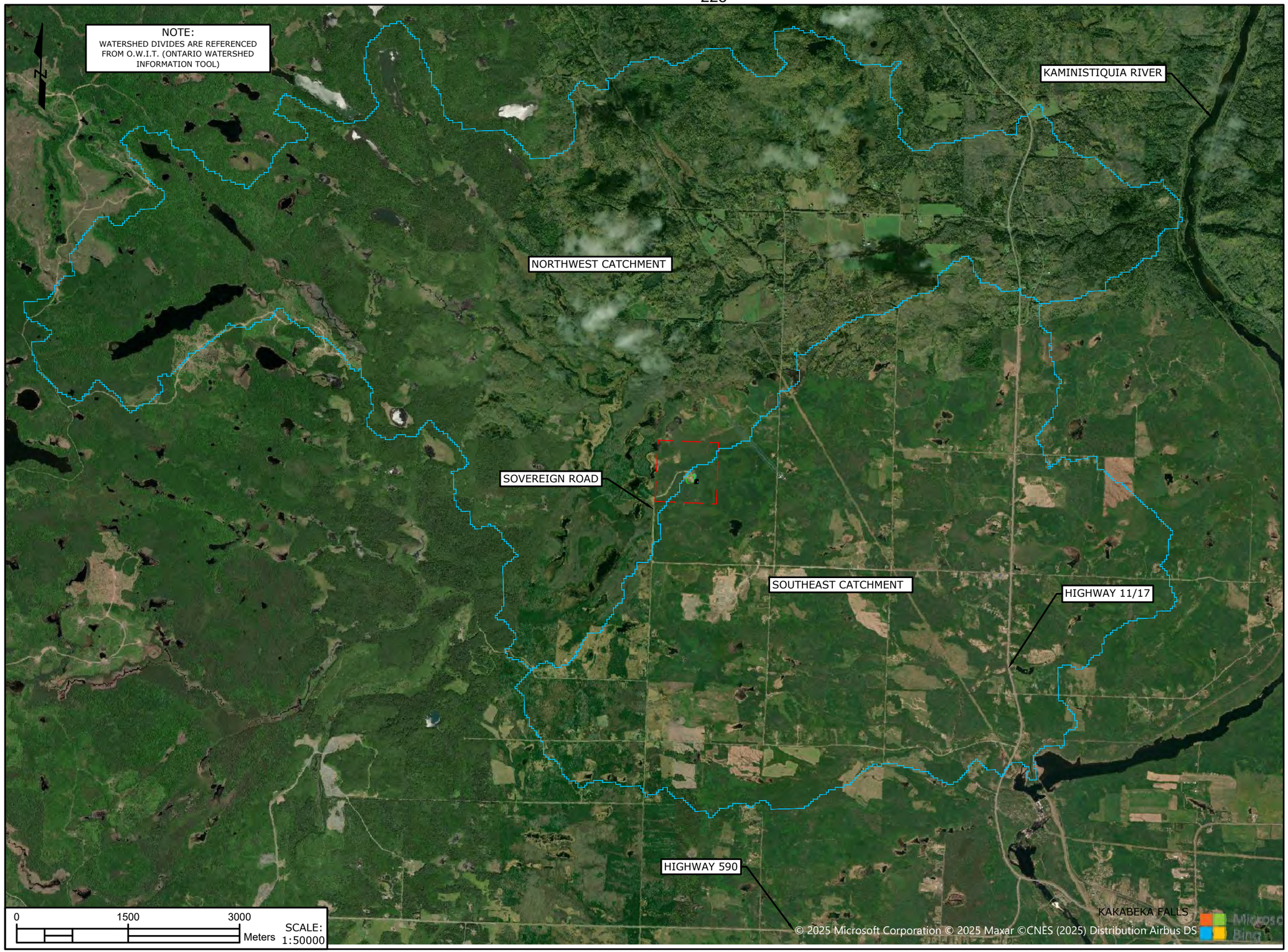
TITLE
CLOSURE VOLUME

PROJECT NO.
E25-015-04

DATE
2026.01.05

REV NO.
0

DRAWING NO.
06



LEGEND

- APPROVED LANDFILL LIMIT
- 2024 ACTIVE WASTE LIMIT
- WATERSHED CATCHMENT AREA

DESCRIPTION	DRN	CHK	DES	DD.MM.YY

NORTH ROCK ENGINEERING
70 Secord St.
Thunder Bay, ON, P7B 3C9
Tel:807-626-0962
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CLIENT
TOWNSHIP OF CONMEE

PROJECT
2025 WATER QUALITY ASSESSMENT

TITLE
WATERSHED CATCHMENT AREAS

PROJECT NO.	DATE
E25-015-04	2026.01.05
REV NO.	DRAWING NO.
0	07

TABLES

Table 1
Summary of Groundwater Levels
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Well ID	Date	Ground Elevation (masl)	TOP Elevation (masl)	SWL (mbtp)	GWE (masl)	Colour	Odour	Turbidity	Comments
BH5	11-May-23	450.587	451.436	0.941	450.495	Light Brown	NAO	Cloudy	-
	10-Jul-23			2.511	448.925	-	-	-	-
	11-Sep-23			3.344	448.092	Brown	NAO	Cloudy	Slight Sediment
	04-Jun-24			1.199	450.237	Grey	NAO	Cloudy	Slight Sediment
	02-Aug-24			2.295	449.141	Grey	NAO	Cloudy	Slight Sediment
	02-Oct-24			3.404	448.032	Brown	NAO	Cloudy	Slight Sediment
	26-May-25			1.458	449.978	grey	dirt	-	lots of sediment
	15-Jul-25			1.279	450.157	gray	NAO	cloudy	-
	29-Sep-25			2.019	449.417	brown	NAO	cloudy	-
BH6	11-May-23	455.210	455.998	4.141	451.857	Light Brown	NAO	Clear	-
	10-Jul-23			5.699	450.299	Yellow	NAO	Cloudy	Slight Sediment
	11-Sep-23			6.345	449.653	Light Brown	Sl. OGO	Cloudy	Slight Sediment
	04-Jun-24			6.096	449.902	Brown	NAO	Cloudy	Slight Sediment
	02-Aug-24			5.914	450.084	Brown	OGO	Cloudy	Slight Sediment
	02-Oct-24			6.592	449.406	Light Brown	Sl. OGO	Cloudy	Slight Sediment
	26-May-25			6.379	449.619	brown	NAO	cloudy	some particles
	15-Jul-25			6.002	449.996	light brown	NAO	cloudy	-
	29-Sep-25			6.135	449.863	slight yellow	slight organic	cloudy	-
BH7	11-May-23	448.329	449.385	1.137	448.248	Black	Slight OGO	Cloudy	Slight Organic Debris
	10-Jul-23			1.624	447.761	-	-	-	-
	11-Sep-23			1.441	447.944	Light Brown	NAO	Cloudy	-
	04-Jun-24			1.337	448.048	Brown	NAO	Cloudy	-
	02-Aug-24			1.804	447.581	Grey	NAO	Cloudy	Slight Sediment
	02-Oct-24			2.269	447.116	Light Brown	NAO	Cloudy	Slight Sediment
	26-May-25			1.44	447.945	-	-	-	-
	15-Jul-25			1.338	448.047	slight beige	NAO	cloudy	-
	29-Sep-25			1.484	447.901	NC	NAO	cloudy	-
BH8	11-May-23	457.940	458.690	0.939	453.679	Light Brown	NAO	Clear	-
	10-Jul-23			3.284	451.334	-	-	-	-
	11-Sep-23			3.431	451.187	-	-	-	-
	04-Jun-24			1.05	453.568	Brown	NAO	Cloudy	-
	02-Aug-24			2.951	451.667	Brown	OGO	Cloudy	Slight Sediment
	02-Oct-24			3.461	451.157	-	-	-	-
	26-May-25			1.244	457.446	light yellow	slight OGO	clear	some particles
	15-Jul-25			1.038	457.652	slight beige	slight organic	cloudy	-
	29-Sep-25			3.127	455.563	yellow	slight organic	cloudy	-
BH9	11-May-23	453.843	454.618	1.571	453.047	Light Brown	NAO	Clear	Slight Sediment
	10-Jul-23			3.286	451.332	Grey	NAO	Cloudy	Slight Sediment
	11-Sep-23			3.977	450.641	Slight Yellow	NAO	Cloudy	Slight Sediment
	04-Jun-24			2.585	452.033	Brown	NAO	Cloudy	Slight Sediment
	02-Aug-24			3.283	451.335	Slight Yellow	NAO	Cloudy	-
	02-Oct-24			4.194	450.424	Grey	NAO	Cloudy	Slight Sediment
	26-May-25			2.731	451.887	NC	NAO	cloudy	-
	15-Jul-25			3.653	450.965	NC	slight organic	clear	-
	29-Sep-25			3.306	451.312	NC	strong organic	cloudy	-

Table 1
Summary of Groundwater Levels
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Well ID	Date	Ground Elevation (masl)	TOP Elevation (masl)	SWL (mbtp)	GWE (masl)	Colour	Odour	Turbidity	Comments
BH10	11-May-23	444.841	445.680	4.789	440.891	-	-	-	-
	10-Jul-23			4.819	440.861	-	-	-	-
	11-Sep-23			DRY	-	-	-	-	-
	04-Jun-24			DRY	-	-	-	-	-
	02-Aug-24			DRY	-	-	-	-	-
	02-Oct-24			DRY	-	-	-	-	-
	26-May-25			DRY	-	-	-	-	-
	15-Jul-25			DRY	-	-	-	-	-
	29-Sep-25			DRY	-	-	-	-	-
BH11	04-Jun-24	449.956	450.970	3.788	447.182	-	-	-	-
	02-Aug-24			3.352	447.618	No Colour	NAO	Cloudy	-
	02-Oct-24			3.831	447.139	-	-	-	-
	26-May-25			DRY	-	-	-	-	-
	15-Jul-25			3.748	447.222	-	-	-	Insufficient Water
	29-Sep-25			3.696	447.274	-	-	-	Insufficient Water
SP03	11-May-23	462.320	462.750	1.932	460.818	-	-	-	-
	10-Jul-23			3.214	459.536	-	-	-	-
	11-Sep-23			3.691	459.059	-	-	-	-
	04-Jun-24			2.351	460.399	-	-	-	-
	02-Aug-24			2.93	459.82	-	-	-	-
	02-Oct-24			3.655	459.095	-	-	-	-
	26-May-25			2.455	460.295	-	-	-	-
	15-Jul-25			2.304	460.446	-	-	-	-
	29-Sep-25			2.693	460.057	-	-	-	-

Notes:
Table to be read in conjunction with accompanying report.
SWL = Static water level (mbtp); GWE = groundwater elevation (mard).
mbtp = Metres Below Top of Pipe
mard = Metres Above Relative Datum
NAO = No Apparent Odour
OGO = Organic Odour

Table 2
Summary of 2023 Groundwater Analytical Results
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	RUG Criteria	Trigger Criteria	BH5 11-May-2023	BH5 11-Sep-2023	BH6 11-May-2023	BH6 10-Jul-2023	BH6 11-Sep-2023	BH7 11-May-2023	BH7 11-Sep-2023	BH8 11-May-2023	BH8 11-Sep-2023	BH9 11-May-2023	BH9 10-Jul-2023	BH9 11-Sep-2023	BH10 11-May-2023	BH10 10-Jul-2023	BH10 11-Sep-2023
Field Testing Results																			
pH	pH units	6.5-8.5	-	-	7.38	7.65	7.48	8.88	7.47	7.19	7.66	8.04	-	7.44	8.69	7.55	-	-	-
Temperature	℃	-	-	-	12	8	12.7	10.3	9.1	11	11	11.1	-	12.4	10.8	9.7	-	-	-
Conductivity	µS/cm	-	-	-	297	347	151	280	566	428	462	171	-	89	1229	1690	-	-	-
General Chemistry																			
pH	pH units	6.5-8.5	-	-	8.09	8.03	7.07	7.47	7.48	7.90	8.03	7.12	-	7.10	7.48	7.6	-	-	-
Specific Conductance 25°C	µS/cm	-	-	-	286	318	84	279	511	419	444	98	-	80	1300	1680	-	-	-
Total Dissolved Solids	mg/L	500	367	-	220	200	76	162	286	229	275	118	-	92	**850**	**1120**	-	-	-
Total Suspended Solids	mg/L	-	-	-	1910	1600	122	156	178	672	921	153	-	302	272	350	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	1.08	-	-	-	-	-	-	0.637	-	-	-	-
Dissolved Organic Carbon	mg/L	5	4.37	-	2.76	3.34	3.56	3.09	4.35	2.15	1.50	3.63	-	**7.26**	**7.42**	**8.33**	-	-	-
Biological Oxygen Demand	mg/L	-	-	-	5.0	2.2	3.0	3.7	<2.0	15.1	<2.0	3.0	-	3.0	<2.0	<2.0	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	43	20	34	65	33	179	41	60	-	44	38	69	-	-	-
Phenols (4AAP)	mg/L	-	-	-	-	-	-	<0.0010	-	-	-	-	-	-	<0.0010	-	-	-	-
Anions and Nutrients			-																
Alkalinity (as CaCO3)	mg/L	30-500	-	-	181	193	38	167	277	267	240	38	-	32	578	699	-	-	-
Ammonia (as N)	mg/L	-	-	-	0.0206	<0.0050	0.0063	0.011	0.008	0.142	0.0345	0.0323	-	0.0082	<0.0050	0.0233	-	-	-
Chloride	mg/L	250	128	125	1.07	1.67	4.16	4.14	6.56	1.43	1.26	7.17	-	1.78	52.5	79.0	-	-	-
Sulphate	mg/L	500	251	-	5.65	7.52	0.67	1.33	1.98	23.50	25	1.42	-	4	156	211	-	-	-
Nitrate (as N)	mg/L	10	3	-	0.488	0.074	0.020	<0.020	<0.020	0.020	0.023	0.021	-	0.54	0.31	<0.400	-	-	-
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	<0.010	-	-	-	-	-	-	<0.020	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	0.279	-	-	-	-	-	-	0.148	-	-	-	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.003	-	-	-	-	0.00053	-	-	-	-	-	-	0.00034	-	-	-	-
Barium (Ba)	mg/L	1	0.28	-	0.0368	0.0346	0.0099	0.017	0.0569	0.0511	0.0442	0.0079	-	0.007	0.109	0.148	-	-	-
Boron (B)	mg/L	5	1.26	-	0.010	0.010	0.010	<0.010	<0.010	0.032	0.045	0.010	-	0.010	0.029	0.037	-	-	-
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	0.0000073	-	-	-	-	-	-	0.0000729	-	-	-	-
Calcium (Ca)	mg/L	-	--	-	32.5	33.8	10.1	37.5	69.9	49.3	51.4	6.0	-	8.13	205	194	-	-	-
Chromium (Cr)	mg/L	0.05	0.013	-	-	-	-	<0.00050	-	-	-	-	-	-	<0.00050	-	-	-	-
Copper (Cu)	mg/L	1	0.5	-	-	-	-	0.00106	-	-	-	-	-	-	0.00196	-	-	-	-
Iron (Fe)	mg/L	0.3	0.17	-	0.0100	<0.010	**0.1870**	**0.249**	**13.10**	**2.6200**	0.137	**0.7160**	-	**0.194**	<0.010	0.02	-	-	-
Lead (Pb)	mg/L	0.01	0.003	-	-	-	-	<0.000050	-	-	-	-	-	-	<0.000050	-	-	-	-
Magnesium (Mg)	mg/L	-	--	-	14.5	15.4	3.19	8.89	17.2	22.7	22.7	2.19	-	3.14	74.8	90.9	-	-	-
Manganese (Mn)	mg/L	0.05	0.111*	-	-	-	-	0.111	-	-	-	-	-	-	0.0016	-	-	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	<0.0000050	-	-	-	-	-	-	<0.0000050	-	-	-	-
Potassium (K)	mg/L	-	--	-	-	-	-	0.229	-	-	-	-	-	-	2.28	-	-	-	-
Sodium (Na)	mg/L	200	102	103	5.57	8.07	2.04	2.44	3.28	5.3	5.13	1.05	-	1.22	20.3	25.9	-	-	-
Zinc (Zn)	mg/L	5	2.5	-	-	-	-	<0.0010	-	-	-	-	-	-	0.0012	-	-	-	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	-	-	-	-	<0.0005	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.0016	-	-	-	-	<0.0005	-	-	-	-	-	-	<0.0005	-	-	-	-
Dichloromethane	mg/L	0.05	0.016	-	-	-	-	0.0108	-	-	-	-	-	-	0.0054	-	-	-	-
Toluene	mg/L	0.06	0.03	-	-	-	-	<0.0005	-	-	-	-	-	-	0.0087	-	-	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	-	-	-	-	<0.0005	-	-	-	-
Ion Balance																			
Total Anions	meq/L	-	-	-	-	-	-	3.5	-	-	-	-	-	-	16.3	-	-	-	-
Total Cations	meq/L	-	-	-	-	-	-	2.7	-	-	-	-	-	-	17.3	-	-	-	-
Percent Difference	%	-	-	-	-	-	-	-24.3	-	-	-	-	-	-	6.2	-	-	-	-

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);* shown underlined, italics, and bold.
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown highlighted in red.
Trigger exceedances shown highlighted in yellow.

Table 3
Summary of 2024 Groundwater Analytical Results
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	RUG Criteria 2024	Trigger Criteria	BH5 4-Jun-2024	BH5 2-Aug-2024	BH5 2-Oct-2024	BH6 4-Jun-2024	BH6 2-Aug-2024	BH6 2-Oct-2024	BH7 4-Jun-2024	BH7 2-Aug-2024	BH7 2-Oct-2024	BH8 4-Jun-2024	BH8 2-Aug-2024	BH8 2-Oct-2024	BH9 4-Jun-2024	BH9 2-Aug-2024	BH9 2-Oct-2024
Field Testing Results																Dry			
pH	pH units	6.5-8.5	-	-	8.46	7.6	7.49	8.38	7.21	7.08	8.35	7.43	7.35	7.71	6.66	-	7.84	7.05	6.98
Temperature	°C	-	-	-	9.5	12.3	9.7	9.6	13.3	11.8	11.3	14.7	12.6	11.8	15.8	-	9.2	13	10.1
Specific Conductance 25°C	µS/cm	-	-	-	336	350	383	300	408	484	392	477	463	120	325	-	289	1095	1533
General Chemistry																			
pH	pH units	6.5-8.5	-	-	8.27	8.36	7.87	8.09	8.13	7.7	8.31	8.32	8.07	7.65	7.7	-	7.98	8.25	7.95
Specific Conductance 25°C	µS/cm	-	-	-	347	332	308	321	372	396	412	449	408	122	222	-	348	990	1280
Total Dissolved Solids	mg/L	500	363	-	222	196	208	197	215	238	248	250	266	107	132	-	240	**654**	**936**
Total Suspended Solids	mg/L	-	-	-	1000	182	1260	1070	645	158	276	617	1520	78.7	2790	-	168	148	104
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.231	-	-	0.839	-	-	0.335	-	-	9.07	-	-	0.431	-
Dissolved Organic Carbon	mg/L	5	4.37	-	2.74	3.22	3.50	3.26	3.81	3.29	1.34	1.82	1.61	**4.60**	**6.16**	-	**5.72**	**8.99**	**8.54**
Biological Oxygen Demand	mg/L	-	-	-	<3.0	<2.0	<5.0	<3.8	4.1	2.3	<3.0	<3.0	<5.0	<3.0	8.3	-	<3.0	<2.0	<2.0
Chemical Oxygen Demand	mg/L	-	-	-	52	<10	40	134	20	36	27	<10	97	36	64	-	32	15	48
Phenols (4AAP)	mg/L	-	-	-	-	0.0015	-	-	<0.0010	-	-	0.0012	-	-	0.0058	-	-	<0.0010	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	195	189	261	182	216	343	220	251	331	65.8	118	-	150	419	**693**
Ammonia (as N)	mg/L	-	-	-	0.0082	<0.0050	<0.0500	0.0058	0.0122	<0.0500	0.0231	0.0156	<0.0500	<0.0050	0.183	-	0.0161	0.0145	0.028
Chloride	mg/L	250	128	125	1.95	1.08	1.12	6.32	5.38	6.37	1.33	1.49	1.58	<0.50	<0.50	-	9.42	40.5	75
Sulphate	mg/L	500	251	-	12.7	9.01	9.54	1.5	0.98	2.46	20.3	23.5	28.9	1.03	1.31	-	27.9	105	191
Nitrate (as N)	mg/L	10	2.52	-	0.165	0.066	0.056	<0.020	<0.020	<0.020	0.122	0.022	<0.020	0.026	<0.020	-	0.041	0.062	<0.200
Nitrite (as N)	mg/L	1	0.26	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	<0.020	-
Phosphorus (P)	mg/L	-	-	-	-	0.0396	-	-	0.191	-	-	0.234	-	-	0.488	-	-	1.65	-
Dissolved Metals																			
Arsenic (As)	mg/L	0.01	0.003	-	-	0.00063	-	-	0.00137	-	-	0.00087	-	-	0.00058	-	-	0.00037	-
Barium (Ba)	mg/L	1	0.27	-	0.051	0.04	0.0379	0.0271	0.026	0.0235	0.0506	0.0511	0.0504	0.0125	0.0334	-	0.019	0.102	0.14
Boron (B)	mg/L	5	1.26	-	0.012	0.011	0.01	<0.010	<0.010	<0.010	0.032	0.052	0.054	<0.010	<0.020	-	<0.010	0.026	0.04
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	0.0000182	-	-	0.0000162	-	-	0.0000162	-	-	0.0000163	-	-	0.000108	-
Calcium (Ca)	mg/L	-	--	-	38.3	44.7	44.0	44.0	58.8	60.1	43.4	54.2	54.4	13.1	27.2	-	29.1	162	192
Chromium (Cr)	mg/L	0.05	0.013	-	-	<0.00050	-	-	<0.00050	-	-	<0.00050	-	-	<0.00100	-	-	<0.00050	-
Copper (Cu)	mg/L	1	0.5	-	-	0.00197	-	-	0.00103	-	-	0.00086	-	-	0.00109	-	-	0.00207	-
Iron (Fe)	mg/L	0.3	0.19	-	0.089	<0.010	<0.010	0.016	**1.48**	0.022	0.017	0.014	0.016	**0.611**	**0.463**	-	0.058	0.026	0.158
Lead (Pb)	mg/L	0.01	0.003	-	-	<0.000050	-	-	0.000063	-	-	<0.000050	-	-	<0.000100	-	-	<0.000050	-
Magnesium (Mg)	mg/L	-	--	-	19.7	17.0	13.9	14.3	12.9	12.7	28.0	27.7	25.5	5.95	9.65	-	12.0	61.9	80.2
Manganese (Mn)	mg/L	0.05	0.352*	-	-	0.00268	-	-	0.176	-	-	0.325	-	-	**0.454**	-	-	0.162	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	<0.0000050	-	-	0.0000055	-	-	<0.0000050	-	-	<0.0000050	-	-	<0.0000050	-
Potassium (K)	mg/L	-	--	-	-	1.36	-	-	0.219	-	-	2.89	-	-	1.29	-	-	2.18	-
Sodium (Na)	mg/L	200	102	103	10.2	6.13	3.76	3.63	3.1	2.64	3.95	4.8	4.56	1.7	2.03	-	3.55	17.8	23.1
Zinc (Zn)	mg/L	5	2.5	-	-	0.001	-	-	0.0011	-	-	0.001	-	-	<0.0020	-	-	0.0012	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-
1,4-Dichlorobenzene	mg/L	0.005	0.0016	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-
Dichloromethane	mg/L	0.05	0.0163	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-
Toluene	mg/L	0.06	0.0303	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-	-	<0.0005	-
Ion Balance																			
Total Anions	meq/L	-	-	-	4.2	4.0	5.4	3.8	4.5	7.1	4.9	5.5	7.3	1.3	2.4	-	3.8	11.7	19.9
Total Cations	meq/L	-	-	-	4.0	3.9	3.5	3.5	4.2	4.2	4.6	5.3	5.0	1.2	2.3	-	2.6	14.0	17.2
Percent Difference	%	-	-	-	-2.9	-0.8	-21.7	-4.3	-3.4	-26.0	-2.3	-2.5	-18.3	-3.8	-1.5	-	-19.4	9.0	-7.4

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown underlined and bold.
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown highlighted and bold
Trigger exceedances shown italic and bold

Table 3
Summary of 2024 Groundwater Analytical Results
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	RUG Criteria 2024	BH10 4-Jun-2024	BH10 2-Aug-2024	BH10 22-Jul-2021	BH11 5-Jun-2024	BH11 2-Aug-2024	BH11 2-Oct-2024
Field Testing Results							Partial		Dry
pH	pH units	6.5-8.5	-	-	-	-	-	7.38	-
Temperature	°C	-	-	-	-	-	-	13.8	-
Specific Conductance 25°C	µS/cm	-	-	-	-	-	-	492	-
General Chemistry									
pH	pH units	6.5-8.5	-	-	-	-	-	8.1	-
Specific Conductance 25°C	µS/cm	-	-	-	-	-	-	449	-
Total Dissolved Solids	mg/L	500	363	-	-	-	-	290	-
Total Suspended Solids	mg/L	-	-	-	-	-	-	268	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	0.162	-
Dissolved Organic Carbon	mg/L	5	4.37	-	-	-	2.56	4.14	-
Biological Oxygen Demand	mg/L	-	-	-	-	-	-	<2.0	-
Chemical Oxygen Demand	mg/L	-	-	-	-	-	1100	<10	-
Phenols (4AAP)	mg/L	-	-	-	-	-	-	0.0094	-
Anions and Nutrients									
Alkalinity (as CaCO3)	mg/L	30-500	-	-	-	-	-	275	-
Ammonia (as N)	mg/L	-	-	-	-	-	0.06	0.0112	-
Chloride	mg/L	250	128	-	-	-	-	0.66	-
Sulphate	mg/L	500	251	-	-	-	-	3.84	-
Nitrate (as N)	mg/L	10	2.52	-	-	-	-	0.37	-
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	0.02	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	0.0443	-
Dissolved Metals									
Arsenic (As)	mg/L	0.01	0.003	-	-	-	-	0.0007	-
Barium (Ba)	mg/L	1	0.27	-	-	-	0.041	0.0276	-
Boron (B)	mg/L	5	1.26	-	-	-	<0.100	0.017	-
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	0.0000245	-
Calcium (Ca)	mg/L	-	--	-	-	-	48.5	66.7	-
Chromium (Cr)	mg/L	0.05	0.013	-	-	-	-	<0.00050	-
Copper (Cu)	mg/L	1	0.5	-	-	-	-	0.00164	-
Iron (Fe)	mg/L	0.3	0.19	-	-	-	**0.352**	<0.010	-
Lead (Pb)	mg/L	0.01	0.003	-	-	-	-	<0.000050	-
Magnesium (Mg)	mg/L	-	--	-	-	-	15.2	24.1	-
Manganese (Mn)	mg/L	0.05	0.352*	-	-	-	-	0.137	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	<0.0000050	-
Potassium (K)	mg/L	-	--	-	-	-	-	0.955	-
Sodium (Na)	mg/L	200	102	-	-	-	29.1	5.18	-
Zinc (Zn)	mg/L	5	2.5	-	-	-	-	0.0015	-
Volatile Organic Compounds									
Benzene	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-
1,4-Dichlorobenzene	mg/L	0.005	0.0016	-	-	-	-	<0.0005	-
Dichloromethane	mg/L	0.05	0.0163	-	-	-	-	<0.001	-
Toluene	mg/L	0.06	0.0303	-	-	-	-	<0.0005	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-
Ion Balance									
Total Anions	meq/L	-	-	-	-	-	-	5.6	-
Total Cations	meq/L	-	-	-	-	-	-	5.6	-
Percent Difference	%	-	-	-	-	-	-	-0.3	-

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown underlined and bold.
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown highlighted and bold
Trigger exceedances shown italic and bold

Table 4
Summary of 2025 Groundwater Analytical Results
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	RUG Criteria 2025	Trigger Criteria	BH5	BH5	BH5	BH6	BH6	BH6	BH7	BH7	BH7	BH8	BH8	BH8	BH9	BH9	BH9
					26-May-2025	15-Jul-2025	29-Sep-2025	26-May-2025	15-Jul-2025	29-Sep-2025	26-May-2025	15-Jul-2025	29-Sep-2025	26-May-2025	15-Jul-2025	29-Sep-2025	26-May-2025	15-Jul-2025	29-Sep-2025
Field Testing Results																			
pH	pH units	6.5-8.5	-	-	7.71	7.93	7.71	7.60	7.26	7.02	7.70	7.73	7.67	6.35	6.95	7.21	7.31	6.96	7.11
Temperature	°C	-	-	-	6.4	7.9	10.2	9.5	8.4	11.1	9.5	10.9	12.6	7.9	11.3	14.5	8.2	8.5	10.9
Specific Conductance 25°C	µS/cm	-	-	-	374	299	352	222	314	427	484	439	458	108	161	368	410	808	1306
General Chemistry																			
pH	pH units	6.5-8.5	-	-	8.13	7.9	7.67	7.81	7.07	7.36	8.29	7.61	7.74	7.57	6.76	7.12	8.22	6.97	7.21
Specific Conductance 25°C	µS/cm	-	-	-	365	295	365	201	304	422	430	437	473	117	173	360	392	767	1420
Total Dissolved Solids	mg/L	500	349	-	252	190	205	140	195	190	281	290	280	119	140	220	251	**385**	**940**
Total Suspended Solids	mg/L	-	-	-	5590	924	2440	466	273	356	1850	520	374	12.8	77.5	2580	59	56.5	54.5
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	<2	-	-	<0.2	-	-	<0.2	-	-	0.3	-	-	<0.2	-
Dissolved Organic Carbon	mg/L	5	4.37	-	2.90	3.00	2.10	3.77	3.30	**4.50**	1.08	1.10	0.90	4.00	**4.9**	**11.7**	**5.42**	**5.2**	**6.4**
Biological Oxygen Demand	mg/L	-	-	-	<6.0	0.5	0.6	<3.8	1.5	0.8	<5.0	0.3	0.6	<2.0	0.6	5.7	<2.0	1.9	1
Chemical Oxygen Demand	mg/L	-	-	-	74	26	13	23	30	<5	12	13	<5	28	22	<5	24	34	<5
Phenols (4AAP)	mg/L	-	-	-	-	0.0037	-	-	0.0031	-	-	0.0035	-	-	0.0033	-	-	0.0025	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	201	162	193	105	162	220	240	221	237	61	91	198	179	304	**615**
Ammonia (as N)	mg/L	-	-	-	0.0392	<0.01	<0.01	0.076	<0.01	<0.01	0.0174	<0.01	<0.01	<0.0050	<0.01	<0.01	<0.0050	<0.01	<0.01
Chloride	mg/L	250	128	125	1.60	0.50	0.60	6.04	5.1	3.70	2.06	1.6	1.30	0.60	0.3	<0.2	9.55	33.6	55.40
Sulphate	mg/L	500	251	-	36.0	11.9	13.4	0.53	<0.5	1.70	27.1	26.9	20.2	0.85	0.9	0.5	26.8	92.3	160
Nitrate (as N)	mg/L	10	2.52	-	0.140	0.16	-	<0.020	<0.05	-	0.037	0.13	-	<0.020	<0.05	-	0.051	<0.05	-
Nitrite (as N)	mg/L	1	0.26	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
Phosphorus (P)	mg/L	-	-	-	-	0.026	-	-	0.225	-	-	<0.002	-	-	0.004	-	-	<0.002	-
Dissolved Metals																			
Arsenic (As)	mg/L	0.01	0.003	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.001	-
Barium (Ba)	mg/L	1	0.27	-	0.0621	0.035	0.052	0.0165	0.024	0.044	0.0447	0.042	0.059	0.00829	0.012	0.0240	0.0296	0.055	0.105
Boron (B)	mg/L	5	1.26	-	0.013	0.010	0.015	<0.010	0.002	<0.003	0.036	0.050	0.054	<0.010	0.008	<0.006	0.011	0.015	0.036
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	<0.00002	-	-	<0.00002	-	-	0.001	-	-	0.000	-	-	0.000	-
Calcium (Ca)	mg/L	-	-	-	34.8	36.200	39.3	25.0	44.000	61.6	47.1	52.400	55.3	11.9	22.400	47.7	45.9	65.300	185.0
Chromium (Cr)	mg/L	0.05	0.013	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-
Copper (Cu)	mg/L	1	0.5	-	-	0.002	-	-	0.002	-	-	<0.001	-	-	0.001	-	-	0.001	-
Iron (Fe)	mg/L	0.3	0.26	-	0.036	<0.020	**0.574**	<0.010	**0.517**	**4.52**	<0.010	<0.020	0.044	**0.352**	**0.601**	0.0430	0.012	0.025	**0.368**
Lead (Pb)	mg/L	0.01	0.0025	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-
Magnesium (Mg)	mg/L	-	-	-	20.7	13.000	21.6	7.76	10.600	13.8	24.3	21.200	28.1	4.42	7.650	15.9	19.3	27.400	77.9
Manganese (Mn)	mg/L	0.05	0.272*	-	-	0.049	-	-	0.272	-	-	0.024	-	-	0.076	-	-	**0.342**	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-
Potassium (K)	mg/L	-	-	-	-	1.260	-	-	0.350	-	-	2.340	-	-	0.530	-	-	1.010	-
Sodium (Na)	mg/L	200	101	103	7.71	4.010	8.27	2.72	2.710	2.95	4.46	4.890	4.45	1.34	1.790	2.15	4.66	7.65	24.8
Zinc (Zn)	mg/L	5	2.5	-	-	0.001	-	-	0.003	-	-	0.002	-	-	0.007	-	-	0.003	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-
1,4-Dichlorobenzene	mg/L	0.005	0.0016	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-
Dichloromethane	mg/L	0.05	0.016	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-
Toluene	mg/L	0.06	0.0303	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-	-	<0.0003	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-
Ion Balance																			
Total Anions	meq/L	-	-	-	4.8	3.5	4.2	2.3	3.4	4.5	5.4	5.0	5.2	1.3	1.8	-	4.4	8.9	17.2
Total Cations	meq/L	-	-	-	3.8	3.1	4.1	2.0	3.2	4.5	4.5	4.6	5.3	1.0	1.9	-	4.1	5.9	16.7
Percent Difference	%	-	-	-	-12.0	-6.3	-0.4	-6.3	-2.4	-0.4	-8.8	-4.1	0.7	-9.9	0.5	-	-3.8	-20.6	-1.3

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown underlined and bold.
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown highlighted and bold
Trigger exceedances shown italic and bold

Table 4
Summary of 2025 Groundwater Analytical Results
2023-2025 Comprehensive Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	RUG Criteria 2025	BH10	BH10	BH10	BH11	BH11	BH11
				31-May-2025	15-Jul-2025	29-Sep-2025	31-May-2025	15-Jul-2025	29-Sep-2025
Field Testing Results				Dry	Dry	Dry	Dry	Low Water	Low Water
pH	pH units	6.5-8.5	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-
Specific Conductance 25°C	µS/cm	-	-	-	-	-	-	-	-
General Chemistry									
pH	pH units	6.5-8.5	-	-	-	-	-	-	-
Specific Conductance 25°C	µS/cm	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	500	349	-	-	-	-	-	-
Total Suspended Solids	mg/L	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	5	4.37	-	-	-	-	-	-
Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	-	-	-	-	-	-	-	-
Anions and Nutrients									
Alkalinity (as CaCO3)	mg/L	30-500	-	-	-	-	-	-	-
Ammonia (as N)	mg/L	-	-	-	-	-	-	-	-
Chloride	mg/L	250	128	-	-	-	-	-	-
Sulphate	mg/L	500	251	-	-	-	-	-	-
Nitrate (as N)	mg/L	10	2.52	-	-	-	-	-	-
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	-	-
Dissolved Metals									
Arsenic (As)	mg/L	0.01	0.003	-	-	-	-	-	-
Barium (Ba)	mg/L	1	0.27	-	-	-	-	-	-
Boron (B)	mg/L	5	1.26	-	-	-	-	-	-
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	0.05	0.013	-	-	-	-	-	-
Copper (Cu)	mg/L	1	0.5	-	-	-	-	-	-
Iron (Fe)	mg/L	0.3	0.26	-	-	-	-	-	-
Lead (Pb)	mg/L	0.01	0.0025	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	0.05	0.272*	-	-	-	-	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L	200	101	-	-	-	-	-	-
Zinc (Zn)	mg/L	5	2.5	-	-	-	-	-	-
Volatile Organic Compounds									
Benzene	mg/L	0.001	0.0006	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.0016	-	-	-	-	-	-
Dichloromethane	mg/L	0.05	0.016	-	-	-	-	-	-
Toluene	mg/L	0.06	0.0303	-	-	-	-	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	-	-
Ion Balance									
Total Anions	meq/L	-	-	-	-	-	-	-	-
Total Cations	meq/L	-	-	-	-	-	-	-	-
Percent Difference	%	-	-	-	-	-	-	-	-

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown underlined and bold.
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APPENDIX A

Content Copy Of Original

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 8454-4Z8J3V
Issue Date: December 19, 2016

The Corporation of the Township of Conmee
19 Holland Rd W
Rural Route, No. 1
Conmee, Ontario
P0T 1W0

Site Location: Conmee Landfill
Sovereign Road North
Lot 6, Concession 3
Conmee Township, District of Thunder Bay

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

the use and operation of a 1.0 hectare landfilling area and waste transfer facility within a total site area of 17.5 hectares.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A";

"Contaminating Life Span" means contaminating life span as defined in Ontario Regulation 232/98;

"Director" means any *Ministry* employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part II.1 of the *EPA;*

"District Manager" means the District Manager of the local district office of the *Ministry* in which the *Site* is geographically located;

"EPA" means *Environmental Protection Act* , R.S.O. 1990, c. E. 19, as amended;

"HHW" means household hazardous waste;

"Ministry" means the Ontario Ministry of the Environment and Climate Change;

"NMA" means *Nutrient Management Act* , 2002, S.O. 2002, c. 4, as amended;

"Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality S tandards) as amended;

"Operator" means any person, other than the *Owner's* employees, authorized by the *Owner* as having the charge, management or control of any aspect of the *Site* and includes its successors or

assigns;

"Owner" means any person that is responsible for the establishment or operation of the *Site* being approved by this *Approval,* and includes the Corporation of the Township of Conmee and its successors and assigns;

"OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

"PA" means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended;

"Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA,* Section 5 of the *EPA,* Section 17 of the *PA,* Section 4 of the *NMA,* or Section 8 of the *SDWA;*

"Reasonable Use Guideline" or *" RUG"* means the Ministry Guideline B-7 entitled "Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities", dated April 1994, as amended;

"Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

"Regional Director" means the Regional Director of the local Regional Office of the *Ministry* in which the *Site* is located;

"Regulation 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended;

"Regulation 903" means Regulation 903, R.R.O. 1990, made under the *OWRA,* as amended;

"SDWA" means *Safe Drinking Water Act,* 2002, S.O. 2002, c. 32, as amended;

"Site" means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Conmee Landfill, Sovereign Road North, Lot 6, Concession 3, Conmee Township, District of Thunder Bay; and

"Trained Personnel" means personnel knowledgeable in the following through instruction and/or practice:

a. relevant waste management legislation, regulations and guidelines;
b. major environmental concerns pertaining to the waste to be handled;
c. occupational health and safety concerns pertaining to the processes and wastes to be handled;
d. management procedures including the use and operation of equipment for the processes and wastes to be handled;
e. emergency response procedures;
f. specific written procedures for the control of nuisance conditions;
g. specific written procedures for refusal of unacceptable waste loads; and
h. the requirements of this *Approval.*

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL

Compliance

(1) The *Owner* and *Operator* shall ensure compliance with all the conditions of this *Approval* and shall ensure that any person authorized to carry out work on or operate any aspect of the *Site* is notified of this *Approval* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the *Site* shall comply with the conditions of this *Approval.*

In Accordance

(3) Except as otherwise provided by this *Approval,* the *Site* shall be designed, developed, built, operated and maintained in accordance with the documentation listed in the attached Schedule “A”.

Interpretation

(4) Where there is a conflict between a provision of any document listed in Schedule "A" in this *Approval,* and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence.

(5) Where there is a conflict between the application and a provision in any document listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.

(6) Where there is a conflict between any two documents listed in Schedule "A", the document bearing the most recent date shall take precedence.

(7) The conditions of this *Approval* are severable. If any condition of this *Approval,* or the application of any condition of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Approval* shall not be affected thereby.

Other Legal Obligations

(8) The issuance of, and compliance with, this *Approval* does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
(b) limit in any way the authority of the *Ministry* to require certain steps be taken or to require the *Owner* and *Operator* to furnish any further information related to compliance with this *Approval.*

Adverse Effect

(9) The *Owner* and *Operator* shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the *Site,* including such accelerated or additional monitoring as may be necessary to determine the nature and extent of

the effect or impairment.

(10) Despite an *Owner, Operator* or any other person fulfilling any obligations imposed by this *Approval* the person remains responsible for any contravention of any other condition of this *Approval* or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

Change of Ownership

(11) The *Owner* shall notify the *Director,* in writing, and forward a copy of the notification to the *District Manager,* within 30 days of the occurrence of any changes in the following information:

(a) the ownership of the *Site;*
(b) the *Operator* of the *Site;*
(c) the address of the *Owner or Operator;* and
(d) the partners, where the *Owner or Operator* is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R. S. O. 1990, c. B.17, shall be included in the notification.

(12) No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

(13) In the event of any change in ownership of the *Site,* other than change to a successor municipality, the *Owner* shall notify the successor of and provide the successor with a copy of this *Approval,* and the *Owner* shall provide a copy of the notification to the *District Manager* and the *Director.*

Registration on Title Requirement

(14) Prior to dealing with the property in any way, the *Owner* shall provide a copy of this *Approval* and any amendments, to any person who will acquire an interest in the property as a result of the dealing.

(15) (a) Within thirty (30) calendar days from the date of issuance of this *Approval,* the *Owner* shall submit to the *Director* a completed Certificate of Requirement which shall include:

(i) a plan of survey prepared, signed and sealed by an Ontario Land Surveyor, which shows the area of the *Site* where waste has been or is to be deposited at the *Site;*
(ii) proof of ownership of the *Site;*
(iii) a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the *Director,* verifying the legal description provided in the Certificate of Requirement;
(iv) the legal abstract of the property; and
(v) any supporting documents including a registerable description of the *Site.*

(b) Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the *Director,* the *Owner* shall:

(i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
(ii) submit to the *Director* and the District Manager, written verification that the Certificate of Requirement has been registered on title.

Inspections by the Ministry

(16) No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA,* of any place to which this *Approval* relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *Approval* are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Approval;*
(c) to inspect the *Site,* related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this *Approval;* and
(e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *Approval* or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information and Record Retention

(17) (a) Except as authorized in writing by the *Director,* all records required by this *Approval* shall be retained at the Municipal Office for a minimum of two (2) years from their date of creation.

(b) The *Owner* shall retain all documentation listed in Schedule “A” for as long as this *Approval* is valid.

(c) All monthly summary reports of waste records collected are to be kept at the *Site* until they are included in the Annual Report.

(d) The *Owner* shall retain employee training records as long as the employee is working at the *Site.*

(e) The *Owner* shall make all of the above documents available for inspection upon request of *Ministry* staff.

(18) The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action under this *Approval* or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the *Ministry* of any act or omission of any person

that contravenes any term or condition of this *Approval* or any statute, regulation or other legal requirement; or
(b) acceptance by the *Ministry* of the information's completeness or accuracy.

(19) The *Owner* shall ensure that a copy of this *Approval,* in its entirety and including all its Notices of Amendment, and documentation listed in Schedule "A", are retained at the Municipal Office at all times.

(20) Any information related to this *Approval* and contained in *Ministry* files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

2. SITE OPERATION

Operation

(1) The *Site* shall be operated and maintained at all times including management and disposal of all waste, in accordance with the *EPA, Regulation 347,* and the conditions of this *Approval.* At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

Signs

(2) A sign shall be installed and maintained at the main entrance/exit to the *Site* on which legibly display the following information:

(a) the name of the *Site* and *Owner;*
(b) the number of the *Approval;*
(c) the name of the *Operator;*
(d) the normal hours of operation;
(e) the allowable and prohibited waste types;
(f) the telephone number to which complaints may be directed;
(g) a warning against unauthorized access;
(h) a twenty-four (24) hour emergency telephone number (if different from above); and
(i) a warning against dumping outside the *Site.*

(3) The *Owner* shall install and maintain signs to direct vehicles to working face and waste diversion areas.

(4) The *Owner* shall provide signs at waste diversion areas informing users what materials are acceptable and directing users to appropriate storage areas.

Vermin, Vectors, Dust, Litter, Odour, Noise and Traffic

(5) The *Site* shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Burning Waste Prohibited

(6) (a) Burning of waste including cardboard at the *Site* is prohibited.

(b) Notwithstanding Condition 2. (6) (a) above, burning of segregated, clean wood and brush at the landfill may be carried out in strict compliance with the Ministry of the Environment Document titled "Guideline C-7, Burning at Landfill Sites" dated April 1994.

Site Access

(7) Waste shall only be accepted during the following time periods:

May 15 to October 15:
Wednesday: from 3:00 p.m. to 7:00 p.m.
Saturday: from 9:00 a.m. to 3:00 p.m.

October 16 to May 14:
Wednesday:from 1:00 p.m. to 5:00 p.m.
Saturday: from 9:00 a.m. to 3:00 p.m.

(8) On-site equipment used for daily site preparation and closing activities may be operated during day light hours except Sundays and statutory holidays.

(9) With the prior written approval from the *District Manager,* the time periods may be extended to accommodate seasonal or unusual quantities of waste.

Site Security

(10) No waste shall be received, landfilled or removed from the *Site* unless a site supervisor or an attendant is present and supervises the operations during operating hours. The *Site* shall be closed when a site attendant is not present to supervise landfilling operations.

(11) The *Site* shall be operated and maintained in a safe and secure manner. During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons.

3. EMPLOYEE TRAINING

(1) A training plan for all employees that operate any aspect of the *Site* shall be developed and implemented by the *Owner* or the *Operator.* Only *Trained Personnel* shall operate any aspect of the *Site* or carry out any activity required under this *Approval* .

4. COMPLAINTS RESPONSE PROCEDURE

(1) If at any time the *Owner* receives complaints regarding the operation of the *Site,* the *Owner* shall respond to these complaints according to the following procedure:

(a) The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
(b) The *Owner,* upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and
(c) The *Owner* shall complete and retain at the municipal office a report written within two (2) weeks of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

5. EMERGENCY RESPONSE

(1) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

(2) In addition, the *Owner* shall submit, to the *District Manager* a written report within three (3) business days of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the *Site.*

(3) All wastes resulting from an emergency situation shall be managed and disposed of in accordance with *Reg. 347.*

(4) All equipment and materials required to handle the emergency situations shall be:

(a) kept on hand at all times that waste landfilling and/or handling is undertaken at the *Site;* and
(b) adequately maintained and kept in good repair.

(5) The *Owner* shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

6. INSPECTIONS, RECORD KEEPING AND REPORTING

Log Book

(1) A log shall be maintained in written or electronic format and shall include the following information:

(a) the area of the *Site* in which waste disposal operations are taking place;
(b) a record of litter collection activities and the application of any dust suppressants;
(c) a record of the daily inspections; and

(d) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.

(2) Any information requested, by the *Director* or a *Provincial Officer,* concerning the *Site* and its operation under this *Approval,* including but not limited to any records required to be kept by this *Approval* shall be provided to the *Ministry,* upon request.

Inspections and Log Book

(3) An inspection of the entire *Site* and all equipment on the *Site* shall be conducted each day the *Site* is in operation to ensure that: the *Site* is secure; that the operation of the *Site* is not causing any nuisances; that the operation of the *Site* is not causing any adverse effects on the environment and that the *Site* is being operated in compliance with this *Approval.* Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the *Site* if needed **.**

(4) A record of the inspections shall be kept in a daily log book that includes:

(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

(5) A record shall be kept in the log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Monitoring Report

(6) Commencing on June 30, 2017, and on a three year basis thereafter, the Township shall submit to the *District Manager* a Monitoring Report. The report shall contain but is not limited to the following information:

(a) An estimate of the amount of waste received for disposal and comparison of the actual capacity used to the estimates of the capacity approved;
(b) A plan of the Landfill outlining all groundwater monitoring locations;
(c) Tables outlining groundwater monitoring locations, analytical parameters sampled, and frequency of sampling;
(d) An analysis and interpretation of groundwater monitoring data, a review of the adequacy of the monitoring program, conclusions of the monitoring data, and recommendations for any changes to the groundwater monitoring programs that may be necessary;
(e) An assessment of groundwater quality in relation to the RUG and the ODWO at the Landfill boundaries;
(f) An assessment of the efficiency of the attenuation zone;
(g) An update of changes in operations, equipment, or procedures made or produced at the Landfill, and any operating difficulties encountered;
(h) A summary of complaints regarding Landfill operations and the Township's response and action; and
(i) Recommendations respecting any proposed change in the operation of the Landfill.

(7) Commencing on June 30, 2018, the Township shall submit to the *District Manager* an annual

water quality data summary for each of the intervening years in which a Monitoring Report is not required to be submitted to the *District Manager.*

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

(1) Only domestic non-hazardous solid waste shall be accepted at the *Site* for landfilling. No liquid industrial waste or hazardous waste as designated under Regulation 347 shall be disposed of at the Landfill.

(2) The *Owner* shall develop and implement a program to inspect waste to ensure that the waste received at the *Site* is of a type approved for acceptance under this *Approval.*

(3) The *Owner* shall ensure that all loads of waste are properly inspected by *Trained personnel* prior to acceptance at the *Site* and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The *Owner* shall notify the *District Manager,* in writing, of load rejections at the *Site* within one (1) business day from their occurrence.

Capacity

(4) The calculated theoretical maximum volumetric capacity of the *Site,* consisting of the waste, daily cover and intermediate cover, but excluding the final cover is 25,750 cubic metres.

(5) The Design Operations and Closure Plan, dated August 31, 2016 to increase the capacity of the *Site* to 25,750 m3 is hereby approved subject to the conditions of this approval.

Service Area

(6) Only waste that is generated within the boundaries of the Township of Conmee may be accepted at the *Site.*

Cover

(7) Alternative materials to soil may be used as weekly and interim cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the *Owner* to the *Director,* copied to the *District Manager* and as approved by the *Director* via an amendment to this *Approval.* The alternative material shall be non-hazardous according to *Reg. 347* and will be expected to perform at least as well as soil in relation to the following functions:

(a) Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
(b) Provision for an aesthetic condition of the landfill during the active life of the *Site;*
(c) Provision for vehicle access to the active tipping face; and
(d) Compatibility with the design of the *Site* for groundwater protection, leachate management and landfill gas management.

(8) Cover material shall be applied as follows:

(a) Interim Cover - Weather permitting, deposited waste shall be covered weekly from May 15 to October 15 and Bi-Weekly for the remainder of the year, in a manner acceptable to the *District Manager* so that no waste is exposed to the atmosphere;
(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and
(c) Final Cover - In areas where landfilling has been completed to final contours, a minimum 600 millimetre thick layer of soil of medium permeability and 150 millimetres of top soil (vegetative cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

8. LANDFILL MONITORING

Landfill Gas

(1) The *Owner* shall ensure that any buildings or structures at the *Site* contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the *Site,* especially enclosed structures which at times are occupied by people.

Compliance

(2) The *Site* shall be operated in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the *Site;* and

(b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives,* as amended from time to time or limits set by the *Regional Director,* for the protection of the surface water at and off the *Site; and*

(c) Ontario Drinking Water Quality Standards.

Surface Water and Groundwater

(3) The *Owner* shall monitor surface water and ground water in accordance with the monitoring programs outlined in documents listed in the attached Schedule "A".

(4) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

(5) The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

(6) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

(7) Any groundwater monitoring well included in the on-going monitoring program that is damaged shall be assessed, repaired, replaced or decommissioned by the *Owner,* as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *Director* for abandonment, shall be decommissioned by the *Owner,* as required, in accordance with *O.Reg. 903,* to prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Trigger Mechanisms and Contingency Plans

(8) (a) Trigger mechanisms shall be in accordance with documents in Schedule "A".

(b) Contingency plan in the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate shall be in accordance with Item documents in Schedule "A".

(9) In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the *Owner* shall immediately notify the *District Manager,* and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the *Owner* in accordance with the approved trigger mechanisms and associated contingency plans.

(10) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the *Owner* shall ensure that the following steps are taken:

(a) The *Owner* shall notify the *District Manager,* in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the *Owner* to the *Director* for approval; and
(c) The contingency measures shall be implemented by the *Owner* upon approval by the *Director.*

(11) The *Owner* shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the *Director* via an amendment to this *Approval.*

Changes to the Monitoring Plan

(12) The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The *Owner* shall make clear reference to the proposed changes in a separate letter that shall accompany the annual

report.

(13) Within fourteen (14) days of receiving the written correspondence from the *District Manager* confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Approval* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

(14) In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current *Ministry* procedures for seeking approval for amending the *Approval.*

(15) Within three (3) months of issuance of this *Approval,* the *Owner* shall provide to the *District Manager* a report addressing the need for the replacement of BH10 and the adequacy of the groundwater monitoring program related to assessing compliance with Guideline B-7. A proposal shall be provided with this report as needed.

9. CLOSURE PLAN

(1) At least 3 years prior to the anticipated date of closure of this *Site,* the *Owner* shall submit to the *Director* for approval, with copies to the *District Manager,* a detailed *Site* closure plan pertaining to the termination of landfilling operations at this *Site,* post-closure inspection, maintenance and monitoring, and end use. The plan shall include but not be limited to the following information:

(a) a plan showing *Site* appearance after closure;
(b) a description of the proposed end use of the *Site;*
(c) a description of the procedures for closure of the *Site,* including:

(i) advance notification of the public of the landfill closure;
(ii) posting of a sign at the *Site* entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
(iii) completion, inspection and maintenance of the final cover and landscaping;
(iv) *Site* security;
(v) removal of unnecessary landfill-related structures, buildings and facilities;
(vi) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas; and
(vii) a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above;

(d) descriptions of the procedures for post-closure care of the *Site,* including:

(i) operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
(ii) record keeping and reporting; and
(iii) complaint contact and response procedures;

(e) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
(f) an updated estimate of the *contaminating life span* of the *Site,* based on the results of the monitoring programs to date.

(2) The *Site* shall be closed in accordance with the closure plan as approved by the *Director.*

10. WASTE DIVERSION

(1) The *Owner* shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during high winds events.

(2) Only *Refrigerant Appliances* that have been tagged by a licensed technician to indicate that the refrigerant has been removed may be accepted at the *Site* for transfer. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site.*

(3) Collection, storage and transfer of Waste Electrical and Electronic Equipment shall be in accordance with the documents in the Schedule "A". If there is any discrepancy between the guideline titled " Collection Site Organizing & Operating Waste Electrical and Electronic Equipment (WEEE) Guidebook" dated November 2012 as amended prepared by Ontario Electronic Stewardship and the documents in Schedule "A", the guideline shall take precedence.

(4) No more than 100 tires shall be stored on *Site* for transfer.

11. HHW

(1) The maximum amount of waste to be stored at the *Site* shall be limited to the following:

(a) 700 litres of batteries in accordance with the documents in Schedule "A".

(b) 700 litres of pain in accordance with the documents in Schedule "A".

(c) 2400 litres of waste oil.

(2) Notwithstanding Condition 11(1) above, where storage of waste creates nuisance impact or affects the health and safety of the public, the waste shall be removed and disposed of immediately.

(3) The collection, storage and transfer *HHW* shall be in accordance with the documents in Schedule "A".

(4) No radioactive, pathological or biomedical wastes or contaminated radioactive, pathological or biomedical wastes shall be accepted at this Site.

SCHEDULE "A"

1. Aquatic Baseline Survey Un-Named Creek Conmee Township prepared by DST Consulting Engineers Inc. and dated November 14, 2000.

2. Drainage Study Proposed Waste Disposal Site Conmee Township, Kakabeka Falls, Ontario prepared by DST Consulting Engineers Inc. and dated November 21, 2000.

3. Letter from D.Brigham of DST Consulting Engineers Inc. to E.Zaltsberg of the MOE of June 1, 2001 Re: Response to Comments on Conmee Township Municipal Landfill Site.

4. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Heather Vialiux and dated August 22, 2001.

5. Hydrogeological Investigation Proposed Waste Disposal Site Conmee Township Kakabeka Falls, Ontario prepared by DST Consulting Engineers Inc. and dated September, 2001.

6. Design and Operations Report Proposed Waste Disposal Site Conmee Township Kakabeka Falls, Ontario prepared by DST Consulting Engineers Inc. and dated September, 2001.

7. Letter from J.P.Mucklow of Wardrop Engineering Inc. to H.Mortfield of MOEE of July 23, 2002 Re: Application for Amendment Provisional Certificate of Approval No. 8454-4Z8J3V Waste Disposal Site Township of Conmee, District of Thunder Bay.

8. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Patricia Maxwell and dated July 30, 2002.

9. Letter from J.P. Mucklow of Wardrop Engineering Inc. to E.Zaltsberg of the MOEE of August 19, 2002 Re: Application for Approval of Waste Disposal Site, Relocate Fill Area, Amend Trench Geometry and Operating Hours, Conmee Township, District Thunder Bay, Certificate of Approval No. 8454-4Z8J3V.

10. Letter from J.R. Garatti and J.P. Mucklow of Wardrop Engineering Inc. to I. Parrott of MOE on July 21, 2003 Re: Application for Amendment Provisional Certificate of Approval No. 8454-4Z8J3V.

11. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Patricia Maxwell and dated August 8, 2003.

12. Memorandum from L. Nelson, MOE-Technical Support Section to H. Mortfield, MOE-Thunder Bay District on March 11, 2003 Re: Monitoring Well Installations, New Landfill Site Township of Conmee.

13. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Patricia Maxwell and dated August 3, 2009.

14. Memorandum from Sam Shippam, Environmental Officer, MOE-Thunderbay office, to the Corporation of the Township of Conmee on April 2, 2009 Re: Conmee Township Landfill Site 2005, 2006, 2007 Annual Monitoring Reports.

15. Environmental Compliance Approval Application dated December 21, 2015 and signed Patricia Maxwell, CAO/Clerk, the Corporation of the Township of Conmee, including the attached supporting documentation.

16. Report titled "Design, Operation and Closure Plan, Conmee Landfill Site" dated August 31, 2015 prepared by True Grit Consulting Ltd.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

- The reason for Conditions 1(1), (2), (4), (5), (6), (7), (8), (9), (10), (17), (18) and (19) is to clarify the legal rights and responsibilities of the *Owner* and *Operator* under this *Approval* .

- The reasons for Condition 1(3) are to ensure that the *Site* is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the *Owner,* and not in a manner which the *Director* has not been asked to consider.

- The reasons for Condition 1(11) are to ensure that the *Site* is operated under the corporate name which appears on the application form submitted for this *approval* and to ensure that the *Director* is informed of any changes.

- The reasons for Condition 1(12) are to restrict potential transfer or encumbrance of the *Site* without the approval of the *Director* and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this *Approval* .

- The reason for Condition 1(13) is to ensure that the successor is aware of its legal responsibilities.

- The reasons for Conditions 1(14) and (15) are that the Part II.1 *Director* is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the *Approval* to any person who will acquire an interest in the property as a result of the dealing.

- The reason for Condition 1(16) is to ensure that appropriate *Ministry* staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this *Approval* . This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *Act* , the *OWRA* , the *PA* , the *NMA* and the *SDWA* .

- Condition 1 (20) has been included in order to clarify what information may be subject to the *Freedom of Information Act.*

SITE OPERATION

- The reasons for Conditions 2(1), 2(5) and 6(3) are to ensure that the *Site* is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.

- The reason for Conditions 2 (2), 2(3) and 2(4) is to ensure that users of the *Site* are fully aware of important information and restrictions related to *Site* operations and access under this *Approval.*

- The reasons for Condition 2(6) (a), (b) and (c) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects, and the potential fire

hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.

- The reasons for Condition 2(7), 2(8) and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.

- The reasons for Condition 2(10) and 2(11) are to ensure that the *Site* is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the *Site* by preventing unauthorized access when the Site is closed and no site attendant is on duty.

EMPLOYEE TRAINING

- The reason for Condition 3(1) is to ensure that the *Site* is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

COMPLAINTS RESPONSE PROCEDURE

- The reason for Condition 4(1) is to ensure that any complaints regarding landfill operations at this *Site* are responded to in a timely and efficient manner.

EMERGENCY RESPONSE

- Conditions 5(1) and 5(2) are included to ensure that emergency situations are reported to the Ministry to ensure public health and safety and environmental protection.

- Conditions 5(3), 5(4) and 5(5) are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.

RECORD KEEPING AND REPORTING

- The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this *Approval* (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the *EPA* and its regulations.

- The reason for Conditions 6(4) and 6(5) is to ensure that detailed records of *Site* inspections are recorded and maintained for inspection and information purposes.

- The reasons for Conditions 6(6) and 6(7) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.

LANDFILL DESIGN AND DEVELOPMENT

- The reason for Conditions 7(1) to 7(6) inclusive is to specify the approved areas from which waste may be accepted at the *Site* and the types and amounts of waste that may be accepted for disposal at the *Site,* based on the *Owner*'s application and supporting documentation.

- Condition 7(7) is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.

- The reasons for Condition 7(8) are to ensure that daily/weekly and intermediate cover are used to control potential nuisance effects, to facilitate vehicle access on the *Site,* and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the *Site.*

LANDFILL MONITORING

- Reasons for Condition 8(1) are to ensure that off-site migration of landfill gas is monitored and all buildings at the *Site* are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the *Site.*

- Condition 8(2) is included to provide the groundwater and surface water limits to prevent water pollution at the *Site.*

- Conditions 8(3) and 8(4) are included to require the Owner to demonstrate that the *Site* is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

- Conditions 8(5), 8(6) and 8(7) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

- Conditions 8(8) to 8(11) inclusive are added to ensure the *Owner* has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the *Site's* compliance point.

- Conditions 8(12), 8(13) and 8(14) are included to streamline the approval of the changes to the monitoring plan.

- Condition 8(15) is included to require the *Owner* to assess groundwater monitoring well BH10 with respect to adequacy and replace if necessary.

CLOSURE PLAN

- The reasons for Condition 9 are to ensure that final closure of the *Site* is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

WASTE DIVERSION

- Condition 10 is included to ensure that the recyclable materials are stored in their temporary storage location and transferred off-site in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.

HHW
- The reasons for the Condition 11 are to approve collection of household hazardous waste and to ensure that the wastes are managed in a manner that protects the environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 8454-4Z8J3V issued on October 10, 2001

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served

upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the
purposes of Part II.1 of the
Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 19th day of December, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of
the *Environmental Protection Act*

RM/
c: District Manager, MOECC Thunder Bay - District
True Grit Consulting Ltd.

APPENDIX B

LOG OF BOREHOLE 01

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **457 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **14 April 1999**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) × 20 40 60 80 / SPT (N) □ Blows/0.3m DCPT ◆ 20 40 60 80	REMARKS
1	456				60mm Topsoil. CLAY - Silty, trace sand & gravel, brown.	1		12		Dry upon completion. Cave @ 4.6m. Water level @ 2.5m on April 22, 1999.
2	455				---------- - stiff. ---------- - stiff, low to medium plastic.	2		14		
3	454				TILL - Silt, sandy, some clay, trace gravel, brown, very dense to compact.	3		47		
4	453					4		60		
5	452				End of Borehole @ 5.0m	5		29		Standpipe installed to 4.6m.
6	451					6		21		
7	450					7				
8	449					8				
9	448					9				

DST CONSULTING ENGINEERS
DST Consulting Engineers Inc.
605 Hewitson Street
Thunder Bay, Ontario P7C 5V5
PH: (807) 623-2929
FX: (807) 623-1792
Email: thunderbay@dstgroup.com
Web: www.dstgroup.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 6

BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

LOG OF BOREHOLE 02

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **457 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **14 April 1999**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) × 20 40 60 80 / SPT (N) □ Blows/0.3m DCPT ◆ 20 40 60 80	REMARKS
1	456				70mm Topsoil. SAND - Silty, trace gravel, occ. cobble, brown.	1		>99	>50	Dry upon completion. Cave @ 2.0m. Dry on April 22, 1999.
					TILL - Grey, hard.			>99	>50	Standpipe installed to 1.8m.
2	455				End of Borehole @ 2.0m. Auger Refusal.	2				
3	454					3				
4	453					4				
5	452					5				
6	451					6				
7	450					7				
8	449					8				
9	448					9				

BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 7

LOG OF BOREHOLE 03

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **464 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **14 April 1999**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) x 20 40 60 80 / SPT (N) □ Blows/0.3m DCPT ◆ 20 40 60 80	REMARKS
1	463				100mm Topsoil. SAND - Silty, trace gravel, clay, brown, compact.	1		22		Dry upon completion. Cave @ 4.6m. Dry on April 22, 1999.
2	462				TILL - Silt, sand, some gravel, sand pockets, brown, dense to very dense.	2		37		
3	461					3		37		
4	460				End of Borehole @ 4.0m. Auger Refusal.	4		67		
5	459					5		>99		Standpipe installed to 4.0m.
6	458					6				
7	457					7				
8	456					8				
9	455					9				

BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 8

LOG OF BOREHOLE 04

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **454 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **15 April 1999**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION
0					100mm Topsoil.
1	453				CLAY - Silty, trace sand, brown - stiff. - very stiff.
2	452				TILL - Clay, silty, sand & gravel pockets, brown, very stiff to hard.
3	451				
4	450				
5	449				End of Borehole @ 5.0m.
6	448				
7	447				
8	446				
9	445				

DEPTH(m)	SAMPLE TYPE	'N' VALUE
1		12
2		21
3		28
4		27
5		21
		36

VANE (kPa) x (20 40 60 80)
SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)

REMARKS

Water level @ 3.8m upon completion.
Cave @ 4.6m.
Water level @ 2.0m on April 22, 1999

Standpipe installed to 4.6m.

OREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

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SAMPLE TYPE LEGEND

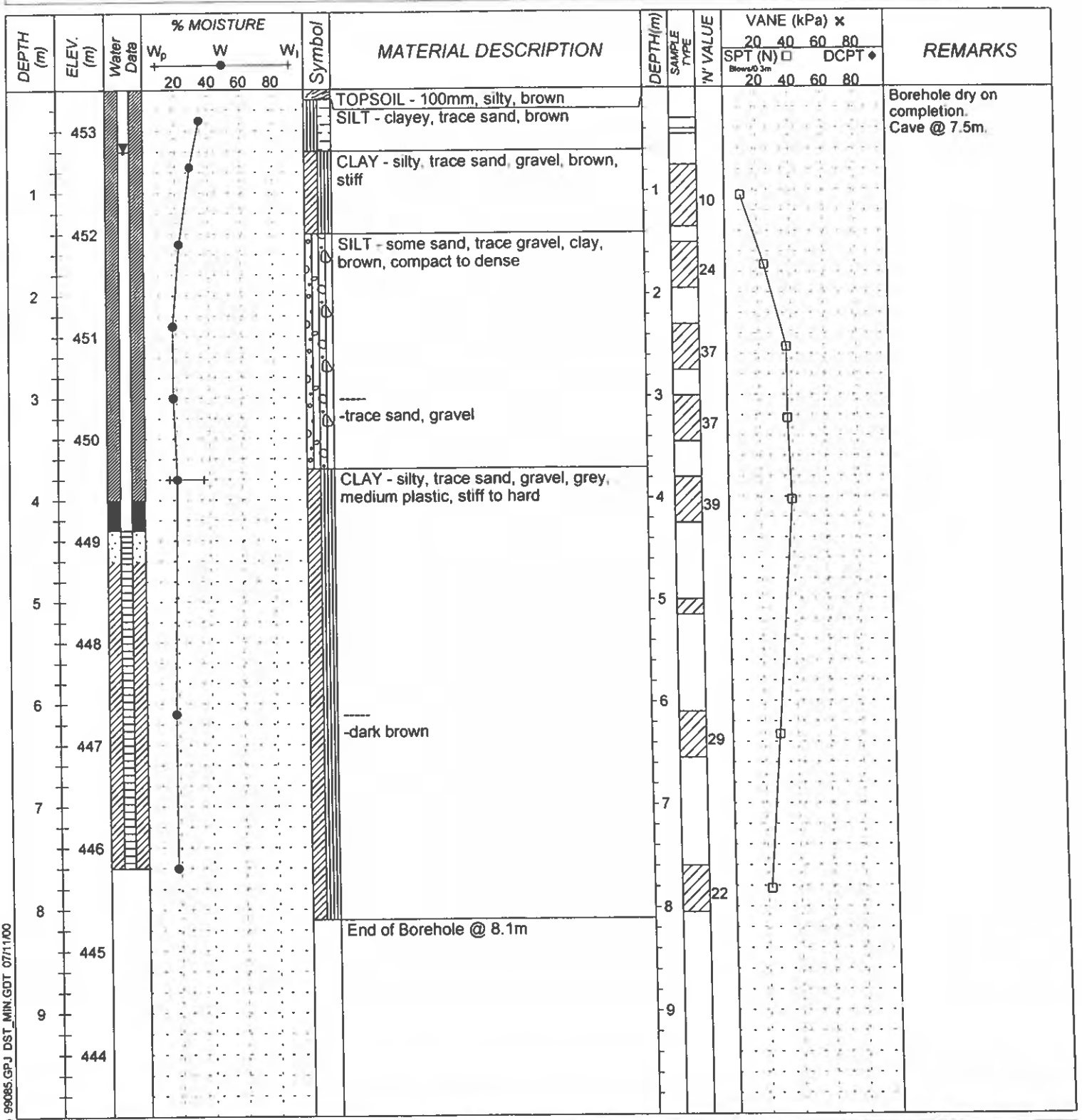
- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Poner Sample

ENCLOSURE 9

LOG OF BOREHOLE 05

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **453.4 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**
DATE: **04 July 2000**



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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 10

IOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

LOG OF BOREHOLE 06

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **457.8 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **04 July 2000**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) x 20 40 60 80 / SPT (N) □ DCPT ◆ Blows/0.3m 20 40 60 80	REMARKS
0	457				TOPSOIL - 100mm, clayey, brown					Water level @ 4.0m on completion.
					CLAY - silty, trace sand, gravel, very stiff to hard					Cave @ 7.0m.
1					-medium plastic clay	1		16		
2	456					2		38		
3	455				SILT - some gravel, clay, brown, dense to very dense	3		90		
4	454					4				
5	453				-trace sand, gravel	5		30		
6	452					6				
7	451					7				
8	450				SAND - layered, grey/brown, loose	8		9		
					End of Borehole @ 8.2m					
9	449					9				
	448									

REHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 11

LOG OF BOREHOLE 07

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **450.8 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **04 July 2000**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) × (20 40 60 80) SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	REMARKS
0	450		106		PEAT - 300mm, organics	0				Borehole dry on completion. Cave @ 2.3m.
1					CLAY - silty, trace sand, gravel, brown, firm to very stiff	1		6		
2	449				-grey/brown	2		18		
3	448				End of Borehole @ 2.3m	3				
4	447					4				
5	446					5				
6	445					6				
7	444					7				
8	443					8				
9	442					9				
	441									

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 12

OREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

LOG OF BOREHOLE 08

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **460.5 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **04 July 2000**

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l) 20 40 60 80	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) × 20 40 60 80; SPT (N) □ Blows/0.3m DCPT ◆ 20 40 60 80	REMARKS
0	460				TOPSOIL - clayey, brown					Borehole dry on completion. Cave @ 2.6m.
					CLAY - silty, trace sand, brown					
1	459				SILT - sandy, trace gravel, brown, compact	1		17	□	
					-gravel					
2	458				-pieces of rock	2				
3	457				End of Borehole @ 2.8m Auger refusal	3				
4	456					4				
5	455					5				
6	454					6				
7	453					7				
8	452					8				
9	451					9				

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

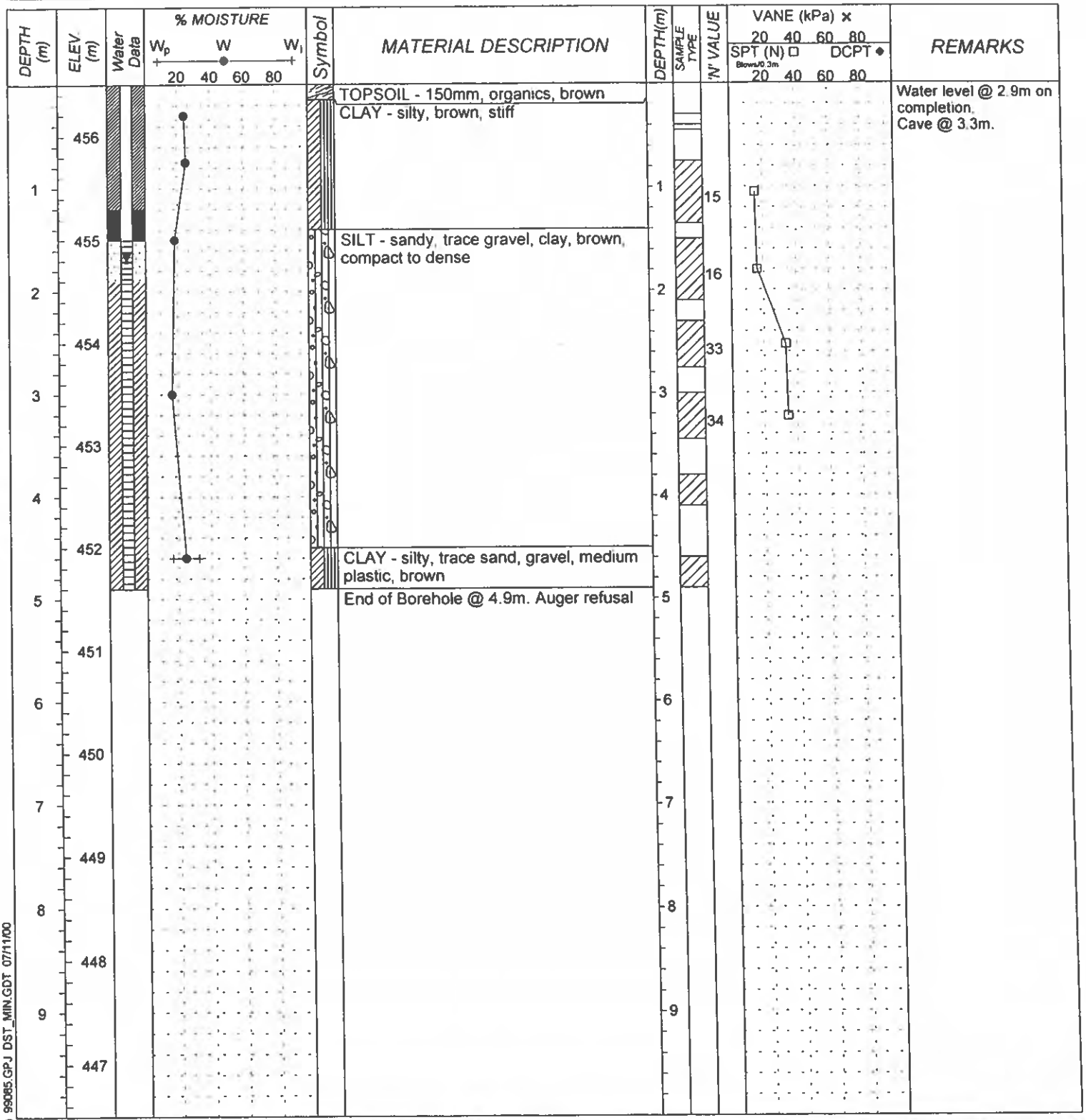
ENCLOSURE 13

BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

LOG OF BOREHOLE 09

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **456.5 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**
DATE: **04 July 2000**



BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 14

LOG OF BOREHOLE 10

DST REF. No.: **TE99085**
CLIENT: **Conmee Township**
PROJECT: **Hydrogeological Study, Proposed Waste Disposal Site**
LOCATION: **Conmee Township, Ontario**
SURFACE ELEV.: **447.5 metres**

Drilling Data
METHOD: **HS Auger**
DIAMETER: **80mm ID**

DATE: **04 July 2000**

DEPTH (m)	ELEV. (m)	Water Date	% MOISTURE W_p W W_l (20 40 60 80)	Symbol	MATERIAL DESCRIPTION	DEPTH(m)	SAMPLE TYPE	'N' VALUE	VANE (kPa) × (20 40 60 80) SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	REMARKS
0	447				TOPSOIL - 100mm, clayey, brown CLAY - silty, trace sand, gravel, brown, hard	1		36		Water level @ 4.0m on completion. Cave @ 4.1m.
1	446				-low plastic	2		61		
2	445				SILT & SAND - trace gravel, brown	3				
3	444					4				
4	443				End of Borehole @ 4.4m. Auger refusal	5				
5	442					6				
6	441					7				
7	440					8				
8	439					9				
9	438									

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- 70mm Thin Wall Tube
- Rock Core
- Side Sampler
- 75mm Split Spoon Sample
- Ponar Sample

ENCLOSURE 15

BOREHOLE (STANDARD) 99085.GPJ DST_MIN.GDT 07/11/00

BOREHOLE LOG: BH11

PROJECT NUMBER E23-015-02
PROJECT NAME Well Replacement
CLIENT Township of Conmee
SITE Conmee Landfill
LOCATION Soverign Rd N, Kakabeka Falls, ON

DRILLING DATE February 1, 2024
TOTAL DEPTH (mbgs) 9.97
DIAMETER (m) 0.178
DRILLING CONTRACTOR RPM Drilling
DRILL RIG CME 55

COORDINATES 16U 0300737 E 5369875 N
SURFACE ELEVATION (m) ~ 452
STATIC WATER LEVEL (mbgs) 0.261
DATE MEASURED February 1, 2024
STICK UP HT. (m) 0.82

COMMENTS mbgs = metres below ground surface

LOGGED BY RS
CHECKED BY CL/KB

Elevation (m)	Depth (m)	Graphic Log	Material Description	Well Diagram	Additional Observations
451.8	0.2		Topsoil/Peat, some organics, dark brown, loose, damp		Surface elevation is approximate. Well has yet to be surveyed.
451.6	0.4			Bentonite	
451.4	0.6				
451.2	0.8				
451	1		Clay loam, trace organics, brown, dense, damp		
450.8	1.2				
450.6	1.4				
450.4	1.6				
450.2	1.8			Sand	
450	2				
449.8	2.2				
449.6	2.4				
449.4	2.6				
449.2	2.8				
449	3				
448.8	3.2		END OF BOREHOLE at 3.04 m. Refusal on suspected bedrock		
448.6	3.4				
448.4	3.6				
448.2	3.8				
448	4				
447.8	4.2				
447.6	4.4				
447.4	4.6				
447.2	4.8				

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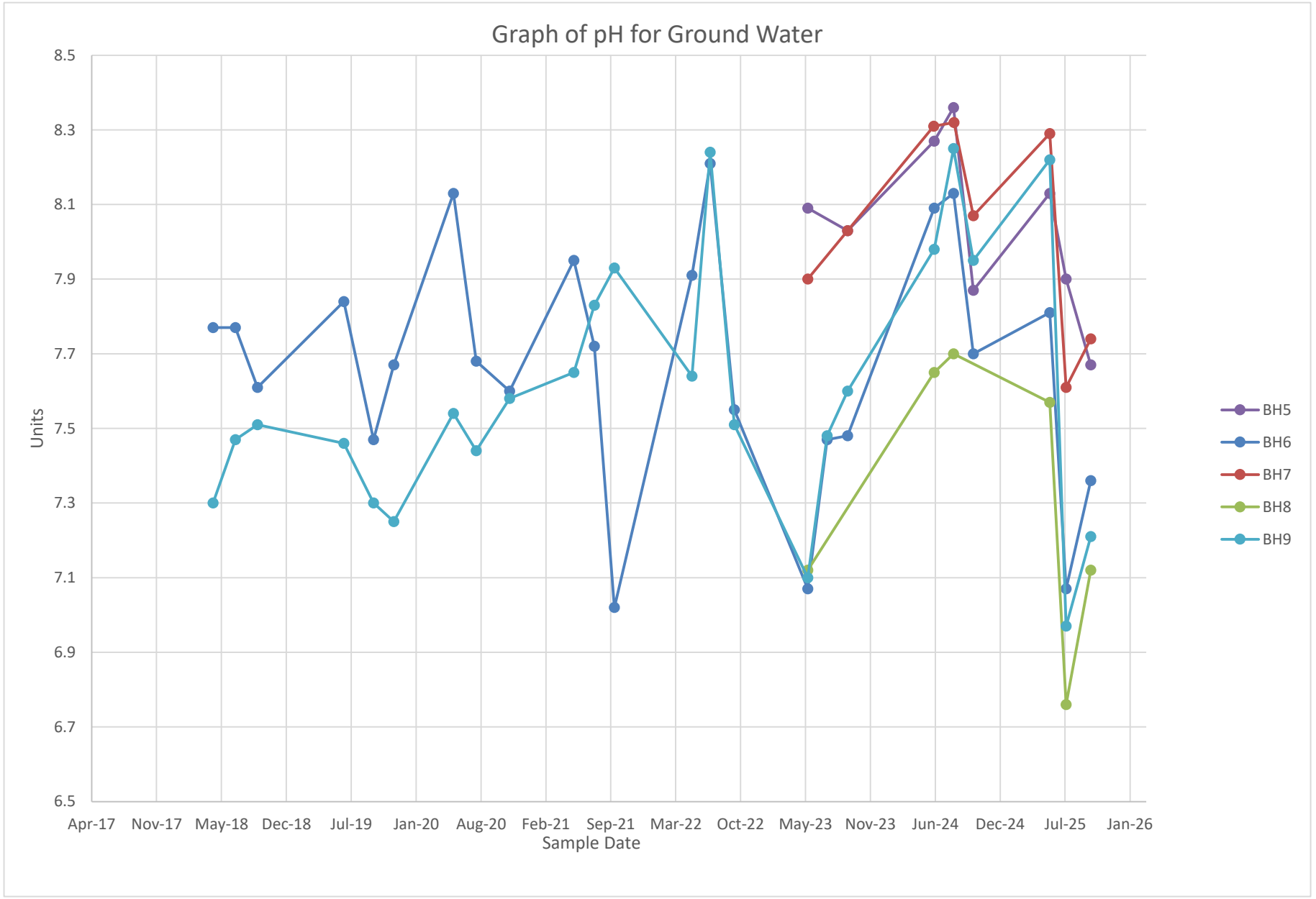
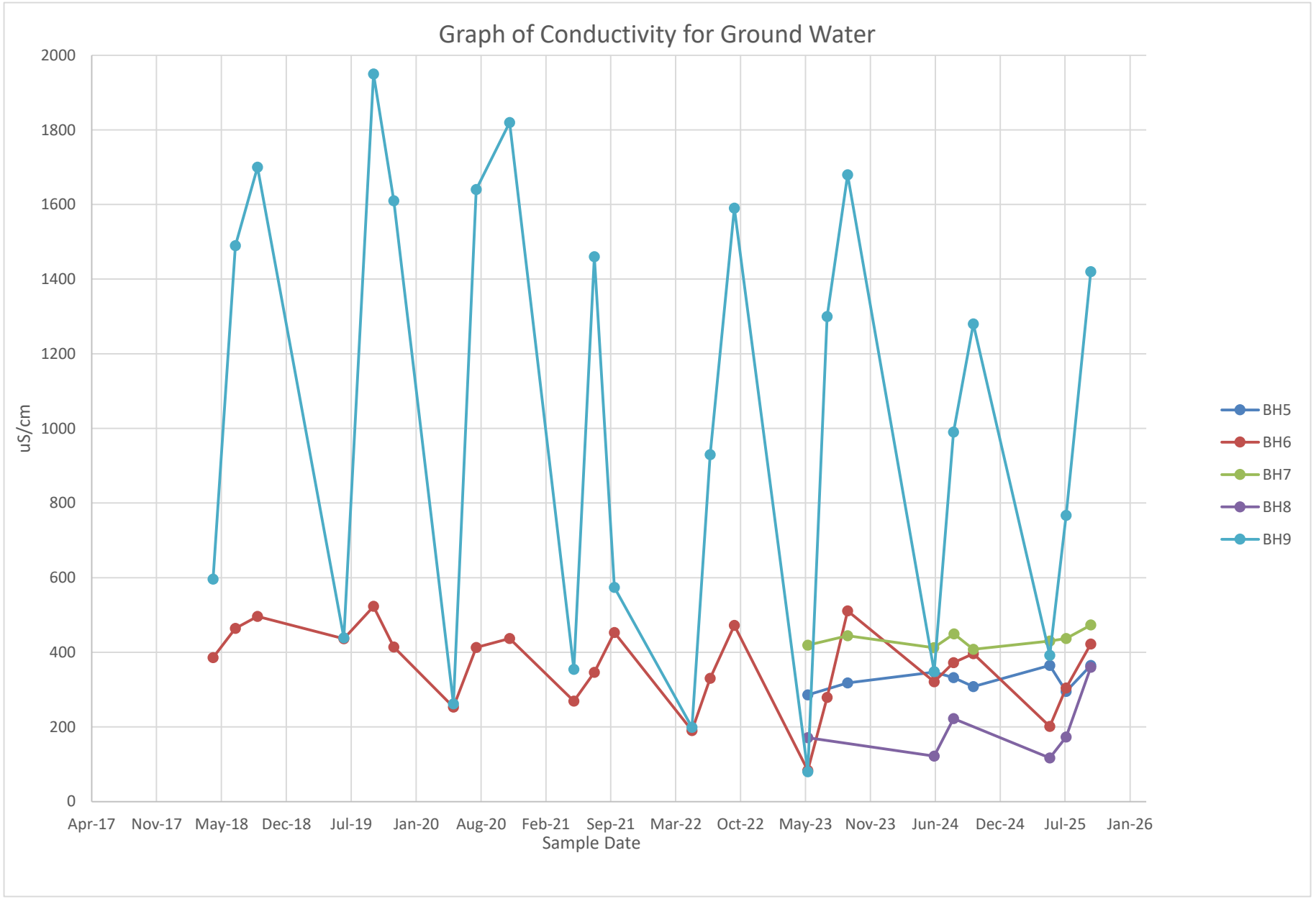
APPENDIX C



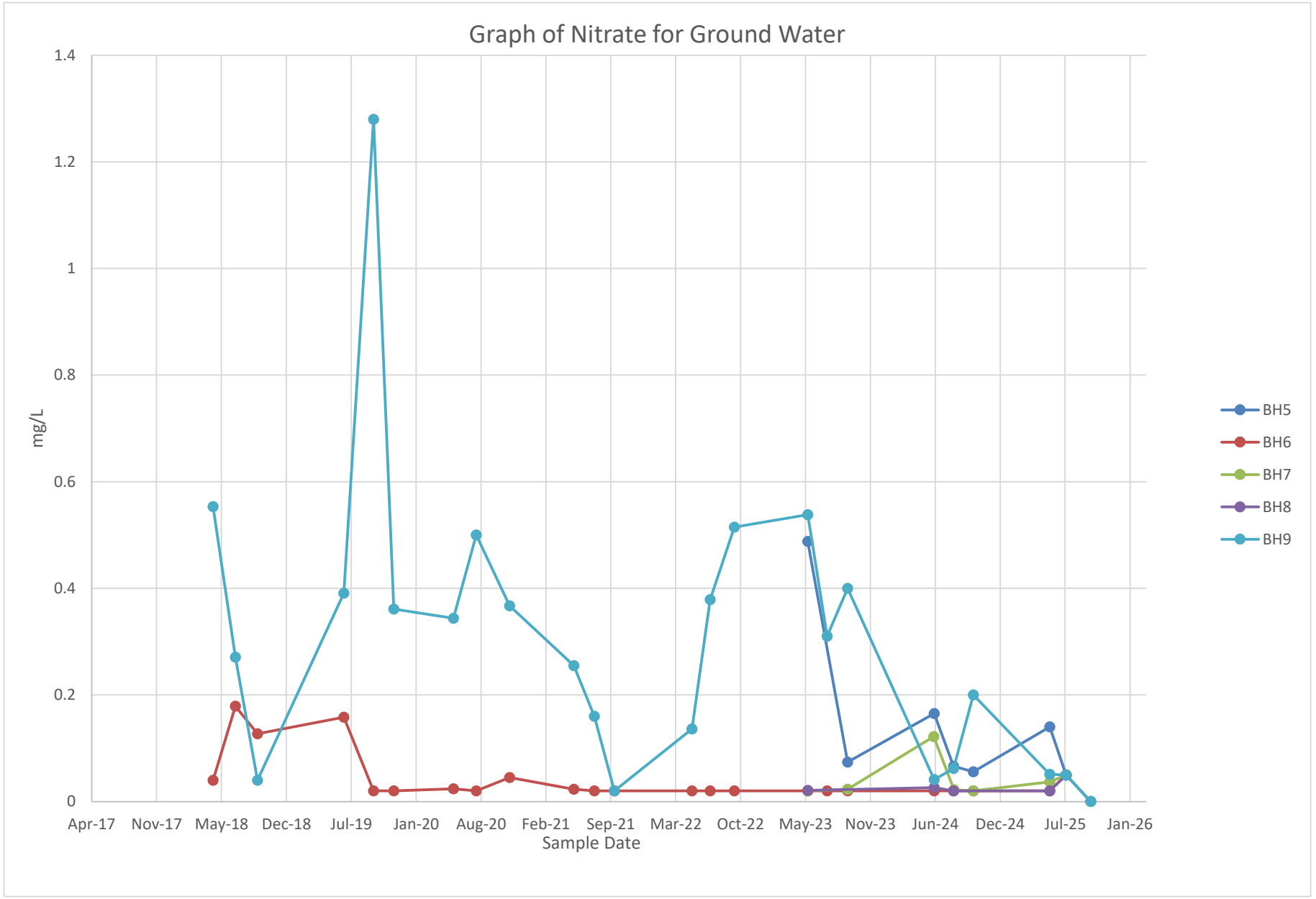
Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04



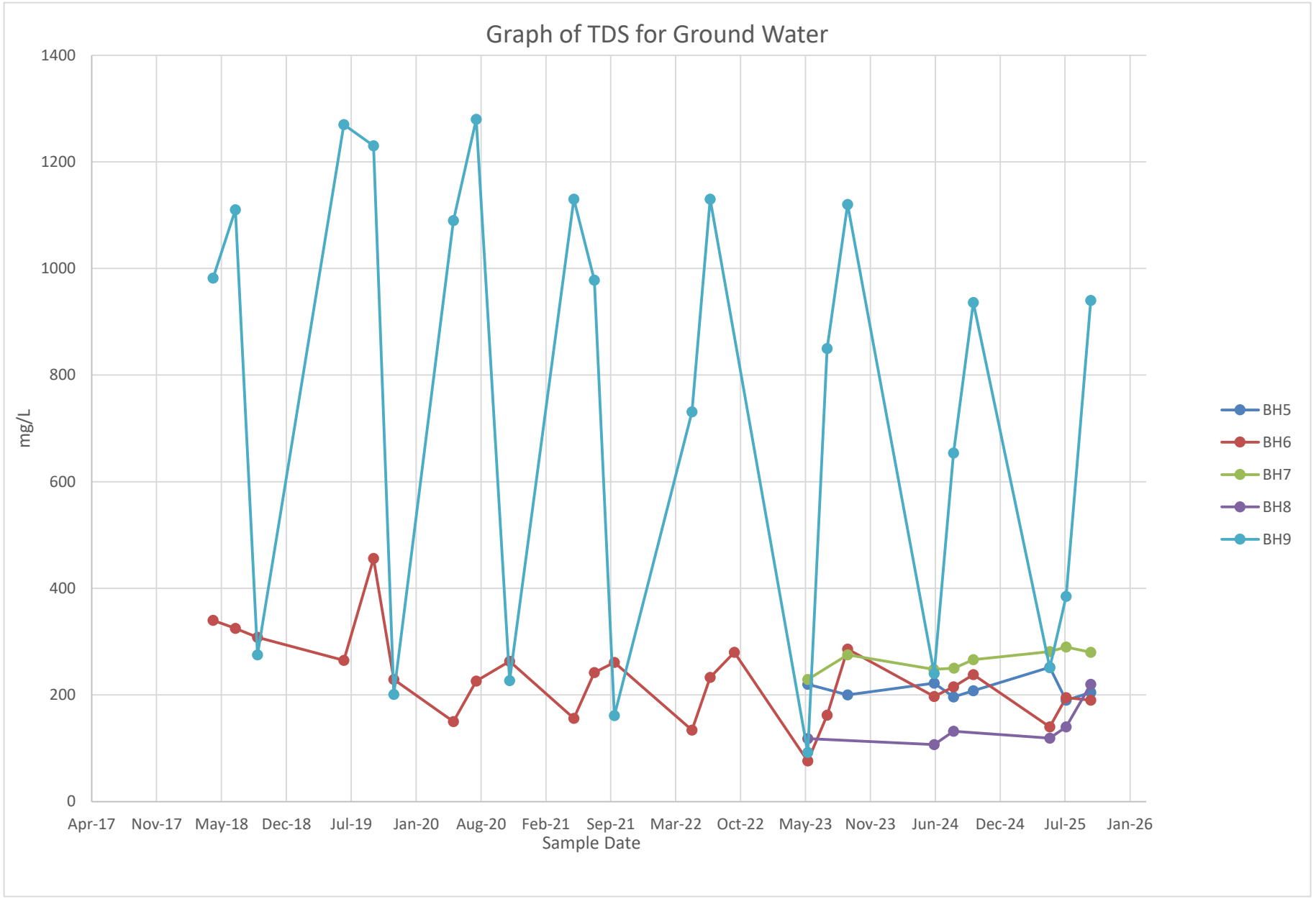
Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04



Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04



Graph of pH for Groundwater
2023-2025 Water Quality Assessment
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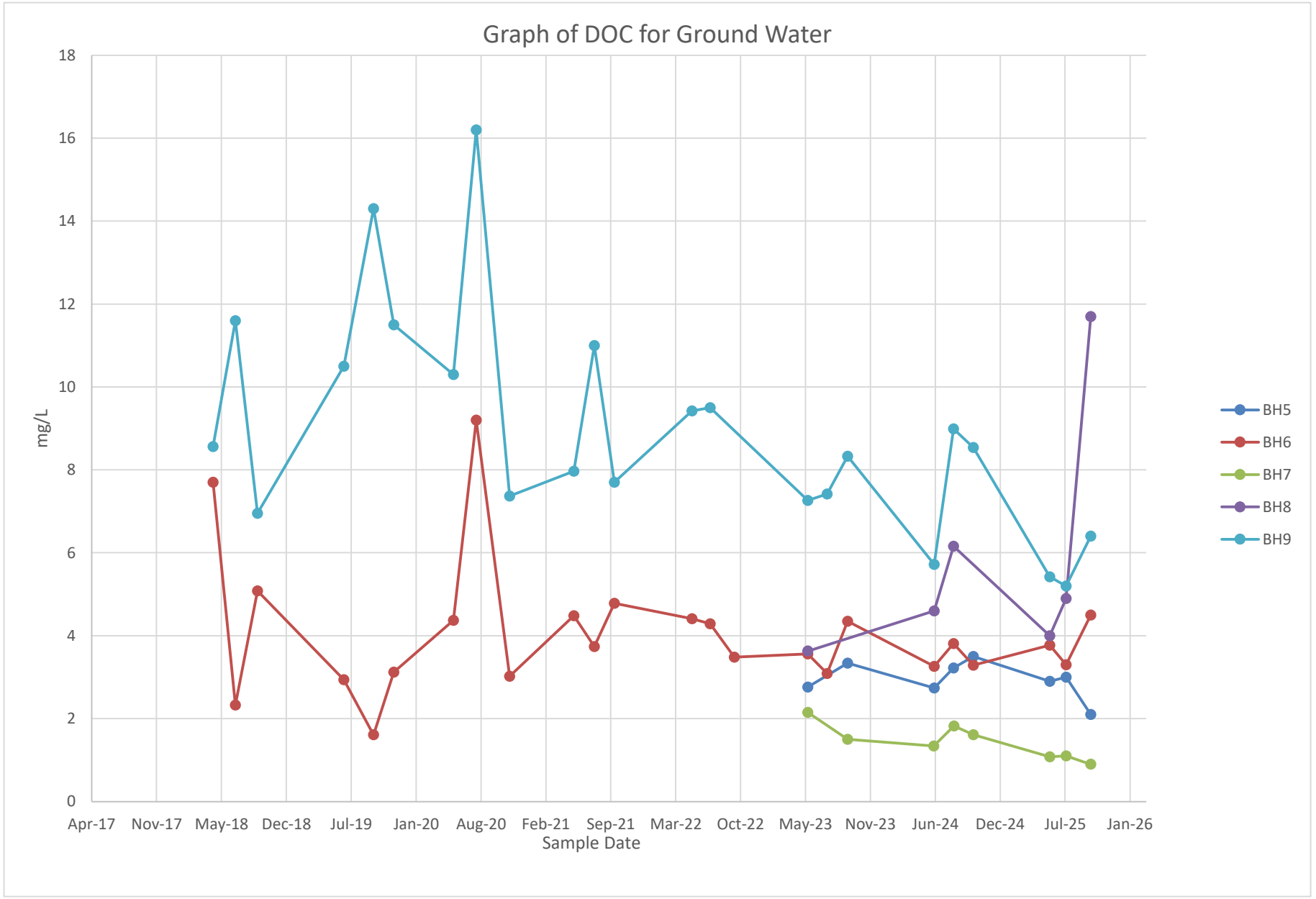
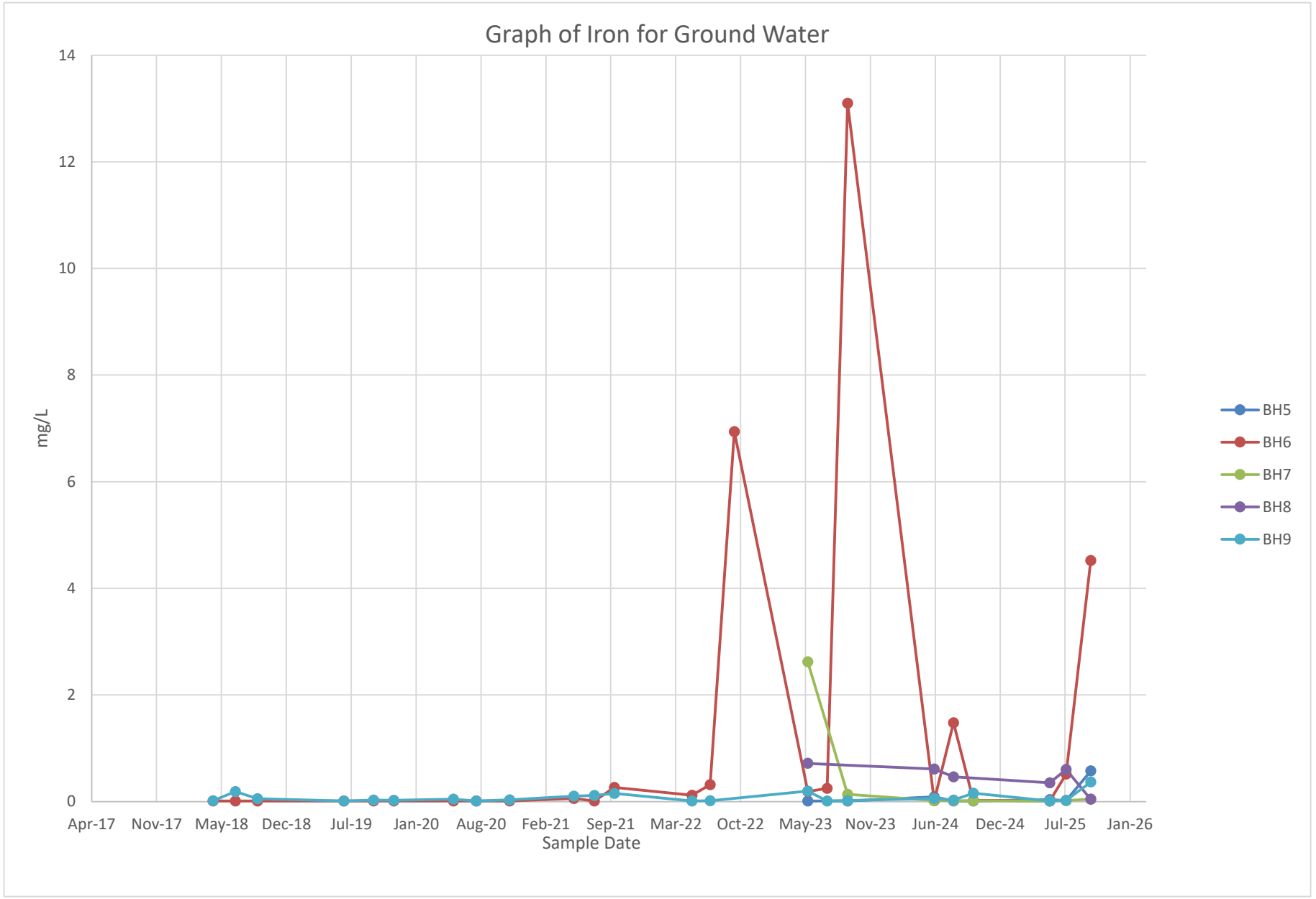
North Rock Engineering
Project No.: E25-015-04

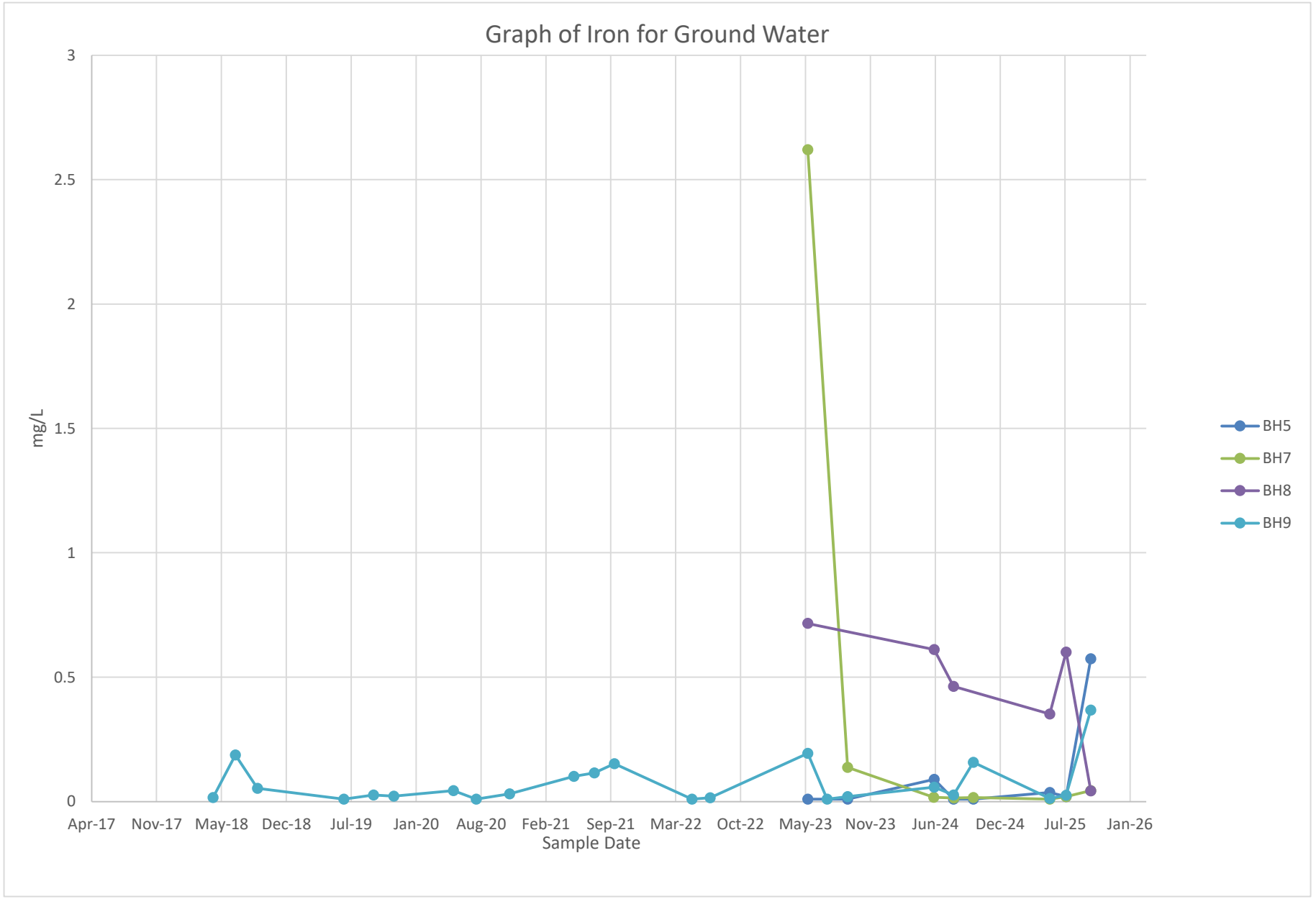


Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04

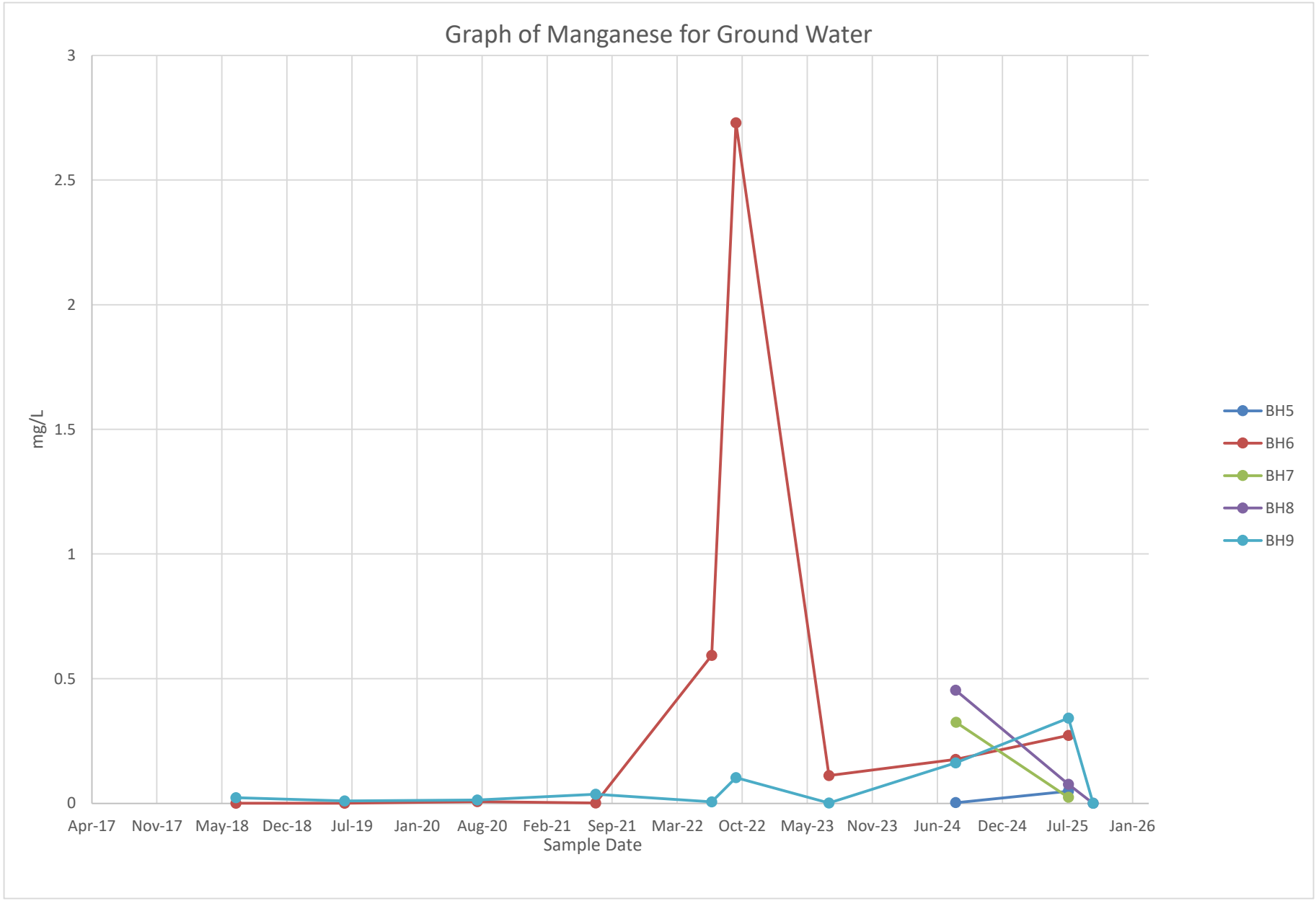


Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee



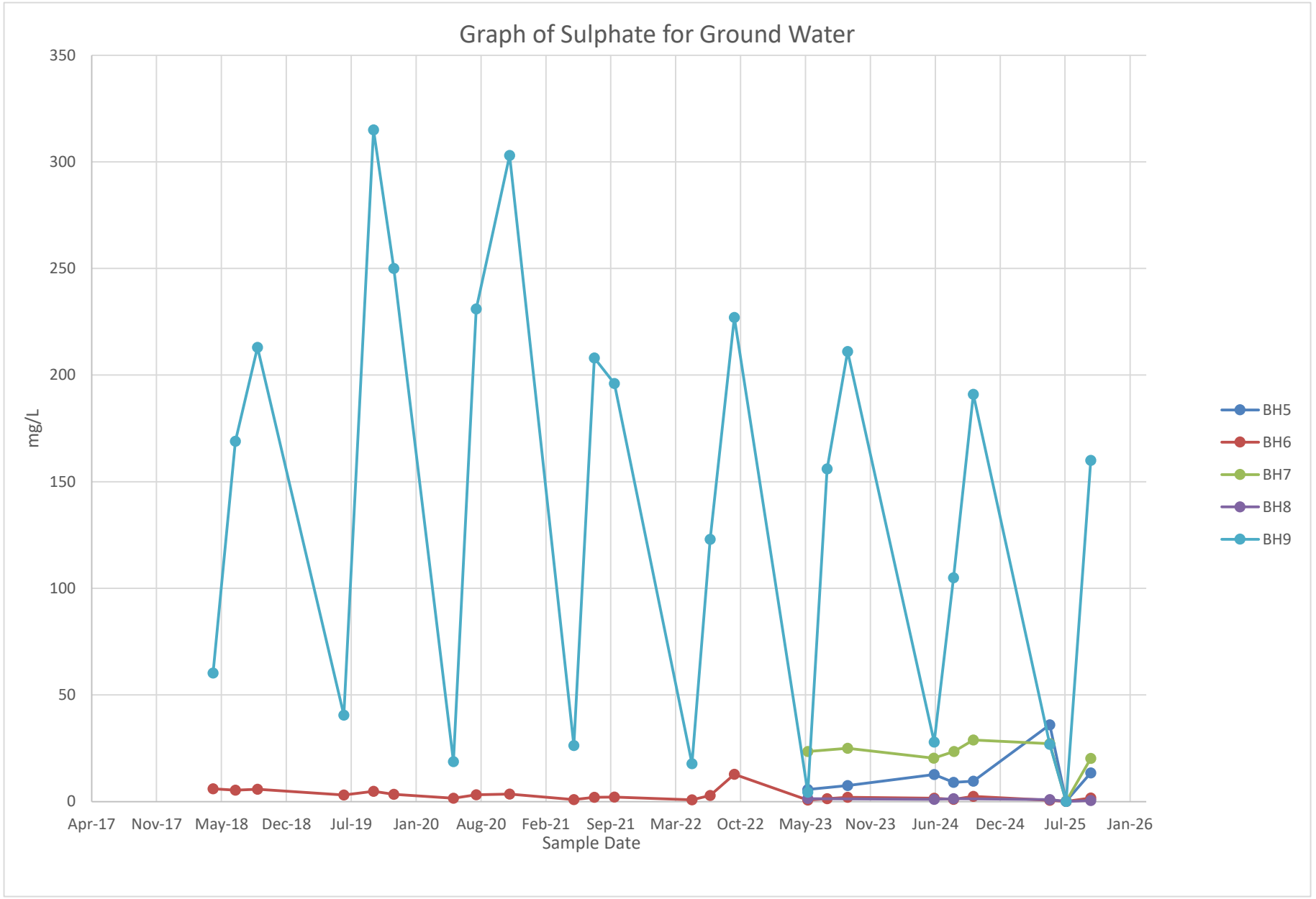
Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04



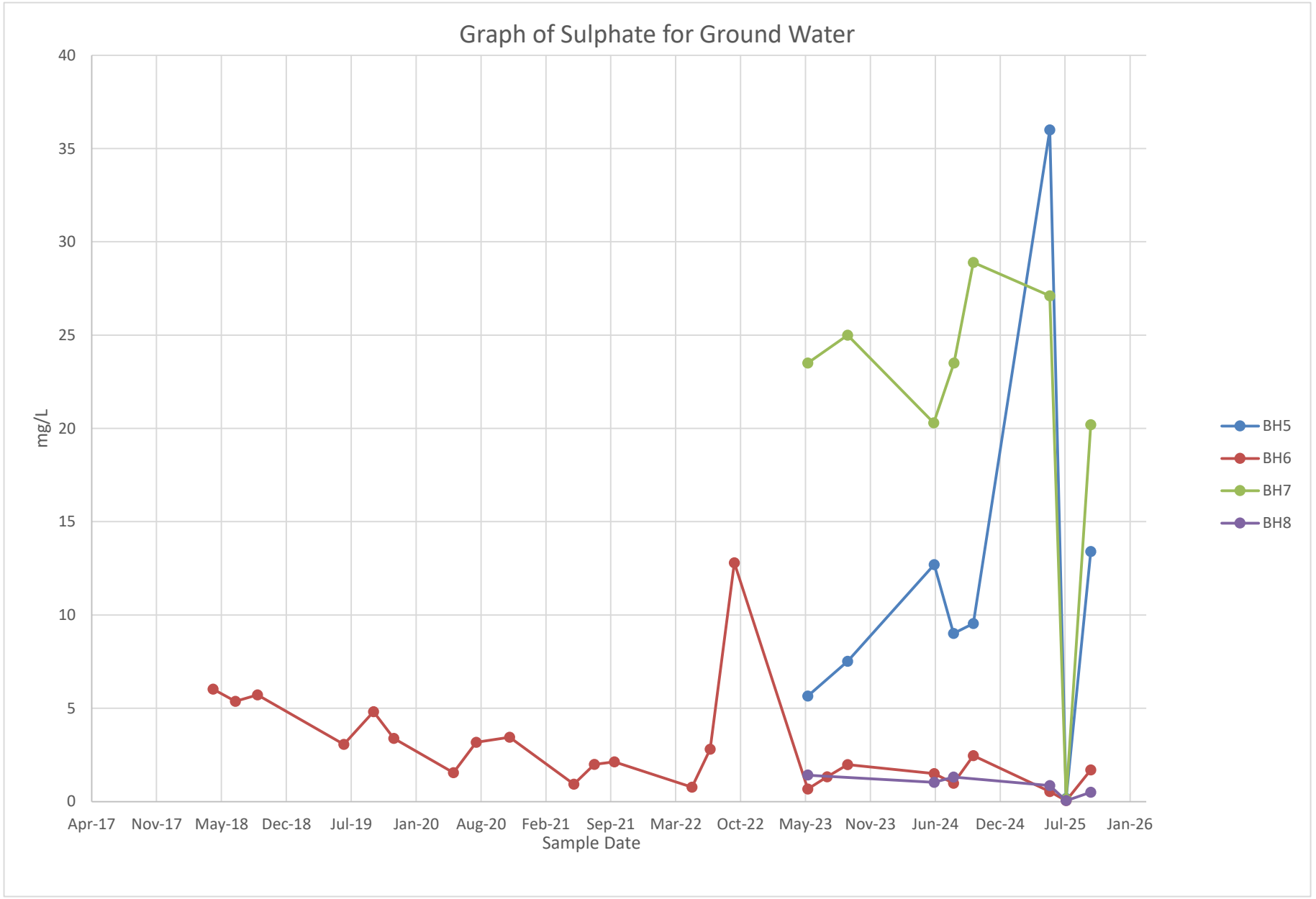
Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04



Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

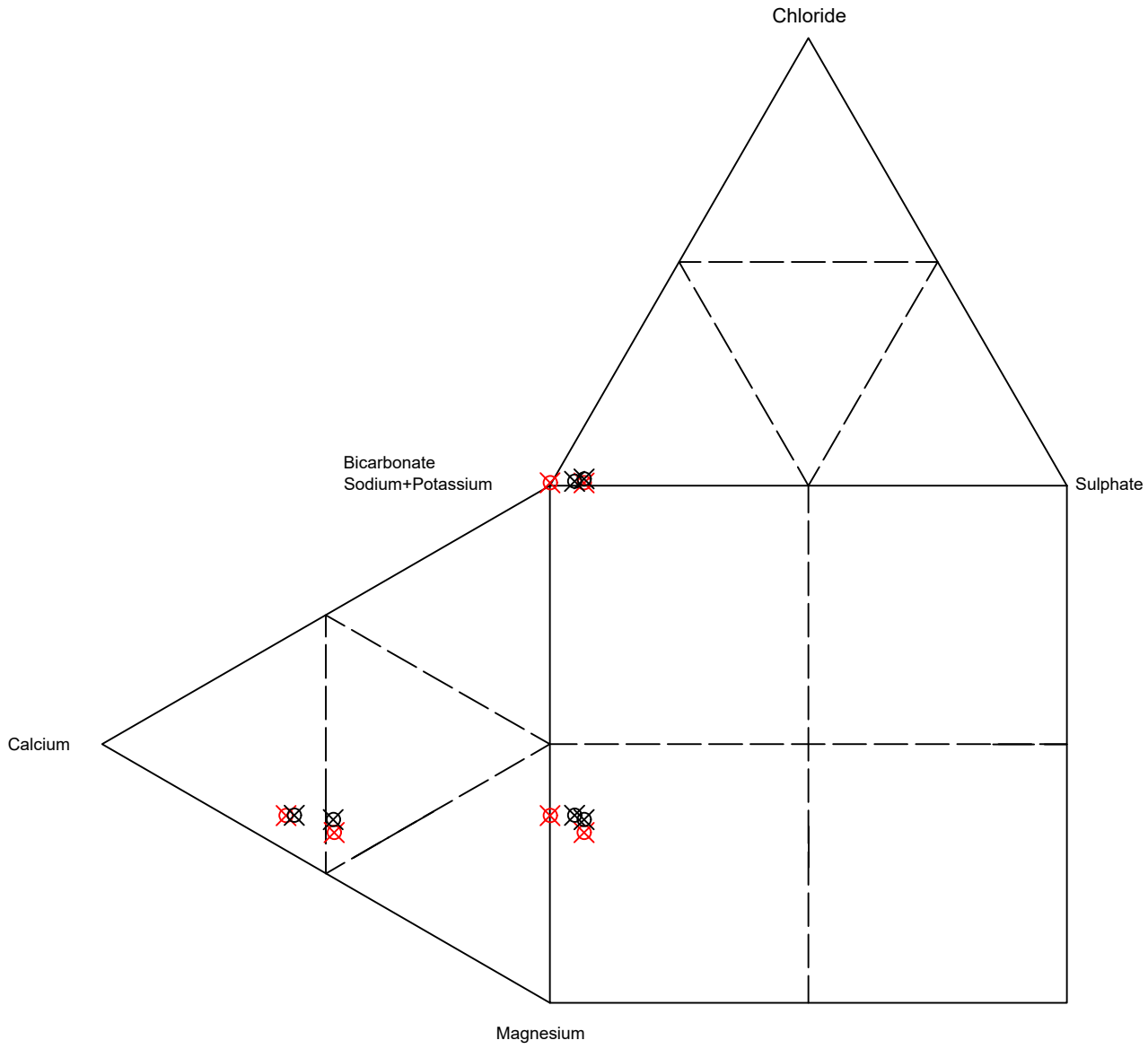
North Rock Engineering
Project No.: E25-015-04



Graph of pH for Groundwater
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

North Rock Engineering
Project No.: E25-015-04

APPENDIX D



LEGEND

- Historical Data
- Current Data

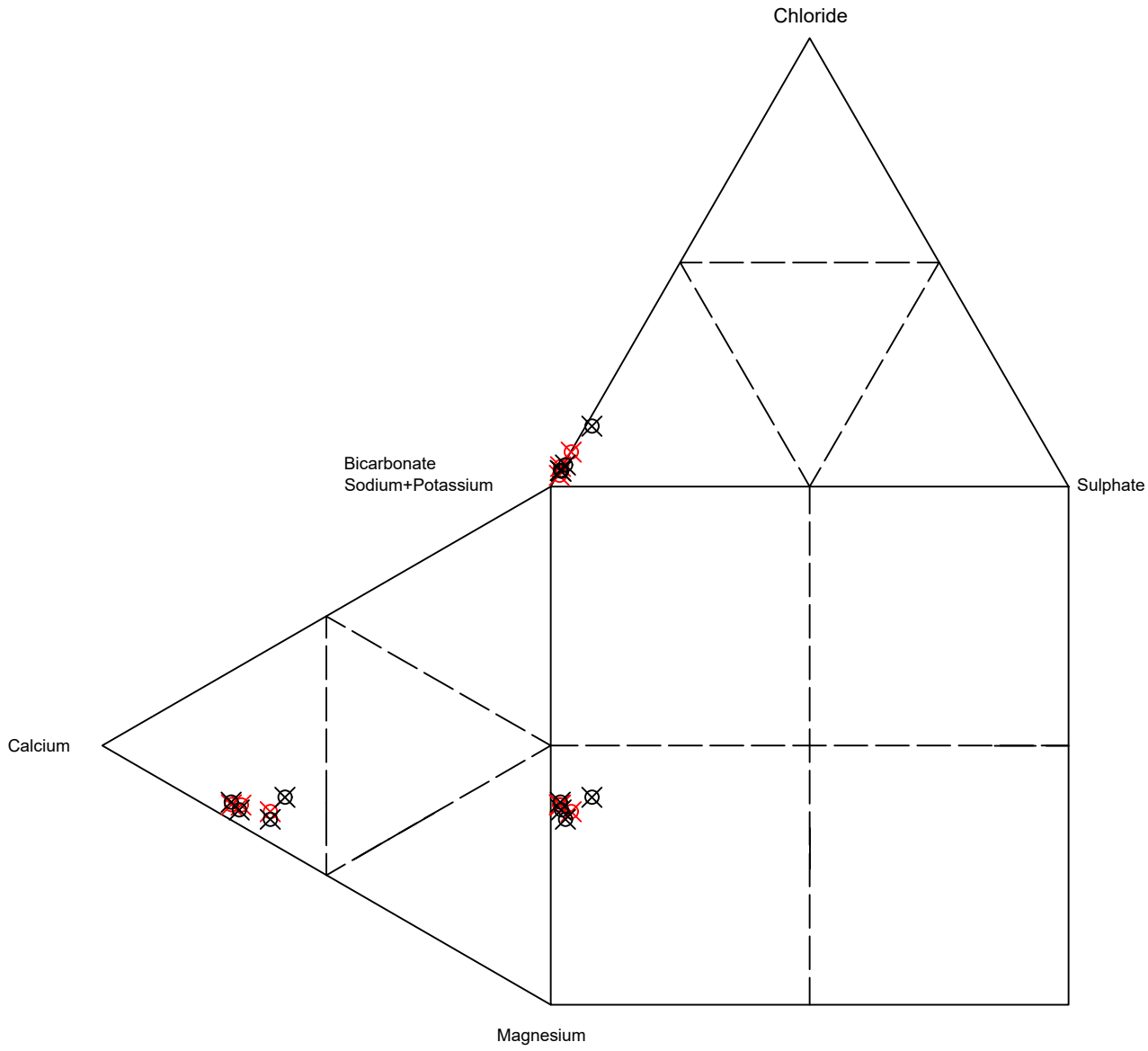
Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH5

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04



LEGEND

- Historical Data
- Current Data

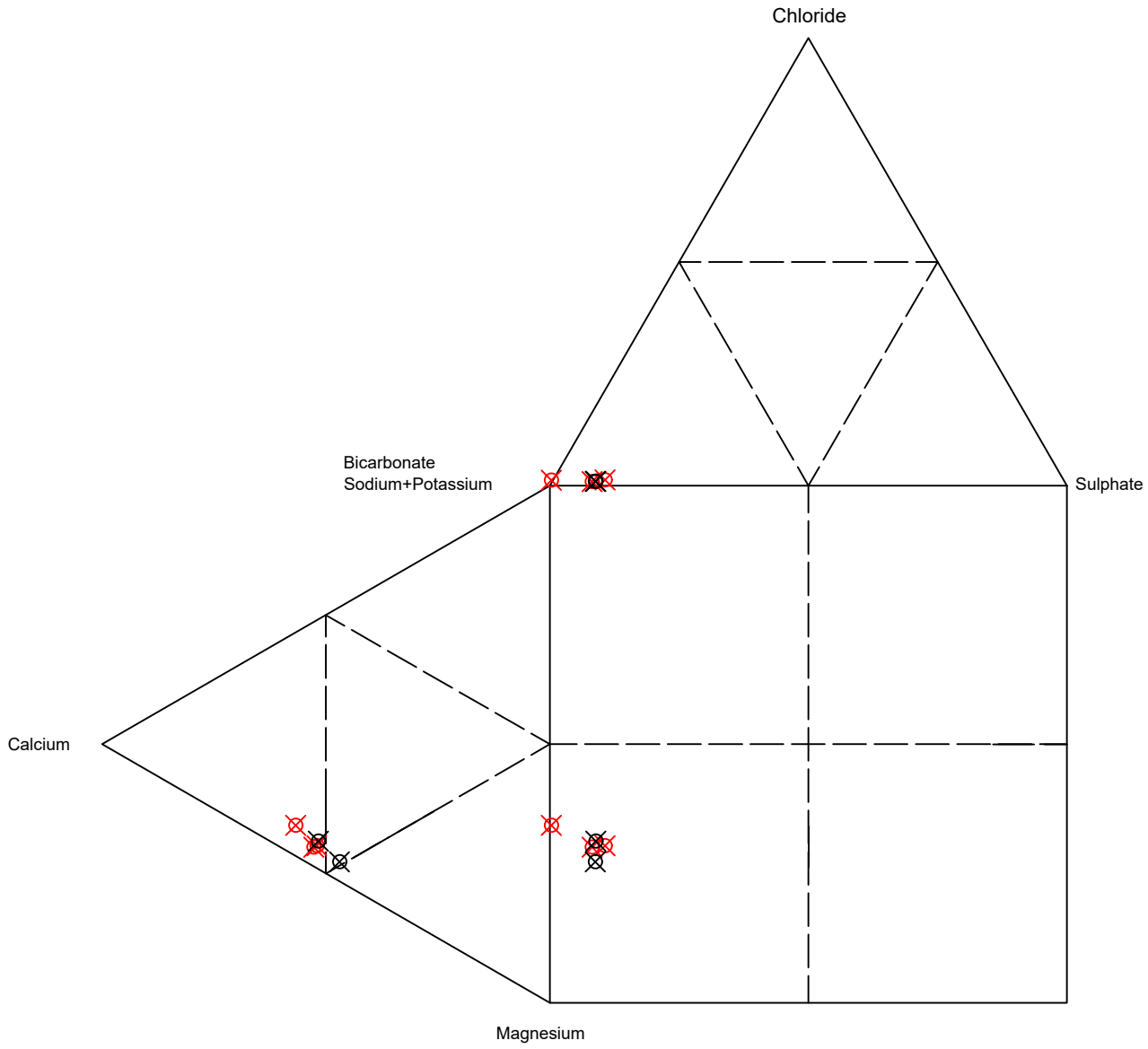
Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH5

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04



LEGEND

- Historical Data
- Current Data

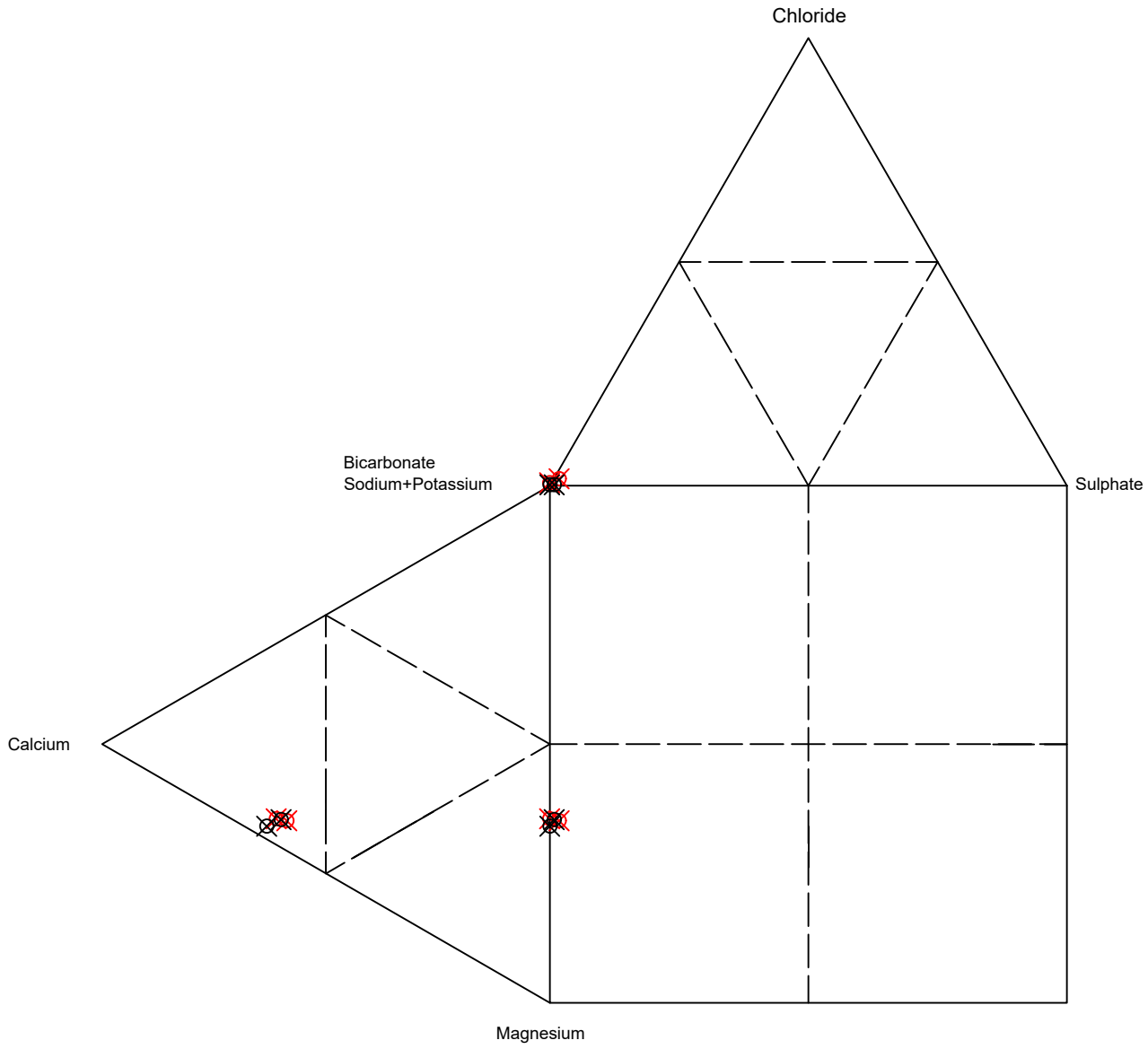
Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH7

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04



LEGEND

- Historical Data
- Current Data

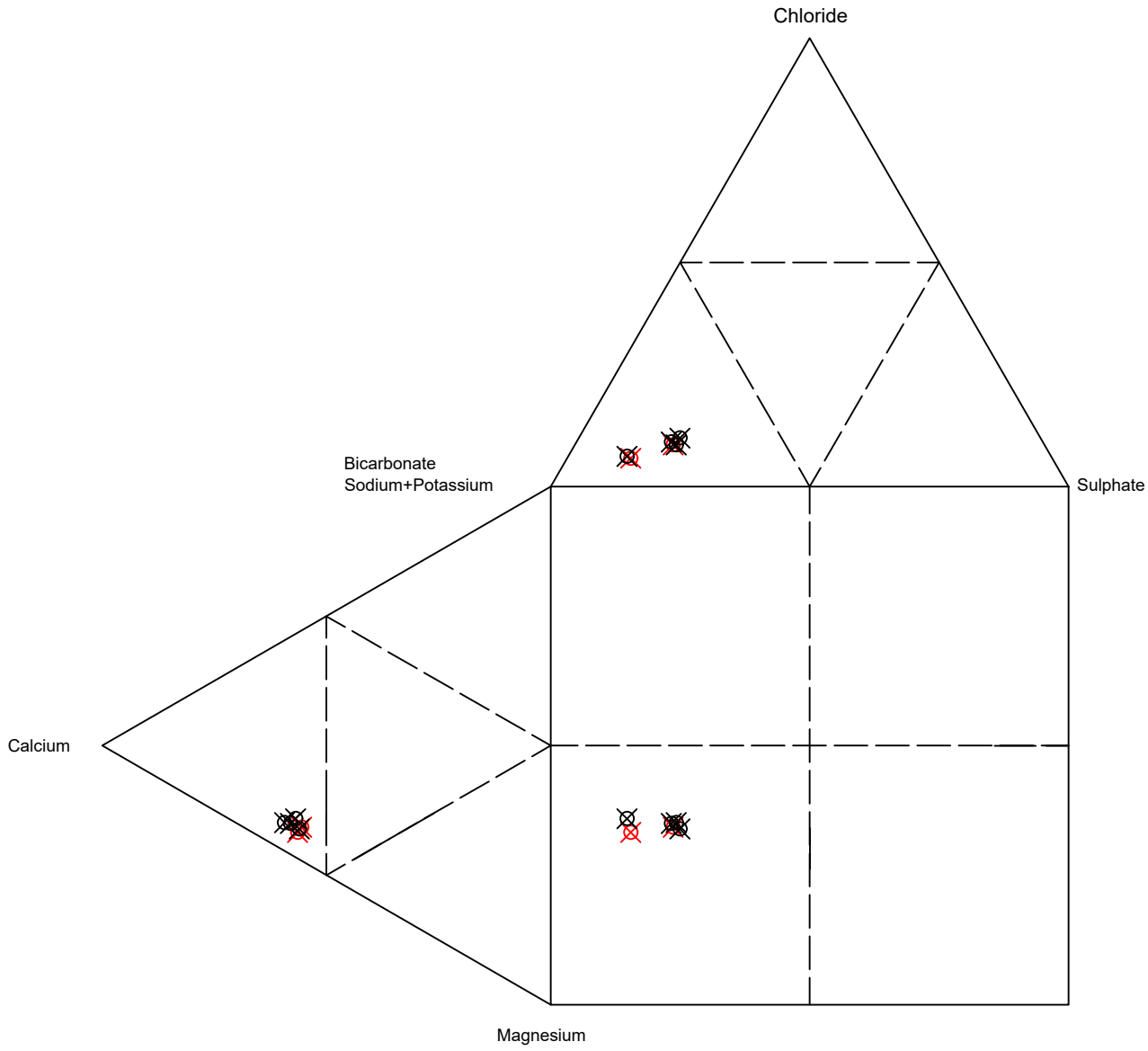
Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH8

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04



LEGEND

- Historical Data
- Current Data

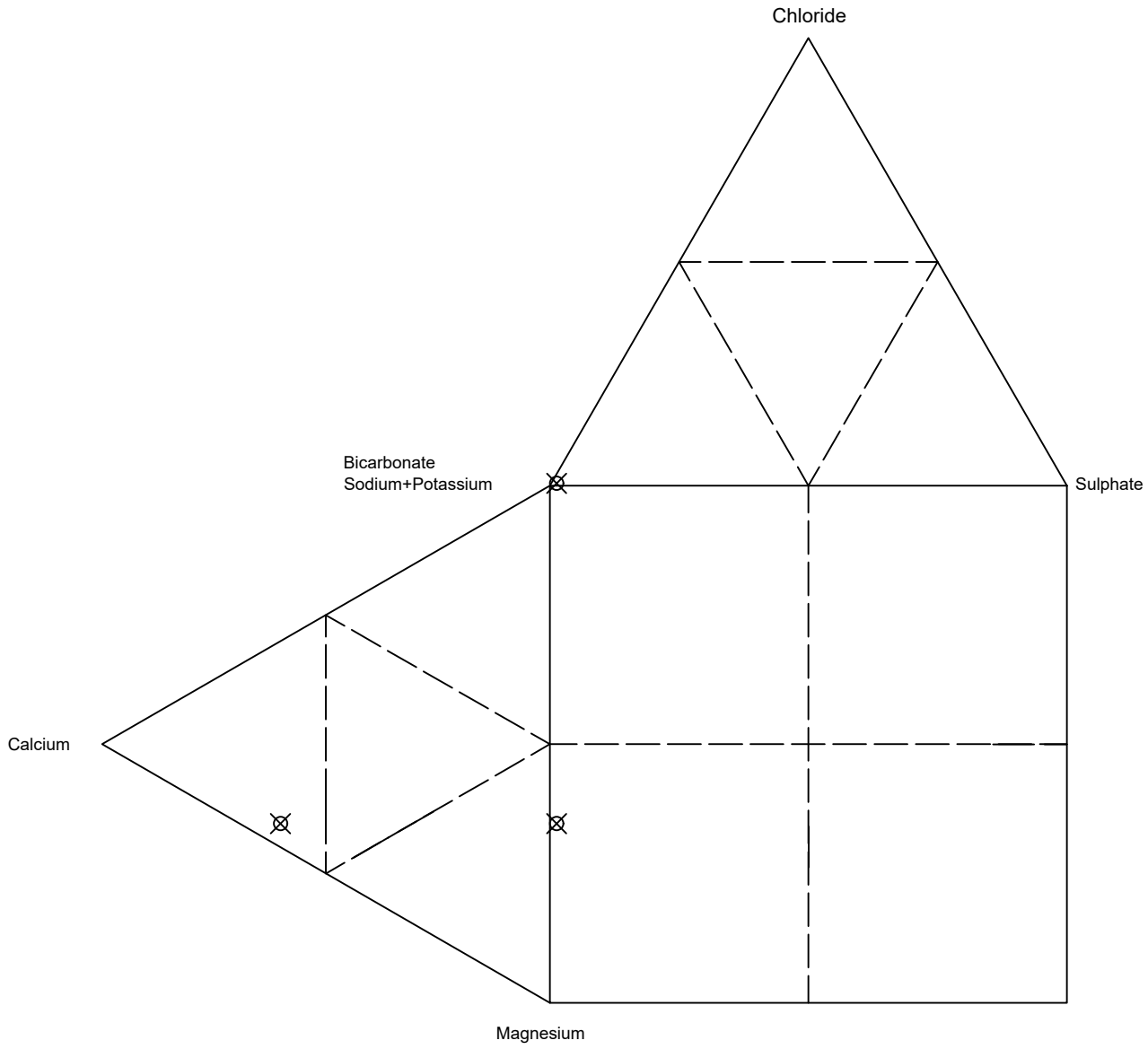
Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH9

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04



LEGEND

- Historical Data
- Current Data

Conmee Waste Disposal Site
Township of Conmee
2023-2025 Water Quality Assessment
Conmee, Ontario

Durov Plot
BH11

70 Secord Street
Thunder Bay
ON P7B 3C9
C: (807)633-9859
www.nrock.ca

Designed By: CS
Approved By: PS
Date: December 12, 2025

Project No.: E25-015-04

APPENDIX E

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS

Work Order	: **TY2306580**	Page	: 1 of 4
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 10-Jul-2023 12:34
PO	: ----	Date Analysis Commenced	: 11-Jul-2023
C-O-C number	: ----	Issue Date	: 18-Jul-2023 18:58
Sampler	: ES/SW		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 3		
No. of samples analysed	: 3		

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
- Surrogate Control Limits

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Metals, Thunder Bay, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario

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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
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Workorder Comments

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
OWP	*Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.*

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Analytical Results

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	BH6	BH9	DUP	----	----
					Client sampling date / time	10-Jul-2023 11:35	10-Jul-2023 10:35	10-Jul-2023 10:40	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2306580-001	TY2306580-002	TY2306580-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		279	1300	1200	----	----
pH	----	E108/TY	0.10	pH units		7.47	7.48	7.45	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		162	850	806	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		156	272	220	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		167	578	537	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0110	<0.0050	0.0057	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		4.14	52.5	46.4	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/TY	0.050	mg/L		1.08	0.637	0.659	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		<0.020	0.310	0.319	----	----
Nitrite (as N)	14797-65-0	E235.NO2/TY	0.010	mg/L		<0.010	<0.020 DLDS	<0.020 DLDS	----	----
Phosphorus, total	7723-14-0	E372-U/TY	0.0020	mg/L		0.279	0.148	0.189	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		1.33	156	139	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		3.09	7.42	6.68	----	----
Dissolved Metals										
Arsenic, dissolved	7440-38-2	E421/TY	0.00010	mg/L		0.00053	0.00034	0.00033	----	----
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0170	0.109	0.0905	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		<0.010	0.029	0.023	----	----
Cadmium, dissolved	7440-43-9	E421/TY	0.0000050	mg/L		0.0000073	0.0000729	0.0000749	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		37.5	205	161	----	----
Chromium, dissolved	7440-47-3	E421/TY	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Copper, dissolved	7440-50-8	E421/TY	0.00020	mg/L		0.00106	0.00196	0.00163	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		0.249	<0.010	<0.010	----	----
Lead, dissolved	7439-92-1	E421/TY	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		8.89	74.8	58.6	----	----
Manganese, dissolved	7439-96-5	E421/TY	0.00010	mg/L		0.111	0.00160	0.00236	----	----
Mercury, dissolved	7439-97-6	E509/WT	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Potassium, dissolved	7440-09-7	E421/TY	0.050	mg/L		0.229	2.28	2.15	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		2.44	20.3	15.5	----	----

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Page	:	4 of 4
Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH6	BH9	DUP	----	----
					Client sampling date / time	10-Jul-2023 11:35	10-Jul-2023 10:35	10-Jul-2023 10:40	----	----
						TY2306580-001	TY2306580-002	TY2306580-003	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Zinc, dissolved	7440-66-6	E421/TY	0.0010	mg/L		<0.0010	0.0012	0.0011	----	----
Dissolved mercury filtration location	----	EP509/WT	-	-		Field	Field	Field	----	----
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		3.7	<2.0	<2.0	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		65	38	44	----	----
Phenols, total (4AAP)	----	E562/WT	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		10.8 OWP	5.4 OWP	8.3 OWP	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L		<0.50 OWP	0.87 OWP	1.12 OWP	----	----
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%		96.8	97.6	96.6	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%		99.2	99.3	99.5	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **TY2306580**	Page	: 1 of 5
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 10-Jul-2023 12:34
PO	: ----	Date Analysis Commenced	: 11-Jul-2023
C-O-C number	: ----	Issue Date	: 18-Jul-2023 19:13
Sampler	: ES/SW		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 3		
No. of samples analysed	: 3		

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
- Guideline Comparison

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Metals, Thunder Bay, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario

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No Breaches Found

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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

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

Unit	*Description*
-	no units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Workorder Comments

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Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.

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Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH6	BH9	DUP	----	----	----	----
				Sampling date/time	10-Jul-2023 11:35	10-Jul-2023 10:35	10-Jul-2023 10:40	----	----	----	----
				Sub-Matrix	Groundwater	Groundwater	Groundwater	----	----	----	----
					TY2306580-001	TY2306580-002	TY2306580-003	--------	--------	--------	--------
Physical Tests											
Conductivity	----	E100/TY			279	1300	1200	----	----	----	----
pH	----	E108/TY	pH units		7.47	7.48	7.45	----	----	----	----
Solids, total dissolved [TDS]	----	E162/TY			162	850	806	----	----	----	----
Solids, total suspended [TSS]	----	E160/TY	mg/L		156	272	220	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY			167	578	537	----	----	----	----
Anions and Nutrients											
Ammonia, total (as N)	7664-41-7	E298/TY	mg/L		0.0110	<0.0050	0.0057	----	----	----	----
Chloride	16887-00-6	E235.Cl/TY			4.14	52.5	46.4	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/TY	mg/L		1.08	0.637	0.659	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY			<0.020	0.310	0.319	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2/TY	mg/L		<0.010	<0.020 DLDS	<0.020 DLDS	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/TY			0.279	0.148	0.189	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	mg/L		1.33	156	139	----	----	----	----
Organic / Inorganic Carbon											
Carbon, dissolved organic [DOC]	----	E358-L/WT			3.09	7.42	6.68	----	----	----	----
Dissolved Metals											
Arsenic, dissolved	7440-38-2	E421/TY	mg/L		0.00053	0.00034	0.00033	----	----	----	----
Barium, dissolved	7440-39-3	E421/TY			0.0170	0.109	0.0905	----	----	----	----
Boron, dissolved	7440-42-8	E421/TY	mg/L		<0.010	0.029	0.023	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/TY			0.0000073	0.0000729	0.0000749	----	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	mg/L		37.5	205	161	----	----	----	----
Chromium, dissolved	7440-47-3	E421/TY			<0.00050	<0.00050	<0.00050	----	----	----	----
Copper, dissolved	7440-50-8	E421/TY	mg/L		0.00106	0.00196	0.00163	----	----	----	----
Iron, dissolved	7439-89-6	E421/TY			0.249	<0.010	<0.010	----	----	----	----
Lead, dissolved	7439-92-1	E421/TY	mg/L		<0.000050	<0.000050	<0.000050	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY			8.89	74.8	58.6	----	----	----	----
Manganese, dissolved	7439-96-5	E421/TY	mg/L		0.111	0.00160	0.00236	----	----	----	----
Mercury, dissolved	7439-97-6	E509/WT			<0.0000050	<0.0000050	<0.0000050	----	----	----	----

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Page	:	5 of 5
Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: BH6	BH9	DUP	----	----	----	----
				Sampling date/time: 10-Jul-2023 11:35	10-Jul-2023 10:35	10-Jul-2023 10:40	----	----	----	----
				Sub-Matrix: Groundwater	Groundwater	Groundwater	----	----	----	----
				TY2306580-001	TY2306580-002	TY2306580-003	--------	--------	--------	--------
Dissolved Metals										
Potassium, dissolved	7440-09-7	E421/TY	mg/L	0.229	2.28	2.15	----	----	----	----
Sodium, dissolved	7440-23-5	E421/TY		2.44	20.3	15.5	----	----	----	----
Zinc, dissolved	7440-66-6	E421/TY	mg/L	<0.0010	0.0012	0.0011	----	----	----	----
Dissolved mercury filtration location	----	EP509/WT		Field	Field	Field	----	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	Field	Field	Field	----	----	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY		3.7	<2.0	<2.0	----	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	mg/L	65	38	44	----	----	----	----
Phenols, total (4AAP)	----	E562/WT		<0.0010	<0.0010	<0.0010	----	----	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	µg/L	<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT		<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----	----	----
Dichloromethane	75-09-2	E611D/WT	µg/L	10.8 OWP	5.4 OWP	8.3 OWP	----	----	----	----
Toluene	108-88-3	E611D/WT		<0.50 OWP	0.87 OWP	1.12 OWP	----	----	----	----
Vinyl chloride	75-01-4	E611D/WT	µg/L	<0.50 OWP	<0.50 OWP	<0.50 OWP	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT		96.8	97.6	96.6	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%	99.2	99.3	99.5	----	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Key:

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2306580**	Page	: 1 of 14
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 10-Jul-2023 12:34
PO	: ----	Issue Date	: 18-Jul-2023 17:23
C-O-C number	: ----		
Sampler	: ES/SW		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 3		
No. of samples analysed	: 3		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH6	E550	10-Jul-2023	----	----	----		11-Jul-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH9	E550	10-Jul-2023	----	----	----		11-Jul-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
DUP	E550	10-Jul-2023	----	----	----		11-Jul-2023	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E559-L	10-Jul-2023	----	----	----		13-Jul-2023	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E559-L	10-Jul-2023	----	----	----		13-Jul-2023	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
DUP	E559-L	10-Jul-2023	----	----	----		13-Jul-2023	28 days	3 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E562	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] BH9	E562	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] DUP	E562	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH6	E298	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH9	E298	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] DUP	E298	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH6	E235.Cl	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH9	E235.Cl	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] DUP	E235.Cl	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH6	E235.NO3	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓

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Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH9	E235.NO3	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
DUP	E235.NO3	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP]										
BH6	E235.NO2	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP]										
BH9	E235.NO2	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP]										
DUP	E235.NO2	10-Jul-2023	11-Jul-2023	7 days	1 days	✓	12-Jul-2023	6 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
BH6	E235.SO4	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
BH9	E235.SO4	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
DUP	E235.SO4	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	12-Jul-2023	27 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E318	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E318	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
DUP	E318	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	13-Jul-2023	26 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E372-U	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E372-U	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
DUP	E372-U	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
BH6	E509	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	12-Jul-2023	26 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
BH9	E509	10-Jul-2023	13-Jul-2023	28 days	3 days	✓	13-Jul-2023	25 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
DUP	E509	10-Jul-2023	13-Jul-2023	28 days	3 days	✓	13-Jul-2023	25 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
BH6	E421	10-Jul-2023	11-Jul-2023	180 days	1 days	✓	11-Jul-2023	179 days	0 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	10-Jul-2023	11-Jul-2023	180 days	1 days	✓	11-Jul-2023	179 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP	E421	10-Jul-2023	11-Jul-2023	180 days	1 days	✓	11-Jul-2023	179 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	14-Jul-2023	26 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	14-Jul-2023	26 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] DUP	E358-L	10-Jul-2023	12-Jul-2023	28 days	2 days	✓	14-Jul-2023	26 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH9	E290	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] DUP	E290	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH6	E100	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] DUP	E100	10-Jul-2023	11-Jul-2023	28 days	1 days	✓	11-Jul-2023	27 days	0 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] DUP	E108	10-Jul-2023	11-Jul-2023	14 days	1 days	✓	11-Jul-2023	13 days	0 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] DUP	E162	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] DUP	E160	10-Jul-2023	----	----	----		11-Jul-2023	7 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH6	E611D	10-Jul-2023	12-Jul-2023	14 days	2 days	✓	12-Jul-2023	12 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH9	E611D	10-Jul-2023	12-Jul-2023	14 days	2 days	✓	12-Jul-2023	12 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP	E611D	10-Jul-2023	12-Jul-2023	14 days	2 days	✓	12-Jul-2023	12 days	0 days	✓

Legend & Qualifier Definitions

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

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Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1032564	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	1032513	1	7	14.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1032299	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032516	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	1032574	1	3	33.3	5.0	✓
Conductivity in Water	E100	1032563	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1035146	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1032552	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1035241	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1032572	1	8	12.5	5.0	✓
Nitrite in Water by IC	E235.NO2	1032573	1	7	14.2	5.0	✓
pH by Meter	E108	1032565	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1035800	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032575	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	1032747	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1032515	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1032514	1	7	14.2	5.0	✓
TSS by Gravimetry	E160	1032750	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1035237	3	19	15.7	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1032564	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	1032513	1	7	14.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1032299	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032516	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	1032574	1	3	33.3	5.0	✓
Conductivity in Water	E100	1032563	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1035146	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1032552	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1035241	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1032572	1	8	12.5	5.0	✓
Nitrite in Water by IC	E235.NO2	1032573	1	7	14.2	5.0	✓
pH by Meter	E108	1032565	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1035800	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032575	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	1032747	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1032515	1	3	33.3	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1032514	1	7	14.2	5.0	✓
TSS by Gravimetry	E160	1032750	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1035237	2	19	10.5	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1032564	1	10	10.0	5.0	✓
Ammonia by Fluorescence	E298	1032513	1	7	14.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1032299	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032516	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	1032574	1	3	33.3	5.0	✓
Conductivity in Water	E100	1032563	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1035146	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1032552	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1035241	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1032572	1	8	12.5	5.0	✓
Nitrite in Water by IC	E235.NO2	1032573	1	7	14.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1035800	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032575	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	1032747	1	5	20.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1032515	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1032514	1	7	14.2	5.0	✓
TSS by Gravimetry	E160	1032750	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1035237	2	19	10.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1032513	1	7	14.2	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1032516	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.Cl	1032574	1	3	33.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1035146	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1032552	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1035241	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1032572	1	8	12.5	5.0	✓
Nitrite in Water by IC	E235.NO2	1032573	1	7	14.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1035800	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1032575	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1032515	1	3	33.3	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1032514	1	7	14.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1035237	2	19	10.5	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Waterloo	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Thunder Bay	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

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QUALITY CONTROL REPORT

Work Order	: **TY2306580**	Page	: 1 of 10
Client	: North Rock Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	:	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 10-Jul-2023 12:34
PO	: ----	Date Analysis Commenced	: 11-Jul-2023
C-O-C number	: ----	Issue Date	: 18-Jul-2023 18:58
Sampler	: ES/SW (807)633-7866		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 3		
No. of samples analysed	: 3		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Metals, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Thunder Bay Metals, Thunder Bay, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Inorganics, Thunder Bay, Ontario

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Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

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

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

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Work Order : TY2306580
Client : North Rock Engineering
Project : E23-025-01

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1032563)											
TY2306579-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	1410	1400	0.782%	10%	----
Physical Tests (QC Lot: 1032564)											
TY2306579-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	67.1	67.2	0.149%	20%	----
Physical Tests (QC Lot: 1032565)											
TY2306579-001	Anonymous	pH	----	E108	0.10	pH units	7.86	7.87	0.01	Diff <2x LOR	----
Physical Tests (QC Lot: 1032747)											
TY2306558-008	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	296	308	3.97%	20%	----
Physical Tests (QC Lot: 1032750)											
TY2306558-008	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	45.0	47.0	4.35%	20%	----
Anions and Nutrients (QC Lot: 1032513)											
TY2306580-001	BH6	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0110	0.0095	0.0015	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1032514)											
TY2306580-001	BH6	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.279	0.253	9.73%	20%	----
Anions and Nutrients (QC Lot: 1032515)											
TY2306580-001	BH6	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	1.08	1.07	0.465%	20%	----
Anions and Nutrients (QC Lot: 1032572)											
TY2306580-001	BH6	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1032573)											
TY2306580-001	BH6	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1032574)											
TY2306580-001	BH6	Chloride	16887-00-6	E235.Cl	0.50	mg/L	4.14	4.12	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1032575)											
TY2306580-001	BH6	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.33	1.18	0.15	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1035241)											
TY2306567-009	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1032552)											
TY2306567-001	Anonymous	Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00046	0.00049	0.00002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0133	0.0133	0.0803%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

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Page	:	4 of 10
Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1032552) - continued											
TY2306567-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.3	23.5	3.50%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00053	0.00052	0.00002	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.047	0.047	0.0004	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.44	4.38	1.29%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00248	0.00245	1.00%	20%	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.467	0.474	0.007	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.47	1.49	1.60%	20%	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1035146)											
TY2306580-001	BH6	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1036387)											
TY2306580-002	BH9	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1032299)											
TY2306580-001	BH6	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	3.7	3.9	5.3%	20%	----
Aggregate Organics (QC Lot: 1032516)											
TY2306580-001	BH6	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	65	56	10	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1035800)											
TY2306580-001	BH6	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1035237)											
WT2320810-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1037269)											
WT2321117-001	Anonymous	Dichloromethane	75-09-2	E611D	1.0	µg/L	1.6	1.5	0.1	Diff <2x LOR	----
WT2321117-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	0.67	0.62	0.05	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1032563)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1032564)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1032747)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1032750)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1032513)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1032514)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1032515)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1032572)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1032573)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1032574)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1032575)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Organic / Inorganic Carbon (QCLot: 1035241)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 1032552)						
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----

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Page	:	6 of 10
Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1032552) - continued						
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 1035146)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1036387)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1032299)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1032516)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 1035800)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1035237)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Volatile Organic Compounds (QCLot: 1037269)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----

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Work Order	:	TY2306580
Client	:	North Rock Engineering
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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1032563)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	96.4	90.0	110	----
Physical Tests (QCLot: 1032564)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	101	85.0	115	----
Physical Tests (QCLot: 1032565)									
pH	----	E108	----	pH units	7 pH units	99.3	98.0	102	----
Physical Tests (QCLot: 1032747)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.9	85.0	115	----
Physical Tests (QCLot: 1032750)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1032513)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.8	85.0	115	----
Anions and Nutrients (QCLot: 1032514)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.0168 mg/L	96.4	80.0	120	----
Anions and Nutrients (QCLot: 1032515)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	87.7	75.0	125	----
Anions and Nutrients (QCLot: 1032572)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 1032573)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 1032574)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 1032575)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1035241)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.4	80.0	120	----
Dissolved Metals (QCLot: 1032552)									
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	102	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	99.5	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	103	80.0	120	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1032552) - continued									
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	99.1	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	100	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	100	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	98.5	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	97.5	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	103	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.0125 mg/L	97.1	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	99.8	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	104	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	93.8	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	91.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.0	80.0	120	----
Aggregate Organics (QCLot: 1032299)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	98.6	85.0	115	----
Aggregate Organics (QCLot: 1032516)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	101	85.0	115	----
Aggregate Organics (QCLot: 1035800)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	104	85.0	115	----
Volatile Organic Compounds (QCLot: 1035237)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	97.2	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	98.1	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	98.6	70.0	130	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	97.2	60.0	140	----
Volatile Organic Compounds (QCLot: 1037269)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	93.2	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	98.7	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	93.4	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	94.2	70.0	130	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	96.2	60.0	140	----

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Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1032513)										
TY2306580-002	BH9	Ammonia, total (as N)	7664-41-7	E298	0.0751 mg/L	0.1 mg/L	75.1	75.0	125	----
Anions and Nutrients (QCLot: 1032514)										
TY2306580-002	BH9	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.035 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1032515)										
TY2306580-002	BH9	Kjeldahl nitrogen, total [TKN]	----	E318	2.35 mg/L	2.5 mg/L	94.1	70.0	130	----
Anions and Nutrients (QCLot: 1032572)										
TY2306580-002	BH9	Nitrate (as N)	14797-55-8	E235.NO3	5.07 mg/L	5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1032573)										
TY2306580-002	BH9	Nitrite (as N)	14797-65-0	E235.NO2	0.844 mg/L	1 mg/L	84.4	75.0	125	----
Anions and Nutrients (QCLot: 1032574)										
TY2306580-002	BH9	Chloride	16887-00-6	E235.Cl	211 mg/L	200 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1032575)										
TY2306580-002	BH9	Sulfate (as SO4)	14808-79-8	E235.SO4	206 mg/L	200 mg/L	103	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1035241)										
TY2306567-009	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.91 mg/L	5 mg/L	118	70.0	130	----
Dissolved Metals (QCLot: 1032552)										
TY2306567-002	Anonymous	Arsenic, dissolved	7440-38-2	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.113 mg/L	0.1 mg/L	113	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00448 mg/L	0.004 mg/L	112	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.17 mg/L	2 mg/L	109	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.32 mg/L	4 mg/L	108	70.0	130	----

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Work Order	:	TY2306580
Client	:	North Rock Engineering
Project	:	E23-025-01

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1032552) - continued										
TY2306567-002	Anonymous	Sodium, dissolved	7440-23-5	E421	2.18 mg/L	2 mg/L	109	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.437 mg/L	0.4 mg/L	109	70.0	130	----
Dissolved Metals (QCLot: 1035146)										
TY2306644-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000901 mg/L	0.0001 mg/L	90.1	70.0	130	----
Dissolved Metals (QCLot: 1036387)										
TY2306580-003	DUP	Mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
Aggregate Organics (QCLot: 1032516)										
TY2306580-001	BH6	Chemical oxygen demand [COD]	----	E559-L	75 mg/L	100 mg/L	75.1	75.0	125	----
Aggregate Organics (QCLot: 1035800)										
TY2306580-001	BH6	Phenols, total (4AAP)	----	E562	0.0210 mg/L	0.02 mg/L	105	75.0	125	----
Volatile Organic Compounds (QCLot: 1035237)										
WT2320810-001	Anonymous	Benzene	71-43-2	E611D	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	97.1 µg/L	100 µg/L	97.1	60.0	140	----
		Dichloromethane	75-09-2	E611D	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		Toluene	108-88-3	E611D	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		Vinyl chloride	75-01-4	E611D	89.3 µg/L	100 µg/L	89.3	60.0	140	----
Volatile Organic Compounds (QCLot: 1037269)										
WT2321117-001	Anonymous	Benzene	71-43-2	E611D	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	94.0 µg/L	100 µg/L	94.0	60.0	140	----
		Dichloromethane	75-09-2	E611D	98.6 µg/L	100 µg/L	98.6	60.0	140	----
		Toluene	108-88-3	E611D	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		Vinyl chloride	75-01-4	E611D	86.0 µg/L	100 µg/L	86.0	60.0	140	----

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Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 - 321

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Environmental Division Thunder Bay

Work Order Reference TY2306580

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering
Contact:	Jason Garatti
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	1411 Goods Road
City/Province:	Thunder Bay, ON
Postal Code:	P7G 1J1
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	jgaratti@nrock.ca,csprovieri@nrock.ca
Email 2	switzel@nrock.ca, kcox@nrock.ca
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax	jen@nrock.ca
Email 2	kbriggs@nrock.ca

Project Information	
ALS Account # / Quote #:	NORO100 / TY2023NORO1000005
Job #:	E23-025-01
PO / AFE:	
LSD:	Conmee Landfill

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): TY2306580

ALS Contact: CP

Sampler: ES/SW

Turnaround Time (TAT) Requested
☒ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge mi
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge m
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge m
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge m
☐ Same day [E2] if received by 10am M-S - 200% rush surch
Additional fees may apply to rush requests on weeke
Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 1:	Alkalinity, Conductivity, BOD, Cl, COD	Dissolved Hg; Dissolved As, B, Ba, Ca,	Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Pb, Zn	OGC, NH3, NO2, NO3, pH, Phenols,	SO4, TKN, Total Phosphorus	TDS, TSS, VOC's	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH6	10-07-23	11:35	Groundwater	9	x									
	BH9	10-07-23	10:35	Groundwater	9	x									
	BH10			Groundwater		x									
	DUP	10-07-23	10:40	Groundwater	9	x									

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☑ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
12.6	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
S Switzel	10-07-23	12:30				MP	10-07-23	12:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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DRO P 055

Intake and Login Verification Form

322

SAMPLE INTAKE					
Priority/Emergency Service Requested			YES	(NO)	
Time Sensitive Hold Time			YES	(NO)	
Client:	NORTH ROCK ENGINEERING				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier		(Drop Off)		
Courier					
Waybill Number					
Temperature	12°C		Cooler Count		
Cooling Method	(None)	Ice	Ice Packs		
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	(Water)	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				Yes	No
DW Metals pH Check <2				Yes	No
Regulation Circled, Works # present			Yes	No - Reject?	
# of Bottles:	Sample Count				
Green/white	3 BOD, 3 ROUTINE				
Purple/white	3-NUT, 3-DOC, 3-PHENOL				
Warm red/white	3 - DISS Metal				
Yellow/black	3 - DISS Hg				
Light blue/white					
Orange/black					
Others (detail)	6 - VOC (SODIUM BISULPHATE				
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:					
Layout Staff Initials	NP				
Date and Time of Layout	10/07/23	12:50			

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client / Work Contact / Quote		
RECEIPT DETAIL		
Project / PO / Site/LSD		
Overall Description Entered	Yes	NA
Received date/time as per COC		
Recipients match CoC or Sample Remarks	Yes	No
Billing Instruction added to remarks	Yes	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	NA
Sample Info communicated via Remarks	Yes	NA
VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	No
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	NA
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		
VALIDATION		
Validation errors resolved?	Yes	No
Internal Sublet CoC created	Yes	NA
Login Comments:		
Login Staff Initials:	AN	

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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Environmental Division
Thunder Bay
Work Order Reference
TY2306580

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Telephone : +1 807 623 8463

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering
Contact:	Jason Garatti
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	1411 Goods Road
City/Province:	Thunder Bay, ON
Postal Code:	P7G 1J1
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report: ☐ YES ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: jgaratti@nrock.ca,csprovieri@nrock.ca
Email 2: switzel@nrock.ca, kcox@nrock.ca
Email 3:

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax: jen@nrock.ca
Email 2: kbriggs@nrock.ca

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge mi
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge m
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge m
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge m
☐ Same day [E2] if received by 10am M-S - 200% rush surch
Additional fees may apply to rush requests on weeke
Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	NORQ100 / TY2023NORQ1000005
Job #:	E23-025-01
PO / AFE:	
LSD:	Conmee Landfill
ALS Lab Work Order # (ALS use only):	TY2306580

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: CP	Sampler: ES/SW

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule S Column 1:	(Alkalinity, Conductivity, BOD, Cl, COD	Dissolved Hg, Dissolved As, B, Ba, Ca,	Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Pb, Zn,	DOC, NH3, NO2, NO3, pH, Phenols,	SO4, TKN, Total Phosphorus	TDS, TSS, VOCs	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH6	10-07-23	11:35	Groundwater	9	x									
	BH9	10-07-23	10:35	Groundwater	9	x									
	BH10			Groundwater		x									
	DUP	10-07-23	10:40	Groundwater	9	x									

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO
Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☑ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.6							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
S. Witzel	10-07-23	12:30

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
MP	10/07/23	12:36

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

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DRO P 055

Intake and Login Verification Form

324

SAMPLE INTAKE					
Priority/Emergency Service Requested			YES	(NO)	
Time Sensitive Hold Time			YES	(NO)	
Client:	NORTH ROCK ENGG WEBRNG				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier		(Drop Off)		
Courier					
Waybill Number					
Temperature	12°6		Cooler Count		
Cooling Method	(None)	Ice	Ice Packs		
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	(Water)	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				Yes	No
DW Metals pH Check <2				Yes	No
Regulation Circled, Works # present			Yes	No - Reject?	
# of Bottles:	Sample Count				
Green/white	3 BOD, 3 ROUTINE				
Purple/white	3-NUT, 3-DOC, 3-PHENOL				
Warm red/white	3 - DISS Metal				
Yellow/black	3 - DISS Hg				
Light blue/white					
Orange/black					
Others (detail)	6 - VOC (SODIUM BISULPHATE				
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:					
Layout Staff Initials Date and Time of Layout	NP 10/07/23 12:50				

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client / Work Contact / Quote		
RECEIPT DETAIL		
Project / PO / Site/LSD		
Overall Description Entered	Yes	NA
Received date/time as per COC		
Recipients match CoC or Sample Remarks	Yes	No
Billing Instruction added to remarks	Yes	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	NA
Sample Info communicated via Remarks	Yes	NA
VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	No
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	NA
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		
VALIDATION		
Validation errors resolved?	Yes	No
Internal Sublet CoC created	Yes	NA
Login Comments:		
Login Staff Initials:	AN	

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CERTIFICATE OF ANALYSIS

Work Order	: **TY2308973**	Page	: 1 of 3
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-Sep-2023 12:30
PO	: ----	Date Analysis Commenced	: 12-Sep-2023
C-O-C number	: ----	Issue Date	: 18-Sep-2023 15:24
Sampler	: SW/RS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 5		
No. of samples analysed	: 5		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Workorder Comments

Sample DUP: Container BOD and Routine not received at laboratory, but requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannont be performed.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH6	BH9	DUP	BH5	BH7
					Client sampling date / time	11-Sep-2023 11:00	11-Sep-2023 10:25	11-Sep-2023 10:30	11-Sep-2023 11:30	11-Sep-2023 11:15
						TY2308973-001	TY2308973-002	TY2308973-003	TY2308973-004	TY2308973-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		511	1680	----	318	444
pH	----	E108/TY	0.10	pH units		7.48	7.60	----	8.03	8.03
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		286	1120	----	200	275
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		178	350	----	1600	921
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		277	699	----	193	240
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0080	0.0233	0.0185	<0.0050	0.0345
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		6.56	79.0	----	1.67	1.26
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		<0.020	<0.400 DLDS	----	0.074	0.023
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		1.98	211	----	7.52	25.0
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		4.35	8.33	8.56	3.34	1.50
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0569	0.148	0.154	0.0346	0.0442
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		<0.010	0.037	0.037	0.010	0.045
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		69.9	194	200	33.8	51.4
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		13.1	0.020	<0.020 DLM	<0.010	0.137
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		17.2	90.9	90.4	15.4	22.7
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		3.28	25.9	26.3	8.07	5.13
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<2.0	<2.0	----	2.2	<2.0
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		33	69	60	20	41

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2308973**	Page	: 1 of 13
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-Sep-2023 12:30
PO	: ----	Issue Date	: 18-Sep-2023 15:24
C-O-C number	: ----		
Sampler	: SW/RS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 5		
No. of samples analysed	: 5		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH5	E550	11-Sep-2023	----	----	----		12-Sep-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH6	E550	11-Sep-2023	----	----	----		12-Sep-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH7	E550	11-Sep-2023	----	----	----		12-Sep-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH9	E550	11-Sep-2023	----	----	----		12-Sep-2023	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E559-L	11-Sep-2023	----	----	----		13-Sep-2023	28 days	2 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E559-L	11-Sep-2023	----	----	----		13-Sep-2023	28 days	2 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E559-L	11-Sep-2023	----	----	----		13-Sep-2023	28 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E559-L	11-Sep-2023	----	----	----		13-Sep-2023	28 days	2 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
DUP	E559-L	11-Sep-2023	----	----	----		13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E298	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E298	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E298	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E298	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
DUP	E298	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	13-Sep-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH5	E235.Cl	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH6	E235.Cl	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓

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Page	:	5 of 13
Work Order	:	TY2308973
Client	:	North Rock Engineering
Project	:	E23-025-01

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH7	E235.Cl	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH9	E235.Cl	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH5	E235.NO3	11-Sep-2023	12-Sep-2023	7 days	1 days	✓	12-Sep-2023	7 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH6	E235.NO3	11-Sep-2023	12-Sep-2023	7 days	1 days	✓	12-Sep-2023	7 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH7	E235.NO3	11-Sep-2023	12-Sep-2023	7 days	1 days	✓	12-Sep-2023	7 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH9	E235.NO3	11-Sep-2023	12-Sep-2023	7 days	1 days	✓	12-Sep-2023	7 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
BH5	E235.SO4	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
BH6	E235.SO4	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP]										
BH7	E235.SO4	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	11-Sep-2023	12-Sep-2023	180 days	1 days	✓	12-Sep-2023	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	11-Sep-2023	12-Sep-2023	180 days	1 days	✓	12-Sep-2023	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	11-Sep-2023	12-Sep-2023	180 days	1 days	✓	12-Sep-2023	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	11-Sep-2023	12-Sep-2023	180 days	1 days	✓	12-Sep-2023	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP	E421	11-Sep-2023	12-Sep-2023	180 days	1 days	✓	12-Sep-2023	180 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	11-Sep-2023	13-Sep-2023	28 days	2 days	✓	15-Sep-2023	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	11-Sep-2023	13-Sep-2023	28 days	2 days	✓	15-Sep-2023	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	11-Sep-2023	13-Sep-2023	28 days	2 days	✓	15-Sep-2023	28 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP]										
BH9	E358-L	11-Sep-2023	13-Sep-2023	28 days	2 days	✓	15-Sep-2023	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP]										
DUP	E358-L	11-Sep-2023	13-Sep-2023	28 days	2 days	✓	15-Sep-2023	28 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH5	E290	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH6	E290	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH7	E290	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH9	E290	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH5	E100	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH6	E100	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH7	E100	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	11-Sep-2023	12-Sep-2023	28 days	1 days	✓	12-Sep-2023	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	11-Sep-2023	12-Sep-2023	14 days	1 days	✓	12-Sep-2023	14 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	11-Sep-2023	----	----	----		13-Sep-2023	7 days	2 days	✓

Legend & Qualifier Definitions

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

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1129105	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1129109	1	15	6.6	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1129126	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1129114	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	1129096	1	17	5.8	5.0	✓
Conductivity in Water	E100	1129104	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1129569	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1132674	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1129100	1	10	10.0	5.0	✓
pH by Meter	E108	1129103	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	1129097	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1131701	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1131690	1	15	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1129105	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1129109	1	15	6.6	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1129126	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1129114	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	1129096	1	17	5.8	5.0	✓
Conductivity in Water	E100	1129104	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1129569	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1132674	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1129100	1	10	10.0	5.0	✓
pH by Meter	E108	1129103	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	1129097	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1131701	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1131690	1	15	6.6	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1129105	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1129109	1	15	6.6	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1129126	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1129114	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	1129096	1	17	5.8	5.0	✓
Conductivity in Water	E100	1129104	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1129569	1	12	8.3	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1132674	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1129100	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1129097	1	17	5.8	5.0	✓
TDS by Gravimetry	E162	1131701	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	1131690	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1129109	1	15	6.6	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1129114	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	1129096	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1129569	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1132674	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	1129100	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1129097	1	17	5.8	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **TY2308973**	Page	: 1 of 8
Client	: North Rock Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	:	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-Sep-2023 12:30
PO	: ----	Date Analysis Commenced	: 12-Sep-2023
C-O-C number	: ----	Issue Date	: 18-Sep-2023 15:24
Sampler	: SW/RS (807)633-7866		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 5		
No. of samples analysed	: 5		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Thunder Bay Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Metals, Thunder Bay, Ontario

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Page	:	2 of 8
Work Order	:	TY2308973
Client	:	North Rock Engineering
Project	:	E23-025-01

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

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

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1129103)											
TY2308964-001	Anonymous	pH	----	E108	0.10	pH units	7.82	7.83	0.01	Diff <2x LOR	----
Physical Tests (QC Lot: 1129104)											
TY2308964-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	245	242	1.23%	10%	----
Physical Tests (QC Lot: 1129105)											
TY2308964-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	44.8	44.5	0.672%	20%	----
Physical Tests (QC Lot: 1131690)											
TY2308970-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	3.2	4.2	1.0	Diff <2x LOR	----
Physical Tests (QC Lot: 1131701)											
TY2308970-001	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	74	85	10	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1129096)											
TY2308970-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	3.84	3.86	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1129097)											
TY2308970-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.48	1.51	0.04	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1129100)											
TY2308970-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.042	0.042	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1129109)											
TY2308964-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0054	<0.0050	0.0004	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1132674)											
BF2300278-009	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.67	1.50	0.17	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1129569)											
TY2308959-002	Anonymous	Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00581	0.00583	0.433%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	1.57	1.50	4.80%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.250	0.265	5.90%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.308	0.304	1.61%	20%	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.668	0.664	0.628%	20%	----
Aggregate Organics (QC Lot: 1129114)											
TY2308960-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	87	90	3	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1129126)											
TY2308903-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1129104)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1129105)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1131690)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1131701)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1129096)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1129097)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1129100)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1129109)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 1132674)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 1129569)						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 1129114)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 1129126)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1129103)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1129104)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	95.5	90.0	110	----
Physical Tests (QCLot: 1129105)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	99.6	85.0	115	----
Physical Tests (QCLot: 1131690)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	106	85.0	115	----
Physical Tests (QCLot: 1131701)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.9	85.0	115	----
Anions and Nutrients (QCLot: 1129096)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1129097)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 1129100)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1129109)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.4	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1132674)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.3	80.0	120	----
Dissolved Metals (QCLot: 1129569)									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	109	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	93.8	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	97.6	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	105	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	104	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	105	80.0	120	----
Aggregate Organics (QCLot: 1129114)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	93.3	85.0	115	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	LCS Recovery (%)	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Aggregate Organics (QCLot: 1129126)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	102	85.0	115	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Anions and Nutrients (QCLot: 1129096)										
TY2308977-001	Anonymous	Chloride	16887-00-6	E235.Cl	206 mg/L	200 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1129097)										
TY2308977-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	210 mg/L	200 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1129100)										
TY2308977-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	5.03 mg/L	5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1129109)										
TY2308964-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0985 mg/L	0.1 mg/L	98.5	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1132674)										
BF2300278-009	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.11 mg/L	5 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 1129569)										
TY2308959-003	Anonymous	Barium, dissolved	7440-39-3	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	98.8	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.12 mg/L	2 mg/L	106	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	0.998 mg/L	1 mg/L	99.8	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.03 mg/L	2 mg/L	102	70.0	130	----
Aggregate Organics (QCLot: 1129114)										
TY2308960-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	88 mg/L	100 mg/L	88.6	75.0	125	----

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Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 - 340

Page 1 of 1

Environmental Division Thunder Bay
Work Order Reference
TY2308973

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Turnaround Time (TAT) Requested
Company	North Rock Engineering	Select Report Format: PDF EXCEL EDD (DIGITAL)	Routine (R) if received by 3pm M-F - no surcharges apply
Contact	Jason Garatti	Quality Control (QC) Report with Rel YES NO	4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone	807-633-7866	Compare Results to Criteria on Report - provide details below if box checked	3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: EMAIL MAIL FAX	2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street	1411 Goods Road	Email 1 or Fax jgaratti@nrock.ca,csprovieri@nrock.ca	1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province	Thunder Bay, ON	Email 2 switzel@nrock.ca, kcox@nrock.ca	Same day [E2] if received by 10am M-S - 200% rush surcharge
Postal Code	P7G 1J1	Email 3	Additional fees may apply to rush requests on weekends
Invoice To	Same as Report To YES NO	Invoice Distribution	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
	Copy of Invoice with Report YES NO	Select Invoice Distribution: EMAIL MAIL FAX	For all tests with rush TATs requested, please contact your AM to confirm availability
Company		Email 1 or Fax jen@nrock.ca	
Contact		Email 2 kbriggs@nrock.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #	NORO100 / TY2023NORO1000005	AFE/Cost Center	PO#
Job #	E23-025 C	Major/Minor Code	Routing Code
PO / AFE		Requisitioner	
LSD	Conmee Landfill	Location	

ALS Lab Work Order # (ALS use only): TY2308973 | ALS Contact: CP | Sampler: SW / RS

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 2	(Alkalinity, BOD, Chloride, COD,	Dissolved B, Ba, Ca, Fe, Mg, Na	UOC, Conductivity, NH3, NO3,	pH, SO4, TDS, TSS)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH6	11-09-23	11:00	Groundwater	5	x							
	BH9	11-09-23	10:25	Groundwater	5	x	\						
	~~BH8~~			Groundwater		x							
	DUP	11-09-23	10:30	Groundwater	3	x							
	BH5	↓	11:30	Groundwater	5	x			•				
	BH7	↓	11:15	Groundwater	5	x							
	~~BH8~~			Groundwater		x							
				Groundwater									
				Groundwater									
				Groundwater									
				Groundwater									
				Groundwater									

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

MECP Table 2

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: NONE ICE ICE PACKS FROZEN COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: YES NO

Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
9.9	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: S. Witzel	Date: 11-09-23	Time: 12:30	Received by:	Date:	Time:	Received by: LV	Date: 9/11/23	Time: 12:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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FCD 2022-FRONT

Drop-off 1 Cooler

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Intake and Login Verification Form

SAMPLE INTAKE		
Priority/Emergency Service Requested	YES	~~NO~~
Time Sensitive Hold Time	YES	~~NO~~
Client:	North Rock	

SAMPLE RECEIPT INFORMATION			
Mode of Delivery:	Courier		Drop Off
Courier			
Waybill Number			
Temperature 9.9			Cooler Count 1
Cooling Method	None	Ice	Ice Packs

SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	Water	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				~~Yes~~	~~No~~
DW Metals pH Check <2				~~Yes~~	~~No~~
Regulation Circled, Works # present			~~Yes~~	~~No - Reject?~~	
# of Bottles:	Sample Count			5	
Green/white	5	4 Routine, 4 BOD			
Purple/white		5 Nuts, 5 Diss. Nut			
Warm red/white		5 ~~Tot~~ Metals (Diss.)			
Yellow/black					
Light blue/white					
Orange/black					
Others (detail)					

Comments on Samples and Bottles:

Fraction 3 ⇒ BOD & Routine bottles not received.

Samples Requiring Preservation or Filtering:

Layout Staff Initials Date and Time of Layout	LV 9/11/23 1243

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client	Work Contact	Quote

RECEIPT DETAIL			
Project	PO	Site/LSD	
Overall Description Entered		Yes	NA
Received date/time as per COC			
Recipients match CoC or Sample Remarks		Yes	No
Billing Instruction added to remarks		Yes	NA
Sample Remarks/Specification Doc checked			
Submission Issues communicated		Yes	NA
Sample Info communicated via Remarks		Yes	NA

VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	No
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	NA
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		

VALIDATION		
Validation errors resolved?	Yes	No
Internal Sublet CoC created	Yes	NA

Login Comments:

Login Staff Initials:	AN

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right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **TY2303987**	Page	: 1 of 4
Client	: **North Rock Engineering**	Laboratory	: Thunder Bay - Environmental
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-May-2023 15:48
PO	: ----	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 25-May-2023 16:18
Sampler	: ES, SW		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 6		
No. of samples analysed	: 6		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Mingjian Yang	Laboratory Assistant	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario

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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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	11-May-2023 13:50	11-May-2023 13:40	11-May-2023 13:15	11-May-2023 12:55	11-May-2023 12:10
						TY2303987-001	TY2303987-002	TY2303987-003	TY2303987-004	TY2303987-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		286	83.6	419	98.3	79.7
pH	----	E108/TY	0.10	pH units		8.09	7.07	7.90	7.12	7.10
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		220	76	229	118	92
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		1910	122	672	153	302
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		181	37.6	267	37.5	31.5
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0206	0.0063	0.142	0.0323	0.0082
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.07	4.16	1.43	7.17	1.78
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.488	<0.020	<0.020	0.021	0.538
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		5.65	0.67	23.5	1.42	4.36
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		2.76	3.56	2.15	3.63	7.26
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0368	0.00987	0.0511	0.00788	0.00662
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		<0.010	<0.010	0.032	<0.010	<0.010
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		32.5	10.1	49.3	6.00	8.13
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		<0.010	0.187	2.62	0.716	0.194
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		14.5	3.19	22.7	2.19	3.14
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		5.57	2.04	5.30	1.05	1.22
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<5.0 DLM	<3.0 DLM	15.1	<3.0 DLM	<3.0 DLM
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		43	34	179	60	44

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Analytical Results

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	BH20	----	----	----	----
					Client sampling date / time	11-May-2023 12:15	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2303987-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		72.3	----	----	----	----
pH	----	E108/TY	0.10	pH units		7.08	----	----	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		100	----	----	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		282	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		30.5	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0078	----	----	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.37	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.539	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		3.56	----	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		7.62	----	----	----	----
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.00609	----	----	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		<0.010	----	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		8.27	----	----	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		0.120	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		3.18	----	----	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		1.24	----	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	-		Field	----	----	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<3.0 DLM	----	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		36	----	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2303987**	Page	: 1 of 15
Client	: **North Rock Engineering**	Laboratory	: Thunder Bay - Environmental
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-May-2023 15:48
PO	: ----	Issue Date	: 25-May-2023 16:18
C-O-C number	: ----		
Sampler	: ES, SW		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 6		
No. of samples analysed	: 6		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH20	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH5	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH6	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH7	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH8	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH9	E550	11-May-2023	----	----	----		12-May-2023	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH20	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E559-L	11-May-2023	----	----	----		15-May-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH20	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E298	11-May-2023	15-May-2023	----	----		17-May-2023	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH20	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH5	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH6	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH7	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH8	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH9	E235.Cl	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH20	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH5	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH6	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH7	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH8	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH9	E235.NO3	11-May-2023	12-May-2023	----	----		13-May-2023	7 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH20	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH5	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH6	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH7	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH8	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	11-May-2023	12-May-2023	----	----		13-May-2023	28 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH20	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH8	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	11-May-2023	15-May-2023	----	----		15-May-2023	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH20	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH8	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	11-May-2023	16-May-2023	----	----		18-May-2023	28 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH20	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH5	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH7	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH8	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP]										
BH9	E290	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH20	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH5	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH6	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH7	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH8	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH9	E100	11-May-2023	12-May-2023	----	----		12-May-2023	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
BH20	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH8	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	11-May-2023	12-May-2023	----	----		12-May-2023	14 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH20	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH8	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH20	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH8	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	11-May-2023	----	----	----		13-May-2023	7 days	2 days	✓

Legend & Qualifier Definitions

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

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Page	:	12 of 15
Work Order	:	TY2303987
Client	:	North Rock Engineering
Project	:	E23-025-01

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	935463	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	938271	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	934738	2	25	8.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	938282	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	935473	0	9	0.0	5.0	×
Conductivity in Water	E100	935465	0	14	0.0	5.0	×
Dissolved Metals in Water by CRC ICPMS	E421	937987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	941156	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	935469	1	15	6.6	5.0	✓
pH by Meter	E108	935464	0	18	0.0	5.0	×
Sulfate in Water by IC	E235.SO4	935472	0	9	0.0	5.0	×
TDS by Gravimetry	E162	936722	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	936727	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	935463	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	938271	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	934738	2	25	8.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	938282	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	935473	1	9	11.1	5.0	✓
Conductivity in Water	E100	935465	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	937987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	941156	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	935469	1	15	6.6	5.0	✓
pH by Meter	E108	935464	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	935472	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	936722	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	936727	1	17	5.8	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	935463	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	938271	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	934738	2	25	8.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	938282	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	935473	1	9	11.1	5.0	✓
Conductivity in Water	E100	935465	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	937987	1	20	5.0	5.0	✓

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Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	941156	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	935469	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	935472	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	936722	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	936727	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	938271	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	938282	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	935473	0	9	0.0	5.0	✗
Dissolved Metals in Water by CRC ICPMS	E421	937987	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	941156	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	935469	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	935472	0	9	0.0	5.0	✗

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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
Conductivity in Water	E100 Thunder Bay - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Thunder Bay - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Thunder Bay - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Thunder Bay - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Thunder Bay - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Thunder Bay - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Thunder Bay - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Thunder Bay - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Thunder Bay - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Thunder Bay - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 Thunder Bay - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L Thunder Bay - Environmental	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Thunder Bay - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 Waterloo - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 Thunder Bay - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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QUALITY CONTROL REPORT

Work Order	: **TY2303987**	Page	: 1 of 7
Client	: North Rock Engineering	Laboratory	: Thunder Bay - Environmental
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	:	Telephone	: +1 807 623 6463
Project	: E23-025-01	Date Samples Received	: 11-May-2023 15:48
PO	: ----	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 25-May-2023 16:18
Sampler	: ES, SW (807)633-7866		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill		
No. of samples received	: 6		
No. of samples analysed	: 6		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Mingjian Yang	Laboratory Assistant	Thunder Bay Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Laboratory Assistant	Thunder Bay Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Metals, Thunder Bay, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario

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Page	:	2 of 7
Work Order	:	TY2303987
Client	:	North Rock Engineering
Project	:	E23-025-01

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

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

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Work Order : TY2303987
Client : North Rock Engineering
Project : E23-025-01

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 935463)											
TY2303939-002	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	45.3	45.0	0.664%	20%	----
Physical Tests (QC Lot: 936722)											
TY2303987-001	BH5	Solids, total dissolved [TDS]	----	E162	20	mg/L	220	205	7.29%	20%	----
Physical Tests (QC Lot: 936727)											
TY2303987-001	BH5	Solids, total suspended [TSS]	----	E160	7.5	mg/L	1910	1850	3.51%	20%	----
Anions and Nutrients (QC Lot: 935469)											
TY2303961-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 938271)											
TY2303975-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	16.5	17.5	5.88%	20%	----
Organic / Inorganic Carbon (QC Lot: 941156)											
TY2303987-001	BH5	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.76	2.87	0.11	Diff <2x LOR	----
Dissolved Metals (QC Lot: 937987)											
TY2303987-001	BH5	Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0368	0.0368	0.00184%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	32.5	34.1	4.77%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	14.5	14.6	0.468%	20%	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	5.57	5.58	0.299%	20%	----
Aggregate Organics (QC Lot: 934738)											
TY2303947-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	33.3	mg/L	219	221	1.2%	20%	----
Aggregate Organics (QC Lot: 935204)											
TY2303987-001	BH5	Biochemical oxygen demand [BOD]	----	E550	5.0	mg/L	<5.0	<5.0	0.0%	20%	----
Aggregate Organics (QC Lot: 938282)											
TY2303987-001	BH5	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	43	43	0.6	Diff <2x LOR	----

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 935463)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 935465)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 936722)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 936727)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 935469)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 935472)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 935473)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 938271)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 941156)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 937987)						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 934738)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 935204)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 938282)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 935463)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	99.8	85.0	115	----
Physical Tests (QCLot: 935464)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 935465)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	98.2	90.0	110	----
Physical Tests (QCLot: 936722)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.0	85.0	115	----
Physical Tests (QCLot: 936727)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 935469)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 935472)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	----
Anions and Nutrients (QCLot: 935473)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	108	90.0	110	----
Anions and Nutrients (QCLot: 938271)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.4	85.0	115	----
Organic / Inorganic Carbon (QCLot: 941156)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 937987)									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	103	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	95.3	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	99.8	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	102	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	102	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	106	80.0	120	----
Aggregate Organics (QCLot: 934738)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	98.9	85.0	115	----

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Page	:	7 of 7
Work Order	:	TY2303987
Client	:	North Rock Engineering
Project	:	E23-025-01

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Aggregate Organics (QCLot: 935204)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	95.4	85.0	115	----
Aggregate Organics (QCLot: 938282)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	107	85.0	115	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Anions and Nutrients (QCLot: 935469)										
TY2303964-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.65 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 938271)										
TY2303975-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Organic / Inorganic Carbon (QCLot: 941156)										
TY2303987-001	BH5	Carbon, dissolved organic [DOC]	----	E358-L	5.74 mg/L	5 mg/L	115	70.0	130	----
Dissolved Metals (QCLot: 937987)										
TY2303987-002	BH6	Barium, dissolved	7440-39-3	E421	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.3	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
Aggregate Organics (QCLot: 938282)										
TY2303987-002	BH6	Chemical oxygen demand [COD]	----	E559-L	99 mg/L	100 mg/L	98.8	75.0	125	----

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Chain of Custody (COC) / Analytical Request Form

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 - 077

Page of

Environmental Division Thunder Bay

Work Order Reference TY2303987

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering
Contact:	Jason Garatti
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	1411 Goods Road
City/Province:	Thunder Bay, ON
Postal Code:	P7G 1J1
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: jgaratti@nrock.ca,csprovieri@nrock.ca

Email 2: switzel@nrock.ca, kcox@nrock.ca

Email 3:

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX

Email 1 or Fax: jen@nrock.ca

Email 2: kbriggs@nrock.ca

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge m

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge n

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge n

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge n

☐ Same day [E2] if received by 10am M-S - 200% rush surch

Additional fees may apply to rush requests on we

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	NORO100 / TY2023NORO1000005	AFE/Cost Center:	PO#:
Job #:	E23-025-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Conmee Landfill	Location:	

ALS Lab Work Order # (ALS use only): TY2303987 ALS Contact: CP Sampler: ES/SW

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 2	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: (Alkalinity, BOD, Chloride, COD)	Dissolved B, Ba, Ca, Fe, Mg, Na, (DOC, Conductivity, NH3, NO3, pH, SO4, TDS, TSS)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH5	11-may-23	13:50	Groundwater	5	x	X	X			
	BH6	11-may-23	13:40	Groundwater	5	x	X	X			
	BH7	11-may-23	13:15	Groundwater	5	x	X	X			
	BH8	11-may-23	12:55	Groundwater	5	x	X	X			
	BH9	11-may-23	12:10	Groundwater	5	x	X	X			
	BH10 — no sample	~~11-may-23~~		Groundwater	5	x					
	BH20	11-may-23	12:15	Groundwater	5	x	X	X			
				Groundwater							
				Groundwater							
				Groundwater							
				Groundwater							
				Groundwater							

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

ODWS

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
3.5	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Eric Sager	11-may 23	15:00				JR	5/11/23	3:48pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 | PDF

dropoff -1-cooler

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Intake and Login Verification Form

SAMPLE INTAKE				
Priority/Emergency Service Requested			YES	NO
Time Sensitive Hold Time			YES	NO
Client:	North Rock Engineering			
SAMPLE RECEIPT INFORMATION				
~~Mode of Delivery:~~	~~Courier~~		~~Drop Off~~	
COURIER				
Waybill Number				
Shipment Cost			Collect?	Y/N
Temperature	13.5	Cooler Count		1
Cooling Method	None	Ice	Ice Packs	
SAMPLE MATRIX/BOTTLE INFORMATION				
Matrix:	Water	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				Yes	No
DW Metals pH Check <2				Yes	No
Bottle Types: 5	Sample Count		6		
Green/white	6 Sensitive, 6 BOD				
Orange/black					
Warm red/green/white					
Warm red/white	6 Diss. Metals				
Yellow/black					
Purple/white	6 Nutrients, 6 DOC				
Light blue/white					
Others (detail)					
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:					
Layout Staff Initials Date and Time of Layout	NP3 May 12, 2023 11:03 AM				

ACCOUNT INFO VERIFICATION			
Confirmed-all-as-accurate-as-per-COC, Sample Remarks or PM			
Client ✓	~~Office~~ ✓	Work Contact ✓	Quote ✓
RECEIPT DETAIL			
Project	~~PO~~ ✓	Site/LSD ✓	
Recipients match CoC or Sample Remarks		~~Yes~~	No
~~Billing instruction added to remarks~~		~~Yes~~	NA
Sample Remarks checked		~~Yes~~ ✓	
Submission Issues communicated		Yes	NA ✓
Sample Info communicated via Remarks		Yes	NA
VERIFICATION CHECKLIST			
Sample Name entered as per CoC		✓	
Sampling Date and time entered as per CoC		✓	
Containers selected in order of COC		✓	
Sales items from QUOTE ONLY (and/or verified as correct)		✓	
Field Data/Calc Codes removed if not on COC		✓	
Bottle Allocation Verified		✓	
Guideline added or auto-allocated		✓	
Due dates updated		✓	
VALIDATION			
Validation errors or checks		Yes	~~No~~
Internal CoC created		~~Yes~~	NA
Login Comments:			
Login Staff Initials:	SS09		

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CERTIFICATE OF ANALYSIS

Work Order	: **TY2405650**	Page	: 1 of 4
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 04-Jun-2024 13:39
PO	: ----	Date Analysis Commenced	: 05-Jun-2024
C-O-C number	: ----	Issue Date	: 12-Jun-2024 11:59
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Kelly Fischer	Technical Specialist	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	04-Jun-2024 08:00	04-Jun-2024 08:00	04-Jun-2024 08:00	04-Jun-2024 08:00	04-Jun-2024 08:00
						TY2405650-001	TY2405650-002	TY2405650-003	TY2405650-004	TY2405650-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		347	321	412	122	348
pH	----	E108/TY	0.10	pH units		8.27	8.09	8.31	7.65	7.98
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		222	197	248	107	240
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		1000	1070	276	78.7	168
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		195	182	220	65.8	150
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0082	0.0058	0.0231	<0.0050	0.0161
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.95	6.32	1.33	<0.50	9.42
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.165	<0.020	0.122	0.026	0.041
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		12.7	1.50	20.3	1.03	27.9
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		2.74	3.26	1.34	4.60	5.72
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0510	0.0271	0.0506	0.0125	0.0190
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		0.012	<0.010	0.032	<0.010	<0.010
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		38.3	44.0	43.4	13.1	29.1
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		0.089	0.016	0.017	0.611	0.058
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		19.7	14.3	28.0	5.95	12.0
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		10.2	3.63	3.95	1.70	3.55
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	Laboratory	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<3.0 DLM	<3.8 DLM	<3.0 DLM	<3.0 DLM	<3.0 DLM
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		52	134	27	36	32

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Page	:	4 of 4
Work Order	:	TY2405650
Client	:	North Rock Engineering
Project	:	E24-015-03

Analytical Results

Sub-Matrix: Groundwater (Matrix: Water)				Client sample ID	Duplicate	----	----	----	----
				Client sampling date / time	04-Jun-2024 08:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	TY2405650-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
Conductivity	----	E100/TY	2.0	µS/cm	298	----	----	----	----
pH	----	E108/TY	0.10	pH units	7.94	----	----	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L	212	----	----	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L	159	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L	131	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L	0.0137	----	----	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L	7.83	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L	0.035	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L	22.2	----	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L	6.19	----	----	----	----
Dissolved Metals									
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L	0.0188	----	----	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L	<0.010	----	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L	28.5	----	----	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L	0.067	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L	11.9	----	----	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L	3.37	----	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	-	Field	----	----	----	----
Aggregate Organics									
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L	<3.0 DLM	----	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L	32	----	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2405650**	Page	: 1 of 15
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 04-Jun-2024 13:39
PO	: ----	Issue Date	: 12-Jun-2024 11:59
C-O-C number	: ----		
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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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.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH5	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH6	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH7	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH8	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
BH9	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d]										
Duplicate	E550	04-Jun-2024	----	----	----		05-Jun-2024	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓

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Page	:	4 of 15
Work Order	:	TY2405650
Client	:	North Rock Engineering
Project	:	E24-015-03

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH6	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH7	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH8	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH9	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E559-L	04-Jun-2024	----	----	----		07-Jun-2024	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH5	E298	04-Jun-2024	05-Jun-2024	28 days	1 days	✓	05-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH6	E298	04-Jun-2024	05-Jun-2024	28 days	1 days	✓	05-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH7	E298	04-Jun-2024	05-Jun-2024	28 days	1 days	✓	05-Jun-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH8	E298	04-Jun-2024	05-Jun-2024	28 days	1 days	✓	05-Jun-2024	28 days	1 days	✓

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Page	:	5 of 15
Work Order	:	TY2405650
Client	:	North Rock Engineering
Project	:	E24-015-03

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH9	E298	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	07-Jun-2024	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E298	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	07-Jun-2024	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH5	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	08-Jun-2024	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH6	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	08-Jun-2024	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH7	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH8	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH9	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] Duplicate	E235.Cl	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH5	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	08-Jun-2024	7 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH6	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	08-Jun-2024	7 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH7	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	10-Jun-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH8	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	10-Jun-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH9	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	10-Jun-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] Duplicate	E235.NO3	04-Jun-2024	06-Jun-2024	7 days	2 days	✓	10-Jun-2024	7 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH5	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	08-Jun-2024	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH6	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	08-Jun-2024	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH7	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH8	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] Duplicate	E235.SO4	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BH8	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Duplicate	E421	04-Jun-2024	07-Jun-2024	180 days	3 days	✓	07-Jun-2024	180 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	04-Jun-2024	07-Jun-2024	28 days	3 days	✓	11-Jun-2024	28 days	7 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	04-Jun-2024	07-Jun-2024	28 days	3 days	✓	11-Jun-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	04-Jun-2024	07-Jun-2024	28 days	3 days	✓	11-Jun-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] Duplicate	E358-L	04-Jun-2024	07-Jun-2024	28 days	3 days	✓	11-Jun-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	04-Jun-2024	10-Jun-2024	28 days	6 days	✓	10-Jun-2024	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) [ON MECP] BH8	E358-L	04-Jun-2024	10-Jun-2024	3 days	6 days	× EHT	10-Jun-2024	28 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH5	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH7	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH8	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH9	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] Duplicate	E290	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH5	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH6	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH7	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH8	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] Duplicate	E100	04-Jun-2024	06-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH8	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] Duplicate	E108	04-Jun-2024	06-Jun-2024	14 days	2 days	✓	10-Jun-2024	14 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH8	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] Duplicate	E162	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH8	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] Duplicate	E160	04-Jun-2024	----	----	----		06-Jun-2024	7 days	2 days	✓

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

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1479870	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	1476898	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1476814	1	8	12.5	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479717	2	18	11.1	5.0	✓
Conductivity in Water	E100	1479872	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481173	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482608	2	39	5.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1479716	2	28	7.1	5.0	✓
pH by Meter	E108	1479871	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	1479718	2	31	6.4	5.0	✓
TDS by Gravimetry	E162	1478861	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1478862	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1479870	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	1476898	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1476814	1	8	12.5	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479717	2	18	11.1	5.0	✓
Conductivity in Water	E100	1479872	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481173	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482608	2	39	5.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1479716	2	28	7.1	5.0	✓
pH by Meter	E108	1479871	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	1479718	2	31	6.4	5.0	✓
TDS by Gravimetry	E162	1478861	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1478862	1	18	5.5	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1479870	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	1476898	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1476814	1	8	12.5	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479717	2	18	11.1	5.0	✓
Conductivity in Water	E100	1479872	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481173	1	20	5.0	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482608	2	39	5.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1479716	2	28	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1479718	2	31	6.4	5.0	✓
TDS by Gravimetry	E162	1478861	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1478862	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1476898	2	40	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479717	2	18	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481173	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482608	2	39	5.1	5.0	✓
Nitrate in Water by IC	E235.NO3	1479716	2	28	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1479718	2	31	6.4	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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QUALITY CONTROL REPORT

Work Order	: **TY2405650**	Page	: 1 of 10
Client	: North Rock Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 04-Jun-2024 13:39
PO	: ----	Date Analysis Commenced	: 05-Jun-2024
C-O-C number	: ----	Issue Date	: 12-Jun-2024 12:06
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Kelly Fischer	Technical Specialist	Waterloo Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Thunder Bay Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Metals, Thunder Bay, Ontario

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Page	:	2 of 10
Work Order	:	TY2405650
Client	:	North Rock Engineering
Project	:	E24-015-03

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

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

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1478861)											
TY2405573-003	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	104	105	0.7	Diff <2x LOR	----
Physical Tests (QC Lot: 1478862)											
TY2405573-003	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1479870)											
TY2405613-005	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	177	171	2.99%	20%	----
Physical Tests (QC Lot: 1479871)											
TY2405613-005	Anonymous	pH	----	E108	0.10	pH units	8.30	8.30	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1479872)											
TY2405613-005	Anonymous	Conductivity	----	E100	2.0	µS/cm	486	484	0.412%	10%	----
Anions and Nutrients (QC Lot: 1476898)											
TY2405573-003	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0214	0.0179	0.0035	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1478733)											
TY2405646-009	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1479716)											
TY2405653-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	2.28	2.28	0.0400%	20%	----
Anions and Nutrients (QC Lot: 1479717)											
TY2405653-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	134	135	0.132%	20%	----
Anions and Nutrients (QC Lot: 1479718)											
TY2405653-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	18.5	18.3	0.806%	20%	----
Anions and Nutrients (QC Lot: 1479865)											
TY2405613-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	2.99	2.93	2.07%	20%	----
Anions and Nutrients (QC Lot: 1479866)											
TY2405613-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	66.3	64.9	2.21%	20%	----
Anions and Nutrients (QC Lot: 1479869)											
TY2405646-009	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	6.43	6.51	1.28%	20%	----
Organic / Inorganic Carbon (QC Lot: 1482608)											
TY2405586-006	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	9.27	10.1	8.77%	20%	----
Organic / Inorganic Carbon (QC Lot: 1482611)											
BF2400070-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.99	2.12	0.14	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1481173)											

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Work Order : TY2405650
Client : North Rock Engineering
Project : E24-015-03

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1481173) - continued											
TY2405646-008	Anonymous	Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00574	0.00562	2.06%	20%	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.5	11.6	1.10%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	0.011	0.0004	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.59	4.57	0.402%	20%	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.16	2.13	0.990%	20%	----
Aggregate Organics (QC Lot: 1476814)											
TY2405650-001	BH5	Biochemical oxygen demand [BOD]	----	E550	3.0	mg/L	<3.0	<3.0	0.0%	30%	----
Aggregate Organics (QC Lot: 1479677)											
TY2405650-001	BH5	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	52	53	0.6	Diff <2x LOR	----

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1478861)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1478862)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1479870)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1479872)						
Conductivity	----	E100	1	µS/cm	1.0	----
Anions and Nutrients (QCLot: 1476898)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1478733)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1479716)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1479717)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1479718)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1479865)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1479866)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1479869)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1482608)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1482611)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 1481173)						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1481173) - continued						
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 1476814)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1479677)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----

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Work Order	:	TY2405650
Client	:	North Rock Engineering
Project	:	E24-015-03

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1478861)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.4	85.0	115	----
Physical Tests (QCLot: 1478862)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	98.2	85.0	115	----
Physical Tests (QCLot: 1479870)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	99.4	85.0	115	----
Physical Tests (QCLot: 1479871)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 1479872)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	101	90.0	110	----
Anions and Nutrients (QCLot: 1476898)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.1	85.0	115	----
Anions and Nutrients (QCLot: 1478733)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 1479716)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1479717)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1479718)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1479865)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 1479866)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1479869)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1482608)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1482611)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----

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Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1481173)									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.012 mg/L	104	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	93.3	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	102	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	105	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	102	80.0	120	----
Aggregate Organics (QCLot: 1476814)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	104	85.0	115	----
Aggregate Organics (QCLot: 1479677)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	106	85.0	115	----

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Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1476898)										
TY2405575-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 1478733)										
TY2405646-010	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 1479716)										
TY2405655-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1479717)										
TY2405655-001	Anonymous	Chloride	16887-00-6	E235.Cl	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1479718)										
TY2405655-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1479865)										
TY2405613-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1479866)										
TY2405613-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1479869)										
TY2405646-010	Anonymous	Chloride	16887-00-6	E235.Cl	107 mg/L	100 mg/L	107	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1482608)										
TY2405586-006	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1482611)										
BF2400070-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.53 mg/L	5 mg/L	111	70.0	130	----
Dissolved Metals (QCLot: 1481173)										
TY2405646-009	Anonymous	Barium, dissolved	7440-39-3	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	93.4	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.12 mg/L	2 mg/L	106	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
Aggregate Organics (QCLot: 1479677)										
TY2405650-001	BH5	Chemical oxygen demand [COD]	----	E559-L	92 mg/L	100 mg/L	91.7	75.0	125	----

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Chain of Custody (COC) / Analytical Request Form

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COC Number: 22 -

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Environmental Division Thunder Bay
Work Order Reference
TY2405650

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	North Rock Engineering	Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Jason Garatti	Merge QC/QCI Reports with COA ☒ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge
Phone:	807-633-7866	☒ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge
	Company address below will appear on the final report	Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge
Street:	1411 Goods Road	Email 1 or Fax jgaratti@nrock.ca,csprovieri@nrock.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge
City/Province:	Thunder Bay, ON	Email 2 rsmith@nrock.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surc
Postal Code:	P7G 1J1	Email 3	Additional fees may apply to rush requests on weel
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☒ YES ☐ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☑ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:		Email 1 or Fax jen@nrock.ca	
Contact:		Email 2 kbriggs@nrock.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Client Code / QUOTE #:	NORO100 / TY2023NORO1000005	AFE/Cost Center:	PO#
Job / Project #:	E24-015-03	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Conmee Landfill	Location:	
ALS Lab Work Order # (ALS use only):	TY2405650	ALS Contact: CP	Sampler: CS

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 2	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: (Alkalinity, BOD, Chloride, COD)	Dissolved B, Ba, Ca, Fe, Mg, Na	DOC, Conductivity, NH3, NO3	pH, SO4, TDS, TSS)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	BH5	04-Jun-24	am	Groundwater	5	x							
2	BH6			Groundwater	5	x							
3	BH7			Groundwater	5	x							
4	BH8			Groundwater	5	x							
5	BH9			Groundwater	5	x							
	~~BH10~~ No Sample			Groundwater		x							
	~~BH11~~ No Sample			Groundwater		x							
6	Duplicate			Groundwater	5	x							

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)	SAMPLE RECEIPT DETAILS (ALS use only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	BH8 - F/P in Lab	Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Are samples for human consumption/ use? ☐ YES ☑ NO	ODWS	Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A
		INITIAL COOLER TEMPERATURES °C: 9.3 — FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Charles 2	Date: Jun 04/24	Time: 1:30	Received by: AP6	Date: Jun 4, 2024	Time: 13:39	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Intake and Login Verification Form

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SAMPLE INTAKE					
Priority/Emergency Service Requested				YES	NO
Time Sensitive Hold Time				YES	NO
Client:	North Rock				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier			Drop Off	
Courier					
Waybill Number					
Temperature	9.3			Cooler Count	
Cooling Method	None	Ice		Ice Packs	
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	Water	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				~~Yes~~	~~No~~
DW Metals pH Check <2				Yes	No
Regulation Circled, Works # present			~~Yes~~	~~No~~	~~Reject?~~
# of Bottles:	5	Sample Count		6	
Green/white	6 Routine, 6 BOD				
Purple/white	6 Nuts, 6 DOC				
Warm red/white	6 Diss. Metals				
Yellow/black					
Light blue/white					
Orange/black					
Others (detail)					
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:	FR 4 BHB : Diss Met/DOC -FIP				
Layout Staff Initials Date and Time of Layout	LV 6/4/24 3:20				

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client / Work Contact / Quote		
RECEIPT DETAIL		
Project / PO / Site/LSD		
Overall Description Entered	Yes	NA
Received date/time as per COC		
Recipients match CoC or Sample Remarks	Yes	No
Billing Instruction added to remarks	Yes	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	NA
Sample Info communicated via Remarks	Yes	NA
VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	No
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	NA
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		
VALIDATION		
Validation errors resolved?	Yes	No
Internal Sublet CoC created	Yes	NA
Login Comments:		
Login Staff Initials:	APS	

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CERTIFICATE OF ANALYSIS

Work Order	: **TY2405749**	Page	: 1 of 4
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 05-Jun-2024 16:32
PO	: ----	Date Analysis Commenced	: 06-Jun-2024
C-O-C number	: ----	Issue Date	: 13-Jun-2024 16:57
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Daron Mooney	Laboratory Assistant	Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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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
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Workorder Comments

Sample BH11: Container BOD and routine received empty at laboratory; subsample cannot be obtained from other containers to meet request. BOD and routine analysis cannot be performed.

Qualifiers

Qualifier	*Description*
SP	*Sample was preserved at the laboratory.*

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Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: BH11 - Partial Sample GW	SW1 SW	----	----	----
Client sampling date / time					05-Jun-2024 11:30	05-Jun-2024 11:45	----	----	----
					TY2405749-001	TY2405749-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
Conductivity	----	E100/TY	2.0	µS/cm	----	320	----	----	----
pH	----	E108/TY	0.10	pH units	----	7.91	----	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L	----	208	----	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L	----	<3.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L	----	95.0	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L	0.0643	0.0204	----	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L	----	19.3	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/TY	0.050	mg/L	----	0.718	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L	----	<0.020	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2/TY	0.010	mg/L	----	<0.010	----	----	----
Phosphorus, total	7723-14-0	E372-U/TY	0.0020	mg/L	----	0.0072	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L	----	36.3	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L	2.56	----	----	----	----
Total Metals									
Iron, total	7439-89-6	E420/TY	0.010	mg/L	----	0.088	----	----	----
Dissolved Metals									
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L	0.0410	----	----	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L	<0.100	----	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L	48.5	----	----	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L	0.352	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L	15.2	----	----	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L	29.1	----	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	-	Laboratory	----	----	----	----
Aggregate Organics									
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L	----	<2.0	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L	1100	54	----	----	----

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Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	BH11 - Partial Sample GW	SW1 SW	---	----	----
					Client sampling date / time	05-Jun-2024 11:30	05-Jun-2024 11:45	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2405749-001	TY2405749-002	--------	--------	--------
						Result	Result	----	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/WT	0.0010	mg/L		----	<0.0010 SP	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2405749**	Page	: 1 of 10
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 05-Jun-2024 16:32
PO	: ----	Issue Date	: 13-Jun-2024 16:57
C-O-C number	: ----		
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] SW1 - SW	E550	05-Jun-2024	----	----	----		06-Jun-2024	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH11 - Partial Sample - GW	E559-L	05-Jun-2024	----	----	----		07-Jun-2024	28 days	2 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] SW1 - SW	E559-L	05-Jun-2024	----	----	----		07-Jun-2024	28 days	2 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] SW1 - SW	E562	05-Jun-2024	11-Jun-2024	28 days	6 days	✓	12-Jun-2024	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH11 - Partial Sample - GW	E298	05-Jun-2024	06-Jun-2024	28 days	1 days	✓	07-Jun-2024	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] SW1 - SW	E298	05-Jun-2024	06-Jun-2024	28 days	1 days	✓	07-Jun-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] SW1 - SW	E235.Cl	05-Jun-2024	06-Jun-2024	28 days	1 days	✓	07-Jun-2024	28 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] SW1 - SW	E235.NO3	05-Jun-2024	06-Jun-2024	7 days	1 days	✓	07-Jun-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] SW1 - SW	E235.NO2	05-Jun-2024	06-Jun-2024	7 days	1 days	✓	07-Jun-2024	7 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] SW1 - SW	E235.SO4	05-Jun-2024	06-Jun-2024	28 days	1 days	✓	07-Jun-2024	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] SW1 - SW	E318	05-Jun-2024	10-Jun-2024	28 days	5 days	✓	11-Jun-2024	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] SW1 - SW	E372-U	05-Jun-2024	07-Jun-2024	28 days	2 days	✓	10-Jun-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BH11 - Partial Sample - GW	E421	05-Jun-2024	07-Jun-2024	180 days	2 days	✓	07-Jun-2024	180 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) [ON MECP] BH11 - Partial Sample - GW	E358-L	05-Jun-2024	07-Jun-2024	3 days	2 days	✓	11-Jun-2024	28 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] SW1 - SW	E290	05-Jun-2024	06-Jun-2024	14 days	1 days	✓	10-Jun-2024	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] SW1 - SW	E100	05-Jun-2024	06-Jun-2024	28 days	1 days	✓	10-Jun-2024	28 days	5 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Physical Tests : pH by Meter										
HDPE [ON MECP] SW1 - SW	E108	05-Jun-2024	06-Jun-2024	14 days	1 days	✓	10-Jun-2024	14 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] SW1 - SW	E162	05-Jun-2024	----	----	----		06-Jun-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] SW1 - SW	E160	05-Jun-2024	----	----	----		06-Jun-2024	7 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) SW1 - SW	E420	05-Jun-2024	07-Jun-2024	180 days	2 days	✓	10-Jun-2024	180 days	5 days	✓

Legend & Qualifier Definitions

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

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Page	:	6 of 10
Work Order	:	TY2405749
Client	:	North Rock Engineering
Project	:	E24-015-03

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1479596	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1479199	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1478691	1	11	9.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479498	1	2	50.0	5.0	✓
Conductivity in Water	E100	1479595	1	4	25.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481174	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482611	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1479497	1	16	6.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1479494	1	14	7.1	5.0	✓
pH by Meter	E108	1479594	1	16	6.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1487213	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1479495	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1479180	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1481646	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1481132	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1479206	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1479166	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1479596	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1479199	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1478691	1	11	9.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479498	1	2	50.0	5.0	✓
Conductivity in Water	E100	1479595	1	4	25.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481174	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482611	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1479497	1	16	6.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1479494	1	14	7.1	5.0	✓
pH by Meter	E108	1479594	1	16	6.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1487213	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1479495	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1479180	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1481646	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1481132	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1479206	1	19	5.2	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
TSS by Gravimetry	E160	1479166	1	12	8.3	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1479596	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1479199	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1478691	1	11	9.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479498	1	2	50.0	5.0	✓
Conductivity in Water	E100	1479595	1	4	25.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481174	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482611	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1479497	1	16	6.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1479494	1	14	7.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1487213	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1479495	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1479180	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1481646	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1481132	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1479206	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1479166	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1479199	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1479677	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1479498	1	2	50.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1481174	1	5	20.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1482611	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1479497	1	16	6.2	5.0	✓
Nitrite in Water by IC	E235.NO2	1479494	1	14	7.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1487213	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1479495	1	7	14.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1481646	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1481132	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1479206	1	19	5.2	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Thunder Bay	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Thunder Bay	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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QUALITY CONTROL REPORT

Work Order	: **TY2405749**	Page	: 1 of 10
Client	: North Rock Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 05-Jun-2024 16:32
PO	: ----	Date Analysis Commenced	: 06-Jun-2024
C-O-C number	: ----	Issue Date	: 13-Jun-2024 20:44
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Metals, Thunder Bay, Ontario
Daron Mooney	Laboratory Assistant	Thunder Bay Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Waterloo Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Thunder Bay Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Thunder Bay Metals, Thunder Bay, Ontario

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Work Order	:	TY2405749
Client	:	North Rock Engineering
Project	:	E24-015-03

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

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

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Work Order	:	TY2405749
Client	:	North Rock Engineering
Project	:	E24-015-03

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1479166)											
TY2405573-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1479180)											
TY2405573-002	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	91	96	5	Diff <2x LOR	----
Physical Tests (QC Lot: 1479594)											
TY2405698-001	Anonymous	pH	----	E108	0.10	pH units	8.79	8.69	0.10	Diff <2x LOR	----
Physical Tests (QC Lot: 1479595)											
TY2405698-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	390	387	0.772%	10%	----
Physical Tests (QC Lot: 1479596)											
TY2405698-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	90.8	90.4	0.442%	20%	----
Anions and Nutrients (QC Lot: 1479199)											
TY2405729-004	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0153	0.0148	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1479206)											
TY2405729-005	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0235	0.0247	5.02%	20%	----
Anions and Nutrients (QC Lot: 1479494)											
TY2405698-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1479495)											
TY2405698-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	8.53	6.56	1.97	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1479497)											
TY2405698-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.200	mg/L	24.2	23.9	0.901%	20%	----
Anions and Nutrients (QC Lot: 1479498)											
TY2405761-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	12.8	12.9	1.25%	20%	----
Anions and Nutrients (QC Lot: 1481646)											
TY2405749-002	SW1 SW	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.718	0.705	1.70%	20%	----
Organic / Inorganic Carbon (QC Lot: 1482611)											
BF2400070-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.99	2.12	0.14	Diff <2x LOR	----
Total Metals (QC Lot: 1481132)											
TY2405664-003	Anonymous	Iron, total	7439-89-6	E420	0.020	mg/L	8.71	8.78	0.806%	20%	----
Dissolved Metals (QC Lot: 1481174)											
TY2405698-001	Anonymous	Barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.00442	0.00410	0.00032	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----

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Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1481174) - continued											
TY2405698-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.250	mg/L	6.49	6.19	4.74%	20%	----
		Iron, dissolved	7439-89-6	E421	0.050	mg/L	0.129	0.119	0.010	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	1.93	1.84	4.78%	20%	----
		Sodium, dissolved	7440-23-5	E421	0.250	mg/L	62.1	59.9	3.58%	20%	----
Aggregate Organics (QC Lot: 1478691)											
TY2405646-012	Anonymous	Biochemical oxygen demand [BOD]	----	E550	6.0	mg/L	9.5	8.9	6.5%	30%	----
Aggregate Organics (QC Lot: 1479677)											
TY2405650-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	52	53	0.6	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1487213)											
HA2401330-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

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Work Order	:	TY2405749
Client	:	North Rock Engineering
Project	:	E24-015-03

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1479166)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1479180)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1479595)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1479596)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 1479199)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1479206)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1479494)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 1479495)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1479497)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1479498)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1481646)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 1482611)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1481132)						
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Dissolved Metals (QCLot: 1481174)						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 1478691)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1479677)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 1487213)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1479166)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	108	85.0	115	----
Physical Tests (QCLot: 1479180)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.2	85.0	115	----
Physical Tests (QCLot: 1479594)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 1479595)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 1479596)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1479199)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 1479206)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.017 mg/L	105	80.0	120	----
Anions and Nutrients (QCLot: 1479494)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	97.3	90.0	110	----
Anions and Nutrients (QCLot: 1479495)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 1479497)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 1479498)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.2	90.0	110	----
Anions and Nutrients (QCLot: 1481646)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1482611)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 1481132)									
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 1481174)									

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Dissolved Metals (QCLot: 1481174) - continued									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.012 mg/L	104	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	99.0	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	101	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	104	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	108	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	102	80.0	120	----
Aggregate Organics (QCLot: 1478691)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	105	85.0	115	----
Aggregate Organics (QCLot: 1479677)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	106	85.0	115	----
Aggregate Organics (QCLot: 1487213)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	105	85.0	115	----

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Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1479199)										
TY2405729-005	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.100 mg/L	0.1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1479206)										
TY2405747-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	----	ND	70.0	130	----
Anions and Nutrients (QCLot: 1479494)										
TY2405698-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	5.03 mg/L	5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1479495)										
TY2405698-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1240 mg/L	1000 mg/L	124	75.0	125	----
Anions and Nutrients (QCLot: 1479497)										
TY2405698-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	31.1 mg/L	25 mg/L	124	75.0	125	----
Anions and Nutrients (QCLot: 1479498)										
TY2405761-001	Anonymous	Chloride	16887-00-6	E235.Cl	125 mg/L	100 mg/L	125	75.0	125	----
Anions and Nutrients (QCLot: 1481646)										
TY2405750-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	52.0 mg/L	50 mg/L	104	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1482611)										
BF2400070-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.53 mg/L	5 mg/L	111	70.0	130	----
Total Metals (QCLot: 1481132)										
TY2405664-004	Anonymous	Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
Dissolved Metals (QCLot: 1481174)										
TY2405698-002	Anonymous	Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	4.21 mg/L	4 mg/L	105	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
Aggregate Organics (QCLot: 1479677)										
TY2405650-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	92 mg/L	100 mg/L	91.7	75.0	125	----
Aggregate Organics (QCLot: 1487213)										
HA2401330-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0214 mg/L	0.02 mg/L	107	75.0	125	----

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Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

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Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering Inc.
Contact:	Jason Garatti
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	70 Secord Street
City/Province:	Thunder Bay, Ontario
Postal Code:	P7B 3C9
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	csprovieri@nrock.ca
Email 2	rsmith@nrock.ca
Email 3	jgaratti@nrock.ca
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	jen@nrock.ca
Email 2	

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information	
ALS Account # / Quote #:	
Job #:	E24-015-03
PO / AFE:	
LSD:	Conmee Landfill

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): TY2405749

ALS Contact: CP Sampler: CS

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Schedule 5 Column 2	Alkalinity, BOD, chloride, COD	Dissolved B, Ba, Ca, Fe, Mg, Na	EOC, Conductivity, NH3, NO3	pH, SO4, TDS, TSS	Schedule 5 Column 4	Number of Containers
	BH11- Partial Sample	5-Jun-24	11:30	GW	R						5
	SW1	5-Jun-24	11:45	SW						R	5

Environmental Division
Thunder Bay
Work Order Reference
TY2405749

Telephone : +1 807 623 8463

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	BH11 F/P@Lab
Are samples for human drinking water use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☑

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
10.4					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Chandler L	Date: Jun 05/24	Time: 3:20	Received by:	Date:	Time:	Received by: AC	Date: 06-05-24	Time: 4:32

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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Intake and Login Verification Form

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SAMPLE INTAKE					
Priority/Emergency Service Requested				YES	(NO)
Time Sensitive Hold Time				YES	(NO)
Client:	North Rock Engineering				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier			(Drop Off)	
Courier					
Waybill Number					
Temperature	12.4			Cooler Count	1
Cooling Method	None	Ice		(Ice Packs)	
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	(Water)	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				~~Yes~~	~~No~~
DW Metals pH Check <2				~~Yes~~	~~No~~
Regulation Circled, Works # present			~~Yes~~	~~No - Reject?~~	
# of Bottles:	6	Sample Count		2	
Green/white	2R, 2BOD				
Purple/white	2 nuts, 2 DOC				
Warm red/white	1 diss metals, 1 total metals				
Yellow/black					
Light blue/white					
Orange/black					
Others (detail)					
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:	DOC, diss metals				
Layout Staff Initials	AM				
Date and Time of Layout	Oct 24 2023	0917			

ACCOUNT INFO VERIFICATION			
Priority/Emergency Service Requested		YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM			
Client	Work Contact	Quote	
RECEIPT DETAIL			
Project	PO	Site/LSD	
Overall Description Entered		Yes	NA
Received date/time as per COC			
Recipients match CoC or Sample Remarks		Yes	No
Billing Instruction added to remarks		Yes	NA
Sample Remarks/Specification Doc checked			
Submission Issues communicated		Yes	NA
Sample Info communicated via Remarks		Yes	NA
VERIFICATION CHECKLIST			
Plannned Event Submission		Yes	No
Sample Name entered as per CoC			
Sampling Date and time entered as per CoC			
Containers selected in layout order			
Sales items entered from QUOTE ONLY (and/or verified as correct)			
Field Data/EC298A removed if not on COC		Yes	NA
Bottle Allocation Verified			
Guideline added or auto-allocated			
Due dates updated			
VALIDATION			
Validation errors resolved?		Yes	No
Internal Sublet CoC created		Yes	NA
Login Comments:			
Login Staff Initials:			

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ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **TY2408393**	Page	: 1 of 6
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay ON Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 02-Aug-2024 14:07
PO	: ----	Date Analysis Commenced	: 03-Aug-2024
C-O-C number	: ----	Issue Date	: 12-Aug-2024 17:35
Sampler	: ----		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Surrogate Control Limits

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).

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*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Metals, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

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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
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH 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.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
SP	*Sample was preserved at the laboratory.*

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00
						TY2408393-001	TY2408393-002	TY2408393-003	TY2408393-004	TY2408393-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		332	372	449	222	990
pH	----	E108/TY	0.10	pH units		8.36	8.13	8.32	7.70	8.25
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		196	215	250	132	654
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		182	645	617	2790	148
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		189	216	251	118	419
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		<0.0050	0.0122	0.0156	0.183	0.0145
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.08	5.38	1.49	<0.50	40.5
Kjeldahl nitrogen, total [TKN]	----	E318/TY	0.050	mg/L		0.231	0.839	0.335	9.07	0.431
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.066	<0.020	0.022	<0.020	0.062
Nitrite (as N)	14797-65-0	E235.NO2/TY	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.020 DLDS
Phosphorus, total	7723-14-0	E372-U/TY	0.0020	mg/L		0.0396	0.191	0.234	0.488	1.65
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		9.01	0.98	23.5	1.31	105
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		3.22	3.81	1.82	6.16	8.99
Dissolved Metals										
Arsenic, dissolved	7440-38-2	E421/TY	0.00010	mg/L		0.00063	0.00137	0.00087	0.00058	0.00037
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0400	0.0260	0.0511	0.0334	0.102
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		0.011	<0.010	0.052	<0.020	0.026
Cadmium, dissolved	7440-43-9	E421/TY	0.0000050	mg/L		0.0000182	0.0000162	0.0000162	0.0000163	0.000108
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		44.7	58.8	54.2	27.2	162
Chromium, dissolved	7440-47-3	E421/TY	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00100	<0.00050
Copper, dissolved	7440-50-8	E421/TY	0.00020	mg/L		0.00197	0.00103	0.00086	0.00109	0.00207
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		<0.010	1.48	0.014	0.463	0.026
Lead, dissolved	7439-92-1	E421/TY	0.000050	mg/L		<0.000050	0.000063	<0.000050	<0.000100	<0.000050
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		17.0	12.9	27.7	9.65	61.9
Manganese, dissolved	7439-96-5	E421/TY	0.00010	mg/L		0.00268	0.176	0.325	0.454	0.162
Mercury, dissolved	7439-97-6	E509/WT	0.0000050	mg/L		<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050
Potassium, dissolved	7440-09-7	E421/TY	0.050	mg/L		1.36	0.219	2.89	1.29	2.18

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Page : 4 of 6
Work Order : TY2408393
Client : North Rock Engineering
Project : E24-015-03

Analytical Results

Sub-Matrix: **Groundwater** (Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00
						TY2408393-001	TY2408393-002	TY2408393-003	TY2408393-004	TY2408393-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		6.13	3.10	4.80	2.03	17.8
Zinc, dissolved	7440-66-6	E421/TY	0.0010	mg/L		0.0010	0.0011	0.0010	<0.0020	0.0012
Dissolved mercury filtration location	----	EP509/WT	-	-		Field	Field	Field	Laboratory	Field
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	Laboratory	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<2.0	4.1	<3.0 DLM	8.3	<2.0
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		<10	20	<10	64	15
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		0.0015 SP	<0.0010	0.0012	0.0058	<0.0010
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	108-88-3	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%		103	107	103	96.5	103
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%		99.2	99.9	99.8	99.7	99.2

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Page	:	5 of 6
Work Order	:	TY2408393
Client	:	North Rock Engineering
Project	:	E24-015-03

Analytical Results

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	BH11	Duplicate	----	----	----
					Client sampling date / time	02-Aug-2024 11:00	02-Aug-2024 11:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2408393-006	TY2408393-007	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		449	380	----	----	----
pH	----	E108/TY	0.10	pH units		8.10	7.93	----	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		290	226	----	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		268	362	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		275	261	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0112	0.0095	----	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		0.66	5.36	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/TY	0.050	mg/L		0.162	1.56	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.370	<0.020	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2/TY	0.010	mg/L		0.020	<0.010	----	----	----
Phosphorus, total	7723-14-0	E372-U/TY	0.0020	mg/L		0.0443	0.588	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		3.84	1.00	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		4.14	3.83	----	----	----
Dissolved Metals										
Arsenic, dissolved	7440-38-2	E421/TY	0.00010	mg/L		0.00070	0.00142	----	----	----
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0276	0.0267	----	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		0.017	<0.010	----	----	----
Cadmium, dissolved	7440-43-9	E421/TY	0.0000050	mg/L		0.0000245	0.0000123	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		66.7	60.9	----	----	----
Chromium, dissolved	7440-47-3	E421/TY	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Copper, dissolved	7440-50-8	E421/TY	0.00020	mg/L		0.00164	0.00076	----	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		<0.010	1.42	----	----	----
Lead, dissolved	7439-92-1	E421/TY	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		24.1	13.0	----	----	----
Manganese, dissolved	7439-96-5	E421/TY	0.00010	mg/L		0.137	0.310	----	----	----
Mercury, dissolved	7439-97-6	E509/WT	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Potassium, dissolved	7440-09-7	E421/TY	0.050	mg/L		0.955	0.236	----	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		5.18	3.10	----	----	----

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Analytical Results

Sub-Matrix: Groundwater (Matrix: Water)					Client sample ID	BH11	Duplicate	----	----	----
					Client sampling date / time	02-Aug-2024 11:00	02-Aug-2024 11:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2408393-006	TY2408393-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Zinc, dissolved	7440-66-6	E421/TY	0.0010	mg/L		0.0015	<0.0010	----	----	----
Dissolved mercury filtration location	----	EP509/WT	-	-		Laboratory	Field	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	-		Laboratory	Field	----	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<2.0	<3.8 DLM	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		<10	52	----	----	----
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		0.0094	<0.0010	----	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	0.50	µg/L		<0.50	<0.50	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L		<1.0	<1.0	----	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L		<0.50	<0.50	----	----	----
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L		<0.50	<0.50	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%		94.2	105	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%		99.5	99.4	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **TY2408393**	Page	: 1 of 5
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 02-Aug-2024 14:07
PO	: ----	Date Analysis Commenced	: 03-Aug-2024
C-O-C number	: ----	Issue Date	: 12-Aug-2024 17:09
Sampler	: ----		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Guideline Comparison

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).

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*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Metals, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

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No Breaches Found

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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

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

Unit	*Description*
-	no units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

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Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
SP	Sample was preserved at the laboratory.

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Page	:	4 of 5
Work Order	:	TY2408393
Client	:	North Rock Engineering
Project	:	E24-015-03

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH5	BH6	BH7	BH8	BH9	BH11	Duplicate
				Sampling date/time	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00
				Sub-Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
					TY2408393-001	TY2408393-002	TY2408393-003	TY2408393-004	TY2408393-005	TY2408393-006	TY2408393-007
Physical Tests											
Conductivity	----	E100/TY	µS/cm		332	372	449	222	990	449	380
pH	----	E108/TY	pH units		8.36	8.13	8.32	7.70	8.25	8.10	7.93
Solids, total dissolved [TDS]	----	E162/TY	mg/L		196	215	250	132	654	290	226
Solids, total suspended [TSS]	----	E160/TY	mg/L		182	645	617	2790	148	268	362
Alkalinity, total (as CaCO3)	----	E290/TY	mg/L		189	216	251	118	419	275	261
Anions and Nutrients											
Ammonia, total (as N)	7664-41-7	E298/TY	mg/L		<0.0050	0.0122	0.0156	0.183	0.0145	0.0112	0.0095
Chloride	16887-00-6	E235.Cl/TY	mg/L		1.08	5.38	1.49	<0.50	40.5	0.66	5.36
Kjeldahl nitrogen, total [TKN]	----	E318/TY	mg/L		0.231	0.839	0.335	9.07	0.431	0.162	1.56
Nitrate (as N)	14797-55-8	E235.NO3/TY	mg/L		0.066	<0.020	0.022	<0.020	0.062	0.370	<0.020
Nitrite (as N)	14797-65-0	E235.NO2/TY	mg/L		<0.010	<0.010	<0.010	<0.010	<0.020 DLDS	0.020	<0.010
Phosphorus, total	7723-14-0	E372-U/TY	mg/L		0.0396	0.191	0.234	0.488	1.65	0.0443	0.588
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	mg/L		9.01	0.98	23.5	1.31	105	3.84	1.00
Organic / Inorganic Carbon											
Carbon, dissolved organic [DOC]	----	E358-L/WT	mg/L		3.22	3.81	1.82	6.16	8.99	4.14	3.83
Dissolved Metals											
Arsenic, dissolved	7440-38-2	E421/TY	mg/L		0.00063	0.00137	0.00087	0.00058	0.00037	0.00070	0.00142
Barium, dissolved	7440-39-3	E421/TY	mg/L		0.0400	0.0260	0.0511	0.0334	0.102	0.0276	0.0267
Boron, dissolved	7440-42-8	E421/TY	mg/L		0.011	<0.010	0.052	<0.020	0.026	0.017	<0.010
Cadmium, dissolved	7440-43-9	E421/TY	mg/L		0.0000182	0.0000162	0.0000162	0.0000163	0.000108	0.0000245	0.0000123
Calcium, dissolved	7440-70-2	E421/TY	mg/L		44.7	58.8	54.2	27.2	162	66.7	60.9
Chromium, dissolved	7440-47-3	E421/TY	mg/L		<0.00050	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050
Copper, dissolved	7440-50-8	E421/TY	mg/L		0.00197	0.00103	0.00086	0.00109	0.00207	0.00164	0.00076
Iron, dissolved	7439-89-6	E421/TY	mg/L		<0.010	1.48	0.014	0.463	0.026	<0.010	1.42
Lead, dissolved	7439-92-1	E421/TY	mg/L		<0.000050	0.000063	<0.000050	<0.000100	<0.000050	<0.000050	<0.000050
Magnesium, dissolved	7439-95-4	E421/TY	mg/L		17.0	12.9	27.7	9.65	61.9	24.1	13.0
Manganese, dissolved	7439-96-5	E421/TY	mg/L		0.00268	0.176	0.325	0.454	0.162	0.137	0.310

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Page : 5 of 5
Work Order : TY2408393
Client : North Rock Engineering
Project : E24-015-03

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: BH5	BH6	BH7	BH8	BH9	BH11	Duplicate
Sampling date/time				02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00	02-Aug-2024 11:00
Sub-Matrix				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
				TY2408393-001	TY2408393-002	TY2408393-003	TY2408393-004	TY2408393-005	TY2408393-006	TY2408393-007
Dissolved Metals										
Mercury, dissolved	7439-97-6	E509/WT	mg/L	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Potassium, dissolved	7440-09-7	E421/TY	mg/L	1.36	0.219	2.89	1.29	2.18	0.955	0.236
Sodium, dissolved	7440-23-5	E421/TY	mg/L	6.13	3.10	4.80	2.03	17.8	5.18	3.10
Zinc, dissolved	7440-66-6	E421/TY	mg/L	0.0010	0.0011	0.0010	<0.0020	0.0012	0.0015	<0.0010
Dissolved mercury filtration location	----	EP509/WT	-	Field	Field	Field	Laboratory	Field	Laboratory	Field
Dissolved metals filtration location	----	EP421/TY	-	Field	Field	Field	Laboratory	Field	Laboratory	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	mg/L	<2.0	4.1	<3.0 DLM	8.3	<2.0	<2.0	<3.8 DLM
Chemical oxygen demand [COD]	----	E559-L/TY	mg/L	<10	20	<10	64	15	<10	52
Phenols, total (4AAP)	----	E562/EO	mg/L	0.0015 SP	<0.0010	0.0012	0.0058	<0.0010	0.0094	<0.0010
Volatile Organic Compounds										
Benzene	71-43-2	E611D/WT	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane	75-09-2	E611D/WT	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	108-88-3	E611D/WT	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	75-01-4	E611D/WT	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%	103	107	103	96.5	103	94.2	105
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%	99.2	99.9	99.8	99.7	99.2	99.5	99.4

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

Key:

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2408393**	Page	: 1 of 23
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 02-Aug-2024 14:07
PO	: ----	Issue Date	: 12-Aug-2024 17:09
C-O-C number	: ----		
Sampler	: ----		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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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.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH11	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH5	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH6	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH7	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH8	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH9	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] Duplicate	E550	02-Aug-2024	----	----	----		03-Aug-2024	4 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH11	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
Duplicate	E559-L	02-Aug-2024	----	----	----		06-Aug-2024	28 days	4 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP]										
BH11	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] BH6	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] BH7	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] BH8	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] BH9	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E562	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH11	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH5	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH6	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH7	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH8	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH9	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E298	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	03-Aug-2024	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH11	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH5	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH6	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH7	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH8	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH9	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓

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Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
Duplicate	E235.Cl	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH11	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH5	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH6	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH7	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH8	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH9	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
Duplicate	E235.NO3	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP]										
BH11	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] BH5	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] BH6	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] BH7	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] BH8	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] BH9	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE [ON MECP] Duplicate	E235.NO2	02-Aug-2024	03-Aug-2024	7 days	1 days	✓	04-Aug-2024	7 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH11	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH5	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH6	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH7	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH8	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] Duplicate	E235.SO4	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	04-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH11	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH5	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH6	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH7	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH8	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓

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Work Order	:	TY2408393
Client	:	North Rock Engineering
Project	:	E24-015-03

Matrix: **Water**

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
Duplicate	E318	02-Aug-2024	06-Aug-2024	28 days	4 days	✓	06-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH11	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP]										
Duplicate	E372-U	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) BH11	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH5	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH6	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH7	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) BH8	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH9	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) Duplicate	E509	02-Aug-2024	09-Aug-2024	28 days	7 days	✓	09-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BH11	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BH8	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Duplicate	E421	02-Aug-2024	07-Aug-2024	180 days	5 days	✓	07-Aug-2024	180 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] Duplicate	E358-L	02-Aug-2024	08-Aug-2024	28 days	6 days	✓	09-Aug-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) [ON MECP] BH11	E358-L	02-Aug-2024	06-Aug-2024	3 days	4 days	× EHT	09-Aug-2024	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) [ON MECP] BH8	E358-L	02-Aug-2024	06-Aug-2024	3 days	4 days	× EHT	09-Aug-2024	28 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH5	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH7	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH8	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH9	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH11	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	08-Aug-2024	14 days	6 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] Duplicate	E290	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	08-Aug-2024	14 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH5	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	06-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH6	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	06-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH7	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	06-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH8	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	06-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	06-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH11	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	08-Aug-2024	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] Duplicate	E100	02-Aug-2024	03-Aug-2024	28 days	1 days	✓	08-Aug-2024	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓

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Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH8	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	06-Aug-2024	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH11	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	08-Aug-2024	14 days	6 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] Duplicate	E108	02-Aug-2024	03-Aug-2024	14 days	1 days	✓	08-Aug-2024	14 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH11	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH8	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] Duplicate	E162	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH11	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH8	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] Duplicate	E160	02-Aug-2024	----	----	----		03-Aug-2024	7 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH11	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH5	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH6	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH7	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH8	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) BH9	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Duplicate	E611D	02-Aug-2024	08-Aug-2024	14 days	6 days	✓	08-Aug-2024	14 days	6 days	✓

Legend & Qualifier Definitions

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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

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1578934	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	1579178	1	16	6.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1578857	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1579198	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	1579367	1	12	8.3	5.0	✓
Conductivity in Water	E100	1578936	2	25	8.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1586578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1581235	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585370	3	29	10.3	5.0	✓
Nitrate in Water by IC	E235.NO3	1579365	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1579366	1	17	5.8	5.0	✓
pH by Meter	E108	1578935	2	32	6.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1588158	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1579368	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	1578822	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1579177	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1579179	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1578823	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1585956	2	20	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1578934	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	1579178	1	16	6.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1578857	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1579198	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	1579367	1	12	8.3	5.0	✓
Conductivity in Water	E100	1578936	2	25	8.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1586578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1581235	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585370	3	29	10.3	5.0	✓
Nitrate in Water by IC	E235.NO3	1579365	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1579366	1	17	5.8	5.0	✓
pH by Meter	E108	1578935	2	32	6.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1588158	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1579368	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	1578822	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1579177	1	11	9.0	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1579179	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1578823	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1585956	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1578934	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	1579178	1	16	6.2	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1578857	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1579198	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	1579367	1	12	8.3	5.0	✓
Conductivity in Water	E100	1578936	2	25	8.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1586578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1581235	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585370	3	29	10.3	5.0	✓
Nitrate in Water by IC	E235.NO3	1579365	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1579366	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1588158	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1579368	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	1578822	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1579177	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1579179	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1578823	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1585956	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1579178	1	16	6.2	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1579198	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	1579367	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1586578	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1581235	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585370	3	29	10.3	5.0	✓
Nitrate in Water by IC	E235.NO3	1579365	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	1579366	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1588158	2	33	6.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1579368	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1579177	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1579179	1	18	5.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1585956	1	20	5.0	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Waterloo	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 ALS Environmental - Thunder Bay	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Thunder Bay	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

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Canada Toll Free: 1 800 668 9878

Environmental Division
Thunder Bay
Work Order Reference
TY2408393

Telephone : +1 807 623 8463

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	North Rock Engineering	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Jason Garatti	Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge mi
Phone:	807-633-7866	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge mi
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge mi
Street:	1411 Goods Road	Email 1 or Fax jgaratti@nrock.ca,csprovieri@nrock.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge mi
City/Province:	Thunder Bay, ON	Email 2 rsmith@nrock.ca, clong@nrock.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surchi
Postal Code:	P7G 1J1	Email 3	Additional fees may apply to rush requests on weeke
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☒ YES ☐ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☑ FAX	For all tests with rush TATs requested, please
Company:		Email 1 or Fax jen@nrock.ca	
Contact:		Email 2 kbriggs@nrock.ca, clong@nrock.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Client Code / QUOTE #:	NORO100 / TY2023NORO1000005	AFE/Cost Center:	PO#
Job / Project #:	E24-015-03	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Conmee Landfill	Location:	
ALS Lab Work Order # (ALS use only):	TY2408393	ALS Contact: CP	Sampler: RS/CS

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 1:	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
							(Alkalinity, Conductivity, BOD, Cl, COD	Dissolved Hg, Dissolved As, B, Ba, Ca,	Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Pb, Zn,	DOC, NH3, NO2, NO3, pH, Phenols,	SO4, TKN, Total Phosphorus	TDS, TSS, VOC's)											
	BH5	02-Aug-24	am	Groundwater	9	x																
	BH6			Groundwater	9	x																
	BH7			Groundwater	9	x																
	BH8			Groundwater	9	x																
	BH9			Groundwater	9	x																
	BH10 No Sample		—	Groundwater	1	x																
	BH11		am	Groundwater	9	x																
	Duplicate		am	Groundwater	9	x																

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	BH11 & BH8 - F&P in lab
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
15.8	20.6						

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: 02-Aug-24	Time: 14:00	Received by:	Date:	Time:	Received by: AC	Date: 08-02-24	Time: 19:07

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

MAY 2023 FRONT

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.

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2x Doop

Intake and Login Verification Form

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SAMPLE INTAKE					
Priority/Emergency Service Requested			YES	(NO)	
Time Sensitive Hold Time			YES	(NO)	
Client:	North Rock Engineering				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier		(Drop Off)		
Courier					
Waybill Number					
Temperature	15.8, 20.6		Cooler Count	2	
Cooling Method	None	Ice	(Ice Packs)		
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	(Water)	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				Yes	No
DW Metals pH Check <2				Yes	No
Regulation Circled, Works # present			Yes	No - Reject?	
# of Bottles: 8	Sample Count		7		
Green/white	7B, 7BOD				
Purple/white	7NUTS, 7 PHENOLS, 7DOC				
Warm red/white	7 DISS MET				
Yellow/black	7 DISS Hg				
Light blue/white					
Orange/black					
Others (detail)	2x7 Dark Blue Vials				
Comments on Samples and Bottles:					
Samples Requiring Preservation or Filtering:	2 DOC, 2 DISS MET, 2 DISS Hg				
Layout Staff Initials	AC				
Date and Time of Layout	08-02-24 2:23				

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	(NO)
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client / Work Contact / Quote		
RECEIPT DETAIL		
Project / PO / Site/LSD		
Overall Description Entered	Yes	(NA)
Received date/time as per COC		
Recipients match CoC or Sample Remarks	(Yes)	No
Billing Instruction added to remarks	(Yes)	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	(NA)
Sample Info communicated via Remarks	Yes	(NA)
VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	(No)
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	(NA)
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		
VALIDATION		
Validation errors resolved?	(Yes)	No
Internal Sublet CoC created	(Yes)	NA
Login Comments: N/A		
Login Staff Initials:	AM	

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CERTIFICATE OF ANALYSIS

Work Order	: **TY2411156**		
Client	: **North Rock Engineering**	Laboratory	:
Contact	: Cliff Long	Account Manager	:
Address	: North Rock Engineering 70 Secord Street	Address	: 1081 Barton Street
Telephone	:	Telephone	:
Project	:	Date Samples Received	:
PO	:	Date Analysis Commenced	:
C-O-C number	:	Issue Date	:
Sampler	:		
Site	:		
Quote number	:		
No. of samples received	:		
No. of samples analysed	:		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	

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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*
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
pH units	pH 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.

Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

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Analytical Results

Sub-Matrix: (Matrix:)			Client sample ID		BH5	BH6	BH7	BH9	Duplicate
			Client sampling date / time		02-Oct-2024 12:55	02-Oct-2024 12:25	02-Oct-2024 12:45	02-Oct-2024 11:58	02-Oct-2024 12:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	TY2411156-001	TY2411156-002	TY2411156-003	TY2411156-004	TY2411156-005
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity	----	E100/TY	2.0	µS/cm	308	396	408	1280	443
pH	----	E108/TY	0.10	pH units	7.87	7.70	8.07	7.95	7.68
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L	208	238	266	936	254
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L	1260	158	1520	104	602
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L	261	343	331	693	326
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L	<0.0500 DLM	<0.0500 DLM	<0.0500 DLM	0.0280	<0.0500 DLM
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L	1.12	6.37	1.58	75.0	6.65
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L	0.056	<0.020	<0.020	<0.200 DLDS	<0.020
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L	9.54	2.46	28.9	191	4.48
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L	3.50	3.29	1.61	8.54	3.40
Dissolved Metals									
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L	0.0379	0.0235	0.0504	0.140	0.0408
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L	0.010	<0.010	0.054	0.040	<0.010
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L	44.0	60.1	54.4	192	61.7
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L	<0.010	0.022	0.016	0.158	1.29
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L	13.9	12.7	25.5	80.2	13.6
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L	3.76	2.64	4.56	23.1	2.78
Dissolved metals filtration location	----	EP421/TY	-	-	Field	Field	Field	Field	Field

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Analytical Results

Sub-Matrix: (Matrix:)					Client sample ID	BH5	BH6	BH7	BH9	Duplicate
					Client sampling date / time	02-Oct-2024 12:55	02-Oct-2024 12:25	02-Oct-2024 12:45	02-Oct-2024 11:58	02-Oct-2024 12:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		TY2411156-001	TY2411156-002	TY2411156-003	TY2411156-004	TY2411156-005
						Result	Result	Result	Result	Result
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<5.0 DLM	2.3	<5.0 DLM	<2.0	<2.0
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		40	36	97	48	169

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **TY2411156**	Page	: 1 of 5
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 02-Oct-2024 14:00
PO	: ----	Date Analysis Commenced	: 03-Oct-2024
C-O-C number	: ----	Issue Date	: 11-Oct-2024 08:09
Sampler	: RS/BJ		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 5		
No. of samples analysed	: 5		

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
- Guideline Comparison

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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No Breaches Found

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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

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

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

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Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

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Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: BH5	BH6	BH7	BH9	Duplicate	----	----
				Sampling date/time: 02-Oct-2024 12:55	02-Oct-2024 12:25	02-Oct-2024 12:45	02-Oct-2024 11:58	02-Oct-2024 12:00	----	----
				Sub-Matrix: Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	----	----
				TY2411156-001	TY2411156-002	TY2411156-003	TY2411156-004	TY2411156-005	--------	--------
Physical Tests										
Conductivity	----	E100/TY	µS/cm	308	396	408	1280	443	----	----
pH	----	E108/TY	pH units	7.87	7.70	8.07	7.95	7.68	----	----
Solids, total dissolved [TDS]	----	E162/TY	mg/L	208	238	266	936	254	----	----
Solids, total suspended [TSS]	----	E160/TY	mg/L	1260	158	1520	104	602	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	mg/L	261	343	331	693	326	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	mg/L	<0.0500 DLM	<0.0500 DLM	<0.0500 DLM	0.0280	<0.0500 DLM	----	----
Chloride	16887-00-6	E235.Cl/TY	mg/L	1.12	6.37	1.58	75.0	6.65	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	mg/L	0.056	<0.020	<0.020	<0.200 DLDS	<0.020	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	mg/L	9.54	2.46	28.9	191	4.48	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	mg/L	3.50	3.29	1.61	8.54	3.40	----	----
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	mg/L	0.0379	0.0235	0.0504	0.140	0.0408	----	----
Boron, dissolved	7440-42-8	E421/TY	mg/L	0.010	<0.010	0.054	0.040	<0.010	----	----
Calcium, dissolved	7440-70-2	E421/TY	mg/L	44.0	60.1	54.4	192	61.7	----	----
Iron, dissolved	7439-89-6	E421/TY	mg/L	<0.010	0.022	0.016	0.158	1.29	----	----
Magnesium, dissolved	7439-95-4	E421/TY	mg/L	13.9	12.7	25.5	80.2	13.6	----	----
Sodium, dissolved	7440-23-5	E421/TY	mg/L	3.76	2.64	4.56	23.1	2.78	----	----
Dissolved metals filtration location	----	EP421/TY	-	Field	Field	Field	Field	Field	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	mg/L	<5.0 DLM	2.3	<5.0 DLM	<2.0	<2.0	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	mg/L	40	36	97	48	169	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Key:

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2411156**	Page	: 1 of 14
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 02-Oct-2024 14:00
PO	: ----	Issue Date	: 11-Oct-2024 08:09
C-O-C number	: ----		
Sampler	: RS/BJ		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 5		
No. of samples analysed	: 5		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH5	E550	02-Oct-2024	----	----	----		03-Oct-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH6	E550	02-Oct-2024	----	----	----		03-Oct-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH7	E550	02-Oct-2024	----	----	----		03-Oct-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH9	E550	02-Oct-2024	----	----	----		03-Oct-2024	4 days	1 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] Duplicate	E550	02-Oct-2024	----	----	----		03-Oct-2024	4 days	1 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH5	E559-L	02-Oct-2024	----	----	----		07-Oct-2024	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH6	E559-L	02-Oct-2024	----	----	----		07-Oct-2024	28 days	5 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH7	E559-L	02-Oct-2024	----	----	----		07-Oct-2024	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH9	E559-L	02-Oct-2024	----	----	----		07-Oct-2024	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E559-L	02-Oct-2024	----	----	----		07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH5	E298	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH6	E298	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH7	E298	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] BH9	E298	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP] Duplicate	E298	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	07-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH5	E235.Cl	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH6	E235.Cl	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH7	E235.Cl	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] BH9	E235.Cl	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] Duplicate	E235.Cl	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH5	E235.NO3	02-Oct-2024	05-Oct-2024	7 days	3 days	✓	08-Oct-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH6	E235.NO3	02-Oct-2024	05-Oct-2024	7 days	3 days	✓	08-Oct-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH7	E235.NO3	02-Oct-2024	05-Oct-2024	7 days	3 days	✓	08-Oct-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH9	E235.NO3	02-Oct-2024	05-Oct-2024	7 days	3 days	✓	08-Oct-2024	7 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] Duplicate	E235.NO3	02-Oct-2024	05-Oct-2024	7 days	3 days	✓	08-Oct-2024	7 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH5	E235.SO4	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH6	E235.SO4	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH7	E235.SO4	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] Duplicate	E235.SO4	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	08-Oct-2024	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	02-Oct-2024	04-Oct-2024	180 days	2 days	✓	04-Oct-2024	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	02-Oct-2024	04-Oct-2024	180 days	2 days	✓	04-Oct-2024	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	02-Oct-2024	04-Oct-2024	180 days	2 days	✓	04-Oct-2024	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	02-Oct-2024	04-Oct-2024	180 days	2 days	✓	04-Oct-2024	180 days	2 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Duplicate	E421	02-Oct-2024	04-Oct-2024	180 days	2 days	✓	04-Oct-2024	180 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	09-Oct-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	09-Oct-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	09-Oct-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	09-Oct-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] Duplicate	E358-L	02-Oct-2024	04-Oct-2024	28 days	2 days	✓	09-Oct-2024	28 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH5	E290	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH7	E290	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH9	E290	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] Duplicate	E290	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH5	E100	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	07-Oct-2024	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH6	E100	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	07-Oct-2024	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH7	E100	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	07-Oct-2024	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	07-Oct-2024	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] Duplicate	E100	02-Oct-2024	05-Oct-2024	28 days	3 days	✓	07-Oct-2024	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] Duplicate	E108	02-Oct-2024	05-Oct-2024	14 days	3 days	✓	07-Oct-2024	14 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] Duplicate	E162	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] Duplicate	E160	02-Oct-2024	----	----	----		06-Oct-2024	7 days	4 days	✓

Legend & Qualifier Definitions

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

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1693153	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1690789	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1687205	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1692473	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1693148	1	7	14.2	5.0	✓
Conductivity in Water	E100	1693154	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1689776	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1691541	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1693147	1	15	6.6	5.0	✓
pH by Meter	E108	1693152	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1693145	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	1693192	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1693193	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1693153	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1690789	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1687205	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1692473	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1693148	1	7	14.2	5.0	✓
Conductivity in Water	E100	1693154	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1689776	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1691541	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1693147	1	15	6.6	5.0	✓
pH by Meter	E108	1693152	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1693145	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	1693192	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1693193	1	19	5.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1693153	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1690789	2	40	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1687205	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1692473	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1693148	1	7	14.2	5.0	✓
Conductivity in Water	E100	1693154	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1689776	1	20	5.0	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1691541	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1693147	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1693145	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	1693192	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1693193	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1690789	2	40	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1692473	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1693148	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1689776	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1691541	1	20	5.0	5.0	✓
Nitrate in Water by IC	E235.NO3	1693147	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1693145	1	13	7.6	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division
Thunder Bay
Work Order Reference
TY24-11156

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering
Contact:	Cliff Long
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	70 Secord Street
City/Province:	Thunder Bay, ON
Postal Code:	P7B 3C9
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: clong@nrock.ca,csprovieri@nrock.ca
Email 2: rsmith@nrock.ca
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX
Email 1 or Fax: jen@nrock.ca
Email 2: kbriggs@nrock.ca, clong@nrock.ca

Turnaround Time (TAT) Requested

☑ Routine (R) if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Additional fees may apply to rush requests on weekends, stat
Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information		Oil and Gas Required Fields (client use)	
ALS Client Code / QUOTE #:	NORO100 / TY2023NORO1000005	AFE/Cost Center:	PO#:
Job / Project #:	E24-015-03	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Conmee Landfill	Location:	

ALS Lab Work Order # (ALS use only): TY24 11156 | ALS Contact: CP | Sampler: RS / BJ

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 2	(Alkalinity, BOD, Chloride, COD,	Dissolved B, Ba, Ca, Fe, Mg, Na,	DOC, Conductivity, NH3, NO3,	pH, SO4, TDS, TSS)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH5	Oct 2/24	12:55	Groundwater	5	x							
	BH6		12:25	Groundwater		x							
	BH7	↓	12:45	Groundwater		x							
	BH8 NO SAMPLE	—	#	Groundwater		x							
	BH9	Oct 2/24	11:58	Groundwater		x							
	BH10 NO SAMPLE	—		Groundwater		x							
	BH11 " "	—		Groundwater		x							
	Duplicate	Oct 2/24	9AM	Groundwater	↓	x							

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Cooler Custody Seals Intact: ☐ YES ☐ N/A | Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.5							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: BJ	Date: Oct 2/24	Time: 1345	Received by:	Date:	Time:	Received by: LV	Date: 10/2/24	Time: 2:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

MAY 2022 FRONT

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.

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Intake and Login Verification Form

SAMPLE INTAKE					
Priority/Emergency Service Requested				YES	NO
Time Sensitive Hold Time				YES	NO
Client:	North Rock				
SAMPLE RECEIPT INFORMATION					
Mode of Delivery:	Courier			Drop Off	
Courier	—				
Waybill Number	—				
Temperature	12.5			Cooler Count	1
Cooling Method	None	Ice		Ice Packs	
SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	Water	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				Yes	No
DW Metals pH Check <2				Yes	No
Regulation Circled, Works # present		Yes		No - Reject?	
# of Bottles:	5	Sample Count		5	
Green/white	SWA SBCO				
Purple/white	STOUTS SDC				
Warm red/white	S Dmet				
Yellow/black					
Light blue/white					
Orange/black					
Others (detail)	—				
Comments on Samples and Bottles:	—				
Samples Requiring Preservation or Filtering:	—				
Layout Staff Initials Date and Time of Layout	MM 10/3/24 1136				

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	NO
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client / Work Contact / Quote		
RECEIPT DETAIL		
Project / PO / Site/LSD		
Overall Description Entered	Yes	NA
Received date/time as per COC		
Recipients match CoC or Sample Remarks	Yes	No
Billing Instruction added to remarks	Yes	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	NA
Sample Info communicated via Remarks	Yes	NA
VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	No
Sample Name entered as per CoC		
Sampling Date and time entered as per CoC		
Containers selected in layout order		
Sales items entered from QUOTE ONLY (and/or verified as correct)		
Field Data/EC298A removed if not on COC	Yes	NA
Bottle Allocation Verified		
Guideline added or auto-allocated		
Due dates updated		
VALIDATION		
Validation errors resolved?	Yes	No
Internal Sublet CoC created	Yes	NA
Login Comments:		
Login Staff Initials:	ANA	

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **TY2405650**	Page	: 1 of 14
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 04-Jun-2024 13:39
PO	: ----	Date Analysis Commenced	: 05-Jun-2024
C-O-C number	: ----	Issue Date	: 12-Jun-2024 12:03
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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
- Guideline Comparison

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Kelly Fischer	Technical Specialist	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

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

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH5 Sampling date/time: 04-Jun-2024 08:00 TY2405650-001	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	347	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	8.27	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	222	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	1000	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	195	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0082	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	1.95	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	0.165	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	12.7	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	2.74	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0510	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	0.012	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	38.3	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.089	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	19.7	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	10.2	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Field	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.0 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	52	--	--	--	--	--	--

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH6 Sampling date/time: 04-Jun-2024 08:00 TY2405650-002	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	321	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	8.09	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	197	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	1070	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	182	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0058	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	6.32	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	<0.020	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	1.50	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	3.26	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0271	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	<0.010	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	44.0	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.016	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	14.3	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	3.63	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Field	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.8 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	134	--	--	--	--	--	--

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Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH7 Sampling date/time: 04-Jun-2024 08:00 TY2405650-003	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	412	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	8.31	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	248	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	276	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	220	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0231	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	1.33	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	0.122	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	20.3	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	1.34	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0506	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	0.032	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	43.4	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.017	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	28.0	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	3.95	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Field	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.0 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	27	--	--	--	--	--	--

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Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH8 Sampling date/time: 04-Jun-2024 08:00 TY2405650-004	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	122	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	7.65	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	107	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	78.7	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	65.8	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	<0.0050	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	<0.50	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	0.026	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	1.03	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	4.60	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0125	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	<0.010	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	13.1	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.611	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	5.95	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	1.70	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Laboratory	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.0 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	36	--	--	--	--	--	--

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Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
BH8	Water	Iron, dissolved	Based on taste and staining of laundry and plumbing fixtures; no evidence exists of dietary iron toxicity in the general population.	ONDWS	AO/OG	0.611 mg/L	0.3 mg/L

Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH9 Sampling date/time: 04-Jun-2024 08:00 TY2405650-005	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	348	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	7.98	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	240	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	168	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	150	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0161	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	9.42	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	0.041	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	27.9	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	5.72	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0190	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	<0.010	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	29.1	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.058	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	12.0	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	3.55	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Field	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.0 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	32	--	--	--	--	--	--

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Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
BH9	Water	Carbon, dissolved organic [DOC]		ONDWS	AO/OG	5.72 mg/L	5 mg/L

Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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Analytical Results

Sub-Matrix: **Groundwater**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: Duplicate Sampling date/time: 04-Jun-2024 08:00 TY2405650-006	ONDWS AO/OG	ONDWS MAC	--	--	--	--
Physical Tests										
Conductivity	E100/TY	2.0	µS/cm	298	--	--	--	--	--	--
pH	E108/TY	0.10	pH units	7.94	6.5 - 8.5 pH units	--	--	--	--	--
Solids, total dissolved [TDS]	E162/TY	10	mg/L	212	500 mg/L	--	--	--	--	--
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	159	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	131	30 - 500 mg/L	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0137	--	--	--	--	--	--
Chloride	E235.Cl/TY	0.50	mg/L	7.83	250 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	0.035	--	10 mg/L	--	--	--	--
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	22.2	500 mg/L	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	6.19	5 mg/L	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0188	--	1 mg/L	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	<0.010	--	5 mg/L	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	28.5	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.067	0.3 mg/L	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	11.9	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	3.37	200 mg/L	20 mg/L	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Field	--	--	--	--	--	--
Aggregate Organics										
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<3.0 DLM	--	--	--	--	--	--
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	32	--	--	--	--	--	--

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Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
Duplicate	Water	Carbon, dissolved organic [DOC]		ONDWS	AO/OG	6.19 mg/L	5 mg/L

Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline (2006)
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **TY2405749**	Page	: 1 of 4
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Jason Garatti	Account Manager	: Christine Paradis
Address	: North Rock Engineering 1411 Goods Road Thunder Bay ON Canada P7G 1J1	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: (807)633-7866	Telephone	: +1 807 623 6463
Project	: E24-015-03	Date Samples Received	: 05-Jun-2024 16:32
PO	: ----	Date Analysis Commenced	: 06-Jun-2024
C-O-C number	: ----	Issue Date	: 13-Jun-2024 16:50
Sampler	: CS		
Site	: Conmee Landfill		
Quote number	: Conmee Landfill 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

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
- Guideline Comparison

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Daron Mooney	Laboratory Assistant	Inorganics, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Metals, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Inorganics, Thunder Bay, Ontario
Shannon Veltri	Supervisor - Water Chemistry	Metals, Thunder Bay, Ontario

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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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

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

Unit	*Description*

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Workorder Comments

Sample BH11: Container BOD and routine received empty at laboratory; subsample cannot be obtained from other containers to meet request. BOD and routine analysis cannot be performed.

Qualifiers

Qualifier	*Description*
SP	*Sample was preserved at the laboratory.*

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Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID	BH11 - Partial Sample GW						
			Sampling date/time	05-Jun-2024 11:30						
Analyte	*Method/Lab*	*LOR*	*Unit*	TY2405749-001	--	--	--	--	--	--
Anions and Nutrients										
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0643	--	--	--	--	--	--
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E358-L/WT	0.50	mg/L	2.56	--	--	--	--	--	--
Dissolved Metals										
Barium, dissolved	E421/TY	0.00010	mg/L	0.0410	--	--	--	--	--	--
Boron, dissolved	E421/TY	0.010	mg/L	<0.100	--	--	--	--	--	--
Calcium, dissolved	E421/TY	0.050	mg/L	48.5	--	--	--	--	--	--
Iron, dissolved	E421/TY	0.010	mg/L	0.352	--	--	--	--	--	--
Magnesium, dissolved	E421/TY	0.0050	mg/L	15.2	--	--	--	--	--	--
Sodium, dissolved	E421/TY	0.050	mg/L	29.1	--	--	--	--	--	--
Dissolved metals filtration location	EP421/TY		-	Laboratory	--	--	--	--	--	--
Aggregate Organics										
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	1100	--	--	--	--	--	--

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

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Page	:	4 of 4
Work Order	:	TY2405749
Client	:	North Rock Engineering
Project	:	E24-015-03

Analytical Results

Sub-Matrix: **Water** (Matrix: **Water**)				Client sample ID	**SW1 SW**						
				Sampling date/time	05-Jun-2024 11:45						
Analyte	*Method/Lab*	*LOR*	*Unit*	TY2405749-002	--	--	--	--	--	--	
Physical Tests											
Conductivity	E100/TY	2.0	µS/cm	320	--	--	--	--	--	--	
pH	E108/TY	0.10	pH units	7.91	--	--	--	--	--	--	
Solids, total dissolved [TDS]	E162/TY	10	mg/L	208	--	--	--	--	--	--	
Solids, total suspended [TSS]	E160/TY	3.0	mg/L	<3.0	--	--	--	--	--	--	
Alkalinity, total (as CaCO3)	E290/TY	2.0	mg/L	95.0	--	--	--	--	--	--	
Anions and Nutrients											
Ammonia, total (as N)	E298/TY	0.0050	mg/L	0.0204	--	--	--	--	--	--	
Chloride	E235.Cl/TY	0.50	mg/L	19.3	--	--	--	--	--	--	
Kjeldahl nitrogen, total [TKN]	E318/TY	0.050	mg/L	0.718	--	--	--	--	--	--	
Nitrate (as N)	E235.NO3/TY	0.020	mg/L	<0.020	--	--	--	--	--	--	
Nitrite (as N)	E235.NO2/TY	0.010	mg/L	<0.010	--	--	--	--	--	--	
Phosphorus, total	E372-U/TY	0.0020	mg/L	0.0072	--	--	--	--	--	--	
Sulfate (as SO4)	E235.SO4/TY	0.30	mg/L	36.3	--	--	--	--	--	--	
Total Metals											
Iron, total	E420/TY	0.010	mg/L	0.088	--	--	--	--	--	--	
Aggregate Organics											
Biochemical oxygen demand [BOD]	E550/TY	2.0	mg/L	<2.0	--	--	--	--	--	--	
Chemical oxygen demand [COD]	E559-L/TY	10	mg/L	54	--	--	--	--	--	--	
Phenols, total (4AAP)	E562/WT	0.0010	mg/L	<0.0010 SP	--	--	--	--	--	--	

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

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CERTIFICATE OF ANALYSIS

Work Order	: **TY2505339**		
Client	: **North Rock Engineering**	Laboratory	:
Contact	: Cliff Long	Account Manager	:
Address	: North Rock Engineering 70 Secord Street	Address	: 1081 Barton Street
Telephone	:	E-mail	:
Project	:	Telephone	:
PO	:	Date Samples Received	:
C-O-C number	:	Date Analysis Commenced	:
Sampler	:	Issue Date	:
Site	:		
Quote number	:		
No. of samples received	:		
No. of samples analysed	:		

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).

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*
Cassandra Grzelewski	Team Leader - Inorganics	Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Metals, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Senior Analyst	Centralized Prep, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	

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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
mg/L	milligrams per litre
pH units	pH units
µS/cm	

<: 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.

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

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Analytical Results

Sub-Matrix: (Matrix:)					Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	26-May-2025 01:30	26-May-2025 02:03	26-May-2025 02:35	26-May-2025 12:55	26-May-2025 03:15
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2505339-001	TY2505339-002	TY2505339-003	TY2505339-004	TY2505339-005
						Result	Result	Result	Result	Result
Sample Preparation										
Dissolved carbon filtration location	----	EP358/WT	-	-		field	field	field	field	field
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		365	201	430	117	392
pH	----	E108/TY	0.10	pH units		8.13	7.81	8.29	7.57	8.22
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		252	140	281	119	251
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		5590	466	1850	12.8	59.0
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		201	105	240	61.0	179
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0392	0.0760	0.0174	<0.0050	<0.0050
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.60	6.04	2.06	0.60	9.55
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.140	<0.020	0.037	<0.020	0.051
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		36.0	0.53	27.1	0.85	26.8
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		2.90	3.77	1.08	4.00	5.42
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0621	0.0165	0.0447	0.00829	0.0296
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		0.013	<0.010	0.036	<0.010	0.011
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		34.8	25.0	47.1	11.9	45.9
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		0.036	<0.010	<0.010	0.352	0.012
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		20.7	7.76	24.3	4.42	19.3
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		7.71	2.72	4.46	1.34	4.66

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Analytical Results

Sub-Matrix: (Matrix:)					Client sample ID	BH5	BH6	BH7	BH8	BH9
					Client sampling date / time	26-May-2025 01:30	26-May-2025 02:03	26-May-2025 02:35	26-May-2025 12:55	26-May-2025 03:15
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2505339-001	TY2505339-002	TY2505339-003	TY2505339-004	TY2505339-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Dissolved metals filtration location	----	EP421/TY	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<6.0 DLM	<3.8 DLM	<5.0 DLM	<2.0	<2.0
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		74	23	12	28	24

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

Analytical Results

Sub-Matrix: (Matrix:)					Client sample ID	Duplicate	----	----	----	----
					Client sampling date / time	26-May-2025 12:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2505339-006	----	----	----	----
						Result	----	----	----	----
Sample Preparation										
Dissolved carbon filtration location	----	EP358/WT	-	-		field	----	----	----	----
Physical Tests										
Conductivity	----	E100/TY	2.0	µS/cm		372	----	----	----	----
pH	----	E108/TY	0.10	pH units		8.13	----	----	----	----
Solids, total dissolved [TDS]	----	E162/TY	10	mg/L		248	----	----	----	----
Solids, total suspended [TSS]	----	E160/TY	3.0	mg/L		6510	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/TY	2.0	mg/L		248	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/TY	0.0050	mg/L		0.0328	----	----	----	----
Chloride	16887-00-6	E235.Cl/TY	0.50	mg/L		1.61	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3/TY	0.020	mg/L		0.111	----	----	----	----

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Analytical Results

Sub-Matrix: (Matrix:)					Client sample ID	Duplicate	----	----	----	----
					Client sampling date / time	26-May-2025 12:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		TY2505339-006	----	----	----	----
						Result	----	----	----	----
Anions and Nutrients										
Sulfate (as SO4)	14808-79-8	E235.SO4/TY	0.30	mg/L		37.2	----	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WT	0.50	mg/L		2.22	----	----	----	----
Dissolved Metals										
Barium, dissolved	7440-39-3	E421/TY	0.00010	mg/L		0.0617	----	----	----	----
Boron, dissolved	7440-42-8	E421/TY	0.010	mg/L		0.013	----	----	----	----
Calcium, dissolved	7440-70-2	E421/TY	0.050	mg/L		35.2	----	----	----	----
Iron, dissolved	7439-89-6	E421/TY	0.010	mg/L		0.029	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/TY	0.0050	mg/L		20.7	----	----	----	----
Sodium, dissolved	7440-23-5	E421/TY	0.050	mg/L		7.28	----	----	----	----
Dissolved metals filtration location	----	EP421/TY	-	-		Field	----	----	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/TY	2.0	mg/L		<5.0 DLM	----	----	----	----
Chemical oxygen demand [COD]	----	E559-L/TY	10	mg/L		33	----	----	----	----

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **TY2505339**	Page	: 1 of 15
Client	: **North Rock Engineering**	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: ----	Date Samples Received	: 26-May-2025 16:54
PO	: ----	Issue Date	: 05-Jun-2025 17:00
C-O-C number	: ----		
Sampler	: ----		
Site	: Conmee Landfill		
Quote number	: OP Landfills - North and South 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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 Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

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Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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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 / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH5	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH6	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH7	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH8	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] BH9	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] Duplicate	E550	26-May-2025	----	----	----		29-May-2025	4 days	3 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] BH5	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) [ON MECP]										
Duplicate	E559-L	26-May-2025	----	----	----		03-Jun-2025	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH5	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH6	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH7	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH8	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
BH9	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) [ON MECP]										
Duplicate	E298	26-May-2025	30-May-2025	28 days	4 days	✓	30-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH5	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH6	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH7	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH8	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
BH9	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
Duplicate	E235.Cl	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP]										
BH5	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH6	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH7	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH8	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] BH9	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE [ON MECP] Duplicate	E235.NO3	26-May-2025	30-May-2025	7 days	4 days	✓	31-May-2025	7 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH5	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH6	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH7	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH8	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓

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Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] BH9	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] Duplicate	E235.SO4	26-May-2025	30-May-2025	28 days	4 days	✓	31-May-2025	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH6	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH7	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH8	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH9	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Duplicate	E421	26-May-2025	30-May-2025	180 days	4 days	✓	30-May-2025	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH5	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH6	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH7	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH8	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] BH9	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) [ON MECP] Duplicate	E358-L	26-May-2025	01-Jun-2025	28 days	6 days	✓	04-Jun-2025	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH5	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH6	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH7	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH8	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] BH9	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE [ON MECP] Duplicate	E290	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH5	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH6	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH7	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH8	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH9	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP] Duplicate	E100	26-May-2025	30-May-2025	28 days	4 days	✓	02-Jun-2025	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH5	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP] BH6	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH7	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH8	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] BH9	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] Duplicate	E108	26-May-2025	30-May-2025	14 days	4 days	✓	02-Jun-2025	14 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH5	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH6	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH7	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH8	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓

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Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] BH9	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE [ON MECP] Duplicate	E162	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH5	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH6	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH7	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH8	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] BH9	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] Duplicate	E160	26-May-2025	----	----	----		31-May-2025	7 days	5 days	✓

Legend & Qualifier Definitions

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

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Conductivity in Water	E100	2023947	1	17	5.8	5.0	✓
pH by Meter	E108	2023946	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	2025665	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	2025664	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	2023945	2	24	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	2023941	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	2023942	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	2023948	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	2023723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2026609	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	2022748	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	2021307	2	40	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	2023755	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Conductivity in Water	E100	2023947	1	17	5.8	5.0	✓
pH by Meter	E108	2023946	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	2025665	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	2025664	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	2023945	2	24	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	2023941	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	2023942	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	2023948	1	19	5.2	5.0	✓
Ammonia by Fluorescence	E298	2023723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2026609	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	2022748	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	2021307	2	40	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	2023755	1	20	5.0	5.0	✓
Method Blanks (MB)							
Conductivity in Water	E100	2023947	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	2025665	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	2025664	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	2023945	2	24	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	2023941	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	2023942	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	2023948	1	19	5.2	5.0	✓

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Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Ammonia by Fluorescence	E298	2023723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2026609	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	2022748	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	2021307	2	40	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	2023755	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	2023945	2	24	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	2023941	2	40	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	2023942	2	40	5.0	5.0	✓
Ammonia by Fluorescence	E298	2023723	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2026609	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	2022748	1	20	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	2023755	1	20	5.0	5.0	✓

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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
Conductivity in Water	E100 ALS Environmental - Thunder Bay	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Thunder Bay	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Thunder Bay	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Thunder Bay	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Thunder Bay	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Thunder Bay	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Thunder Bay	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Thunder Bay	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Thunder Bay	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Thunder Bay	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Thunder Bay	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Waterloo	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 ALS Environmental - Thunder Bay	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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QUALITY CONTROL REPORT

Work Order	: **TY2505339**	Page	: 1 of 9
Client	: North Rock Engineering	Laboratory	: ALS Environmental - Thunder Bay
Contact	: Cliff Long	Account Manager	: Christine Paradis
Address	: North Rock Engineering 70 Secord Street Thunder Bay ON Canada P7B 3C9	Address	: 1081 Barton Street Thunder Bay, Ontario Canada P7B 5N3
Telephone	: ----	Telephone	: +1 807 623 6463
Project	: ----	Date Samples Received	: 26-May-2025 16:54
PO	: ----	Date Analysis Commenced	: 29-May-2025
C-O-C number	: ----	Issue Date	: 05-Jun-2025 17:00
Sampler	: ----		
Site	: Conmee Landfill		
Quote number	: OP Landfills - North and South 2024		
No. of samples received	: 6		
No. of samples analysed	: 6		

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:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Inorganics, Thunder Bay, Ontario
Cassandra Grzelewski	Team Leader - Inorganics	Thunder Bay Metals, Thunder Bay, Ontario
Julie Ruoho	Teamleader Wet Chem	Thunder Bay Inorganics, Thunder Bay, Ontario
Nik Perkio	Senior Analyst	Waterloo Centralized Prep, Waterloo, Ontario
Nik Perkio	Senior Analyst	Waterloo Inorganics, Waterloo, Ontario
Rhiannon Scheffee	Project Manager	Thunder Bay Metals, Thunder Bay, Ontario

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Page	:	2 of 9
Work Order	:	TY2505339
Client	:	North Rock Engineering
Project	:	----

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

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

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 2023946)											
TY2505326-001	Anonymous	pH	----	E108	0.10	pH units	8.03	8.04	0.01	Diff <2x LOR	----
Physical Tests (QC Lot: 2023947)											
TY2505326-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	447	452	1.11%	10%	----
Physical Tests (QC Lot: 2023948)											
TY2505326-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	91.3	91.5	0.219%	20%	----
Physical Tests (QC Lot: 2025664)											
TY2505339-001	BH5	Solids, total dissolved [TDS]	----	E162	40	mg/L	252	238	14	Diff <2x LOR	----
Physical Tests (QC Lot: 2025665)											
TY2505339-001	BH5	Solids, total suspended [TSS]	----	E160	15.0	mg/L	5590	5670	1.28%	20%	----
Anions and Nutrients (QC Lot: 2023723)											
TY2505324-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0168	0.0099	0.0069	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2023941)											
TY2505316-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	1.00	mg/L	1.02	1.09	0.071	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2023942)											
TY2505316-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	15.0	mg/L	1300	1350	4.09%	20%	----
Anions and Nutrients (QC Lot: 2023945)											
TY2505321-001	Anonymous	Chloride	16887-00-6	E235.Cl	1.00	mg/L	154	151	1.53%	20%	----
Anions and Nutrients (QC Lot: 2024141)											
TY2505339-004	BH8	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.85	0.83	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2024142)											
TY2505339-004	BH8	Chloride	16887-00-6	E235.Cl	0.50	mg/L	0.60	0.61	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2024143)											
TY2505339-004	BH8	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 2026609)											
TY2505339-001	BH5	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.90	2.77	0.13	Diff <2x LOR	----
Dissolved Metals (QC Lot: 2022748)											
TY2505304-001	Anonymous	Barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.101	0.0978	3.63%	20%	----
		Boron, dissolved	7440-42-8	E421	0.020	mg/L	0.060	0.061	0.0003	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.100	mg/L	360	350	3.04%	20%	----
		Iron, dissolved	7439-89-6	E421	0.020	mg/L	9.82	9.91	0.918%	20%	----

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Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 2022748) - continued											
TY2505304-001	Anonymous	Magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	54.0	50.9	6.05%	20%	----
		Sodium, dissolved	7440-23-5	E421	0.100	mg/L	88.6	84.9	4.25%	20%	----
Aggregate Organics (QC Lot: 2021307)											
TY2505358-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----
Aggregate Organics (QC Lot: 2022055)											
TY2505314-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----
Aggregate Organics (QC Lot: 2023755)											
TY2505323-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	36	34	3	Diff <2x LOR	----

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 2023947)						
Conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 2023948)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 2025664)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 2025665)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 2023723)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 2023941)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 2023942)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 2023945)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 2024141)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 2024142)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 2024143)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Organic / Inorganic Carbon (QCLot: 2026609)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 2022748)						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Aggregate Organics (QCLot: 2021307)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 2022055)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 2023755)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 2023946)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 2023947)									
Conductivity	----	E100	1	µS/cm	447 µS/cm	97.8	90.0	110	----
Physical Tests (QCLot: 2023948)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	200 mg/L	99.2	85.0	115	----
Physical Tests (QCLot: 2025664)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.5	85.0	115	----
Physical Tests (QCLot: 2025665)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.3	85.0	115	----
Anions and Nutrients (QCLot: 2023723)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.2	85.0	115	----
Anions and Nutrients (QCLot: 2023941)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 2023942)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 2023945)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 2024141)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 2024142)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 2024143)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	104	90.0	110	----
Organic / Inorganic Carbon (QCLot: 2026609)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.0	80.0	120	----
Dissolved Metals (QCLot: 2022748)									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.012 mg/L	94.4	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	86.1	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	96.9	80.0	120	----

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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Dissolved Metals (QCLot: 2022748) - continued									
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	97.6	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	98.1	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	105	80.0	120	----
Aggregate Organics (QCLot: 2021307)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	103	85.0	115	----
Aggregate Organics (QCLot: 2022055)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	102	85.0	115	----
Aggregate Organics (QCLot: 2023755)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	106	85.0	115	----

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Work Order	:	TY2505339
Client	:	North Rock Engineering
Project	:	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 2023723)										
TY2505324-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0963 mg/L	0.1 mg/L	96.3	75.0	125	----
Anions and Nutrients (QCLot: 2023941)										
TY2505316-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	25.8 mg/L	25 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 2023942)										
TY2505316-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1040 mg/L	1000 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 2023945)										
TY2505323-001	Anonymous	Chloride	16887-00-6	E235.Cl	5680 mg/L	5000 mg/L	114	75.0	125	----
Anions and Nutrients (QCLot: 2024141)										
TY2505339-005	BH9	Sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 2024142)										
TY2505339-005	BH9	Chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 2024143)										
TY2505339-005	BH9	Nitrate (as N)	14797-55-8	E235.NO3	2.58 mg/L	2.5 mg/L	103	75.0	125	----
Organic / Inorganic Carbon (QCLot: 2026609)										
TY2505339-001	BH5	Carbon, dissolved organic [DOC]	----	E358-L	4.59 mg/L	5 mg/L	91.8	70.0	130	----
Dissolved Metals (QCLot: 2022748)										
TY2505304-002	Anonymous	Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.7	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	102	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
Aggregate Organics (QCLot: 2023755)										
TY2505323-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	82 mg/L	100 mg/L	81.9	75.0	125	----

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Chain of Custody (COC) / Analytical Request Form

COC Number: 22 - 545

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Canada Toll Free: 1 800 668 9878

Environmental Division Thunder Bay

Work Order Reference TY2505339

Telephone : +1 807 623 6463

Report To	Contact and company name below will appear on the final report
Company:	North Rock Engineering
Contact:	Cliff Long
Phone:	807-633-7866
	Company address below will appear on the final report
Street:	70 Secord Street
City/Province:	Thunder Bay, ON
Postal Code:	P7B 3C9
Invoice To	Same as Report To ☒ YES ☐ NO
	Copy of Invoice with Report ☒ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: clong@nrock.ca,csprovieri@nrock.ca

Email 2: rsmith@nrock.ca

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☑ FAX

Email 1 or Fax: jen@nrock.ca

Email 2: kbriggs@nrock.ca, clong@nrock.ca

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minim

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minir

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minir

☐ Same day [E2] if received by 10am M-S - 200% rush surcharg

Additional fees may apply to rush requests on weekends.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information		Oil and Gas Required Fields (client use)	
ALS Client Code / QUOTE #:	NORO100 / TY2023NORO1000005	AFE/Cost Center:	PO#:
Job / Project #:	E25-015-04	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	Conmee Landfill	Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact: CP	Sampler: RS, TD

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Schedule 5 Column 2	(Alkalinity, BOD, Chloride, COD,	Dissolved B, Ba, Ca, Fe, Mg, Na,	DOC, Conductivity, NH3, NO3,	pH, SO4, TDS, TSS)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH5	26-05-25	1:30	Groundwater	5	x							
	BH6		2:03	Groundwater	5	x							
	BH7		2:35 ~~3:15~~	Groundwater	5	x							
	BH8		12:55	Groundwater	5	x							
	BH9		3:15	Groundwater	5	x							
	BH10 No sample		—	Groundwater	—	x							
	BH11 No sample		—	Groundwater	—	x							
	Duplicate	↓	12:00	Groundwater	5	x							

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.6							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: May 26, 2025	Time: 4:40	Received by:	Date:	Time:	Received by: GS	Date: 26 May 25 Time: 4:54

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

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Intake and Login Verification Form

SAMPLE INTAKE		
Priority/Emergency Service Requested	YES	(NO)
Time Sensitive Hold Time	YES	(NO)
Client:	North Rock	

SAMPLE RECEIPT INFORMATION		
Mode of Delivery:	Courier	(Drop Off)
Courier		
Waybill Number		
Temperature 12.6		Cooler Count 1
Cooling Method	None / Ice	(Ice Packs)

SAMPLE MATRIX/BOTTLE INFORMATION					
Matrix:	(Water)	Soil	Air	Biota	Other
DW Schedule 24 Bottles Correct?				~~Yes~~	~~No~~
DW Metals pH Check <2				~~Yes~~	~~No~~
Regulation Circled, Works # present			~~Yes~~	~~No - Reject?~~	
# of Bottles: 5	Sample Count 6				
Green/white	6 Routine. 6 BOD				
Purple/white	6 Nuts. 6 DOC				
Warm red/white	6 Diss Metals				
Yellow/black					
Light blue/white					
Orange/black					
Others (detail)					

Comments on Samples and Bottles:	
Samples Requiring Preservation or Filtering:	
Layout Staff Initials Date and Time of Layout	LV 27-May-25 11:56

ACCOUNT INFO VERIFICATION		
Priority/Emergency Service Requested	YES	(NO)
Confirmed all as accurate as per COC, Sample Remarks or PM		
Client ✓	Work Contact ✓	Quote

RECEIPT DETAIL		
Project ✓	PO ✓	Site/LSD ✓
Overall Description Entered	(Yes)	NA
Received date/time as per COC		
Recipients match CoC or Sample Remarks	(Yes)	No
Billing Instruction added to remarks	(Yes)	NA
Sample Remarks/Specification Doc checked		
Submission Issues communicated	Yes	(NA)
Sample Info communicated via Remarks	Yes	(NA)

VERIFICATION CHECKLIST		
Plannned Event Submission	Yes	(No)
Sample Name entered as per CoC	✓	
Sampling Date and time entered as per CoC	✓	
Containers selected in layout order	✓	
Sales items entered from QUOTE ONLY (and/or verified as correct)	✓	
Field Data/EC298A removed if not on COC	Yes	(NA)
Bottle Allocation Verified	✓	
Guideline added or auto-allocated	✓	
Due dates updated	✓	

VALIDATION		
Validation errors resolved?	(Yes)	No
Internal Sublet CoC created	(Yes)	NA
Login Comments:		
Login Staff Initials:	SS	

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CERTIFICATE OF ANALYSIS

Client:	Paula Sdao	Work Order Number:	588914
Company:	North Rock Engineering	PO #:	
Address:	70 Secord Street	Regulation:	Other
	Thunder Bay, ON, P7B 3C9	Project #:	CONMEE Groundwater
Phone:	(807) 633-9859	DWS #:	
Email:	psdao@nrock.ca	Sampled By:	RS/PA
Date Order Received:	7/15/2025	Analysis Started:	7/16/2025
Arrival Temperature:	11 C	Analysis Completed:	7/27/2025

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH5	2172160	Ground Water	Grab		7/15/2025	2:30 PM
BH6	2172161	Ground Water	Grab		7/15/2025	2:15 PM
BH7	2172162	Ground Water	Grab		7/15/2025	2:00 PM
BH8	2172163	Ground Water	Grab		7/15/2025	1:20 PM
BH9	2172164	Ground Water	Grab		7/15/2025	1:45 PM
Dup	2172165	Ground Water	Grab		7/15/2025	

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Thunder Bay	Determination of Alkalinity by Titrimetry	Modified from APHA-2320B
Ammonia Water (A42)	Garson	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Thunder Bay	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Thunder Bay	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
COD (A4)	Thunder Bay	Determination of Chemical Oxygen Demand (COD)	Modified from APHA-5220D
Conductivity of Water (A12)	Thunder Bay	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B

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North Rock Engineering

Work Order Number: 588914

Method	Lab	Description	Reference
DOC Water FF (A55.1)	Thunder Bay	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
ICPMS Dis. Water FF (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
pH of Water (A2.0)	Thunder Bay	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
Phenols 4AAP (T38)	Mississauga	Determination of Total Phenols by 4AAP	Modified from APHA-5530
TDS (A27)	Thunder Bay	Determination of Total Dissolved Solids in water by gravimetry	Modified from SM-2540
TKN Water Dig. (A58)	Garson	Determination of Total Kjeldahl Nitrogen in Waters with Block Digestion.	Modified from SM-4500 NORG-D
TP Water (A23.2)	Garson	Determination of Total Phosphorus in Water.	Modified from EPA 365.3 and ESS 310.2,
TSS (A27)	Thunder Bay	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540
VOC Water (A127)	Garson	Determination of Volatile Organic Compounds in Water by P&T/GC/MS	Modified from EPA 624

REPORT COMMENTS

Other Regulation: O.Reg. 232 Landfill, Sch 5, Col 1

This report has been approved by:

Brad Halvorson, B.Sc.
Laboratory Director

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North Rock Engineering

Work Order Number: 588914

WORK ORDER RESULTS

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	0.5 [0.5]	0.2	5.1	0.2	1.6	0.2	0.3	0.2	mg/L
Nitrate (as N)	0.16 [0.16]	0.05	<0.05	0.05	0.13	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05 [<0.05]	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	11.9 [11.6]	0.5	<0.5	0.5	26.9	0.5	0.9	0.5	mg/L

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Anions	Result	MDL	Result	MDL	Units
Chloride	33.6	0.2	34.2	0.2	mg/L
Nitrate (as N)	<0.05	0.05	<0.05	0.05	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	92.3	0.5	94.0	0.5	mg/L

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	mg/L
Conductivity	295	1	304	1	437	1	173	1	µS/cm

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Work Order Number: 588914

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Organic Carbon	3.0	0.4	3.3	0.4	1.1	0.4	4.9	0.4	mg/L
M-Alkalinity (pH 4.5)	162	2	162	2	221	2	91	2	mg/L as CaCO3
pH	7.9	N/A	7.07	N/A	7.61	N/A	6.76	N/A	pH
Total Kjeldahl Nitrogen	<2	2*	<0.2	0.2*	<0.2	0.2*	0.3	0.2*	mg/L
Total Phenols	0.0037	0.0004	0.0031	0.0004	0.0035	0.0004	0.0033	0.0004	mg/L
Total Phosphorus (as P)	0.026	0.002	0.225	0.002	<0.002	0.002	0.004	0.002	mg/L

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
General Chemistry	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	<0.01	0.01	mg/L
Conductivity	767	1	759	1	µS/cm
Dissolved Organic Carbon	5.2	0.4	5.0	0.4	mg/L
M-Alkalinity (pH 4.5)	304	2	304	2	mg/L as CaCO3
pH	6.97	N/A	6.92	N/A	pH
Total Kjeldahl Nitrogen	<0.2	0.2*	<0.2	0.2*	mg/L
Total Phenols	0.0025	0.0004	0.0026	0.0004	mg/L
Total Phosphorus (as P)	<0.002	0.002	0.014	0.002	mg/L

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Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Arsenic	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Barium	35	1	24	1	42	1	12	1	ug/L
Dissolved Boron	10	2	2	2	50	2	8	2	ug/L
Dissolved Cadmium	<0.02	0.02	<0.02	0.02	1.02	0.02	0.04	0.02	ug/L
Dissolved Calcium	36200	50	44000	50	52400	500*	22400	50	ug/L
Dissolved Chromium	<1	1	<1	1	<1	1	<1	1	ug/L
Dissolved Copper	2	1	2	1	<1	1	1	1	ug/L
Dissolved Iron	<20	20	517	20	<20	20	601	20	ug/L
Dissolved Lead	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Magnesium	13000	4	10600	4	21200	4	7650	4	ug/L
Dissolved Manganese	49	1	272	1	24	1	76	1	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Potassium	1260	100	350	100	2340	100	530	100	ug/L
Dissolved Sodium	4010	100	2710	100	4890	100	1790	100	ug/L
Dissolved Zinc	1	1	3	1	2	1	7	1	ug/L

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Arsenic	1	1	1	1	ug/L
Dissolved Barium	55	1	58	1	ug/L
Dissolved Boron	15	2	15	2	ug/L

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Work Order Number: 588914

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Cadmium	0.10	0.02	0.11	0.02	ug/L
Dissolved Calcium	65300	500*	70000	500*	ug/L
Dissolved Chromium	<1	1	1	1	ug/L
Dissolved Copper	1	1	1	1	ug/L
Dissolved Iron	25	20	21	20	ug/L
Dissolved Lead	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Magnesium	27400	4	28600	4	ug/L
Dissolved Manganese	342	10*	363	10*	ug/L
Dissolved Mercury	<0.1	0.1	<0.1	0.1	ug/L
Dissolved Potassium	1010	100	960	100	ug/L
Dissolved Sodium	7650	100	7720	100	ug/L
Dissolved Zinc	3	1	3	1	ug/L

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Oxygen Demand	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
BOD (5 day)	0.5	0.2	1.5	0.2	0.3	0.2	0.6	0.2	mg/L
Chemical Oxygen Demand	26	5	30	5	13 [13]	5	22	5	mg/L

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Work Order Number: 588914

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Oxygen Demand	Result	MDL	Result	MDL	Units
BOD (5 day)	1.9	0.2	0.8	0.2	mg/L
Chemical Oxygen Demand	34	5	22	5	mg/L

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Dissolved Solids	190 [185]	10	195	10	290	10	140	10	mg/L
Total Suspended Solids	924.0 [864]	0.2	273	2	520	2	77.5	1	mg/L

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Solids	Result	MDL	Result	MDL	Units
Total Dissolved Solids	385	10	470	10	mg/L
Total Dissolved Solids [rr]	365	10	490	10	mg/L
Total Suspended Solids	56.5	1	61	1	mg/L

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Work Order Number: 588914

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Benzene	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
Ethylbenzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Toluene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
m+p-Xylene	<0.8	0.8	<0.8	0.8	<0.8	0.8	<0.8	0.8	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,1,1,2-Tetrachloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,1,1-Trichloroethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,1,2,2-Tetrachloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,1,2-Trichloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,1-Dichloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,1-Dichloroethylene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
1,2-Dibromo-3-chloropropane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichloroethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichloroethane-d4 (Surr)	107	N/A	107	N/A	107	N/A	107	N/A	% Rec
1,2-Dichloropropane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,3-Dichlorobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1,3-Dichloropropane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
1,4-Dichlorobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
1-Bromo-4-fluorobenzene (Surr.)	96.8	N/A	96	N/A	96.4	N/A	96.4	N/A	% Rec

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North Rock Engineering

Work Order Number: 588914

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Acetone	<30	30	<30	30	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Bromomethane	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Chloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
cis-1,2-Dichloroethylene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
cis-1,3-Dichloropropene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dibromochloromethane	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Dibromomethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Dichlorodifluoromethane	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Dichloromethane	<1	1	<1	1	<1	1	<1	1	ug/L
Hexachlorobutadiene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Methyl ethyl ketone	<5	5	<5	5	<5	5	<5	5	ug/L
Methyl isobutyl ketone (MIBK)	<5	5	<5	5	<5	5	<5	5	ug/L
Methyl tert-butyl ether (MTBE)	<1	1	<1	1	<1	1	<1	1	ug/L
n-Hexane	<0.5	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5	ug/L

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Sample Description	BH5		BH6		BH7		BH8		
Sample Date	7/15/2025 2:30 PM		7/15/2025 2:15 PM		7/15/2025 2:00 PM		7/15/2025 1:20 PM		
Lab ID	2172160		2172161		2172162		2172163		
Volatile Organic Compounds	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Styrene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Tetrachloroethylene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Toluene-d8 (Surr.)	94.6	N/A	94.8	N/A	94.3	N/A	94.2	N/A	% Rec
Trans-1,2-dichloroethylene	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Trans-1,3-dichloropropene	<0.3	0.3	<0.3	0.3	<0.3	0.3	<0.3	0.3	ug/L
Trichloroethylene	<0.2	0.2	<0.2	0.2	<0.2	0.2	<0.2	0.2	ug/L
Trichlorofluoromethane	<0.4	0.4	<0.4	0.4	<0.4	0.4	<0.4	0.4	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	ug/L

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Benzene	<0.1	0.1	<0.1	0.1	ug/L
Ethylbenzene	<0.2	0.2	<0.2	0.2	ug/L
Toluene	<0.3	0.3	<0.3	0.3	ug/L
m+p-Xylene	<0.8	0.8	<0.8	0.8	ug/L
o-Xylene	<0.4	0.4	<0.4	0.4	ug/L
Total Xylenes (Calc.)	<0.4	0.4	<0.4	0.4	ug/L
1,1,1,2-Tetrachloroethane	<0.3	0.3	<0.3	0.3	ug/L
1,1,1-Trichloroethane	<0.2	0.2	<0.2	0.2	ug/L
1,1,2,2-Tetrachloroethane	<0.3	0.3	<0.3	0.3	ug/L
1,1,2-Trichloroethane	<0.3	0.3	<0.3	0.3	ug/L

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Work Order Number: 588914

Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
1,1-Dichloroethane	<0.3	0.3	<0.3	0.3	ug/L
1,1-Dichloroethylene	<0.3	0.3	<0.3	0.3	ug/L
1,1-Dichloropropene	<0.1	0.1	<0.1	0.1	ug/L
1,2,4-Trichlorobenzene	<0.4	0.4	<0.4	0.4	ug/L
1,2-Dibromo-3-chloropropane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dibromoethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichlorobenzene	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichloroethane	<0.2	0.2	<0.2	0.2	ug/L
1,2-Dichloroethane-d4 (Surr)	109	N/A	108	N/A	% Rec
1,2-Dichloropropane	<0.3	0.3	<0.3	0.3	ug/L
1,3-Dichlorobenzene	<0.3	0.3	<0.3	0.3	ug/L
1,3-Dichloropropane	<0.2	0.2	<0.2	0.2	ug/L
1,4-Dichlorobenzene	<0.3	0.3	<0.3	0.3	ug/L
1-Bromo-4-fluorobenzene (Surr.)	95.2	N/A	96.6	N/A	% Rec
Acetone	<30	30	<30	30	ug/L
Bromobenzene	<0.3	0.3	<0.3	0.3	ug/L
Bromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Bromodichloromethane	<0.2	0.2	<0.2	0.2	ug/L
Bromoform	<0.3	0.3	<0.3	0.3	ug/L
Bromomethane	<0.4	0.4	<0.4	0.4	ug/L
Carbon tetrachloride	<0.2	0.2	<0.2	0.2	ug/L
Chlorobenzene	<0.5	0.5	<0.5	0.5	ug/L
Chloroethane	<0.3	0.3	<0.3	0.3	ug/L
Chloroform	<0.3	0.3	<0.3	0.3	ug/L

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Sample Description	BH9		Dup		
Sample Date	7/15/2025 1:45 PM		7/15/2025 12:00 AM		
Lab ID	2172164		2172165		
Volatile Organic Compounds	Result	MDL	Result	MDL	Units
Chloromethane	<0.3	0.3	<0.3	0.3	ug/L
cis - + trans-1,3-Dichloropropene (Calc.)	<0.2	0.2	<0.2	0.2	ug/L
cis-1,2-Dichloroethylene	<0.3	0.3	<0.3	0.3	ug/L
cis-1,3-Dichloropropene	<0.3	0.3	<0.3	0.3	ug/L
Dibromochloromethane	<0.3	0.3	<0.3	0.3	ug/L
Dibromomethane	<0.2	0.2	<0.2	0.2	ug/L
Dichlorodifluoromethane	<0.2	0.2	<0.2	0.2	ug/L
Dichloromethane	<1	1	<1	1	ug/L
Hexachlorobutadiene	<0.4	0.4	<0.4	0.4	ug/L
Methyl ethyl ketone	<5	5	<5	5	ug/L
Methyl isobutyl ketone (MIBK)	<5	5	<5	5	ug/L
Methyl tert-butyl ether (MTBE)	<1	1	<1	1	ug/L
n-Hexane	<0.5	0.5	<0.5	0.5	ug/L
Styrene	<0.3	0.3	<0.3	0.3	ug/L
Tetrachloroethylene	<0.3	0.3	<0.3	0.3	ug/L
Toluene-d8 (Surr.)	94.5	N/A	93.6	N/A	% Rec
Trans-1,2-dichloroethylene	<0.4	0.4	<0.4	0.4	ug/L
Trans-1,3-dichloropropene	<0.3	0.3	<0.3	0.3	ug/L
Trichloroethylene	<0.2	0.2	<0.2	0.2	ug/L
Trichlorofluoromethane	<0.4	0.4	<0.4	0.4	ug/L
Vinyl chloride	<0.1	0.1	<0.1	0.1	ug/L

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LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

LCL: Lower Control Limit.

UCL: Upper Control Limit.

QAQCID: This is a unique reference to the quality control data set used to generate the reported value. Contact our lab for this information, as it is traceable through our LIMS.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

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ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

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QUALITY CONTROL DATA

THIS SECTION REPORTS QC RESULTS ASSOCIATED WITH THE TEST BATCH; THESE ARE NOT YOUR SAMPLE RESULTS.
QAQC details include only values where sufficient sample data allowed measurement.

Anions

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	0.2	mg/L	0	<0.2	0.6	20250722.A5F
Chloride	0.2	mg/L	0	<0.2	0.6	20250722.A5G
Nitrate (as N)	0.05	mg/L	0	<0.05	0.15	20250722.A5F
Nitrate (as N)	0.05	mg/L	0	<0.05	0.15	20250722.A5G
Nitrite (as N)	0.05	mg/L	0	<0.05	0.15	20250722.A5F
Nitrite (as N)	0.05	mg/L	0	<0.05	0.15	20250722.A5G
Sulphate	0.5	mg/L	0	<0.5	1.5	20250722.A5F
Sulphate	0.5	mg/L	0	<0.5	1.5	20250722.A5G

Positive Control: LFB-5 (20/10/1 mg/L) (5)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	80	113	120	20250722.A5F
Chloride	N/A	% Rec	80	116	120	20250722.A5G
Nitrate (as N)	N/A	% Rec	80	113	120	20250722.A5F
Nitrate (as N)	N/A	% Rec	80	117	120	20250722.A5G
Nitrite (as N)	N/A	% Rec	80	102	120	20250722.A5F
Nitrite (as N)	N/A	% Rec	80	111	120	20250722.A5G
Sulphate	N/A	% Rec	80	115	120	20250722.A5F
Sulphate	N/A	% Rec	80	119	120	20250722.A5G

Positive Control: LFB-7 (100/50 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	80	115	120	20250722.A5F
Chloride	N/A	% Rec	80	117	120	20250722.A5G
Nitrate (as N)	N/A	% Rec	80	112	120	20250722.A5F
Nitrate (as N)	N/A	% Rec	80	113	120	20250722.A5G

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Nitrite (as N)	N/A	% Rec	80	109	120	20250722.A5F
Nitrite (as N)	N/A	% Rec	80	111	120	20250722.A5G
Sulphate	N/A	% Rec	80	115	120	20250722.A5F
Sulphate	N/A	% Rec	80	117	120	20250722.A5G

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Sulphate	N/A	%	0	0.3	20	20250722.A5G
Sulphate	N/A	%	0	2.6	20	20250722.A5F

Sample Spike: LFS-R (Spiked Sample) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	75	117	125	20250722.A5F
Chloride	N/A	% Rec	75	122	125	20250722.A5G
Nitrate (as N)	N/A	% Rec	75	115	125	20250722.A5F
Nitrate (as N)	N/A	% Rec	75	120	125	20250722.A5G
Nitrite (as N)	N/A	% Rec	75	116	125	20250722.A5F
Nitrite (as N)	N/A	% Rec	75	119	125	20250722.A5G
Sulphate	N/A	% Rec	75	104	125	20250722.A5G
Sulphate	N/A	% Rec	75	110	125	20250722.A5F

General Chemistry

Blank: LRB-6 (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	0.01	mg/L	0	<0.01	0.03	20250723.A42L

Method Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	1	µS/cm	0	1	5	20250716.A12G
Conductivity	1	µS/cm	0	1.7	5	20250716.A12H
Dissolved Organic Carbon	0.4	mg/L	0	<0.4	1.2	20250718.A55.1F
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	0	4.43	6	20250716.A1.0H
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	0	5.76	6	20250716.A1.0G

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Total Kjeldahl Nitrogen	0.4	mg/L	0	<0.4	1.2	20250722.A58D
Total Kjeldahl Nitrogen	0.4	mg/L	0	<0.4	1.2	20250724.A58B
Total Phenols	0.0004	mg/L	0	<0.0004	0.0012	20250722.TM-M.T38B

Method Blank: Method Blank (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phosphorus (as P)	0.002	mg/L	0	<0.002	0.006	20250722.A23.2I
Total Phosphorus (as P)	0.002	mg/L	0	<0.002	0.006	20250724.A23.2B

Positive Control: 25 ppb Control (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phenols	0.0004	mg/L	0.02	0.0265	0.03	20250722.TM-M.T38B

Positive Control: 5 ppb Control (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phenols	0.0004	mg/L	0.0035	0.0051	0.0065	20250722.TM-M.T38B

Positive Control: IVS-5 (10 mg/L) (5)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Kjeldahl Nitrogen	0.2	mg/L	8	8.15	12	20250722.A58D
Total Kjeldahl Nitrogen	0.4	mg/L	8	8.5	12	20250724.A58B

Positive Control: Lab Control Sample .05 (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phosphorus (as P)	0.004	mg/L	0.04	0.0431	0.06	20250724.A23.2B
Total Phosphorus (as P)	0.004	mg/L	0.04	0.0485	0.06	20250722.A23.2I

Positive Control: Lab Control Sample .2 (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phosphorus (as P)	0.004	mg/L	0.18	0.184	0.22	20250722.A23.2I
Total Phosphorus (as P)	0.004	mg/L	0.18	0.202	0.22	20250724.A23.2B

Positive Control: LFB-4 (100 mg/L CaCO3) (4)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	80	105	120	20250716.A1.0G
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	80	105	120	20250716.A1.0H

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Positive Control: LFB-5 (500 µS/cm) (5)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	1	µS/cm	475	500	525	20250716.A12G
Conductivity	1	µS/cm	475	504	525	20250716.A12H

Positive Control: LFB-7 (0.25 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	0.01	mg/L	0.2	0.205	0.3	20250723.A42L

Positive Control: LFB-7 (15 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Organic Carbon	0.4	mg/L	12.5	15	17.5	20250718.A55.1F

Positive Control: LFB-7 (25 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Kjeldahl Nitrogen	0.4	mg/L	20	20.1	30	20250724.A58B
Total Kjeldahl Nitrogen	0.8	mg/L	20	20.3	30	20250722.A58D

Positive Control: pH 8.0 (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
pH	N/A	pH	7.8	7.97	8.2	20250716.A2.0G
pH	N/A	pH	7.8	7.98	8.2	20250716.A2.0H

Sample Replicate: % RPD (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	N/A	%	0	0	20	20250716.A12G
Conductivity	N/A	%	0	0.3	20	20250716.A12H
M-Alkalinity (pH 4.5)	N/A	%	0	2.9	20	20250716.A1.0G
M-Alkalinity (pH 4.5)	N/A	%	0	9.7	20	20250716.A1.0H
pH	N/A	% Rec	0	0.01	0.2	20250716.A2.0H
pH	N/A	% Rec	0	0.09	0.2	20250716.A2.0G

Sample Spike: LFMS-9 (10 mg/L) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Organic Carbon	N/A	% Rec	80	115	120	20250718.A55.1F

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Sample Spike: LFMS-9 (25 mg/L) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Kjeldahl Nitrogen	N/A	% Rec	80	80.2	120	20250722.A58D
Total Kjeldahl Nitrogen	N/A	% Rec	80	83.4	120	20250724.A58B

Sample Spike: LFS-9 (Sample Spike) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	N/A	% Rec	80	84.4	120	20250723.A42L

Sample Spike: LFSM-8 (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phenols	N/A	% Rec	70	106	130	20250722.TM-M.T38B

Sample Spike: Matrix Spike (UCL 125, LCL 75, New) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Phosphorus (as P)	N/A	% Rec	75	104	125	20250722.A23.2I
Total Phosphorus (as P)	N/A	% Rec	75	105	125	20250724.A23.2B

Metals (Dissolved)

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Arsenic	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Barium	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Boron	2	ug/L	0	<2	5	20250726.A13.3B
Dissolved Cadmium	0.02	ug/L	0	<0.02	0.06	20250726.A13.3B
Dissolved Calcium	50	ug/L	0	<50	50	20250726.A13.3B
Dissolved Chromium	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Copper	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Iron	20	ug/L	0	<20	20	20250726.A13.3B
Dissolved Lead	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Magnesium	4	ug/L	0	<4	4	20250726.A13.3B
Dissolved Manganese	1	ug/L	0	<1	1	20250726.A13.3B
Dissolved Mercury	0.1	ug/L	0	<0.1	0.1	20250726.A13.3B

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Dissolved Potassium	100	ug/L	0	<100	100	20250726.A13.3B
Dissolved Sodium	100	ug/L	0	<100	300	20250726.A13.3B
Dissolved Zinc	1	ug/L	0	<1	1	20250726.A13.3B

Positive Control: LFB-7 (N 100 µg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Arsenic	N/A	%	80	116	120	20250726.A13.3B
Dissolved Barium	N/A	%	80	117	120	20250726.A13.3B
Dissolved Boron	N/A	%	80	108	120	20250726.A13.3B
Dissolved Cadmium	N/A	%	80	114	120	20250726.A13.3B
Dissolved Calcium	N/A	%	80	96.9	120	20250726.A13.3B
Dissolved Chromium	N/A	%	80	105	120	20250726.A13.3B
Dissolved Copper	N/A	%	80	108	120	20250726.A13.3B
Dissolved Iron	N/A	%	80	107	120	20250726.A13.3B
Dissolved Lead	N/A	%	80	105	120	20250726.A13.3B
Dissolved Magnesium	N/A	%	80	101	120	20250726.A13.3B
Dissolved Manganese	N/A	%	80	106	120	20250726.A13.3B
Dissolved Mercury	N/A	%	80	106	120	20250726.A13.3B
Dissolved Potassium	N/A	%	80	98.1	120	20250726.A13.3B
Dissolved Sodium	N/A	%	80	100	120	20250726.A13.3B
Dissolved Zinc	N/A	%	80	109	120	20250726.A13.3B

Reference Sample: CRM-12 EP-L-3 (µg/L) (12)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Arsenic	1	ug/L	7.5	11.1	12.4	20250726.A13.3B
Dissolved Barium	1	ug/L	6.4	8.94	9.7	20250726.A13.3B
Dissolved Boron	2	ug/L	76	110	113	20250726.A13.3B
Dissolved Cadmium	0.1	ug/L	1.5	2.2	2.4	20250726.A13.3B
Dissolved Calcium	50	ug/L	273	540	664	20250726.A13.3B
Dissolved Chromium	1	ug/L	9.4	14.1	16.6	20250726.A13.3B
Dissolved Copper	1	ug/L	12.3	18.4	20	20250726.A13.3B
Dissolved Lead	0.1	ug/L	2.58	4.48	5.38	20250726.A13.3B
Dissolved Magnesium	4	ug/L	41	62.5	71	20250726.A13.3B

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Dissolved Manganese	1	ug/L	4.7	6.62	7.3	20250726.A13.3B
Dissolved Potassium	100	ug/L	323	410	497	20250726.A13.3B
Dissolved Sodium	100	ug/L	145	261	345	20250726.A13.3B
Dissolved Zinc	1	ug/L	34.1	48.1	51.5	20250726.A13.3B

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	N/A	%	0	0	20	20250726.A13.3B
Dissolved Calcium	N/A	%	0	5.2	20	20250726.A13.3B
Dissolved Magnesium	N/A	%	0	4.8	20	20250726.A13.3B
Dissolved Manganese	N/A	%	0	0	20	20250726.A13.3B
Dissolved Sodium	N/A	%	0	4.7	20	20250726.A13.3B

Sample Spike: LFSM-9 (N 100 µg/L) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Arsenic	N/A	% Rec	70	105	130	20250726.A13.3B
Dissolved Barium	N/A	% Rec	70	105	130	20250726.A13.3B
Dissolved Cadmium	N/A	% Rec	70	106	130	20250726.A13.3B
Dissolved Chromium	N/A	% Rec	70	105	130	20250726.A13.3B
Dissolved Copper	N/A	% Rec	70	106	130	20250726.A13.3B
Dissolved Iron	N/A	% Rec	70	88.7	130	20250726.A13.3B
Dissolved Lead	N/A	% Rec	70	104	130	20250726.A13.3B
Dissolved Manganese	N/A	% Rec	70	104	130	20250726.A13.3B
Dissolved Zinc	N/A	% Rec	70	116	130	20250726.A13.3B

Oxygen Demand

Blank: Blank (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	5	mg/L	0	<5	15	20250722.TM-TB.A4C

Blank: BOD Method Blank (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	N/A	mg/L	0	-0.1	0.2	20250716.TM-TB.A3B

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Positive Control: Lab Control Sample (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	100	mg/L	167.5	200	228.5	20250716.TM-TB.A3B

Positive Control: Lab Control Sample 100 (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	N/A	mg/L	85	100	115	20250722.TM-TB.A4C

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	N/A	%	0	3.4	30	20250716.TM-TB.A3B

Sample Spike: Matrix Spike (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	N/A	% Rec	70	108	130	20250722.TM-TB.A4C

Solids

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Suspended Solids	0.67	mg/L	0	<0.67	10	20250717.TM-TB.A27.0D

Method Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	10	mg/L	0	<10	50	20250718.TM-TB.A27B
Total Dissolved Solids	10	mg/L	0	10	50	20250717.TM-TB.A27E

Positive Control: LFB-7 (250 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	10	mg/L	225	245	275	20250717.TM-TB.A27E
Total Dissolved Solids	10	mg/L	225	265	275	20250718.TM-TB.A27B
Total Suspended Solids	2	mg/L	212.5	239	287.5	20250717.TM-TB.A27.0D

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	N/A	%	0	0	20	20250718.TM-TB.A27B

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Total Dissolved Solids	N/A	%	0	2.7	20	20250717.TM-TB.A27E
Total Suspended Solids	N/A	%	0	6.7	20	20250717.TM-TB.A27.0D

Volatile Organic Compounds

Blank Spike: LFSM (21)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
1,1,1,2-Tetrachloroethane	0.5	% Rec	60	102	130	20250721.TM-G.A14w
1,1,1-Trichloroethane	0.5	% Rec	60	103	130	20250721.TM-G.A14w
1,1,2,2-Tetrachloroethane	0.5	% Rec	60	121	130	20250721.TM-G.A14w
1,1,2-Trichloroethane	0.5	% Rec	60	98.8	130	20250721.TM-G.A14w
1,1-Dichloroethane	0.5	% Rec	60	101	130	20250721.TM-G.A14w
1,1-Dichloroethylene	0.5	% Rec	60	101	130	20250721.TM-G.A14w
1,2,4-Trichlorobenzene	0.5	% Rec	60	104	130	20250721.TM-G.A14w
1,2-Dibromo-3-chloropropane	0.3	% Rec	60	125	130	20250721.TM-G.A14w
1,2-Dibromoethane	0.2	% Rec	60	108	130	20250721.TM-G.A14w
1,2-Dichlorobenzene	0.5	% Rec	60	97.2	130	20250721.TM-G.A14w
1,2-Dichloroethane	0.5	% Rec	60	108	130	20250721.TM-G.A14w
1,2-Dichloroethane-d4 (Surr)	N/A	% Rec	50	102	140	20250721.TM-G.A14w
1,2-Dichloropropane	0.5	% Rec	60	108	130	20250721.TM-G.A14w
1,3-Dichlorobenzene	0.5	% Rec	60	94.1	130	20250721.TM-G.A14w
1,3-Dichloropropane	0.3	% Rec	60	103	130	20250721.TM-G.A14w
1,4-Dichlorobenzene	0.5	% Rec	60	92.7	130	20250721.TM-G.A14w
1-Bromo-4-fluorobenzene (Surr.)	N/A	% Rec	50	91.9	140	20250721.TM-G.A14w
Acetone	3	% Rec	60	83.5	130	20250721.TM-G.A14w
Benzene	0.2	% Rec	60	104	130	20250721.TM-G.A14w
Bromobenzene	0.3	% Rec	60	90.5	130	20250721.TM-G.A14w
Bromochloromethane	0.3	% Rec	60	105	130	20250721.TM-G.A14w
Bromodichloromethane	0.2	% Rec	60	106	130	20250721.TM-G.A14w
Bromoform	0.5	% Rec	60	123	130	20250721.TM-G.A14w
Bromomethane	0.5	% Rec	50	90	140	20250721.TM-G.A14w

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Carbon tetrachloride	0.2	% Rec	60	103	130	20250721.TM-G.A14w
Chlorobenzene	0.5	% Rec	60	105	130	20250721.TM-G.A14w
Chloroethane	0.3	% Rec	50	86.8	140	20250721.TM-G.A14w
Chloroform	1	% Rec	60	107	130	20250721.TM-G.A14w
Chloromethane	0.3	% Rec	50	95.8	140	20250721.TM-G.A14w
cis-1,2-Dichloroethylene	0.5	% Rec	60	106	130	20250721.TM-G.A14w
cis-1,3-Dichloropropene	0.5	ug/L	60	102	130	20250721.TM-G.A14w
Dibromochloromethane	2	% Rec	60	110	130	20250721.TM-G.A14w
Dibromomethane	0.3	% Rec	60	114	130	20250721.TM-G.A14w
Dichlorodifluoromethane	2	% Rec	50	92.6	140	20250721.TM-G.A14w
Dichloromethane	5	% Rec	60	107	130	20250721.TM-G.A14w
Ethylbenzene	0.5	% Rec	60	104	130	20250721.TM-G.A14w
Hexachlorobutadiene	0.5	ug/L	60	99.8	130	20250721.TM-G.A14w
m+p-Xylene	0.5	% Rec	60	103	130	20250721.TM-G.A14w
Methyl ethyl ketone	20	% Rec	60	119	130	20250721.TM-G.A14w
Methyl isobutyl ketone (MIBK)	20	% Rec	60	73.9	130	20250721.TM-G.A14w
Methyl tert-butyl ether (MTBE)	2	% Rec	60	83.7	130	20250721.TM-G.A14w
n-Hexane	5	ug/L	60	104	130	20250721.TM-G.A14w
o-Xylene	0.5	% Rec	60	100	130	20250721.TM-G.A14w
Styrene	0.5	% Rec	60	100	130	20250721.TM-G.A14w
Tetrachloroethylene	0.5	% Rec	60	102	130	20250721.TM-G.A14w
Toluene	0.5	% Rec	60	103	130	20250721.TM-G.A14w
Toluene-d8 (Surr.)	N/A	% Rec	50	97.5	140	20250721.TM-G.A14w
Trans-1,2-dichloroethylene	0.5	% Rec	60	99.6	130	20250721.TM-G.A14w
Trans-1,3-dichloropropene	0.5	ug/L	60	108	130	20250721.TM-G.A14w
Trichloroethylene	0.5	% Rec	60	99.8	130	20250721.TM-G.A14w
Trichlorofluoromethane	5	% Rec	60	94.9	130	20250721.TM-G.A14w
Vinyl chloride	0.1	% Rec	50	80	140	20250721.TM-G.A14w

Method Blank: LRB-6 (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
1,1,1,2-Tetrachloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w

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1,1,1-Trichloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,1,2,2-Tetrachloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,1,2-Trichloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,1-Dichloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,1-Dichloroethylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,2,4-Trichlorobenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,2-Dibromo-3-chloropropane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
1,2-Dibromoethane	0.2	ug/L	0	<0.2	0.2	20250721.TM-G.A14w
1,2-Dichlorobenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,2-Dichloroethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,2-Dichloroethane-d4 (Surr)	N/A	% Rec	50	108	140	20250721.TM-G.A14w
1,2-Dichloropropane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,3-Dichlorobenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1,3-Dichloropropane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
1,4-Dichlorobenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
1-Bromo-4-fluorobenzene (Surr.)	N/A	% Rec	50	97.9	140	20250721.TM-G.A14w
Acetone	30	ug/L	0	<30	30	20250721.TM-G.A14w
Benzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Bromobenzene	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
Bromochloromethane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
Bromodichloromethane	0.2	ug/L	0	<0.2	0.2	20250721.TM-G.A14w
Bromoform	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Bromomethane	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Carbon tetrachloride	0.2	ug/L	0	<0.2	0.2	20250721.TM-G.A14w
Chlorobenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Chloroethane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
Chloroform	1	ug/L	0	<1	1	20250721.TM-G.A14w
Chloromethane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
cis-1,2-Dichloroethylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
cis-1,3-Dichloropropene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Dibromochloromethane	2	ug/L	0	<2	2	20250721.TM-G.A14w

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Dibromomethane	0.3	ug/L	0	<0.3	0.3	20250721.TM-G.A14w
Dichlorodifluoromethane	2	ug/L	0	<2	2	20250721.TM-G.A14w
Dichloromethane	5	ug/L	0	<5	5	20250721.TM-G.A14w
Ethylbenzene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Hexachlorobutadiene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
m+p-Xylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Methyl ethyl ketone	20	ug/L	0	<20	20	20250721.TM-G.A14w
Methyl isobutyl ketone (MIBK)	20	ug/L	0	<20	20	20250721.TM-G.A14w
Methyl tert-butyl ether (MTBE)	2	ug/L	0	<2	2	20250721.TM-G.A14w
n-Hexane	5	ug/L	0	<5	5	20250721.TM-G.A14w
o-Xylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Styrene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Tetrachloroethylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Toluene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Toluene-d8 (Surr.)	N/A	% Rec	50	95.8	140	20250721.TM-G.A14w
Trans-1,2-dichloroethylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Trans-1,3-dichloropropene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Trichloroethylene	0.5	ug/L	0	<0.5	0.5	20250721.TM-G.A14w
Trichlorofluoromethane	5	ug/L	0	<5	5	20250721.TM-G.A14w
Vinyl chloride	0.1	ug/L	0	<0.1	0.1	20250721.TM-G.A14w

Positive Control: LFB-7 (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
1,1,1,2-Tetrachloroethane	0.5	% Rec	60	103	130	20250721.TM-G.A14w
1,1,1-Trichloroethane	0.5	% Rec	60	103	130	20250721.TM-G.A14w
1,1,2,2-Tetrachloroethane	0.5	% Rec	60	122	130	20250721.TM-G.A14w
1,1,2-Trichloroethane	0.5	% Rec	60	105	130	20250721.TM-G.A14w
1,1-Dichloroethane	0.5	% Rec	60	102	130	20250721.TM-G.A14w
1,1-Dichloroethylene	0.5	% Rec	60	102	130	20250721.TM-G.A14w
1,2,4-Trichlorobenzene	0.5	% Rec	60	100	130	20250721.TM-G.A14w
1,2-Dibromo-3-chloropropane	0.3	% Rec	60	122	130	20250721.TM-G.A14w
1,2-Dibromoethane	0.2	% Rec	60	107	130	20250721.TM-G.A14w

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North Rock Engineering

Work Order Number: 588914

1,2-Dichlorobenzene	0.5	% Rec	60	95	130	20250721.TM-G.A14w
1,2-Dichloroethane	0.5	% Rec	60	107	130	20250721.TM-G.A14w
1,2-Dichloroethane-d4 (Surr)	N/A	% Rec	50	99.5	140	20250721.TM-G.A14w
1,2-Dichloropropane	0.5	% Rec	60	108	130	20250721.TM-G.A14w
1,3-Dichlorobenzene	0.5	% Rec	60	92.1	130	20250721.TM-G.A14w
1,3-Dichloropropane	0.3	% Rec	60	101	130	20250721.TM-G.A14w
1,4-Dichlorobenzene	0.5	% Rec	60	91.2	130	20250721.TM-G.A14w
1-Bromo-4-fluorobenzene (Surr.)	N/A	% Rec	50	91.4	140	20250721.TM-G.A14w
Acetone	30	% Rec	60	82.9	130	20250721.TM-G.A14w
Benzene	0.1	% Rec	60	104	130	20250721.TM-G.A14w
Bromobenzene	0.3	% Rec	60	88.9	130	20250721.TM-G.A14w
Bromochloromethane	0.3	% Rec	60	105	130	20250721.TM-G.A14w
Bromodichloromethane	0.2	% Rec	60	107	130	20250721.TM-G.A14w
Bromoform	0.5	% Rec	60	123	130	20250721.TM-G.A14w
Bromomethane	0.5	% Rec	50	91.4	140	20250721.TM-G.A14w
Carbon tetrachloride	0.2	% Rec	60	105	130	20250721.TM-G.A14w
Chlorobenzene	0.5	% Rec	60	106	130	20250721.TM-G.A14w
Chloroethane	0.3	% Rec	50	87.6	140	20250721.TM-G.A14w
Chloroform	1	% Rec	60	107	130	20250721.TM-G.A14w
Chloromethane	0.3	% Rec	50	101	140	20250721.TM-G.A14w
cis-1,2-Dichloroethylene	0.5	% Rec	60	106	130	20250721.TM-G.A14w
cis-1,3-Dichloropropene	0.5	ug/L	60	103	130	20250721.TM-G.A14w
Dibromochloromethane	2	% Rec	60	111	130	20250721.TM-G.A14w
Dibromomethane	0.3	% Rec	60	115	130	20250721.TM-G.A14w
Dichlorodifluoromethane	2	% Rec	50	97.3	140	20250721.TM-G.A14w
Dichloromethane	5	% Rec	60	108	130	20250721.TM-G.A14w
Ethylbenzene	0.5	% Rec	60	103	130	20250721.TM-G.A14w
Hexachlorobutadiene	0.5	ug/L	60	102	130	20250721.TM-G.A14w
m+p-Xylene	0.5	% Rec	60	103	130	20250721.TM-G.A14w
Methyl ethyl ketone	0.5	% Rec	60	111	130	20250721.TM-G.A14w
Methyl isobutyl ketone (MIBK)	0.5	% Rec	60	94.5	130	20250721.TM-G.A14w

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Methyl tert-butyl ether (MTBE)	2	% Rec	60	82.8	130	20250721.TM-G.A14w
n-Hexane	5	ug/L	60	105	130	20250721.TM-G.A14w
o-Xylene	0.5	% Rec	60	100	130	20250721.TM-G.A14w
Styrene	0.5	% Rec	60	99.5	130	20250721.TM-G.A14w
Tetrachloroethylene	0.5	% Rec	60	103	130	20250721.TM-G.A14w
Toluene	0.5	% Rec	60	104	130	20250721.TM-G.A14w
Toluene-d8 (Surr.)	N/A	% Rec	50	98.6	140	20250721.TM-G.A14w
Trans-1,2-dichloroethylene	0.5	% Rec	60	101	130	20250721.TM-G.A14w
Trans-1,3-dichloropropene	0.5	ug/L	60	109	130	20250721.TM-G.A14w
Trichloroethylene	0.5	% Rec	60	96.4	130	20250721.TM-G.A14w
Trichlorofluoromethane	5	% Rec	60	96.7	130	20250721.TM-G.A14w
Vinyl chloride	0.1	% Rec	50	84	140	20250721.TM-G.A14w

THIS INDEX SHOWS HOW YOUR SAMPLES ARE ASSOCIATED TO THE CONTROLS INCLUDED IN THE IDENTIFIED BATCHES.

Sample Description	Lab ID	Method	QAQCID	Prep QAQCID
BH5	2172160	Alkalinity (A1.0)	20250716.A1.0H	
BH5	2172160	Ammonia Water (A42)	20250723.A42L	
BH5	2172160	Anions Water (mg/L by IC) (A5)	20250722.A5F	
BH5	2172160	BOD (A3)	20250716.TM-TB.A3B	
BH5	2172160	COD (A4)	20250722.TM-TB.A4C	
BH5	2172160	Conductivity of Water (A12)	20250716.A12H	
BH5	2172160	DOC Water (A55.1)	20250718.A55.1F	
BH5	2172160	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
BH5	2172160	pH of Water (A2.0)	20250716.A2.0H	
BH5	2172160	Phenols 4AAP (T38)	20250722.TM-M.T38B	
BH5	2172160	TDS (A27)	20250717.TM-TB.A27E	
BH5	2172160	TKN Water Dig. (A58)	20250722.A58D	
BH5	2172160	TP Water (A23.2)	20250722.A23.2I	
BH5	2172160	TSS (A27)	20250717.TM-TB.A27.0D	
BH5	2172160	VOC Water (A127)	20250721.TM-G.A14w	
BH5	2172160r	Anions Water (mg/L by IC) (A5)	20250722.A5F	
BH5	2172160r	TDS (A27)	20250717.TM-TB.A27E	

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BH5	2172160r	TSS (A27)	20250717.TM-TB.A27.0D	
BH6	2172161	Alkalinity (A1.0)	20250716.A1.0G	
BH6	2172161	Ammonia Water (A42)	20250723.A42L	
BH6	2172161	Anions Water (mg/L by IC) (A5)	20250722.A5G	
BH6	2172161	BOD (A3)	20250716.TM-TB.A3B	
BH6	2172161	COD (A4)	20250722.TM-TB.A4C	
BH6	2172161	Conductivity of Water (A12)	20250716.A12G	
BH6	2172161	DOC Water (A55.1)	20250718.A55.1F	
BH6	2172161	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
BH6	2172161	pH of Water (A2.0)	20250716.A2.0G	
BH6	2172161	Phenols 4AAP (T38)	20250722.TM-M.T38B	
BH6	2172161	TDS (A27)	20250717.TM-TB.A27E	
BH6	2172161	TKN Water Dig. (A58)	20250724.A58B	
BH6	2172161	TP Water (A23.2)	20250724.A23.2B	
BH6	2172161	TSS (A27)	20250717.TM-TB.A27.0D	
BH6	2172161	VOC Water (A127)	20250721.TM-G.A14w	
BH7	2172162	Alkalinity (A1.0)	20250716.A1.0G	
BH7	2172162	Ammonia Water (A42)	20250723.A42L	
BH7	2172162	Anions Water (mg/L by IC) (A5)	20250722.A5G	
BH7	2172162	BOD (A3)	20250716.TM-TB.A3B	
BH7	2172162	COD (A4)	20250722.TM-TB.A4C	
BH7	2172162	Conductivity of Water (A12)	20250716.A12G	
BH7	2172162	DOC Water (A55.1)	20250718.A55.1F	
BH7	2172162	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
BH7	2172162	pH of Water (A2.0)	20250716.A2.0G	
BH7	2172162	Phenols 4AAP (T38)	20250722.TM-M.T38B	
BH7	2172162	TDS (A27)	20250717.TM-TB.A27E	
BH7	2172162	TKN Water Dig. (A58)	20250722.A58D	
BH7	2172162	TP Water (A23.2)	20250722.A23.2I	
BH7	2172162	TSS (A27)	20250717.TM-TB.A27.0D	
BH7	2172162	VOC Water (A127)	20250721.TM-G.A14w	

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BH7	2172162r	COD (A4)	20250722.TM-TB.A4C	
BH8	2172163	Alkalinity (A1.0)	20250716.A1.0G	
BH8	2172163	Ammonia Water (A42)	20250723.A42L	
BH8	2172163	Anions Water (mg/L by IC) (A5)	20250722.A5F	
BH8	2172163	BOD (A3)	20250716.TM-TB.A3B	
BH8	2172163	COD (A4)	20250722.TM-TB.A4C	
BH8	2172163	Conductivity of Water (A12)	20250716.A12G	
BH8	2172163	DOC Water (A55.1)	20250718.A55.1F	
BH8	2172163	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
BH8	2172163	pH of Water (A2.0)	20250716.A2.0G	
BH8	2172163	Phenols 4AAP (T38)	20250722.TM-M.T38B	
BH8	2172163	TDS (A27)	20250717.TM-TB.A27E	
BH8	2172163	TKN Water Dig. (A58)	20250722.A58D	
BH8	2172163	TP Water (A23.2)	20250722.A23.2I	
BH8	2172163	TSS (A27)	20250717.TM-TB.A27.0D	
BH8	2172163	VOC Water (A127)	20250721.TM-G.A14w	
BH9	2172164	Alkalinity (A1.0)	20250716.A1.0G	
BH9	2172164	Ammonia Water (A42)	20250723.A42L	
BH9	2172164	Anions Water (mg/L by IC) (A5)	20250722.A5F	
BH9	2172164	BOD (A3)	20250716.TM-TB.A3B	
BH9	2172164	COD (A4)	20250722.TM-TB.A4C	
BH9	2172164	Conductivity of Water (A12)	20250716.A12G	
BH9	2172164	DOC Water (A55.1)	20250718.A55.1F	
BH9	2172164	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
BH9	2172164	pH of Water (A2.0)	20250716.A2.0G	
BH9	2172164	Phenols 4AAP (T38)	20250722.TM-M.T38B	
BH9	2172164	TDS (A27)	20250717.TM-TB.A27E	
BH9	2172164	TDS (A27)	20250718.TM-TB.A27B	
BH9	2172164	TKN Water Dig. (A58)	20250722.A58D	
BH9	2172164	TP Water (A23.2)	20250722.A23.2I	
BH9	2172164	TSS (A27)	20250717.TM-TB.A27.0D	

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BH9	2172164	VOC Water (A127)	20250721.TM-G.A14w	
Dup	2172165	Alkalinity (A1.0)	20250716.A1.0G	
Dup	2172165	Ammonia Water (A42)	20250723.A42L	
Dup	2172165	Anions Water (mg/L by IC) (A5)	20250722.A5G	
Dup	2172165	BOD (A3)	20250716.TM-TB.A3B	
Dup	2172165	COD (A4)	20250722.TM-TB.A4C	
Dup	2172165	Conductivity of Water (A12)	20250716.A12G	
Dup	2172165	DOC Water (A55.1)	20250718.A55.1F	
Dup	2172165	ICPMS Dis. Water (A13.3)	20250726.A13.3B	20250718.A52ZW
Dup	2172165	pH of Water (A2.0)	20250716.A2.0G	
Dup	2172165	Phenols 4AAP (T38)	20250722.TM-M.T38B	
Dup	2172165	TDS (A27)	20250717.TM-TB.A27E	
Dup	2172165	TDS (A27)	20250718.TM-TB.A27B	
Dup	2172165	TKN Water Dig. (A58)	20250722.A58D	
Dup	2172165	TP Water (A23.2)	20250722.A23.2I	
Dup	2172165	TSS (A27)	20250717.TM-TB.A27.0D	
Dup	2172165	VOC Water (A127)	20250721.TM-G.A14w	

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CERTIFICATE OF ANALYSIS

Client:	Paula Sdao	Work Order Number:	598678
Company:	North Rock Engineering	PO #:	
Address:	70 Secord Street	Regulation:	Other
	Thunder Bay, ON, P7B 3C9	Project #:	E25-015-04 CONMEE Groundwater
Phone:	(807) 633-9859	DWS #:	
Email:	psdao@nrock.ca	Sampled By:	RS/MG
Date Order Received:	9/29/2025	Analysis Started:	10/1/2025
Arrival Temperature:	12 C	Analysis Completed:	10/7/2025

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH5	2204868	Ground Water	Grab		9/29/2025	3:15 PM
BH6	2204869	Ground Water	Grab		9/29/2025	12:00 PM
BH7	2204870	Ground Water	Grab		9/29/2025	2:23 PM
BH8	2204871	Ground Water	Grab		9/29/2025	2:00 PM
BH9	2204872	Ground Water	Grab		9/29/2025	1:19 PM
GW Dup	2204873	Ground Water	Grab		9/29/2025	

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Alkalinity (A1.0)	Thunder Bay	Determination of Alkalinity by Titrimetry	Modified from APHA-2320B
Ammonia Water (A42)	Thunder Bay	Determination of Ammonia/Ammonium in Water	Modified from EPA 350.1
Anions Water (mg/L by IC) (A5)	Thunder Bay	Determination of Anions in Water by Ion Chromatography	Modified from SW846-9056A
BOD (A3)	Thunder Bay	Determination of Biochemical Oxygen Demand (BOD) 5-Day	Modified from SM-5210 B
COD (A4)	Thunder Bay	Determination of Chemical Oxygen Demand (COD)	Modified from APHA-5220D
Conductivity of Water (A12)	Thunder Bay	Determination of Conductivity in Water at 25°C	Modified from SM 2510 B

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Method	Lab	Description	Reference
DOC Water (A55.1)	Thunder Bay	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
DOC Water FF (A55.1)	Thunder Bay	Determination of Dissolved Organic Carbon in Water	Modified from SM-5310 C
ICPMS Dis. Water (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Lab-Filtered	Modified from SW846-6020A
ICPMS Dis. Water FF (A13.3)	Garson	Determination of Dissolved Metals in Water by ICP/MS -> Field-Filtered	Modified from SW846-6020A
pH of Water (A2.0)	Thunder Bay	Determination of Water pH by Ion Selective Electrode	Modified from APHA-4500H+ B
TDS (A27)	Thunder Bay	Determination of Total Dissolved Solids in water by gravimetry	Modified from SM-2540
TSS (A27)	Thunder Bay	Determination of Total Suspended Solids in water by gravimetry	Modified from SM-2540

REPORT COMMENTS

Other Regulation: O. Reg. 232 Landfill Sch 5, Col 2

This report has been approved by:

Adam Tam, M.Sc.
Laboratory Manager

WORK ORDER RESULTS

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	9/29/2025 3:15 PM		9/29/2025 12:00 PM		9/29/2025 2:23 PM		9/29/2025 2:00 PM		
Lab ID	2204868		2204869		2204870		2204871		
Anions	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	0.6	0.2	3.7	0.2	1.3	0.2	<0.2	0.2	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	13.4	0.5	1.7	0.5	20.2	0.5	0.5	0.5	mg/L

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Work Order Number: 598678

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
Anions	Result	MDL	Result	MDL	Units
Chloride	55.4	0.2	0.7	0.2	mg/L
Nitrite (as N)	<0.05	0.05	<0.05	0.05	mg/L
Sulphate	160.0	0.5	13.4	0.5	mg/L

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	9/29/2025 3:15 PM		9/29/2025 12:00 PM		9/29/2025 2:23 PM		9/29/2025 2:00 PM		
Lab ID	2204868		2204869		2204870		2204871		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	<0.01 [<0.01]	0.01	<0.01	0.01	<0.01	0.01	mg/L
Conductivity	365	1	422	1	473	1	360	1	µS/cm
Dissolved Organic Carbon	2.1	0.4	4.5	0.4	0.9	0.4	11.7	0.4	mg/L
M-Alkalinity (pH 4.5)	193	2	220	2	237	2	198	2	mg/L as CaCO3
pH	7.67	N/A	7.36	N/A	7.74	N/A	7.12	N/A	pH

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
General Chemistry	Result	MDL	Result	MDL	Units
Ammonia (as N)	<0.01	0.01	<0.01	0.01	mg/L
Conductivity	1420	1	371	1	µS/cm
Dissolved Organic Carbon	6.4	0.4	2.3	0.4	mg/L

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Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
General Chemistry	Result	MDL	Result	MDL	Units
M-Alkalinity (pH 4.5)	615	2	190	2	mg/L as CaCO3
pH	7.21	N/A	7.67	N/A	pH

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	9/29/2025 3:15 PM		9/29/2025 12:00 PM		9/29/2025 2:23 PM		9/29/2025 2:00 PM		
Lab ID	2204868		2204869		2204870		2204871		
Metals (Dissolved)	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Dissolved Barium	52	1	44	1	59	1	24	1	ug/L
Dissolved Boron	15	2	3	2	54	2	6	2	ug/L
Dissolved Calcium	39300	50	61600	500*	55300	500*	47700	500*	ug/L
Dissolved Iron	574	20	4520	200*	44	20	43	20	ug/L
Dissolved Magnesium	21600	4	13800	4	28100	4	15900	4	ug/L
Dissolved Sodium	8270	100	2950	100	4450	100	2150	100	ug/L

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Barium	105	1	51	1	ug/L
Dissolved Boron	36	2	15	2	ug/L
Dissolved Calcium	185000	500*	38800	50	ug/L
Dissolved Iron	368	20	426	20	ug/L

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North Rock Engineering

Work Order Number: 598678

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
Metals (Dissolved)	Result	MDL	Result	MDL	Units
Dissolved Magnesium	77900	40*	21100	4	ug/L
Dissolved Sodium	24800	100	8130	100	ug/L

Sample Description	BH5		BH6		BH7		BH8		
Sample Date	9/29/2025 3:15 PM		9/29/2025 12:00 PM		9/29/2025 2:23 PM		9/29/2025 2:00 PM		
Lab ID	2204868		2204869		2204870		2204871		
Oxygen Demand	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
BOD (5 day)	0.6	0.2	0.8	0.2	0.6 [0.6]	0.2	5.7	0.2	mg/L
Chemical Oxygen Demand	13	5	<5	5	<5	5	<5	5	mg/L

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
Oxygen Demand	Result	MDL	Result	MDL	Units
BOD (5 day)	1.0	0.2	0.5	0.2	mg/L
Chemical Oxygen Demand	<5	5	26	5	mg/L

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Sample Description	BH5		BH6		BH7		BH8		
Sample Date	9/29/2025 3:15 PM		9/29/2025 12:00 PM		9/29/2025 2:23 PM		9/29/2025 2:00 PM		
Lab ID	2204868		2204869		2204870		2204871		
Solids	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Units
Total Dissolved Solids	205 [195]	10	190	10	280	10	220	10	mg/L
Total Suspended Solids	2440 [2550]	4	356	4	374	2	2580	10	mg/L

Sample Description	BH9		GW Dup		
Sample Date	9/29/2025 1:19 PM		9/29/2025 12:00 AM		
Lab ID	2204872		2204873		
Solids	Result	MDL	Result	MDL	Units
Total Dissolved Solids	940	10	185	10	mg/L
Total Suspended Solids	54.5	1	3030	4	mg/L

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Quality Control: All associated Quality Control data is available on request.

LCL: Lower Control Limit.

UCL: Upper Control Limit.

QAQCID: This is a unique reference to the quality control data set used to generate the reported value. Contact our lab for this information, as it is traceable through our LIMS.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

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Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

*Dilution: In the MDL column an asterisk (*) indicates a sample dilution was performed.

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QUALITY CONTROL DATA

THIS SECTION REPORTS QC RESULTS ASSOCIATED WITH THE TEST BATCH; THESE ARE NOT YOUR SAMPLE RESULTS.
QAQC details include only values where sufficient sample data allowed measurement.

Anions

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	0.2	mg/L	0	<0.2	0.6	20251003.A5D
Chloride	0.2	mg/L	0	<0.2	0.6	20251003.A5E
Nitrite (as N)	0.05	mg/L	0	<0.05	0.15	20251003.A5D
Nitrite (as N)	0.05	mg/L	0	<0.05	0.15	20251003.A5E
Sulphate	0.5	mg/L	0	<0.5	1.5	20251003.A5D
Sulphate	0.5	mg/L	0	<0.5	1.5	20251003.A5E

Positive Control: LFB-5 (20/10/1 mg/L) (5)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	80	92	120	20251003.A5D
Chloride	N/A	% Rec	80	92.5	120	20251003.A5E
Nitrite (as N)	N/A	% Rec	80	83.5	120	20251003.A5D
Nitrite (as N)	N/A	% Rec	80	86	120	20251003.A5E
Sulphate	N/A	% Rec	80	94.7	120	20251003.A5D
Sulphate	N/A	% Rec	80	95.8	120	20251003.A5E

Positive Control: LFB-7 (100/50 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	80	95.1	120	20251003.A5E
Chloride	N/A	% Rec	80	95.4	120	20251003.A5D
Nitrite (as N)	N/A	% Rec	80	91.8	120	20251003.A5E
Nitrite (as N)	N/A	% Rec	80	92.3	120	20251003.A5D
Sulphate	N/A	% Rec	80	95.4	120	20251003.A5D
Sulphate	N/A	% Rec	80	96	120	20251003.A5E

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Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	%	0	0	20	20251003.A5E

Sample Spike: LFS-R (Spiked Sample) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chloride	N/A	% Rec	75	92	125	20251003.A5D
Chloride	N/A	% Rec	75	98.6	125	20251003.A5E
Nitrite (as N)	N/A	% Rec	75	93.2	125	20251003.A5E
Nitrite (as N)	N/A	% Rec	75	94	125	20251003.A5D
Sulphate	N/A	% Rec	75	95.1	125	20251003.A5D
Sulphate	N/A	% Rec	75	97.3	125	20251003.A5E

General Chemistry

Blank: LRB-6 (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	0.01	mg/L	0	<0.01	0.03	20251006.A42B

Method Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	1	µS/cm	0	3.3	5	20251001.A12C
Dissolved Organic Carbon	0.4	mg/L	0	<0.4	1.2	20251007.A55.1E
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	0	5.35	6	20251001.A1.0C

Positive Control: LFB-4 (100 mg/L CaCO3) (4)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
M-Alkalinity (pH 4.5)	2	mg/L as CaCO3	80	107	120	20251001.A1.0C

Positive Control: LFB-5 (500 µS/cm) (5)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	1	µS/cm	475	510	525	20251001.A12C

Positive Control: LFB-7 (0.25 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	0.01	mg/L	0.2	0.223	0.3	20251006.A42B

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Positive Control: LFB-7 (15 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Organic Carbon	0.4	mg/L	12.5	14.8	17.5	20251007.A55.1E

Positive Control: pH 8.0 (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
pH	N/A	pH	7.8	7.98	8.2	20251001.A2.0C

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Organic Carbon	N/A	%	0	0	15	20251007.A55.1E

Sample Replicate: % RPD (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Conductivity	N/A	%	0	0.2	20	20251001.A12C
M-Alkalinity (pH 4.5)	N/A	%	0	0.6	20	20251001.A1.0C
pH	N/A	% Rec	0	0.08	0.2	20251001.A2.0C

Sample Spike: LFMS-9 (10 mg/L) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Organic Carbon	N/A	% Rec	80	106	120	20251007.A55.1E

Sample Spike: LFS-9 (Sample Spike) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Ammonia (as N)	N/A	% Rec	80	88.6	120	20251006.A42B

Metals (Dissolved)

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	1	ug/L	0	<1	1	20251006.A13.3C
Dissolved Boron	2	ug/L	0	<2	5	20251006.A13.3C
Dissolved Calcium	50	ug/L	0	<50	50	20251006.A13.3C
Dissolved Iron	20	ug/L	0	<20	20	20251006.A13.3C
Dissolved Magnesium	4	ug/L	0	<4	4	20251006.A13.3C
Dissolved Sodium	100	ug/L	0	<100	300	20251006.A13.3C

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Positive Control: LFB-7 (N 100 µg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	N/A	%	80	95.7	120	20251006.A13.3C
Dissolved Boron	N/A	%	80	83.7	120	20251006.A13.3C
Dissolved Calcium	N/A	%	80	99.7	120	20251006.A13.3C
Dissolved Iron	N/A	%	80	101	120	20251006.A13.3C
Dissolved Magnesium	N/A	%	80	102	120	20251006.A13.3C
Dissolved Sodium	N/A	%	80	101	120	20251006.A13.3C

Reference Sample: CRM-12 EP-L-3 (µg/L) (12)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	1	ug/L	6.4	7.72	9.7	20251006.A13.3C
Dissolved Boron	2	ug/L	76	83	113	20251006.A13.3C
Dissolved Calcium	50	ug/L	273	558	664	20251006.A13.3C
Dissolved Magnesium	4	ug/L	41	49.1	71	20251006.A13.3C
Dissolved Sodium	100	ug/L	145	294	345	20251006.A13.3C

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	N/A	%	0	1.9	20	20251006.A13.3C
Dissolved Calcium	N/A	%	0	0.6	20	20251006.A13.3C
Dissolved Magnesium	N/A	%	0	1.5	20	20251006.A13.3C
Dissolved Sodium	N/A	%	0	2	20	20251006.A13.3C

Sample Spike: LFSM-9 (N 100 µg/L) (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Dissolved Barium	N/A	% Rec	70	102	130	20251006.A13.3C
Dissolved Iron	N/A	% Rec	70	86.4	130	20251006.A13.3C

Oxygen Demand

Blank: Blank (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	5	mg/L	0	<5	15	20251001.TM-TB.A4B

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Blank: BOD Method Blank (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	N/A	mg/L	0	-0.1	0.2	20251001.TM-TB.A3B

Positive Control: Lab Control Sample (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	100	mg/L	167.5	179	228.5	20251001.TM-TB.A3B

Positive Control: Lab Control Sample 100 (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	N/A	mg/L	85	101	115	20251001.TM-TB.A4B

Sample Replicate: % RPD (8)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
BOD (5 day)	N/A	%	0	0	30	20251001.TM-TB.A3B

Sample Spike: Matrix Spike (9)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Chemical Oxygen Demand	N/A	% Rec	70	75.8	130	20251001.TM-TB.A4B

Solids

Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Suspended Solids	0.67	mg/L	0	<0.67	10	20251003.TM-TB.A27A

Method Blank: LRB-6 (Blank) (6)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	10	mg/L	0	25	50	20251003.TM-TB.A27B

Positive Control: LFB-7 (250 mg/L) (7)

Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	10	mg/L	225	275	275	20251003.TM-TB.A27B
Total Suspended Solids	2	mg/L	212.5	238	287.5	20251003.TM-TB.A27A

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Sample Replicate: % RPD (8)						
Parameter	MDL	Units	LCL	Result	UCL	QAQCID
Total Dissolved Solids	N/A	%	0	5	20	20251003.TM-TB.A27B
Total Suspended Solids	N/A	%	0	4.4	20	20251003.TM-TB.A27A

THIS INDEX SHOWS HOW YOUR SAMPLES ARE ASSOCIATED TO THE CONTROLS INCLUDED IN THE IDENTIFIED BATCHES.

Sample Description	Lab ID	Method	QAQCID	Prep QAQCID
BH5	2204868	Alkalinity (A1.0)	20251001.A1.0C	
BH5	2204868	Ammonia Water (A42)	20251006.A42B	
BH5	2204868	Anions Water (mg/L by IC) (A5)	20251003.A5D	
BH5	2204868	BOD (A3)	20251001.TM-TB.A3B	
BH5	2204868	COD (A4)	20251001.TM-TB.A4B	
BH5	2204868	Conductivity of Water (A12)	20251001.A12C	
BH5	2204868	DOC Water (A55.1)	20251007.A55.1E	
BH5	2204868	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
BH5	2204868	pH of Water (A2.0)	20251001.A2.0C	
BH5	2204868	TDS (A27)	20251003.TM-TB.A27B	
BH5	2204868	TSS (A27)	20251003.TM-TB.A27A	
BH5	2204868r	TDS (A27)	20251003.TM-TB.A27B	
BH5	2204868r	TSS (A27)	20251003.TM-TB.A27A	
BH6	2204869	Alkalinity (A1.0)	20251001.A1.0C	
BH6	2204869	Ammonia Water (A42)	20251006.A42B	
BH6	2204869	Anions Water (mg/L by IC) (A5)	20251003.A5D	
BH6	2204869	BOD (A3)	20251001.TM-TB.A3B	
BH6	2204869	COD (A4)	20251001.TM-TB.A4B	
BH6	2204869	Conductivity of Water (A12)	20251001.A12C	
BH6	2204869	DOC Water (A55.1)	20251007.A55.1E	
BH6	2204869	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
BH6	2204869	pH of Water (A2.0)	20251001.A2.0C	
BH6	2204869	TDS (A27)	20251003.TM-TB.A27B	
BH6	2204869	TSS (A27)	20251003.TM-TB.A27A	

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BH6	2204869r	Ammonia Water (A42)	20251006.A42B	
BH7	2204870	Alkalinity (A1.0)	20251001.A1.0C	
BH7	2204870	Ammonia Water (A42)	20251006.A42B	
BH7	2204870	Anions Water (mg/L by IC) (A5)	20251003.A5D	
BH7	2204870	BOD (A3)	20251001.TM-TB.A3B	
BH7	2204870	COD (A4)	20251001.TM-TB.A4B	
BH7	2204870	Conductivity of Water (A12)	20251001.A12C	
BH7	2204870	DOC Water (A55.1)	20251007.A55.1E	
BH7	2204870	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
BH7	2204870	pH of Water (A2.0)	20251001.A2.0C	
BH7	2204870	TDS (A27)	20251003.TM-TB.A27B	
BH7	2204870	TSS (A27)	20251003.TM-TB.A27A	
BH7	2204870r	BOD (A3)	20251001.TM-TB.A3B	
BH8	2204871	Alkalinity (A1.0)	20251001.A1.0C	
BH8	2204871	Ammonia Water (A42)	20251006.A42B	
BH8	2204871	Anions Water (mg/L by IC) (A5)	20251003.A5D	
BH8	2204871	BOD (A3)	20251001.TM-TB.A3B	
BH8	2204871	COD (A4)	20251001.TM-TB.A4B	
BH8	2204871	Conductivity of Water (A12)	20251001.A12C	
BH8	2204871	DOC Water (A55.1)	20251007.A55.1E	
BH8	2204871	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
BH8	2204871	pH of Water (A2.0)	20251001.A2.0C	
BH8	2204871	TDS (A27)	20251003.TM-TB.A27B	
BH8	2204871	TSS (A27)	20251003.TM-TB.A27A	
BH9	2204872	Alkalinity (A1.0)	20251001.A1.0C	
BH9	2204872	Ammonia Water (A42)	20251006.A42B	
BH9	2204872	Anions Water (mg/L by IC) (A5)	20251003.A5E	
BH9	2204872	BOD (A3)	20251001.TM-TB.A3B	
BH9	2204872	COD (A4)	20251001.TM-TB.A4B	
BH9	2204872	Conductivity of Water (A12)	20251001.A12C	
BH9	2204872	DOC Water (A55.1)	20251007.A55.1E	

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BH9	2204872	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
BH9	2204872	pH of Water (A2.0)	20251001.A2.0C	
BH9	2204872	TDS (A27)	20251003.TM-TB.A27B	
BH9	2204872	TSS (A27)	20251003.TM-TB.A27A	
GW Dup	2204873	Alkalinity (A1.0)	20251001.A1.0C	
GW Dup	2204873	Ammonia Water (A42)	20251006.A42B	
GW Dup	2204873	Anions Water (mg/L by IC) (A5)	20251003.A5E	
GW Dup	2204873	BOD (A3)	20251001.TM-TB.A3B	
GW Dup	2204873	COD (A4)	20251001.TM-TB.A4B	
GW Dup	2204873	Conductivity of Water (A12)	20251001.A12C	
GW Dup	2204873	DOC Water (A55.1)	20251007.A55.1E	
GW Dup	2204873	ICPMS Dis. Water (A13.3)	20251006.A13.3C	20251003.A52D
GW Dup	2204873	pH of Water (A2.0)	20251001.A2.0C	
GW Dup	2204873	TDS (A27)	20251003.TM-TB.A27B	
GW Dup	2204873	TSS (A27)	20251003.TM-TB.A27A	

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APPENDIX F

Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH5	BH5	BH5	BH5	BH5	BH5	BH5	BH5	BH6	BH6	BH6	BH6	BH6	BH6	BH6
					11-May-23	11-Sep-23	04-Jun-24	02-Aug-24	02-Oct-24	26-May-2025	15-Jul-2025	29-Sep-2025	26-Jun-2017	04-May-18	12-Jul-18	18-Sep-18	11-Jun-19	11-Sep-19	12-Nov-19
Field Testing Results																			
pH	units	6.5-8.5	-	-	7.38	7.65	8.46	7.6	7.49	7.71	7.93	7.71	-	-	7.21	6.84	7.14	7.95	7.38
Temperature	C	-	-	-	12	8	9.5	12.3	9.7	6.4	7.9	10.2	-	-	13.5	8.2	9.4	8.6	5.3
Specific Conductance 25°C	uS/cm	-	-	-	297	347	336	350	383	374	299	352	-	-	476	500	442	616	436
General Chemistry																			
pH	units	6.5-8.5	-	-	8.09	8.03	8.27	8.36	7.87	8.13	7.9	7.67	7.8	7.77	7.77	7.61	7.84	7.47	7.67
Specific Conductance 25°C	uS/cm	-	-	-	286	318	347	332	308	365	295	365	461	386	464	496	436	523	414
Total Dissolved Solids	mg/L	500	348	-	220	200	222	196	208	252	190	205	325	340	325	308	265	456	229
Total Suspended Solids	mg/L	-	-	-	1910	1600	1000	182	1260	5590	924	2440	397	540	427	452	1240	2910	2920
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	0.2	-	-	<2	-	-	-	1	-	2.36	-	-
Dissolved Organic Carbon	mg/L	5	4.33	-	2.8	3.3	2.7	3.2	3.5	2.9	3	2.1	1.2	7.7	2.3	5.1	2.9	1.6	3.1
Biological Oxygen Demand	mg/L	-	-	-	5	2.2	<3.0	<2.0	<5.0	<6.0	0.5	0.6	2	2	2	2	2	2.8	2
Chemical Oxygen Demand	mg/L	-	-	-	43	20	52	<10	40	74	26	13	10	43	37	39	63	152	155
Phenols (4AAP)	mg/L	-	-	-	-	-	-	0.0015	-	-	0.0037	-	-	-	0.001	-	0.004	-	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	181	193	195	189	261	201	162	193	287	225	257	269	217	358	225
Ammonia (as N)	mg/L	-	-	-	0.0206	0.005	0.0082	<0.0050	<0.0500	0.0392	<0.01	<0.01	0.114	0.062	0.024	0.02	0.096	0.059	0.126
Chloride	mg/L	250	128.09	125	1	2	2	1	1.12	1.6	0.5	0.6	7	3.97	6.49	5.98	7.21	7.20	6.15
Sulphate	mg/L	500	251	-	6	8	13	9	0.056	36	0.16	13.4	5	6.02	5.37	5.72	3.06	4.81	3.38
Nitrate (as N)	mg/L	10	2.52	-	0.49	0.07	0.17	0.07	9.54	0.14	<0.05	-	0.27	0.0400	0.1790	0.1270	0.1580	0.0200	0.0200
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	<0.010	-	-	11.9	<0.05	-	-	0.0100	-	0.0100	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	0.04	-	-	0.026	-	-	-	0.2920	-	1.2600	-	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	-	-	0.0006	-	-	<0.001	-	-	-	0.0003	-	0.0003	-	-
Barium (Ba)	mg/L	1	0.27	-	0.04	0.03	0.05	0.04	0.0379	0.0621	0.035	0.052	0.04	0.0301	0.0371	0.0443	0.0344	0.0456	0.0398
Boron (B)	mg/L	5	1.26	-	0.01	0.01	0.01	0.01	0.01	0.013	0.010	0.015	0.01	0.01	0.014	0.017	0.015	0.013	0.01
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	0.0000	-	-	<0.00002	-	-	-	0.000078	-	0.0000382	-	-
Calcium (Ca)	mg/L	-	-	-	32.5	33.8	38.3	44.7	44	34.8	36.200	39.3	61.1	54.50	63.90	70.50	62.50	67.50	52.40
Chromium (Cr)	mg/L	0.05	0.0129	-	-	-	-	<0.00050	-	-	<0.001	-	-	-	0.00521	-	0.00406	-	-
Copper (Cu)	mg/L	1	0.50	-	-	-	-	0.00	-	-	0.002	-	-	-	0.00055	-	0.00239	-	-
Iron (Fe)	mg/L	0.3	0.24	-	0.01	0.01	0.09	<0.010	<0.010	0.036	<0.020	0.5740	0.26	0.01	0.01	0.01	0.01	0.01	0.01
Lead (Pb)	mg/L	0.01	0.0025	-	-	-	-	<0.000050	-	-	<0.0001	-	-	-	0.00005	-	0.00005	-	-
Magnesium (Mg)	mg/L	-	-	-	14.5	15.4	19.7	17.0	13.9	20.7	13.000	21.6	21.3	17.0	21.8	23.3	20.1	20	18.1
Manganese (Mn)	mg/L	0.05	*	-	-	-	-	0.0027	-	-	0.049	-	-	-	0.00044	-	0.00043	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	<0.0000050	-	-	<0.0001	-	-	-	0.000005	-	0.000005	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	1.3600	-	-	1.260	-	-	-	1.4	-	1.16	-	-
Sodium (Na)	mg/L	200	101.5	103	6	8	10	6	3.76	7.71	4.010	8.27	4	4.39	3.68	3.93	3.83	3.64	3.86
Zinc (Zn)	mg/L	5	-	-	-	-	-	0.00	-	-	0.001	-	-	-	0.0012	-	0.0042	-	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	<0.0001	-	-	-	0.00	-	0.0005	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	-	-	<0.0005	-	-	<0.0003	-	-	-	0.00	-	0.0005	-	-
Dichloromethane	mg/L	0.05	0.02	-	-	-	-	<0.001	-	-	<0.001	-	-	-	0.01	-	0.005	-	-
Toluene	mg/L	0.06	0.030	-	-	-	-	<0.0005	-	-	<0.0003	-	-	-	0.00	-	0.0005	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	<0.0001	-	-	-	0.00	-	0.0005	-	-
Ion Balance																			
Total Anions	meq/L	-	-	-	-	4.07	4.23	4.00	-	0.0	4.1	4.2	-	4.7	5.4	7.7	4.6	7.5	4.7
Total Cations	meq/L	-	-	-	-	3.31	3.98	3.93	-	0.0	3.1	4.1	-	4.3	5.2	5.6	5.0	5.2	4.3
Percent Difference	%	-	-	-	-	-10.32	-3.07	-0.83	-	100.0	-14.2	-0.4	-	-4.69	-2.50	-15.57	3.74	-18.08	-5.13

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown in bold and underlined
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown in bold and highlighted
Trigger exceedances shown bold and italic

Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6	BH6
					14-May-20	23-Jul-20	03-Nov-20	20-May-21	22-Jul-21	22-Sep-21	19-May-22	14-Jul-22	27-Sep-22	11-May-23	10-Jul-23	11-Sep-23	04-Jun-24	02-Aug-24	02-Oct-24
Field Testing Results																			
pH	units	6.5-8.5	-	-	7.55	7.59	8.13	8.26	8.12	7.45	7.37	7.62	7.41	7.48	8.88	7.47	8.38	7.21	7.08
Temperature	C	-	-	-	4	13.5	8.8	12.7	10.7	11.5	7.3	13.6	9.4	12.7	10.3	9.1	9.6	13.3	11.8
Specific Conductance 25°C	uS/cm	-	-	-	264	425	422	259	377	409	242	463	574	151	280	566	300	408	484
General Chemistry																			
pH	units	6.5-8.5	-	-	8.13	7.68	7.60	7.95	7.72	7.02	7.91	8.21	7.55	7.07	7.47	7.48	8.09	8.13	7.7
Specific Conductance 25°C	uS/cm	-	-	-	253	413	437	269	346	453	190	330	472	83.6	279	511	321	372	396
Total Dissolved Solids	mg/L	500	348	-	150	226	263	156	242	261	134	233	280	76	162	286	197	215	238
Total Suspended Solids	mg/L	-	-	-	189	247	1890	305	378	741	157	527	399	122	156	178	1070	645	158
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.65	-	-	0.632	-	-	1.06	-	-	1.08	-	-	0.839	-
Dissolved Organic Carbon	mg/L	5	4.33	-	4.4	9.2	3.0	4.5	3.7	4.8	4.41	4.29	3.48	3.56	3.09	4.35	3.3	3.8	3.29
Biological Oxygen Demand	mg/L	-	-	-	2	2	5.6	2.5	2	-	-	2.5	<2.5	3	3.7	2	<3.8	4.1	2.3
Chemical Oxygen Demand	mg/L	-	-	-	20	101	47	50	61	13	29	14	99	34	65	33	134	20	36
Phenols (4AAP)	mg/L	-	-	-	-	0.001	-	-	0.01	-	-	<0.0010	-	-	0.001	-	-	<0.0010	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	131	226	230	133	181	229	96.9	255	244	37.6	167	277	182	216	343
Ammonia (as N)	mg/L	-	-	-	0.016	0.021	0.05	0.0058	0.0353	0.0076	0.005	<0.050	0.0152	0.0063	0.011	0.008	0.0058	0.0122	<0.0500
Chloride	mg/L	250	128.09	125	5.90	6.99	6.92	10.5	10.8	10.3	4.32	10.6	6.67	4.16	4.14	6.56	6.32	5.38	6.37
Sulphate	mg/L	500	251	-	1.54	3.17	3.45	0.93	1.99	2.12	0.77	2.81	12.8	0.67	1.33	1.98	1.50	0.98	<0.020
Nitrate (as N)	mg/L	10	2.52	-	0.0240	0.0200	0.0450	0.023	0.0200	0.0200	0.02	<0.020	<0.020	0.02	0.02	0.02	<0.020	<0.020	2.46
Nitrite (as N)	mg/L	1	0.26	-	-	0.0100	-	-	0.0100	-	-	<0.010	-	-	0.0100	-	-	<0.010	-
Phosphorus (P)	mg/L	-	-	-	-	0.2200	-	-	0.6200	-	-	0.4600	-	-	0.2790	-	-	0.1910	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	0.00021	-	-	0.00018	-	-	0.00118	0.00342	-	0.00053	-	-	0.00137	-
Barium (Ba)	mg/L	1	0.27	-	0.0201	0.0347	0.0372	0.0258	0.0248	0.0345	0.0175	0.0215	0.0561	0.00987	0.017	0.0569	0.0271	0.0260	0.0235
Boron (B)	mg/L	5	1.26	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.010	<0.010	0.01	0.01	0.01	<0.010	<0.010	<0.010
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	0.0000173	-	-	0.0000089	-	-	0.0000241	0.0000247	-	0.0000073	-	-	0.0000162	-
Calcium (Ca)	mg/L	-	-	-	38.40	52.30	55.10	37.5	47.4	56.8	23.8	44.1	62.4	10.1	37.5	69.9	44.00	58.80	60.1
Chromium (Cr)	mg/L	0.05	0.0129	-	-	0.00192	-	-	0.00173	-	-	<0.00010	<0.00050	-	0.0005	-	-	<0.00050	-
Copper (Cu)	mg/L	1	0.50	-	-	0.0032	-	-	0.00127	-	-	0.00144	0.00032	-	0.00106	-	-	0.00103	-
Iron (Fe)	mg/L	0.3	0.24	-	0.01	0.01	0.01	0.059	0.01	0.266	0.119	0.317	6.94	0.187	0.249	13.1	0.016	1.48	0.022
Lead (Pb)	mg/L	0.01	0.0025	-	-	0.000082	-	-	0.00005	-	-	<0.000050	<0.000050	-	0.00005	-	-	0.000063	-
Magnesium (Mg)	mg/L	-	-	-	10.9	14.7	16.8	9.84	11.1	13.7	7.82	9.28	17	3.19	8.89	17.2	14.3	12.9	12.7
Manganese (Mn)	mg/L	0.05	*	-	-	0.00707	-	-	0.00141	-	-	0.593	2.73	-	0.111	-	-	0.176	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	0.000005	-	-	0.000005	-	-	<0.0000050	-	-	0.000005	-	-	0.0000055	-
Potassium (K)	mg/L	-	-	-	-	0.721	-	-	0.272	-	-	0.687	2.13	-	0.229	-	-	0.219	-
Sodium (Na)	mg/L	200	101.5	103	3.04	3.26	3.36	3.25	3.31	3.37	2.93	2.7	3.24	2.04	2.44	3.28	3.63	3.1	2.64
Zinc (Zn)	mg/L	5	-	-	-	0.0016	-	-	0.001	-	-	<0.0010	<0.0010	-	0.001	-	-	0.0011	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.00	-	-	<0.0005	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.00	-	-	<0.0005	-
Dichloromethane	mg/L	0.05	0.02	-	-	0.005	-	-	0.005	-	-	<0.005	-	-	0.01	-	-	<0.001	-
Toluene	mg/L	0.06	0.030	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.0005	-	-	<0.0005	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.0005	-	-	<0.0005	-
Ion Balance																			
Total Anions	meq/L	-	-	-	2.8	4.8	4.9	3.0	4.0	4.9	2.1	5.5	5.3	-	3.5	5.8	3.8	4.5	-
Total Cations	meq/L	-	-	-	2.9	4.0	4.3	2.8	3.4	4.1	2.0	3.1	5.1	-	2.7	5.5	3.5	4.1	-
Percent Difference	%	-	-	-	2.21	-9.13	-6.42	-2.63	-7.21	-8.91	-2.90	-27.22	-2.64	-	-12.17	-2.20	-4.29	-4.02	-

Notes:
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Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH6	BH6	BH6	BH6 Duplicate	BH6 Duplicate	BH6 Duplicate	BH6 Duplicate	BH7	BH7	BH7	BH7	BH7	BH7	BH7	BH7
					26-May-2025	15-Jul-2025	29-Sep-2025	18-Sep-18	11-Jun-19	02-Aug-24	02-Oct-24	11-May-23	11-Sep-23	04-Jun-24	02-Aug-24	02-Oct-24	26-May-2025	15-Jul-2025	29-Sep-2025
Field Testing Results																			
pH	units	6.5-8.5	-	-	7.60	7.26	7.02	-	-	-	-	7.19	7.66	8.35	7.43	7.35	7.70	7.73	7.67
Temperature	C	-	-	-	9.5	8.4	11.1	-	-	-	-	11	11	11.3	14.7	12.6	9.5	10.9	12.6
Specific Conductance 25°C	uS/cm	-	-	-	222	314	427	-	-	-	-	428	462	392	477	463	484	439	458
General Chemistry																			
pH	units	6.5-8.5	-	-	7.81	7.07	7.36	7.53	7.86	7.93	7.94	7.90	8.03	8.31	8.32	8.07	8.29	7.61	7.74
Specific Conductance 25°C	uS/cm	-	-	-	201	304	422	494	400	380	298	419	444	412	449	408	430	437	473
Total Dissolved Solids	mg/L	500	348	-	140	195	190	330	257	226	212	229	275	248	250	266	281	290	280
Total Suspended Solids	mg/L	-	-	-	466	273	356	970	904	326	159	672	921	276	617	1520	1850	520	374
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	<0.2	-	-	1.51	1.56	-	-	-	-	0.335	-	-	<0.2	-
Dissolved Organic Carbon	mg/L	5	4.33	-	3.77	3.3	4.50	3.0	2.7	3.8	6.2	2.2	1.5	1.3	1.8	1.61	1.08	1.1	0.90
Biological Oxygen Demand	mg/L	-	-	-	<3.8	1.5	0.8	2	2	<3.8	<3.0	15.1	2	<3.0	<3.0	<5.0	<5.0	0.3	0.6
Chemical Oxygen Demand	mg/L	-	-	-	23	30	<5	40	42	52	32	179	41	27	<10	97	12	13	<5
Phenols (4AAP)	mg/L	-	-	-	-	0.0031	-	-	0.0075	<0.0010	-	-	-	-	0.0012	-	-	0.0035	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	105	162	220	271	204	261	131	267	240	220	251	331	240	221	237
Ammonia (as N)	mg/L	-	-	-	0.076	<0.01	<0.01	0.02	0.054	0.0095	0.0137	0.142	0.0345	0.0231	0.0156	<0.0500	0.0174	<0.01	<0.01
Chloride	mg/L	250	128.09	125	6.04	5.1	3.70	6.06	6.40	5.36	7.83	1.43	1.26	1.33	1.49	1.58	2.06	1.6	1.30
Sulphate	mg/L	500	251	-	0.53	<0.05	1.70	5.86	2.71	1.00	22.20	23.50	25.00	20.30	23.50	<0.020	27.1	0.13	20.2
Nitrate (as N)	mg/L	10	2.52	-	<0.020	<0.05	-	0.16	0.14	<0.020	0.04	0.020	0.023	0.122	0.022	28.9	0.037	<0.05	-
Nitrite (as N)	mg/L	1	0.26	-	-	<0.5	<0.05	-	0.0100	<0.010	-	-	-	-	<0.010	-	-	26.9	<0.05
Phosphorus (P)	mg/L	-	-	-	-	0.225	-	-	0.7330	0.5880	-	-	-	-	0.2340	-	-	<0.002	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	<0.001	-	-	0.00024	0.00142	-	-	-	-	0.00087	-	-	<0.001	-
Barium (Ba)	mg/L	1	0.27	-	0.0165	0.024	0.044	0.0440	0.0356	0.0267	0.0188	0.0511	0.0442	0.0506	0.0511	0.0504	0.0447	0.042	0.059
Boron (B)	mg/L	5	1.26	-	<0.010	0.002	<0.003	0.017	0.014	<0.010	<0.010	0.032	0.045	0.032	0.052	0.054	0.036	0.050	0.054
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	<0.00002	-	-	0.0000376	0.0000123	-	-	-	-	0.0000162	-	-	0.001	-
Calcium (Ca)	mg/L	-	-	-	25	44.000	61.6	69.80	60.70	60.90	28.50	49.3	51.4	43.4	54.2	54.4	47.1	52.400	55.3
Chromium (Cr)	mg/L	0.05	0.0129	-	-	<0.001	-	-	0.0039	<0.00050	-	-	-	-	<0.00050	-	-	<0.001	-
Copper (Cu)	mg/L	1	0.50	-	-	0.002	-	-	0.00087	0.00076	-	-	-	-	0.00086	-	-	<0.001	-
Iron (Fe)	mg/L	0.3	0.24	-	<0.010	0.517	4.52	0.01	0.01	1.42	0.067	2.62	0.137	0.017	0.014	0.016	<0.010	<0.020	0.044
Lead (Pb)	mg/L	0.01	0.0025	-	-	<0.0001	-	-	0.00005	<0.000050	-	-	-	-	<0.000050	-	-	<0.0001	-
Magnesium (Mg)	mg/L	-	-	-	7.76	10.600	13.8	22.8	19	13	11.9	22.7	22.7	28	27.7	25.5	24.3	21.200	28.1
Manganese (Mn)	mg/L	0.05	*	-	-	0.272	-	-	0.00205	0.31	-	-	-	-	0.325	-	-	0.024	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	<0.0001	-	-	0.000005	<0.0000050	-	-	-	-	<0.0000050	-	-	<0.0001	-
Potassium (K)	mg/L	-	-	-	-	0.350	-	-	1.12	0.236	-	-	-	-	2.89	-	-	2.340	-
Sodium (Na)	mg/L	200	101.5	103	2.72	2.710	2.95	3.77	3.7	3.1	3.37	5.3	5.13	3.95	4.8	4.56	4.46	4.890	4.45
Zinc (Zn)	mg/L	5	-	-	-	0.003	-	-	0.001	<0.0010	-	-	-	-	0.001	-	-	0.002	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	<0.0001	-	-	0.0005	<0.0005	-	-	-	-	<0.0005	-	-	<0.0001	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	<0.0003	-	-	0.0005	<0.0005	-	-	-	-	<0.0005	-	-	<0.0003	-
Dichloromethane	mg/L	0.05	0.02	-	-	<0.001	-	-	0.005	<0.001	-	-	-	-	<0.001	-	-	<0.001	-
Toluene	mg/L	0.06	0.030	-	-	<0.0003	-	-	0.0005	<0.0005	-	-	-	-	<0.0005	-	-	<0.0003	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	<0.0001	-	-	0.0005	<0.0005	-	-	-	-	<0.0005	-	-	<0.0001	-
Ion Balance																			
Total Anions	meq/L	-	-	-	0.0	3.4	4.5	9.7	4.3	-	-	-	5.4	4.9	5.6	-	0.0	6.4	5.2
Total Cations	meq/L	-	-	-	0.0	3.2	4.5	5.5	4.8	-	-	-	4.7	4.6	5.3	-	0.0	4.6	5.3
Percent Difference	%	-	-	-	100.0	-2.7	-0.4	-27.54	5.06	-	-	-	-6.91	-2.34	-2.49	-	100.0	-15.9	0.7

Notes:
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ODWS exceedances shown in bold and underlined
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown in bold and highlighted
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Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH8	BH8	BH8	BH8	BH8	BH8	BH8	BH8	BH9	BH9	BH9	BH9	BH9	BH9	BH9
					11-May-23	11-Sep-23	04-Jun-24	02-Aug-24	02-Oct-24	26-May-2025	15-Jul-2025	29-Sep-2025	26-Jun-17	04-May-18	12-Jul-18	18-Sep-18	11-Jun-19	11-Sep-19	12-Nov-19
Field Testing Results									Dry										
pH	units	6.5-8.5	-	-	8.04	-	7.71	6.66	-	6.35	6.95	7.21	-	7.37	7.14	6.73	7.18	7.39	7.44
Temperature	C	-	-	-	11.1	-	11.8	15.8	-	7.9	11.3	14.5	-	10.3	16	10.2	9.1	8.5	4
Specific Conductance 25°C	uS/cm	-	-	-	171	-	120	325	-	108	161	368	-	654	1521	1595	445	1930	1331
General Chemistry																			
pH	units	6.5-8.5	-	-	7.12	-	7.65	7.70	-	7.57	6.76	7.12	7.45	7.30	7.47	7.51	7.46	7.30	7.25
Specific Conductance 25°C	uS/cm	-	-	-	98	-	122	222	-	117	173	360	597	596	1490	1700	439	1950	1610
Total Dissolved Solids	mg/L	500	348	-	118	-	107	132	-	119	140	220	809	152	982	1110	275	1270	1230
Total Suspended Solids	mg/L	-	-	-	153	-	79	2790	-	12.8	77.5	2580	300	102	48	37	193	769	106
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	9.07	-	-	0.3	-	-	-	0.49	-	0.50	-	-
Dissolved Organic Carbon	mg/L	5	4.33	-	3.6	-	4.6	6.2	-	4	4.9	11.7	5.9	10.7	8.56	11.60	6.95	10.50	14.30
Biological Oxygen Demand	mg/L	-	-	-	3	-	<3.0	8.3	-	<2.0	0.6	5.7	-	2	2.0	2.0	2.0	2.0	2.0
Chemical Oxygen Demand	mg/L	-	-	-	60	-	36	64	-	28	22	<5	-	36	23	34	37	44	38
Phenols (4AAP)	mg/L	-	-	-	-	-	-	0.0058	-	-	0.0033	-	-	-	0.001	-	0.0046	-	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	38	-	66	118	-	61	91	198	256	269	608	645	161	716	651
Ammonia (as N)	mg/L	-	-	-	0.0323	-	<0.0050	0.183	-	<0.0050	<0.01	<0.01	0.207	0.049	0.02	0.032	0.015	0.02	0.022
Chloride	mg/L	250	128.09	125	7.17	-	<0.50	<0.50	-	0.6	0.3	<0.2	27.80	26.2	70.20	87.50	14.00	89.70	79.50
Sulphate	mg/L	500	251	-	1.42	-	1.03	1.31	-	0.85	<0.05	0.5	51.70	60.3	169.0	213.0	40.5	315.0	250.0
Nitrate (as N)	mg/L	10	2.52	-	0.021	-	0.026	<0.020	-	<0.020	<0.05	-	0.179	0.553	0.271	0.040	0.391	1.280	0.361
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	<0.010	-	-	0.9	<0.05	-	-	0.010	-	0.010	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	0.4880	-	-	0.004	-	-	-	0.058	-	0.252	-	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	-	-	0.00058	-	-	<0.001	-	-	-	0.0003	-	0.0003	-	-
Barium (Ba)	mg/L	1	0.27	-	0.0079	-	0.0125	0.0334	-	0.00829	0.012	0.0240	0.0184	0.662	0.103	0.156	0.043	0.157	0.151
Boron (B)	mg/L	5	1.26	-	0.01	-	<0.010	<0.020	-	<0.010	0.008	<0.006	0.01	0.018	0.023	0.041	0.016	0.032	0.031
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	0.0000163	-	-	0.000	-	-	-	0.00012	-	0.00004	-	-
Calcium (Ca)	mg/L	-	-	-	6.0	-	13.1	27.2	-	11.9	22.400	47.7	25.7	118	165.00	224.00	88.80	253.00	216.00
Chromium (Cr)	mg/L	0.05	0.0129	-	-	-	-	<0.00100	-	-	<0.001	-	-	-	0.0004	-	0.00047	-	-
Copper (Cu)	mg/L	1	0.50	-	-	-	-	0.00109	-	-	0.001	-	-	-	0.00171	-	0.00224	-	-
Iron (Fe)	mg/L	0.3	0.24	-	0.716	-	0.611	0.463	-	0.352	0.601	0.0430	0.511	0.84	0.016	0.187	0.053	0.01	0.026
Lead (Pb)	mg/L	0.01	0.0025	-	-	-	-	<0.000100	-	-	<0.0001	-	-	-	0.00005	-	0.00005	-	-
Magnesium (Mg)	mg/L	-	-	-	2.19	-	5.95	9.65	-	4.42	7.650	15.9	10.3	50.3	65.9	100	34	98.2	123
Manganese (Mn)	mg/L	0.05	*	-	-	-	-	0.454	-	-	0.076	-	-	-	0.0223	-	0.00919	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	<0.0000050	-	-	<0.0001	-	-	-	0.000005	-	0.000005	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	1.29	-	-	0.530	-	-	-	2.17	-	1.62	-	-
Sodium (Na)	mg/L	200	101.5	103	1.05	-	1.7	2.03	-	1.34	1.790	2.15	2.78	6.75	10.1	13.2	5.6	22.7	25.6
Zinc (Zn)	mg/L	5	-	-	-	-	-	<0.0020	-	-	0.007	-	-	-	0.0032	-	0.0011	-	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	<0.0001	-	-	-	0.0005	-	0.0005	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	-	-	<0.0005	-	-	<0.0003	-	-	-	0.0005	-	0.0005	-	-
Dichloromethane	mg/L	0.05	0.02	-	-	-	-	<0.001	-	-	<0.001	-	-	-	0.01	-	0.005	-	-
Toluene	mg/L	0.06	0.030	-	-	-	-	<0.0005	-	-	<0.0003	-	-	-	0.0005	-	0.00071	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	<0.0005	-	-	<0.0001	-	-	-	0.0005	-	0.0005	-	-
Ion Balance																			
Total Anions	meq/L	-	-	-	-	-	1.3	2.4	-	0.0	1.9	-	-	7.4	17.7	21.8	4.5	23.5	20.5
Total Cations	meq/L	-	-	-	-	-	1.2	2.3	-	0.0	1.8	-	-	10.4	14.2	21.0	7.5	21.7	22.0
Percent Difference	%	-	-	-	-	-	-4.73	-1.86	-	100.0	-1.4	-	-	16.61	-11.05	-1.88	25.27	-3.97	3.60

Notes:
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Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9	BH9
					14-May-20	23-Jul-20	03-Nov-20	20-May-21	23-Jul-21	22-Sep-21	19-May-22	14-Jul-22	27-Sep-22	11-May-23	10-Jul-23	11-Sep-23	04-Jun-24	02-Aug-24	02-Oct-24
Field Testing Results																			
pH	units	6.5-8.5	-	-	7.47	7.1	7.53	8.22	7.35	7.43	8.02	7.15	7.37	7.44	8.69	7.55	7.84	7.05	6.98
Temperature	C	-	-	-	4.7	9.9	8.6	10.2	11.6	10.6	5.2	11.8	10.3	12.4	10.8	9.7	9.2	13	10.1
Specific Conductance 25°C	uS/cm	-	-	-	520	1347	1433	329	1390	1152	268	1122	1662	89	1229	1690	289	1095	1533
General Chemistry																			
pH	units	6.5-8.5	-	-	7.54	7.44	7.58	7.65	7.83	7.93	7.64	8.24	7.51	7.1	7.48	7.6	7.98	8.25	7.95
Specific Conductance 25°C	uS/cm	-	-	-	262	1640	1820	354	1460	574	199	930	1590	79.7	1300	1680	348	990	1280
Total Dissolved Solids	mg/L	500	348	-	201	1090	1280	227	1130	978	161	731	1130	92	850	1120	240	654	936
Total Suspended Solids	mg/L	-	-	-	507	1460	345	121	131	188	167	467	221	302	272	350	168	148	104
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	3.8	-	-	0.687	-	-	0.988	-	-	0.637	-	-	0.431	-
Dissolved Organic Carbon	mg/L	5	4.33	-	11.5	10.3	16.2	7.37	7.97	11	7.7	9.42	9.5	7.26	7.42	8.33	5.72	8.99	8.54
Biological Oxygen Demand	mg/L	-	-	-	2	2	2	2.0	2.0	-	-	<2.0	<2.0	3	2	2	<3.0	<2.0	<2.0
Chemical Oxygen Demand	mg/L	-	-	-	35	66	68	44	37	33	37	13	88	44	38	69	32	15	48
Phenols (4AAP)	mg/L	-	-	-	-	0.0015	-	-	0.01	-	-	<0.0010	-	-	0.001	-	-	<0.0010	-
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	110	695	703	148	589	570	74	518	668	31.5	578	699	150	419	693
Ammonia (as N)	mg/L	-	-	-	0.02	0.021	0.0302	0.0307	0.0487	0.0433	0.005	<0.010	0.0187	0.0082	0.005	0.0233	0.0161	0.0145	0.028
Chloride	mg/L	250	128.09	125	7.24	78.8	117	11.4	81.4	85.3	6.61	38.5	77.5	1.78	52.5	79	9.42	40.5	75
Sulphate	mg/L	500	251	-	18.7	231	303	26.3	208	196	17.7	123	227	4.36	156	211	27.9	105	<0.200
Nitrate (as N)	mg/L	10	2.52	-	0.344	0.5	0.367	0.255	0.16	0.020	0.136	0.379	0.515	0.538	0.31	0.4	0.041	0.062	191
Nitrite (as N)	mg/L	1	0.26	-	-	0.05	-	-	0.05	-	-	<0.010	-	-	0.02	-	-	<0.020	-
Phosphorus (P)	mg/L	-	-	-	-	1.63	-	-	0.212	-	-	0.359	-	-	0.148	-	-	1.65	-
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	0.00034	-	-	0.00019	-	-	0.00027	0.0003	-	0.00034	-	-	0.00037	-
Barium (Ba)	mg/L	1	0.27	-	0.0256	0.156	0.163	0.024	0.025	0.125	0.021	0.081	0.141	0.00662	0.109	0.148	0.019	0.102	0.14
Boron (B)	mg/L	5	1.26	-	0.01	0.028	0.039	0.01	0.01	0.038	0.011	0.013	0.035	0.01	0.029	0.037	<0.010	0.026	0.04
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	0.000138	-	-	0.0000458	-	-	0.00018	0.000209	-	0.0000729	-	-	0.000108	-
Calcium (Ca)	mg/L	-	-	-	47.1	222	219	45.1	29.4	181	29.4	158	206	8.13	205	194	29.1	162	192
Chromium (Cr)	mg/L	0.05	0.0129	-	-	0.00029	-	-	0.00046	-	-	0.00049	0.00108	-	0.0005	-	-	<0.00050	-
Copper (Cu)	mg/L	1	0.50	-	-	0.00867	-	-	0.00243	-	-	0.00179	0.00409	-	0.00196	-	-	0.00207	-
Iron (Fe)	mg/L	0.3	0.24	-	0.022	0.044	0.01	0.031	0.101	0.115	0.152	<0.010	0.015	0.194	0.01	0.02	0.058	0.026	0.158
Lead (Pb)	mg/L	0.01	0.0025	-	-	0.000284	-	-	0.00005	-	-	<0.000050	0.000056	-	0.00005	-	-	<0.000050	-
Magnesium (Mg)	mg/L	-	-	-	20.5	93.8	107	18	10.2	77.6	13.2	53	96.3	3.14	74.8	90.6	12	61.9	80.2
Manganese (Mn)	mg/L	0.05	*	-	-	0.0132	-	-	0.0361	-	-	0.00608	0.103	-	0.0016	-	-	0.162	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	0.000005	-	-	0.000005	-	-	0.0000057	-	-	0.000005	-	-	<0.0000050	-
Potassium (K)	mg/L	-	-	-	-	2.76	-	-	1.2	-	-	2.42	2.89	-	2.28	-	-	2.18	-
Sodium (Na)	mg/L	200	101.5	103	3.84	21.1	24.2	3.48	2.99	17.9	4.26	10.7	22.8	1.22	20.3	25.9	3.55	17.8	23.1
Zinc (Zn)	mg/L	5	-	-	-	0.0056	-	-	0.0018	-	-	0.0014	0.003	-	0.0012	-	-	0.0012	-
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.0005	-	-	<0.0005	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.0005	-	-	<0.0005	-
Dichloromethane	mg/L	0.05	0.02	-	-	0.005	-	-	0.005	-	-	<0.005	-	-	0.0054	-	-	<0.001	-
Toluene	mg/L	0.06	0.030	-	-	0.00509	-	-	0.0005	-	-	0.00163	-	-	0.00087	-	-	<0.0005	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	0.0005	-	-	0.0005	-	-	<0.0005	-	-	0.0005	-	-	<0.0005	-
Ion Balance																			
Total Anions	meq/L	-	-	-	5.1	21.0	23.7	3.8	18.4	17.9	2.0	14.0	20.3	-	16.3	20.6	3.8	11.7	-
Total Cations	meq/L	-	-	-	5.9	19.8	13.8	3.9	2.5	16.2	2.7	12.8	19.3	-	17.3	18.3	2.6	14.0	-
Percent Difference	%	-	-	-	7.35	-2.88	-26.52	0.52	-76.30	-4.93	14.54	-4.68	-2.59	-	3.04	-6.06	-19.44	8.98	-

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Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH9	BH9	BH9	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate
					26-May-2025	15-Jul-2025	29-Sep-2025	04-May-18	12-Jul-18	11-Sep-19	12-Nov-19	14-May-20	23-Jul-20	03-Nov-20	20-May-21	22-Jul-21	22-Sep-21	19-May-22	14-Jul-22
Field Testing Results																			
pH	units	6.5-8.5	-	-	7.31	6.96	7.11	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	C	-	-	-	8.2	8.5	10.9	-	-	-	-	-	-	-	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	410	808	1306	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry																			
pH	units	6.5-8.5	-	-	8.22	6.97	7.21	6.96	7.60	7.47	7.20	7.85	7.24	7.30	7.56	7.82	7.57.	7.79	8.28
Specific Conductance 25°C	uS/cm	-	-	-	392	767	1420	112	1440	1970	1180	554	1630	1870	262	1360	1530	282	1050
Total Dissolved Solids	mg/L	500	348	-	251	385	940	100	894	1310	703	246	944	1280	169	1070	1070	215	758
Total Suspended Solids	mg/L	-	-	-	59	56.5	54.5	91	87	345	215	706	1170	216	174	349	363	167	392
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	<0.2	-	-	0.75	-	-	-	2.8	-	-	0.86	-	-	1.03
Dissolved Organic Carbon	mg/L	5	4.33	-	5.42	5.2	6.4	9.5	8.08	10.30	13.90	9.83	14.60	15.70	7.57	9.96	12.3	8	8.46
Biological Oxygen Demand	mg/L	-	-	-	<2.0	1.9	1	2.0	2.0	4.5	2.0	2.5	2.0	2.0	2.0	2.0	-	-	<2.0
Chemical Oxygen Demand	mg/L	-	-	-	24	34	<5	37	35	59	35	98	39	69	42	33	49	-	13
Phenols (4AAP)	mg/L	-	-	-	-	0.0025	-	-	0.0015	-	-	-	0.0016	-	-	0.01	-	-	<0.0010
Anions and Nutrients																			
Alkalinity (as CaCO3)	mg/L	30-500	-	-	179	304	615	46	561	763	460	222	681	717	113	556	573	106	495
Ammonia (as N)	mg/L	-	-	-	<0.0050	<0.01	<0.01	0.059	0.02	0.02	0.02	0.062	0.02	0.005	0.01	0.0254	0.0425	0.0067	<0.010
Chloride	mg/L	250	128.09	125	9.55	33.6	55.40	2.84	68.00	86.60	52.10	19.70	77.00	101.00	7.52	71.6	83.1	10.1	39.1
Sulphate	mg/L	500	251	-	26.8	<0.05	160	6.5	162.0	297.0	164.0	58.0	226.0	273.0	16.5	184	200	28	128
Nitrate (as N)	mg/L	10	2.52	-	0.051	<0.05	-	0.845	0.267	1.170	0.351	0.330	0.500	0.330	0.254	0.15	0.066	0.139	0.432
Nitrite (as N)	mg/L	1	0.26	-	-	92.3	<0.05	-	0.010	-	-	-	0.05	-	-	0.05	-	-	<0.010
Phosphorus (P)	mg/L	-	-	-	-	<0.002	-	-	0.135	-	-	-	1.410	-	-	0.319	-	-	0.322
Dissolved Metals (Water)																			
Arsenic (As)	mg/L	0.01	0.0033	-	-	0.001	-	-	0.0003	-	-	-	0.00028	-	-	0.00035	-	-	0.00029
Barium (Ba)	mg/L	1	0.27	-	0.0296	0.055	0.105	0.1	0.098	0.151	0.140	0.045	0.149	0.159	0.024	0.131	0.125	0.0182	0.0735
Boron (B)	mg/L	5	1.26	-	0.011	0.015	0.036	0.025	0.02	0.033	0.031	0.015	0.028	0.034	0.01	0.032	0.038	0.01	0.013
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	0.000	-	-	0.000083	-	-	-	0.000106	-	-	0.000133	-	-	0.000217
Calcium (Ca)	mg/L	-	-	-	45.9	65.300	185.0	169.00	171.00	253.00	202.00	77.70	219.00	193.00	47.3	198	181	26.9	142
Chromium (Cr)	mg/L	0.05	0.0129	-	-	<0.001	-	-	0.00035	-	-	-	0.00022	-	-	0.00024	-	-	0.00041
Copper (Cu)	mg/L	1	0.50	-	-	0.001	-	-	0.00158	-	-	-	0.0022	-	-	0.00179	-	-	0.00176
Iron (Fe)	mg/L	0.3	0.24	-	0.012	0.025	0.368	0.036	0.011	0.01	0.025	0.019	0.028	0.01	0.027	0.131	0.114	0.096	<0.010
Lead (Pb)	mg/L	0.01	0.0025	-	-	<0.0001	-	-	0.00005	-	-	-	0.00005	-	-	0.00005	-	-	<0.000050
Magnesium (Mg)	mg/L	-	-	-	19.3	27.400	77.9	77.4	64.9	94.7	118	36.6	91.4	108	18.5	73.5	77.3	11.7	48.8
Manganese (Mn)	mg/L	0.05	*	-	-	0.342	-	-	0.0224	-	-	-	0.0129	-	-	0.309	-	-	0.0031
Mercury (Hg)	mg/L	0.001	0.0005	-	-	<0.0001	-	-	0.000005	-	-	-	0.000005	-	-	0.000005	-	-	0.0000053
Potassium (K)	mg/L	-	-	-	-	1.010	-	-	2.13	-	-	-	2.67	-	2.65	-	-	-	2.33
Sodium (Na)	mg/L	200	101.5	103	4.66	7.650	24.8	10.5	9.35	22.9	25.4	6.72	20.8	23.1	18.6	17.9	-	3.17	9.65
Zinc (Zn)	mg/L	5	-	-	-	0.003	-	-	0.0023	-	-	-	0.0018	-	0.0013	-	-	-	0.00
Volatile Organic Compounds																			
Benzene	mg/L	0.001	0.0006	-	-	<0.0001	-	-	0.0005	-	-	-	0.0005	-	0.0005	-	-	-	<0.0005
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	<0.0003	-	-	0.0005	-	-	-	0.0005	-	0.0005	-	-	-	<0.0005
Dichloromethane	mg/L	0.05	0.02	-	-	<0.001	-	-	0.005	-	-	-	0.005	-	0.005	-	-	-	<0.005
Toluene	mg/L	0.06	0.030	-	-	<0.0003	-	-	0.005	-	-	-	0.00201	-	0.0005	-	-	-	0.00116
Vinyl chloride	mg/L	0.001	0.0006	-	-	<0.0001	-	-	0.0005	-	-	-	0.0005	-	0.0005	-	-	-	<0.0005
Ion Balance																			
Total Anions	meq/L	-	-	-	0.0	13.6	17.2	1.2	18.5	24.0	14.1	2.8	21.5	20.5	2.8	17.0	-	-	13.7
Total Cations	meq/L	-	-	-	0.0	5.9	16.7	15.3	15.3	21.4	20.9	2.8	19.4	19.4	4.0	16.8	-	-	11.6
Percent Difference	%	-	-	-	100.0	-39.6	-1.3	85.59	-9.41	-5.61	19.41	0.00	-5.13	-2.75	17.56	-0.45	-	-	-8.35

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown in bold and underlined
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown in bold and highlighted
Trigger exceedances shown bold and italic

Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	BH9 Duplicate	Duplicate (BH9)	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10
					27-Sep-22	11-May-23	10-Jul-23	11-Sep-23	04-Jun-24	15-Jul-2025	26-Jun-17	04-May-18	12-Jul-18	18-Sep-18	11-Jun-19	11-Sep-19	12-Nov-19	14-May-20	23-Jul-20	03-Nov-20
Field Testing Results													DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
pH	units	6.5-8.5	-	-	-	-	-	-	-	-	-	7.83	-	-	-	-	-	-	-	-
Temperature	C	-	-	-	-	-	-	-	-	-	-	15.2	-	-	-	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	-	-	-	-	-	-	-	398	-	-	-	-	-	-	-	-
General Chemistry																				
pH	units	6.5-8.5	-	-	7.52	7.08	7.45	-	7.94	6.92	8	8.22	-	-	-	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	1590	72.3	1200	-	298	759	551	348	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	500	348	-	1130	100	806	-	212	490	343	309	-	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	-	-	-	171	282	220	-	159	61	1520	1900	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	0.659	-	-	<0.2	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	5	4.33	-	8.71	7.62	6.68	8.56	6.19	5	1.4	2.7	-	-	-	-	-	-	-	-
Biological Oxygen Demand	mg/L	-	-	-	<2.0	3	2	-	<3.0	0.8	2	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	81	36	44	60	32	22	74	219	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	-	-	-	-	-	0.001	-	-	0.0026	-	-	-	-	-	-	-	-	-	-
Anions and Nutrients																				
Alkalinity (as CaCO3)	mg/L	30-500	-	-	677	30.5	537	-	131	304	328	233	-	-	-	-	-	-	-	-
Ammonia (as N)	mg/L	-	-	-	0.0218	0.0078	0.0057	0.0185	0.0137	<0.01	0.497	0.074	-	-	-	-	-	-	-	-
Chloride	mg/L	250	128.09	125	72.8	1.37	46.4	-	7.83	34.2	2.13	1.3	-	-	-	-	-	-	-	-
Sulphate	mg/L	500	251	-	211	3.56	139	-	22.2	<0.05	10.8	4.78	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	10	2.52	-	0.507	0.539	0.319	-	0.035	<0.05	0.055	0.093	-	-	-	-	-	-	-	-
Nitrite (as N)	mg/L	1	0.26	-	-	-	0.02	-	-	94	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	0.189	-	-	0.014	-	-	-	-	-	-	-	-	-	-
Dissolved Metals (Water)																				
Arsenic (As)	mg/L	0.01	0.0033	-	0.00031	-	0.00033	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	1	0.27	-	0.146	0.00609	0.0905	0.154	0.0188	0.058	0.0368	0.0273	-	-	-	-	-	-	-	-
Boron (B)	mg/L	5	1.26	-	0.035	0.01	0.023	0.037	<0.010	0.015	0.028	0.05	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	0.005	0.0013	-	0.000203	-	0.0000749	-	-	0.000	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	207	8.27	161	200	28.5	70.000	57.6	38.80	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	0.05	0.0129	-	<0.00050	-	0.0005	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	1	0.50	-	0.00194	-	0.00163	-	-	0.001	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	0.3	0.24	-	0.012	0.12	0.01	0.02	0.067	0.021	0.01	0.05	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	0.01	0.0025	-	<0.000050	-	0.00005	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	97	3.18	58.6	90.4	11.9	28.600	37.5	23.80	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	0.05	*	-	0.105	-	0.00236	-	-	0.363	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	0.000005	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	2.88	-	2.15	-	-	0.960	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L	200	101.5	103	22.80	1.24	15.50	26.30	3.37	7.720	6.16	-	-	-	-	-	-	-	-	-
Zinc (Zn)	mg/L	5	-	-	0.00	-	0.00	-	-	0.003	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																				
Benzene	mg/L	0.001	0.0006	-	-	-	0.00	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	-	0.00	-	-	<0.0003	-	-	-	-	-	-	-	-	-	-
Dichloromethane	mg/L	0.05	0.02	-	-	-	0.01	-	-	<0.001	-	-	-	-	-	-	-	-	-	-
Toluene	mg/L	0.06	0.030	-	-	-	0.00112	-	-	<0.0003	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	0.0005	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-
Ion Balance																				
Total Anions	meq/L	-	-	-	20.0	-	15.0	0.0	-	16.8	-	4.8	-	-	-	-	-	-	-	-
Total Cations	meq/L	-	-	-	19.4	-	13.6	18.6	-	6.2	-	4.1	-	-	-	-	-	-	-	-
Percent Difference	%	-	-	-	-1.60	-	-4.81	100.00	-	-45.8	-	-8.08	-	-	-	-	-	-	-	-

Notes:
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ODWS exceedances shown in bold and underlined
RUG - *Reasonable Use Guidelines* .
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Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10	BH10
					20-May-21	22-Jul-21	22-Sep-21	19-May-22	14-Jul-22	27-Sep-22	11-May-23	10-Jul-23	11-Sep-23	04-Jun-24	02-Aug-24	31-May-2025	15-Jul-2025	29-Sep-2025
Field Testing Results					DRY	DRY	DRY		DRY	DRY	DRY			DRY	DRY	Dry	DRY	DRY
pH	units	6.5-8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry																		
pH	units	6.5-8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	500	348	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	5	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anions and Nutrients																		
Alkalinity (as CaCO3)	mg/L	30-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia (as N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	250	128.09	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate	mg/L	500	251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	mg/L	10	2.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite (as N)	mg/L	1	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Metals (Water)																		
Arsenic (As)	mg/L	0.01	0.0033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	1	0.27	-	-	-	-	0.0122	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/L	5	1.26	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	-	-	18.5	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	0.05	0.0129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	1	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	0.3	0.24	-	-	-	-	0.223	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	0.01	0.0025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-	-	8.85	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	0.05	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L	200	101.5	103	-	-	-	2.17	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	mg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																		
Benzene	mg/L	0.001	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	mg/L	0.05	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/L	0.06	0.030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ion Balance																		
Total Anions	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Cations	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Difference	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
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Appendix F
Summary of Historical Groundwater Analytical Results
2023-2025 Water Quality Assessment
Conmee WDS, Township of Conmee

Parameter	Units	ODWS	2024 RUG Criteria	Trigger Criteria	BH11	BH11	BH11	BH11	BH11	BH11	BH12
					04-Jun-24	02-Aug-24	02-Oct-24	31-May-2025	15-Jul-2025	29-Sep-2025	26-Jun-17
Field Testing Results					DRY		Dry	Dry	Insufficient Water	Insufficient Water	
pH	units	6.5-8.5	-	-	-	7.38	-	-	-	-	-
Temperature	C	-	-	-	-	13.8	-	-	-	-	-
Specific Conductance 25°C	uS/cm	-	-	-	-	492	-	-	-	-	-
General Chemistry											
pH	units	6.5-8.5	-	-	-	8.1	-	-	-	-	7.58
Specific Conductance 25°C	uS/cm	-	-	-	-	449	-	-	-	-	636
Total Dissolved Solids	mg/L	500	348	-	-	290	-	-	-	-	818
Total Suspended Solids	mg/L	-	-	-	-	268	-	-	-	-	315
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	0.162	-	-	-	-	-
Dissolved Organic Carbon	mg/L	5	4.33	-	-	4.14	-	-	-	-	7.1
Biological Oxygen Demand	mg/L	-	-	-	-	<2.0	-	-	-	-	2
Chemical Oxygen Demand	mg/L	-	-	-	-	<10	-	-	-	-	43
Phenols (4AAP)	mg/L	-	-	-	-	0.0094	-	-	-	-	-
Anions and Nutrients											
Alkalinity (as CaCO3)	mg/L	30-500	-	-	-	275	-	-	-	-	261
Ammonia (as N)	mg/L	-	-	-	-	0.0112	-	-	-	-	0.218
Chloride	mg/L	250	128.09	125	-	0.66	-	-	-	-	29.2
Sulphate	mg/L	500	251	-	-	3.84	-	-	-	-	53.2
Nitrate (as N)	mg/L	10	2.52	-	-	0.37	-	-	-	-	0.172
Nitrite (as N)	mg/L	1	0.26	-	-	0.02	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	0.0443	-	-	-	-	-
Dissolved Metals (Water)											
Arsenic (As)	mg/L	0.01	0.0033	-	-	0.0007	-	-	-	-	-
Barium (Ba)	mg/L	1	0.27	-	-	0.0276	-	-	-	-	0.0182
Boron (B)	mg/L	5	1.26	-	-	0.017	-	-	-	-	0.01
Cadmium (Cd)	mg/L	0.005	0.0013	-	-	0.0000245	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	66.7	-	-	-	-	25.7
Chromium (Cr)	mg/L	0.05	0.0129	-	-	<0.00050	-	-	-	-	-
Copper (Cu)	mg/L	1	0.50	-	-	0.00164	-	-	-	-	-
Iron (Fe)	mg/L	0.3	0.24	-	-	<0.010	-	-	-	-	0.388
Lead (Pb)	mg/L	0.01	0.0025	-	-	<0.000050	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	24.1	-	-	-	-	10
Manganese (Mn)	mg/L	0.05	*	-	-	0.137	-	-	-	-	-
Mercury (Hg)	mg/L	0.001	0.0005	-	-	<0.0000050	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	0.955	-	-	-	-	1.31
Sodium (Na)	mg/L	200	101.5	103	-	5.18	-	-	-	-	2.74
Zinc (Zn)	mg/L	5	-	-	-	0.0015	-	-	-	-	-
Volatile Organic Compounds											
Benzene	mg/L	0.001	0.0006	-	-	<0.0005	-	-	-	-	-
1,4-Dichlorobenzene	mg/L	0.005	0.002	-	-	<0.0005	-	-	-	-	-
Dichloromethane	mg/L	0.05	0.02	-	-	<0.001	-	-	-	-	-
Toluene	mg/L	0.06	0.030	-	-	<0.0005	-	-	-	-	-
Vinyl chloride	mg/L	0.001	0.0006	-	-	<0.0005	-	-	-	-	-
Ion Balance											
Total Anions	meq/L	-	-	-	-	5.62	-	-	-	-	-
Total Cations	meq/L	-	-	-	-	5.57	-	-	-	-	-
Percent Difference	%	-	-	-	-	-0.50	-	-	-	-	-

Notes:
Table to be read in conjunction with accompanying report.
ODWS - *Ontario Drinking Water Standards (Rev.2006);*
ODWS exceedances shown in bold and underlined
RUG - *Reasonable Use Guidelines* .
RUG exceedances shown in bold and highlighted
Trigger exceedances shown bold and italic

The Corporation of the Township of Conmee
Administrative Report

Date: **July 14, 2026**

To: **Mayor and Council**

Subject: **Highway 11/17 Widening and Rerouting Project**

File Number: **18-D01-0000 – Highway 11/17 Planning and Corridor Safety - MTO**

Submitted by: **Karen Paisley Clerk**

RECOMMENDATION:
THAT Council discuss the Ministry of Transportation's Highway 11/17 Widening and Rerouting Project and provide direction to Administration regarding any comments to be submitted to the Ministry of Transportation.

BACKGROUND:
The Ministry of Transportation (MTO) is currently undertaking a Preliminary Design and Class Environmental Assessment Study for the widening of Highway 11/17 to four lanes from Kakabeka Falls easterly to the Thunder Bay Expressway. The project includes a new alignment between Kakabeka Falls and east of Vibert Road as well as twinning of the existing highway to the Thunder Bay Expressway. According to the Ministry of Transportation's presentation materials, the project forms part of a broader plan to create a four-lane highway between Thunder Bay and Shabaqua.

A Public Information Centre was held on June 18, 2026 to present the preferred alternatives and seek public feedback on the study. MTO has requested that comments on the project be submitted by July 18, 2026.

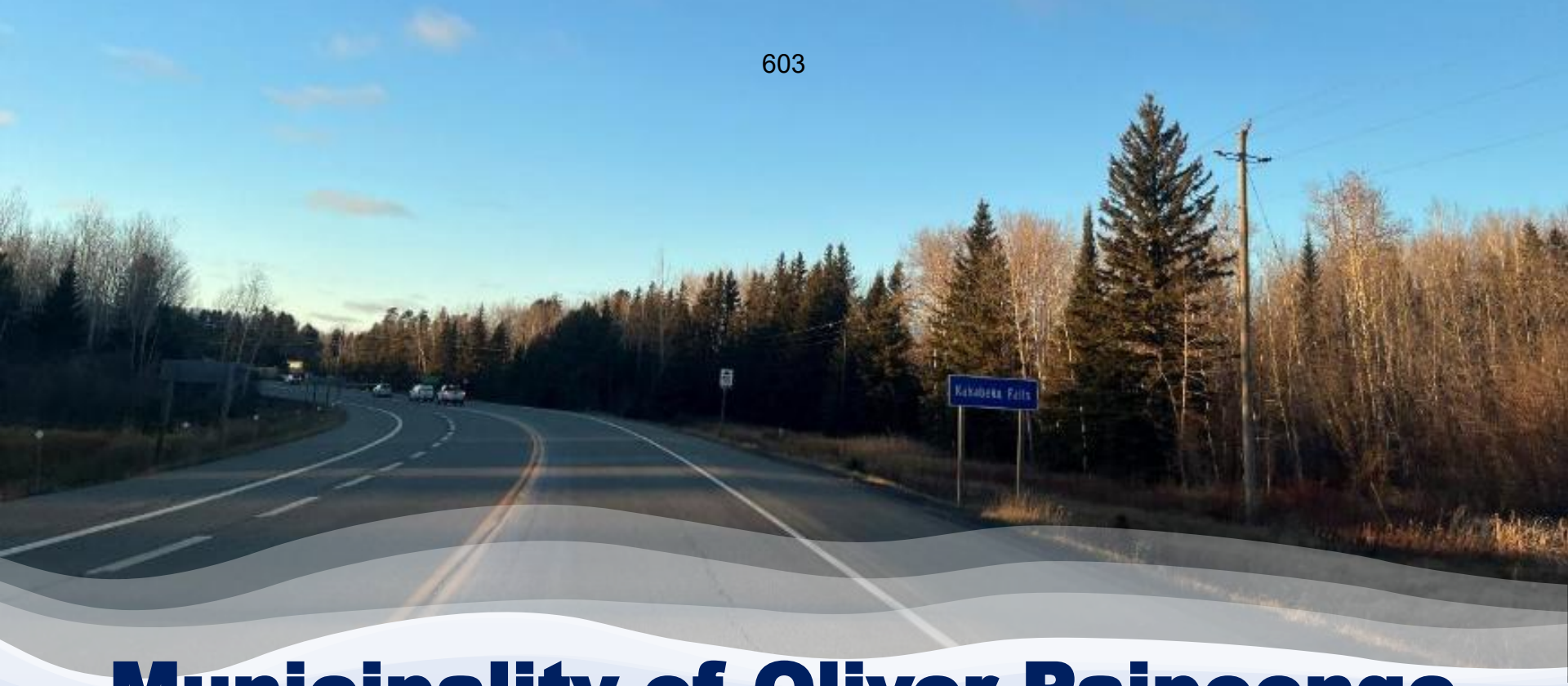
The Clerk recently received correspondence from the CAO/Clerk for the Municipality of Oliver Paipoonge, advising that Oliver Paipoonge Council discussed the project on June 24, 2026 and directed Administration to prepare a draft submission to MTO for Council's consideration. The correspondence noted that Oliver Paipoonge Council is expected to consider the draft submission at its July 14, 2026 meeting.

DISCUSSION:
The proposed project affects an important transportation corridor used by residents, businesses, and commercial traffic travelling through the Township of Conmee. Council has previously expressed concerns regarding increased truck traffic along Highway 11/17 following implementation of the City of Thunder Bay's Designated Truck Route By-law.

The correspondence received from the Municipality of Oliver Paipoonge advises that their draft submission to MTO raises concerns regarding increased heavy truck traffic through Kakabeka Falls and Conmee following implementation of the City of Thunder Bay's Designated Truck

Route By-law. The draft submission notes that while the proposed widening project may provide transportation benefits, it does not address the underlying issue of increased truck traffic on the Highway 11/17 corridor and advocates for completion of the broader four-lane connection between Thunder Bay and Shabaqua as a long-term solution.

As Highway 11/17 is the primary provincial highway corridor through Conmee, Council may wish to discuss whether the Township should submit comments to MTO prior to the July 18, 2026 deadline. A copy of the Ministry of Transportation presentation regarding the proposed project has been included for Council's reference.



Municipality of Oliver Paipoonge Council Presentation

GWP#6023-21-00 Highway 11/17 Widening to Four Lanes from Kakabeka Falls Easterly to Thunder Bay Expressway Preliminary Design and Class Environmental Assessment Study

EA Study Website: www.hwy11-17-kakabekafalls-east.ca

Ontario

June 8, 2026

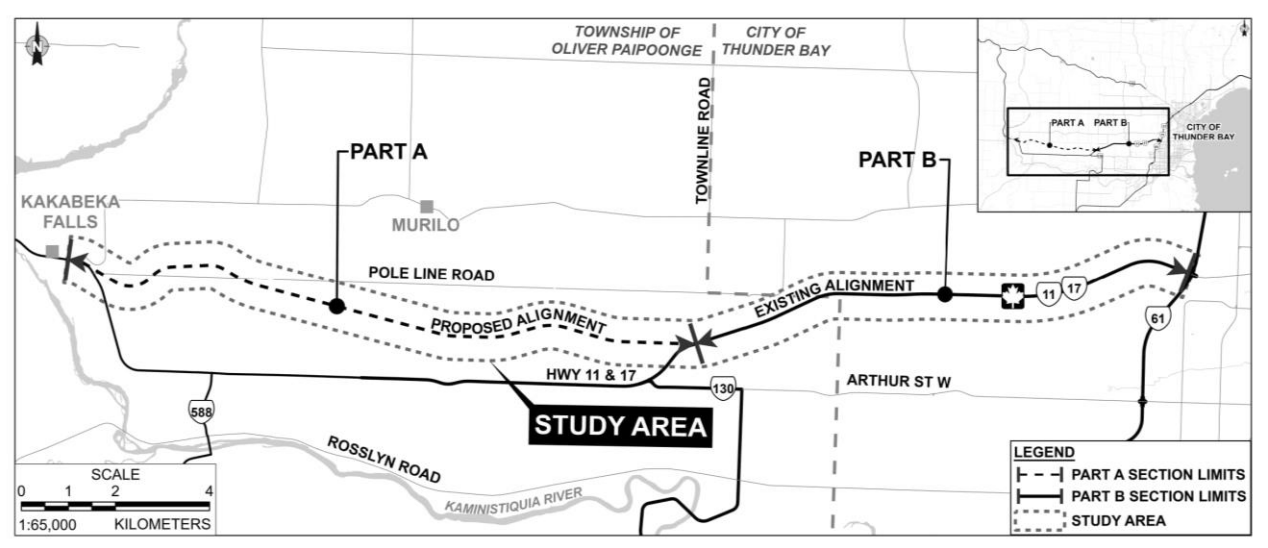
WSP

Study Overview

MTO has retained WSP to complete the Preliminary Design and Class Environmental Assessment (EA) Study for Highway 11/17 widening to four lanes from Kakabeka Falls easterly to Thunder Bay Expressway.

The study area includes the following two distinct corridors of Highway 11/17:

- **Part A** is the west portion of the project, which will be all new alignment, from Kakabeka to just east of Vibert Road.
- **Part B** is the east portion, which involves twinning of the existing highway from just east of Vibert Road to the Thunder Bay Expressway.



Study Background

- This work builds on planning studies dating back to the 1970s that identified safety and traffic concerns and the need for improvements.
- A corridor for a future four-lane highway was set in 1979 and updated in the eastern (Part B) portion in 1992.
- This study will update the design to reflect today's conditions, meet current standards and follow through on previous commitments.
- The project is part of a broader plan to create a four-lane highway between Thunder Bay and Shabaqua.

Previous discussions with Oliver Paipoonge/ Summary of Public Comments

- MTO's previous discussions with Oliver Paipoogne staff:
  - October 17, 2025 – meeting to provide an overview of the project and request input
  - November 4, 2025 – meeting at the request of the municipal staff to discuss the proposed Kakabeka Falls access road and the impacts to the landfill
  - March 9, 2026 – a representative from Oliver Paipoonge presented key concerns/issues to the value engineering team
  - May 13, 2026 – meeting to discuss landfill concerns and potential alternative alignment for Kakabeka Falls access road

- MTO has also received 40 comments, to date, from the public, interested stakeholders and Indigenous communities. Common themes expressed by the public include:
  - Property impacts
  - Increased noise
  - Increased truck traffic

Overview of Environmental and Engineering Studies

We are completing environmental and engineering studies to understand existing conditions and potential impacts:

Highway 11/17 Designated Corridor

- The preferred Highway 11/17 route was identified in earlier studies.
  - Development within the corridor has been limited over time to protect space for the future highway
  - Property owners are aware of these long-term plans
- The four-lane highway will generally remain within the corridor established in 1979, with adjustments to meet design standards.
  - The existing right-of-way will be expanded from the 90 metres established in 1979, to the current standard of 110 metres.
  - This study also looks at how the highway connects to local roads, including interchange alternatives based on current and future use
- Additional land will be required; MTO will work to minimize additional property impacts.

Summary of Interchange Alternatives Evaluated

We are looking the connection to local roads and developed alternatives for interchanges at:

1. Kakabeka Access
2. Fraser Road
3. Twin City Crossroad
4. Mapleward Road
5. Pole Line Road /Pineview Road Configuration

Summary of the Proposed Improvements

The preferred plan includes:

Highway Improvements

- New four lanes from Kakabeka Access Interchange to east of Vibert Road
- Twinning from east of Vibert Road to Thunder Bay Expressway
- New two-lane connection road from Kakabeka Access Interchange to Kakabeka Falls

Interchanges

- Kakabeka Falls access
- Fraser Road
- Twin City Crossroad
- Mapleward Road

Road Closures

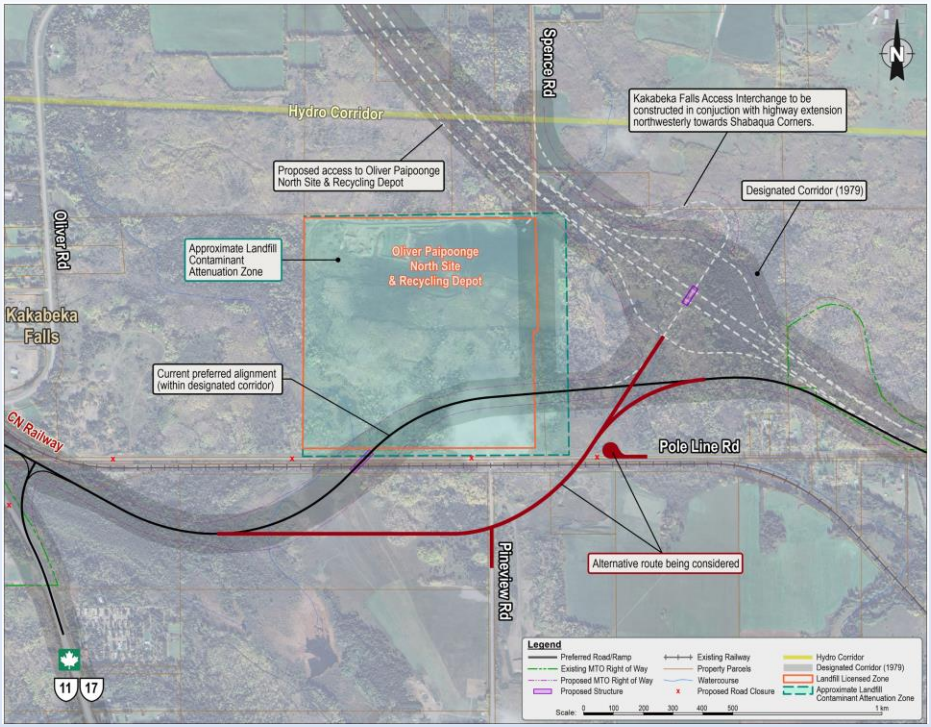
- Wing Road (at new Highway 11/17)
- Vibert Road (at new Highway 11/17)
- Sections of Poleline Road (west end, within Part A)

Flyovers

- CN Rail
- Pebblestone / Mining Road

Kakabeka Falls Access Road

- The proposed access road from Highway 11/17 to Kakabeka Falls follows a route selected through a public process in the 1970s. Part of this route passes through the landfill buffer area (known as a contamination attenuation zone, or CAZ).
- Based on the work completed to date, MTO expects the road can be designed so it does not interfere with the municipality's ability to use or expand the landfill.
- In response to concerns, MTO is also reviewing a route that avoids the landfill buffer area. This alternative would impact additional private properties; further study is needed to fully understand this and other impacts.
- MTO will continue consultation and evaluation of both alternatives. The preferred alternative will be identified in the study report, which will be available for public review and comment.



This shows an alternative to the previously designated access road for Kakabeka Falls

Next Steps (EA)

Hold public information centre to present project background, environmental assessment process, environmental conditions, interchange evaluation process, the preferred alternative, and next steps

Consult with City of Thunder Bay and Municipality of Oliver Paipoonge

Consult with Indigenous communities

Consult with the public, regulatory agencies, and key stakeholders

May – June 2026 (PIC: June 18, 2026)

Follow up with Oliver Paipoonge and other stakeholders

Conduct environmental/engineering fieldwork and prepare study report

Review phasing of the project (when four lanes and interchanges would be implemented)

Summer / Fall 2026

Publish study report for 30-day comment period

Fall 2026

Thank you for
your time.

Appended Slides

Evaluation Criteria

The following factors have been considered in the evaluation of interchanges / access options:

Socio-Economic Environment

- Number of properties and access points affected
- Number of properties that may need to be relocated
- Potential impacts on nearby homes and other noise-sensitive areas, and ability to reduce noise
- Potential effects on air quality and greenhouse gas emissions

Cultural Environment

- Impacts to known or potential archaeological sites
- Impacts to protected or listed heritage properties (under the *Ontario Heritage Act* or municipal registers)
- Impacts to identified built heritage resources and cultural landscapes
- Overall extent of potential impacts to Indigenous lands

Natural Environment

- Potential impacts to water, wildlife, and natural areas, including species at risk (SAR)
- Effects on sensitive environments and wetlands
- Possible impacts to nearby properties
- Consideration of drainage, erosion, and groundwater
- Effects on Williams Bog

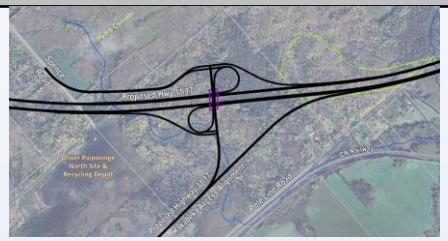
Technical Considerations

- Handles traffic and supports future growth
- Minimizes impacts to major infrastructure
- Limits changes to local travel and emergency access
- Can be constructed efficiently with manageable staging
- Overall cost considerations

Screening of Long List of Alternatives

Kakabeka Access Interchange

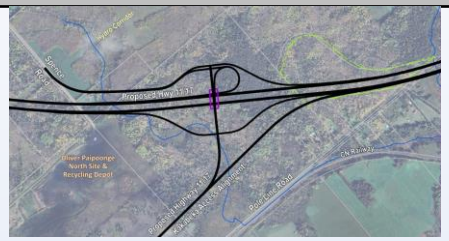
Alternative 1 – Parclo A2



✓	Accommodates expected traffic, supports future growth, and improves access to Spence Road and nearby connections
×	Some existing highway sections would no longer be needed, additional land would be required, and this option may have greater environmental impacts due to more stream crossings

Do not carry forward

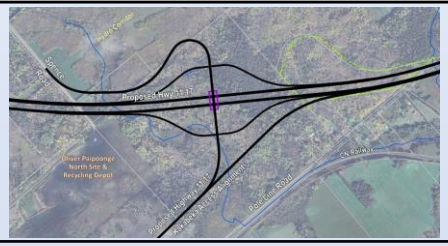
Alternative 2 – Partial Diamond/Parclo A2



✓	Accommodates expected traffic, supports future growth, and improves access to Spence Road and nearby connections
×	Some existing highway sections would be removed, additional land would be needed, and environmental impacts are expected to be moderate compared to the other options

Carry forward

Alternative 3 – Diamond



✓	Uses intersections instead of ramps, slightly limiting capacity but still meeting traffic needs while improving access to Spence Road
×	Some existing highway sections would be removed, additional land would be needed, and environmental impacts are expected to be moderate compared to other options

Carry forward

Alternative 4 – Trumpet A – No Spence Road Connection

✓	Provides full access in all directions, requires some additional land, and has the lowest environmental impact by avoiding stream crossings
×	No direct connection to Spence Road

Carry forward

Short List of Alternatives Evaluation Summary

Kakabeka Access Interchange				
Factor / Criteria	**Alternative 2 - Partial Diamond / Parclo A2 (with Spence Road connection)**	**Alternative 3 – Diamond (with Spence Road connection)**	**Alternative 4 - Trumpet A (with Spence Road connection)**	**Key Benefit / Disadvantage**
Natural Environment	◕	◕	●	Alternative 4 has the least impact, minimizing effects on wetlands and waterways and requiring the least new roadway and vegetation clearing.
Socio-Economic Environment	●	●	◕	Alternatives 2 and 3 have slightly less impact on private property, while all options have similar noise levels and no expected air quality impacts.
Cultural Environment	●	●	●	All alternatives have similar potential impacts on archaeological and cultural heritage resources (there are no known heritage features nearby).
Transportation / Technical Considerations	◕	●	◑	Alternative 3 meets traffic needs at a lower cost than Alternative 2 and allows for future expansion, with a simpler design that reduces maintenance compared to Alternative 4.
Recommendation	✗	✓	✗	**Preferred Alternative: Alternative 3 – Diamond (with Spence Road connection)** Provides sufficient capacity at a lower cost, supports future expansion, uses a simpler perpendicular design for easier construction and maintenance, and limits impacts to private property, with only minor environmental differences that can be mitigated.

LEGEND	
●	Best performing alternatives
◕	Between best to moderate performing alternatives
◑	Moderate performing alternatives
◔	Between moderate to least performing alternatives
○	Least performing alternatives

Ontario

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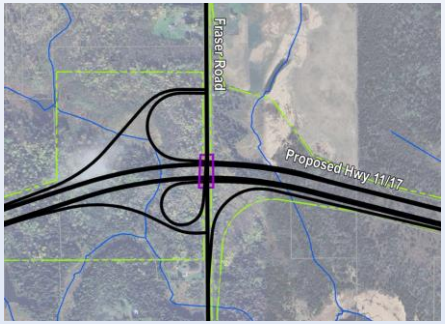
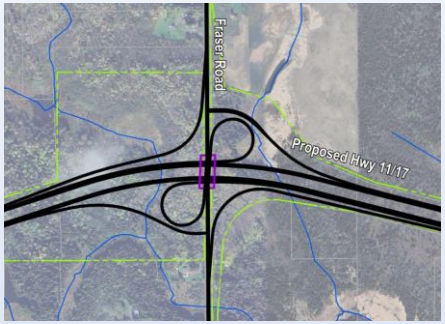
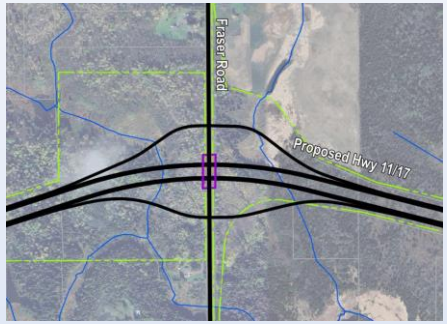
Screening of Long List of Alternatives

Fraser Road Interchange

Alternative 1 – Parclo AB	Alternative 2 – Parclo A4	Alternative 3 – Diamond
		
✓ Handles expected traffic while requiring minimal additional land beyond the existing highway corridor	✓ Can be built in stages as traffic grows, provides efficient traffic flow, and requires minimal additional land	✓ Meets traffic needs, has the lowest environmental impact, and is the most cost-effective option
× Limited ability to support future growth, less effective for traffic flow, greater environmental impact, and higher cost due to larger structures	× Greater environmental impact and higher costs due to larger structures	× Limited ability to support future growth, less efficient for traffic flow, and requires additional land
Do not carry forward	**Carry forward**	**Carry forward**

Short List of Alternatives Evaluation Summary

Fraser Road Interchange			
Factor / Criteria	**Alternative 2 - Parclo A4**	**Alternative 3 – Diamond**	**Key Benefit / Disadvantage**
Natural Environment	◔	●	Alternative 3 has lower impacts on wetlands, waterbodies and wildlife habitat compared to Alternative 2, reducing potential disturbance and the need for erosion and sediment control measures.
Socio-Economic Environment	●	◕	Alternative 2 has slightly less impact on private property, while both options have similar noise and air quality effects.
Cultural Environment	●	●	Both alternatives have similar potential impacts on archaeological resources and Indigenous lands (there are no known heritage features nearby).
Transportation / Technical Considerations	●	◕	Alternative 2 offers better traffic operations and supports future growth, although the cost is higher than Alternative 3.
Recommendation	✓	✗	**Preferred Alternative: Alternative 2 - Parclo A4** Higher cost, but provides better traffic operations, supports future growth, and reduces impacts to private property; environmental differences are limited and can be mitigated.

LEGEND	
●	Best performing alternatives
◕	Between best to moderate performing alternatives
◑	Moderate performing alternatives
◔	Between moderate to least performing alternatives
○	Least performing alternatives

Ontario

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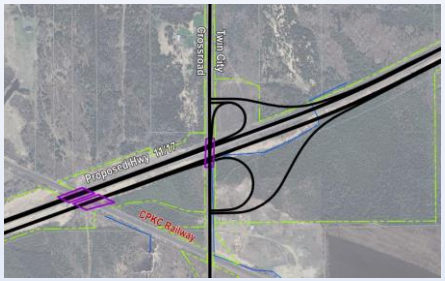
Screening of Long List of Alternatives

Twin City Crossroad Interchange		
Alternative 1 – Parclo AB	**Alternative 2 – Parclo A4 / A2**	**Alternative 3 – Diamond**
		
✓ Meets traffic needs, reduces impacts on nearby properties, and offers a lower-cost solution × Limited ability to support future growth, less efficient traffic flow, and greater environmental impact due to additional stream crossings	✓ Can be built in stages as traffic grows, offers efficient traffic flow, and requires less additional land than some options × Greater environmental impact than Alternative 3 due to additional stream crossings, and higher costs from larger structures	✓ Meets traffic needs while minimizing environmental impacts by avoiding stream and waterway crossings × Limited ability to support future growth, less efficient traffic flow, requires more land, and has higher costs due to larger structures
Carry forward	**Carry forward**	**Do not carry forward**

Short List of Alternatives Evaluation Summary

Twin City Crossroad Interchange			
Factor / Criteria	**Alternative 1 - Parclo AB**	**Alternative 2 - Parclo A2/A4**	**Key Benefit / Disadvantage**
Natural Environment	●	◕	Alternative 1 reduces impacts on water features and areas of erosion concern compared to Alternative 2; although it affects more vegetation and wildlife habitat, these impacts are outweighed by the benefits to water resources.
Socio-Economic Environment	●	●	Both alternatives have similar impacts on private properties, noise levels, and air quality.
Cultural Environment	●	●	Both alternatives have similar potential impacts on archaeological resources and Indigenous lands (there are no known heritage features nearby).
Transportation / Technical Considerations	◕	●	Alternative 2 has a higher cost, it provides better traffic operations and supports future growth, although the cost is higher than Alternative 3.
Recommendation	✗	✓	**Preferred Alternative: Alternative 2 - Parclo A2/A4** Higher cost, but provides better traffic operations and supports future growth (Parclo A4), with reduced impacts to vegetation and wildlife habitat; while it affects more water features, these impacts can be mitigated.

LEGEND	
●	Best performing alternatives
◕	Between best to moderate performing alternatives
◑	Moderate performing alternatives
◔	Between moderate to least performing alternatives
○	Least performing alternatives

Ontario

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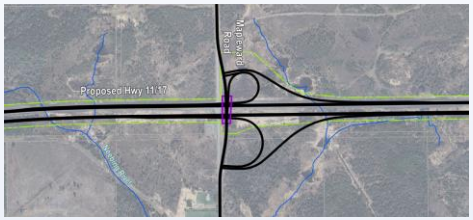
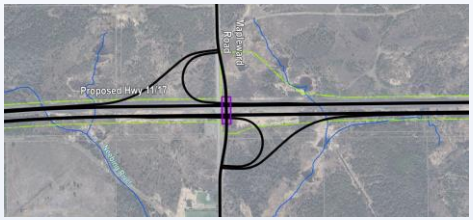
Screening of Long List of Alternatives

Mapleward Road Interchange	
Alternative 1 – Parclo AB	**Alternative 2 – Parclo B2**
	
✓ Meets traffic needs and future growth from development of the West Arthur Secondary Plan area, requires less additional land than some options, and is expected to have lower impacts on archaeological resources × Less efficient traffic flow, greater environmental impact, and higher cost	✓ Lower cost (similar for Alternatives 2 and 3). × Less effective for traffic flow, requires the most additional land, has greater environmental impacts, and poses the highest potential impact on archaeological resources
Carry forward	**Do not carry forward**

Alternative 3 – Partial Diamond North side / Parclo B Southeast	**Alternative 4 – Diamond**
✓ Expected to have lower impacts on archaeological resources and is a lower-cost option, similar to other alternatives × Limited ability to support future growth, requires more additional land than some options, and has greater environmental impacts	✓ Best supports future road connections, requires less land, has the lowest environmental impact, and is expected to reduce impacts on archaeological resources × Limited ability to support future growth, higher cost, and increased construction risk due to nearby infrastructure
Carry forward	**Carry forward**

Ontario

wsp

Short List of Alternatives Evaluation Summary

Mapleward Road Interchange				
Factor / Criteria	**Alternative 1 - Parclo AB**	**Alternative 3 - Partial Diamond / Parclo B**	**Alternative 4 - Small Diamond**	**Key Benefit / Disadvantage**
Natural Environment	◐	◕	●	Alternative 4 reduces impacts on water features while keeping vegetation clearing similar to other options.
Socio-Economic Environment	◕	◐	●	Alternative 4 impacts slightly less private property, while all options have similar noise levels and no expected air quality impacts.
Cultural Environment	◕	◐	●	Alternative 4 has a smaller impact near the core area of the Cummins archaeological site; all options have similar potential impacts on archaeological, and Indigenous resources (there are no known nearby heritage features nearby).
Transportation / Technical Considerations	●	◕	●	Alternatives 1 and 4 both offer benefits—Alternative 1 provides higher capacity, while Alternative 4 has a simpler ramp design with adequate capacity, though it involves higher construction complexity and cost
Recommendation	✗	✗	✓	**Preferred Alternative: Alternative 4 - Small Diamond** Alternative 4 is preferred, as it has the smallest overall footprint, resulting in reduced impacts to private property, lower archaeological potential, and fewer impacts to water features

LEGEND	
●	Best performing alternatives
◕	Between best to moderate performing alternatives
◐	Moderate performing alternatives
◔	Between moderate to least performing alternatives
○	Least performing alternatives

Ontario

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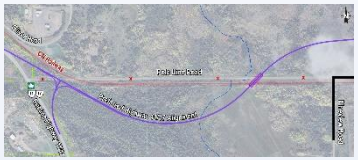
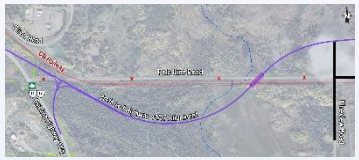
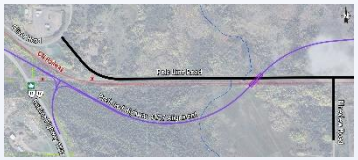
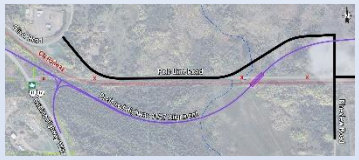
Screening of Long List of Alternatives

Pole Line Road /Pineview Road Configuration

Alternative 1 – Close Pole Line west of Pineview Road	Alternative 2 – Close Pole Line Road & Extend Pineview Road (at-grade intersection with Highway 11/17)	Alternative 3 – Connect Pole Line Road to Oliver Road
		
✓ Provides efficient traffic flow, requires no additional land, has the lowest environmental impact, and is the most cost-effective option	✓ Maintains existing access via Pineview Road, requires no additional land, has lower environmental impact, and is a cost-effective option	✓ Eliminates the need for a rail crossing, avoids impacts to the nearby landfill, and reduces overall environmental effects
× Significantly affects local access, requiring a detour of about 3 km for east–west travel	× Increased potential for conflicts due to an additional intersection at Highway 11/17 and Pineview Road	× Adds a new intersection, changes travel patterns with longer trips, may affect nearby properties, and increases costs
Carry forward	**Carry forward**	**Carry forward**

Alternative 4 – Extend Pineview Road (at-grade intersection), Realign Pole Line Road north of highway and connect to Oliver Road	Alternative 5 – Connect Pole Line Road to Highway 11/17	Alternative 6 – Extend Pineview Road (at-grade intersection), Realign Pole Line Road north of highway and connect to Highway 11/17
		
✓ Eliminates crossing of Pole Line Road with CN Rail.	✓ Improves rail crossing with a better alignment, maintains local travel, and reduces impacts to nearby areas and the environment	✓ Improves rail crossing at Pole Line Road and better maintains existing travel patterns
× Adds new intersections that may affect traffic flow, changes travel patterns, impacts nearby properties (including the landfill area), and increases environmental impacts and costs	× May affect nearby properties and increase costs due to road changes, a longer structure, and rail crossing relocation	× Adds another intersection on Highway 11/17, increasing potential for traffic conflicts, impacts nearby properties (including the landfill area), and results in higher environmental impacts and costs
Do not carry forward	**Carry forward**	**Do not carry forward**

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Short List of Alternatives Evaluation Summary

Pole Line Road /Pineview Road Configuration					
Factor / Criteria	**Alternative 1 - Close Pole Line west of Pineview Rd**	**Alternative 2 - Close Pole Line Rd & Extend Pineview Rd**	**Alternative 3 - Connect Pole Line Rd to Oliver Rd**	**Alternative 5 - Connect Pole Line Rd to Highway 11/17**	**Key Benefit / Disadvantage**
Natural Environment	●	◕	◑	◔	Alternative 1 avoids negative impacts, minimizes disturbance, protects drainage, and offers stormwater management benefits.
Socio-Economic Environment	●	●	◕	◑	Alternatives 1 and 2 avoid additional impacts to private properties and have lower noise impacts than other options.
Cultural Environment	●	◕	◔	◔	Alternative 1 is preferred because it involves little to no ground disturbance and therefore has the least potential archaeological impact and least potential impact to Indigenous Lands.
Transportation / Technical Considerations	●	◔	◔	◔	Although Alternative 1 requires the most out-of-way travel, traffic volumes in the area are relatively low and this alternative provides significantly better operations than the other alternatives.
Recommendation	✓	✗	✗	✗	**Preferred Alternative: Alternative 1 - Close Pole Line west of Pineview Rd** Since it proposes to close Pole Line Road, it does not impact any private property, and it minimizes potential archaeological impact, potential to impact Indigenous land and environmental impact.

LEGEND	
●	Best performing alternatives
◕	Between best to moderate performing alternatives
◑	Moderate performing alternatives
◔	Between moderate to least performing alternatives
○	Least performing alternatives

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Town of Whitby
575 Rossland Road East,
Whitby, ON L1N 2M8
905.430.4300
whitby.ca

June 25, 2026

Via Email

The Honourable Doug Ford
Premier of Ontario
premier@ontario.ca

Re: Review of the Ontario Land Tribunal and Enhancing Deference to Municipal Planning Decisions

Please be advised that at its meeting held on June 22, 2026, the Council of the Town of Whitby adopted the following as Resolution # 166-26:

Whereas local councils are elected by residents to make planning decisions that reflect the needs and priorities of their communities;

Whereas municipalities rely on extensive public consultation, professional planning advice, engineering studies, and technical reports when making land-use decisions;

Whereas the Ontario Land Tribunal (OLT) has the authority to overturn municipal planning decisions, often requiring municipalities to spend significant taxpayer dollars defending decisions that have already undergone a thorough local review process;

Whereas lengthy and costly appeals can delay housing projects, consume municipal resources, and reduce the ability of municipalities to focus on delivering services to residents; and,

Whereas local governments should have greater certainty and authority when decisions are consistent with approved Official Plans, provincial policies, and sound planning principles.

Now Therefore be it Resolved:

1. That the Government of Ontario be requested to review the role and mandate of the Ontario Land Tribunal to ensure greater respect for municipal planning decisions that are supported by evidence, public consultation, and approved planning policies;

2. That the Province consider amendments to the Planning Act and Ontario Land Tribunal Act to provide stronger deference to municipal decisions that align with provincial planning frameworks and Official Plans;

3. That the Province improve transparency and accountability within the Ontario Land Tribunal by requiring clear and detailed reasoning when municipal decisions are overturned;

4. That the Province explore measures to reduce the financial burden on municipalities defending planning decisions before the OLT, helping to protect taxpayer dollars and improve the efficiency of the planning process; and,

5. That Staff be directed to circulate this resolution to the Premier of Ontario, the Minister of Municipal Affairs and Housing, Local Members of Provincial Parliament, the Association of Municipalities of Ontario (AMO), and all Ontario municipalities for consideration and support.

Should you require further information, please do not hesitate to contact the Office of the Town Clerk at 905-430-4300.

Kathryn Douglas
Supervisor, Legislative Services
clerk@whitby.ca

Copy: C. Harris, Director of Legislative Services/Town Clerk - clerk@whitby.ca

The Honourable Rob Flack, Minister of Municipal Affairs and Housing - minister.mah@ontario.ca
Peter Bethlenfalvy, MPP, Pickering-Uxbridge - peter.bethlenfalvy@pc.ola.org
Lorne Coe, MPP, Whitby - lorne.coe@pc.ola.org
Jennifer K. French, MPP, Oshawa - jfrench-co@ndp.on.ca
Todd J. McCarthy, MPP, Durham - todd.mccarthy@pc.ola.org
Rob Cerjanec, MPP, Ajax - rcerjanec.mpp.co@liberal.ola.org
Laurie Scott, MPP, Haliburton-Kawartha Lakes-Brock - laurie.scott@pc.ola.org
Robin Jones, President, Association of Municipalities of Ontario - amopresident@amo.on.ca
All Ontario Municipalities

Peterborough County
Our History - Your Future

June 25, 2026

Re: Request for Provincial Action on the Accuracy of Municipal Voters Lists

Please be advised that at its regular County Council meeting held Wednesday, June 24, 2026, the Council of the County of Peterborough passed the following Resolution:

Resolution No. 129-2026

Moved by Councillor Carolyn Amyotte

Seconded by Councillor Carol Armstrong

Whereas the Province of Ontario shifted responsibility of the municipal election voters list from MPAC to Elections Ontario by amending the Municipal Elections Act, 1996, through the Helping Tenants and Small Businesses Act, 2020, effective after the 2022 municipal election; and

Whereas many of the eight lower-tier Township elector lists presented by Elections Ontario have discrepancies in voter counts from the 2022 municipal election, specifically in the number of eligible non-resident property owners which are significantly lower than the 2022 numbers; and

Whereas Elections Ontario has acknowledged the discrepancies and is planning to address them;

Now therefore be it resolved that the Corporation of the County of Peterborough urges the Province of Ontario to immediately encourage prioritization of the review of data specifically related to non-resident property owners to ensure voter lists are as accurate as possible prior to August 14, 2026; and

That this resolution be forwarded to the Premier, the Minister of Municipal Affairs and Housing, the local MPPs, AMO, ROMA, AMCTO, EOWC, FOCA, all Ontario municipalities and the eight lower-tier Township Clerks for support.

Sincerely,

Kari Stevenson

Director of Legislative Services/Clerk

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The Corporation of the Township of

NORTH STORMONT
RESOLUTION

Date: June 23, 2026

Resolution No. 163-2026

MOVED BY:		**SECONDED BY:**	
Mayor F. Landry		Mayor F. Landry	
Deputy Mayor S. Densham		Deputy Mayor S. Densham	SD
Councillor A. Bugelli		Councillor A. Bugelli	
Councillor A. McDonald		Councillor A. McDonald	
Councillor C. Shane	CS	Councillor C. Shane	

BE it resolved that the Council of the Township of North Stormont support the Eastern Ontario Wardens'Caucus resolution 2026-03: Ontario Most Outdated Property Reassessment in Canada: A Call to Return to Property Tax Reassessment Cycle, as presented.

AND BE IT FURTHER RESOLVED THAT a copy of this resolution be circulated to the Honourable Doug Ford, Premier of Ontario; the Honourable Peter Bethlenfalry, Minister of Finance; EOWC Members of Provincial Parliament; the Association of Municipalities of Ontario; the Rural Ontario Municipal Association; the Municipal Property Assessment Corporation; the Ontario Big City Mayors; the Western Ontario Wardens 'Caucus; the Mayors and Regional Chairs of Ontario; the Federation of Northern Ontario Municipalities; and all EOWC municipalities."

☒ **CARRIED** ☐ **DEFEATED** ☐ **DEFERRED**

Landry

Chair

Declaration of Conflict of Interest: _____
☐ **Disclosed His/Her/Their Interest**
☐ **Vacated His/Her/Their Seat**

RECORDED VOTE	
Councillor C. Shane	
Councillor A. McDonald	
Councillor A. Bugelli	
Deputy Mayor S. Densham	
Mayor F. Landry	

MISSISSAUGA

RESOLUTION 0147-2026
adopted by the Council of
The Corporation of the City of Mississauga
at its meeting on June 24, 2026

0147-2026 Moved by: Councillor N. Hart Seconded by: Councillor C. Fonseca

WHEREAS women and children experiencing intimate partner violence rely on emergency shelters as a critical component of their safety, recovery, and transition to stable housing;

WHEREAS adequate lengths of stay in emergency shelters are often necessary to support safety planning, access to social services, legal supports, mental health resources, and housing stabilization;

WHEREAS funding formulas and service benchmarks directly influence shelter capacity, operations, and the ability of service providers to meet community needs;

Whereas The City of Mississauga declared Intimate Partner Violence an epidemic on September 13th 2023;

WHEREAS municipalities across Ontario utilize varying approaches to shelter funding and length-of-stay expectations, providing opportunities for benchmarking and best-practice review;

WHEREAS any reductions to funding based on the formulas may have unintended consequences on service levels and the availability of supports for individuals fleeing intimate partner violence;

THEREFORE BE IT FURTHER RESOLVED THAT the Mayor, on behalf of Council, write to the Premier of Ontario, the Minister of Children, Community and Social Services, the Minister of Municipal Affairs and Housing, and the local Members of Provincial Parliament requesting a provincial review of benchmarking, funding formulas, and length-of-stay standards for emergency shelters serving women and children experiencing intimate partner violence, with a view to ensuring adequate shelter stays and preventing reductions in funding that could negatively impact service delivery and client outcomes;

AND BE IT FURTHER RESOLVED THAT a copy of this resolution be forwarded to the Premier of Ontario, the Minister of Children, Community and Social Services, the Minister of Municipal Affairs and Housing, local MPPs, the Association of Municipalities of Ontario (AMO), and all Ontario municipalities for their information and consideration.

Recorded Vote	YES	NO	ABSENT	ABSTAIN
Mayor C. Parrish				
Councillor S. Dasko	X			
Councillor A. Tedjo	X			
Councillor C. Fonseca	X			
Councillor J. Kovac	X			
Councillor N. Hart	X			
Councillor J. Horneck	X			
Councillor D. Damerla	X			
Councillor M. Mahoney	X			
Councillor M. Reid	X			
Councillor S. McFadden	X			
Councillor B. Butt	X			

Carried (11, 0)

TOWN OF CALEDON

Annette Groves
Mayor

July 2, 2026 Sent via E-Mail: sylvia.jones@pc.ola.org

Honourable Sylvia Jones, Deputy Premier
Constituency Office
Suite A, 3rd Floor
180 Broadway Ave.
Orangeville, ON L9W 1K3

Dear Deputy Premier Jones,

RE: Motion for Provincial Support, Funding and Coordinated Plans to Combat Tick Borne Diseases

I am writing to advise that at the Town Council meeting held on June 23, 2026, Council adopted a motion regarding requesting support to combat tick borne diseases.

The resolution reads as follows:

> *Whereas the prevalence of ticks, including those known to carry Lyme disease, and other Vector borne diseases have increased across Ontario;*
>
> *Whereas Lyme disease diagnoses have increased by 27% in 2024 to 2369 (Public Health Agency of Canada, PHAC);*
>
> *Whereas residents across Caledon have registered growing concerns about public health risks associated with tick exposure in parks, trails and residential areas;*
>
> *Whereas municipalities have limited jurisdiction and resources to effectively manage tick populations on a broad ecological scale;*
>
> *Whereas the Government of Ontario is responsible for public health policy, environmental management and vector-borne disease prevention and detection;*
>
> *Therefore, be it resolved that:*
>
> *Caledon Town Council formally requests that the Government of Ontario investigate and implement measures to reduce burgeoning tick populations and to mitigate their associated public health risks; and*

That such measures may include safe and effective tick control methods, public education campaigns and coordinated regional strategies; and

That the Province consider increased funding and support for local public health units to address tick-borne disease prevention; and

That a copy of this motion be sent to Minister of Health, Sylvia Jones, Chief Medical Officer of Health, Kiernan Moore, Minister of the Environment, Conservation and Parks, Todd McCarthy, Peel Public Health, the Toronto and Region Conservation Authority (TRCA), the Credit Valley Conservation (CVC), the Association of Municipalities of Ontario (AMO) and all 444 municipalities across Ontario.

For more information regarding this request, please contact the undersigned by email to mayor@caledon.ca or by phone at 905.584.2272 ext. 4155.

Thank you for your attention to this matter.

Sincerely,

Mayor Annette Groves

CC:

Chief Medical Officer of Health Kieran.Moore@ontario.ca

Minister of the Environment, Conservation and Parks minister.mecp@ontario.ca

Peel Public Health info@peelregion.ca

Toronto and Region Conservation Authority (TRCA) info@trca.ca

Credit Valley Conservation (CVC) foundation@cvc.ca

Association of Municipalities of Ontario (AMO) resolutions@amo.on.ca

444 municipalities across Ontario

THE CORPORATION OF THE TOWN OF CALEDON

6311 Old Church Road, Caledon East, Caledon, ON, Canada L7C 1J6
T. 905.584.2272 | 1.888.225.3366 | F. 905.584.1444 | www.caledon.ca | annette.groves@caledon.ca

THE CORPORATION OF THE TOWNSHIP OF CONMEE

BY-LAW # 2026-024

Being a By-law to confirm the proceedings of Council at its meeting.

Recitals:

Subsection 5(3) of the Municipal Act, 2001, S.O. 2001, Chapter 25, as amended, requires a municipal Council to exercise its powers by by-law, except where otherwise required.

Council from time to time authorizes action to be taken which does not lend itself to an individual by-law.

The Council of The Corporation of the Township of Conmee deems it desirable to confirm the proceedings of Council at its meeting by by-law to achieve compliance with the Municipal Act, 2001.

ACCORDINGLY, THE COUNCIL FOR THE CORPORATION OF THE TOWNSHIP OF CONMEE ENACTS AS FOLLOWS:

1. Ratification and Confirmation

The actions of this Council at its meeting held July 14th, 2026, with respect to each motion, resolution and other action passed and taken by this Council at the meeting, are adopted, ratified and confirmed as if such proceedings and actions had been expressly adopted and confirmed by by-law.

2. Execution of all Documents

The Mayor of the Council and the proper officers of the Township are authorized and directed to do all things necessary to give effect to the actions authorized at the meeting, and/or to obtain approvals where required, and except where otherwise provided, the Mayor and Clerk are authorized and directed to execute all necessary documents and to affix the Corporate Seal of the Township to such documents.

Passed this 14th day of July, 2026.

THE CORPORATION OF THE
TOWNSHIP OF CONMEE

_____
Mayor Sheila Maxwell

_____
Clerk Karen Paisley