REGULAR MEETING OF THE BOARD OF DIRECTORS
OF THE CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
TO BE HELD THURSDAY, SEPTEMBER 17, 2026
LEDUC GOLF CLUB, 5725 BLACK GOLD DRIVE, LEDUC, AB, T9E 8C4
DINNER: 5:30 P.M., MEETING: 6:00 P.M.

1. ***CALL TO ORDER***

2. ***ADOPTION OF AGENDA***

3. ***APPROVAL OF MINUTES***

* A. Minutes of the May 28, 2026 Regular Meeting *(pages 2 - 18)*

4. ***PUBLIC COMMENTARY***

5. ***REPORTS OF OFFICERS***

* A. Manager's Report *(pages 19 - 23)*

* B. Treasurer's Report *(pages 24 - 30)*

6. ***UNFINISHED BUSINESS***

7. ***NEW BUSINESS***

* A. Camrose / Wetaskiwin Feasibility Study (30 – 45 minutes) *(pages 31 - 33)*

8. ***CLOSED SESSION***

9. ***NEXT MEETING***

The Organizational and Regular Board meetings are scheduled for November 19, 2026, to be held at the Leduc Golf Club.

10. ***ADJOURNMENT***

* Items attached to agenda
** Verbal agenda item
*** Items to be circulated

MINUTES OF THE CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION, REGULAR MEETING, HELD ON THURSDAY, MAY 28, 2026 DINNER AT 5:00 P.M., MEETING AT 5:30 P.M., MARQUIS ROOM, BEST WESTERN PREMIER DENHAM INN & SUITES, 5207 - 50 AVENUE, LEDUC, AB T9E 6V3

1. CALL TO ORDER

Shawn Olson called the meeting to order at 5:26 p.m.

PRESENT:	Councillor Jaime McKeag-Reber	Town of Calmar
	Councillor Don Faulkner (alt.)	Town of Calmar
	Mayor Lars Hansen	City of Leduc
	Councillor Jill Spinks (alt.)	City of Leduc
	Mayor Lisa Vanderkwaak	City of Beaumont
	Councillor Anthony Kohlsmith	City of Beaumont
	Deputy Mayor Ron These	Village of Hay Lakes
	Councillor Paul Patterson	Village of Hay Lakes
	Councillor Dal Virdi	Leduc County
	Councillor Bonnie Thomas	Leduc County
	Councillor Doug Lyseng	Camrose County
	Councillor Jordon Banack	Camrose County
	Mayor Doug Peel	Town of Millet
	Councillor Mathew Starky	Town of Millet
ALSO PRESENT:	Councillor Wayne Throndson	City of Camrose
	Kristofer Johnson, G.M., Infrastructure	City of Camrose
	Des Mryglod, Director, Eng., Utilities & Transit	Leduc County
	Shawn Olson, Commission Manager	City of Leduc
	Rick Sereda, Operations Manager	City of Leduc
	Gerard Del Rosario, Commission Treasurer	City of Leduc
	Elie Tymchyshyn, Accountant	City of Leduc
	Mark D'aoust, Operations Technician	City of Leduc
	Chelsey Iles, Manager, Capital Projects	City of Leduc
	Melanie White, Project Manager	City of Leduc
	Shannon Bremner, Recording Secretary	City of Leduc
	Blair Martin, Manager, Infrastructure & Main.	City of Leduc
	Chris Parfitt, Project Manager	Associated Engineering
WITH REGRETS:	Mayor Krista Gardner	Town of Calmar
	Councillor Laura Tillack	City of Leduc
	Councillor Lana Broker	City of Camrose

2. ADOPTION OF AGENDA

Shawn Olson advised that in the absence of the Chair and Vice-Chair, the Commission Manager shall call the meeting to order and call for nominations for a Director to be appointed by the Board to exercise the duties and powers of the Chair, as per Bylaw 01/2021.

Shawn Olson called for nominations and/or anyone who wished to let their name stand to Chair the May 28, 2026 Board meeting.

Councillor Paul Patterson nominated Mayor Lars Hansen to be appointed as Chair of May 28, 2026 CRSWSC Board meeting. Mayor Lars Hansen accepted the nomination.

Shawn Olson made a second call for nominations, then made a third and final call for nominations. No further nominations were received.

27-26 **Motion:** It was **Moved** by Councillor Jill Spinks to appoint Mayor Lars Hansen as Chair of the May 28, 2026 Capital Region Southwest Water Services Commission Board meeting, elected by Acclamation.

Motion Carried Unanimously

Mayor Lars Hansen assumed Chair of the meeting.

28-26 **Motion:** It was **Moved** by Councillor Jordon Banack that the agenda for the May 28, 2026, Capital Region Southwest Water Services regular meeting be approved as circulated.

Motion Carried Unanimously

3. APPROVAL OF MINUTES

A. Minutes of the March 19, 2026 Regular Meeting

29-26 **Motion:** It was **Moved** by Mayor Doug Peel that the meeting minutes of the March 19, 2026 regular meeting of the Capital Region Southwest Water Services Commission be approved as circulated.

Motion Carried Unanimously

4. PUBLIC COMMENTARY

There was no public commentary.

5. REPORTS OF OFFICERS

A. Manager's Report

Nisku Booster Station

Ongoing negotiations with Maple Reinders and their subcontractor (Inline) to wrap up completion of the project have come to an impasse. The Commission received an official Notice of Escalation from Maple Reinders on March 30. In general terms, the issue is that Maple's subcontractor, Inline, believes they are entitled to extra compensation for work that did not conform to the contract and did not follow notice requirements. Administration engaged Reynolds Mirth Richards & Farmer LLP (RMRF) to provide legal counsel and opened an insurance claim with Alberta Municipalities to cover the legal expenses incurred. The Commission's insurance agreed to pay 80% of the legal fees, including any expert services required to support the claim.

Summary of events:

- On March 30, CRSWSC received official Notice of Escalation from Maple Reinders.
- On April 15, CRSWSC sent official Notice of Default for additional outstanding deficiencies and failure to achieve Total Completion to Maple Reinders. A Notice of Claim was also sent for additional engineering fees incurred due to the delays.
- On April 15, RMRF responded to Maple Reinders Notice of Escalation on behalf of CRSWSC, agreeing to proceed with mediation.
- On April 17 and April 28, Maple Reinders acknowledged the CRSWSC's Notice of Default and Notice of Claim, requesting an extension to the response deadline to allow time for them to coordinate with their subcontractors, which was accepted.

In response to a Board inquiry, it was clarified that when the former Booster Station on Highway 2 was sold to EPCOR, the Agreement required the establishment of two separate demarcation points. This requirement was not fulfilled, as the Commission's contractor subsequently encased the area in concrete, making any corrective work significantly risky and difficult. Administration is working through this with EPCOR and the contractor.

The legal team, alongside the CRSWSC Administration, is working on procuring a mediator and setting the mediation date.

The Nisku Booster Station remains operational during the legal process. Administration will provide an update at the next Board meeting.

Municipal Developments

Administration received 5 subdivision development/extension notifications (4 from the City of Beaumont and 1 from the Town of Calmar), as well as 1 Neighborhood Structure Plan from the City of Leduc. No concerns were identified, and no comments were provided in response.

Feasibility Study

Administration and Associated Engineering (AE) met with EPCOR on April 23, 2026 to discuss the potential demand increase to supply the City of Camrose, City of Wetaskiwin and Wetaskiwin County as part of the Feasibility Study. It was determined at this meeting that EPCOR cannot supply the water required through the future 50 street connection to Beaumont through the anticipated second feed line. The large increase in demand means that the new line to Camrose and Wetaskiwin would likely need to tie in north of the Anthony Henday Drive in Edmonton, as the current water supply to the perimeter of Edmonton would not be adequate. AE will take this into consideration when completing the Feasibility Study and will work closely with EPCOR in determining the most logical connection point and alignment.

It is anticipated that the draft of the Feasibility Study will be ready in June, with the opportunity to complete a Water for Life grant application by the November deadline if desired. Results from the Feasibility Study will be shared at the September 17, 2026 Board meeting.

City of Beaumont Line Extension to St. Vital Reservoir

At the meeting with EPCOR on April 23, Administration also discussed the ongoing water needs in Beaumont. EPCOR indicated they cannot maintain higher pressures long term and indicated that they intend to lower the pressure at the Blackmud Booster Station in Spring 2028, at the latest. After Spring 2028 it will be impossible for the City of Beaumont to complete system upgrades, utilizing St. Vital in the interim, without a new Booster Station. EPCOR has indicated that they need a formal letter requesting increased pressure with specific timelines to facilitate review and approval. A letter was sent to Beaumont to summarize the discussion with EPCOR, which was attached to the CRSWSC agenda package, in addition to the April 23, 2026 meeting minutes.

Beaumont Administration continues to work through the steps needed to perform the necessary repairs at their main reservoir. It should be noted that while a conditional approval was provided for the work on July 9, 2025, there are outstanding requirements that need to be submitted to receive full approval. The conditional approval was attached for reference.

The CRSWSC Administration will continue to work with Beaumont on these plans and to communicate with EPCOR.

Beaumont Second Feed Line

In the April 23 meeting with EPCOR, the 5-year forecast as it relates to the second feed line was discussed. EPCOR disclosed the design and construction of a second feed line along 50 street is anticipated to be in the 2032 - 2035 budget cycle. This information was included in the letter to Beaumont.

EPCOR reiterated that the new Beaumont feed line will not increase system pressures and will not be able to supply St. Vital reservoir. The Commission's intent was to provide redundancy if the existing 400mm line goes down, but EPCOR stated that full redundancy is not immediately achievable with the second feed line. EPCOR's intent of the second feed line is to supplement the existing 400mm line once it is at capacity to maintain minimum pressure to the Beaumont reservoir, but EPCOR cannot guarantee the second feed line will provide average day demand on its own.

Details regarding the specific level of redundancy that the second feed line will provide have not yet been finalized, as the project remains in the early stages of planning. In the event of an incident affecting supply, the Commission would implement contingency measures, including the trucking of water to Beaumont if required. Nonetheless, the second feed line is expected to provide a limited degree of short-term redundancy. It should be noted that this is an elevated level of service when compared to most commission members in the Regional Water Customers Group, where service is provided through single feed lines to reservoirs with 2 days of storage to allow time for emergency repairs. *In this manner, the second feed line does provide a level of additional supply for emergency response which is in alignment with the strategic priority of emergency preparedness.*

Regional Water Customer Group (RWCG)

The RWCG met on May 7, 2026 and discussed a range of topics.

1. EPCOR advised that the 2027 water rate is likely to increase due to inflation in operating and maintenance costs, including a significant increase in power costs and flood protection work. More details were provided in the financial report.

2. The Regional Water/Wastewater Assessment Initiative (RWWAI) was discussed and the consensus was that most members (EPCOR, Strathcona County, St. Albert and Sturgeon County) were not aware of the project until the CRSWSC copied them on correspondence to the Ministers. The group agreed to share information as more details became available.

3. A RWCG webpage is being created and should be active shortly. Once live, the webpage link will be added to the CRSWSC website to ensure the messaging for water demand management is consistent. A screenshot of the webpage content was attached for reference.

Regional Water/Wastewater Assessment Initiative (RWWAI)

The Commission received a response letter from Grant Hunter, Minister of Environment and Protected Areas (AEPA), acknowledging the letter the Commission previously sent regarding potential changes to the structure of water commissions and how rates are established (see attached). Minister Hunter stated that the first phase of the RWWAI is nearly complete, but a decision on how to proceed has not been made yet.

The correspondence with the Minister regarding this initiative aligns with the strategic priority of Commission governance; maintaining role clarity and long-term planning.

ARROW Utilities New Sanitary Line

Administration continues to work with ARROW Utilities regarding their proposed construction of a new sanitary main within the shared utility right-of-way containing the CRSWSC feed line to Beaumont. Given the proximity of the proposed work to critical CRSWSC infrastructure and the importance of coordinated planning and construction, Administration engaged Brownlee LLP to draft a formal letter emphasizing the need for collaborative engagement and risk mitigation between the two parties. The letter was circulated to ARROW Utilities and CRSWSC Board members on May 27, 2026.

Administration advised that a representative from ARROW Utilities has since contacted the Commission to confirm that they are aware of the need for preventative measures during construction, to protect critical CRSWSC infrastructure. ARROW Utilities is planning for construction in 2027 and 2028.

ATIA / POPA Legislative Requirements

Following the recent adoption of Policy 8 – Privacy and Access Management, Administration has generated the Personal Information Banks and Security Classification System to ensure the Commission is compliant with the Access to Information Act (ATIA) and Protection of Privacy Act (POPA) by the June 11, 2026 deadline.

Planned Shutdown at Blackmud Booster Station

EPCOR successfully completed scheduled maintenance at the Blackmud Booster Station on April 16, 2026. The work proceeded as planned and required a full outage of the Blackmud Booster Station for approximately 10 hours to the CRSWSC system.

Partial system flows were maintained during the outage to reduce impacts to members with smaller reservoir storage. Larger systems, including the City of Leduc, were fully isolated for the duration of the work.

The maintenance was completed successfully and without issue, system performance met expectations, and no adverse impacts were experienced. Commission operations staff coordinated throughout the outage and maintained communication with member operations teams.

Calmar Line Repair

Associated Engineering (AE), in collaboration with Administration, completed and issued the permanent repair Request for Quotes (RFQ) to seven qualified contractors. Following a competitive evaluation, the contract was awarded to Nikiforuk Construction Ltd., the lowest compliant bidder, for a contract value of $265,000 (excluding GST). This exceeds the budget of $200,000 approved at the January 2026 Board Meeting (Motion 07-26). No additional funding request is required at this time, as the variance will be accommodated with other capital project savings.

Construction is scheduled to begin in late May 2026, with completion anticipated in July 2026. Throughout construction, CRSWSC Administration will coordinate with Calmar Administration to ensure knowledge and awareness of potential impacts of the project.

Emergency Planning

Planned electrical protection, including lightning rods, have been procured and are being installed at all Commission facilities with towers this Spring / Summer. Due to ground conditions and site access, Hay Lakes and New Sarepta will be completed during the Summer when the ground has dried out and can accommodate the heavy equipment.

Telford Booster Station Pump Repairs

Repairs to Pump 101 at the Telford Booster Station have been successfully completed, and the pump has been returned to service. Maintenance on Pump 102 is underway to complete preventative mechanical seal work, which was planned to coincide with the completion of work on Pump 101. An additional third set of seal components has been ordered and is being retained as emergency backup inventory.

Administration is also continuing to evaluate the purchase of an additional pump and motor for the Telford Booster Station. As both pumps are the same size, this would improve redundancy and ensure rapid response capability in the event of a future failure. This practice is already employed at other stations like Highway 21.

These efforts support the strategic priority of emergency preparedness.

Commission Facility Locates

Commission operators completed 74 Utility Safety Partner locates as of May 11, 2026, as compared to 163 as of June 2025.

Professional Development Opportunities

Professional development opportunities were attached to the agenda package.

30-26 **Motion:** It was **Moved** by Councillor Don Faulkner that the Capital Region Southwest Water Services Commission Board of Directors receives as information the Manager's Report as presented by Shawn Olson, Commission Manager.

Motion Carried Unanimously

B. Treasurer's Report

2026 Financial Update

The financial reports have been prepared up to April 30, 2026. At this stage in the year, approximately 33% of the annual budget would normally be expended or earned. The Commission is on track with respect to budget, with total revenues of 32% earned and total expenditures of 31% incurred. Management expenses are under budget at 22% of the budget spent, while Operating expenses are on budget with 32% of the budget spent.

Water sales and purchases

- Water sales and purchases are on budget with 32% of the budget spent.
- A line loss of 3.38% has been recorded to date.

Revenue Variances

- Interest revenue is above budget at 164%; attributed to conservative budgeting of interest.

Expenditure Variances

Management:

- Management contract expenditures align with budget expectations with 33% spent.
- Debenture payments remain unutilized as they are paid in June and December.
- We have not incurred any Legal fees to date.
- Audit fees currently reflect 5% of the budget being spent; fees will be booked in Q4 during the interim audit of the Commission's financials.
- Honorariums (51%) and mileage (50%) are over budget. Alternate attendance has been encouraged this year, to build knowledge of the Commission's operations amongst the newly appointed members. *This is a direct link to member education, which is one of the Board's strategic goals.*

Operating:

- Operating contract is consistent with the budget at 33% spent.
- Seminars & Conferences are presently under budget (3%) but will incur additional costs as registrations and travel for WEFTEC get expensed. We are expecting to use the entirety of this budget, which further contributes to the overall education of both the Board and Administration.
- Power and Gas are slightly below budget at 22% and 26%, respectively. Our new rates for power will begin in July.
- Engineering fees are under budget at 12% as the primary focus remains on the close out of the Booster Station.
- Insurance premiums were paid in full at the beginning of the year and came in slightly higher than expected. We will adjust the 2027 Budget in the Fall to reflect this new base.
- Easement Leases are currently at 69% of budget, reflecting the full annual member fee payment made in January.
- Materials and Supplies expenditures are at 62% due to the procurement of AGM materials.
- Infrastructure Maintenance is over budget at 46% due to repairs done to the pump at Telford Booster Station (~$27K).
- Cathodic Protection and Computer & Comm. Maintenance, Supplies, Licenses are below budget due to the timing of scheduled work.
- Instrumentation & Mechanical is currently over budget at 49% due to a HACH invoice for the region's annual calibrations being paid in full. Costs will be recovered through billbacks to each respective municipality/COOP.

Capital Expenditures

Capital expenditure stands at 3% of the budget, due to timing of planned capital initiatives.

<u>Addressed in Manager's Report:</u>

- 2021.001 Nisku Booster Station & Beaumont Piping Upgrades (0.3%)
- 2025.001 Water Master Plan & Strategic Plan (16%)
- 2025.003 Camrose Feasibility Study (35%)
- 2026.001 Calmar Line Repair (9%)

<u>2017.002 Air Release Manhole Rehab (26%):</u>

- Project was completed in 2025; the remaining funds were carried forward to purchase a replacement core for a new Air Release Valve that failed. The remaining budget will be used for Air Release replacement parts.

<u>2024.002 Scada Upgrade (0%):</u>

- Project is ongoing, but no invoices have been billed to date.

2025.002 Emergency Planning (4.69%):

- Budget will be spent on lightning rods and grounding cables. Administration is working with the contractor to address issues that have surfaced since the initial planning phase.

2026.002 Arc Flash Study (0%):

- Project has been completed; we are waiting to be invoiced.

Unrestricted Surplus

As of the 2025 Financial Statements, the Commission's unrestricted surplus totals $3.1M. The Commission currently does not have a clause in its reserve policy that provisions the transfer of this surplus into a capital reserve. The total unrestricted surplus in the last 5 years is $1.9M. Administration requested that the Board allow for the transfer of this lump sum ($1.9M) into the Future Water Capacity Capital Reserve which will further strengthen the Commission's reserve balances. The reserve policy is due for revision in 2027, and at that time, Administration will bring forward options for transferring potential surpluses to the Commission's capital reserves.

Regional Water Customers Group (RWCG)

At the May 7, 2026 RWCG meeting it was confirmed by Strathcona County that the 2023 settlement which was executed in 2025, has been paid out. The total of this settlement was ~$281K and has been deposited into the balancing fund.

As of the 2025 Year End, the balance in the balancing fund totals ~$6.9M with a max fund balance of ~$5.1M. The RWCG is projecting a balance owing to EPCOR of ~$2.9M for the 2024 settlement (to be settled this year) as well as a balance owing of ~$1.1M for the 2025 settlement (to be settled in 2027), which would bring the balancing fund into the allowable threshold.

Councillor Dal Virdi and Councillor Jaime McKeag-Reber joined the meeting at 5:40 p.m.

Statement of Operations to April 30, 2026

	Actual 2026	Budget 2026	Variance	Budget % Spent
Revenue				
Water Sales	3,867,157	12,261,383	8,394,226	32%
Water Flat Rate Debenture Proceeds	31,301	93,903	62,602	33%
Interest Earned	81,861	50,000	(31,861)	164%
Miscellaneous Revene	-	-	-	0%
Capital Prov Gov't Grants	23,270	-	(23,270)	
Total Revenue	**4,003,588**	**12,405,286**	**8,401,698**	**32%**
Expenses				
Management Expenses				
Management Contract	51,000	153,000	102,000	33%
Debenture payments	-	93,903	93,903	0%
Legal Fees	-	10,000	10,000	0%
Other Professional Fees	3,910	10,500	6,590	37%
Honorarium	8,240	16,200	7,960	51%
Audit Fees	863	18,000	17,138	5%
Office Supplies	747	2,000	1,253	37%
Mileage	2,001	4,000	1,999	50%
Bank Charges & Interest	121	500	379	24%
Total Management Expenses	**66,882**	**308,103**	**241,221**	**22%**
Operating Expenses				
Water Purchases	2,300,303	7,264,713	4,964,410	32%
Operating Contract	125,667	377,000	251,333	33%
Seminars & Conferences	3,872	124,400	120,528	3%
Power	44,107	200,000	155,893	22%
Engineering Fees	4,037	35,000	30,964	12%
Instrumentation & Mechanical	22,231	45,000	22,769	49%
Insurance	55,824	45,000	- 10,824	124%
Infrastructure Maintenance	54,073	117,000	62,927	46%
Regular & Annual Meeting Expenses	15,866	26,000	10,134	61%
Cathodic Protection	-	6,000	6,000	0%
Materials & Supplies	11,220	18,000	6,780	62%
Computer & Comm. Maintenance, Supplies, Licenses	2,513	30,500	27,988	8%
Easement Leases	2,079	3,000	921	69%
Gas	3,346	13,000	9,654	26%
Telephone	2,036	7,500	5,464	27%
Total Operating Expenses	**2,647,174**	**8,312,113**	**5,664,939**	**32%**
Total Expenses	**2,714,055**	**8,620,216**	**5,906,161**	**31%**
Net of Revenue over Expenses	**1,289,533**	**3,785,070**	**2,495,537**	**34%**
Net Interfund Transfers				
Drawn from Accumulated Surplus	-	-	-	0%
Transfer to Operating Reserves	-	- 169,449	- 169,449	100%
Transfer from Operating Reserves	-	98,700	98,700	100%
Transfer to Capital Reserves	-	- 3,714,321	- 3,714,321	100%
Total Interfund Transfers	-	- **3,785,070**	- **3,785,070**	
Net Surplus (Deficit)	**1,289,533**	- -	**1,289,533**	

Statement of Financial Position as at April 30, 2026

Financial Assets

Bank	$	3,968,632
Accounts Receivable	$	3,015,363
Accrued Receivables	$	-
Investment Interest Receivable	$	37,807
GST Receivable	$	15,040
Short Term Investments	$	8,060,930
Inventory	$	19,422
Total Financial Assets	**$**	**15,117,195**

Liabilities

Trade Accounts Payable	$	739,696
Accrued Accounts Payable	$	337,380
Accrued Interest on Debentures	$	1,085
Deferred Revenue - Gov't Grant	$	-
Debenture 4000845 - 2010	$	502,195
Debenture 4002395 - 2018	$	60,315
Total Liabilities	**$**	**1,640,672**
Net-Financial Assets	**$**	**13,476,523**

Non-Financial Assets

Land	$	334,685
Machinery & Equipment	$	405,377
Accum. Depreciation - Mach & Equip	$	(397,943)
Engineering Structures	$	46,455,495
Work in Progress - Buildings	$	-
Work in Progress - Equipment	$	269,922
Work in Progress - Eng Structure	$	257,825
Accum. Depreciation - Eng Stru	$	(6,357,364)
Work in Progress - Nisku Booster Station	$	11,483
Total Non-Financial Assets	**$**	**40,979,480**

Accumulated Surplus

Rate Stabilization Op Reserve	$	170,165	
Emergency & Operations - Op Res	$	200,000	
General Reserves - Op Reserve	$	1,203,846	
Equipment - Cap Reserve	$	1,768,342	
Future Water Capacity - Cap Reserve	$	6,763,343	
Total Reserves for Future Use			$ 10,105,696
Unrestricted Surplus			$ 2,781,290
Investment - remeasurement gains/losses			
Equity in Fixed Assets			$ 40,279,484
Current Earnings (Net surplus (deficit) + add back debenture principle)			$ 1,289,533
Total Accumulated Surplus			**$ 54,456,003**

2025 Capital Summary to April 30, 2026

2017.002 Air Release Manhole Rehab	
2026 Budget	18,700
2026 Expenditures	(4,825)
Budget Remaining	**13,875**
2021.001 Nisku Booster Station & Beaumont Piping Upgrade	
2026 Budget	3,675,755
2026 Expenditures	(11,471)
Budget Remaining	**3,664,284**
2024.002 SCADA upgrade	
2026 Budget	51,250
2026 Expenditures	-
Budget Remaining	**51,250**
2025.001 Water Master Plan & Strategic Plan	
2026 Budget	132,520
2026 Expenditures	(21,383)
	111,137
2025.002 Emergency Planning	
2026 Budget	120,000
2026 Expenditures	(5,634)
	114,366
2025.003 Camrose Feasibility Study	
2026 Budget	219,520
2026 Expenditures	(77,020)
	142,500
2026.001 Calmar Line Repair	
2026 Budget	200,000
2026 Expenditures	(17,136)
	182,864
2026.002 Arc Flash Study	
2026 Budget	10,000
2026 Expenditures	-
	10,000
2025 Total Capital Budget	**4,427,745**
2025 Total Capital Expenditu	**(137,468)**
Budget Remaining	**4,290,277**
Budget Spent	**3%**

31-26 **Motion:** It was **Moved** by Councillor Paul Patterson that the Capital Region Southwest Water Services Commission Board of Directors receive the Treasurer's Report as information as presented by Gerard Del Rosario, Treasurer.

Motion Carried Unanimously

32-26 **Motion:** It was **Moved** by Deputy Mayor Ron These that the Capital Region Southwest Water Services Commission Board of Directors approve a transfer from Accumulated Surplus to the Future Water Capacity Reserve in the amount of $1.9M.

Motion Carried Unanimously

6. UNFINISHED BUSINESS

A. Water Master Plan

In January 2025, Administration began the process to complete a Water Master Plan Update in accordance with CRSWSC Bylaw 01/2021. According to the Bylaw, a review and update of the Water Master Plan must be completed every 5 years, beginning on the date the previous Master Plan was adopted. The previous Master Plan Update was adopted in 2020.

According to the Bylaw, the goal of the Water Master Plan is:

1. To assess the Commission's existing assets and projected maintenance and asset acquisition requirements;

2. To set out a written forecast of the quantity of water which the Commission reasonably expects to purchase during the next five calendar years, and;

3. To provide engineering and other information supporting the forecast including, without limitation, information regarding the forecast population, business and industrial growth of the Members.

The 2026 Water Master Plan Update was completed by Associated Engineering (AE) and was circulated in advance for review. Completion of the Water Master Plan also incorporated an update to the Commission's strategic priorities.

While preparing the Master Plan, it became apparent that a further policy is needed to address future large demand customers or large demand increases for current members. Policy 9 – Large Demand User and Infrastructure Upgrade Policy was drafted in conjunction with the Master Plan, which was also attached for review (Appendix D of the Water Master Plan).

Board members were asked to review the draft Water Master Plan update and proposed Policy 9 – Large Demand User and Infrastructure Upgrade Policy in

advance, for discussion and adoption at the May 28, 2026 Board meeting. Members and their administration teams were invited to reach out to CRSWSC Administration with any questions.

Prior to the meeting, the City of Beaumont submitted correspondence requesting that their preferred conceptual alignment of the secondary water line be incorporated into the Master Plan. As the proposed alignment aligns with the Commission's existing modelling, there were no concerns with its inclusion. Administration proposed adding the correspondence from Beaumont as a supplementary appendix to the Water Master Plan update.

Further to proposed Policy 9 – Large Demand User and Infrastructure Upgrade, Shawn Olson advised that a prospective large volume customer had recently contacted the Commission regarding water supply. This inquiry highlighted the need for a Large Demand User Policy to establish a clear framework for evaluating and responding to high-demand requests. A Board member sought clarification on whether large users would be required to contribute if sufficient capacity exists. Shawn Olson clarified that the policy is intended to address unusually large water users, that significantly impact long-term (25 year) demand forecasts, and not typical water users operating within standard demand ranges.

A Board member raised questions regarding cost-sharing under Section 2 a) ii. of the draft policy related to infrastructure upgrades that provide mixed benefits. Shawn Olson clarified that the Commission would fund infrastructure required to support forecasted growth; however, any infrastructure exceeding forecasted requirements (e.g. upsizing of pipes) would be the responsibility of the benefiting member or developer. The member or developer would initially fund the upgrade, with the Commission reimbursing the portion attributed to growth-related capacity. The Board suggested that interest costs should be considered in such reimbursements, and Administration agreed this should be reflected in the policy. With respect to operations and maintenance, Administration noted that incremental costs are expected to be minimal, primarily limited to increased power consumption. As such, additional operational costs are not expected to be addressed within the policy.

An amendment to the policy was recommended to explicitly include interest and debt servicing considerations under Section 2, recognizing cost of borrowing as a relevant factor. It was suggested that the policy be approved as amended to ensure a framework is in place to address future inquiries. The Board asked that if the policy were approved as amended, that it be brought back to the September 17, 2026 meeting to analyze if further modifications should be considered.

Board members representing Leduc County expressed a preference to defer approval of the Large Demand User Policy to allow additional time for review by members respective Administration teams.

33-26 **Motion:** It was **Moved** by Councillor Bonnie Thomas that the Capital Region Southwest Water Services Commission Board of Directors defer the Policy 9 – Large Demand User and Infrastructure Upgrade Policy approval until the September 17, 2026 Board meeting.

In Favour (4): Councillor Bonnie Thomas, Councillor Dal Virdi, Councillor Doug Lyseng, Deputy Mayor Ron These

Opposed (10): Councillor Jaime McKeag-Reber, Councillor Don Faulkner, Mayor Lars Hansen Councillor Jill Spinks, Mayor Lisa Vanderkwaak, Councillor Anthony Kohlsmith, Councillor Paul Patterson, Councillor Jordon Banack, Mayor Doug Peel, Councillor Mathew Starky

Motion Defeated

34-26 **Motion:** It was **Moved** by Councillor Anthony Kohlsmith that the Capital Region Southwest Water Services Commission Board of Directors approve the Policy 9 – Large Demand User and Infrastructure Upgrade Policy as amended, to explicitly include interest and debt servicing considerations under Section 2, recognizing cost of borrowing as a relevant factor.

In Favour (12): Councillor Jaime McKeag-Reber, Councillor Don Faulkner, Mayor Lars Hansen Councillor Jill Spinks, Mayor Lisa Vanderkwaak, Councillor Anthony Kohlsmith, Councillor Paul Patterson, Councillor Jordon Banack, Mayor Doug Peel, Councillor Mathew Starky, Councillor Doug Lyseng, Deputy Mayor Ron These

Opposed (2): Councillor Bonnie Thomas, Councillor Dal Virdi

Motion Carried

Administration agreed to bring Policy 9 – Large Demand User and Infrastructure Upgrade back to the September 17, 2026 Board meeting for review under Unfinished Business, providing opportunity for the Board to bring forward policy amendments.

35-26 **Motion:** It was **Moved** by Mayor Lisa Vanderkwaak that the Capital Region Southwest Water Services Commission Board of Directors approve the draft Water Master Plan Update as amended and direct Administration to finalize the Water Master Plan as amended.

Motion Carried Unanimously

7. NEW BUSINESS

There were no new business items.

8. CLOSED SESSION

There were no closed session agenda items.

9. NEXT MEETING

The next meeting of the Capital Region Southwest Water Services Commission is scheduled for September 17, 2026, to be held at the Leduc Golf Club.

10. ADJOURNMENT

36-26 **Motion:** It was **Moved** by Mayor Lars Hansen to adjourn the meeting at 6:13 p.m.

Motion Carried Unanimously

_____
CHAIR

_____
MANAGER

5A Manager's Report
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

Report Name: **Manager's Report – September 17, 2026**

Recommendation:

1) It is recommended that the CRSWSC Board of Directors receive this report as information.

Nisku Booster Station

The Nisku Booster Station is fully operational. The legal team, alongside the CRSWSC Administration, continues to work through the claim issues with Maple. Deficiencies include the PRV performance and cathodic protection, and the overall project close out. We expect the claim discussions to carry on for an extended period of time.

Municipal Developments

Since the last Board report, Administration received 7 subdivision development/extension notifications, 3 Land Use Bylaw Amendment Public Hearing notices, and 2 Municipal Development Plan Density Target amendment circulations from the City of Beaumont. Administration also received 2 Public Engagement Invitations regarding the City of Leduc Growth Management Study (GMS) findings and the proposed Recommended Annexation Area. No concerns were identified, and no comments were submitted in response.

City of Beaumont Line Extension to St. Vital Reservoir

Commission Administration received a letter from the City of Beaumont on July 3, 2026 regarding outstanding Commission connection issues for the St. Vital Reservoir project. The Commission responded on July 30, 2026. Both letters are attached for reference.

Administration met with the City of Beaumont on August 17, 2026, to discuss the outstanding requirements for the CRSWSC connection application and Beaumont's construction schedule. The minutes from this meeting are attached for reference. The project carries a significant risk, as EPCOR has indicated that pressure reductions will occur in Spring 2028, while Beaumont's construction schedule, which requires higher pressure from EPCOR, shows project completion in March 2028.

While responsibility for addressing elevated pressure requirements to get water to St. Vital Reservoir rests with Beaumont, the Commission and EPCOR will continue to provide support as needed. To facilitate ongoing collaboration, the Commission coordinated a meeting with Commission Administration, Beaumont Administration and EPCOR. The meeting is scheduled for September 22, 2026. Administration will provide a further update at the next Board meeting.

Outstanding items to confirm include duration of time EPCOR can maintain a higher pressure to support Beaumont's construction, modelling of system performance during construction, confirmation of EPCOR meter requirements for Beaumont, and the aforementioned meeting with all parties.

Beaumont Second Feed Line

Administration received a response from EPCOR on July 28, 2026 (attached) regarding Beaumont's 2026-2031 Five-Year Demand Forecast. EPCOR confirmed plans to construct a water main along 50 Street to the Beaumont city boundary within its 2032-2035 capital budget cycle. EPCOR also reiterated that the 50 Street water main is primarily intended to supplement Beaumont's existing water supply and maintain the minimum pressure requirements outlined in the Water Supply Agreement.

Regional Water Customer Group (RWCG)

The RWCG met on May 7, 2026; updates were provided in the May 28, 2026 Manager's Report. There have been no further meetings since this date.

The Framework for Drinking Water Emergencies in the Greater Edmonton Region was sent to the RWCG for information. This has been finalized following several years of collaboration among EPCOR, municipal partners, Alberta Health Services (AHS), Alberta Environment and Protected Areas (AEPA), Alberta Emergency Management Agency (AEMA) and other regional stakeholders.

The framework establishes a coordinated, multi-agency approach for responding to significant drinking water emergencies affecting communities supplied by the North Saskatchewan River. It outlines governance, roles and responsibilities, decision-making processes, communications protocols, emergency water distribution strategies, and system restoration objectives.

Key objectives include:

- Providing emergency drinking water to priority populations within 24 hours and the general public within 72 hours.
- Restoring affected drinking water systems as quickly as possible.
- Delivering coordinated, transparent, and timely public communications throughout an emergency.

The framework adopts an Incident Command System (ICS) approach and emphasizes unified decision-making among utilities, municipalities, public health authorities and provincial agencies.

It also establishes a prioritized approach to emergency water distribution, ensuring vulnerable populations, critical facilities, and emergency responders receive support first.

The framework strengthens regional preparedness and provides a common response structure for drinking water emergencies that may affect up to 89 communities and approximately 1.55 million residents in the Greater Edmonton Region.

Implications for the CRSWSC: The framework provides clear guidance on emergency response coordination, communications, water distribution, and system restoration activities, improving regional readiness and ensuring alignment with provincial partners during major drinking water incidents. This framework will also serve as the foundation for future regional emergency preparedness exercises and ongoing inter-agency collaboration.

A CRSWSC Technical Committee meeting will be held to review member municipalities roles within this framework.

ARROW Utilities New Sanitary Line

Administration continues to work with ARROW Utilities regarding their proposed construction of a new sanitary main within the shared utility right-of-way containing the CRSWSC feed line to Beaumont. Administration requested an update from ARROW Utilities on August 19, 2026, and ARROW advised that they have not awarded the project to a contractor yet but will update the Commission with project milestones as they become available.

Calmar Line Repair

Construction has been scheduled to occur after the peak water demand period, when materials are available. As a result, the construction will commence on September 28, 2026, and be completed by October 9, 2026. Commission Administration met with Calmar Administration on September 2, 2026 to discuss the project schedule. Throughout construction, Commission Administration will continue to coordinate with the Town of Calmar Administration to proactively address any potential impacts such as closure of the truck fill station.

Administration also discussed the Crossing Agreement process to support development in the Town of Calmar. Calmar Administration will be submitting sketches for lots in question to aid in quicker approval when development proceeds.

Leduc County Whitemud Landing Utility Servicing

Administration met with Leduc County on July 30, 2026, to discuss servicing options for the Whitemud Landing Area Structure Plan. Several concepts were presented, and the Commission confirmed that mixed water supply sources are not permitted. Administration is reviewing the proposed concepts and will continue to work collaboratively with Leduc County to identify a suitable connection strategy.

Beacon Hill Data Centre

Administration met with a representative from the Beacon Hill Data Centre that is being proposed in Leduc County to discuss their water needs. No water servicing concerns were identified.

Emergency Planning

Current outstanding emergency preparedness initiatives are focused on lightning strike protection. The original plan was to install lightning protection systems at all unprotected CRSWSC fill station towers. As many of our existing towers are not CSA certified, the feasibility of installing certified equipment has become cost prohibitive in those situations.

As a result, lightning protection systems will proceed at the Armena, Millet and Robinson stations, as these sites have CSA-certified climbing towers that allow installation at a significantly lower cost.

Administration is examining alternative solutions at the remaining stations (Hay Lakes, New Sarepta, and Calmar), including cellular and satellite-based solutions, that may eliminate the need for tower access and associated lightning protection upgrades.

Commission Facility Locates

Commission operators completed 202 Utility Safety Partner locates as of September 1, 2026, as compared to 275 as of September 1, 2025.

Professional Development Opportunities

Professional development opportunities are listed in attachment vi.

Attachments

i. 2026.07.03 City of Beaumont Letter – CIMA+ Tech Memo *(pages 34 - 45)*
ii. 2026.07.30 CRSWSC Response to Beaumont – Temporary Connection to St. Vital Reservoir *(pages 46 - 55)*
iii. 2026.08.17 CRSWSC Meeting with Beaumont – Minutes *(pages 56 - 58)*
iv. 2026.07.28 EPCOR Letter re: 2026 – 2031 5-Year Demand Forecast Response *(page 59)*
v. EPCOR Framework for Drinking Water Emergencies *(pages 60 - 96)*
vi. Professional Development Opportunities *(pages 97 - 98)*

5B Treasurer's Report
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

Report Name: **Treasurer's Report – September 17, 2026**

Recommendation:

1) It is recommended that the CRSWSC Board of Directors receive this report as information.

2026 Financial Update

The financial reports have been prepared up to August 31, 2026. At this stage in the year, approximately 67% of the annual budget would normally be expended or earned. The Commission is on track with respect to budget, with total revenues of 68% earned and total expenditures of 66% incurred. Management expenses are under budget at 57% of the budget spent, while Operating expenses are on budget with 66% of the budget spent.

Water Sales and Purchases

- Water sales and purchases are on budget with 67% of the budget spent.
- A line loss of 2.40% has been recorded to date.
- An error in the June EPCOR bill affected the June and July Recap of Water Sales to Purchases. In June, three new flow meters were added at Commission sites under the amended EPCOR Agreement related to the new Booster Station. During the transition, final readings recorded when the meters were commissioned on June 17 were later overwritten by readings taken on June 26. This caused a portion of the consumption to be counted twice in the June billing calculation. Administration brought this issue forward to EPCOR who verified the discrepancy, and the correction was applied as a credit on the July bill.

Revenue Variances

- Interest earned (314%) exceeds the budget due to a combination of interest on our bank balance as well as investment returns.

Expenditure Variances – Management

- Management contract expenditures align with budget expectations with 67% spent.
- Debentures are under budget at 50%; however, payments are made in June and December.
- Legal fees currently sit at 64% of the budget spent. Majority of this expense relates to Arrow Utilities new sanitary line construction.

- Audit fees currently reflect 5% of the budget being spent; fees will be booked in Q4 during the interim audit of the Commission's financials.
- Honorariums (65%) and mileage (64%) are on budget.
- Other Professional Fees are under budget at 37%; the only expense incurred has been for the 2025 Annual Report.
- Office supplies are under budget at 44%.

Expenditure Variances – Operations

- Operating contract is consistent with the budget at 67% spent.
- Seminars & Conferences are presently under budget at 48% but will incur additional costs as registrations and travel for WEFTEC get expensed. We are expecting to use the entirety of this budget, which further contributes to the overall education of both the Board and Administration.
- Power and Gas are below budget at 47% and 41%, respectively.
- Engineering fees are under budget at 40% as the primary focus remains on the closing out of the Booster Station.
- Insurance premiums were paid in full at the beginning of the year and came in higher than expected. We will adjust the 2027 Budget in the fall to reflect this new base.
- Easement Leases are currently at 69% of budget.
- Materials and Supplies expenditures are at 93% due to the procurement of AGM materials.
- Infrastructure Maintenance is over budget at 85% due to repairs done to the pump at Telford Booster Station (~$27K), surge protection at Telford Booster Station (~$11K), and retrofit of the pump at Telford Booster Station (~$31K).
- Cathodic Protection and Computer & Comm. Maintenance, Supplies, Licenses are below budget due to the timing of scheduled work.
- Instrumentation & Mechanical is slightly under budget at 58%.

Capital Expenditures

Capital expenditure stands at 9% of the budget, due to timing of planned capital initiatives.

Addressed in Manager's Report:

- 2021.001 Nisku Booster Station & Beaumont Piping Upgrades (1.5%)
- 2025.002 Emergency Planning (5%)
- 2025.003 Camrose Feasibility Study (95%)
- 2026.001 Calmar Line Repair (23%)

2017.002 Air Release Manhole Rehab (26%):

- Project was completed in 2025; the remaining funds were carried forward to purchase a replacement core for a new Air Release Valve that failed. The remaining budget will be used to offset the expected overage in the Calmar Line Repair project.

2024.002 Scada Upgrade (34%):

- Project is ongoing.

2025.001 Water Master Plan & Strategic Plan (50%):

- Project is completed and savings will be used to offset the expected overage in the Calmar Line Repair project.

2026.002 Arc Flash Study (75%):

- Project has been completed and came in under budget. Project savings will be used to offset the expected overage in the Calmar Line Repair project.

5B Treasurer's Report
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

Statement of Operations to August 31, 2026

	Actual 2026	Budget 2026	Variance	Budget % Spent
Revenue				
Water Sales	8,251,043	12,261,383	4,010,340	67%
Water Flat Rate Debenture Proceeds	62,602	93,903	31,301	67%
Interest Earned	156,965	50,000	(106,965)	314%
Miscellaneous Revene	-	-	-	0%
Capital Prov Gov't Grants	23,270	-	(23,270)	
Total Revenue	**8,493,881**	**12,405,286**	**3,911,405**	**68%**
Expenses				
Management Expenses				
Management Contract	102,000	153,000	51,000	67%
Debenture payments	46,951	93,903	46,952	50%
Legal Fees	6,350	10,000	3,650	64%
Other Professional Fees	3,910	10,500	6,590	37%
Honorarium	10,560	16,200	5,640	65%
Audit Fees	863	18,000	17,138	5%
Office Supplies	889	2,000	1,111	44%
Mileage	2,561	4,000	1,439	64%
Bank Charges & Interest	591	500	- 91	118%
Total Management Expenses	**174,675**	**308,103**	**133,428**	**57%**
Operating Expenses				
Water Purchases	4,858,566	7,264,713	2,406,147	67%
Operating Contract	251,333	377,000	125,667	67%
Seminars & Conferences	59,821	124,400	64,579	48%
Power	93,505	200,000	106,495	47%
Engineering Fees	13,878	35,000	21,122	40%
Instrumentation & Mechanical	26,162	45,000	18,838	58%
Insurance	55,824	45,000	- 10,824	124%
Infrastructure Maintenance	99,259	117,000	17,741	85%
Regular & Annual Meeting Expenses	18,130	26,000	7,870	70%
Cathodic Protection	-	6,000	6,000	0%
Materials & Supplies	16,803	18,000	1,197	93%
Computer & Comm. Maintenance, Supplies, Licenses	2,543	30,500	27,958	8%
Easement Leases	2,079	3,000	921	69%
Gas	5,288	13,000	7,712	41%
Telephone	4,127	7,500	3,373	55%
Total Operating Expenses	**5,507,319**	**8,312,113**	**2,804,794**	**66%**
Total Expenses	**5,681,994**	**8,620,216**	**2,938,222**	**66%**
Net of Revenue over Expenses	**2,811,887**	**3,785,070**	**973,183**	**74%**
Net Interfund Transfers				
Drawn from Accumulated Surplus	-	-	-	0%
Transfer to Operating Reserves	-	169,449	- 169,449	100%
Transfer from Operating Reserves	-	98,700	98,700	100%
Transfer to Capital Reserves	-	3,714,321	- 3,714,321	100%
Total Interfund Transfers	**-**	**3,785,070**	**- 3,785,070**	
Net Surplus (Deficit)	**2,811,887**	**-**	**2,811,887**	

5B Treasurer's Report
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

Statement of Financial Position as at August 31, 2026

Financial Assets

Bank	$	6,569,866
Accounts Receivable	$	1,622,208
Accrued Receivables	$	-
Investment Interest Receivable	$	37,807
GST Receivable	$	14,850
Short Term Investments	$	8,092,204
Inventory	$	19,422
Total Financial Assets	**$**	**16,356,356**

Liabilities

Trade Accounts Payable	$	724,200
Accrued Accounts Payable	$	337,380
Accrued Interest on Debentures	$	1,085
Deferred Revenue - Gov't Grant	$	-
Deposits	$	7,500
Debenture 4000845 - 2010	$	502,195
Debenture 4002395 - 2018	$	60,315
Total Liabilities	**$**	**1,632,675**
Net-Financial Assets	**$**	**14,723,681**

Non-Financial Assets

Land	$	334,685
Machinery & Equipment	$	405,377
Accum. Depreciation - Mach & Equip	$	(397,943)
Engineering Structures	$	46,455,495
Work in Progress - Buildings	$	-
Work in Progress - Equipment	$	501,097
Work in Progress - Eng Structure	$	257,825
Accum. Depreciation - Eng Stru	$	(6,357,364)
Work in Progress - Nisku Booster Station	$	55,505
Total Non-Financial Assets	**$**	**41,254,676**

Accumulated Surplus

Rate Stabilization Op Reserve	$	170,165	
Emergency & Operations - Op Res	$	200,000	
General Reserves - Op Reserve	$	1,203,846	
Equipment - Cap Reserve	$	1,768,342	
Future Water Capacity - Cap Reserve	$	6,763,343	
Total Reserves for Future Use			$ 10,105,696
Unrestricted Surplus			$ 2,781,290
Investment - remeasurement gains/losses			
Equity in Fixed Assets			$ 40,279,484
Current Earnings (Net surplus (deficit) + add back debenture principle)			$ 2,811,887
Total Accumulated Surplus			**$ 55,978,357**

Prepared by: Gerard Del Rosario, Elie Tymchyshyn
Date: September 17, 2026
Pages: Page 5 of 7

5B Treasurer's Report
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

2026 Capital Summary to August 31, 2026

2017.002 Air Release Manhole Rehab	
2026 Budget	18,700
2026 Expenditures	(4,825)
Budget Remaining	**13,875**
2021.001 Nisku Booster Station & Beaumont Piping Upgrade	
2026 Budget	3,675,755
2026 Expenditures	(55,505)
Budget Remaining	**3,620,250**
2024.002 SCADA upgrade	
2026 Budget	51,250
2026 Expenditures	(17,500)
Budget Remaining	**33,750**
2025.001 Water Master Plan & Strategic Plan	
2026 Budget	132,520
2026 Expenditures	(66,491)
	66,029
2025.002 Emergency Planning	
2026 Budget	120,000
2026 Expenditures	(5,634)
	114,366
2025.003 Camrose Feasibility Study	
2026 Budget	219,520
2026 Expenditures	(209,139)
	10,381
2026.001 Calmar Line Repair	
2026 Budget	200,000
2026 Expenditures	(46,134)
	153,866
2026.002 Arc Flash Study	
2026 Budget	10,000
2026 Expenditures	(7,450)
	2,550
2025 Total Capital Budget	**4,427,745**
2025 Total Capital Expenditu	**(412,677)**
Budget Remaining	**4,015,068**
Budget Spent	**9%**

Attachments:

i. 2026 Recap of Water Sales to Purchases *(page 99)*
ii. 2026 Customer Sales Detailed Report $ *(page 100)*
iii. 2026 Customer Sales Detailed Report M^3 *(page 101)*

7A Camrose / Wetaskiwin Feasibility Study

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

Report Name: **Camrose / Wetaskiwin Feasibility Study**

Recommendations:

1) It is recommended that the CRSWSC Board of Directors approve and finalize the draft Feasibility Study.

2) It is recommended that the CRSWSC Board of Directors provide the finalized Feasibility Study to the City of Camrose to coordinate submitting a Water for Life grant application for the proposed regional waterline.

Background:

At the CRSWSC Board meeting on March 21, 2024, Administration was directed to submit an application to the Water for Life grant program for funding a Feasibility Study to investigate the possibility of extending the CRSWSC water supply lines to the City of Camrose, City of Wetaskiwin and Wetaskiwin County. The Water for Life grant was announced in Spring 2025, and work commenced on the Feasibility Study to be completed alongside the Commission's Water Master Plan.

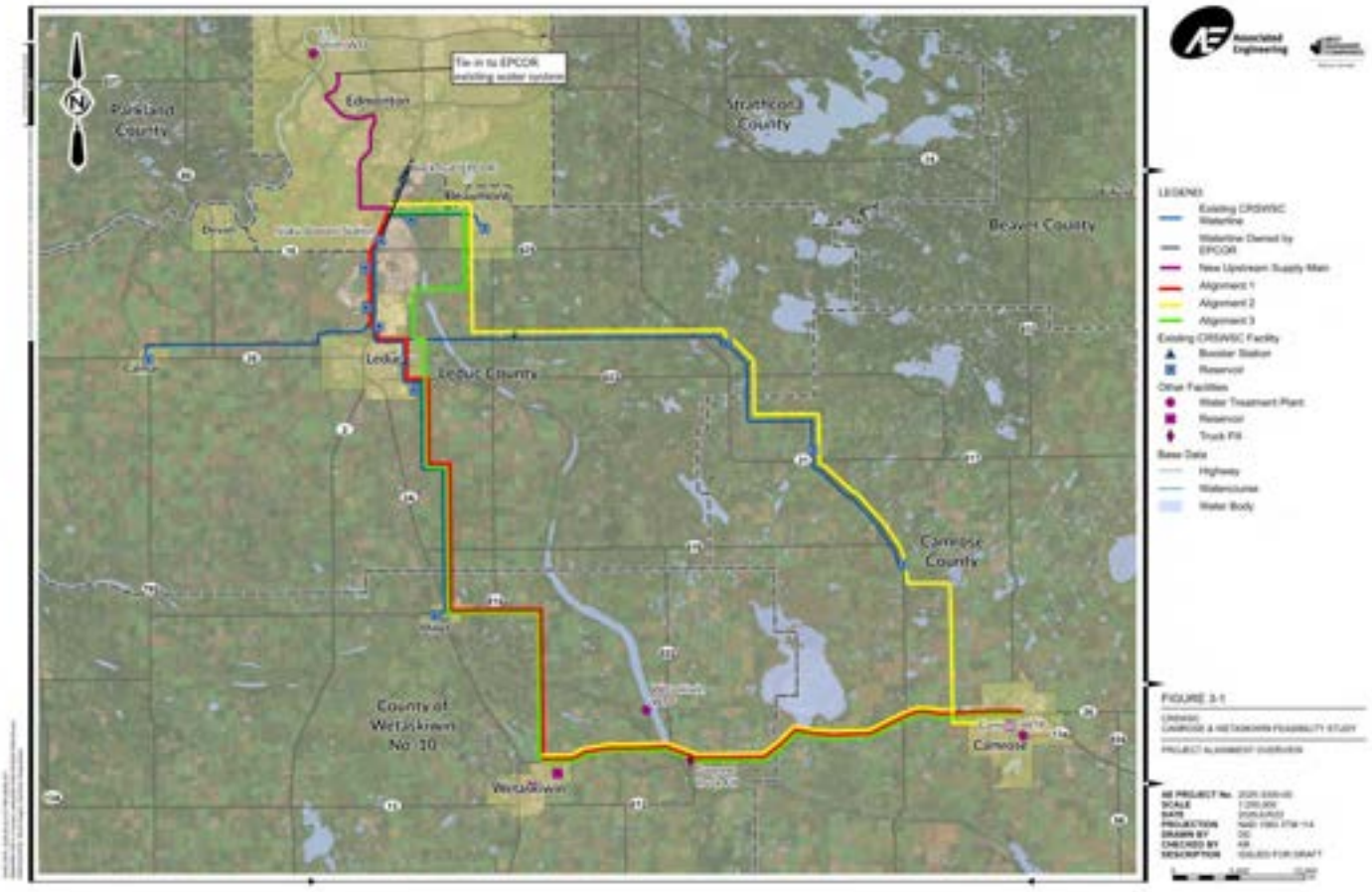
With the recent completion of the Water Master Plan, the Feasibility Study can now be finalized. Administration received a draft copy of the Camrose and Wetaskiwin Regional Water Feasibility Study in August 2026. The draft was distributed to the City of Camrose, Camrose County, Wetaskiwin County, City of Wetaskiwin, City of Beaumont and Leduc County for review and comments. A copy of the final draft incorporating comments is attached.

Emma Knapik with Associated Engineering will present the draft Feasibility Study to the Board, on behalf of Chris Parfitt.

Key points of the Feasibility Study are as follows:

- The City of Camrose, City of Wetaskiwin, and a portion of the County of Wetaskiwin currently obtain their water from local lakes via local water treatment plants. These lakes are vulnerable to drought conditions and lack long-term supply resiliency for the growing communities.
- EPCOR is unable to supply the additional demand of Camrose and Wetaskiwin through the existing 750mm supply main from the Blackmud Booster Station. The new supply lines would need to tie into EPCOR's system north of Anthony Henday Drive.

- It is estimated that a new regional waterline would take 10 years to complete due to the extensive design, land acquisition, and construction required.
- While there is not unanimous support amongst all benefitting parties, the proposed alignment is Option 2 (yellow line in the image below), which would begin within the City of Edmonton, run through the City of Beaumont, extend south to twin the Armena line to Camrose, then head west to Wetaskiwin. There is a possibility that this alignment may replace the 50 Street second feed line to Beaumont that has previously been discussed.
- The estimated cost of the regional pipeline is $434M.



Administration met with Alberta Transportation and Economic Corridors (ATEC) on September 4, 2026 to discuss the project and gather information regarding the available grant programs and next steps. Unfortunately, a project of this magnitude is beyond what the Water for Life Grant can fund, and there are many other municipalities throughout the province in a similar situation, or even more critical. ATEC indicated that a project of this

magnitude could at best be funded 1/3 federally, 1/3 provincially and 1/3 municipally. Due to the required municipal expenditures and coordination between benefiting parties required, Administration recommends that once finalized, the Feasibility study be turned over to the City of Camrose to determine the most appropriate time to submit subsequent grant applications. The next application would be for funding the preliminary design of the anticipated new feed line to Beaumont, Camrose and Wetaskiwin. It is recommended that the Commission assist the City of Camrose in preparing the application, if requested, and provide a letter of support to submit with the application.

The City of Leduc is meeting with Michael Botros, Regional Director, North Central Region of Transportation and Economic Corridors (ATEC), on September 24, 2026 as part of the Alberta Municipalities convention in Edmonton. Municipalities were given the opportunity to discuss their top 3 priorities with the province. The City of Leduc will be presenting the Camrose and Wetaskiwin regional water supply line as one of its top three priorities, to support this important regional project. Other Commission members may choose to do the same.

Alternative Recommendations:

1) It is recommended that the CRSWSC Board of Directors approve the Feasibility Study with the following changes: _____.

Attachments

i. Camrose and Wetaskiwin Feasibility Study – FINAL DRAFT *(pages 102 - 279)*

BEAUMONT

With spirit | Avec esprit

July 3, 2026

Capital Region Southwest Water Services Commission
c/o City of Leduc Civic Centre
#1 Alexandra Park, Leduc, AB T9E 4C4

Attention: Chelsea Iles, Manager

Dear Chelsea:

RE: Response to CRSWSC Letter dated May 14, 2026 – Reference No: 2025-3197

In response to the letter entitled, "Beaumont Second Feedline – EPCOR Supply Pressure," received on May 14, 2026, from the Capital Region Southwest Water Commission (CRSWSC Letter), the City of Beaumont has provided the following submission to CRSWSC.

CIMA+, who completed the design for the current feedline project between the City's two pumphouses and reservoirs, has reviewed the CRSWSC Letter and prepared responses in the attached Technical Memorandum. The Technical Memorandum raises concerns with the CRSWSC's plan to service Beaumont solely with City of Edmonton water pressure and summarizes requested information in the CRSWSC Letter, and the information listed by Shawn Olson in the Conditional Acceptance Letter. We trust the information provided satisfies the CRSWSC's needs.

To advance these efforts further, the City of Beaumont is requesting a meeting with the CRSWSC to discuss the concerns raised in CIMA+'s Technical Memorandum and clarify any further concerns the CRSWSC may have with the information provided. Please advise on availability as to when the CRSWSC can meet. Thank you.

Regards,

Aaron Lewicki, P.Eng.
Director, Infrastructure & Engineering

Attachment: Technical Memorandum from CIMA+ dated June 30, 2026, entitled "City of Beaumont Feedline and Temporary Connection"

cc: Shawn Olson, Commission Manager, CRSWSC
Rick Sereda, Commission Operations Manager, CRSWSC
John Conway, Senior Manager, Infrastructure, CIMA+
Maureen O'Neil, Deputy Chief Administrative Officer, City of Beaumont
Bryce Piacentini, Director, Public Works, City of Beaumont
Charles Conroy, Project Manager, City of Beaumont
Ryan Orlovsky, Manager, Utility and Facility Operations, City of Beaumont
Trevor Moningka, Manager, Long-Range Engineering, City of Beaumont

TECHNICAL MEMORANDUM

Presented to: Aaron Lewicki, Director, Infrastructure & Engineering

Project: City of Beaumont Feedline and Temporary connection

Version: Rev. A

Date: June 30, 2026

O/Ref: Z0016761 **Y/Ref:** 2026 BEAU-7 City of Beaumont Regional Feedline Extension

Object: Information Requested by the Commission to Approve the Temporary Connection

CIMA+ has put together the following technical information based on the May 14, 2026, letter entitled, "*Beaumont Second Feedline – EPCOR Supply Pressure*", received on May 14, 2026, from the Capital Region Southwest Water Commission (CRSWSC Letter). This memorandum references plans to serve Beaumont with City of Edmonton pressures and also compiles all the information requested by the commission for formal acceptance of the temporary connection. This memorandum summarizes what has been requested in the second half of the letter from Chelsey Iles, and the information listed by Shawn Olson in the Conditional Acceptance Letter.

The first half of the letter from Chelsey Iles raises major concerns with the commission's plan to serve Beaumont with just City of Edmonton water pressure. The City of Beaumont should have more active involvement with the commission and exercise diligence in reviewing their planning. The decisions made in 2018 on how to serve Beaumont in the future with just City of Edmonton pressure will not serve Beaumont well moving forward and it does not appear that plan will work as the commission had intended. It could be problematic for the commission to keep up with Beaumont's growth and deliver peak day flows to even the existing delivery point.

For the second part of the CRSWSC Letter, the technical information below has been compiled to highlight why the temporary connection is required and why it's important that the Blackmud Booster be ran at higher pressure when the temporary connection is in use.

At the start of the feedline project, the City of Beaumont requested a permanent second delivery point from the commission at the St. Vital Pumphouse. That request was denied because the commission already had made earlier planning decisions in 2018 to sell the Blackmud Booster that could provide additional pressure to Beaumont for a second delivery point and to build a new Nisku Booster for the regional system that would not be providing pressure to Beaumont. These decisions to put Beaumont back on direct City of Edmonton pressure have eliminated the possibility of the 2010 built St. Vital reservoir being directly fed by the commission. It is at a higher elevation than the existing delivery point and would require 20 - 30 psi more pressure. We have been told that is more pressure than what City of Edmonton pressure can provide when the second pipeline from the City of Edmonton is built. This planning decision requires Beaumont to continue pumping all water through the aging Main Pumphouse over to the higher St. Vital Pumphouse indefinitely. The Main pumphouse has a single Asbestos Cement pipe that it pumps into to supply the distribution system with water and the St. Vital reservoir fills from the distribution system at night. Only about 1/5th of the St. Vital reservoir (1,900 m3) is able to be filled at nighttime through the distribution system.

The new pipeline that is under construction that was originally proposed to connect to the commission line permanently and serve as a supply line for a second delivery point at St. Vital will now need to serve as a dedicated transfer pipeline from Main Pumphouse to the St. Vital Pumphouse. To properly connect the new transfer pipeline to the single AC pipeline leaving the Main pumphouse we need a short-term, two-week shutdown of the main pumphouse to add a connection vault and back flow prevention to that line. This is scheduled for two weeks in September 2026. For the Main Pumphouse to continue transferring all water to the St. Vital reservoir into the future it will also require a longer shutdown and major overhaul of the pumphouse floor, upsizing of the pumps, and replacement of the aging distribution header. This is scheduled for 3-6 months in late fall 2027 and early winter 2028.

During these needed shutdowns of the Main Pumphouse the only water supply for Beaumont is the 10,000 m3 of stored water at the St. Vital reservoir. In 2025 the September peak day for Beaumont was 6,250 m3 and the average was 5,288 m3. The City of Beaumont will run out of water in less than two days without a temporary connection to supply water to the St. Vital reservoir during the Main Pumphouse shutdowns. A large tandem axle water truck holds 4,000 to 6,000 gallons (15-20 m3) and St. Vital would require over 300 truck deliveries in a day without a temporary connection. That is a full water truck every 4.8 minutes for a full 24 hours.

Information Requested in the May 14, 2026 letter from Chelsey Iles:

1. EPCOR Meter:
    a. EPCOR will not permit the installation of a third-party meter upstream of their existing main meter for the temporary configuration. An EPCOR-owned meter will be required at St. Vital for use during the period when the existing meter is bypassed.
    b. EPCOR has determined that an 8" meter, which can handle flows of up to 2,774 GPM, will need to be installed at St. Vital Reservoir.
    c. For meters 150 mm (6 inches) and larger, a standard electrical plug-in connection will be required.

Response: An electrical plug will be made available, and we will need the dimensions on the 8" meter so we can fabricate a section of pipe to temporarily replace a section of our permanent piping.

2. Construction Schedules for St Vital and the Feedline:

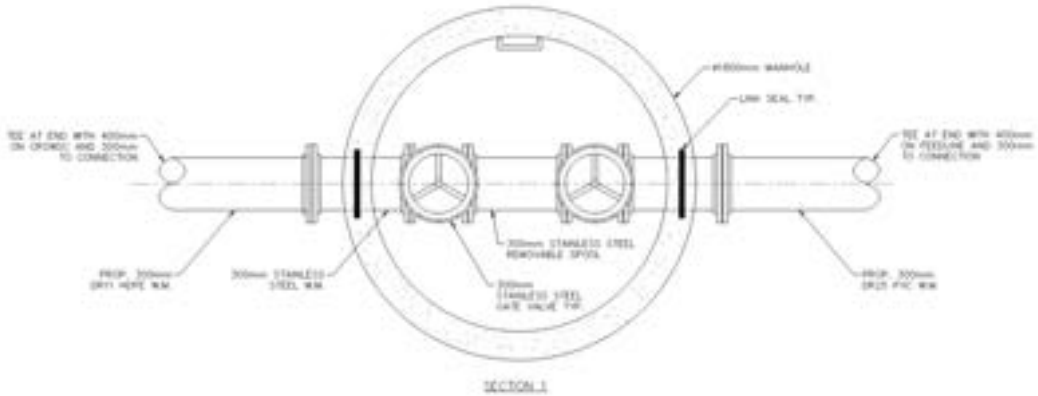
Response: The contractor submitted schedules are attached as Appendix B. Aquatech Canadian Water Services Inc. for the St Vital Pumphouse and Whissel Contracting Ltd. for the Feedline installation. The CRSWSC will be notified if the schedules change significantly.

3. Beaumont request letter for higher supply pressures:

Response: Please accept this letter as the request for higher pressure on behalf of the City of Beaumont. When the commission states higher pressure we believe they just mean the pressure the Blackmud booster use to run at to meet contractual minimum pressure. Associated Engineering took the contracted minimum pressure at Discovery Park to back calculate the Blackmud discharge pressure. With that calculated Blackmud discharge pressure they then calculated what flow could reach St. Vital. They stated it wouldn't be able to provide Peak Day Demand but could provide Average Day Demand and didn't say what exact flow it could do. The Average Day Demand in 2024 in their calculations was just over 51.7L/s which is 4,466 m3. If Blackmud pressure is not increased above those contractual minimums so that a flow close to the expected peak day for that time of year can be maintained, we still run the risk of running a 2,000 to 4,000 m3 per day shortfall. Which is still an insurmountable task of 100 to 200 trucks per day and we risk running out of water in 3-5 days. We truly need to request increased pressure to maintain an agreed flow near that month's peak day for the scheduled times of the temporary connection to avoid a water outage crisis.

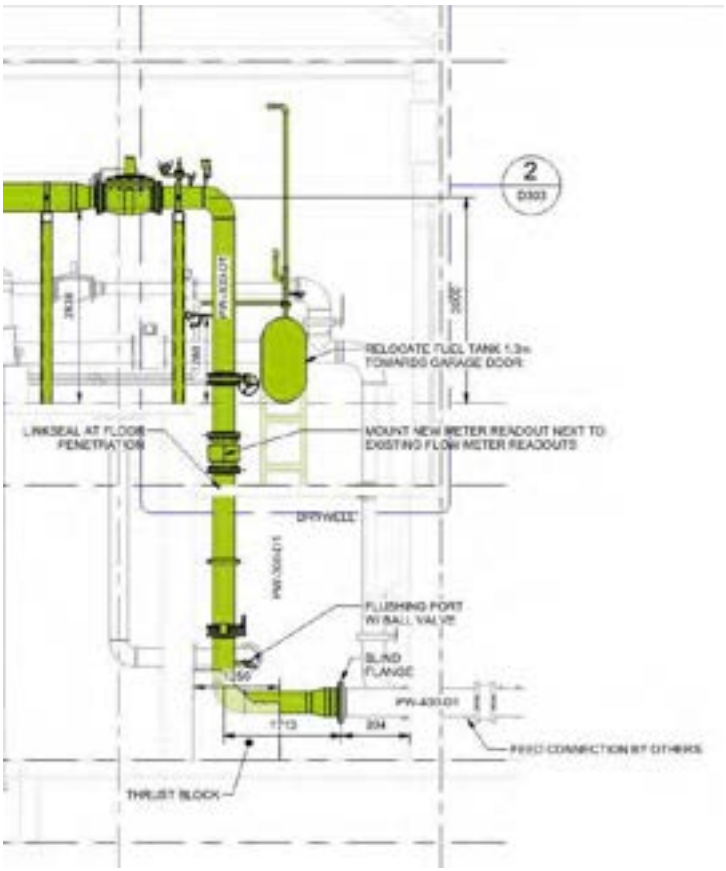
4. A complete list of questions, including any relevant drawings or supporting details, for submission to EPCOR through the Commission.

Response: 1) If the temporary meter is required just to meet a bylaw, could EPCOR take temporary ownership of the permanent meter similar to how the commission will be taking ownership of the pipeline? 2) If a second meter needs installed still, can we put a battery operated 12" meter in the manhole at the temporary connection location where we already have the 12" removeable spool? The meter could replace the spool.



This meter location would only measure water that went through the temporary connection. If the meter is placed in St. Vital it will measure all water and we will need to remove it each time the spool is removed or take readings when the spool goes in and out.

3) If it still has to be at St. Vital, can they re-consider our earlier request to match the 12" pipe and meter flanges we are already building for the permanent meter run. They have requested we put it upstream of the permanent meter in this section of 12" pipe.



5. Any outstanding items identified in the conditional approval on the New Connection Request that received conditional Board approval on July 9, 2025.

Response: See below responses to every section of the CRSWSC Conditional Approval Letter and a list of all items in Section 4.2 that letter referenced

6. If revisions have been made to the construction drawings submitted on April 22, 2025, these should be submitted for review.

Response: Signed and stamped IFC packages for the work within St. Vital Pumphouse and the new transfer pipeline has been included in Appendix A.

Information requested in the CRSWSC Conditional Approval Letter July 9th, 2025:

1. Construction Compliance: The waterline to St. Vital must be constructed in accordance with the most recent drawings submitted to the CRSWSC on April 22, 2025. Any deviations from these plans must be reviewed and approved by the CRSWSC.
   - IFC are attached as Appendix A. The crossing pipe has been updated to demonstrate the 1m vertical clearance requested in the crossing agreement discussions since the last submission.
2. Water Supply Agreement: All information required under Section 4.2 of the Water Supply Agreement must be submitted and approved:

Section 4.2 Requirements:

- A five-year and a 25-year water demand projection:
  - This connection is temporary; there is no long-term demand projection for it. We request a demand of 75 L/s.
- Proposed point of connection:
  - Temporary connection point shown in drawings sheet C100.
- Reservoir location, floor plan and floor elevation:
  - Reservoir information for St Vital shown in As-Built plans included in Appendix C and D.
- Reservoir capacity including fire storage requirements (if being provided):
  - St. Vital has a capacity of 10,000m^3.
- Reservoir filling plan:
  - While operating on the temporary connection the new flow control valve will be set to a fixed flow rate agreed to with the commission and EPCOR. We request a flow rate of 75 L/s to not risk a shortfall. The flow control valve will open on a low level setting of 4.0 m and close on the high level setting of 4.2 m.
- Location and size of reservoirs located within Distribution System:
  - The two reservoirs are the Main Pumphouse and Reservoir (7,273 m3), and the St Vital Pumphouse and Reservoir (10,000 m3). Main Pumphouse which has the permanent CRSWSC connection is located at 4909-57th Street. St Vital Pumphouse is located at 4102-50 Avenue.
- Size and material type of connection pipe:

  - Pipe sizes and materials are shown in the drawings. Hot tap connection with 300mm DR11 HDPE, main pipeline after temporary connection is 400mm DR25 PVC.
- Proposed service date:
  - Current approximate date for the temporary connection is September 2026.
- Reservoir Operation Plan:
  - While operating on the temporary connection we will have no time-of-day restriction on the filling of St. Vital. It will start filling on the low-level sensor and shut off on the high-level sensor. We will have a higher-than-normal low-level start point to reduce the needed flow from the commission as much as possible. Once the temporary connection is decommissioned after the short-term shutdown. The filling from Main Pumphouse to St. Vital will be restricted to nighttime, as the current pumps at Main can't meet distribution demands and transfer at the same time. The nighttime transfer rate will be increased higher than what can be transferred through the distribution system now. After the major shutdown and pump upgrades at Main the nighttime filling restriction will likely be removed.
- Each fill station is housed within a separate building or room accessible by the Commission only:
  - Temporary Connection has been discussed and agreed that a separate building or room is not required for the temporary connection.
- The Applicant is to provide engineering drawings signed by a Professional Engineer registered in the Province of Alberta:
  - IFC drawing package has been provided in Appendix A.
- Prior to operation, the Applicant is to provide the Commission with a detailed reservoir operation plan which outlines the following: fill level requirements, and monitoring of downstream fill reservoirs.
  - While operating on the temporary connection the new flow control valve will be set to a fixed flow rate agreed to with the commission and EPCOR. We request a flow rate of 75 L/s to not risk a shortfall. The flow control valve will open on a low level setting of 4.0 m and close on the high level setting of 4.2 m.
- Only the Commission has the right to undertake work or operate valves on the Commission's Pipeline.
  - This will be followed.
- The Commission may permit the Member/Customer's Contractors to undertake work.
  - Contractors for the work are Aquatech Canadian Water Services Ltd. And Whissel Contracting Ltd.

- The Commission has preferred Contractors, which Members/Customers are expected to use for the following: Pipeline taps or Hot Taps on the Commission's Pipeline, Programming of the Commission's SCADA System.
    - The connection to the CRSWSC pipeline via Hot Tap is being completed by Whissel Contracting Ltd. And Sub-Contractor Pacific Flow Control. The connection is temporary and it is not being connected to the commissions SCADA it is attached to the City of Beaumont system.
- Commission's approval and inspection shall be required for the service connection installation of the meter facility and upstream of the Air Gap.
    - Commission is approved to inspect equipment as required.
- Any service line installed under a Provincial highway, municipal roadway, water body or a railway shall be installed to the requirements of the respective authorities and applicable legislation.
    - This has been followed.
- Service lines on or across the Commission easement require approval and installation supervision by the Commission.
    - Commission is approved to supervise works as required.
- Minimum depth of cover for all service lines will be 2.8 metres, unless otherwise approved by the Commission.
    - This has been followed, any part of the pipeline which is below the minimum cover shall be insulated as per the IFC drawing package.
- Downstream of the Point of Transfer, the Distribution System is subject to the approval of the local Municipality.
    - This is understood.
- The applicate will be responsible for any and all cost related to upgrading the Commission's system to provide water at the identified service location.
    - This is understood.

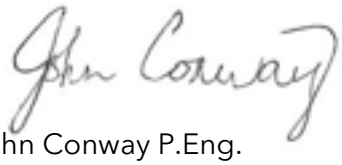
END OF SECTION 4.2

3. Temporary Connection Management: The City agrees to physically remove the spool piece within the proposed manhole when not in use. This temporary connection is only to be used during modifications to the Main Reservoir as part of the waterline extension and future upgrades.
    - This will be followed.

4. Hydrant Installation Restriction: No hydrant directly connected to the proposed waterline may be installed until ownership of the waterline is transferred to the City and it is no longer a CRSWSC asset.
   - The hydrant will be removed from the scope of work and not installed until after the temporary connection is removed.
5. Asset Ownership and Access: The waterline will remain a CRSWSC asset while it functions as a transmission line supplying the St. Vital Reservoir and until all planned upgrades are completed. The CRSWSC retains the right to access all infrastructure along this line, up to and including the air gap at St. Vital.
   - This will be followed.
6. Maintenance Responsibility: All maintenance and repairs will be the responsibility of the City.
   - This will be followed.
7. Water Pressure and Scheduling: EPCOR has agreed to maintain current pressure levels sufficient to meet the City's average day demand (ADD) based on current plans. However, EPCOR cannot guarantee pressure for higher flows. The City must provide a detailed schedule for both the waterline installation and Main Reservoir upgrades, including anticipated usage times and durations, to allow coordination with EPCOR.
   - Construction schedules for the St Vital Pumphouse and Feedline are attached as Appendix B. As discussed above it is simply too much water for Beaumont to supplement by any other means if the Blackmud booster is not operated at higher pressure during these shutdowns.
8. Metering Agreement: EPCOR has approved the installation of a temporary meter at the St. Vital Reservoir. The meter will be both supplied and installed by EPCOR. Coordination with EPCOR will be required to determine the appropriate meter size, schedule the installation, and ensure the setup is properly integrated within the reservoir to facilitate efficient and effective installation.
   - Coordination is underway
9. Risk of Inadequate Pressure: Should water pressure at the St. Vital Reservoir prove insufficient during construction, the City bears full responsibility for ensuring water supply to its residents at its own cost. The CRSWSC assumes no liability for any consequences arising from inadequate pressure or supply.
   - This will be followed. As discussed above though we need cooperation from the commission and EPCOR to operate the Blackmud Booster at a setpoint within it's capabilities that can provide sufficient pressure and assist Beaumont in preparing for that booster being decommissioned.
10. Future Demand Planning: The City is required to clarify its long-term strategy for meeting future peak day water demands.

KINCENTRIC
Best Employer
CANADA 2023

- The City of Beaumont Utility Master Plan was developed with review by the CRSWSC and can be found here: Utilities & Storm Water Management Master Plan | Beaumont a more detailed Water System capital plan is underway and will be submitted to the commission upon completion.
- The dedicated transfer pipeline and Main Pumphouse upgrades scheduled for late 2027 and early 2028 will ensure that Beaumont can get a proportionate share of peak day flow from the Main Reservoir to the St. Vital Reservoir. The remainder of the long term strategy for meeting peak day water demands is the responsibility of the commission to deliver peak day flows to Main Pumphouse.



John Conway P.Eng.
Senior Manager, Infrastructure

Encl.:

c.c.: Appendix A: IFC Drawings Regional Feedline Extension from main Pumphouse to ST Vital Pumphouse & St Vital Pumphouse Mechanical and Electrical Upgrade
Appendix B: Construction Schedules
Appendix C: St Vital Pumphouse and Reservoir As-Builts
Appendix D: Main Pumphouse and Reservoir As-Builts

Capital Region Southwest Water Services Commission
C/O City of Leduc
#1 Alexandra Park
Leduc, AB T9E 4C4
Phone: (780) 980-7177 Fax: (780) 980-7127

July 30, 2026

Reference/Project No.: 2025-3197

Aaron Lewicki, P.Eng.
Director, Infrastructure & Engineering
City of Beaumont
5600 49 Street
Beaumont, AB T4X 1A1

Via email: aaron.lewicki@beaumont.ab.ca

Dear Mr. Lewicki,

SUBJECT: RESPONSE TO JUNE 30, 2026 MEMORANDUM – TEMPORARY CONNECTION TO ST. VITAL RESERVOIR

1 INTRODUCTION

The Capital Region Southwest Water Services Commission (the "Commission") acknowledges receipt of the City of Beaumont's June 30, 2026, memorandum prepared by CIMA+ regarding the proposed temporary connection to the St. Vital Reservoir and the information submitted in support of that request. The Commission appreciates the effort undertaken by the City and its consultants to compile and provide the information requested in the Commission's May 14, 2026, correspondence and the outstanding requirements identified through the Commission's conditional approval process.

The purpose of this letter is to provide:

- the Commission's response to the memorandum,
- clarify the respective responsibilities of the Commission and the City of Beaumont,
- confirm the Commission's position regarding the proposed temporary connection and related operational requests, and
- future servicing considerations.

The Commission has reviewed the submission in consideration of

- The Commission's Water Supply Policy,
- Commission Bylaw 01/2021,
- the Commission Water Supply Agreements, and

- the Commission's responsibility to operate and manage the regional transmission system for the benefit of all Commission members.

While the CIMA+ memorandum contains commentary regarding historical planning decisions, future servicing strategies, and the allocation of responsibilities between the Commission and the City, the Commission considers it important to reiterate that its obligations are governed by the Commission's approved policies, bylaws, agreements, and adopted planning documents. Any review of the temporary connection request must therefore be undertaken within the framework of those established obligations and responsibilities.

2 CLARIFICATION OF THE PURPOSE OF THE TEMPORARY CONNECTION

The proposed temporary connection is being requested by the City to support planned construction activities related to the new transfer pipeline between the Main Pumphouse and the St. Vital Reservoir, as well as future shutdowns required to facilitate upgrades to Beaumont's Main Pumphouse. The temporary connection is intended to maintain water service during periods when the Main Pumphouse is unavailable or operating under reduced capacity.

The Commission has worked collaboratively with Beaumont and EPCOR to evaluate a temporary servicing arrangement intended to support Beaumont's construction program. This temporary accommodation is being pursued to assist Beaumont during a period of operational need and should not be interpreted as establishing a permanent servicing arrangement or modifying the Commission's existing service framework

3 HISTORICAL PLANNING, GOVERNANCE AND BEAUMONT RESPONSIBILITIES

3.1 COMMISSION GOVERNANCE AND BOARD DECISIONS

The Commission wishes to clarify certain historical planning decisions referenced within the memorandum. As a member municipality of the Capital Region Southwest Water Services Commission, the City of Beaumont is represented on the Commission's Board of Directors and participates directly in the governance, planning, and operation of the regional water system. Under Section 4.1 of Bylaw 01/2021, the Board is responsible for the management and conduct of the affairs of the Commission, including the adoption of the Master Plan and oversight of Commission operations.

The servicing strategy related to the transfer of the Boundary Pumping Station and future supply arrangements for Beaumont was reviewed by the Board on June 28, 2018 as part of ongoing discussions regarding the Edmonton annexation area and long-term regional servicing. Three options were presented to the Board.

- Option 1 - The Commission will retain ownership and operation of all existing infrastructure.

- Option 2 - The Commission would transfer all existing infrastructure located within City of Edmonton Annexation lands to EPCOR and the future construction of a second supply connection to Beaumont from the south Edmonton boundary.
- Option 3 - ls similar to Option 2; however, does not assume that additional water supply will be available to Beaumont through the City of Edmonton Southeast Annexation Area.

After discussion of the options, the Commission's Board approved Motion 43-18 directing Administration to proceed with Option 2 and continue negotiations with EPCOR. The meeting was attended by Beaumont's appointed Board representatives, Councillor Bill Daneluik and Councillor Sam Munckhof-Swain, who participated in the Commission's governance process as representatives of the City of Beaumont.

The Commission does not agree with any implication that the current servicing approach was developed unilaterally or without Beaumont's involvement. The servicing strategy ultimately adopted was based on the 2018 Master Plan process, which included participation from Beaumont's Administration, review of the proposed operating set points and design assumptions, and presentations to member municipalities throughout the planning process. The resulting recommendations were adopted through Board decisions made with representation from all member municipalities, including the City of Beaumont.

The Commission notes that the operating set points and associated design parameters established through the 2018 Master Plan were presented to Beaumont's Administration and were not identified as a constraint on Beaumont's existing or future water distribution system. At the time, all parties accepted the proposed set points as an appropriate basis for the planning and operation of the regional and municipal systems. The Commission was not aware of any concerns having been raised that the approved set points would limit Beaumont's ability to meet future servicing requirements.

To the extent that Beaumont now views these operating set points as a limitation, the Commission notes that this concern was not identified during development or adoption of the 2018 Master Plan, nor during Beaumont's acceptance of the associated design parameters. Rather, the concern has arisen after the fact, following Beaumont's subsequent planning and decisions based on those accepted design parameters.

The Commission also notes that Beaumont's current servicing approach does not appear to adequately reflect the findings and operational design parameters established through the 2018 Master Plan. The Master Plan identified the future transfer of the booster station to EPCOR, the associated system operating requirements, and the water delivery set points that were subsequently incorporated into the Commission's agreement with EPCOR. These findings were communicated to Commission members, and the Commission also presented the draft Master Plan recommendations directly to Beaumont City Council during the review process. As such, the Commission would have expected these known design parameters to have been incorporated into Beaumont's planning and design of its water system.

The Commission further notes that the Commission's water system remains fully capable of delivering Beaumont's required water demands to the approved point of transfer at the minimum pressures established under the applicable agreements. This remains the Commission's fundamental obligation under its Water Supply Agreement and Water Supply Policy. The Commission has continued to meet this obligation. Any requirement by Beaumont for pressures, operating conditions, or system performance beyond those established design parameters is a matter for Beaumont's internal system planning and operation and does not alter the Commission's obligations with respect to water delivery at the approved point of transfer

3.2 BEAUMONT'S RESPONSIBILITY FOR MUNICIPAL INFRASTRUCTURE

The Commission's Water Supply Policy clearly distinguishes between the Commission's role as a regional transmission provider and the responsibilities of member municipalities. Section 3.1(2) states that "The Commission shall not be responsible for any aspects of distribution downstream of the Point of Transfer." The policy establishes that members are responsible for the operation of their municipal distribution systems and retail water service within their municipal boundaries.

The operational limitations identified in Beaumont's memorandum, including the transfer of water between municipal reservoirs, pumping requirements, pressure management, operational redundancy, and the need for future booster infrastructure, are matters downstream of the Point of Transfer and therefore remain the responsibility of the City of Beaumont.

4 COMMISSION WATER SUPPLY OBLIGATIONS

The Commission strives to provide members with requested demands up to a maximum of 1.8 times Average Day Demand (as per Commissions Water Supply Policy), subject to available system capacity, EPCOR operating conditions, and Regional Water Customers Group requirements. Section 7.1 of Bylaw 01/2021 states that the Commission shall make commercially reasonable efforts to provide capacity to supply requested volumes, while Section 7.3 recognizes that available capacity may be allocated where system limitations exist. These provisions do not create a guarantee of pressure or flow under all operating conditions.

The Commission is working proactively with Beaumont and EPCOR to facilitate a temporary connection to support Beaumont's construction activities. While this accommodation extends beyond the Commission's normal service arrangements, any service provided through the temporary connection remains subject to available system capacity and EPCOR operating conditions.

The proposed temporary St. Vital connection is an accommodation by the Commission and does not establish a second permanent Point of Transfer or expand the Commission's obligations under its governing documents.

The Commission's efforts to facilitate this temporary connection demonstrate its commitment to supporting Beaumont during a period of operational need. The Commission has worked with Beaumont and EPCOR to identify and establish a temporary solution that exceeds the Commission's existing obligations and is being pursued solely to assist a member municipality. This accommodation is being provided in the spirit of regional cooperation.

5 TEMPORARY CONNECTION ACCOMMODATION

The proposed St. Vital connection was reviewed and conditionally accepted solely as a temporary construction-related connection intended to facilitate municipal infrastructure work. The Commission has worked collaboratively with Beaumont and EPCOR to evaluate and facilitate this temporary servicing arrangement, despite it extending beyond the Commission's standard service framework. This accommodation is intended solely to address Beaumont's temporary construction requirements and does not modify the Commission's existing service arrangements or established Points of Transfer

The Commission's willingness to evaluate, coordinate, and facilitate this temporary connection reflects its commitment to supporting Beaumont. The Commission's efforts to facilitate this connection **exceed its existing contractual and policy obligations.**

6 REQUEST FOR INCREASED PRESSURE AND FLOW

As outlined in the Commission's correspondence dated May 14, 2026, to Beaumont, EPCOR advised the Commission and Beaumont that the tertiary pressure zone does not presently have sufficient capacity to reliably supply more than Beaumont's Average Day Demand and that the secondary feed was never intended to function as a standalone supply source. EPCOR further advised that it may be willing to temporarily maintain higher-than-normal pressures during Beaumont's planned construction period; however, this would require formal approval and is not sustainable as a long-term operating strategy. EPCOR specifically advised that any long-term requirement for increased pressure would need to be supported through independent boosting by Beaumont.

The Commission will continue to work with EPCOR to identify opportunities to support Beaumont's temporary servicing requirements. Any increase in pressure beyond normal operating conditions, however, remains dependent on EPCOR approval and regional system operating constraints.

Should Beaumont require higher pressures than those available through the Commission's and EPCOR's systems at the temporary connection, Beaumont will be responsible for constructing and funding any interim boosting facilities necessary to meet its service requirements. The Commission assumes no responsibility for providing such additional pressure.

7 LONG-TERM SERVICING RESPONSIBILITIES AND FUTURE WATER SUPPLY REQUIREMENTS

The Commission recognizes Beaumont's continued growth and the importance of ensuring reliable long-term water service for residents, businesses, and future development. The Commission remains committed to regional planning, ongoing coordination with EPCOR, and maintaining sufficient regional transmission capacity to meet approved member demands in accordance with the Commission's governing documents, Master Planning process, and annual demand forecasting requirements. Under Bylaw 01/2021, the Commission's Master Plan is based on projected member growth and water demand forecasts, and members are required to provide both short-term and long-term demand projections to support regional planning efforts.

The Commission's obligations as a regional transmission provider must be distinguished from Beaumont's responsibilities as the owner and operator of its municipal water system. The Commission's Water Supply Policy establishes that the primary function of the Commission system is to deliver treated water from EPCOR to member's approved point of transfer and expressly states that "the Commission shall not be responsible for any aspects of distribution downstream of the Point of Transfer."

The current operational challenges identified in Beaumont's memorandum are largely associated with limitations within Beaumont's own municipal infrastructure and do not create new obligations for the Commission.

8 OUTSTANDING REQUIREMENTS

The Commission has reviewed the information submitted by Beaumont in response to the July 9, 2025 Conditional Approval and the Commission's May 14, 2026 correspondence. While a significant amount of information has been provided, the Commission's review of the submission should not be interpreted as acceptance of all information submitted, nor as final approval of the temporary connection. Final approval remains subject to the Commission's Board approval.

8.1 CONSTRUCTION COMPLIANCE

The Commission acknowledges receipt of the Issued for Construction drawings submitted in support of the temporary connection and associated infrastructure improvements. The Commission notes Beaumont's statement that revisions have been incorporated to address the crossing requirements previously identified during discussions with the Commission. The Commission has no further comments on the drawings.

8.2 EPCOR METER SIZE

The Commission will request that EPCOR review the proposed Beaumont meter location and, if feasible, use a temporary meter that will match the existing 12-inch piping and flange

arrangement. EPCOR will also be requested to provide shop drawings for its proposed meter assembly, including all relevant dimensions and connection details.

The temporary meter must be supplied and installed by EPCOR to ensure compliance with EPCOR's metering standards. EPCOR will require sufficient lead time to procure the meter and other associated materials, as well as to schedule installation and commissioning activities.

8.3 CONSTRUCTION SCHEDULING AND COORDINATION

The Commission acknowledges receipt of the construction schedules provided by Beaumont for the St. Vital Upgrades and Waterline Construction and notes the City's commitment to advise the Commission of any significant schedule changes.

However, the Commission has not received a schedule for the specific work during which the temporary connection will serve as Beaumont's interim water supply while repairs or modifications are undertaken at Main Reservoir. This information is required to confirm the anticipated duration, timing, and operational requirements of the temporary connection.

Any schedule changes, or the submission of revised construction sequencing, that materially affect the duration, timing, or operating requirements of the temporary connection may require further review by the Commission and EPCOR.

8.4 WATER PRESSURE, FLOW AVAILABILITY AND RISK ALLOCATION

The Commission acknowledges Beaumont's request for increased pressure during operation of the temporary connection. As outlined in the Commission's May 10, 2026 correspondence,

- EPCOR indicated it may be willing to temporarily maintain the currently elevated system pressures to support Beaumont until March 2028, anticipated to extend to approximately spring 2028.
- EPCOR also advised that these elevated pressures are not sustainable as a long-term operating condition and cannot be relied upon beyond the temporary construction period.

The Commission further notes that the current delivery pressures at the Main Pumphouse are approximately 37 psi under average day demand conditions and 20.1 psi under peak day demand conditions. These pressures satisfy the Commission's obligations under the Water Supply Agreement, and neither the Agreement nor the Commission guarantees delivery of pressures greater than those required to meet its contractual commitments.

Furthermore, Condition 9 of the Conditional Approval expressly states that, should pressure at the St. Vital Reservoir prove insufficient during the construction period, Beaumont is solely responsible for maintaining water service to its customers. It is Beaumont's responsibility to construct any infrastructure required to increase pressure to an alternative Point of Transfer should additional pressure be necessary to support its construction activities. Beaumont's June

30, 2026 submission specifically acknowledged and accepted this condition, including the associated allocation of risk.

8.5 EPCOR'S TEMPORARY OWNERSHIP OF THE PERMANENT METER

EPCOR has advised that the meter used for the temporary connection must be an EPCOR-owned and EPCOR-supplied meter. This requirement is necessary to ensure meter accuracy, maintain consistency with EPCOR's metering standards, and the billing process based on EPCOR's Bylaws. EPCOR will not rely on Beaumont's meter for billing purposes.

8.6 EPCOR'S METER INSTALLED IN THE MANHOLE

EPCOR has advised that the temporary meter assembly must be installed within the St. Vital Reservoir building and cannot be located within a manhole.

Accommodating this equipment within a manhole would create significant confined-space constraints and would not provide the access or working clearances required by EPCOR for safe operation and maintenance.

8.7 WATER SUPPLY AGREEMENT AND SECTION 4.2 REQUIREMENTS

The Commission acknowledges Beaumont's submission of information intended to address the requirements outlined in Section 4.2 of the Commission's Water Supply Policy for new service connections, including reservoir information, proposed connection details, operating plans, service dates, demand information, and supporting drawings.

Under current operating conditions, the Commission is capable of supplying approximately **56.3 L/s under Average Day demand conditions** and **101.4 L/s under Peak Day demand conditions** at the approved Point of Transfer at the Main Pumphouse. The Commission can provide Beaumont's water requirements at this location in accordance with its agreements, governing documents, and established design parameters.

While the Commission will work with EPCOR to provide similar service levels at the temporary St. Vital connection where operationally feasible, pressure and flow conditions at that location cannot be guaranteed and remain subject to EPCOR operating requirements. Should Beaumont require pressures or flows at the St. Vital connection beyond those available through normal system operations, it will be Beaumont's responsibility to construct any infrastructure necessary to boost water from the approved Point of Transfer.

The Commission's system is capable of supplying Beaumont's water requirements at the approved Point of Transfer and remains committed to future system expansions and improvements to ensure that adequate capacity continues to be available as Beaumont grows.

Accordingly, approval of the temporary connection does not constitute approval of Beaumont's requested flow rate of **75 L/s**, nor acceptance of any assumptions regarding available pressure,

flow, or system operations. The Commission's responsibility is limited to providing water to the agreed upon transfer point. **Any additional pressure or flow requirements necessary to support Beaumont's operations during the temporary connection period shall be the sole responsibility of Beaumont.**

While the Commission will make reasonable efforts to assist Beaumont during the construction period, it cannot assume responsibility for any additional pressure, flow, or infrastructure requirements arising from Beaumont's construction activities. Such requirements remain the sole responsibility of Beaumont.

8.8 COMMISSION'S PREFERRED CONTRACTORS

The Commission acknowledges that Beaumont intends to utilize Pacific Flow Control to complete the hot tap connection to its existing pipeline and accepts the use of this contractor for the proposed work. All work shall be completed in accordance with applicable Commission standards, specifications, and approved construction requirements.

8.9 TEMPORARY CONNECTION MANAGEMENT

The Commission acknowledges Beaumont's commitment to physically remove the temporary spool piece when the connection is not in use and to restrict use of the connection to the approved construction activities identified in its submission. Any use of the temporary connection outside of the approved construction periods and operating conditions will not be permitted.

8.10 ASSET OWNERSHIP, ACCESS AND MAINTENANCE

The Commission acknowledges Beaumont's acceptance that the temporary feedline will remain a Commission asset while functioning as part of the Commission transmission system and that the Commission retains rights of access to the infrastructure and facilities associated with the temporary connection. The Commission also acknowledges Beaumont's acceptance of responsibility for maintenance and repairs as outlined in the Conditional Approval.

9 CONCLUSION

The Commission remains committed to working collaboratively with the City of Beaumont and supporting the successful delivery of Beaumont's planned infrastructure projects. At the same time, it is important that the respective responsibilities of each party remain clearly understood.

The Commission's responsibility is to provide regional water service in accordance with its governing agreements, policies, and approved service arrangements **at the existing Point of Transfer.** The Commission has no obligation to provide increased flows or pressures through a temporary secondary connection and has already undertaken significant efforts to accommodate Beaumont's request for temporary service.

Ultimately, responsibility for municipal service levels, distribution system performance, operational redundancy, and any infrastructure required to achieve desired pressure or flow conditions remains with the City of Beaumont.

The Commission looks forward to continuing to work cooperatively with Beaumont to resolve the remaining requirements associated with the temporary connection request.

Sincerely,

Shawn Olson, P.Eng, CLGM
Commission Manager

Cc: Mayor Lisa Vanderkwaak, City of Beaumont
Councillor Anthony Kohlsmith, City of Beaumont
Councillor Steven vanNieuwkerk, City of Beaumont
Rick Sereda, Commission Operations Manager, CRSWSC
Chelsey Iles, Manager, Capital Projects and Development
John Conway, Senior Manager, Infrastructure, CIMA+
Maureen O'Neil, Deputy Chief Administrative Officer, City of Beaumont
Bryce Piacentini, Director, Public Works, City of Beaumont
Charles Conroy, Project Manager, City of Beaumont
Ryan Orlovsky, Manager, Utility and Facility Operations, City of Beaumont
Trevor Moningka, Manager, Long-Range Engineering, City of Beaumont

CRSWSC
Capital Region Southwest Water Services Commission

Key Discussion Points

Meeting Date: August 17, 2026 Meeting Time: 9:00 am – 11:00 am

Operations Second Floor Boardroom, OPS Building

Invited:
Shawn Olson, Commission Manager
Rick Sereda, Operations Manager
Chelsey Iles, Manager, Capital Projects & Development
Melanie White, Engineering Project Manager
Chishimba Chiinda, Engineering Project Manager (virtual)
Chris Parfitt, Associated Engineering
Aaron Lewicki, Director, Infrastructure & Engineering, City of Beaumont
Charles Conroy, City of Beaumont
Trevor Moningka, City of Beaumont
Bryce Piacentini, City of Beaumont
Ryan Orlovsky, City of Beaumont
John Conway, Project Consultant, CIMA+ (virtual)
Shannon Bremner, Recording Secretary

Item Description

Beaumont Temporary Connection - St. Vital Reservoir

- The meeting focused on reviewing Beaumont's request and clarifying how CRSWSC, Beaumont and EPCOR can work together to support Beaumont's water infrastructure projects. CRSWSC reaffirmed its role as facilitator and advocate, helping coordinate discussions between Beaumont and EPCOR rather than directing operational decisions.

- CRSWSC provided background on the EPCOR asset sale and system transition. Ongoing EPCOR operational challenges at Discovery Park were discussed, where EPCOR requires pressure reductions to address water quality and system limitations. EPCOR has verbally agreed to hold current pressures until Spring 2028 to accommodate Beaumont's construction period. Beaumont still needs to submit a formal request to EPCOR/Commission for EPCOR to hold the pressures.

- Beaumont requires approximately 50 psi delivered to their Main Reservoir during construction and transition periods. EPCOR is currently providing:
  - Up to 20 psi during peak demand, or
  - Approximately 37 psi during average demand.

- The pressure shortfall remains the primary challenge. The St. Vital Reservoir location is at a higher elevation, requiring 30 psi additional pressure to reach this temporary reservoir while the main reservoir upgrades are completed. EPCOR advised it is currently unable to increase pressures due to operational constraints associated with Discovery Park and system constraints.

- Beaumont anticipates requiring:
  - A 2 week period in October/November 2026 to commission and install the chamber, and
  - A 6 - 8 month period starting in November 2027 for reservoir upgrades and related works. Concern was expressed that this will lead into peak demand months.

- EPCOR and the Commission require confirmed construction timelines to support planning and coordination. Beaumont's construction schedule remains uncertain due to utility conflicts and weather-related delays.

- Discussion included meter requirements and coordination between EPCOR and Beaumont. EPCOR has determined that an 8-inch meter is all they require, while Beaumont will be installing a 12-inch meter. Beaumont has already purchased their meter so a temporary arrangement of using two meters will be required when the second feed line is used to bypass Main Reservoir.

- Modelling discussions identified that actual flow and pressure data from Beaumont is needed to better understand their current delivery pressure at Main Reservoir and to assess future requirements and support discussions with EPCOR.

- Alternative options, including temporary boosting stations and potential reservoir allocation adjustments with Leduc County, were discussed as possible contingency measures if pressure requirements cannot be met.

Project Scheduling Considerations

- Current anticipated construction window:
  - Pipeline Construction: June 2026 – October 2026
  - Main Reservoir Upgrades: Tentatively November 2027 for 6-8 months.

- EPCOR indicated it can meet Beaumont's flow requirements but not the requested pressure requirements.

- Major reservoir upgrades at the main reservoir are expected to require a lengthy shutdown period and are not easily staged if project delays extend into peak-demand months.

Whissel Crossing Agreement

- CRSWSC is progressing the Crossing Agreement with Whistle.

- The agreement does not provide authority for a connection; a separate connection approval application will still be required before construction proceeds.

- Conditional approval has already been granted by the CRSWSC Board, so additional Board approval is not required.

Action Items

Action Item	Responsibility
Provide actual flow and pressure data to the CRSWSC to support hydraulic modelling and pressure analysis.	Beaumont
Confirm construction schedules and shutdown windows for planning discussions.	Beaumont
Review modelling requirements and identify the specific data needed from Beaumont.	Chris Parfitt
Send required modelling information and data requests to Shannon for distribution to Beaumont.	Chris Parfitt
Coordinate a meeting between EPCOR, Beaumont and CRSWSC to discuss meter coordination, pressure requirements and scheduling.	Chelsey Iles

Next Steps

1. Beaumont to provide actual flow and pressure data.

2. Associated Engineering to validate modelling requirements and identify information gaps.

3. Chelsey to arrange a meeting between EPCOR, Beaumont, and CRSWSC.

4. Three key discussion items for the EPCOR meeting:
    - Construction schedule and shutdown windows
    - Actual pressure and flow requirements
    - Meter coordination and installation requirements

Adjournment

The meeting was adjourned at 10:10 am.

DATE: July 28, 2026

TO: Melanie White, P. Eng.
Engineering Project Manager, City of Leduc (rep. CRSWSC)

FROM: Filip Dundur, P. Eng.
Manager, Water Pipe Strategies, EPCOR Water Services

SUBJECT: 2026-2031 5-Year Demand Forecast Response

EPCOR Water Services (EWS) currently provides supply to Capital Region Southwest Water Services Commission (CRSWSC) through the Blackmud Booster Station (formerly CRSWSC's Boundary Booster Station). Servicing pressure criteria is outlined at three locations (Beaumont Reservoir, Leduc County Reservoir and Nisku Booster Station) in the latest Amending Agreement of the Water Supply Agreement between EWS and CRSWSC, dated November 5, 2024.

The commissioning of the Nisku Booster Station enables EWS to reduce discharge pressure from the Blackmud Booster Station from an average Hydraulic Grade Line (HGL) of 760 m to an average HGL of 754 m. To ensure EWS can maintain appropriate servicing pressure at the Beaumont Reservoir until a second feed line to Beaumont is constructed, Associated Engineering's report, titled *CRSWSC Model Upgrade – Second Feed Line to Beaumont* dated January 28, 2026 was reviewed. The report indicates Beaumont's average day demands can be supplied to 2036 with a HGL from Blackmud Booster Station of 752 m. Peak Day demands can be supplied to 2031 with a HGL from Blackmud Booster Station that is consistent with the capabilities of the Blackmud Booster station.

To meet the requirements of the water supply agreement with CRSWSC at the Beaumont Reservoir, EPCOR plans to install a water main along 50 Street to the Beaumont city boundary within the 2032-2035 budget cycle (termed Performance Based Rates or PBR). Until this project is constructed, EPCOR will continue to operate the Blackmud Booster station to provide adequate pressure to the Beaumont Reservoir.

The water main to be installed along 50 Street to the Beaumont city boundary is only to supplement the existing supply to Beaumont to maintain the minimum pressure per the water supply agreement and is not intended for any other purpose. Operational discussions and opportunities can be explored, but no commitment of capacity will be provided by the 50 street connection other than to supplement the existing supply.

If there are any questions about this response, please contact the undersigned.

Sincerely,

Filip Dundur

Filip Dundur, P.Eng.
Manager, Water Pipe Strategies
EPCOR Water Services - One Water Planning
Tel 780.412.8829 | epcor.com

Framework for Drinking Water Emergencies in the Greater Edmonton Region

April 30, 2025

Table of Contents

Acknowledgements 2
Document Revision History 2
Abbreviations and Acronyms 3
1.0 Introduction 5
2.0 Purpose 7
3.0 Principles 7
4.0 Scope 7
5.0 Framework Description 8
Common Foundations 9
Common Response Objectives 15
Common Outcome 16
6.0 Framework Implementation 16
Emergency Response Diagram 16
Emergency Response Description 16
Annex A – Planning Factors & Assumptions 27
Annex B – Role and Responsibilities Details 30
References 36

Acknowledgements

This framework is intended to be used for planning, exercising, and executing regional-level co-operation and coordination during drinking water emergencies within the greater Edmonton region.

We gratefully acknowledge the sustained and productive collaboration of the participating agencies of the Troubled Waters Working Group (listed in alphabetical order below):

- Alberta Emergency Management Agency (AEMA)
- Alberta Environment and Protected Areas (AEPA)
- Alberta Health
- Alberta Health Services (AHS)
- EPCOR Utilities, Water Services and Emergency Management
- Strathcona County on behalf of the Regional Water Quality Advisory Committee

EPCOR is responsible for updates to this document.

Document Revision History

Version Number	Date	Author	Change Description
1.0	April 30, 2025	EPCOR	First publication

Abbreviations and Acronyms

AEMA	Alberta Emergency Management Agency
AEPA	Alberta Environment and Protected Areas
AHS	Alberta Health Services
CMOH	Chief Medical Officer of Health
ECC	Emergency Coordination Centre
EOC	Emergency Operations Centre
ERP	Emergency Response Plan
EWS	EPCOR Water Services
ICS	Incident Command System
MOH	Medical Officer of Health
NGO	Non-Government Organization (e.g., Red Cross)
POC	Provincial Operations Centre
RWQAC	Regional Water Quality Advisory Committee
SOP	Standard Operation Procedure
ZEOC	AHS Zone Emergency Operations Centre

Preface

The precursor to the Troubled Waters Working Group began in ~2014 with a Regional Water Quality Emergency Preparedness exercise that focused on the area around the Edmonton International Airport. What followed was a recognition that agreed-to principles were needed before future plans could be exercised and improved. There were initially three key issues in need of clarification and agreement-in-principle before any other work proceeded, these were: 1) clarity of roles for each organization during an emergency; 2) prioritization of recipients during water emergencies and 3) logistics of emergency drinking water distribution. Later a need to focus on communications was also recognized. Additionally, investing efforts in working groups and discussions were viewed as more valuable that conducting more exercises in the early days. Participants were generally eager to continue collaborating, and so a number of efforts began that involved the organizing, meeting, discussing and drafting of the *Framework for Drinking Water Emergencies In the Greater Edmonton Region*. There were subsequent water quality exercises conducted, which benefited from the early efforts of the Working Group and exercises continued until 2022. The SARS-CoV-2 and global pandemic caused significant delays in finalizing the Framework for Drinking Water Emergencies document. Furthermore, emergency water quality exercises were paused from 2023 until present day. The completion of this document sets the stage for revisiting coordinated discussions and future emergency water quality exercises.

Disclaimer

The information herein is “Confidential”, which means it is not intended for public use or release due to its sensitivity. Assumptions were made that may change over time as new information becomes available, and statements are made that require approval from jurisdictional authorities.

EPCOR does not guarantee any modifications made to this digital file by others after its transmission to the intended recipient.

1.0 Introduction

The North Saskatchewan River is the sole source of drinking water for approximately 89 communities in the greater Edmonton Region, where over 1.55 million people live, work and visit (Figure 1). While the capacity of the river is not in long-term doubt, there are risks to the water supply.

A triggering event(s) for a drinking water emergency in the Greater Edmonton Region could be the realization of risks related to water quantity, water quality or both. Whether the risk to our water resources is due to natural disasters such as a tornado or flooding or manmade due to water contamination, it is essential that the greater Edmonton Region plan ahead for drinking water emergencies, including situations where "*Do not Use*", "*Do not Consume*" or "*Boil Order*" orders/notices are initiated from public health authorities.

To support public health decision making, EPCOR and other affected utilities would coordinate with AEPA and AHS Public Health officers, to share scientific data and analyses about contamination levels, water treatment, quantity of supply available, demand pressures, the numbers of people likely to be impacted, and the effects of the problem on human and public health.

Figure 1 – Edmonton Region Water Service Area (2024)

The greater Edmonton region does not have an easy-to-implement back-up supply to the North Saskatchewan River. In an emergency situation, inter-agency coordination is vital to a successful response. For that reason, starting in 2014 a five-year plan was initiated to review and enhance the current framework for regional coordination, and to conduct emergency preparedness exercises to validate that coordination.

The value of moving forward with a five-year plan was confirmed in 2016, when a heavy oil spill in the North Saskatchewan River occurred, downstream of Edmonton. When containment booms failed to stop the oil plume, the municipalities of North Battleford and Prince Albert quickly closed water treatment plant intakes, which resulted in significant stress to the remaining supply of water. It took almost two months for public health authorities to approve the use of water from the North Saskatchewan River.

As part of the five-year plan, the Troubled Waters Working Group was formally established (2018) to discuss, coordinate and prepare for situations that could involve major drinking water outages. The working group consisted of local and regional authorities, water service providers and provincial ministries with a stake in the quality and delivery of drinking water in the region.

Key goals included:

- Creation of a regional framework for effective inter-agency coordination around emergency distribution, communications and system restoration.
- Exercise the regional framework with multi-agency stakeholders.

Should a significant event impact the water supply in the greater Edmonton region, the maximum population impacted would be approximately 1.55 million people across more than 89 locations, which includes airports, truck fills, and municipalities. Moreover, there are locations where tens of thousands of people will require special assistance due to health concerns or incarceration. Although a popular approach for post-disaster water supplies, the Working Group's research confirmed that the need for significant bottled water supplies would be challenging to meet when the general public, official agencies and various support groups compete for the same supply—thus becoming an unsustainable solution the longer the emergency lasts (USEPA, 2011; WHO, 2012).

This document is the culmination of several years of exercises, working group discussions, research, and lessons learned. While developed for the greater Edmonton region, this framework may be relevant anywhere in the province.

2.0 Purpose

The purpose of this framework is to organize and maximize the efforts, resources and plans of multiple agencies, in order to ensure communities affected by a drinking water emergency continue to receive water while the cause of the emergency is remediated.

The Plan is not intended to provide detailed instructions on how to conduct investigations and responses. Rather, it serves to guide the collaboration of the partners in the identification and response to waterborne incidents including notification of partners, communication and information sharing.

3.0 Principles

The framework was designed to be:

- Compliant with regulatory requirements for drinking water safety and public health
- Consistent with the Incident Command System (ICS)
- Consistent with industry best practices for emergency drinking water planning
- Generally applicable to most drinking water emergencies, in most of Alberta's communities
- Fair and equitable for communities affected by such an emergency

4.0 Scope

Drinking water emergencies are complex, require significant consideration and stakeholder engagement, and are subject to a variety factors unknown until an emergency actually occurs. For those reasons, the scope of the framework was limited, with the understanding that it will likely change in the future as a result of reviews, exercises, and real event implementation.

In-Scope

The framework applies to events affecting:

- The greater Edmonton region.

- Regulated systems – drinking water systems regulated under Alberta's *Environmental Protection and Enhancement Act (EPEA)*.

- Several local authorities – the significant degree of coordination is the reason why the framework was created.

- Drinking water for human consumption – although drinking water emergencies also affect agriculture, the environment and the economy, focusing first on human life is what society and elected officials expect of government agencies and water utility operators. This is also in keeping with the Incident Command System (ICS) and the *Public Health Act*, where "Life Safety" is the first priority of any emergency.

- The initial mobilization and stabilization phase of a drinking water emergency. Longer periods fall within the recovery/restoration phase of an emergency.

To help initiate and support development of the framework for drinking water emergencies there were a series of planning factors and assumptions that the working group used to progress discussions, which are detailed in Annex A.

Out-of-Scope

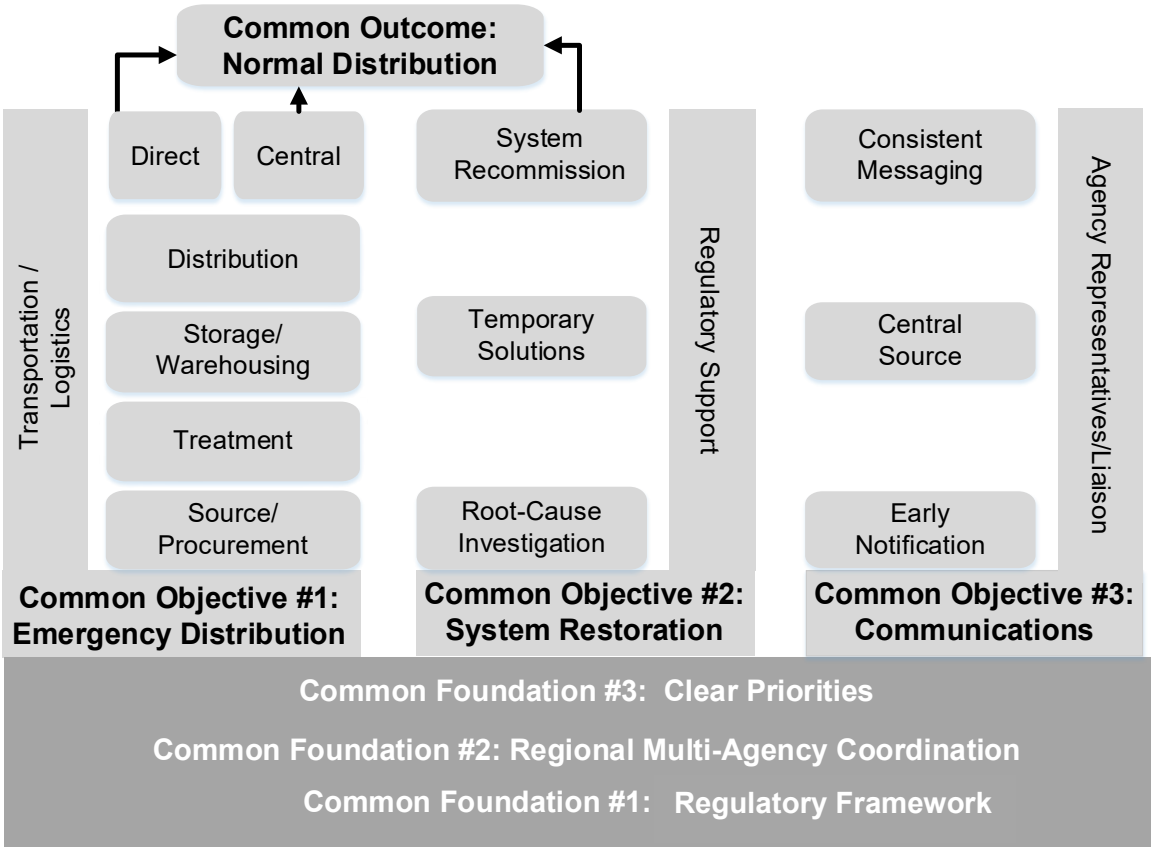
The framework does not address:

- Non-regulated systems – those not regulated through Alberta's *Environmental Protection and Enhancement Act (EPEA)*. However, the principles of the framework may be useful for emergencies affecting those systems.
- Potable water for non-human life/public health purposes – agricultural/ environmental/ economic/ logistical/ infrastructural priorities
- Events affecting a single local authority – local authorities have internal mechanisms for coordination and response.
- Events occurring beyond the greater Edmonton EPCOR-supplied region – those jurisdictions will determine their own needs.
- Detailed or tactical plans and procedures – the framework does not duplicate or replace such documents.

5.0 Framework Description

The framework consists of three enabling foundations that underpin three common response objectives to address drinking water emergencies. Figure 2 reflects the "bottom-up" structure of the framework – starting from common foundations, building up to common objectives, to achieve a common outcome.

Figure 2 – Framework for Drinking Water Emergency



Common Foundations

Common Foundation #1 – Regulatory Framework

The decisions made during a drinking water emergency must satisfy public, legal, and political scrutiny. For that reason, several legal enablers are available to guide and validate decisions, protect responders, and create the conditions required to implement an effective emergency response.

- Environmental Protection and Enhancement Act (GoA, 2024a) – regulatory framework for drinking water quality and management in Alberta
- Drinking Water Safety regulations – legal obligations binding water utility operators to provide clean and safe drinking water, and to remediate drinking water emergencies

- Public Health Act (GoA, 2024b)– legal authority and mechanism to declare a State of Public Health Emergency

- Emergency Management Act (GoA, 2022) and local authority emergency bylaws – legal authority and mechanism to declare a State of Emergency or State of Local Emergency

- Municipal Government Act (GoA, 2025) – legal obligations of a local authority towards its residents.

Common Foundation #2 – Regional Multi-Agency Coordination

- Coordinated Response **–** Drinking water is critical for human health and each jurisdiction is equally entitled to the critical resource. Therefore, a coordinated, regional effort is required to efficiently mitigate information overload, make critical decisions and leverage scarce resources. Responding agencies will establish "Unified Command" (ICS Canada, 2012) to make joint decisions on prioritizing the water supply, restoring the water system, and communicating with the public. To ensure a successful and coordinated response from affected agencies, the following guiding principles ought to be observed:

    - *Early and Meaningful Engagement* – There will be early and meaningful engagement with and between identified stakeholders when the potential for the presence of a waterborne hazard(s) has been identified in a drinking water system, even if a waterborne incident has not been confirmed.

    - *Building Partnerships and Relationships* – There will be an understanding of each other's roles, policies, priorities and limitations. To achieve this understanding, time is needed to develop trust, mutual respect and agreed approaches.

    - *Decision Making and Management* – Communication and discussions between partners will be frank throughout the collaboration. As much as possible, information will be shared freely and openly and the discussion and decisions will be documented.

- Complementary Agency Roles **–** Responding agencies will fall into several broad categories:

    - *Affected Agencies* – Local authorities and water utility operators whose water supply and systems are directly disrupted. In a drinking water emergency multiple utilities could be affected, however, in the case of this Framework EPCOR would be considered the Primary Affected Utility—as EPCOR is the supplier of treated drinking water to all other systems. All Affected agencies would activate their Emergency Operations Centres (EOCs) to address issues within their jurisdiction and legal mandate. The Primary Affected Utility would remediate the root-cause of the

emergency and restore the drinking water system. Other affected utility operators would respond as required. Depending on the magnitude of the event not all regional utility operators may be affected. Local Authorities will respond to their citizens' needs; will maintain public health and public order; and will support water utility operators with communications, emergency distribution, and the security of distribution centres.

- *Lead Agency* – The health authority within whose jurisdiction the drinking water emergency occurs, which for Alberta is Alberta Health Services (AHS). AHS will activate its Zone EOC (ZEOC) to centralize and coordinate emergency water distribution, system restoration and communications.

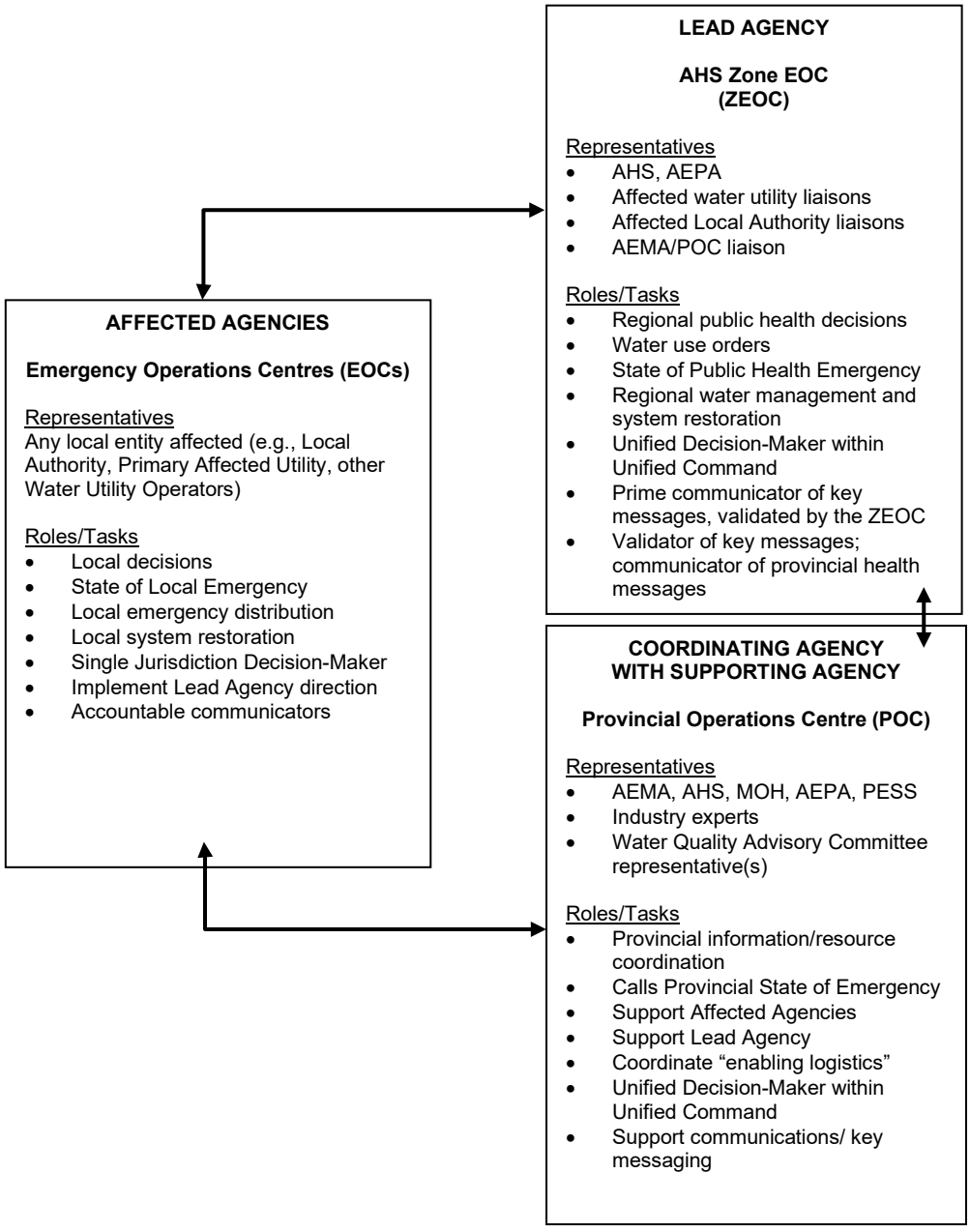
- *Coordinating Agency* – The provincial emergency management organization, in this case the Alberta Emergency Management Agency (AEMA). The AEMA will activate the Provincial Operations Centre (POC) to support Affected Agencies and the Lead Agency, and will be the location where unified command is exercised.

- *Supporting Agency* – An agency with the regulatory mandate or technical expertise to make emergency response decisions, in this case Alberta Environment and Protected Areas (AEPA).

For a more detailed descriptions of the roles and responsibilities of different agencies, see Annex B.

The Affected EOCs, AHS ZEOC and POC will serve distinct but complementary purposes, as illustrated below in Figure 3.

Figure 3 – Complementary Agency Roles



- Unified Decision-Making **–** Decision-making will be done jointly in accordance with ICS Canada's principles of "Unified Command". This means Affected, Lead and Coordinating agencies share formal authority and responsibility over drinking water and emergency response, and respond to the needs of stakeholders. Table 1 below generally describes those entities in order of formal authority from highest to lowest.

Table 1 – Decision Makers and Stakeholders

Role	Description	Entity
Single Jurisdiction Decision-maker	Agency with the legal mandate and liability protection to: • declare a State of Local Emergency, State of Emergency, or State of Public Health Emergency • decide on the nature and scope of priority populations and remaining populations • prioritize/ration scarce resources • communicate major decisions • decide the safety of drinking water	• Affected Agency – Local Authority as defined in acts and regulations • Lead Agency – Chief Medical Officer/Sr. Medical Officer of Health • Coordinating Agency – Lieutenant-Governor in Council (via Minister of Municipal Affairs)
Unified Decision-maker/ Unified Command	Required when multiple local authorities are affected, and a single set of objectives is appropriate. They have the same mandate/legal liability protection as the above single jurisdiction decision-maker	• Lead Agency – Chief Medical Officer /Sr. Medical Officer of Health, and AHS Public Health • Coordinating Agency – Minister of Municipal Affairs
Authority	Agency with a formal/legal mandate over drinking water, such as quality standards, regulatory obligations, permits, etc.	• Supporting Agency – AEPA • Health Canada (for Indigenous communities)
Influencer/ Consulted	Entity that contributes to decisions or the response by providing: • Regulated accountability • Technical/scientific data, advice, options • Responsibility for affected populations • Government resources	• Affected Agencies – Primary Affected Utility, Water Utility Operator, Airport Authority, Corrections Agency, Military, Parks Canada, Academic Institutions
Recipient population	Entity receiving drinking water, whether it pays for it (e.g., customer or ratepayer) or not (e.g., health care patient, child, etc.).	• Impacted population • Critical facility (hospital, correctional facility)
Interested	Entity who wants to know about a drinking water emergency • advocate for itself or another • engage media and/or elected officials	• Business/industry sector • Water vendors • Community advocates/grassroots groups • Media and non-impacted public

Common Foundation #3 – Clear Priorities

The overarching priorities that drive decision-making during a drinking water emergency are:

- To provide drinking water to affected populations, in order of priority
- To maintain public health and public order

Where the supply is insufficient to serve all affected populations at the same time, decision-makers will use two key criteria to identify populations who should receive water first, on Day 1 of an emergency, in order to save lives and maintain public health and public order:

1. The ability of a population to provide for itself, and
2. The role of a population in preserving public health and public order

- Priority Populations – The priority populations below must receive water immediately, as soon as the Medical Officer of Health determines the water supply poses a risk to public health and issues an order to that effect.

  - *Vulnerable* – need assistance to provide for themselves (sick, elderly/young, cognitively disabled, mobility/visually-impaired). They are typically located at health care facilities, emergency reception centres, or cannot leave home without assistance.

  - *Restricted* – cannot be released to provide for themselves (prisoners, detainees, people under quarantine, airport travelers). They are located at critical facilities, such as correctional institutions, health care facilities or homes, or at airports.

  - *Public Health/Public Order Front-Lines* – deal directly with the public in order to maintain public health and public order (health-care workers, home-care providers, paramedics, police, laboratory technicians, hospital cleaning personnel, utility workers).

  - *Water Emergency Responders* – respond to the drinking water emergency under the direction and authority of an Affected Agency, Lead Agency, Coordinating Agency or Supporting Agency (water treatment/packaging/transport, door-to-door delivery, centralized distribution point operations, system restoration workers).

- Remaining Populations **–** Those populations will receive water after priority populations, as soon as possible when more water becomes available. The main criterion is that they are able to provide for themselves, and can travel without assistance to locations where water is available. Although more research is required, remaining populations typically include:

- *General public* – Personnel, organizations or facilities living or located within the affected jurisdictions but not essential to public health, public order or the response to the drinking water emergency – they will be directed to centralized distribution points within the first three days of the emergency, or they can choose to procure water from outside the affected area.

- *Public safety stations/buildings* – the buildings themselves do not have operational needs for emergency drinking water.

- *Local authority infrastructure* – will be addressed through business continuity plans, and personnel will be directed to centralized distribution points after Day 1 of the emergency.

- *Agriculture/farming operations* – typically have their own groundwater source, personnel will be directed to centralized distribution after Day 1 of the emergency, and they can procure water from outside the affected area.

- *Industrial/commercial/retail enterprises* – those that rely on water as a key business input typically have insurance and an emergency/business continuity plan, and can procure water from outside the affected area.

Common Response Objectives

During a drinking water emergency, responding agencies will coordinate their efforts and communications to achieve the core objectives below:

- Common Objective #1 – **Distribute drinking water to priority populations within 24 hours, and to the general public within 72 hours**. Responding agencies will coordinate the procurement and transportation of an alternate supply of water, then will distribute it directly to vulnerable populations and critical facilities, and centrally to the general public. Responding agencies will coordinate with the Primary Affected Utility.

- Common Objective #2 – **Restore drinking water treatment and distribution system(s) as soon as possible**. The Primary Affected Utility (EPCOR) will investigate and address the root-cause of the emergency, and return drinking water operations to normal state, while coordinating with other Responding agencies

- Common Objective #3 – **Communicate within the first operational period with decision-makers and influencers** (see Table 1). Responding agencies will do so consistently, compassionately and transparently throughout the event.

Common Outcome

The successful implementation of the framework will reduce disruption to communities affected by a drinking water emergency, because the response will occur more rapidly and efficiently than it would without this framework.

6.0 Framework Implementation

Emergency Response Diagram

The coordinated response to the initial stages of a drinking water emergency is expected to unfold generally as illustrated in Figure 4.

Emergency Response Description

This section describes each of the items in the response diagram.

Triggering Event Begins

Initial Awareness

Initial awareness of a problem can originate from a number of sources:

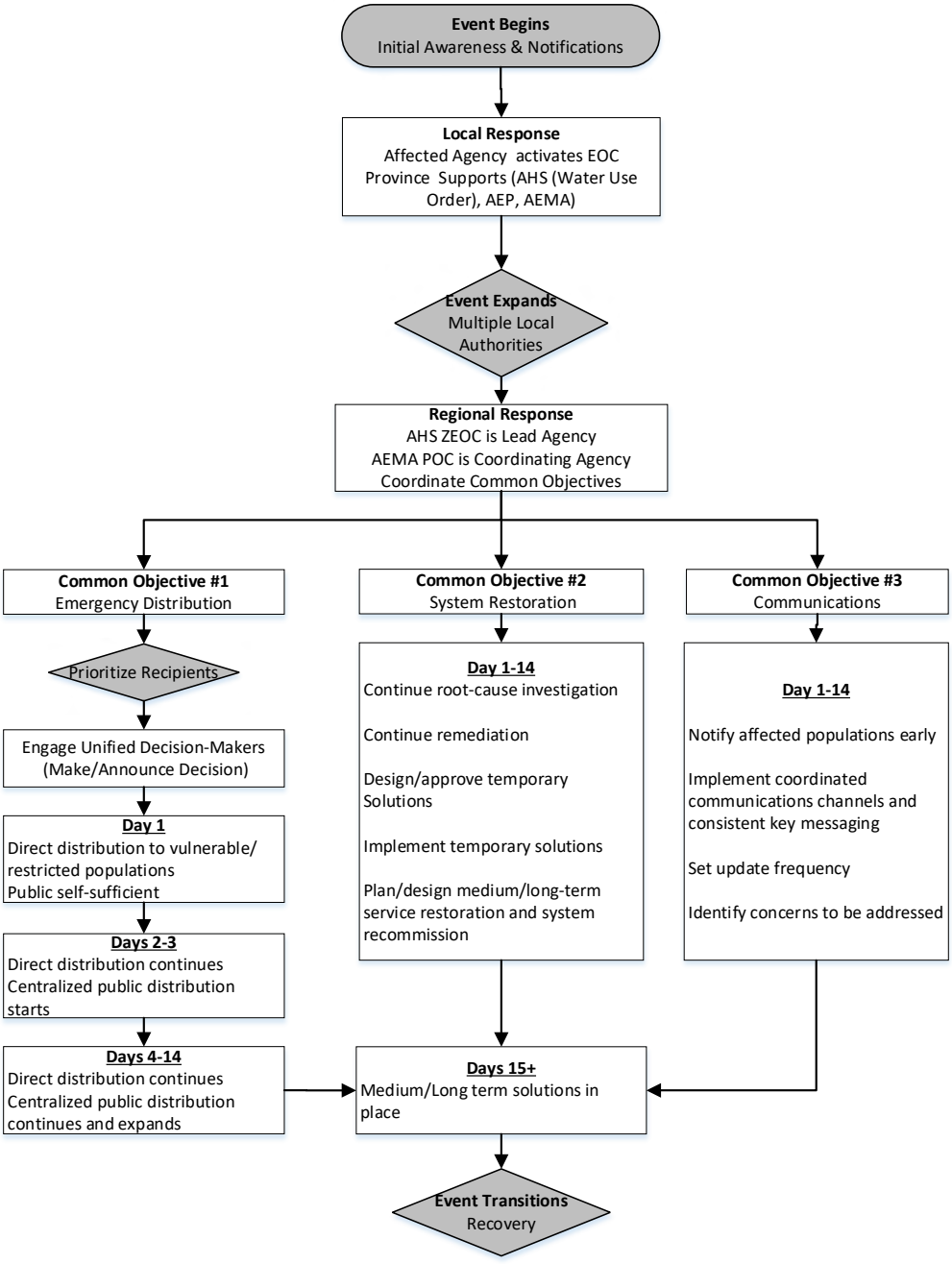
- The water utility operator – As part of its regulatory permit to operate a drinking water system and service, a water utility operator continually tests water quality and monitors the capacity of, and demands on, the distribution system and reservoirs.

- Customers – Residential, multi-residential, commercial, industrial or institutional customers report aesthetic problems with their water (taste, odour, appearance), or pedestrians see or smell something abnormal around a body of water like a creek or river, or witness dumping of substances into storm drains or bodies of water.

- Local authorities – a local authority is typically informed of a water problem through the water utility operator, the public, community services (e.g., Fire or Police Department dispatch, 311 call centre, roadway maintenance, environment specialists, etc.), or provincial agencies such as AEPA or the Alberta Energy Regulator (AER). Local authorities may also be given advance warning through river or river outfall spill event/incident notification systems, severe weather notifications, etc.

- A malicious entity – Although a very rare occurrence, a malicious entity could deliberately tamper with a water source, or pretend to do so, and announce that act to the authorities or the media in order to create mistrust, fear or public outrage.

Figure 4 – Drinking Water Emergency Response



Initial Notifications

Initial notifications to responding agencies may be done by telephone, email or social media to the key agencies below, all of whom have 24/7/365 “on-call” capability to receive notifications:

- Alberta’s toll-free Environment and Dangerous Goods Emergencies line (EDGE)
- Alberta Health Services (AHS) Health Link
- Local authority 311 or public service call centres
- Local authority 911 or police/fire/ambulance emergency lines
- Water utility operator control room
- Water Service Commissions

Methods of Notification

Responding agencies may choose any means of notification, as long as it is efficient, effective, traceable, and known in advance to recipients so that they may give it the attention and urgency it requires.

Information to Include in a Notification

A notification must include, at minimum:

- that a condition exists which may impact public health
- what is currently known about the nature and severity of the potential/actual problem
- the potential/actual area and population affected

Additional information each agency must share with stakeholders is already defined in existing protocols and emergency plans.

Local Response

Once a problem is known, Affected Agencies (the local authority and/or the water utility operator whose water supply and system is directly affected) begin the local response and coordination.

Initial Investigation and Risk Assessment

Once notified, the water utility operator will implement standard operational procedures to investigate the problem's nature, scope, scale, severity, and geographic extent. The operator will also begin containment and notification to mitigate the risk of the problem spreading.

After a triggering event, the Primary Affected Utility and any other affected water utility operators will engage AEPA, AHS Public Health officers, and their communications advisors to assess and confirm whether there is *sufficient* information to confirm a *credible* risk to public health. This process includes sharing scientific data and analyses about contamination levels, water treatment, quantity of supply available and demand pressures, the numbers of people likely to be impacted, and the effects of the problem on human and public health. Each agency will record their assessment and resulting decisions, and communicators will begin outreach to their respective leaderships, local authorities and the public.

Should the concern be deemed "significant" and an imminent danger to public health, AHS will immediately notify the public first.

Table 2 – Definitions of descriptors for use in descriptive risk assessment

Descriptor	Meaning	Notes
Significant	Clearly a priority	Actions need to be taken to minimize the risk. Possible options should be identified and implanted [*sic*] as soon as possible.
Medium	Medium priority	Currently no impact on drinking water safety, but requires attention and/or monitoring
Insignificant	Clearly not a priority	No action is needed at this time. The risk should be revisited in the future as part of a *Drinking Water Safety Plan* review process.
Uncertain	Clarification required	Further data collection or investigation is required to understand the significance of the risk. Some actions can be taken in the meantime as deemed necessary to reduce risk, based on existing information.

Initial Containment and Mitigation

Upon confirmation of a risk to public health, water utility operators must by regulation implement immediate containment and remediation measures, which include, but are not limited to: isolation of affected from unaffected parts of the system, system flushing, system reconfiguration, demand management as well as sampling and testing.

In addition, affected and lead agencies will implement mitigation measures that require public cooperation.

Where the problem is one of quality (a person may become ill), the Medical Officer of Health will issue one of three water orders to reduce the public's exposure to the risk:

- Do Not Consume – Chemical contamination is suspected or detected in the water system and considered to be a threat to public health through ingestion (drinking or cooking). People must avoid water for drinking, food preparation, beverages or ice cubes, washing fruits or vegetables, dishwashing or personal hygiene such as brushing teeth. However, they can still use the water for showering/bathing and toilet flushing.

- Do Not Use – Chemical contamination is suspected or detected in the water system and considered to be a threat to public health through dermal or inhalation exposure, which means touching the skin or breathing the contaminant could affect the skin, eyes, and/or nose. People must avoid the water for all domestic purposes including showering and bathing. However, they can still use the water for toilet flushing.

- Boil-Water – Contamination via a microbiological parameter. People must boil all water used for drinking; preparing food, hot and cold beverages and ice cubes; washing fruits and vegetables; and dental hygiene. However, under most circumstances, it is not necessary to boil tap water used for other household purposes, such as bathing, showering, laundry, or washing dishes.

If the problem is one of quantity (the primary source of supply is compromised, or demand exceeds the capacities of water treatment plants and reservoirs), the affected agencies will implement demand management measures to reduce water consumption.

EPCOR Water Services (EWS) has had protocols for Demand Management Measures (DMM) in place since the early 1990s. These were first introduced as part of the original Water Integrated Resource plan with a primary focus on the curtailment of peak summer water consumption during extended hot weather scenarios.

EWS is in the process of updating the DMM protocols. Historically, DMM protocols consisted of three targeted action levels – A, B and C spanning from EWS' and the City of Edmonton's internal operations curtailment of water use (Measure A), voluntary public

reduction (Measure B) and mandatory public reduction of non-essential water use (Measure C).

For improved clarity to customers, EWS, is planning to move to a four stage DMM protocol defined for each season with targeted percent reductions in each stage. Conservation and water efficiency best management practices are also included as a pre-stage normal operations stage. This is an update from the previous 3 stage (A, B, C) protocol that was communicated to the public only during a Measure B or C scenario. The four-stage DMM approach will improve transparency and provide more granularity to customers on expected demand reduction targets during each stage based on the season and anticipated duration of the DMM event.

EWS' four-stage DMM will begin with a pre-stage general water conservation campaign. In Stage 1, EWS, City of Edmonton and Regional conservation and water efficiency best management practices will be implemented along with a voluntary appeal to the public to reduce indoor usage in winter and outdoor usage in summer. Under Stage 2, the DMM will move to voluntary indoor and outdoor usage restrictions in summer and mandatory restrictions for winter. Stages 3 and 4 will include mandatory restrictions for both seasons. The restrictions will support water demand reduction to meet identified targets for each stage to ensure demand will not exceed treatment and system water storage capacity. Stages 2-4 (winter) and Stages 3-4 (summer) will require specific industry outreach to achieve the targets and the messaging will vary based on the season.

Local Coordination

Affected agencies will activate their emergency response plans (ERPs) and Emergency Operations Centres (EOCs) required to address issues within their jurisdiction and legal mandate.

The water utility operator will continue responding to the root-cause of the drinking water problem; will activate its ERP and EOC; will implement demand management measures; will coordinate the procurement of a bulk supply of drinking water for emergency distribution; will implement temporary solutions; and will begin restoring the drinking water system back to normal.

Meanwhile, the local authority will activate its own ERP and EOC to respond to its citizens' needs; will call a state of local emergency as required; will maintain public health and public order; and will support the water utility operator with communications, demand management or implementing a water use bylaw, emergency distribution, and the security of distribution centres.

Additional details of local coordination are addressed in affected agency ERPs, or will be determined by the EOC based on the specifics of the event and the input of provincial agencies.

Provincial support

The Government of Alberta, through AHS, AEPA and AEMA, will work closely with affected agencies to mitigate impacts to public health, to communicate with affected populations, and to restore drinking water quality. AHS and AEMA will deploy personnel to local authority EOCs, while AEPA will attend the water utility operator EOCs.

AHS Public Health and Public Affairs teams will work with the affected agencies to implement communications strategies to notify affected populations, address public concerns, and provide regular updates throughout the event.

If the issue is with quality, AEPA will work with water utility operators and the Provincial Laboratory for Public Health to identify and remediate the root-cause of the water problem, and to restore the quality of the drinking water supply.

AEMA will support the local authority with advice, liaison to the Provincial Operations Centre (POC), and coordination of additional resources as required. AEMA is also the sole point of contact with other provinces and the federal government.

Event Expands

As soon as multiple local authorities are, or could be, impacted, AHS and AEMA will transition to a regionalized response across all affected jurisdictions.

Regional Response

Provincial Coordination

Regionalized response will be facilitated by the Province:

- Lead Agency – AHS, as the jurisdiction over public health emergencies, will activate its Zone EOC (ZEOC) to centralize the activities of affected agencies and implement emergency distribution, system restoration and communications objectives. The ZEOC does not supersede or control local EOCs, it simply provides provincial-level leadership.
- Coordinating Agency – the Alberta Emergency Management Agency (AEMA) will activate the Provincial Operations Centre (POC) to support affected agencies and the Lead Agency, and will be the location where unified command is executed. The POC

does not supersede or control local EOCs or the ZEOC, it simply facilitates provincial-level support and out-of-province assistance.

- Supporting Agency – AEPA will deploy to the ZEOC or the POC based on the type of expertise required, and will continue close liaison with affected water utility operators.

Implementation of Common Objectives

Together, the Affected Agencies, the Lead Agency, the Coordinating Agency and Supporting Agency (collectively referred to as “responding agencies”) will implement the common objectives of this framework.

- Common Objective #1 – Emergency Distribution

  Emergency distribution begins the first day that the drinking water supply is no longer available to the community, and continues until the drinking water system is confirmed restored by AEPA and AHS. It includes four sequential strategies:

  - *Prioritization* – On Day 1 of the emergency, under the authority of a State of Public Health Emergency, or State of Emergency, or State of Local Emergency, Unified Decision-Makers/Unified Command will formally confirm the nature, size, locations and conditions of priority populations, and announce the decision to the affected populations.

  - *Procurement and warehousing* – On Day 1 of the emergency, Affected Agencies, with support of the Coordinating Agency/POC, will procure and warehouse a supply of bottled water for priority populations, with a minimum quantity of 4 litres/person/day (Public Safety Canada, 2022; WHO, 2012). They will also begin the procurement of a supply of trucked water and licensed trucks for critical facilities and centralized distribution points. The Primary Affected Utility would activate contracts with e.g. water haulers and bottlers and work with the Coordinating Agency/POC as needed.

  - *Direct distribution* – On Day 1 of the emergency, Affected Agencies and the Primary Affected Utility with support of the Lead Agency/AHS and Coordinating Agency/POC, will identify the location of priority populations requiring direct (door-to-door) delivery of bottled water, and will implement the delivery logistics required to begin delivery.

  - *Centralized distribution* – By Day 3 of the emergency, affected local authorities, with support of the Coordinating Agency/POC, will establish and operate (site, staff, security, schedule, and supplies) a minimum of two centralized distribution points for the general public who live within the affected jurisdictions.

- Common Objective #2 – System Restoration

  System restoration begins after the local response described previously is implemented (investigation, risk assessment, containment and mitigation) within the first two weeks, and continues until the drinking water system is confirmed restored by AEPA and AHS. It includes three strategies:

  - *Temporary solution(s)* – the Primary Affected Utility, with the support of AEPA and adjacent water utilities/water service commissions, may implement adjustments to their water systems to re-route or resupply potable water from an unaffected part of the system. Options include installing overland lines from an unaffected location of the supply system or outside the affected jurisdiction; using a previously decommissioned water source such as groundwater; refiling reservoirs from trucked potable water outside the jurisdiction, etc.

    In the event that a temporary solution is not viable or effective, or fails, the water utility operator and AEPA/AHS may recommend evacuation of the affected area.

  - *Permanent solution(s)* – permanent modifications to a water system are outside the scope of this framework. The options depend entirely on the emergency, the impacted system(s), environmental and regulatory constraints, and cost. Permanent solutions take months to design and approve, and potentially years to implement.

  - *Recommission* – returning the system back to normal occurs when the following conditions are met and formally approved by AEPA and AHS.

    - ✓ The root-cause(s) are remediated – scientific tests confirm contamination no longer poses a threat to public health and AEPA certifies that affected parts of the system are fit for operations
    - ✓ The system and utility/ property owner water lines are flushed and clean
    - ✓ AEPA certifies that drinking water supply production is fit for operations
    - ✓ Drinking water reservoir levels are back to normal capacity
    - ✓ Demand management measures can be lifted
    - ✓ The Medical Officer of Health lifts the water orders (do not use, do not consume or boil-water)

- Common Objective #3 – Communications

  The communications strategy for a drinking water emergency is designed to be unified/agile/collaborative, and to support smaller communities with limited access to communications expertise or tools. Communicators must be engaged at the outset of an event, ideally at the risk assessment stage. The strategy is designed for events beyond the crisis communications plans of a single organization/jurisdiction.

Communications begins as soon as the Medical Officer of Health determines there is a risk to public health and declares a water order (do not use, do not consume or boil-water), within the first hours of the emergency, and continues until the drinking water system is confirmed restored by AEPA and AHS. The mission of agency communicators is to inform affected populations early, consistently, compassionately and transparently throughout the event.

- Additional Objectives – those are outside the scope of this framework because they may only be known at the time of the emergency, will be influenced by senior officials, or may only apply to a single agency or jurisdiction.

Event Transitions

Operations under this framework will continue until the water problem no longer poses a risk to public health and the Medical Officer of Health lifts water use orders, or until the drinking water system is authorized to resume normal operations.

At that point, the framework will be deactivated.

Demobilization of Emergency Distribution

- Centralized distribution – AHS and AEPA will confirm with water utility operators the conditions, sequence and time when local authorities can begin demobilizing centralized distribution points. Local authorities will restore those sites to normal conditions and operations.

- Direct distribution – AHS and Alberta Justice will confirm with Affected Agencies the conditions, sequence and time at which when vulnerable populations and critical facilities are ready for normal distribution, and will cease direct distribution.

- Support from the ZEOC/POC – the AHS ZEOC and the POC will determine the conditions and time frame to demobilize the additional resources brought in to support the affected agencies and communities. The POC will determine whether to implement disaster recovery programs.

Demobilization of System Restoration Temporary Solutions

AEPA and water utility operators will determine the conditions and time frame to decommission alternate distribution lines and return to the primary distribution system. This includes transitioning to longer-term recovery and capital investments.

Demobilization of Communications

The ZEOC and POC will determine the criteria and timing of communications to affected communities, and will coordinate messaging with affected local EOCs.

Deactivation

Each agency's EOC, the ZEOC and the POC will follow their existing deactivation and internal debrief procedures, and release their personnel back to normal duties.

Post-Event Review

AHS and AEMA will coordinate the overall post-event review to share and document with all agencies the salient and common points of strengths and improvements for future response.

Since water emergencies are high-profile events, agencies must prepare for an external review, public inquiry or audit into the response, which are typically commissioned by government.

Post-Event Reports

Agencies will share reports that address recommendations for improvement that directly benefit public health, public order, and the common objectives of this framework.

Annex A – Planning Factors & Assumptions

Planning Factors (from USEPA, 2011)

- The primary mission of the utility is to restore piped water service. They will likely be dependent on others to provide and distribute emergency water supplies. A good emergency drinking water plan should avoid resource allocation conflicts (i.e., personnel and equipment) during a disaster in order to allow the utility to focus on restoring piped water service expeditiously.

- The recovery period would likely be of a long duration since events that impact drinking water systems also have profound primary impacts on other infrastructure (e.g., power, transportation, communications) and secondary impacts (e.g., disruption to supply chains, mobility difficulties, security concerns, human-resource depletion).

- An epic catastrophe impacting a region with millions of people would increase a multiplicity of public health risks.

- The value of 4 litres per person/per day is a plausible planning number, consistent with the federal government and the Red Cross estimates for drinking, food preparation, and hygiene related to health and safety. Emergency water required for firefighting, hygiene and other needs (e.g., domestic animals), while important, is beyond the scope of this document.

- Bottled water sources can be stored on-hand, transported into the affected area in the event of an emergency, or a combination of the two. Arrangements for transportation from off-site should be made in advance via contract; this can help prevent “double counting,” such that multiple agencies are not relying on the same water in the event of a large-scale emergency. There are a range of possible sizes for packaged water. Selection of size will depend on a number of factors including handling, availability, and cost.

- A security force may be needed both for protecting water supplies and controlling crowds at distribution sites. Local law enforcement should be consulted regarding their ability to perform this duty during an emergency, but others might be needed such as contracted security firm or guard services.

- *Greater adherence to the Incident Command System (ICS) model* – A major factor inhibiting an effective, streamlined response after a catastrophic disaster is the sheer number of entities that are involved: political (local, regional, national and international), technical, operational, administrative, NGOs, random volunteers, etc. The frequency and duration of the meetings to inform various political and managerial levels can divert

key personnel from the response. The participants affirmed the benefit of the ICS model in maintaining clear lines of control and accountability for disaster management, and they noted that it streamlines policy considerations that could otherwise slow and inhibit a response. Coordination and communication between major players is essential. It helps to limit conflicts of jurisdiction, overlapping responses, and underutilized resources that could delay effective responses.

Assumptions

Drinking water emergencies are complex, and not every aspect can be known in advance. The assumptions below were required so that the framework could be created, and may be validated or refuted in the future.

- Agencies, alone or together, will take measures to mitigate the occurrence and impact of a drinking water emergency, including the implementation of public health orders, demand management measures, and appeals to the public to reduce consumption.
- Water utility operators assume that compliance with provincial drinking water regulations will be required unless the regulator issues formal regulatory relief.
- Each agency will have its own emergency response plan(s), emergency operations centre (EOC) (or equivalent), and resource agreements/contracts in place.
- Local authorities will have a plan to establish water distribution points proportional to the affected population within their jurisdictions.
- There will not be enough trucking capacity within the greater Edmonton region to meet the demand, therefore assistance from the remainder of Alberta and other provinces will be requested.
- Critical facilities will not be able to reduce their consumption due to the nature and needs of their residents.
- Critical facilities will have business continuity plans that include the identification of water connection points and locations, as well as procedures for adjusting plumbing equipment to receive trucked potable water.
- Other critical infrastructure sectors, such as transportation, telecommunications, and electricity will remain operational.
- The private sector and commercial enterprises will support the response efforts of responding agencies, and comply with formal orders.

- In both the “do not consume” and “do not use” scenarios, the water supply volume is not in question and demand management techniques to reduce consumption are generally not required. Fire flow and water for toilet flushing (sanitation) is generally not impacted.

- Assuming some of the household consumption is attributed to outdoor water use and is discretionary, a maximum reduction of 20% is not unreasonable if a mandatory, enforceable, well-communicated water ban was issued during the summer months. While reductions of 25-50% are possible without sacrificing public health, the likelihood of compliance, especially long-term, is low.

- Without water supply, fire protection would be limited to the fire storage volumes allotted to each reservoir, and toilet flushing could not occur.

- As Edmonton is not located in an area that prone to frequent and physically destructive natural disasters (e.g., earthquakes, tsunamis, hurricanes, etc.) it is assumed that the vast majority of citizens are ill-prepared to deal with the effects of an extended drinking water emergency; therefore, personal emergency water stockpiles were not calculated in the needs assessment, and mobilization for emergency supply will be required immediately.

Annex B – Role and Responsibilities Details

The responding agencies below have formal mandates for drinking water emergencies. The list below is not exhaustive, and other agencies will become involved depending on the event. For ease of reading, they are listed in order of involvement.

Affected Agencies

Local authorities, the Primary Affected Utility (EPCOR) and water utility operators whose water supply and systems are directly disrupted. They will activate Emergency Operations Centres (EOCs) and Emergency Response Plans (ERPs) to address issues within their jurisdiction and legal/regulatory mandate.

Water Utility Operator

Organizations, publicly or privately owned, regulated by AEPA under the Alberta Environmental Protection and Enhancement Act to operate the drinking water system and ensuring safe drinking water for Albertans. They include individual utilities, as well as water service commissions.

The role of a water utility operator is the day-to-day operation of treatment plants and must operate in accordance with the standards set out by AEPA and are required to report to AEPA anytime they cannot meet their specified terms and conditions.

Core responsibilities include:

- To confirm, with technical and scientific data, that a problem exists with the drinking water, or the drinking water system
- To report the problem to AEPA, AHS, local authority and adjoining water utility operators/ water service commissions
- To coordinate with the local authority how to provide affected populations with, at minimum, a basic supply of water (Framework Objective #1 Emergency Distribution)
- To remediate the root-cause of the problem, and restore the drinking water system to normal operations (Framework Objective #2 System Recommission)
- To communicate directly with affected populations by as many means as possible, and to act as the Accountable Communicator (Framework Objective #3 Communications)
- To support the government's decision-making process (see Table 1), as provider of technical/scientific data, advice and options

Local Authority

The Municipal Government Act defines local authorities as municipalities, Indigenous band councils, regional health authorities, and regional service commissions.

The role of a local authority is to provide responsible and accountable local governance in order to create and sustain safe and viable communities. It is also to be responsible for the direction and control of the local authority's emergency response unless the Government (of Alberta) assumes direction and control.

Core responsibilities include:

- To establish and maintain liaison with the water utility operator/water service commission
- To activate the local authority EOC, and leverage the powers of a State of Local Emergency and Emergency Bylaw to ensure the effectiveness of response measures
- To respond to the needs and concerns of their citizens, communities and elected officials
- To maintain public health and public order
- To make decisions regarding priority populations (see Table 1)
- To coordinate with the water utility operator and the POC the delivery of a basic supply of water to affected populations (Framework Objective #1 Emergency Distribution)
- To augment the water utility operator's strategies for communicating with affected populations in order to keep them fully informed and address their concerns (Framework Objective #3 Communications)

Other Affected Agencies

The Edmonton International Airport Authority, Alberta Justice and Solicitor General, Corrections Canada, the Department of National Defense and Parks Canada are accountable to address water emergencies within their jurisdiction and for persons under their care or protection. They may activate their own EOCs, and will coordinate their activities with the Local Authority and water utility operator.

Lead Agency

An organization assigned by legislation, regulation, policy or a plan to lead the emergency management of a specific hazard. For a drinking water emergency, the Ministry of Health and Alberta Health Services (AHS) constitute the Lead Agency.

As it relates to water, AHS has a primary role in ensuring the safety of the drinking water supply and providing education and advice to water system operators and the public at large. To achieve this goal, executive officers must cooperate with AEPA and water system operators to ensure the water being delivered is safe for consumption. Their main objectives are:

- Preventing waterborne outbreaks from occurring
- Protecting the public and minimizing the impact of waterborne hazards
- Act as a resource for health information

Core responsibilities include:

- Verify that there is an actual or probable drinking water emergency in consultation with relevant subject matter experts
- Activate the AHS Zone Emergency Operations Centre (ZEOC) to direct and co-ordinate investigation and control of the incident
- Act as the primary source of verified information for the purpose of communicating to both the consumers served by the affected supply and the general public via the media
- Through the Medical Officer of Health, be the final arbiter of decisions to protect public health, including issuing public health orders and any restrictions on the use of potable water
- Communicate with Alberta Health (the Ministry), AEPA and the Affected Agencies
- Through Public Health Officer(s), Monitoring drinking water quality to assess compliance of distribution systems and cisterns with the latest edition of the Guidelines for Canadian Drinking Water Quality (GCDWQ)
- Through the Provincial Laboratory for Public Health, reference services for identification of bacteriological waterborne hazards in drinking water through analysis of water samples submitted by the water system operators
- Through the Alberta Ministry of Health, set policy, legislation and standards for the health system in Alberta, including declaring a State of Public Health Emergency
- Through the Ministry of Health, act as Unified-Decision-Maker(s)/Unified Commander (see Table 1)

Coordinating Agency

The organization assigned by legislation, regulation, policy or plans to coordinate the efforts of different orders of government, supporting or logistic agencies and other emergency

management partners to coordinate requests from the lead agency to deal with the results of the specific incident or hazard.

The Alberta Emergency Management Agency (AEMA) is the Coordinating Agency for all events occurring within the province of Alberta.

The role of AEMA is to centralize emergency support activities when several communities are impacted simultaneously.

Core responsibilities include:

- To activate the POC to support Affected Agencies and the Lead Agency
- To provide the working location where Unified Command / Unified Decision-Making are executed (see Table 1)
- To facilitate the declaration of a State of Emergency
- To coordinate the procurement and transportation of bottled and trucked water from outside the affected jurisdiction(s)
- To coordinate the request and deployment of provincial, federal and international resources

Supporting Agency

Organizations assigned by legislation, regulation, policy or a plan to assist in the emergency management of a specific hazard. It also provides general or specialized assistance to the lead and affected agencies.

For a drinking water emergency, AEPA is the most important supporting agency, as it has the mandate to approve, monitor and regulate approved water works under the auspices of EPEA (see Table 1).

Core responsibilities for AEPA are expected to include:

- Establish and maintain liaison with water utility operators/water service commissions
- Once notified by the water utility operator that a drinking water problem exists, to accompany the water utility provider when providing technical advice and recommendations to the Medical Officer of Health regarding the risk to public health
- To inspect, supervise and approve the water utility operator's strategies for restoring the system (Framework Objective #2 System Restoration), including: water quality sampling and testing plans, system reconfigurations, alternate water supplies, treatment capability, and variances from existing permits/approvals to operate

- To authorize formal declarations regarding the status of drinking water quality and systems, including that the system is fit for recommission and return to normal operations

Unified Decision-Makers / Unified Command

Agencies with the legal mandate and liability protection to declare a State of Local Emergency, State of Emergency, or State of Public Health Emergency.

The role of Unified Decision-Makers/Unified Command is to combine and leverage their authority and legislative powers to maintain public health and public order during a water emergency. Together, they make the significant decisions required to prioritize populations and scarce resources so that communities can manage the consequences of the emergency (see Table 1).

Core responsibilities include:

- To work with the Affected Agencies, Lead Agency and Coordinating Agency to execute the objectives of this framework
- To respond to the needs and concerns of affected populations, communities and local elected officials
- To declare, and leverage the powers of, a State of Public Health Emergency and State of Emergency to ensure the effectiveness of the objectives of this framework
- On Day 1 of the emergency, under the authority of a State of Public Health Emergency or State of Emergency, to formally confirm the nature, size, locations and conditions of priority populations, and announce the decision to the affected populations (Framework Objective #1 Emergency Distribution)
- To ensure the POC and Affected Agency EOCs have the support required to deliver a basic supply of water to affected populations (Framework Objective #1 Emergency Distribution)
- To ensure the POC and Affected Agency EOCs have the support required to communicate with affected populations in order to keep them fully informed and address their concerns (Framework Objective #3 Communications)

Communicators

Personnel employed by responding agencies to communicate with affected populations and other stakeholders about the drinking water emergency, the cause of the emergency, the response, priority populations, and instructions to follow to protect themselves and public health, and to get water for their households.

Prime Communicator

The affected utility where the issue originates is the Prime Communicator and overall project manager for communications, until Unified Command takes over. Once Unified Command is in place, the Lead Agency (AHS) are accountable to notify drinking water customers, and will leverage the operational expertise of the affected utility when doing so.

Accountable Communicators

Communicators in affected utilities and adjacent jurisdictions whose customers are affected are accountable to communicate with their own customers. This makes them “Accountable Communicators”, and they will coordinate their efforts and resources with the Prime Communicator.

Core responsibilities include:

- To notify affected populations as quickly as possible once it is determined a threat to public health exists
- To create key messages
- To disseminate key messages by as many means as possible for maximum outreach
- To address the concerns of stakeholders compassionately, transparently and consistently
- To collaborate with media and other communications agencies

References

ICS Canada (2012, February 12). *Incident Command System Operational Description*. Retrieved from: https://icscanada.ca/wp-content/uploads/2023/11/ICS-OPS-Description2012_2.pdf Link confirmed April 8, 2025.

Government of Alberta (GOA) (2022). *Emergency Management Act. Revised Statutes of Alberta 2000 Chapter E-6.8.* Alberta Queen's Printer. Retrieved from: https://kings-printer.alberta.ca/1266.cfm?page=E06P8.cfm&leg_type=Acts&isbncln=9780779847808 Link confirmed April 8, 2025.

Government of Alberta (GOA) (2024). *Environmental Protection and Enhancement Act. Revised Statutes of Alberta 2000, Chapter E-12*. Alberta Queen's Printer. Retrieved from: https://kings-printer.alberta.ca/documents/Acts/E12.pdf Link confirmed April 8, 2025.

Government of Alberta (GOA) (2025). Municipal Government Act. *Revised Statutes of Alberta 2000, Chapter M-26.* Alberta Queen's Printer. Retrieved from: https://kings-printer.alberta.ca/documents/Acts/M26.pdf Link confirmed April 8, 2025.

Government of Alberta (GOA) (2024). *Public Health Act. Revised Statutes of Alberta 2000, Chapter P-37.* Alberta Queen's Printer. Retrieved from: https://kings-printer.alberta.ca/1266.cfm?page=P37.cfm&leg_type=Acts&isbncln=9780779827206 Link confirmed April 8, 2025.

Public Safety Canada. (2022). *Get Prepared. Emergency Kits*. Retrieved from: https://www.getprepared.gc.ca/cnt/kts/bsc-kt-en.aspx Link confirmed April 8, 2025.

US Environmental Protection Agency. (2011, June). *EPA 600/R-11/054, June 2011.Planning for an Emergency Drinking Water supply*. Retrieved from: https://www.epa.gov/sites/default/files/2015-03/documents/planning_for_an_emergency_drinking_water_supply.pdf Link confirmed April 8, 2025.

World Health Organization. (2012). *Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in mall communities*. Retrieved from: https://iris.who.int/bitstream/handle/10665/75145/9789241548427_eng.pdf Link confirmed April 8, 2025.

Professional Development Opportunities
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

AWWOA 2026 Water Week Conference

Location: Edmonton, Alberta
Dates: October 27 – 30, 2026

Website: https://www.awwoa.ca/events/water-week

Early Bird Deadline: October 22, 2026

The technical program will feature three days of presentations highlighting the future goals, challenges, and expectations of the water and wastewater industry. The tradeshow is Thursday only, and costs $100+GST for members and non-members.

AWWOA 52nd Annual Operators Seminar

Location: Banff, Alberta
Dates: March 15 – 19, 2027

Website: https://www.awwoa.ca/events/seminar-overview

The 52nd Annual Operators Seminar hosted by the Alberta Water and Wastewater Operators Association (AWWOA). This event offers an array of technical presentations covering current topics and emerging trends in the water and wastewater industry.

AWWA Annual Conference & Expo (ACE)

Location: San Diego, California
Dates: June 13 – 16, 2027

Website: https://ace.awwa.org/

The American Water Works Association (AWWA) Annual Conference and Exposition (ACE) is the largest water industry conference in North America, bringing together water professionals, utilities, regulators, and vendors from around the world. The conference focuses on drinking water and utility management and offers technical sessions, workshops, and an extensive trade show covering operations, asset management, safety, regulatory compliance, and emerging technologies.

Attendance supports professional development through exposure to industry best practices, regulatory updates, peer networking, and hands-on learning opportunities relevant to water system operations and management.

Professional Development Opportunities
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION

WEFTEC 100th Annual Technical Exhibition & Conference

Location: Chicago, Illinois
Dates: September 25 – 29, 2027

Website: WEFTEC Conference

The WEFTEC Conference brings together water professionals from around the globe to explore cutting-edge water quality education, engage with industry-leading experts, and learn about the latest technology, trends, and proven solutions.

Capital Region Southwest Water Services Commission

	2026 Recap of Quantity of Water Sales to Purchases - M^3				2025 Recap of Quantity of Water Sales to Purchases - M^3			
	Commission Sales	**Commission Purchases**	**Commission Variance**	**%**	**Commission Sales**	**Commission Purchases**	**Commission Variance**	**%**
January	560,429	582,085	(21,656)	96.28%	557,610	582,303	(24,693)	95.76%
Februrary	513,705	532,215	(18,510)	96.52%	501,698	515,050	(13,352)	97.41%
March	536,808	555,699	(18,891)	96.60%	501,736	518,512	(16,776)	96.76%
April	611,562	630,309	(18,747)	97.03%	601,207	618,309	(17,102)	97.23%
May	639,907	660,933	(21,026)	96.82%	622,419	639,224	(16,805)	97.37%
June	582,465	743,471	(161,006)	78.34%	612,886	631,428	(18,542)	97.06%
July	699,371	547,341	152,030	127.78%	701,151	719,228	(18,077)	97.49%
August	597,732	606,527	(8,795)	98.55%	590,345	611,952	(21,607)	96.47%
September					617,329	631,876	(14,547)	97.70%
October					666,133	687,792	(21,659)	96.85%
November					525,323	544,253	(18,930)	96.52%
December					610,066	629,082	(19,016)	96.98%
Total To Date	**4,741,979**	**4,858,580**	**(116,601)**	**97.60%**	**7,107,903**	**7,329,009**	**(221,106)**	**96.98%**

Capital Regional Southwest Water Services Commission
2026 Recap of Water Sales by Customer
January 1, 2026 to August 31, 2026
Sales $

Revenue

Date	City of Leduc $	EIA $	Leduc County $	Leduc County Flat Rates[1] $	City of Beaumont $	Town of Calmar $	Village of Hay Lakes $	Village of Hay Lakes Flat Rate[2]	Camrose County/ Armena	Camrose County Flat Rate[3]	Town of Millet $	Total $
31-Jan-26	$449,310	$59,844	$155,293	$3,873	$240,066	$33,709	$5,180	$2,786	$7,386	$1,166	$24,358	$982,972
28-Feb-26	$414,529	$50,470	$147,611	$3,873	$215,610	$31,765	$4,952	$2,786	$6,749	$1,166	$22,159	$901,672
31-Mar-26	$428,068	$55,388	$153,997	$3,873	$231,655	$30,607	$4,613	$2,786	$6,156	$1,166	$23,563	$941,871
30-Apr-26	$495,521	$65,323	$169,890	$3,873	$261,397	$34,475	$5,338	$2,786	$6,706	$1,166	$25,468	$1,071,943
31-May-26	$506,109	$65,236	$174,364	$3,873	$284,690	$37,015	$6,140	$2,786	$12,859	$1,166	$27,026	$1,121,263
30-Jun-26	$456,593	$72,245	$164,830	$3,873	$240,063	$35,366	$6,036	$2,786	$12,474	$1,166	$25,883	$1,021,314
31-Jul-26	$535,194	$95,296	$200,514	$3,873	$298,333	$40,547	$6,386	$2,786	$9,415	$1,166	$31,219	$1,224,731
31-Aug-26	$466,243	$80,492	$174,738	$3,873	$247,759	$32,054	$4,945	$2,786	$7,856	$1,166	$25,966	$1,047,879
30-Sep-26				$3,873				$2,786		$1,166		$7,825
31-Oct-26				$3,873				$2,786		$1,166		$7,825
30-Nov-26				$3,873				$2,786		$1,166		$7,825
31-Dec-26				$3,873				$2,786		$1,166		$7,825
	$3,751,567	**$544,295**	**$1,341,237**	**$46,477**	**$2,019,573**	**$275,538**	**$43,590**	**$33,431**	**$69,602**	**$13,992**	**$205,642**	**$8,344,944**

Regular Sales	$ 8,251,043
Flat Rate Sales	$ 93,901
Total Sales	$ 8,344,944

	Debenture 1	Debenture 2	Total
[1]Leduc County Monthly Flat Rates Includes:			
Leduc County Line #2	$ 779	$ 285	$ 1,064
Leduc County/ Formerly New Serepta	$ 2,057	$ 753	$ 2,809
	$ 2,836	$ 1,038	$ 3,873
[2]Village of Hay Lakes Monthly Flat Rates Includ	$ 2,039	$ 746	$ 2,786
[3]Camrose County Monthly Flat Rates Includes:	$ 854	$ 312	$ 1,166
Total Monthly Payment on Debentures	**$ 5,729**	**$ 2,097**	**$ 7,825**

Capital Regional Southwest Water Services Commission
2026 Recap of Water Sales by Customer
January 1, 2026 to Aug 31, 2026
Volume - M^3

Date	City of Leduc M^3	EIA M^3	Leduc County M^3	City of Beaumont M^3	Town of Calmar M^3	Village of Hay Lakes M^3	Camrose County/Armena M^3	Town of Millet M^3	Monthly Total M^3
31-Jan-26	258,224	34,393	89,249	137,969	19,373	2,977	4,245	13,999	560,429
28-Feb-26	238,235	29,006	84,834	123,914	18,256	2,846	3,879	12,735	513,705
31-Mar-26	246,016	31,832	88,504	133,135	17,590	2,651	3,538	13,542	536,808
30-Apr-26	284,782	37,542	97,638	150,228	19,813	3,068	3,854	14,637	611,562
31-May-26	290,867	37,492	100,209	163,615	21,273	3,529	7,390	15,532	639,907
30-Jun-26	262,410	41,520	94,730	137,967	20,325	3,469	7,169	14,875	582,465
31-Jul-26	307,583	54,768	115,238	171,456	23,303	3,670	5,411	17,942	699,371
31-Aug-26	267,956	46,260	100,424	142,390	18,422	2,842	4,515	14,923	597,732
30-Sep-26									-
31-Oct-26									-
30-Nov-26									-
31-Dec-26									-
Total Volume	**2,156,073**	**312,813**	**770,826**	**1,160,674**	**158,355**	**25,052**	**40,001**	**118,185**	**4,741,979**
2026 Budgeted Sales at 97% Recovery Rate	3,261,542	457,048	1,079,039	1,732,335	227,950	39,154	63,281	186,423	7,046,772
2026 Actual Sales % of Budget	66.1%	68.4%	71.4%	67.0%	69.5%	64.0%	63.2%	63.4%	67.3%

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Draft

REPORT

Capital Region Southwest Water Services Commission

Camrose & Wetaskiwin Regional Water Feasibility Study

AUGUST 2026

carbon neutral since 2009

PROUDLY CANADIAN
100% CANADIAN EMPLOYEE-OWNED

BEST MANAGED COMPANIES Platinum Member

CONFIDENTIALITY AND © COPYRIGHT FOR THIS REPORT

This document is for the sole use of the addressee and Associated Engineering Alberta Ltd. The document contains proprietary and confidential information that shall not be reproduced in any manner or disclosed to or discussed with any other parties without the express written permission of Associated Engineering Alberta Ltd. Information in this document is to be considered the intellectual property of Associated Engineering Alberta Ltd. in accordance with Canadian copyright law.

This report was prepared by Associated Engineering Alberta Ltd. for the account of Capital Region Southwest Water Services Commission. The material in it reflects Associated Engineering Alberta Ltd.'s best judgement, in the light of the information available to it, at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Associated Engineering Alberta Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

EXECUTIVE SUMMARY

The City of Wetaskiwin and a portion of the County of Wetaskiwin in Gwynne source their water from Coal Lake, and the City of Camrose sources their water from Driedmeat Lake. These two water bodies are both part of the Battle River Basin, a prairie-based watershed system that relies heavily on localized precipitation rather than mountain snowpack or glacial runoff. As a result, these source water systems are particularly vulnerable to drought conditions, extended precipitation deficits, climate variability, and watershed stress, and the basin has remained under a provincial water shortage advisory since 2023 due to prolonged low-flow conditions and cumulative drought impacts. These conditions increase risks related to source water quantity, degraded water quality, algae growth, operational complexity, and long-term supply resiliency for communities dependent on lake-based water systems within central Alberta.

The Capital Region Southwest Water Services Commission is supportive of supplying water to the municipalities, but further study is required to confirm the feasibility and cost. This feasibility study will also support a funding application to Alberta Transportation and Economic Corridors under the Water for Life Program if a regional water supply is undertaken.

The Commission's system is unable to supply these municipalities through the existing infrastructure. A dedicated supply main will be required. Additionally, through discussions between the Commission and EPCOR, EPCOR determined that they are unable to supply the addition of Camrose and Wetaskiwin through the existing 750 mm supply main from the Blackmud Booster Station and their tertiary pressure zone due to the flow and pressure capacity limitations. As such, a new tie-in point from EPCOR will be required within the City of Edmonton to supply the Commission, connecting into the EPCOR primary pressure zone. Supplying Camrose and Wetaskiwin through the Commission's system, regardless of alignment, will require the new supply line.

Due to the timelines involved in securing grant funding and project implementation, a new regional waterline is likely to be completed over 10 years; this assumes that progress into detailed design and land acquisition can be prioritized in the short-term given the substantive front-end work for a project of this magnitude. Therefore, this report assumes that the 25-year study period will begin in 2036 and the ultimate design will be for 2061.

Design water demands for the three communities in the study area are summarized in Table ES-1 below. The projected demands are based on existing populations and water consumptions and peaking factors. A 1.0% growth rate was applied to all three municipalities.

Table ES-1 Design Demands

Municipality	2036 Average Day Demands (L/s)	2036 Peak Day Demands (L/s)	2061 Average Day Demands (L/s)	2061 Peak Day Demands (L/s)
City of Camrose	70.4	126.8	90.3	162.6
City of Wetaskiwin	40.6	73.0	52.0	93.7
County of Wetaskiwin	0.7	1.3	0.9	1.6
Total	111.7	201.1	143.3	257.9

The proposed alignment includes a new tie-in point from EPCOR within the City of Edmonton to supply the Commission, connecting into the EPCOR primary pressure zone. Three proposed alignments were assessed:

1. Supply through the Nisku Booster Station and twinning the existing Commission line to the Town of Millet. From there, the waterline continues south to Wetaskiwin, then east to Camrose.
2. Supply through the City of Beaumont, then extending to the south to tie into the Armena line upstream of the Highway 21 Booster Station. From there, the waterline twins the existing line to the Hamlet of Armena, then south to Camrose, then west to Wetaskiwin.
3. Supply through Beaumont, then tie into the Millet line downstream of the Leduc Robinson Reservoir. From there, it would twin the Millet line, continue south to Wetaskiwin, and then east to Camrose.

Based on the analysis, Alignment Option 2 is the preferred option for the regional water supply.

A desktop environmental and regulatory review was completed for all three alignment options to identify environmental sensitivities, anticipated regulatory permitting and compliance requirements, and anticipated agency review timelines. Permitting requirements may change depending on the construction methods proposed and should be revisited as additional design information becomes available. Option 2 will likely require less disturbance and reclamation of agricultural soils and fewer crossings of waterbodies than Options 1 and 3. Option 2 will also avoid intersections with Edmonton International Airport (EIA) land, which is owned by Transport Canada, and Telford Lake. Both are intersected by Option 1.

Approvals under the *Environmental Protection and Enhancement Act, Historical Resources Act, Public Lands Act,* and *Water Act* are anticipated for all alignment options. Option 1 will trigger additional regulatory approvals under the *Impact Assessment Act* and the *Water Act* for crossings with Transport Canada owned land and Telford Lake, respectively. Measures to ensure compliance with the *Migratory Birds Convention Act, 1994, Species at Risk Act, Agricultural Pests Act, Soil Conservation Act, Weed Control Act,* and *Wildlife Act* should also be incorporated in the next project stages. Camrose County and County of Wetaskiwin topsoil and clubroot bylaws and policies also apply.

A desktop geotechnical assessment was completed by Thurber Engineering Ltd. to determine the geotechnical considerations of the alignment options. Open cut method is deemed suitable to construct most of the alignment outside potential crossing locations. However, high groundwater may be encountered along the alignment that spans the eolian and glaciolacustrine deposits. Temporary excavation side slopes are anticipated to be stable at slopes of 1H:1V and 1.5H:1V or flatter for clay and sand, respectively, assuming dry conditions. A hybrid approach utilizing open cut for the majority of the alignment, with Horizontal Directional Drilling (HDD) or trenchless installation technologies such as Horizontal Auger Boring (HAB) at constrained crossings, represents the most balanced and practical solution.

As an alternative to a regional waterline, a high-level assessment was completed for upgrades to both the Camrose and Wetaskiwin Water Treatment Plants. Both WTPs would require extensive upgrades to remain viable beyond the next 10 years. The Camrose WTP requires unit process upgrades based on projected demand and capacity constraints as well as a few electrical, mechanical, and structural upgrades, while the Wetaskiwin WTP will not require unit process upgrades due to capacity but requires more extensive structural and mechanical upgrades. The upgrades at each WTP are the following:

Camrose WTP

- Electrical: motor control centers.
- Structural: lime silos and roof assembly.
- Mechanical: alum and lime clarifiers, floc tanks, and chemical room exterior walls.
- Unit Process: Pre-treatment solids contact clarifier (before 2036), granular activated carbon facility (before 2061), and ultraviolet disinfection system (before 2061). Chemical feed systems will require upgrades along with respective unit process upgrades.

Wetaskiwin WTP

- Structural: catwalks, superstructure, structural frame, ceilings, fire separation, and code compliance.
- Building Mechanical: safety equipment, heating and ventilation systems.
- Process Mechanical: filter air scour system, ultraviolet disinfection system, dissolved air flotation refurbishment, granular activated carbon filters.

In Alberta, several established provincial programs provide cost-shared funding for municipal water infrastructure, with varying alignment depending on project type:

- Water For Life Program: Water for Life is the overarching government-wide strategy for water in Alberta. The Water for Life Program, which launched in 2006, provides cost-shared funding to regional commissions or groups of two or more municipalities and consists of two funding streams, for new or existing regional water systems. Funding is typically up to 90% of project costs. During a meeting between Associated, the Commission, and ATEC (Alberta Transportation and Economic Corridors) on September 4, 2026, it was indicated that due to the value of this project, likely funding opportunities with provincial and federal grants will split the costs with the municipalities to approximately one third each.
- Alberta Municipal Water/Wastewater Partnership: The Alberta Municipal Water/Wastewater Partnership (AMWWP), which launched in 1991, provides cost-shared funding to eligible municipalities to help build municipal facilities for water supply and treatment, and wastewater treatment, conveyance, and disposal. Based on municipal population, grant funding for Wetaskiwin would be 31.3% of project costs and funding for Camrose would be 25.0% of project costs.

Both options are eligible for provincial funding; however, the regional waterline option is more favourably positioned due to its alignment with Alberta's long-term water management strategy. This creates a higher likelihood of securing funding and achieving a greater level of cost sharing, further strengthening its feasibility from a financial and strategic perspective.

Capital, Operations & Maintenance, and Lifecycle costs were determined for both the regional waterline and WTP upgrade options. The cost comparison, including potential funding, is provided in Table ES-2.

Table ES-2 Cost Comparison

Option	Capital Cost	Remainder After Funding	O&M Cost	Life Cycle Cost
WTP Upgrades				
Camrose WTP	$68,175,000	$51,131,000	$113,750,000	$181,925,000
Wetaskiwin WTP	$39,400,000	$27,068,000	$48,659,086	$88,059,086
Total WTP	$107,575,000	$78,199,000	$162,409,086	269,984,086
Regional Pipeline				
Option 1	$437,915,000	$145,972,000	$8,924,736	$440,950,736
Option 2 (Preferred)	$433,535,000	$144,512,000	$9,533,155	$437,178,155
Option 3	$395,484,000	$131,828,000	$9,011,523	$398,605,523

The regional waterline option is characterized by higher upfront cost and construction complexity but provides significant long-term advantages, including secure water supply, strong funding alignment, and improved climate resilience. The standalone WTP upgrade option offers lower initial disruption but is constrained by long-term risks, particularly the critical limitation of source water availability, which cannot be resolved through treatment improvements alone.

While both options are technically feasible, the comparison indicates that the Regional Waterline Option provides a more robust, scalable, and sustainable solution. Despite higher short-term construction risks, it mitigates the most significant long-term constraint—reliable access to sufficient source water—and aligns more closely with provincial infrastructure funding priorities and regional water management strategies.

TABLE OF CONTENTS

SECTION			PAGE NO.
Executive Summary			i
Table of Contents			v
List of Tables			vii
List of Figures			viii
1	Introduction		1-1
	1.1	Scope	1-2
	1.2	Background	1-2
2	Design Criteria		2-1
	2.1	Historical Water Usage	2-1
	2.2	Projected Water Demands	2-1
	2.3	Pipeline Criteria	2-2
3	Alignment		3-1
	3.1	Upstream Supply Main	3-1
	3.2	Regional Alignment	3-1
	3.3	Alignment Options	3-3
	3.4	Alignment Analysis	3-12
4	Hydraulic Analysis		4-1
	4.1	New Supply Main	4-1
	4.2	Options Analysis	4-1
	4.3	Existing System Hydraulic Considerations	4-6
5	Environmental and Regulatory Review		5-1
6	Geotechnical Assessment		6-1
7	Construction Considerations		7-1
	7.1	Pipe Installation Method	7-1
	7.2	Preferred Methodology	7-2
8	Water Treatment Plant Assessment		8-1
	8.1	Water Treatment Plant Demands	8-1
	8.2	Raw Water Diversion Licences	8-3
	8.3	Treated Water Storage	8-6
	8.4	Facility Upgrade Assessments	8-7
9	Grant Funding Review		9-1
	9.1	Regional Waterline	9-1
	9.2	Water Treatment Plant Upgrade	9-1

9.3 Funding Summary 9-2
10 Costs Analysis 10-1
10.1 Regional Waterline Opinion of Probable Cost 10-1
10.2 Facility Upgrade and Refurbishment – Opinion of Probable Costs 10-2
10.3 Life Cycle Cost Estimate 10-6
11 Risk Assessment 11-1
12 Options Comparison 12-1
13 Conclusion and Recommendations 13-1
Closure
Appendix A - Environmental Overview Report
Appendix B - Desktop Geotechnical Study
Appendix C - Detailed Cost Breakdown

LIST OF TABLES

		PAGE NO.
Table ES-1	Design Demands	i
Table ES-2	Cost Comparison	iv
Table 2-1	Water Consumption Records 2020 – 2024 (m^3)	2-1
Table 2-2	Average Annual Historical Growth Rates	2-1
Table 2-3	Projected Water Demands	2-2
Table 3-1	Alignment Option Comparison	3-12
Table 5-1	Anticipated Regulatory Permits	5-3
Table 8-1	City of Camrose WTP Raw Water Capacity Requirements	8-1
Table 8-2	City of Wetaskiwin WTP Raw Water Capacity Requirements	8-3
Table 8-3	City of Camrose License Annual Raw Water Demands	8-4
Table 8-4	City of Camrose Licence Maximum Diversion	8-4
Table 8-5	City of Wetaskiwin License Annual Raw Water Demands	8-5
Table 8-6	City of Wetaskiwin Licence Maximum Diversion	8-5
Table 8-7	City of Camrose Water Storage Requirements	8-6
Table 8-8	City of Wetaskiwin Water Storage Requirements	8-7
Table 10-1	Regional Waterline Opinion of Probable Costs	10-2
Table 10-2	City of Camrose WTP Opinion of Probable Cost for Upgrades and Refurbishment	10-2
Table 10-3	City of Wetaskiwin WTP Opinion of Probable Cost for Upgrades and Refurbishment	10-3
Table 10-4	Regional Waterline O&M Costs	10-5
Table 10-5	WTP O&M Costs	10-6
Table 10-6	Opinion of Probable Life Cycle Cost (NPV)	10-6
Table 11-1	Regional Waterline Installation Risks	11-1
Table 11-2	Water Treatment Plan Upgrade Risks	11-1
Table 11-3	Comparative Risk Assessment	11-2
Table 12-1	Options Comparison	12-1

LIST OF FIGURES

		PAGE NO.
Figure 1-1	Existing Commission System	1-3
Figure 3-1	Alignment Options	3-2
Figure 3-2	Alignment Option 1 – Edmonton to Leduc	3-4
Figure 3-3	Alignment Option 1 – Leduc to Wetaskiwin	3-5
Figure 3-4	Alignment Option 1 – Wetaskiwin to Camrose	3-6
Figure 3-5	Alignment Option 2 – Edmonton to New Sarepta	3-7
Figure 3-6	Alignment Option 2 – New Sarepta to Wetaskiwin	3-8
Figure 3-7	Alignment Option 3 – Edmonton to Leduc	3-9
Figure 3-8	Alignment Option 3 – Leduc to Wetaskiwin	3-10
Figure 3-9	Alignment Option 3 – Wetaskiwin to Camrose	3-11
Figure 4-1	Hydraulic Grade Line Alignment Option 1	4-3
Figure 4-2	Hydraulic Grade Line Alignment Option 2	4-4
Figure 4-3	Hydraulic Grade Line Alignment Option 3	4-5
Figure 5-1	Environmental Overview	5-2
Figure 8-1	Camrose Water Treatment Plant 2061 Raw Water Treatment Capacity Summary	8-2
Figure 8-2	Wetaskiwin WTP 2061 Raw Water Treatment Capacity Summary	8-3
Figure 8-3	Camrose WTP Unit Process Capacity	8-8
Figure 8-4	Wetaskiwin WTP Unit Process Capacity	8-10

1 INTRODUCTION

The City of Camrose, the City of Wetaskiwin, and the County of Wetaskiwin approached the Capital Region Southwest Water Services Commission (Commission) regarding receiving regional water supply to each of the municipalities.

The primary driver for this request is the increasing concern regarding the long-term reliability, resiliency, and sustainability of the existing source water supplies within the Battle River Basin. The proposed regional approach supports common objectives related to protecting secure drinking water supplies, improving drought resiliency, promoting regional collaboration, and developing sustainable long-term water infrastructure solutions.

The City of Camrose currently sources raw water from Driedmeat Lake, located approximately 13 km southeast of the City. Raw water is conveyed to the City's water treatment plant (WTP), where it undergoes treatment prior to distribution throughout the municipal system. The WTP regularly experiences operational challenges associated with elevated concentrations of organic matter, algae, and seasonal raw water quality fluctuations. In recent years, concerns regarding source water reliability have increased due to prolonged dry conditions, declining lake levels, and ongoing precipitation deficits throughout the watershed.

Recent monitoring and reporting within the Battle River Basin indicate that, despite above-average snowfall in parts of Alberta during the winter of 2025–2026, the region continues to experience significant water supply pressures. The Battle River Basin has remained under a provincial water shortage advisory since 2023 due to prolonged low-flow conditions and cumulative drought impacts. Existing low water levels in Driedmeat Lake, combined with limited spring runoff recovery following multiple dry years, have heightened concerns regarding the long-term sustainability of the City's raw water supply. Watershed representatives have also noted that recent precipitation is largely being absorbed into depleted soils rather than replenishing lake storage volumes.

The City of Wetaskiwin currently sources raw water from Coal Lake, located approximately 10 km northeast of the City. Raw water is pumped to the City's WTP, where it undergoes treatment prior to distribution throughout the municipal system and to the Hamlet of Gwynne. Similar to Camrose, the Wetaskiwin WTP experiences ongoing treatment challenges associated with elevated levels of organic matter, colour, algae, taste and odour compounds, and seasonal raw water quality variability. Coal Lake has historically experienced significant algae blooms and elevated organic concentrations, resulting in treatment process upgrades to maintain regulatory compliance and treated water quality objectives.

Coal Lake and Driedmeat Lake are both part of the Battle River Basin, a prairie-based watershed system that relies heavily on localized precipitation rather than mountain snowpack or glacial runoff. As a result, these source water systems are particularly vulnerable to drought conditions, extended precipitation deficits, climate variability, and watershed stress. These conditions increase risks related to source water quantity, degraded water quality, algae growth, operational complexity, and long-term supply resiliency for communities dependent on lake-based water systems within central Alberta.

Miquelon Lake Provincial Park has also expressed interest in being serviced by the Commission. Where feasible, Miquelon Lake has been incorporated into the regional pipeline demands and alignment.

The Commission is supportive of supplying water to the municipalities, but further study is required to confirm the feasibility and cost. This feasibility study will also support a funding application to Alberta Transportation and Economic Corridors under the Water for Life Program if a regional water supply is undertaken.

1.1 Scope

The primary objective of the study is to determine the feasibility of water supply to both Cities and the County through supply from the Commission's system. The scope of the study includes:

- Assess regional water supply to the City of Camrose, City of Wetaskiwin, and the County of Wetaskiwin from the Commission.
- Complete a capacity review of the Commission System to determine regional servicing options, preferred connection location(s), and impacts to Commission's system.
- Coordination with EPCOR on impacts to their system.
- Review existing water treatment plants and identify the upgrades required for each municipality's water supply system for a 25-year design based on current standards.
- Assess impacts to the City of Camrose, City of Wetaskiwin, and the County of Wetaskiwin's storage and distribution systems.
- Environmental and geotechnical overviews to identify any areas that could affect routing and cost.
- Capital Costs and Life Cycle costs for each option.
- Conclusions and Recommendations on a preferred regional supply option.

1.2 Background

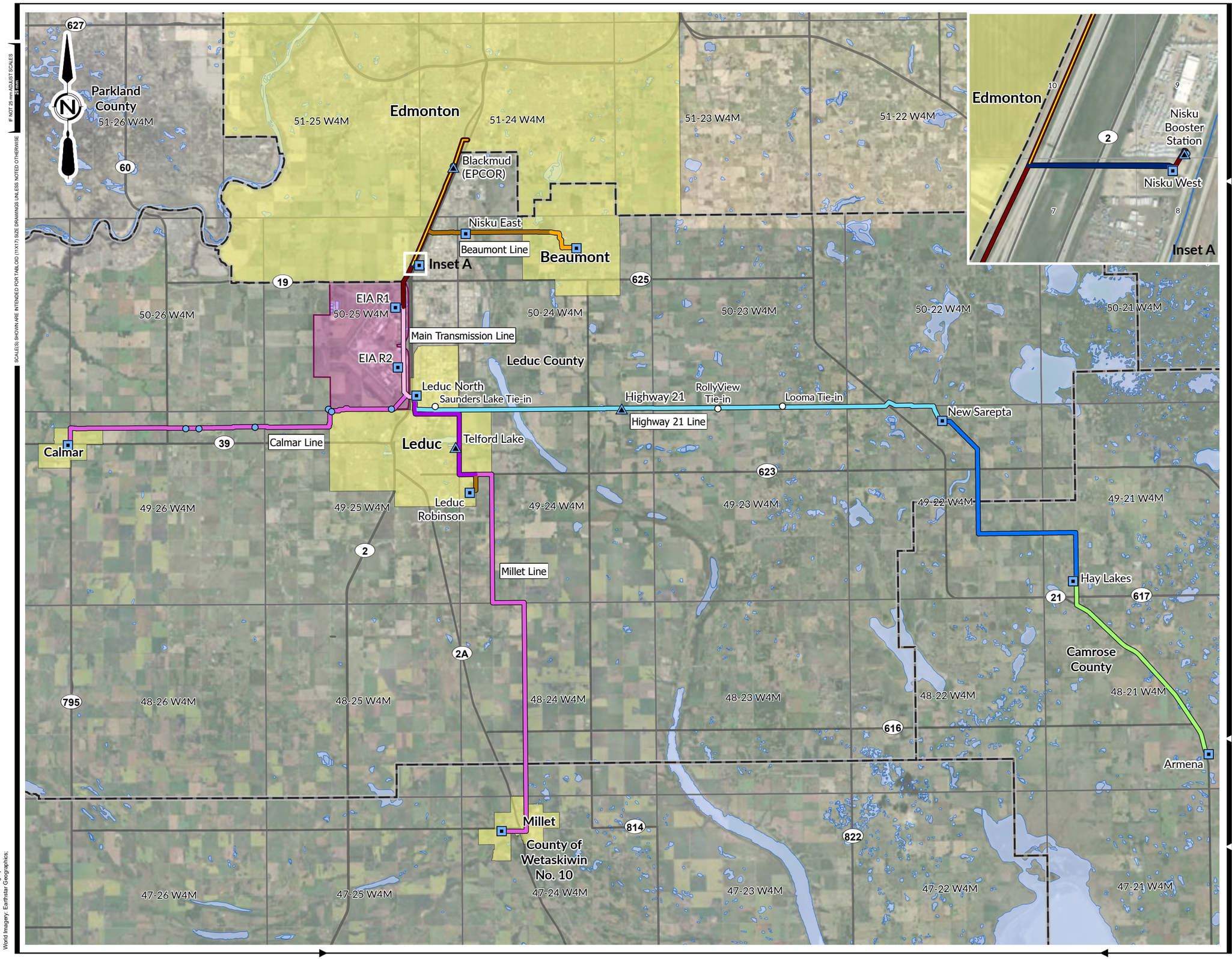
1.2.1 Existing System

The Commission currently supplies water to the following members, along with several small commercial and residential users:

- Leduc County, including the Hamlet of New Sarepta and Edmonton Airports (as a customer of Leduc County)
- City of Beaumont
- City of Leduc
- Town of Calmar
- Village of Hay Lakes
- Camrose County (Hamlet of Armena)
- Town of Millet

Water is supplied from the Blackmud Booster Station within the City of Edmonton, owned by EPCOR, to the Nisku Booster Station constructed by the Commission in 2021. The Nisku East, Nisku West, and City of Beaumont reservoirs and fill stations are located upstream of the Nisku Booster Station and are therefore supplied directly from the Blackmud Booster Station, while the rest of the Commission's system is supplied through the Nisku Booster Station.

Figure 1-1 shows the existing Commission system.



IF NOT 29 mm ADJUST SCALES
29 mm
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-04-20 2:05 PM SAVED BY:
DRAWING PATH: O:\2025\3197-00\Project_data\2025-3197-00\2025-3197-00.aprx
DATA SOURCE: World Imagery: Esri
World Imagery: Earthstar Geographics;

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

LEGEND:

CRSWSC Facility
- Booster Station
- Reservoir
- Single Connection
- Future Tie-In

Existing Waterline CRSWSC Pipe Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Waterline Owned by EPCOR

Base Data
- Highway
- Water Body
- Edmonton International Airport Land

FIGURE 1-1

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

EXISTING SYSTEM

AE PROJECT No.	2025-3197-00
SCALE	1:180,000
DATE	2026APR21
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 2,500 5,000 m

1.2.2 Required Upstream Infrastructure

The Commission's system will require construction of an additional meter vault and second fill line to service the City of Beaumont, due to pumping limitations at EPCOR's Blackmud Booster Station and capacity limitations of the existing fill line. The addition of a second fill line will also provide improved supply security by creating a more resilient loop for emergency management. It also increases overall system reliability by providing redundancy to the existing supply line to the City of Beaumont, which is constructed of C303 bar-wrapped concrete cylinder pipe. Although this pipe type is generally considered lower risk than older C301 prestressed wire concrete cylinder pipe, the transmission main has been in service since 1987. The proposed connection would improve system resilience and reduce reliance on a single supply route.

The capacity assessment completed for the Commission's Water Master Plan (2026) indicates that a second feed line of 600 mm diameter will be required to supply Beaumont. The second feed line to the City of Beaumont will be required shortly after 2031, and prior to 2036 based on velocity criteria during peak demand periods.

Based on several meetings between the Commission and EPCOR, EPCOR determined that they are unable to supply the addition of Camrose and Wetaskiwin through the existing 750 mm supply main from the Blackmud Booster Station and their tertiary pressure zone due to the flow and pressure capacity limitations. As such, a new tie-in point from EPCOR will be required within the City of Edmonton to supply the Commission, connecting into the EPCOR primary pressure zone. Supplying Camrose and Wetaskiwin through the Commission's system, regardless of the alignment, will require the new supply line.

Due to the timelines involved in securing grant funding and project implementation, a new regional waterline is likely to be completed over 10 years; this assumes that progress into detailed design and land acquisition can be prioritized in the short-term given the substantive front-end work for a project of this magnitude. Therefore, this report assumes that the 25-year study period will begin in 2036 and the ultimate design will be for 2061.

2 DESIGN CRITERIA

2.1 Historical Water Usage

Each municipality provided water consumption records from 2020 through 2024. These have been reviewed in conjunction with the City of Camrose and City of Wetaskiwin Water Master Plans.

Table 2-1 summarized the historical water consumption records for the three municipalities. The records indicate that from 2020 to 2024 there has been an increase of 37,331 m^3 in water demand in total. The average annual increase in water consumption over this period was 0.3% per year.

Table 2-1 Water Consumption Records 2020 – 2024 (m^3)

Municipality	2020	2021	2022	2023	2024
City of Camrose	1,886,942	2,010,467	1,983,928	1,984,458	1,971,302
City of Wetaskiwin	1,188,968	1,192,173	1,194,297	1,198,387	1,135,657
County of Wetaskiwin (Gwynne Truckfill) *	13,291	15,107	17,284	20,156	19,573
Total	3,089,201	3,217,747	3,195,509	3,203,001	3,126,532

**The truckfill in Gwynne is also used by County residents in the surrounding area*

Table 2-2 shows the average annual historical growth rates (water demand) for each for each municipality from 2020 to 2024.

Table 2-2 Average Annual Historical Growth Rates

Municipality	Growth in Water Demand 2020-2024
City of Camrose	1.1%
City of Wetaskiwin	-1.1%
County of Wetaskiwin (Gwynne Truckfill)	10%

The high growth rate in water demand in the County of Wetaskiwin can be attributed to a charter school that has been operating within the Hamlet of Gwynne over the past few years. As the population in the region has been fairly stagnant, the County believes that the impact to water demand due to the charter school will not continue to grow.

2.2 Projected Water Demands

The Average Day (AD) demand is defined as the average daily water usage in a year. For this study, the AD was determined using the 2024 consumption records. The peak day (PD) demand represents the maximum consumption on a single day. To project the PD demand, a peak day to average day ratio (peak day factor) is used. It was determined that a peak day factor of 1.8 would be used, which aligns with the Commission's Water Master Plan. The PD demand is then used in determining the delivery capacity required for regional supply.

A growth rate of 1.0% was applied to each municipality for the design period. This growth rate is consistent with the City of Camrose and City of Wetaskiwin's Water Master Plans, and with the Commission's Water Master Plan for rural communities (the County).

Table 2-3 provides the projected AD and PD for each municipality over a 25-year design life (2036-2061).

Table 2-3 Projected Water Demands

Municipality	2036		2046		2061	
	AD (L/s)	PD (L/s)	AD (L/s)	PD (L/s)	AD (L/s)	PD (L/s)
City of Camrose	70.4	126.8	77.8	140.1	90.3	162.6
City of Wetaskiwin	40.6	73.0	44.8	80.7	52.0	93.7
County of Wetaskiwin (Gwynne Truckfill)	0.7	1.3	0.8	1.4	0.9	1.6
Total	111.7	201.1	123.4	222.1	143.3	257.9

2.3 Pipeline Criteria

A maximum velocity of 1.5 m/s is recommended for supply waterlines, as maintaining velocities at or below this threshold minimizes head loss and pumping requirements, improving system efficiency. While this limit primarily serves as a design guideline for new infrastructure, it also supports lower long-term operations and maintenance costs by reducing energy consumption and minimizing wear on system components. Existing waterlines can typically accommodate higher velocities before replacement is required; however, acceptable operating velocities should be evaluated on a case-by-case basis considering pipe material, age, condition, and system criticality.

Operating above 3.0 m/s is generally considered a threshold where risks to system performance, reliability, and asset life increase significantly. While short-term or localized exceedances may be manageable, sustained operation at these velocities typically warrants mitigation (e.g., upsizing pipes, operational controls, or system upgrades) and should be carefully evaluated. High velocities and potential sudden changes in these velocities can result in pressure surges and possibly negative pressure, which can then cause serious pipe (equipment) damage.

The minimum system pressure recommended for supply waterlines is 140 kPa (20 psi) to maintain positive pressure within the waterline. For the purposes of this study, the alignment will be designed to a minimum of 172 kPa (25 psi). The maximum recommended system pressure must account for potential surge pressures and must not exceed the maximum allowable pipe pressure based on AWWA standards. For the purposes of this study, a pipe pressure rating of 165 psi will be assumed.

The Hazen-Williams pipe roughness coefficient (C-value) for plastic pipe will be 135, which is aligned with the Commission's Water Master Plan.

3 ALIGNMENT

3.1 Upstream Supply Main

The ultimate demands for Camrose and Wetaskiwin represent a significant portion of the Commission's current supply, so a new supply main upstream of the Commission's existing system will be required.

The Commission worked together with EPCOR to assess the feasibility of servicing the proposed demands, including evaluating potential supply options from EPCOR's transmission system. EPCOR determined that the new upstream supply line will need to connect to an existing watermain near the E.L. Smith WTP within EPCOR's primary pressure zone, with the exact tie-in location and details to be finalized jointly with EPCOR to ensure compatibility within their system. The supply line will travel southeast through urban development within Edmonton, along the Transportation Utility Corridor of Anthony Henday Drive, and through rural annex land towards the existing supply main along Highway 2, near Discovery Park. The new main will tie into the existing supply main from EPCOR, before continuing east as the new Beaumont 2nd Feed Line. The upstream supply main alignment was selected based on available rights-of-way within the City of Edmonton where construction is feasible. Both the upstream supply main and the Beaumont 2nd Feed Line will be included in all alignment options. Pumping upgrades in EPCOR's upstream system are not included in this assessment and will be determined during detailed design.

3.2 Regional Alignment

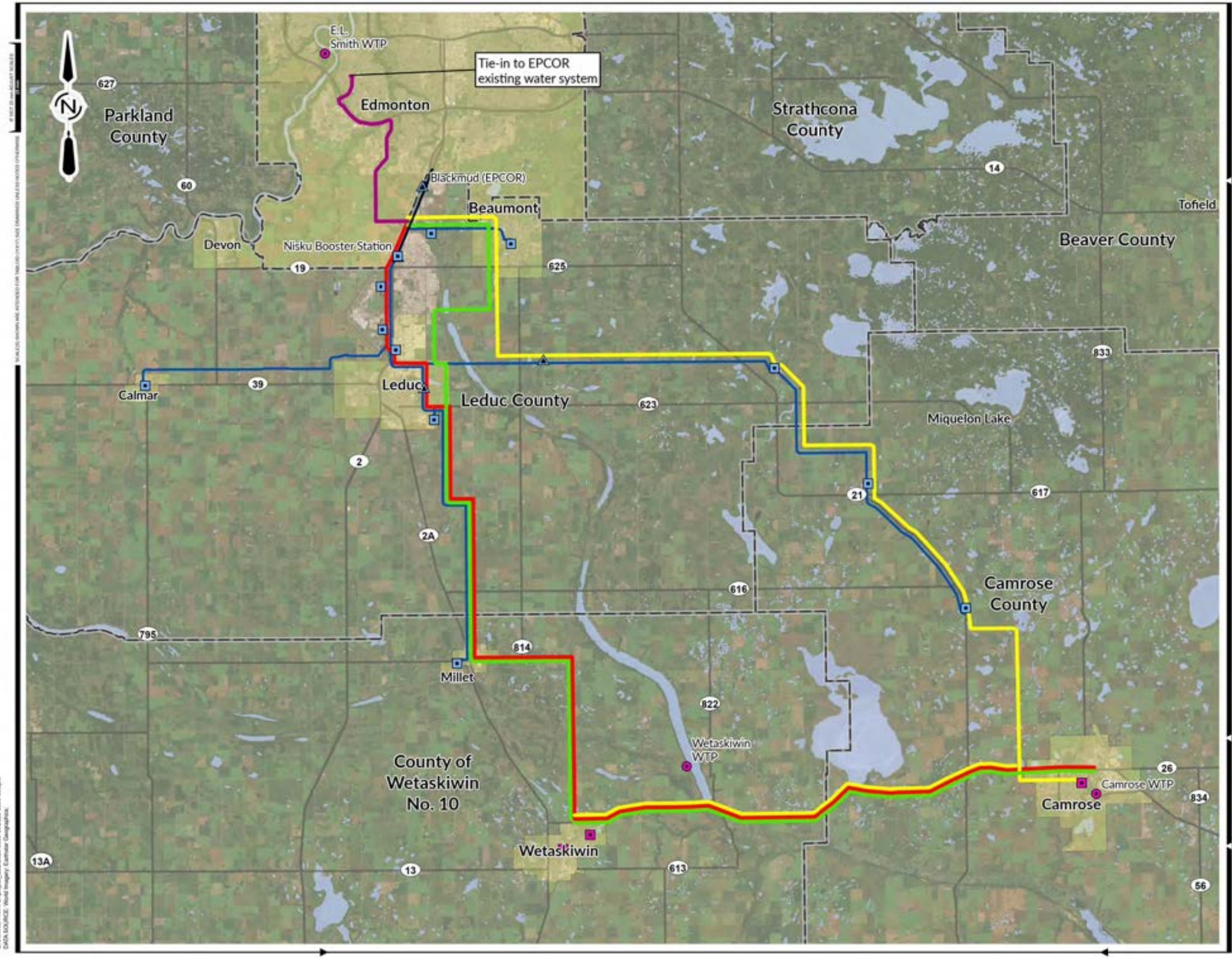
From the new upstream supply main, several alignment options have been developed for the regional extension from the Commission's system. A desktop review was completed to consider the following:

- Direct routing to minimize costs and pressure losses.
- Use of existing road rights-of-way, where possible, to avoid land acquisition time and cost, recognizing that land acquisition may still be required where the alignment parallels provincial highway rights-of-way.
- Minimizing environmental impacts.
- Avoiding conflicts with existing utilities, highways, and waterbodies.
- The capacity of existing Commission infrastructure and system hydraulics.
- Tie-in connection locations.

The terminus location and alignment through both Camrose and Wetaskiwin will be determined in detailed design.

Three alignment options were identified and assessed, and an overview of each option are shown on Figure 3-1. Note that pipeline alignments only are included on the figure, no new facilities are included.

- Alignment Option 1 – Nisku Booster Station to Wetaskiwin then Camrose
- Alignment Option 2 – Beaumont to Camrose then Wetaskiwin
- Alignment Option 3 – Beaumont to Wetaskiwin then Camrose



LEGEND:

- Existing CRSWSC Waterline
- Waterline Owned by EPCOR
- New Supply Main
- Alignment 1
- Alignment 2
- Alignment 3

Existing CRSWSC Facility

- Booster Station
- Reservoir

Other Facilities

- Water Treatment Plant
- Reservoir
- Truck Fill

Base Data

- Highway
- Watercourse
- Water Body

FIGURE 3-1

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

PROJECT ALIGNMENT OVERVIEW

AE PROJECT No.	2025-3300-00
SCALE	1:250,000
DATE	2026SEP10
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 5,000 10,000 m

3.3 Alignment Options

All three options would require a new upstream supply main connecting to the EPCOR system near E. L. Smith WTP in the City of Edmonton, as identified in Section 1.2.2.

Alignment Option 1: Nisku Booster Station → Wetaskiwin → Camrose

Alignment Option 1 involves connecting a new transmission main from the Nisku Booster Station and twinning the existing Commission line to the Town of Millet. From there, the waterline would continue south to the City of Wetaskiwin, then east to the City of Camrose.

The twinned line would be installed within the Commission's Right-of-Way (ROW) alongside the existing line. Beyond Millet, the waterline would follow Township Road 475 east, then Secondary Highway 814 to the City of Wetaskiwin. From Wetaskiwin, the line would follow Highway 13 east to the City of Camrose.

Alignment Option 2: Beaumont → Camrose → Wetaskiwin

Alignment Option 2 involves upsizing the Beaumont 2nd Feed Line and connecting a new transmission main to it, just upstream of the Beaumont Main Reservoir. The waterline will extend to the south to tie into the Armena line upstream of the Highway 21 Booster Station. From there, the waterline would twin the existing line to the Hamlet of Armena, then continue south to the City of Camrose, then west to the City of Wetaskiwin.

The new waterline will follow Range Road 243 traveling south from Beaumont until it reaches the Armena line, then would be installed within the Commission's ROW along the existing line. South of Armena, the waterline will continue south until turning east on Township Road 480, then turn south again on Range Road 205. The waterline would then split, going east along Highway 13 into Camrose and west along Highway 13 to Wetaskiwin.

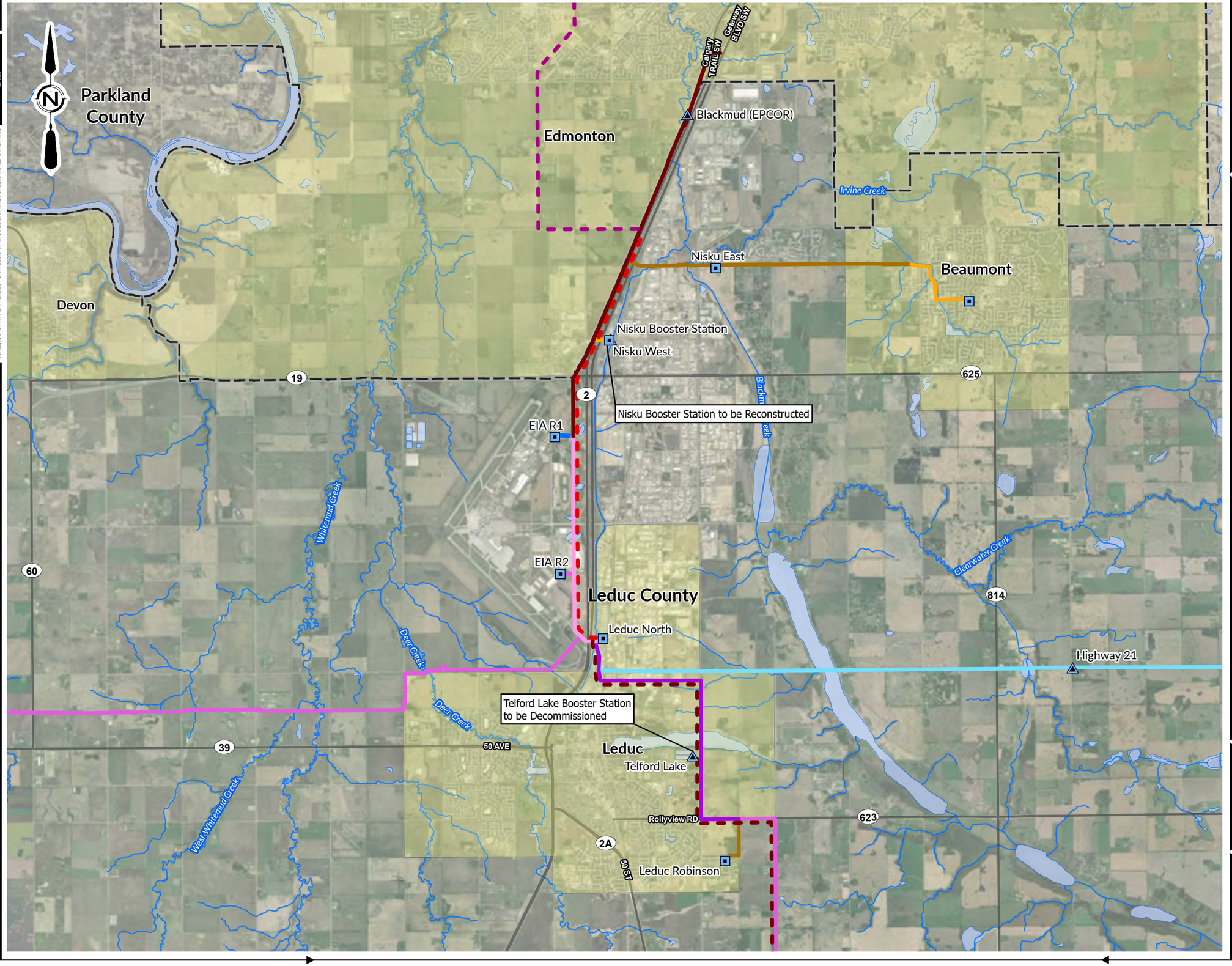
Option 2 also allows for servicing of Miquelon Lake, as it could be serviced from near Hay Lakes.

Alignment Option 3: Beaumont → Wetaskiwin → Camrose

Alignment Option 3 involves the same upsizing and tie-in connection to the Beaumont future 2nd Feed Line as in Alignment Option 2, but rather than following the Armena line it would tie into the Millet line downstream of the Leduc Robinson Reservoir. From there, it would twin the Millet line, like in Alignment Option 1, continue south to Wetaskiwin, and then east to Camrose.

The waterline will follow Range Road 243 traveling south from Beaumont, then turn west along Township Road 502 past Saunders Lake. Then, it will turn south again along Range Road 245 until tying into the Millet line. The new waterline can also cross-connect into the Armena line where it crosses. The waterline will then twin the existing Millet line, being installed within the Commission's existing ROW, before following Township Road 475 east, then Secondary Highway 814 east and south to Wetaskiwin. From Wetaskiwin, the waterline would follow Highway 13 east to Camrose.

Detail alignments for all three options are shown on Figures 3-2 to 3-9. Note the alignments into both Camrose and Wetaskiwin are conceptual only; alignments within city limits will be determined during detailed design.



LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 1 Diameter (mm)
- 600
- 750
- 1050
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-2

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

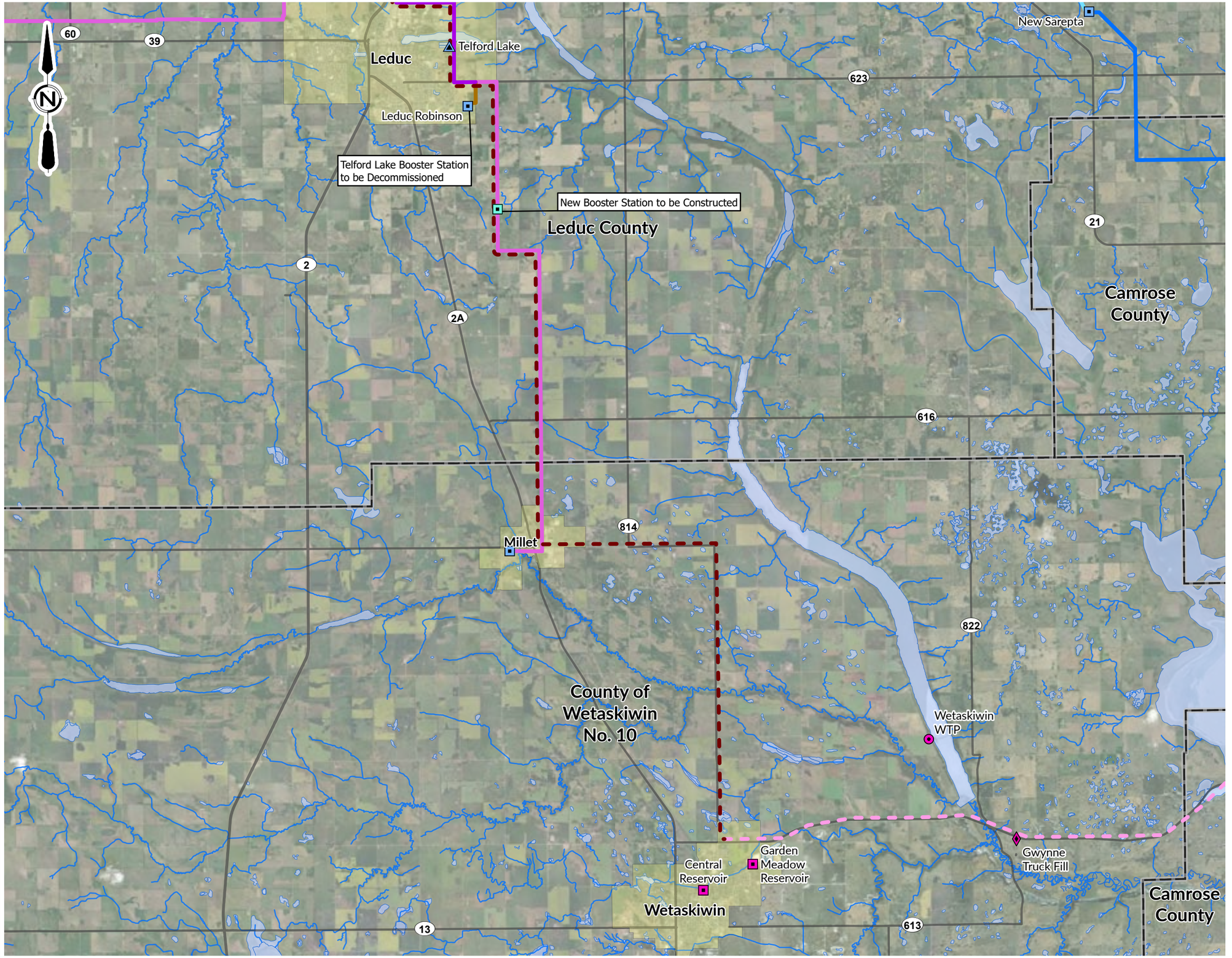
ALIGNMENT OPTION 1
EDMONTON TO LEDUC

AE PROJECT No.	2025-3300-00
SCALE	1:80,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,000 2,000 m

IF NOT 25 mm ADJUST SCALES 25 mm
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:08 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Earthstar Geographics;



IF NOT 25 mm ADJUST SCALES
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:09 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery, Earthstar Geographics;

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 1 Diameter (mm)
- 600
- 750
- 1050
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900

Base Data
- Highway
- Watercourse
- Water Body

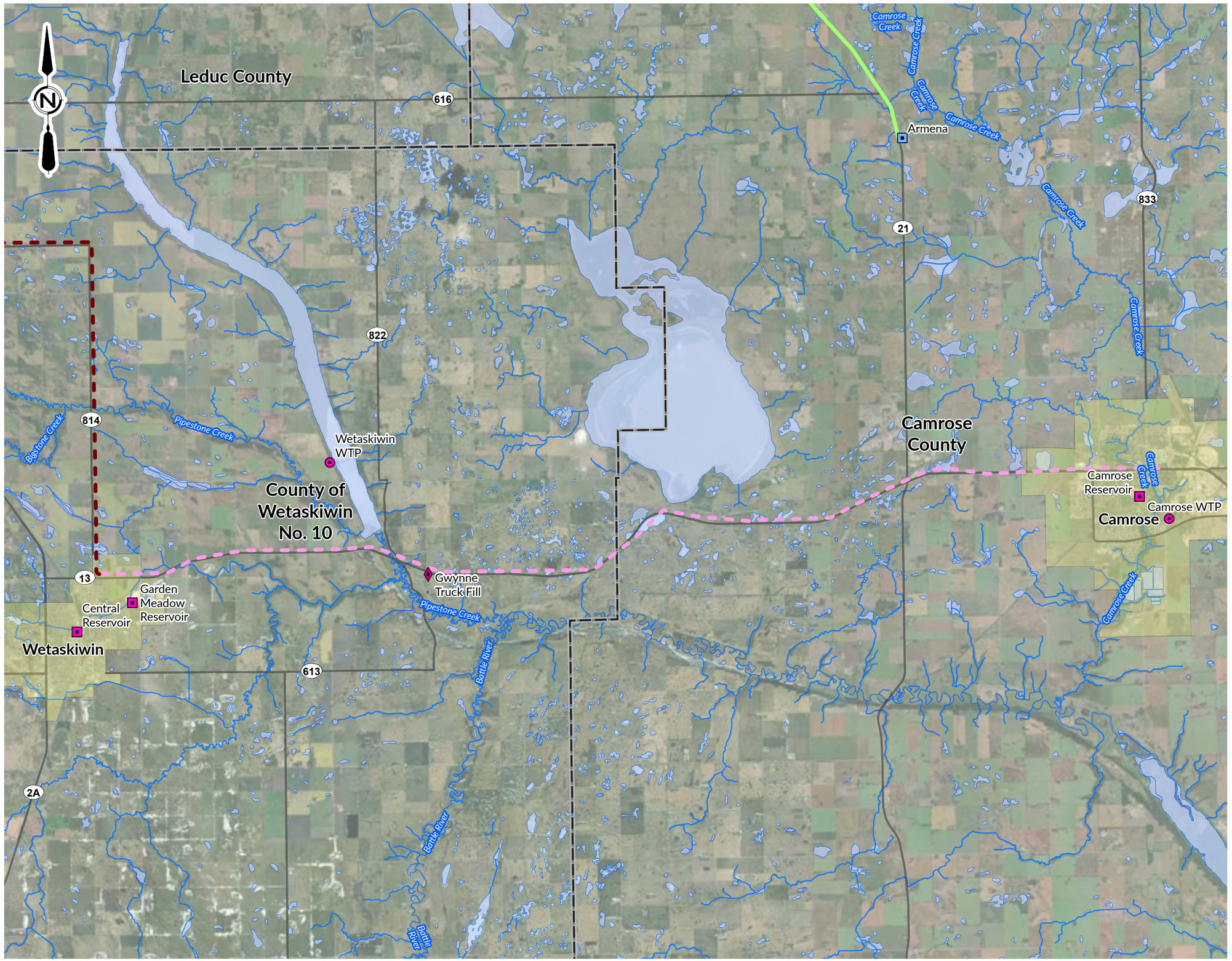
FIGURE 3-3

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 1
LEDUC TO WETASKIWIN

AE PROJECT No.	2025-3300-00
SCALE	1:140,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,500 3,000 m



LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 1 Diameter (mm)
- 600
- 750
- 1050
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-4

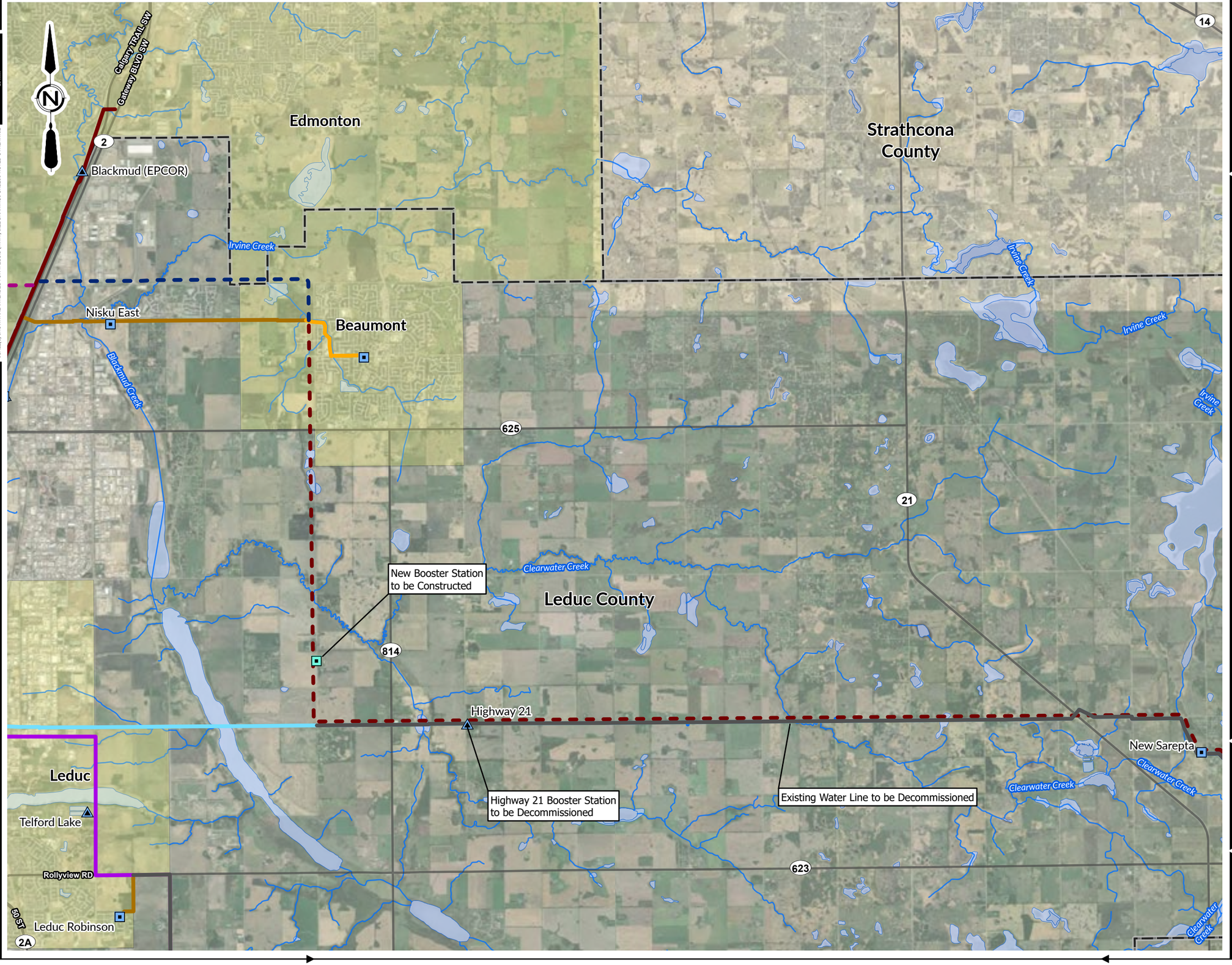
CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 1
WETASKIWIN TO CAMROSE

AE PROJECT No.	2025-3300-00
SCALE	1:125,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,500 3,000 m

IF NOT 25 mm ADJUST SCALES
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE
SAVE DATE: 2026-06-22 4:09 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Earthstar Geographics;



Associated Engineering

CANADA'S BEST MANAGED COMPANIES Platinum member

LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 2 Diameter (mm)
- 500
- 750
- 900
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Water Line to be Decommissioned

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-5

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 2
EDMONTON TO NEW SAREPTA

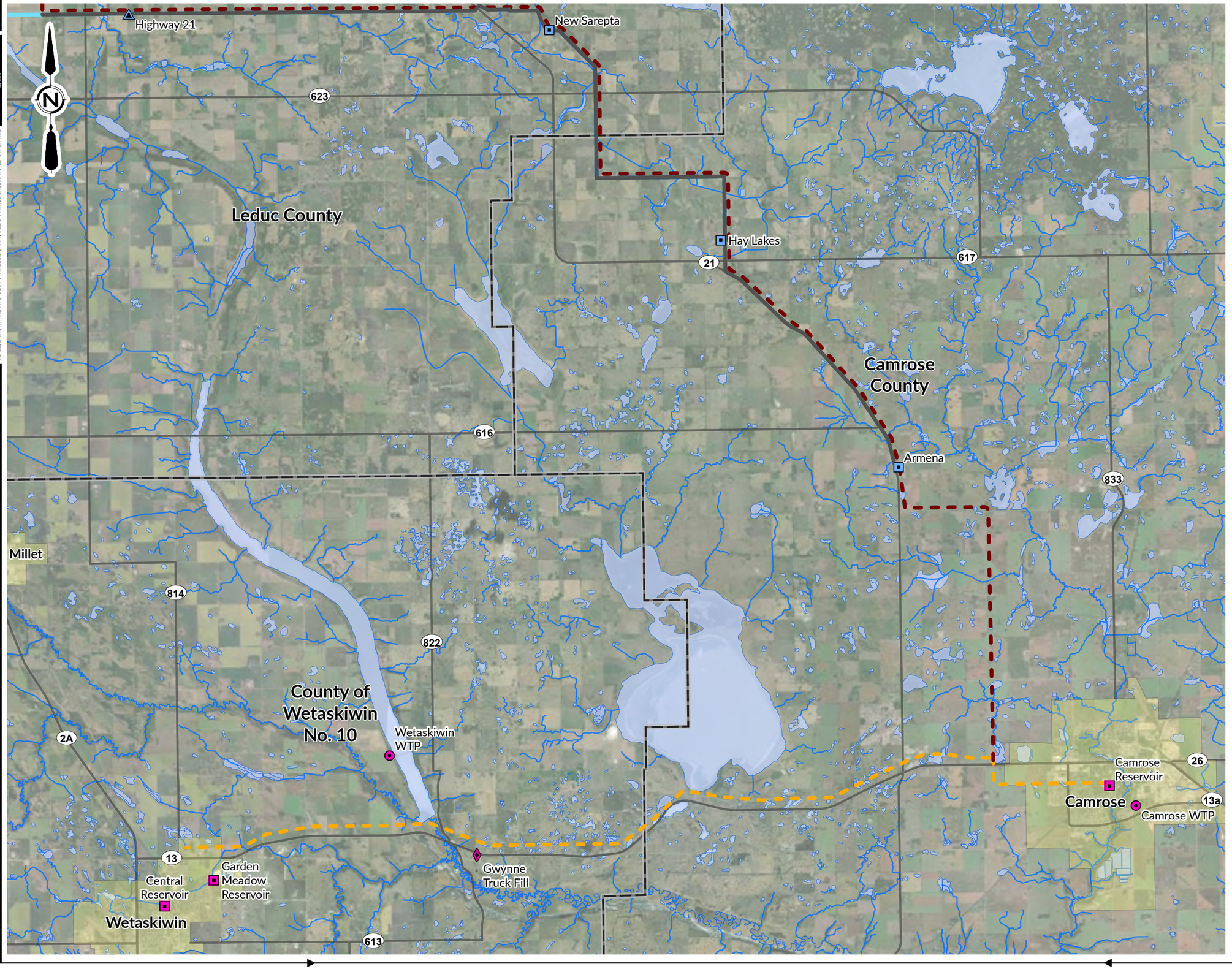
AE PROJECT No.	2025-3300-00
SCALE	1:80,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,000 2,000 m

IF NOT 25 mm ADJUST SCALES
25 mm

SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:10 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Earthstar Geographics;



IF NOT 25 mm ADJUST SCALES
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:10 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Earthstar Geographics;

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 2 Diameter (mm)
- 500
- 750
- 900
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Water Line to be Decommissioned

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-6

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

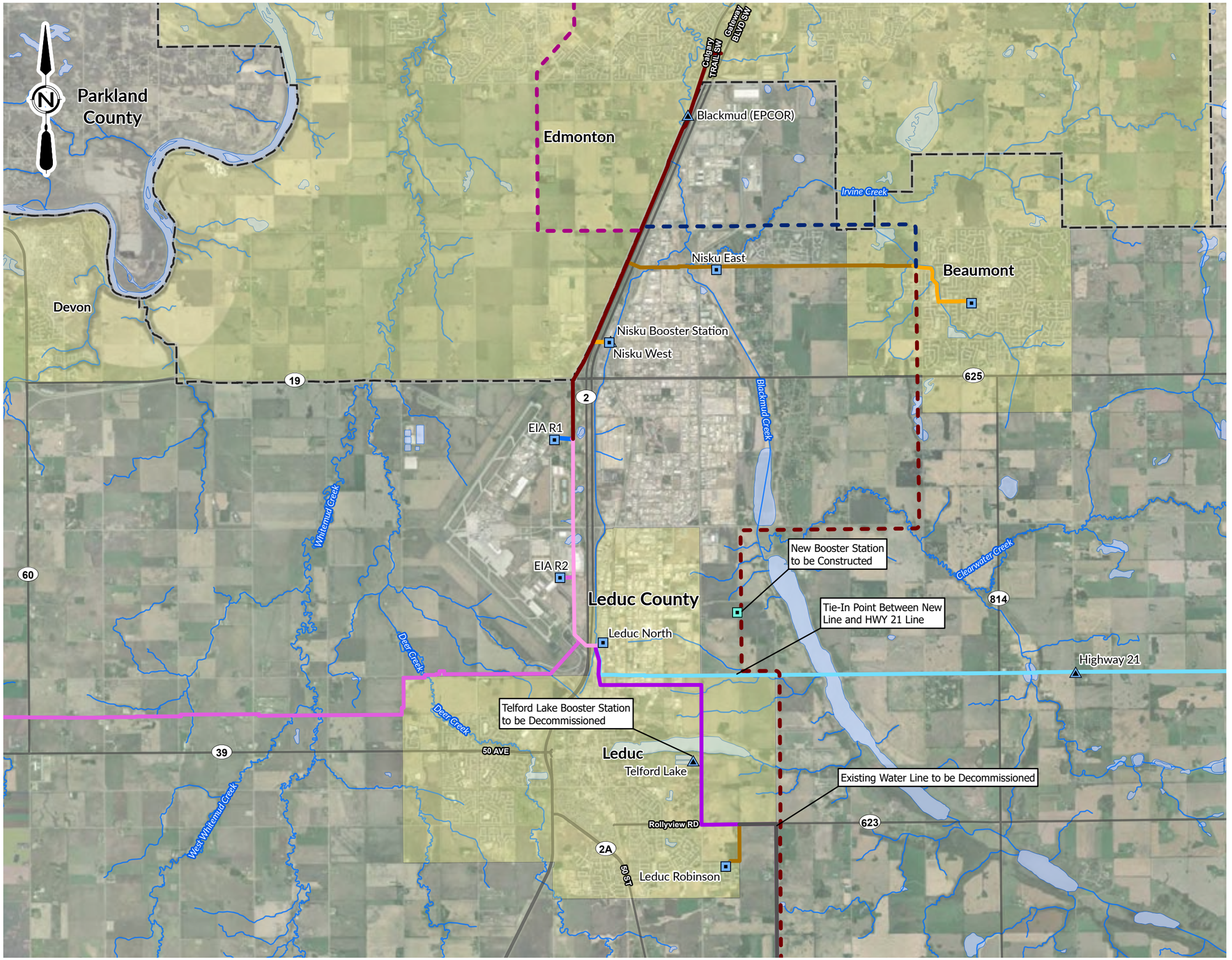
ALIGNMENT OPTION 2
NEW SAREPTA TO WETASKIWIN

AE PROJECT No.	2025-3300-00
SCALE	1:140,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,500 3,000 m

IF NOT 25 mm ADJUST SCALES
25 mm

SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE



LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 3 Diameter (mm)
- 600
- 750
- 900
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Water Line to be Decommissioned

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-7

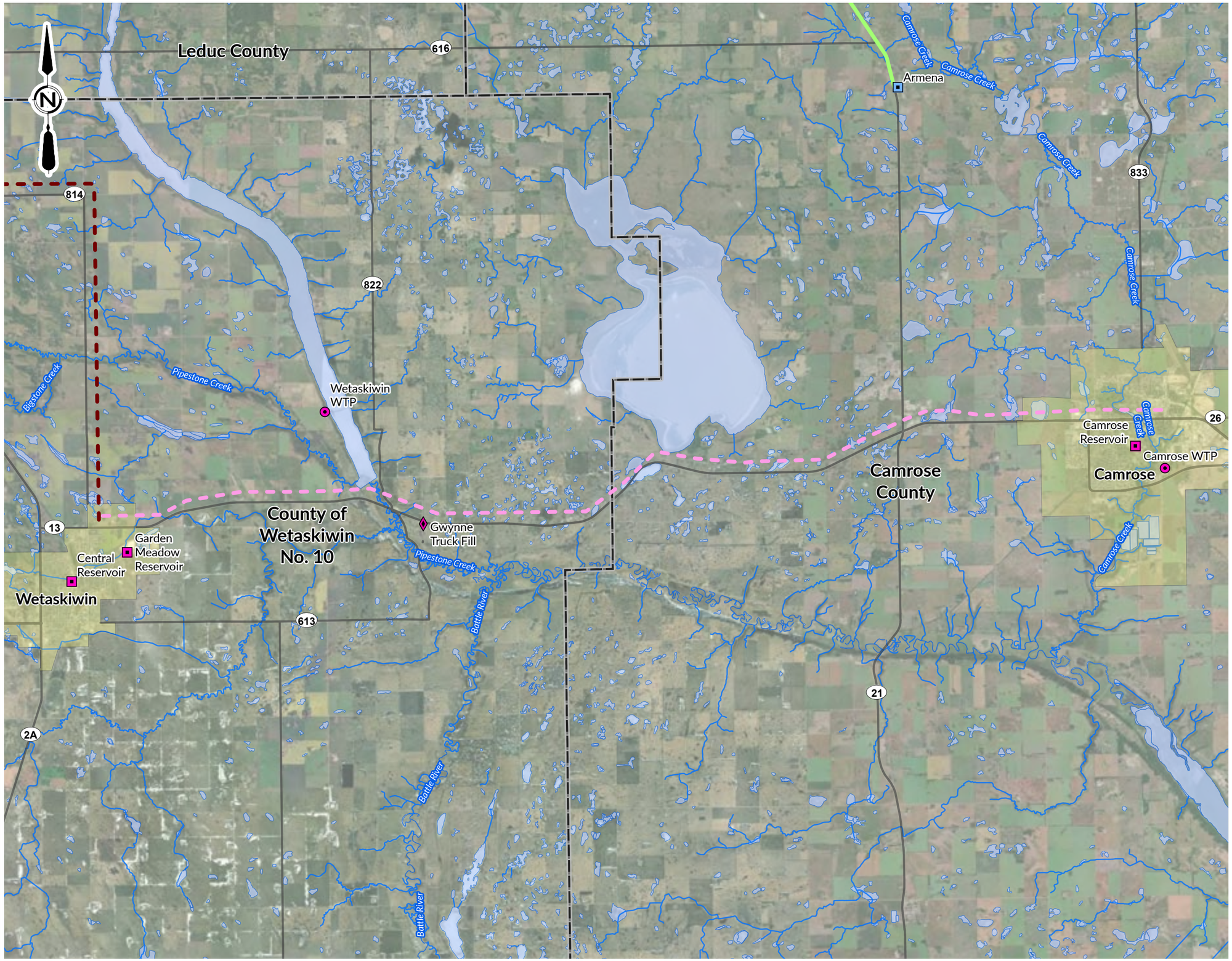
CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 3
EDMONTON TO LEDUC

AE PROJECT No.	2025-3300-00
SCALE	1:80,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,000 2,000 m

SAVE DATE: 2026-06-22 4:11 PM, SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Earthstar Geographics.



IF NOT 25 mm ADJUST SCALES
25 mm

SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:12 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery, Earthstar Geographics;

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 3 Diameter (mm)
- 600
- 750
- 900
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Water Line to be Decommissioned

Base Data
- Highway
- Watercourse
- Water Body

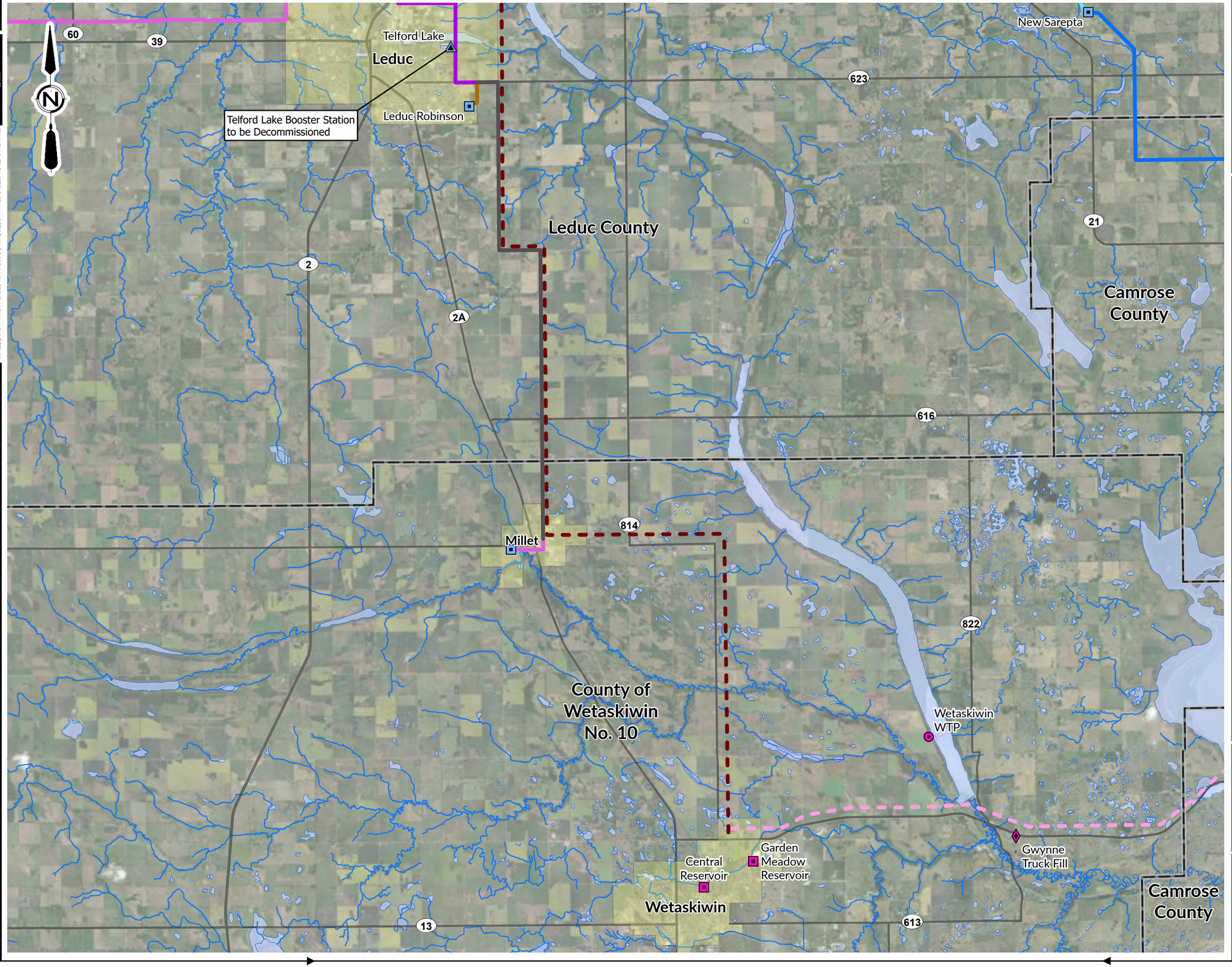
FIGURE 3-8

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 3
WETASKIWIN TO LEDUC

AE PROJECT No.	2025-3300-00
SCALE	1:125,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,500 3,000 m



IF NOT 25 mm ADJUST SCALES
25 mm

SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-06-22 4:11 PM SAVED BY:
DRAWING PATH: D:\project\...data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery, Earthstar Geographics;

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

LEGEND:

Existing CRSWSC Facility
- Booster Station
- Reservoir

Other Facilities
- Water Treatment Plant
- Reservoir
- Truck Fill

Alignment 3 Diameter (mm)
- 600
- 750
- 900
- New Supply Main (900)

Existing Waterline CRSWSC Diameter (mm)
- 150
- 200
- 250
- 300
- 400
- 500
- 550
- 600
- 750
- 900
- Water Line to be Decommissioned

Base Data
- Highway
- Watercourse
- Water Body

FIGURE 3-9

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ALIGNMENT OPTION 3
LEDUC TO WETASKIWIN

AE PROJECT No.	2025-3300-00
SCALE	1:140,000
DATE	2026JUN22
PROJECTION	NAD 1983 3TM 114
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 1,500 3,000 m

3.4 Alignment Analysis

The three alignments were assessed on the following criteria:

- Length – the longer the pipeline the higher the construction cost and hydraulic losses.
- Land Parcels – more land acquisition increases costs and can slow implementation of the project.
- Water and Roadway Crossings – permitting and need for specialised contractors for trenchless crossings.
- Ease of Construction – any considerations which may impact construction cost and schedule.
- Qualitative Cost Considerations.

Table 3-1 details the comparison of the three alignments based on the above criteria.

Table 3-1 Alignment Option Comparison

	Option 1	Option 2	Option 3
Description	Twinned line from Nisku Booster Station to Millet, new line to Wetaskiwin, new line to Camrose	New line from the future Beaumont 2nd Feed Line, twinned line to Armena, new line to Camrose, new line to Wetaskiwin	New line from the future Beaumont 2nd Feed Line, twinned line to Millet, new line to Wetaskiwin, new line to Camrose
Length	114 km	130 km	115 km
Land	Majority of the waterline will be within the Commission's existing line ROW or County Road ROW. Land may be required along Hwy 13 and 814.	Majority of the waterline will be within the Commission's existing line ROW or County Road ROW. Land may be required along Hwy 13.	May require some land parcel acquisitions south of Beaumont. Land may be required along Hwy 13 and 814.
Waterbody Crossings	Telford Lake (500 m) – twinning of existing line Pipestone Creek – crossed twice Other unnamed (further detailed in Section 5)	Pipestone Creek - crossed once Other unnamed (further detailed in Section 5)	Blackmud Creek Pipestone Creek - crossed twice Other unnamed (further detailed in Section 5)
Roadway Crossings	Highway 2, 21, 13 Urban crossings within Leduc Secondary Highway 625, 623, 616, 814, 822 16 Rural Roads	Highway 21, 13 Secondary Highway 625, 623, 621, 616, 822 26 Rural Roads	Highway 21, 13 Secondary Highway 625, 623, 816, 814, 822 20 Rural Roads

	Option 1	Option 2	Option 3
Constructability	The twinned portion along Highway 2 and within Leduc is extremely congested with urban development, narrow ROW, and existing utilities. The remainder of the twinned line is generally rural and accessible.	The extent of the twinned line is generally rural and accessible.	The extent of the twinned line is generally rural and accessible.
Qualitative Cost Considerations	Pipeline Costs: Medium due to larger pipe sizes and Highway 2 congestion. Pumping Costs: highest due to upgrades at Nisku Booster Station	Pipeline Costs: Highest due to length. Pumping Costs: Similar to Option 3	Pipeline Costs: Lowest due to length Pumping Costs: Similar to Option 2

4 HYDRAULIC ANALYSIS

A conceptual hydraulic analysis was conducted for the three alignment options for the ultimate design demands in 2061 (refer to Figure 3-1). The hydraulic analysis considered plastic pipe (HDPE or PVC) and assumed a nominal pipe diameter. It should be noted that the ground profile for the hydraulic analysis was obtained via LiDAR survey and will require refinement during the detailed design stage following a comprehensive topographic survey. The PVC SDR 25 pipe pressure rating of 165 psi was selected for the analysis as it is reasonably conservative and matches the recent 900 mm PVC pipe installed at the discharge of the Nisku Booster Station.

A Hydraulic Grade Line (HGL) was produced for each alignment option considered. Each HGL shows the required pumping head (displayed as an elevation), in comparison to the existing ground conditions and the pipe rating, which represents the maximum allowable pressure along the line. Individual HGL figures are presented in the sections below.

4.1 New Supply Main

The new supply main through Edmonton consists of 900 mm diameter pipe for all alignment options. Two booster stations will be located along the pipeline, at the transition points to the secondary and tertiary pressure zones, respectively. The hydraulic analysis assumes an initial pressure head of 29 m at the tie-in point to EPCOR's existing system, in order to provide a minimum pressure requirement of 25 psi at the inlet of the Secondary Zone Booster Station. Upstream conditions in the EPCOR system are unknown at this time and will need to be reviewed during detailed design.

4.2 Options Analysis

Alignment Option 1: Nisku Booster Station → Wetaskiwin → Camrose

Alignment Option 1 consists of the following:

- 600 mm diameter Beaumont 2nd Feed Line
- 1,050 mm diameter pipe twinning the main supply line from the Nisku Booster Station to Leduc North
- 750 mm diameter pipe twinning the line to Millet, and continuing down from Millet to Wetaskiwin
- 600 mm diameter pipe from Wetaskiwin to Camrose

The EPCOR-owned supply main upstream of the Nisku Booster Station may require twinning as well, between the new supply main and the Nisku Booster Station. Velocity and head losses in that pipe should be monitored to determine if or when twinning would be required. Significant upgrades would be required at the Nisku Booster Station to accommodate the flow and pumping head requirements, and a new booster station would be required south of the Leduc Robinson lateral. The new pipeline and booster station will be able to convey the Leduc Robinson and Millet demands, so the Telford Lake Booster Station would no longer be required.

The projected future pumping requirement at the Nisku Booster Station would require 856 L/s at 70 m of head, which cannot be achieved with the current pumping configuration. The extensive upgrades will require construction of a new booster station, as there is insufficient space at the current location to accommodate the equipment required for the projected flow and pumping head. As the Nisku Booster Station was recently constructed in 2021, such upgrades will likely render this alignment option impractical due to costs and other factors.

Supply for Nisku East and Beaumont would be through the new Beaumont 2nd Feed Line. The remainder of the Commission's supply would be through the new regional waterline. Pumping requirements at the new booster station are 278 L/s at 23 m of head (south of the Leduc Robinson lateral).

Figure 4-1 provides the HGL for Alignment Option 1.

Alignment Option 2: Beaumont → Camrose → Wetaskiwin

Alignment Option 2 consists of the following:

- 900 mm diameter Beaumont 2nd Feed Line
- 750 mm diameter pipe tying into the Beaumont 2nd Feed Line upstream of Beaumont
- 750 mm diameter pipe replacing the Armena line, from the tie-in point upstream of the Highway 21 Booster Station to Armena, and 750 mm pipe continuing down from Armena to Camrose
- 500 mm diameter pipe from Camrose to Wetaskiwin

The future 2nd Feed Line to Beaumont would need to be upsized for supplying Camrose and Wetaskiwin, with a 900 mm diameter pipe. A new booster station would be required upstream of the Highway 21 pipeline replacement to accommodate the flow and head requirements, and the Highway 21 Booster Station would no longer be required.

Supply for Nisku East, Beaumont, Camrose, Wetaskiwin, New Sarepta, Hay Lakes, and Armena would be through the new regional waterline. Supply for Edmonton Airports, Nisku West, Leduc, Calmar, and Millet would be through the existing waterline. Pumping requirements at the new booster station will be 302 L/s at 75 m of head (north of Highway 21). Pumping requirements at Nisku Booster Station will be 541 L/s at 31 m of head.

Figure 4-2 provides the HGL for Alignment Option 2.

Alignment Option 3: Beaumont → Wetaskiwin → Camrose

Alignment Option 3 consists of the following:

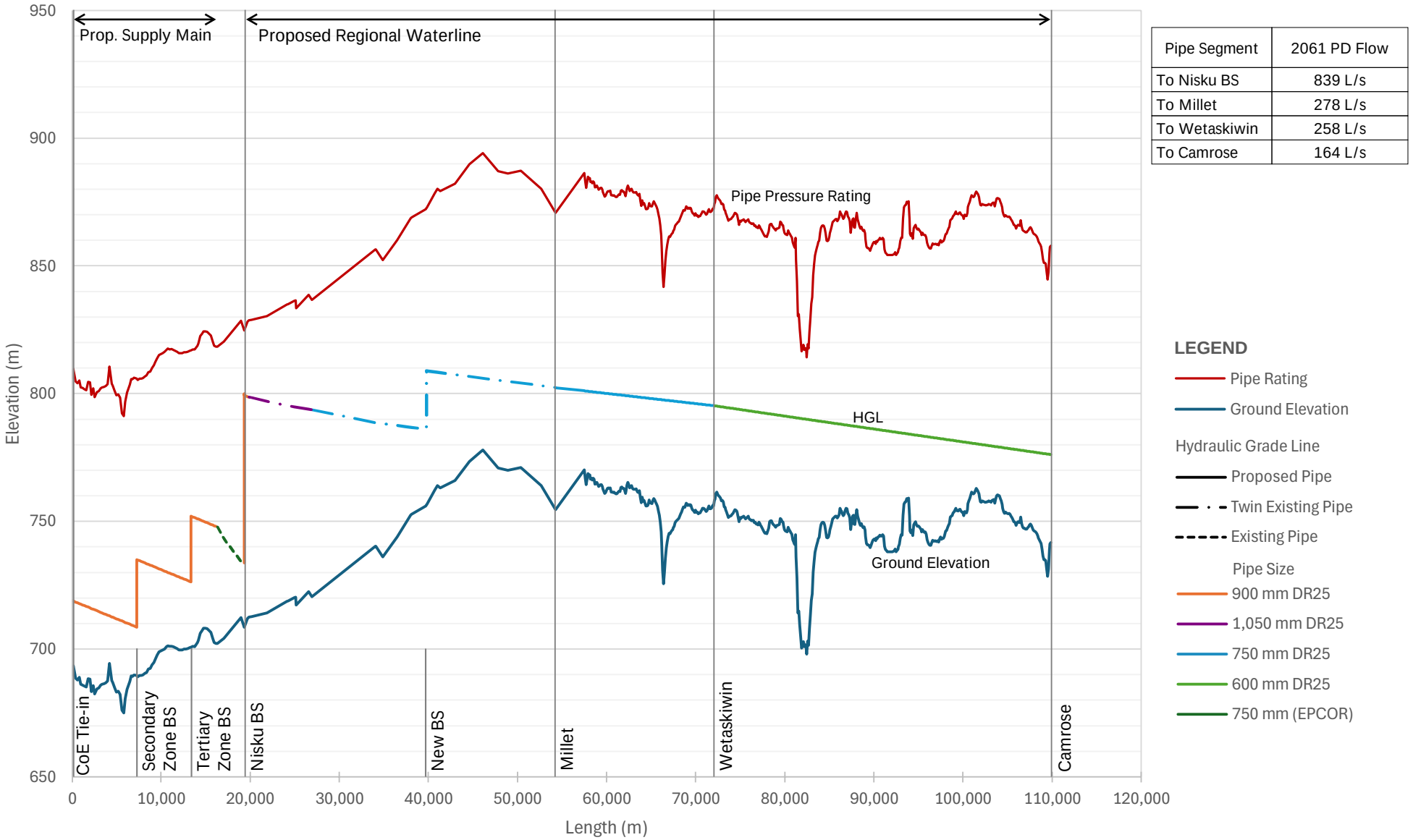
- 900 mm diameter Beaumont 2nd Feed Line
- 750 mm diameter pipe tying into the Beaumont 2nd Feed Line upstream of Beaumont and tying into the Armena line where it crosses
- 750 mm diameter pipe twinning the line to Millet, from just downstream of Leduc Robinson, and continuing down from Millet to Wetaskiwin
- 600 mm diameter pipe from Wetaskiwin to Camrose

The future 2nd Feed Line to Beaumont would need to be upsized for supplying Camrose and Wetaskiwin, with a 900 mm diameter pipe. A new booster station would be required upstream of the Highway 21 pipeline tie-in to accommodate the flow and head requirements, and the Telford Lake Booster Station would no longer be required.

Supply for Nisku East, Beaumont, Camrose, Wetaskiwin, New Sarepta, Hay Lakes, Armena, and Millet would be through the new regional waterline. Supply for Nisku West, Edmonton Airports, Leduc, and Calmar would be through the existing waterline pumping requirements at the new booster station will be 320 L/s at 72 m of head (north of Highway 21). Pumping requirements at Nisku Booster Station will be 521 L/s at 55 m of head.

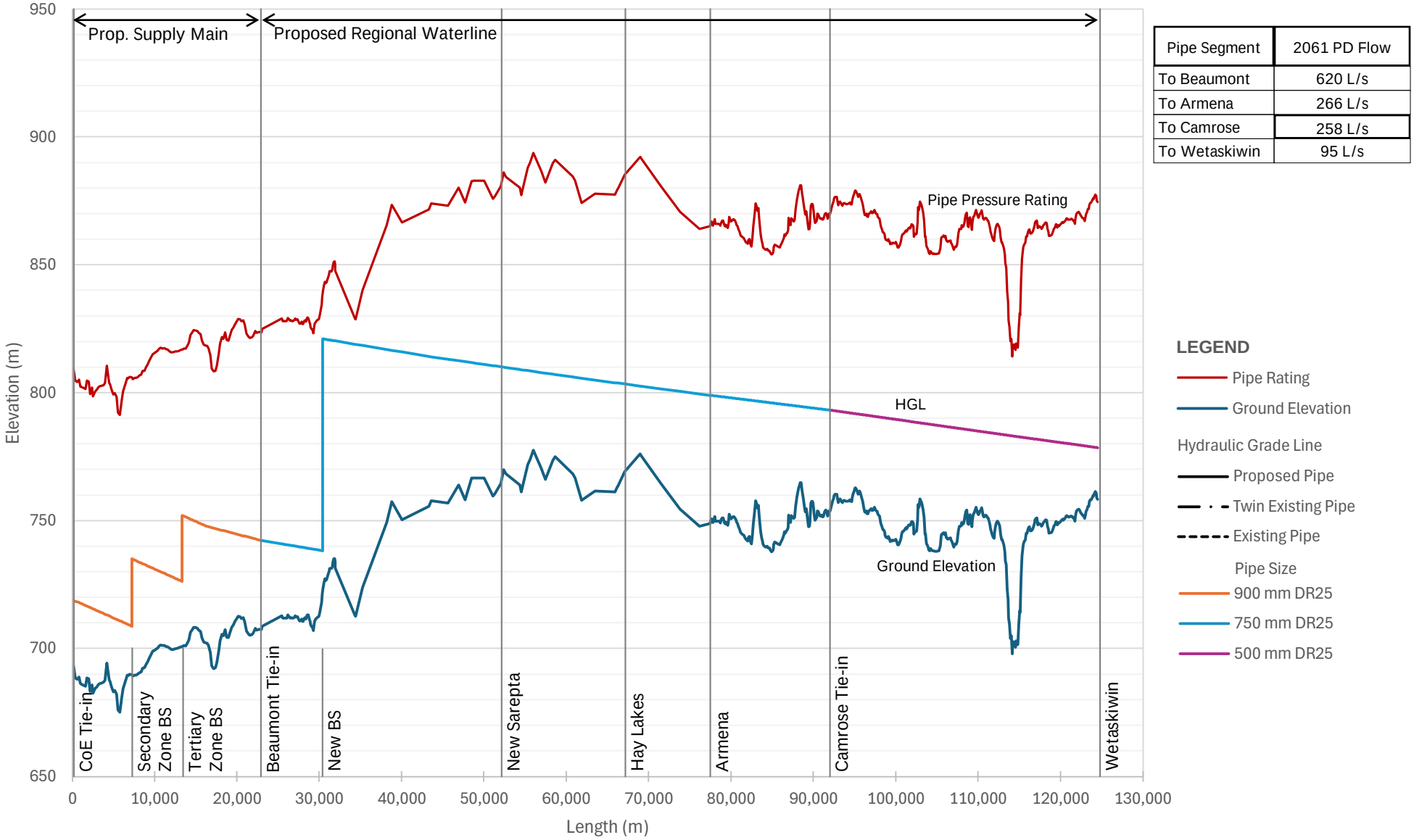
Figure 4-3 provides the HGL for Alignment Option 3.

Figure 4-1 Hydraulic Grade Line
Alignment Option 1



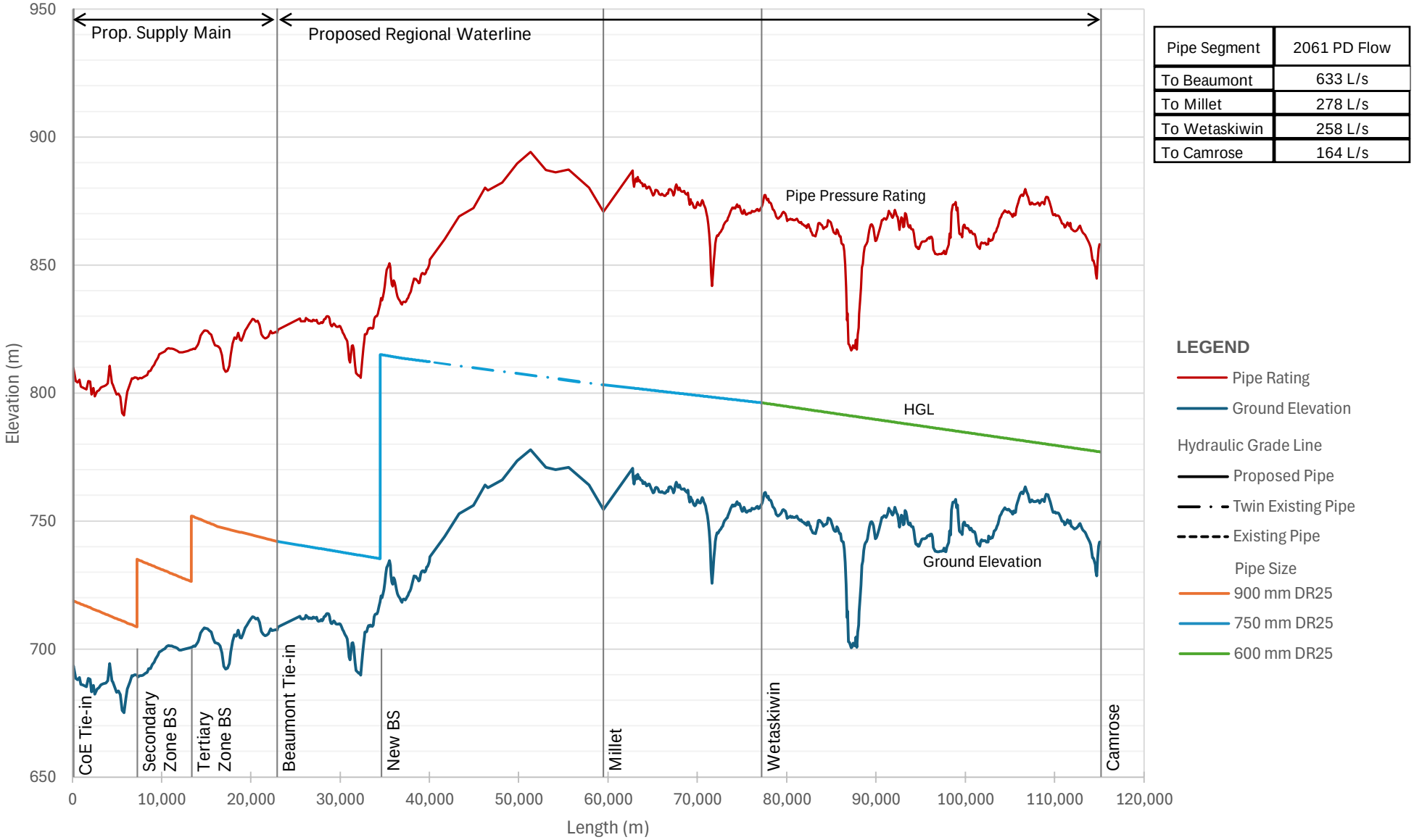
Pipe Segment	2061 PD Flow
To Nisku BS	839 L/s
To Millet	278 L/s
To Wetaskiwin	258 L/s
To Camrose	164 L/s

Figure 4-2 Hydraulic Grade Line
Alignment Option 2



Pipe Segment	2061 PD Flow
To Beaumont	620 L/s
To Armena	266 L/s
To Camrose	258 L/s
To Wetaskiwin	95 L/s

Figure 4-3 Hydraulic Grade Line
Alignment Option 3



Pipe Segment	2061 PD Flow
To Beaumont	633 L/s
To Millet	278 L/s
To Wetaskiwin	258 L/s
To Camrose	164 L/s

4.3 Existing System Hydraulic Considerations

There are a number of considerations that will directly affect the Commission and operation of the existing regional system, as outlined below.

In the existing Commission system, the Highway 21 line experiences the most significant head losses and consequently requires higher pumping head at the Nisku Booster Station and Highway 21 Booster Station (without consideration for Camrose and Wetaskiwin demands). **Alignment Option 1** is the only option that does not offset the constraints of the Highway 21 line, including future demands as the line approaches capacity, and pumping upgrades will be required in the future. Option 1 will also require complete reconstruction of the Nisku Booster Station to accommodate the projected increase in flows and pumping requirements. Twinning of the existing transmission main in Option 1 involves the most congested urban area, around Nisku and the EIA.

Alignment Option 2 will eliminate the need for upgrades along the Highway 21 waterline as this waterline will be intercepted and replaced by the proposed larger waterline servicing Camrose and Wetaskiwin. By accommodating the Highway 21 demands within the new pipeline, the Nisku Booster Station pumping requirements will be reduced by approximately 30 m in 2061. The higher capacity of the new line will accommodate additional growth along the Highway 21 route than can be achieved by the existing watermain.

Additionally, the new pipeline will offset a portion of the flows through the existing transmission main downstream of the Nisku Booster Station. The Commission's Water Master Plan projects that the 600 mm steel transmission main located between the EIA Reservoir R1 and the Leduc North Reservoir requires twinning with a 750 mm diameter line prior to 2051 due to increasing velocity. With the reduced demands through this line in Option 2, those upgrades may be delayed beyond the timelines proposed in the Master Plan. However, the line should be monitored in the future for excessive velocity due to increases in demand.

Alignment Option 3 can intercept and tie into the Highway 21 waterline, which would also reduce the pumping requirements at the Nisku Booster Station (by transferring the demand to the new system and off of the Nisku Booster), similar to Option 2. However, without the Telford Lake Booster Station, Nisku must provide the required pressure to the Leduc Robinson Reservoir, so pumping requirements at Nisku will be reduced by approximately 10 m in 2061 (versus 30 m reduction in Option 2). As well, pumping upgrades will be required along the Highway 21 line. As in Option 2, the demands along the existing transmission main to Leduc would be reduced, thereby delaying the required upgrades detailed in the Water Master Plan.

5 ENVIRONMENTAL AND REGULATORY REVIEW

A desktop environmental review was conducted to assess the environmental sensitivities associated with the three waterline alignment options. Desktop resources and government databases were reviewed for information on land use, soils, surface water and aquatic resources, vegetation, wildlife, historical and cultural resources, and potential contamination. The intent of this review is to determine the overall environmental impact of each alignment option and to compile anticipated regulatory requirements and compliance considerations.

In consideration of environmental sensitivities, Option 2 is recommended as the preferred alignment. Option 2 will likely require less disturbance and reclamation of agricultural soils and fewer crossings of waterbodies than Options 1 and 3. Option 2 will also avoid intersections with EIA land, which is owned by Transport Canada, and Telford Lake. Both are intersected by Option 1. **Figure 5-1** shows an overview of the environmental sensitivities along the alignment options.

Option 2 will intersect with critical habitat for the gypsy cuckoo bumblebee (*Bombus bohemicus*), which is listed as Endangered on Schedule 1 of the *Species at Risk Act*. It is expected that impacts to the critical habitat can be mitigated. All options will intersect the 200 m piping plover buffer around Bittern Lake between Wetaskiwin and Camrose. It is recommended that work within the buffer occur outside the sensitive timing window of April 15 to July 31 and that work within the buffer should follow existing disturbances.

All options are expected to intersect Historical Resource Value listings of 1h, which denotes a site designated as a Provincial Historic Resource or a World Heritage Site. Work within land designated as HRV 1 requires Ministerial approval. It is likely that measures to avoid the HRV 1h listings will be required in the next stages of design regardless of which option is selected.

Approvals under the *Environmental Protection and Enhancement Act*, *Historical Resources Act*, *Public Lands Act*, and *Water Act* are anticipated for all alignment options. Option 1 will trigger additional regulatory approvals under the *Impact Assessment Act* and the *Water Act* for crossings with Transport Canada owned land and Telford Lake, respectively. Regulatory submissions under the *Fisheries Act* and the *Canadian Navigable Waters Act* are not anticipated if trenchless methods are used. Measures to ensure compliance with the *Migratory Birds Convention Act, 1994*, *Species at Risk Act*, *Agricultural Pests Act*, *Soil Conservation Act*, *Weed Control Act*, and *Wildlife Act* should also be incorporated in the next project stages. Camrose County and County of Wetaskiwin topsoil and clubroot bylaws and policies also apply.

Table 5-1 lists the anticipated regulatory permits and their timelines, based on current legislation.

Please refer to the complete environmental overview provided in **Appendix A** for a full description of environmental sensitivities, regulatory applications, regulatory compliance considerations, and project recommendations.

Ochre Dagger Moth

FWIMT Shows seven crossings of Blackmud Creek from SE-7-51-24-W4M to NW-8-51-24-W4M due to meandering stream morphology

Long-Leaved Bluets

Edmonton

Devon

Beaumont

Leduc

Millet

Monarch

Camrose

Wetaskiwin

Umbilicate Sprite

51-25 W4M | 51-24 W4M | 51-23 W4M | 51-22 W4M | 51-21

50-25 W4M | 50-24 W4M | 50-23 W4M | 50-22 W4M

49-25 W4M | 49-24 W4M | 49-23 W4M | 49-22 W4M | 49-21 W4M

48-25 W4M | 48-24 W4M | 48-23 W4M | 48-22 W4M | 48-21 W4M

47-25 W4M | 47-24 W4M | 47-23 W4M | 47-22 W4M | 47-21 W4M | 47-20 W4M

46-25 W4M | 46-24 W4M | 46-23 W4M | 46-21 W4M | 46-20 W4M

WB-ID: 153 | WB-ID: 314481 | WB-ID: 24420 | WB-ID: 47226 | WB-ID: 5975 | WB-ID: 323 | WB-ID: 47074 | WB-ID: 62696 | WB-ID: 31253 | WB-ID: 31294 | WB-ID: 303147 | WB-ID: 31654 | WB-ID: 31759 | WB-ID: 32172 | WB-ID: 303531 | WB-ID: 32445 | WB-ID: 1348 | WB-ID: 32746 | WB-ID: 26310 | WB-ID: 304278 | WB-ID: 32895 | WB-ID: 32952 | WB-ID: 304124 | WB-ID: 304103 | WB-ID: 304356 | WB-ID: 31835 | WB-ID: 25167 | WB-ID: 304102 | WB-ID: 303947 | WB-ID: 253 | WB-ID: 303990

WB-ID: 46835 | WB-ID: 46912 | WB-ID: 46962 | WB-ID: 47006 | WB-ID: 47098 | WB-ID: 47226 | WB-ID: 47350 | WB-ID: 47382 | WB-ID: 47529

19 | 625 | 39 | 623 | 2 | 2A | 814 | 21 | 617 | 616 | 822 | 13 | 613 | 26 | 13a

NE | NW | SE | SW

Associated Engineering

CANADA'S BEST MANAGED COMPANIES Platinum member

LEGEND:

- Proposed Alignment Crosses Waterbody
- Option 1
- Option 2
- Option 3
- Existing Water Line
- Airport Boundary
- Piping Plover Waterbodies Buffer
- Gypsy Cuckoo Bumblebee Critical Habitat
- Sensitive Element Occurrences
- Non-Sensitive Element Occurrences

Historical Resource Values

- HRV 1
- HRV 2
- HRV 3
- HRV 4
- HRV 5

Base Data

- Highway
- Watercourse
- Waterbody

FIGURE 5-1

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ENVIRONMENTAL OVERVIEW

AE PROJECT No.	2025-3300-00
SCALE	1:200,000
DATE	2026MAY19
PROJECTION	NAD 1983 10TM AEP FOREST
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 4,000 8,000 m

IF NOT 25 mm ADJUST SCALES
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE
25 mm

SAVE DATE: 2026-05-06 3:25 PM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Vantor
Sensitive Element Occurrences: NatureServe Canada
World Imagery: Earthstar Geographics
Waterbody: Alberta Environment and Protected Areas, Government of Alberta
Non-Sensitive Element Occurrence (All Taxa Groups): Public: NatureServe Canada
Historical Resource Values: Alberta Culture, Multiculturalism and Status of Women
Gypsy Cuckoo Bumblebee Critical Habitat: The data is compiled and managed by Environment and Climate Change Canada (ECCC), in collaboration with federal, provincial and territorial jurisdictions.;

Table 5-1 Anticipated Regulatory Permits

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
Federal			
Fisheries Act (RSC 1985, c. F-14) Request for review	Work that may impact fish and fish habitat, or work completed below the high-water mark of a fish-bearing waterbody	Where trenchless methods (such as HDD) are used near water, the Fisheries and Oceans Canada measures to protect fish and fish habitat (Fisheries and Oceans Canada, 2025) can be followed, and no request for review is required. If open cut or trenched methods are used near water, a request for review may be required.	Fisheries and Oceans Canada N/A (3–4 months if request for review is required)
Impact Assessment Act (SC 2019, c. 28, s. 1) Environmental effects evaluation	Specific to Option 1 Work that may cause adverse environmental impacts on federally owned land	Twinning of the existing waterline from Edmonton to Millet for Option 1 passes through Transport Canada owned land, leased by the ERAA, and may trigger federal review. The requirements will be determined through consultation with the ERAA.	ERAA Timeline at ERAA discretion
Canadian Navigable Waters Act (RSC 1985, c. N-22) Approval	Construction of a work under a non-scheduled navigable water	Pipestone Creek may be considered navigable under the Act. Where trenchless methods are used (e.g., HDD), an approval will not be required.	Transport Canada N/A (3 months if approval is required)
Provincial			
Environmental Protection and Enhancement Act (RSA 2000, c. E-12) *Conservation and Reclamation Regulation* (Alberta Reg. 115/1993) Conservation and reclamation approval	Construction of a Class I pipeline	It is expected that a conservation and reclamation approval will be required for all options due to the length of each option, regardless of the pipe diameter.	Alberta Environment and Protected Areas 3–6 months
Historical Resources Act (RSA 2000, c. H-9) Approval	Ground disturbance within a provincially designated historic resource value area	Extensive ground disturbance projects require an approval for the proposed project works. Applications for approval are submitted to the Historic Resources Management Branch of Alberta Arts, Culture and Status of Women for assessment of resources within the project area. A historic resources impact assessment may be required as part of this project, following direction provided by Alberta Culture.	Alberta Culture 3–4 months An extended time frame will be required if a historic resources impact assessment is required.
Public Lands Act (RSA 2000, c. P-40) Temporary field authorization	Temporary occupation of Crown-claimed lands	Pipeline crossings under existing permissions (e.g., within the road ROW) should not require an approval under this Act. Temporary/short-term use (e.g., laydowns) may require a temporary field authorization. Applications for a temporary field authorization are submitted to Alberta Forestry and Parks via email.	Alberta Forestry and Parks 1 month
Water Act (RSA 2000, c. W-3) Approval	Utility installation where the conditions of the Code of Practice cannot be met	Where the project's waterbody crossings (including wetland crossings) cannot follow the Code of Practice for Pipelines and Telecommunication Lines Crossing Waterbodies (Government of Alberta 2013), an approval will be required. Twinning of the existing waterline below Telford Lake for Option 1 will require approval. Approvals may be required for the waterbody crossings along Highway 13 between Camrose and Wetaskiwin for all options. Applications for an approval will be submitted through DRAS, supplemented by the design drawings. Additional project details may be required, including the construction specifications and schedule. A pre-consultation assessment request must be submitted to the Aboriginal Consultation Office in support of this application. The results of the Indigenous consultation process are required before the licence may be issued.	Alberta Environment and Protected Areas 3–4 months

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body Notification	Utility installation where the conditions of the Code of Practice can be met	Where the project's watercourse crossings (including wetland crossings) can follow the Code of Practice for Pipelines and Telecommunication Lines Crossing Waterbodies (Government of Alberta 2013), a Code of Practice notification will be required for all watercourse and wetland crossings. Notifications must be submitted through DRAS at least 14 days before work begins and require stamped and signed engineering drawings of the crossings. For crossings of Class A, B, or C watercourses, recommendations from a qualified aquatic environmental specialist may be required. Wetland crossings have additional submission requirements where temporary or permanent impacts occur. For temporary impacts associated with pipeline construction, a wetland impact assessment form will need to be submitted. The project must meet all the conditions in the applicable Code of Practice. If the conditions cannot be met, an approval will be required.	Alberta Environment and Protected Areas At least 14 days before the activity begins
Water Act Licence	Operation of a "works" as defined in the *Water (Ministerial) Regulation* (Alberta Reg. 43/1997)	The application will be submitted through DRAS and will be supplemented by project design drawings and a hydrological assessment. Complex projects may require additional project details, including the construction specifications, schedule, operational plans, water requirements, and method of operation. The Government of Alberta requires a fee for a licence, depending on the volume of water applied for. A pre-consultation assessment request must be submitted to the Aboriginal Consultation Office in support of this application. The results of the Indigenous consultation process are required before the licence is issued.	Alberta Environment and Protected Areas 3–4 months

6 GEOTECHNICAL ASSESSMENT

A desktop geotechnical review was conducted by Thurber Engineering Ltd. (Thurber). The full report is provided in Appendix B.

The main geotechnical considerations along the alignment options are the following:

- Glaciolacustrine and eolian deposits with a high groundwater table are present mainly around Wetaskiwin and Millet.
- Shallow bedrock depths are present in the area around Beaumont and Leduc, where several crossings would be required.
- Potential slope instability at watercourse crossings and presence of nearby top-of-valley slopes to the south of the proposed alignment near Wetaskiwin.
- Multiple pipeline and creek/river crossings. Pipeline companies should be contacted to confirm the depth of cover above the pipelines at potential crossing locations.
- Wetlands and organic deposits present to the north of the proposed alignment between Camrose and Wetaskiwin.

Open cut method is deemed suitable to construct most of the alignment outside potential crossing locations. However, high groundwater may be encountered along the alignment that spans the eolian and glaciolacustrine deposits. Temporary dewatering may be required during excavation, and continuous dewatering will likely be required when sand is encountered within the depth of excavation. The dewatering of water-bearing sand/gravel in eolian and sands of the glaciolacustrine deposits is anticipated to be difficult and will likely require dewatering points. If groundwater seepage is encountered in the clay moraine it should be handled with typical sumps and pumps.

Temporary excavation side slopes are anticipated to be stable at slopes of 1H:1V and 1.5H:1V or flatter for clay and sand, respectively, assuming dry conditions. Cobbles or boulders may be present in the till deposits, and this may hinder the installation of the pipe. If the trench base is situated in soft clays or saturated sands below the water table where the pipe support conditions may be poor, special bedding procedures may be required to improve pipe support conditions and reduce future settlement of the pipes. However, it is important to note that the special bedding procedures do not eliminate the need to adequately dewater the base as pipes installed on a wet disturbed trench base could settle and distort once the trench is backfilled.

If native sand or silt is present at the base of trench level, it is important that it is dewatered to at least 1 m below the base of the trench before installing the pipe to avoid placing the pipe on a loose disturbed base which could settle and distort the pipe after the trench backfill is placed.

HDD should be feasible to install the proposed pipeline below identified watercourse crossings. A specific “No-Drill zone” may have to be established at identified crossing locations and particularly at crossings with potential slope stability issues. For preliminary design purposes, it is recommended that the entry and exist points be located at least 20 m away from the crest of the valley slope or bridge approach fill. The pipe should be located at least 10 m below stream bed for valleys less than 4 m in height and 15 to 20 m for valleys greater than 4 m in height.

HDD may also be used to install the line at pipeline crossings and the entire alignment. However, HDD is anticipated to be difficult in saturated eolian or glaciolacustrine deposits and the likelihood of borehole collapse and frac-out is

high. Hydro-fracture analyses should be undertaken during the detailed design to confirm the bore path and the minimum depth of cover below stream beds and pipelines.

Shallow trenchless installation technologies such as HAB and Pipe Ramming (PR) may be used to complete shallow installations below roadways (if any). It should be noted that PR is more favourable than HAB when sand under high groundwater table is encountered along the drilling path. Temporary shoring and dewatering will likely be required when sand under high groundwater conditions is encountered at the entry and exit pits. A survey monitoring program should be established during construction to assess the impact of installation on roadways.

Slope stability analyses should be undertaken at locations where potential or signs of instability are identified (based on the LiDAR data). This includes water course crossing locations and locations where the stream top of bank exists in the general vicinity of the proposed alignment. This is to determine a safe setback for the pipe from the top of the bank.

A detailed geotechnical investigation should be undertaken to provide more specific recommendations for the design and the construction of the proposed waterline.

7 CONSTRUCTION CONSIDERATIONS

7.1 Pipe Installation Method

A comparison of construction methods was undertaken to evaluate the suitability of HDD and Open Cut installation for large diameter pipelines. For this project, the proposed pipeline diameters will range from 500 mm to 1,050 mm.

7.1.1 HDD

HDD is a trenchless method used for the guided installation of new pipelines and conduits. Originating in the 1970s from oil field and water well drilling technologies, HDD has become a widely adopted technique across North America, particularly by municipalities and utility providers. Its non-invasive nature allows for installations beneath surface structures, roads, and waterways with minimal surface disturbance at entry and exit points. The HDD process consists of two main phases:

- Phase 1: Pilot Bore – A drill rig launches a pilot bore from the surface, guided by an electronic locator system to the designated exit point.
- Phase 2: Reaming and Pipe Installation – Upon reaching the exit point, a back reamer is attached and pulled back through the borehole to enlarge it. The product pipe is then pulled into place from the exit to the entry point. Drilling fluid, typically a bentonite-water mixture with additives, is continuously circulated to assist with soil removal, borehole stabilization, and pipe lubrication.

Key design considerations for HDD include:

- Surface topography and features
- Bore path curvature and exit angle
- Depth of installation
- Geotechnical conditions and soil composition
- Pipe material and diameter
- Available laydown area for the product pipe

As pipeline diameter increases, the cost and complexity of HDD installations also increase due to higher drilling forces, larger equipment requirements, and more stringent design constraints. One of the key risks associated with HDD is hydraulic fracturing (“frac-out”), which occurs when drilling fluid pressures exceed the confining strength of the surrounding soils, potentially resulting in unintended surface releases. Mitigation measures may include increasing bore depth, reducing drill length, or adjusting alignment to avoid sensitive areas and existing utilities.

For large diameter pipelines, HDD requires specialised equipment capable of accommodating significant pullback loads and maintaining bore stability. Successful implementation is highly dependent on detailed geotechnical investigations, as subsurface conditions—including soil type, groundwater presence, cobbles, and bedrock—directly influence constructability and risk. While HDD can be well-suited for crossings of roadways, railways, watercourses, and environmentally sensitive areas due to its minimal surface disruption, it is generally not cost-effective for long-distance installation at larger diameters.

Additional risks include borehole instability, excessive drilling pressures, and inadvertent drilling fluid returns, all of which require careful design, monitoring, and contingency planning during construction.

Final recommendations for HDD segments will be made following the completion of the detailed geotechnical investigation.

7.1.2 Pilot Tube Auger Boring (Crossings)

Auger boring (both HAB and PR) is another trenchless technique used primarily for short crossings. It involves the use of an auger boring machine to simultaneously advance an over-sized casing pipe and remove spoil. The machine applies thrust to push the casing forward while rotating internal augers to excavate and transport soil back to the entry pit. This process is repeated until the casing reaches the desired length. Once the casing pipe is installed the waterline pipe is installed inside of the casing.

7.1.3 Open Cut Method

The conventional open cut method, also known as cut and cover construction, involves excavating a trench along the full length of the pipeline alignment, placing the pipe within the trench, and subsequently backfilling and restoring the surface. This method provides direct access to the pipeline during installation, allowing for straightforward placement, inspection, and compaction.

Open cut has been employed for centuries in the installation of underground utilities. It remains the most widely adopted and standard approach for new utility installations. The method is considered low-tech, with minimal advancements in technology or methodology over the past five decades. As such, it requires relatively straightforward planning and implementation.

For large diameter pipelines, open cut is generally the most conventional and widely used approach, as it accommodates a broader range of pipe materials and diameters with fewer technical constraints. It also allows for real-time adjustment to encountered subsurface conditions. However, this method requires sufficient ROW and access along the alignment and typically results in greater surface disruption, including impacts to roadways, vegetation, and adjacent infrastructure. Additional considerations may include temporary traffic management, dewatering, and restoration requirements.

7.2 Preferred Methodology

The review indicates that while open cut installation is generally the preferred method for large diameter pipeline segments due to its cost-effectiveness and lower construction risk, HDD provides significant advantages in minimizing surface and stakeholder impacts. As such, a hybrid approach utilizing open cut for the majority of the alignment, with HDD or auger boring applied at constrained crossings, represents the most balanced and practical solution.

8 WATER TREATMENT PLANT ASSESSMENT

This analysis will outline potential upgrades to the treatment requirements for the existing water treatment facilities in each municipality. The scope of work for this task will include:

- Review existing water quality information from the source water and available water diversion information for each source.
- Develop high-level upgrades for treatment options to meet project water demands and Alberta Environment and Parks Standards and Guidelines for Waterworks and Health Canada's Guideline for Canadian Drinking Water Quality.

8.1 Water Treatment Plant Demands

The following section outlines the capacities for both the Camrose and Wetaskiwin WTPs, respectively.

As water is treated, a portion is lost as waste, such as blowdown and backwash. To produce the treated water required by the community, the treatment plant must treat additional water to account for in-plant losses. The in-plant losses depend on the treatment process at each facility.

Camrose Water Treatment Plant Capacity

The in-plant losses at the Camrose WTP are:

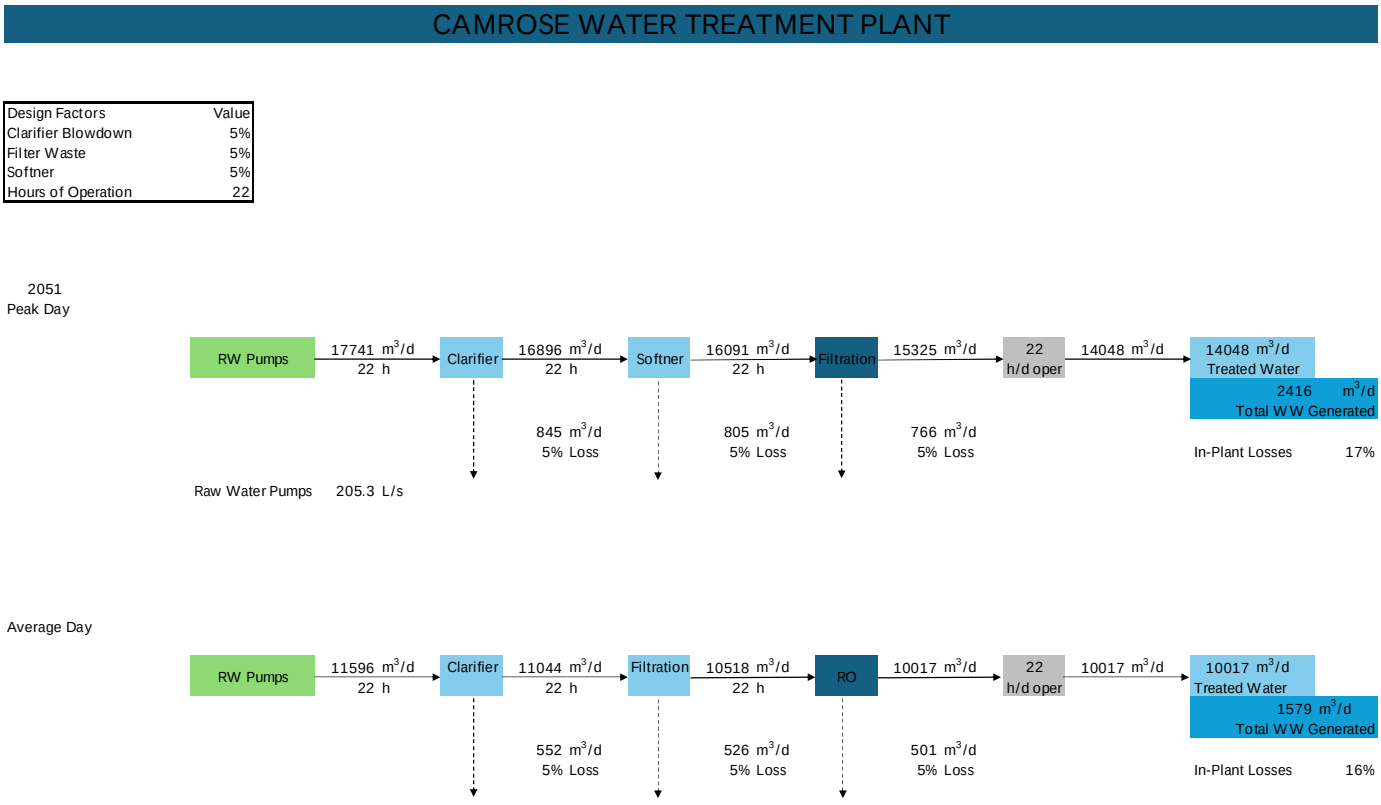
- 5% in-plant losses for blowdown for the solids contact clarifier
- 5% in-plant losses for blowdown for the softening clarifier
- 5% in-plant losses for filter backwash supply
- 2 hours for WTP maintenance

Table 8-1 summarizes the WTP capacity requirements to meet the raw water capacity needed to satisfy the required treated water demand for the City of Camrose. Figure 8-1 summarizes the 2061 treated water demands, in-plant waste production and the raw water treatment requirements for peak day and average day.

Table 8-1 City of Camrose WTP Raw Water Capacity Requirements

Parameter	2026	2036	2061
Peak Day Treated Water Demands (m^3/day)	9,917	10,954	14,048
In-Plant Waste during Peak Day Demand (m^3/day)	1,563	1,884	2,416
Peak Day Raw Water Treatment Capacity Requirement (m^3/day)	12,524	13,833	17,741

Figure 8-1 Camrose Water Treatment Plant 2061 Raw Water Treatment Capacity Summary



Wetaskiwin Water Treatment Plant Capacity

The in-plant losses at the Wetaskiwin WTP are:

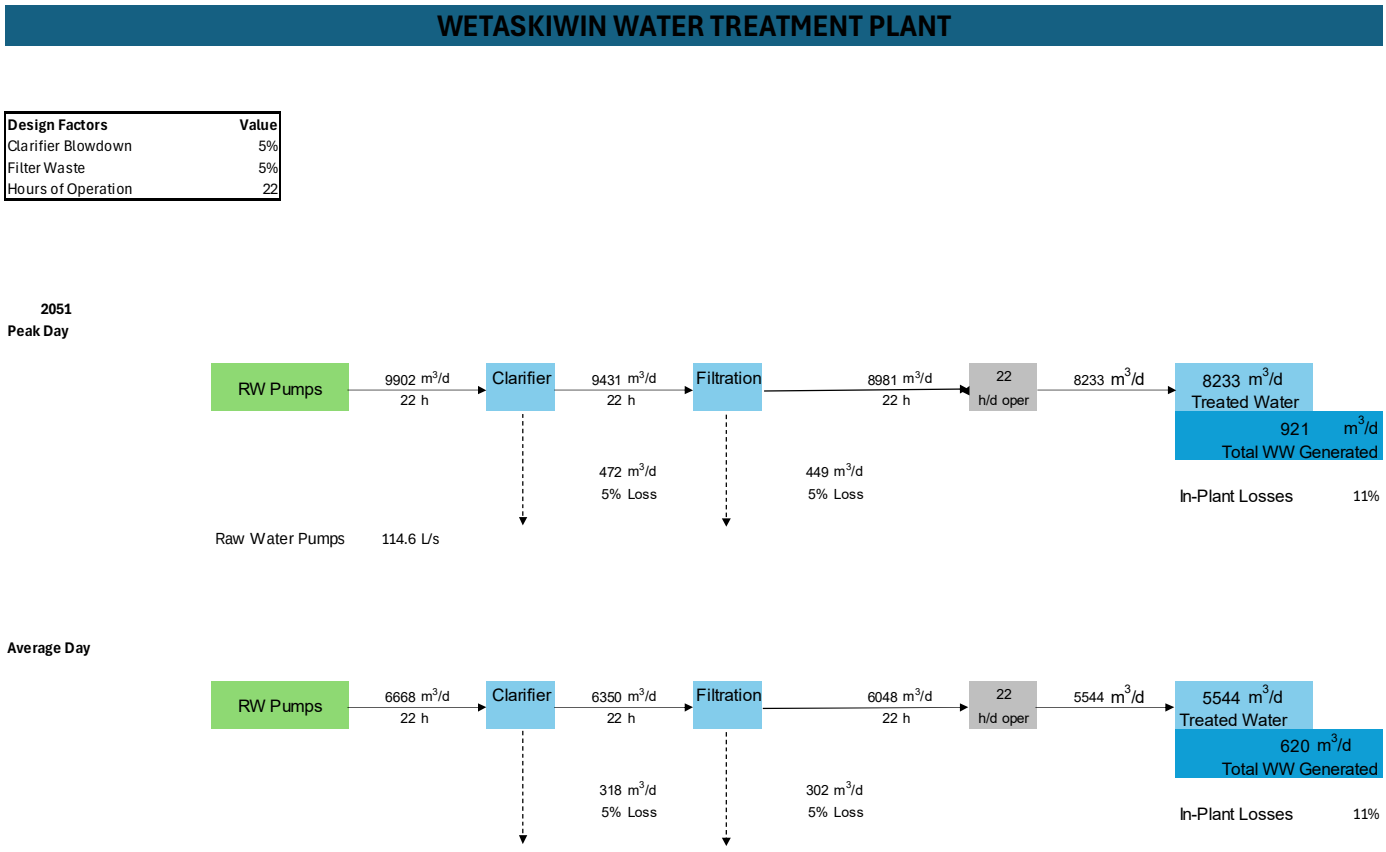
- 5% in-plant loss for blowdown for the dissolved air flotation clarifier
- 5% in-plant loss for filter backwash supply
- 2 hours for WTP maintenance

The City of Wetaskiwin provides potable water through a water line to the Town of Gwynne. Table 8-2 summarizes the raw water demands needed to satisfy the required treated water demands for the City of Wetaskiwin during peak day. Figure 8-2 summarizes the 2061 treated water demands, in-plant loss (waste production) and the raw water treatment requirements for peak day and average day.

Table 8-2 City of Wetaskiwin WTP Raw Water Capacity Requirements

Parameter	2026	2036	2061
Peak Day Treated Water Demands (m^3/day)	5,812	6,420	8,233
In-Plant Waste (m^3/day)	650	718	921
Peak Day Raw Water Demands (m^3/day)	6,990	7,722	9,902

Figure 8-2 Wetaskiwin WTP 2061 Raw Water Treatment Capacity Summary



8.2 Raw Water Diversion Licences

Camrose WTP Raw Water Diversion

The raw water source for the City of Camrose is Driedmeat Lake, which is located approximately 13 km southeast of the City. The lake level is stabilized by a dam and weir structure at its downstream end. The City holds several active licenses that permit a combined annual withdrawal of 4,663,700 m³ from Driedmeat Lake. Driedmeat Lake watershed collects surface water from the area. The raw water source could be highly restricted if climate change leads to

additional drought and leads deteriorating water quality due to less water in the watershed. The City has two withdraw licences from Driedmeat Lake:

Water Diversion License 00044708-00-00

Permits a combined annual withdrawal of 3,083,700 m³. Maximum Daily Diversion Rate: 0.1 m^3/s (8,640 m^3/day).

Water Diversion License 00404908-00-00

Allows for an additional 1,580,000 m³/year from Driedmeat Lake. This allocation is split between urban use (1,150,000 m³) and agricultural/industrial use (430,000 m³), specifically for the Cargill facility. Maximum Daily Diversion Rate: 0.3 m^3/s (25,920 m^3/day).

The City of Camrose has been allocated 4,233,700 m^3 annually for the WTP. The licence has 430,000 m^3 allocated for industrial use, which is provided to the Cargill facility that is fed from the raw water line before the WTP. At present, it is anticipated that the Battle River Water basin has limited unallocated water remaining. If additional diversion licence amounts are required for the City of Camrose, the likely options will be negotiating raw water purchases from other major users, such as ATCO Battle River Generation Station. At present, there are no cost estimates for purchasing licences from major users, nor is there any likelihood that a major user would allow the purchase of a portion of their licence. Table 8-3 summarizes the annual raw water diversion requirements for the City of Camrose; the WTP would have sufficient annual water system allocation for the 25 years of the study period.

Table 8-3 City of Camrose License Annual Raw Water Demands

Item	2026	2036	2061
Average Day Raw Water Demand, m^3/day	6,378	7,045	9,035
Annual Raw Water Demand, m^3	2,327,605	2,571,425	3,297,775
Current License(s) Allocation, m^3/year	4,233,700	4,233,700	4,233,700
Surplus, m^3/year:	1,906,095	1,662,275	935,925

Table 8-4 summarizes the peak day raw water demands and the maximum daily diversion allotments under the licences. The current license does allow for a maximum daily diversion of 25,920 m^3/day, which is sufficient to satisfy the 2061 peak day raw water demand.

Table 8-4 City of Camrose Licence Maximum Diversion

Item	2026	2036	2061
Peak Day Raw Water Demand, m^3/day	12,524	13,833	17,741
Current License(s) Maximum Diversion, m^3/day	25,920	25,920	25,920
Surplus, m^3/day:	13,396	12,087	8,179

Wetaskiwin WTP Raw Water Diversion

Coal Lake is the raw source for the City of Wetaskiwin. Coal Lake is a surface water source; the City has historically faced challenges typical of prairie lakes, such as seasonal algal blooms and high levels of organic carbon, colour, and iron. Coal Lake is recharged by surface runoff from the surrounding area and is subject to seasonal precipitation. Coal Lake is located approximately 9 km east of the City of Wetaskiwin. The raw water source could be severely restricted if climate change leads to additional drought and deteriorating water quality due to reduced watershed flow. Wetaskiwin has one withdrawal licence from Coal Lake:

Water Diversion License 00044708-00-00

Permits a combined annual withdrawal of 2,466,9630 m^3 (2,000 acre-feet). Maximum Daily Diversion Rate: 0.33 m^3/s (28,454 m^3/day – 5,220 gal/min).

At present, it is anticipated that the Battle River Water basin has limited unallocated water remaining. If Wetaskiwin requires additional diversion licence amounts, the likely options will be negotiating raw water purchases from other major users. At present, there are no cost estimates for purchasing licences from major users, nor is there any likelihood that a major user would allow the purchase of a portion of their licence. Table 8-5 summarizes the annual raw water diversion requirements for the City of Wetaskiwin; the WTP would have sufficient annual water system allocation for the 25 years of the study period.

Table 8-5 City of Wetaskiwin License Annual Raw Water Demands

Item	2026	2036	2061
Average Day Raw Water Demand, m^3/day	3,883	4,289	4,980
Annual Raw Water Demand, m^3	1,417,660	1,565,485	2,007,865
Current License(s) Allocation, m^3/year	2,466,963	2,466,963	2,466,963
Surplus, m^3/year:	1,049,303	901,478	459,098

Table 8-6 summarizes the peak day raw water demands and the maximum daily diversion allotments from the licences. The current license allows a maximum daily diversion of 28,454 m^3/day, which is sufficient to meet the 25-year peak day raw water demand.

Table 8-6 City of Wetaskiwin Licence Maximum Diversion

Item	2026	2036	2061
Peak Day Raw Water Demand, m^3/day	6,990	7,722	9,902
Current License(s) Maximum Diversion, m^3/day	28,454	28,454	28,454
Surplus, m^3/day:	21,464	20,732	18,552

8.3 Treated Water Storage

The Commission's *Water Supply Policy* details the storage requirements for members and customers at two times the average day demand plus fire storage, where provided. The following detail the storage requirements for both communities.

City of Camrose Treated Water Storage Assessment

The City of Camrose maintains a total existing potable water storage capacity of 25,680 m³, which is distributed across three reservoirs located at two primary high lift pump stations. High Lift Pump Station No. 2 (HLPS #2), situated on the WTP property at 3701 – 50 Street, houses a clearwell reservoir with a capacity of 4,680 m³. Due to the age and condition of the reservoir at HLPS#2, upgrades or replacement should be considered in the next ten years. The remaining 21,000 m³ of storage is provided at High Lift Pump Station No. 3 (HLPS #3) in Rudy Swanson Park, which consists of a 9,000 m³ north reservoir (constructed in 1983) and a 12,000 m³ south reservoir (constructed in 1992). Table 8-7 summarizes the requirements for regional water storage at different time horizons, including fire storage requirements. Fire storage requirements for the City of Camrose is based on the peak fire flow rate as provided in the 2025 Water Distribution System Master Plan of 233 L/s for 3 hours.

Table 8-7 City of Camrose Water Storage Requirements

Parameter	2026	2036	2061
2x Average Day (m^3)	11,019	12,172	15,609
Fire Storage Requirement (m^3)	2,520	2,520	2,520
Total Water Storage Requirement (m^3)	13,539	14,692	18,129
Existing Storage Available (m^3)	25,680	25,680	25,680
Surplus (m^3):	12,141	10,988	7,551

The data indicates that there is sufficient water storage to meet the 35-year design horizon.

City of Wetaskiwin Treated Water Storage Assessment

The City of Wetaskiwin maintains a total treated water storage capacity of 18,485 m³ distributed between two primary locations. The Garden Meadows Reservoir provides the majority of this volume with a capacity of 11,365 m³. The Central Reservoir accounts for the remaining 7,120 m³ and comprises two above-ground tanks with volumes of 2,270 m³ and 4,550 m³, supplemented by 300 m³ of underground storage located at the pumphouse. Table 8-8 summarizes the requirements for regional water storage at different time horizons, including fire storage requirements. Fire storage requirements for the City of Wetaskiwin is based on the peak fire flow rate as provided in the 2020 Water Distribution System Master Plan of 233 L/s for 3 hours.

Table 8-8 City of Wetaskiwin Water Storage Requirements

Parameter	2026	2036	2061
2x Average Day (m^3)	6,348	7,012	8,992
Fire Storage Requirement (m^3)	2,520	2,520	2,520
Total Water Storage Requirement (m^3)	8,868	9,532	11,512
Existing Storage Available (m^3)	18,485	18,485	18,485
Surplus (m^3):	9,617	8,953	6,973

The data indicates that there is sufficient water storage to meet the 35-year design horizon. Although not consider in the analysis, The Central Reservoir concrete is in poor condition and will require refurbishment or replacement, but these costs are not considered as part of this analysis.

County of Wetaskiwin Treated Water Storage Assessment

The County of Wetaskiwin has two storage reservoirs of 240 m^3 each, totalling 480 m^3 of treated water storage. As the County does not have any fire hydrants in the area, no fire storage is required. The total required storage is therefore the two times average day flow, which results in 110 m^3 in 2026, 121 m^3 in 2036 and 155 m^3 in 2061, indicating the County has sufficient storage for the design horizon.

8.4 Facility Upgrade Assessments

There are two main drivers that require WTPs to complete upgrades at the facility: (1) capacity upgrades and (2) infrastructure renewal due to age. The following sections review both the Camrose and Wetaskiwin WTPs for capacity and asset assessments.

Capacity for the existing process units was developed through a review of the system design with recommended design criteria from Alberta Environment and Protected Area's Standards and Guidelines for Municipal Waterworks, existing reports, and drawings. Information for the capacity assessment were gathered from existing reports, drawings, and operational manuals.

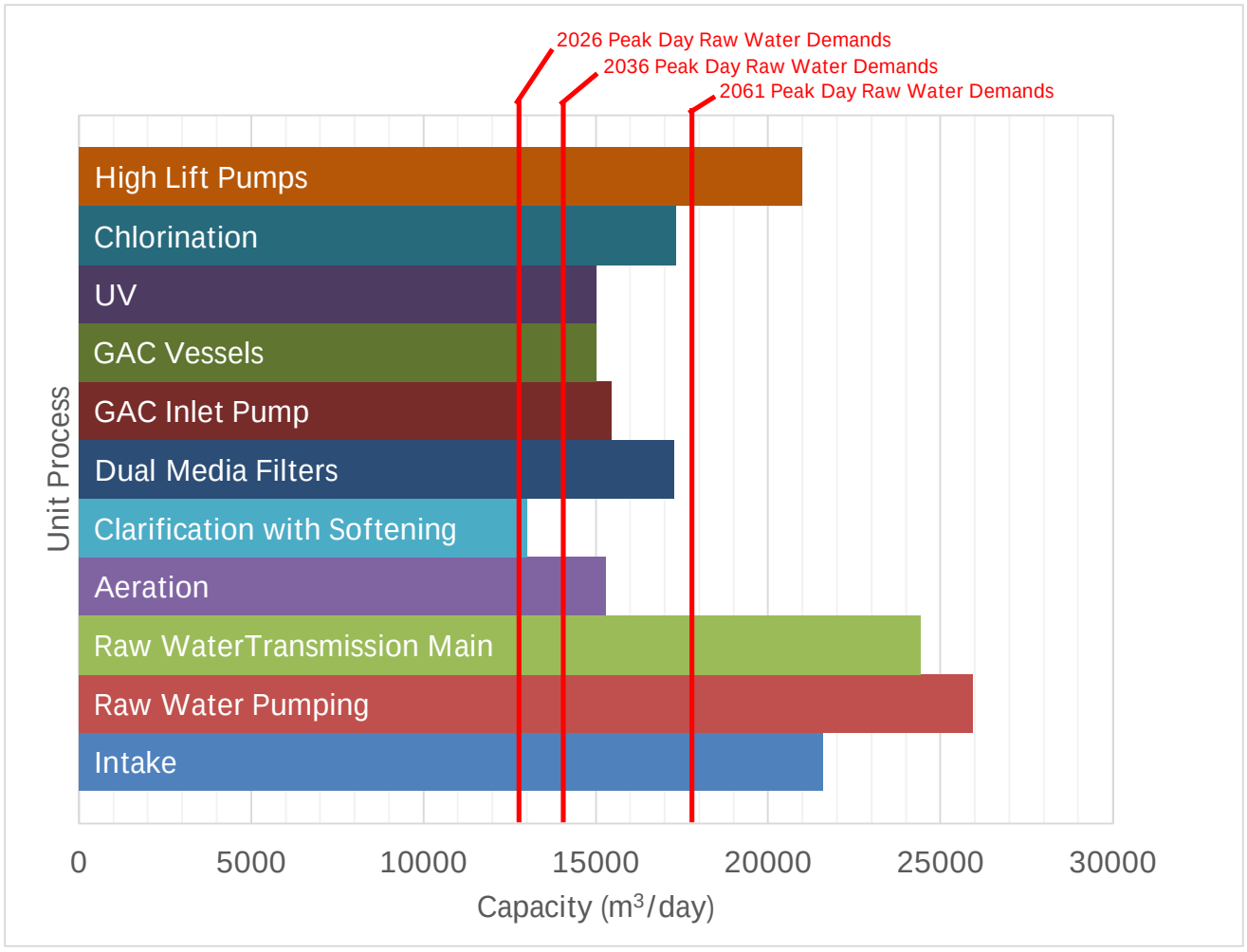
Camrose WTP Capacity Assessment

The Camrose WTP has an existing raw water pump station at Driedmeat Lake, consisting of a raw water intake and a pump station with three raw water pumps and a blower to aerate the pump well. The raw water transmission line runs from the raw water pump station to the WTP, covering approximately 14 km through farmland south of Camrose.

The WTP consists of two solids contact clarifiers in series: the first clarifier acts as a solids-removal unit, and the second acts as a lime softener. The City has the option to operate both units in parallel as solids-clarifying units, but that would require discontinuing softening for the community. Following the softening process, water is passed through re-carbonation tanks before entering three dual media filters, which remove any remaining particles. The water is then filtered through granular activated carbon to remove additional organic carbon. The next step in the process is to treat the water with ultraviolet disinfection to further treat *Giardia* and *Cryptosporidium*. The Camrose WTP uses free chlorine as the primary disinfectant, then adds ammonia to the water. Chloramines are used as a secondary disinfectant in the distribution system to control disinfection by-products.

Figure 8-3 summarizes the different unit processes within the Camrose WTP with their anticipated capacity and the required treatment capacity over the 25-year study horizon. Based on the water demand projections over 25-year study period, the first treatment unit to require upgrades will be the pre-treatment solids contact clarifier, which will need a capacity upgrade within the next 5 years. The addition of the new pre-treatment units would require significant capital investment, and a decision on the regional water line would need to be made quickly to avoid the capital investment. Due to the existing configuration of the plant, a pre-treatment system upgrade may require a complete twinning of the WTP. Before 2061, the existing granular activated carbon facility and ultraviolet disinfection system will also require expansion. Chemical feed systems will require upgrades along with respective unit process upgrades.

Figure 8-3 Camrose WTP Unit Process Capacity



Camrose WTP Asset Assessment

The existing Camrose WTP began construction in 1987; as of 2026, the facility is approximately 39 years old. At this age, the plant requires upgrades to refurbish the existing system and replace the aging infrastructure before failure. In 2026, the City of Camrose is replacing the existing dual media filter underdrains and media. This upgrade is expected to be complete in the spring at a cost of $4.5 million. The City has begun an MCC upgrade for the WTP electrical system, which is near the end of its life. The first phase of this upgrade will occur late in 2026.

ISL Engineering and Land Services completed a City of Camrose "*Raw Water Pumping and Treatment Study*" (July 2022), which looked at the asset condition of the existing raw water and treatment systems and identified the following asset issues.

Electrical

- Motor control centers are at end of life and require replacement, along with renewal of starts and electrical subsystems.

Structural

- Lime Silo: Repair or replacement of six base steel panels and re-coating of the silo exterior due to corrosion and disintegration.
- Roof Assembly: Re-sealing of all roof penetrations, repair of panel clips on the west side, replacement of loose screws, and priming/painting of curbs in the short-term; roof assembly replacement in the long-term.

Process Mechanical

- Clarifiers (Alum and Lime): Removal of corrosion from supports, repainting, and potential replacement of support structures.
- Floc Tanks: Monitoring and interior repair of water leakage through pipe penetrations.
- Chemical Room Exterior Wall: Replacement of corroded/disintegrated metal panels and flashings.

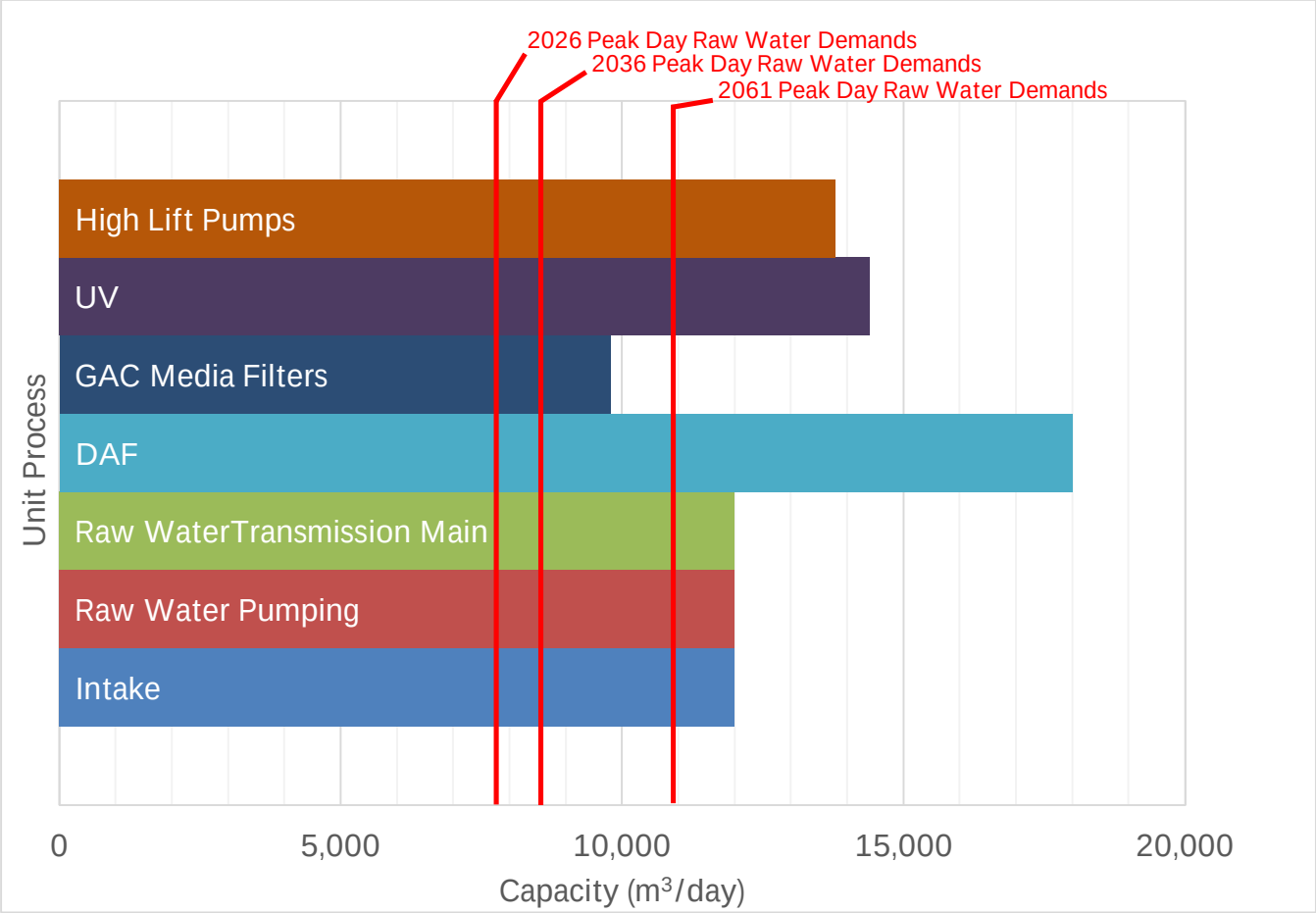
Wetaskiwin WTP Capacity Assessment

The Wetaskiwin WTP has an existing raw water pump station at Coal Lake, consisting of a raw water intake and a pump station with four raw water pumps and a compressor to aerate the intake. The raw water transmission line runs from the raw water pump station at the edge of Coal Lake to the WTP at the top of the hill, covering approximately 200 m along the steep embankment.

The WTP consists of two dissolved flotation clarifiers in parallel. Following the clarification process, water is passed through four granular activated carbon filters, which remove any remaining particles and organic carbon. The next step in the process is to treat the water with ultraviolet disinfection to further treat *Giardia* and *Cryptosporidium*. The Wetaskiwin WTP uses free chlorine as the primary disinfectant, then adds ammonia to the water before the high lift pumps transfer it to the City's reservoir for distribution. Chloramines are used as a secondary disinfectant in the distribution system to control disinfection by-products. There is a transfer line to the Gwynne reservoir, where the water is maintained with a free chlorine residual.

Figure 8-4 summarizes the different unit processes within the Wetaskiwin WTP with their anticipated capacity and the required treatment capacity over the 25-year study horizon. Based on the water demand projections over that time, the Wetaskiwin WTP is not anticipated to require any capacity upgrades.

Figure 8-4 Wetaskiwin WTP Unit Process Capacity



Wetaskiwin WTP Asset Assessment

The existing Wetaskiwin WTP began construction in 1979; as of 2026, the facility is approximately 47 years old. The plant underwent various upgrades in 1982 and 2007. The raw water pumphouse was constructed in 1966. At this age, the plant requires upgrades to refurbish the existing system and replace aging infrastructure before failure occurs.

Associated completed a City of Wetaskiwin "*Facilities Assessment – Water Treatment Plant"* (December 2019), which looked at the asset condition of the existing raw water and treatment systems and identified the following asset issues:

Structural

- Structural Frame: Heavy corrosion is present at a column location near a treatment cell; it requires immediate cleaning and repainting.
- Catwalks/Access: Heavy corrosion exists on catwalk decking above treatment cells. The roof access platform, featuring a chain-supported deck, is a significant safety concern and requires a professional structural analysis or replacement with an engineered system.
- Superstructure: Heavy corrosion is present on the building's superstructure and will need to be replaced.

- Fire Separation: There is no fire damper on ventilation grills or fire stopping on cable tray penetrations between the Electrical Room and the Office.
- Code Compliance: The Fluoride Room uses combustible wood stud walls, and the mezzanine office has a vinyl window with no fire-resistance rating, both of which conflict with the building's non-combustible construction and rated doors.
- Ceilings: The fire-rated gypsum board ceiling in the Boiler Room has cracks, lacks fire taping at joints, and has unsealed pipe penetrations.

Building Mechanical

- Safety Equipment: The safety shower inside the Fluoride Room is severely corroded and must be replaced.
- Heating: Gas-fired, hydronic, and electric unit heaters are operational but nearing or at the end of their service life.
- Ventilation: Exhaust fans in the fluorine, ammonia, and chlorine rooms require replacement when they fail.

Process Mechanical

- Filter Air Scour System: Filter blower at the end of its useful life.
- Ultraviolet Disinfection System: UV system at the end of its useful life; replacement parts are difficult to source – a replacement system should be planned for.
- Dissolved Air Flotation Refurbishment: Dissolved air flotation internals will require refurbishment over the next 25 years as they approach the end of their useful life.
- Granular Activated Carbon Filters: Granular Activated Carbon filters' internals will require refurbishment over the next 25 years as they approach the end of their useful life.

9 GRANT FUNDING REVIEW

Funding availability is a key consideration in evaluating the feasibility of both the regional waterline and WTP upgrade options. In Alberta, several established provincial programs provide cost-shared funding for municipal water infrastructure, with varying alignment depending on project type.

Water for Life Program

Water for Life is the overarching government-wide strategy for water in Alberta. The Water for Life Program, which launched in 2006, provides cost-shared funding to regional commissions or groups of two or more municipalities and consists of two funding streams, for new or existing regional water systems.

Alberta Municipal Water/Wastewater Partnership

The AMWWP, which launched in 1991, provides cost-shared funding to eligible municipalities to help build municipal facilities for water supply and treatment, and wastewater treatment, conveyance, and disposal.

9.1 Regional Waterline

Regional waterline projects are strongly aligned with current provincial priorities focused on regionalization, system efficiency, and long-term water security. The primary funding source is the Water for Life Program, which entails the following:

- Provides cost-shared funding for new regional water systems and extensions to existing systems
- Available to regional commissions or groups of municipalities
- Can fund a significant portion of capital costs (up to ~90–100% for eligible components in some cases)
- Eligible costs include construction, engineering, land acquisition, and associated works
- Prioritizes projects that improve regional collaboration and long-term sustainability

During a meeting between Associated, the Commission, and ATEC (Alberta Transportation and Economic Corridors) on September 4, 2026, due to the value of this project, likely funding opportunity with provincial and federal grants will split the costs with the municipalities to approximately one third each.

Strategic Considerations

Provincial funding programs consistently support regional pipeline projects as they are viewed as more cost-effective and environmentally sustainable than standalone systems. The Province recognizes that implementation of regional pipelines generally come at a short-term cost premium but can save long-term costs. As a result, regional waterline projects typically benefit from strong funding availability and higher competitiveness in grant applications.

9.2 Water Treatment Plant Upgrade

Upgrades to existing water treatment and storage facilities are also eligible for funding but are generally considered lower priority relative to regional system development. The primary funding source is the AMWWP, which entails the following:

- Provides cost-shared funding (municipal water treatment and supply infrastructure upgrades based on a population-based cost share formula: $G = 35 - [0.001\ x\ (P - 10{,}000)]$, *where* G *= Grant funding and* P *= Population*.)

- Based on the estimated population of Wetaskiwin (13,703), grant funding would be 31.3% of project costs
- Based on the estimated population of Camrose (19,984), Grant funding would be 25.0% of project costs
- Eligible costs include construction, engineering, land acquisition, and associated works
- Applicable to both standalone municipal systems and regional facilities

Additionally, the Water for Life Program may provide funding support for upgrades to existing regional systems, subject to an eligibility review.

Strategic Considerations

While funding is available, WTP upgrades may be less competitive where projects do not address long-term supply security or regional integration objectives. Projects focused solely on treatment improvements without resolving source constraints and long-term benefits of regionalization may receive lower prioritization.

9.3 Funding Summary

The regional waterline option benefits from strong alignment with provincial policy objectives, access to higher funding contributions, and an emphasis on regional collaboration and long-term supply reliability.

The WTP upgrade option also remains eligible for funding; however, this option may be less aligned with funding priorities if source water limitations remain unresolved, and such projects typically receive moderate cost sharing support.

Overall, both options are eligible for provincial funding; however, the regional waterline option is more favourably positioned due to its alignment with Alberta's long-term water management strategy. This creates a higher likelihood of securing funding and achieving a greater level of cost sharing, further strengthening its feasibility from a financial and strategic perspective.

10 COSTS ANALYSIS

Given the conceptual nature of this study and the recognition that unknown variables lie beyond its scope, the opinion of probable cost (OPC) estimates presented here include a 30% contingency allowance on the total estimated capital costs. In the OPC, Associated have captured the major scopes of the probable cost estimate in 2026 dollars. However, we cannot guarantee that the actual price will not exceed this estimate due to variables outside Associated's and the communities' control, such as supply chain issues, long timelines, and labour availability. The actual final cost of the project will be determined through further refinement during later design phases and the bidding and construction process. Detailed cost breakdowns are provided in Appendix C.

10.1 Regional Waterline Opinion of Probable Cost

This section presents a preliminary OPCs for the proposed regional waterline options, including estimated construction costs, a contingency allowance of 30%, and non-construction costs of 15%. Non-construction costs include items such as land acquisition, environmental permitting, and engineering services. All cost estimates are provided in 2026 dollars and are based on the assumptions outlined below.

Key Assumptions – Cost Estimation

The preliminary OPCs is based on the following key assumptions:

- Alignment and Length – The pipeline alignment and total length are based on the preliminary routing identified in this study and have not been finalized through detailed design.
- Pipe Diameter and Material – Pipeline diameter and material type are assumed based on preliminary hydraulic analysis and industry-standard materials suitable for regional transmission mains.
- Construction Methodology – Installation will primarily be completed by open cut methods, with trenchless installation (e.g., HDD or auger boring) applied at major crossings (e.g., highways, railways, watercourses).
- Ground Conditions – Subsurface conditions are assumed to be typical for the region, with no unusual geotechnical constraints (e.g., excessive rock, unstable soils, or contamination).
- Utility Crossings – Existing utility crossings are assumed to be manageable using standard construction practices without significant relocation requirements.
- Land Acquisition – Required easements and land access can be obtained at typical market rates and within a reasonable timeframe.
- Environmental and Regulatory Approvals – Environmental permits and regulatory approvals are assumed to be obtainable without significant delays or extraordinary mitigation measures.
- Roadway and Surface Restoration – Restoration requirements are assumed to be limited to typical conditions (e.g., gravel, asphalt, or agricultural lands) with urban reconstruction only within the Cities of Edmonton, Camrose, and Wetaskiwin.
- Exclusions – Costs associated with major unforeseen conditions (e.g., significant geotechnical challenges, extensive utility relocations, or regulatory changes) are not included. Costs for storage upgrades are also not included; it is assumed that the communities will undertake necessary storage expansion as required. Finally, while the pumping requirements in the upstream supply main are included, any pumping upgrades within EPCOR's system to provide this upstream supply main are not included.

The preliminary opinions of probable cost for the regional waterline alignment options are summarized in Table 10-1.

Table 10-1 Regional Waterline Opinion of Probable Costs

Description	Option 1	Option 2	Option 3
Alignment Length	116km	130km	115km
Regional Waterline	$222,065,000	$213,510,000	$188,048,000
New Upstream Supply Main	$70,854,000	$76,480,000	$76,480,000
Contingency (30%)	$87,876,000	$86,997,000	$79,361,000
Non-Construction Costs (15%)	$57,119,000	$56,548,000	$51,585,000
Total Cost	$437,915,000	$433,535,000	$395,484,000
Funding Split (33%)	$145,972,000	$144,512,000	$131,828,000
Total Cost After Funding	$145,972,000	$144,512,000	$131,828,000

10.2 Facility Upgrade and Refurbishment – Opinion of Probable Costs

The Camrose and Wetaskiwin WTPs together will require an estimated $107,575,000 in capital costs to expand capacity and refurbish the existing treatment process to meet the communities' needs for the 25-year study period.

City of Camrose Opinion of Probable Projections

Table 10-2 summarizes the OPC in 2026 dollars, based on the physical and capacity assessments provided in the various documents reviewed. The following assets within the City of Camrose's water treatment systems require maintenance, repair, or refurbishment based on the high-level cost assessment. The assessments do not include any distribution or potable water storage assets that may require maintenance, repair, or refurbishment as part of these cost projections.

The City of Camrose could defer the major requirement of the pre-treatment system clarification and softener capacity expansion, by removing the practice of softening at the water plant, which can be used as a bridge to prevent a major upgrade if the regional waterline goes ahead. If the regional line could be completed within the next 5 years, the majority of these short-term upgrade or refurbishment items could be deferred or minimized to save additional cost.

Table 10-2 City of Camrose WTP Opinion of Probable Cost for Upgrades and Refurbishment

Timeline	Probable Costs
Short-Term (< 10 years) • Lime Silo Refurbishments • Plant Roof Refurbishment • MCC and Electrical Subsystems Refurbishments • Miscellaneous Process Refurbishments • Chlorination System Refurbishment and Capacity Expansion • Pre-treatment System Clarification and Softener Capacity Expansion	$34,700,000
Medium-Term (10 -25 years)	$18,325,000

Timeline	Probable Costs
• Raw Water Intake and Pipeline Refurbishments • Granular Activated Carbon Filter Capacity Expansion • Ultraviolet Disinfection Capacity Upgrades • Granular Activated Carbon Pump Capacity Upgrades • High Lift Pump Refurbishment	
Long-Term (25-35 years) • Dual Media Filter Capacity Expansion • Aeration Expansion	$15,150,000
Total Cost	$68,175,000
Provincial Funding (25.0%)	$17,044,000
Total Cost After Funding	$51,131,000

City of Wetaskiwin Opinion of Probable Cost Projections

Table 10-3 summarizes the opinion of probable cost in 2026 dollars, based on the physical and capacity assessments provided in the various documents reviewed. The following process assets within the City of Wetaskiwin water treatment systems require maintenance, repair, or refurbishment based on the high-level cost assessment. The assessments do not include any distribution or potable water storage assets that may require maintenance, repair, or refurbishment as part of these cost projections. The existing Central Reservoir is in poor condition and requires refurbishment or replacement. If the regional line could be completed within the next 5 years, the majority of these short-term upgrade or refurbishment items could be deferred or minimized to save additional cost.

Table 10-3 City of Wetaskiwin WTP Opinion of Probable Cost for Upgrades and Refurbishment

Timeline	Probable Costs
Short -Term (< 10 years) • Raw Water Pumphouse Refurbishment • UV Replacement • Residual Management Handling • Structural and Building Mechanical Refurbishments	$18,900,000
Medium-Term (10 -25 years) • Dissolved Air Flotation Refurbishment • Granular Activated Carbon Filter Refurbishment • High Lift Pump Replacement	$11,000,000
Long-Term (25-35 years) • Granular Activated Carbon Filter Expansion	$9,500,000
Total Cost	$39,400,000
Potential Funding (31.3%)	$12,332,000
Total Costs After Funding	$27,068,000

10.2.1 Operational & Maintenance Cost

Operation and maintenance costs for the proposed regional waterline and the upgraded WTPs include the ongoing expenses required to operate, monitor, and maintain the system over its service life. At the feasibility stage, these costs are estimated at a high-level based on typical industry practices for both regional transmission pipelines and WTP operation.

To accurately forecast the total lifetime cost of an operational strategy or a capital upgrade, engineers and utility managers rely on Net Present Value (NPV). NPV translates a future stream of annual O&M expenditures into a single, equivalent dollar amount in today's currency. This allows decision-makers to directly compare options with different upfront capital costs and long-term operational burdens on an apples-to-apples basis. NPV was determined using an inflation rate of 3.5% (average of the 6-year data) and 3.5% discount rate.

Pipeline Opinion of Probable Operations and Maintenance Costs

Key components of O&M costs include:

Operation Costs

- Energy consumption associated with pumping (if applicable), including booster stations and pressure management.
- Routine system monitoring and control (e.g., SCADA systems, telemetry, and communications).
- Labour for system operation, administration, and regulatory compliance.

Routine Maintenance

- Regular inspection and exercising of valves and appurtenances (e.g., isolation valves, air release/vacuum valves, blow-offs).
- Flushing and cleaning of the pipeline to maintain water quality.
- General upkeep of chambers, access points, and related infrastructure.

Repairs and Corrective Maintenance

- Minor repairs such as leak detection and repair, valve replacement, and fitting adjustments.
- Emergency response and repair activities associated with pipe breaks or system failures.

Asset Management and Monitoring

- Condition assessment programs, including periodic inspections and monitoring of pipeline performance.
- Implementation of asset management systems to track maintenance activities and support long-term planning.

Surface and Access Maintenance

- Maintenance of access routes, easements, and ROW areas, including vegetation control and minor restoration works.

At this stage, O&M costs are expected to be relatively low compared to the initial capital investment, as regional waterlines typically require limited maintenance when properly designed and constructed. However, ongoing maintenance and proactive asset management are essential to ensure system reliability, maintain water quality, and

maximize service life. Table 10-4 details the estimated O&M costs for each alignment alternative for the proposed regional waterline.

Table 10-4 Regional Waterline O&M Costs

Alignment	O&M Costs
Alignment Option 1	$8,924,736
Alignment Option 2	$9,533,155
Alignment Option 3	$9,011,523

WTP Opinion of Probable Operations and Maintenance Costs

The evaluation of the long-term economics of WTP or pipeline operations and maintenance, analyzing a single year's budget is rarely enough. Chemical costs fluctuate, energy demands shift, and infrastructure ages.

The following key assumptions are typically applied when estimating O&M costs for a WTP at the feasibility stage:

Treatment Capacity and Utilization

- The plant operates within its design capacity, with average and peak flows consistent with projected demand.
- Allowance for partial loading in early years and full utilization over the planning horizon.

Treatment Process

- Conventional treatment processes are assumed (e.g., coagulation, flocculation, filtration, disinfection), unless otherwise specified.
- Treatment complexity (e.g., advanced processes such as membrane filtration or GAC) is reflected in higher chemical, energy, and maintenance costs.

Staffing Requirements

- Staffing levels are based on typical requirements for each facility, including certified operators, maintenance personnel, and administrative support.

Chemical Usage

- Chemical consumption (e.g., coagulants, disinfectants, pH adjustment) is based on typical raw water quality and standard dosing rates.

Energy Consumption

- Power usage is based on typical energy demands for pumping, treatment processes, and building systems.
- Standard utility rates for Alberta are applied, with no allowance for significant price volatility.

Maintenance and Repairs

- Preventative maintenance programs are implemented in accordance with manufacturer recommendations and industry best practices.

- Annual maintenance costs are estimated as a percentage of capital cost, with periodic major maintenance for mechanical and electrical equipment.

Asset Renewal

- Major equipment (e.g., pumps, valves, instrumentation, electrical systems) will require periodic replacement within typical service life ranges (15–30 years).
- No major structural rehabilitation is assumed within the planning horizon.

Automation and Control

- A standard SCADA system is in place to support monitoring and control, reducing manual intervention.
- Instrumentation and control systems are assumed to be reliable with routine calibration and maintenance.

The Camrose and Wetaskiwin annual WTP cost projections were gathered using publicly available data and discussions with the municipalities' public works department. Table 10-5 summarizes the O&M costs for the next 35 years of operation.

Table 10-5 WTP O&M Costs

WTP	O&M Costs
Camrose	$113,750,000
Wetaskiwin	$48,659,086

10.3 Life Cycle Cost Estimate

Table 10-6 summarizes the total life cycles cost for the operation of the WTPs and pipelines for the next 35 years, presented as NPV.

Table 10-6 Opinion of Probable Life Cycle Cost (NPV)

Option	Capital Cost	Remainder After Funding	O&M Cost	Life Cycle Cost
WTP Upgrades				
Camrose WTP	$68,175,000	$51,131,000	$113,750,000	$181,925,000
Wetaskiwin WTP	$39,400,000	$27,068,000	$48,659,086	$88,059,086
Total WTP	$107,575,000	$78,199,000	$162,409,086	269,984,086
Regional Pipeline				
Option 1	$437,915,000	$145,972,000	$8,924,736	$440,950,736
Option 2 (Preferred Option)	$433,535,000	$144,512,000	$9,533,155	$437,178,155
Option 3	$395,484,000	$131,828,000	$9,011,523	$398,605,523

Based on the alignment options analysis, Alignment Option 2 is the preferred alignment for the regional waterline:

- The majority of the Option 2 alignment can follow existing road ROW, with the least highway and roadway crossings.
- The hydraulic benefits to the Commission's existing system in Option 2 are the greatest – lowest pumping requirements at the Nisku Booster Station, greatest flexibility, and capacity for future growth along the Armena line, and the ability to service Miquelon Lake.
- The environmental analysis shows Option 2 likely require less disturbance and reclamation of agricultural soils, fewer crossings of waterbodies, and avoids intersecting with EIA lands or Telford Lake.

11 RISK ASSESSMENT

A comparative risk assessment was completed to evaluate the relative risks associated with:

- Construction of a new regional water transmission pipeline and
- Upgrades to an existing standalone WTP.

Table 11-1 details the regional waterline risks, and Table 11-2 details the WTP upgrade risks.

Table 11-1 Regional Waterline Installation Risks

Risk	Description
Geotechnical and Subsurface Conditions	Variable soils, groundwater, and obstructions affecting trenching and HDD feasibility
Land Approvals and Right-of-Way	Requires easements, utility crossings, and multi-jurisdictional approvals
Environmental Impacts	Surface disturbance (open cut) and frac-out risk (HDD)
Design Complexity	Hydraulic design, surge analysis, and alignment optimization over long distances
Construction Risk	Large diameter installation (500–1,050 mm), contractor capability, staging logistics
Capital Cost	High upfront cost for transmission infrastructure
Funding Availability	Strong alignment with Water for Life funding for regional systems (up to ~90–100% eligible costs in some cases)
Stakeholder Coordination	Multiple municipalities and agencies involved
Climate Change and Resilience	Provides access to diversified/regional water sources, improving long-term resilience
Long-Term Operations	Low operational risk once constructed

Table 11-2 Water Treatment Plan Upgrade Risks

Risk	Description
Source Water Availability	Existing raw water supply is declining and may not meet future demand
Construction Risk	Integration with aging infrastructure while maintaining operations
Regulatory and Water Quality	Changing standards or raw water variability may require additional treatment
Land and Site Constraints	Limited expansion space at existing water treatment sites
Design Complexity	Upgrades within existing footprint and maintaining operations during construction

Risk	Description
Construction Phasing	Sequencing upgrades while maintaining continuous treatment
Capital Cost Efficiency	Upgrades may not provide long-term value if supply is constrained
Funding Availability	Eligible under AMWWP (typically up to ~75% cost share), but often lower priority vs regionalization
Operational Complexity	Ongoing treatment and maintenance requirements; Potential future lack of qualified operators
Climate Change and Source Risk	Increased variability in source water quality/quantity (drought sensitivity)
Residual Asset Life	Existing infrastructure may limit upgrade effectiveness

The comparative risk assessment matrix provided in Table 11-3 summarizes the relative likelihood, impact, and overall risk associated with the regional waterline and standalone WTP upgrade alternatives.

The assessment considers technical, environmental, operational, and long-term service risks. Risk ratings incorporate both likelihood and impact severity, defined as follows:

- Low: Minor impact to cost, schedule, or operations; manageable within existing contingencies
- Moderate: Noticeable impact requiring management effort; may affect budget or schedule
- High: Significant impact to project delivery, cost, or service levels
- Critical: Fundamental risk to system viability, regulatory compliance, or long-term service delivery

Table 11-3 Comparative Risk Assessment

Risk Category	Regional Waterline			WTP Upgrade		
	Likelihood	Impact	Overall Risk	Likelihood	Impact	Overall Risk
Geotechnical & Subsurface Conditions	Moderate	High	High	Low	Moderate	Low–Moderate
Land & Site Approvals & Constraints	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Environmental Impacts	Moderate	Moderate	Moderate	Low	Moderate	Low–Moderate
Design Complexity	Moderate	Moderate	Moderate	High	High	High
Construction Complexity	Moderate	Moderate–High	Moderate–High	High	High	High
Construction Phasing & Maintaining Operations	Low	Low	Low	High	High	High

Risk Category	Regional Waterline			WTP Upgrade		
	Likelihood	Impact	Overall Risk	Likelihood	Impact	Overall Risk
Regulatory & Water Quality Compliance	Low	Moderate	Low–Moderate	Moderate	High	High
Capital Cost Exposure	High	High	High	Moderate	High	High
Funding Availability	Low	Moderate	Low–Moderate	Moderate	Moderate	Moderate
Stakeholder Coordination	Moderate	Moderate	Moderate	Low	Low	Low
Climate Change & Drought Resilience	Low	Low	Low	High	Critical	Critical
Source Water Availability	Low	Low	Low	High	Critical	Critical
Residual Asset Life & Long-Term Reliability	Low	Moderate	Low–Moderate	High	High	High
Long-Term Operations	Low	Low	Low	Moderate	Moderate	Moderate

The risk assessment of the two options highlights a clear distinction between short-term project delivery risks and long-term system reliability risks. While both alternatives present manageable design and construction considerations, the key differentiator lies in long-term water supply security, funding alignment, and resilience to future uncertainty.

Regional Waterline

- Higher design and construction risks (Moderate–High)
- Lower long-term and strategic risk
- Favourable funding environment due to strong provincial support for regionalization
- Improves climate resilience and long-term supply security

WTP Upgrade

- Moderate construction complexity but significant long-term risks
- Includes a Critical Risk (source water availability) that cannot be mitigated through treatment upgrades alone
- Funding is available but generally less aligned with long-term provincial priorities compared to regional systems
- More vulnerable to climate-driven supply variability

Overall, while the regional waterline option presents moderate-to-high construction-related risks, these are generally manageable and limited to the project delivery phase. In contrast, the standalone WTP upgrade option is subject to a high-likelihood, critical-impact risk associated with declining source water availability, representing a fundamental constraint to long-term system reliability. From a lifecycle and strategic perspective, the regional waterline is therefore considered the lower risk and more sustainable solution.

12 OPTIONS COMPARISON

An option comparison was undertaken to assess the key benefits and trade-offs of the regional waterline and WTP upgrade options, shown in Table 12-1. The assessment considers capital cost, constructability, risk, funding alignment, and long-term system performance.

Table 12-1 Options Comparison

Criteria	Regional Waterline	WTP Upgrade
Capital Cost	High upfront capital cost for transmission infrastructure	Lower capital cost for plant upgrades
O&M Costs	Lower Annual O&M Costs	Higher Annual O&M Costs
Constructability	Moderate–High complexity due to pipeline length, diameter, and crossings	Moderate complexity; constrained by working within an active facility
Construction Risk	Higher short-term risk (geotechnical conditions, HDD, staging)	Moderate risk related to sequencing and maintaining operations
Long-Term Risk	Provides reliable long-term water supply	Constrained by source water availability and existing infrastructure
Source Water Security	Accesses regional supply and diversifies sources	Critical risk due to declining or limited source water
Funding Alignment	Strong; supported by provincial programs favouring regionalization	Moderate; eligible for funding but generally lower priority
Environmental Impact	Moderate (open cut disturbance; localized HDD benefits)	Low–Moderate; limited new disturbance but ongoing source impacts
Land & Approvals	Requires easements and multi-jurisdictional coordination	Minimal land impacts; work within existing site
Climate Resilience	Improves drought resilience and long-term reliability	Vulnerable to climate-driven source variability
Operational Complexity	Simple conveyance system once constructed	Ongoing treatment and maintenance requirements; Potential future lack of qualified operators
Future Growth	Supports regional expansion and future demand	Limited; constrained by plant capacity and source availability

Summary of Comparison

- The regional waterline option is characterized by higher upfront cost and construction complexity but provides significant long-term advantages, including secure water supply, strong funding alignment, and improved climate resilience.
- The standalone WTP upgrade option offers lower initial disruption but is constrained by long-term risks, particularly the critical limitation of source water availability, which cannot be resolved through treatment improvements alone.

While both options are technically feasible, the comparison indicates that the regional waterline provides a more robust, scalable, and sustainable solution. Despite higher short-term construction risks, it mitigates the most significant long-term constraint—reliable access to sufficient source water—and aligns more closely with provincial infrastructure funding priorities and regional water management strategies.

13 CONCLUSION AND RECOMMENDATIONS

- The feasibility assessment confirms that a regional water supply from the Commission to the City of Camrose, City of Wetaskiwin, and the County of Wetaskiwin is technically feasible, subject to required upstream infrastructure upgrades requiring coordination with EPCOR.
- The proposed system is capable of meeting projected water demands to the 2061 planning horizon, based on established growth rates and design criteria.
- Regional supply cannot be implemented until key infrastructure is in place, including the EPCOR booster station and second feedline to Beaumont.
- Alignment options connecting through Beaumont provide operational and hydraulic advantages, including reduced head losses and improved system efficiency.
- Existing water treatment plants in Camrose and Wetaskiwin will require significant capital upgrades (approximately $107 million) to maintain and expand capacity over the planning horizon. However, expanding plant capacity may not be a viable long-term solution for servicing population growth due to the uncertainty of the available raw water supply, as discussed below.
- The projected life cycle cost of the regional solutions is comparable to the stand alone WTP needs over a 35-year term.
- Continued reliance on existing raw water sources presents long-term risks related to both water quality and supply reliability. Challenges associated with algae growth, elevated organic levels, and increasing climate variability are expected to place additional pressure on these sources over time. These concerns are compounded by ongoing hydrologic constraints within the Battle River Basin, which has remained under a provincial water shortage advisory since May 31, 2023.
- The regional water supply alternative provides a more reliable, resilient, and sustainable long-term solution, reducing dependence on vulnerable local water sources and improving regional system integration.
- Alignment Option 2 is identified as the preferred option based on environmental considerations, constructability, and overall system performance.

Recommendations

If the Commission is supportive of further developing a regional water supply project, it is recommended that the Commission request support from the City of Wetaskiwin, the City of Camrose, and County of Wetaskiwin to proceed with provincial funding support and advance the preferred regional servicing option. Based on the findings of this feasibility assessment, the following next steps are recommended:

- Submit an application for grant funding through the Alberta Water for Life Program to support the next phase of project development.
- Proceed with the regional water supply option, with Alignment Option 2 identified as the preferred alignment, subject to confirmation during future design phases.
- Work collaboratively with the Cities to determine a preferred governance and financial framework for the regional system extension.
- Advance the project into the preliminary and detailed design phase, including refinement of the preferred alignment, hydraulic modelling, geotechnical investigations, utility coordination, and environmental approvals, subject to funding approval.

- Continue coordination with EPCOR and other stakeholders to confirm upstream infrastructure requirements, system capacity, implementation timing, and integration with planned regional system upgrades.
- Complete additional permitting, land acquisition, and ROW coordination activities as required for the preferred alignment.
- Refine capital cost estimates, project phasing, and implementation scheduling as part of the detailed design process.
- Work with the Cities to defer major capital upgrades to the existing standalone water treatment plants, where feasible, pending confirmation of the regional servicing approach, in order to avoid redundant or potentially stranded infrastructure investments.

Advancing to preliminary and detailed design and securing external funding are critical next steps to confirm project costs, reduce risk, and position the project for implementation. With the deteriorating water supply and imminent decision required on WTP investments, proceeding with the initial phases of the project, including land acquisition as quickly as possible is critical to ensure no communities are left without safe water supply. The regional water supply system represents a strategic investment for the Commission, Municipalities, and the Province that will enhance long-term water security, operational reliability, and regional collaboration for all participating municipalities.

CLOSURE

This report was prepared for the Capital Region Southwest Water Services Commission to investigate the feasibility of regional water supply to the City of Camrose and Wetaskiwin and the County of Wetaskiwin.

The services provided by Associated Engineering Alberta Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practising under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering Alberta Ltd.

Chris Parfitt, P.Eng.
Project Manager

Emma Knapik, E.I.T.
Project Engineer-In-Training

Candice Gottstein, P.Eng.
Technical Specialist, Water Modelling

Nicholai Kristal, P.Eng.
Process Engineer

Lauren Dombroski, B.I.T.
Environmental Scientist

APPENDIX A - ENVIRONMENTAL OVERVIEW REPORT

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

REPORT

Capital Region Southwest Water Services Commission

Camrose and Wetaskiwin Feasibility Study
Environmental Overview
2025-3300

JUNE 2026

carbon neutral since 2009
PROUDLY CANADIAN
BEST MANAGED COMPANIES

https://aeris.ae.ca/DMS/view_document.aspx?ID=12976466&Latest=true

CONFIDENTIALITY AND © COPYRIGHT FOR THIS REPORT

This document is for the sole use of the addressee and Associated Engineering Alberta Ltd. The document contains proprietary and confidential information that shall not be reproduced in any manner or disclosed to or discussed with any other parties without the express written permission of Associated Engineering Alberta Ltd. Information in this document is to be considered the intellectual property of Associated Engineering Alberta Ltd. in accordance with Canadian copyright law.

This report was prepared by Associated Engineering Alberta Ltd. for the account of Capital Region Southwest Water Services Commission . The material in it reflects Associated Engineering Alberta Ltd.'s best judgement, in the light of the information available to it, at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Associated Engineering Alberta Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TABLE OF CONTENTS

SECTION			PAGE NO.
Table of Contents			i
List of Tables			ii
List of Figures			iii
1	Introduction		1
2	Desktop Review Methods		1
3	Baseline Environmental Features		2
	3.1	Land Use	4
	3.2	Soils and Topography	5
	3.3	Surface Water and Aquatic Resources	5
	3.4	Vegetation	7
	3.5	Wildlife	8
	3.6	Historical and Cultural Resources	10
	3.7	Potential Contamination	11
4	Regulatory Framework		11
5	Option Comparison		19
6	Planning Recommendations		21
Closure			
References			
Appendix A – Soils			
Appendix B – Surface Water and Aquatic Resources			
Appendix C – Wildlife			

LIST OF TABLES

		PAGE NO.
Table 1-1	Alignment Options	1
Table 3-1	Crown Land Reservations	4
Table 3-2	Topography	5
Table 3-3	Waterbody Crossings	6
Table 3-4	Wetland Crossings	6
Table 3-5	Historic Resource Value 1h Listings Intersected by the Project	10
Table 3-6	Number of Pipeline Crossings and Long-Term Management Cases for Each Alignment Option	11
Table 4-1	Anticipated Regulatory Permits	12
Table 4-2	Regulatory Compliance Recommendations	16
Table 5-1	Summary of Environmental Sensitivities for Alignment Options	19

LIST OF FIGURES

PAGE NO.

Figure 3-1 Environmental Overview 3

1 INTRODUCTION

The City of Camrose (Camrose), the City of Wetaskiwin (Wetaskiwin), and the County of Wetaskiwin have approached the Capital Region Southwest Water Services Commission (CRSWSC) regarding receiving regional water supply to each of the municipalities. CRSWSC is supportive of supplying water to the municipalities, but further study is required to confirm the feasibility and cost.

Associated Engineering Alberta Ltd (Associated). provides this environmental overview for CRSWSC in support of the feasibility study by identifying environmental sensitivities and anticipated regulatory requirements for three water transmission line alignment options (Table 1-1). As the project is currently in the feasibility stage, the design and construction methods have not yet been determined.

Table 1-1 Alignment Options

Alignment Option	Length (km)	ATS Start	ATS End	Description
1	90.5	SW-17-51-24-W4M	NW-34-46-20-W4M	Twinned line from Nisku booster station to Millet, new line to Wetaskiwin, new line to Camrose
2	106.1	NW-22-50-24-W4M	SW-25-46-24-W4M	New line from future second feed line in Beaumont, twinned line to Armena, new line to Camrose, new line to Wetaskiwin
3	96.1	SE-16-50-24-W4M	NW-34-46-20-W4M	New line from future second feed line in Beaumont, twinned line to Millet, new line to Wetaskiwin, new line to Camrose

2 DESKTOP REVIEW METHODS

Associated reviewed the following resources in preparing this report:

- AbaData3 (AbaData Inc. 2026);
- Agricultural Region of Alberta Soil Inventory Database (Government of Alberta 2026b);
- Alberta Conservation Information Management Systems (ACIMS) (Government of Alberta 2026a);
- Alberta Register of Historic Places (Government of Alberta 2026g);
- Early Detection and Distribution Mapping System (EDDMapS) (University of Georgia 2026);
- Environmental records viewer (Government of Alberta 2026d);
- Fisheries and Wildlife Management Information System (FWMIS) (Government of Alberta 2026e); and
- GeoDiscover Alberta (Government of Alberta 2026f).

The following information was documented from these resources, where available:

- Land use;
- Soils and topography;
- Surface water and aquatic resources (including waterbodies, wetlands, and fish);
- Vegetation;
- Wildlife;
- Historic and cultural resources; and
- Potential contamination.

The sensitivities identified were used to compile the anticipated regulatory requirements and compliance considerations.

This report was completed at a desktop level only. No field surveys (e.g., rare plant surveys, wildlife surveys) were completed, and no desktop or field wetland delineations were completed.

3 BASELINE ENVIRONMENTAL FEATURES

The environmental sensitivities identified for each alignment are summarized in Figure 3-1. The data presented in this overview are based on the alignment options as shown in Figure 3-1 and are subject to change.

Ochre Dagger Moth

FWIMT Shows seven crossings of Blackmud Creek from SE-7-51-24-W4M to NW-8-51-24-W4M due to meandering stream morphology

Long-Leaved Bluets

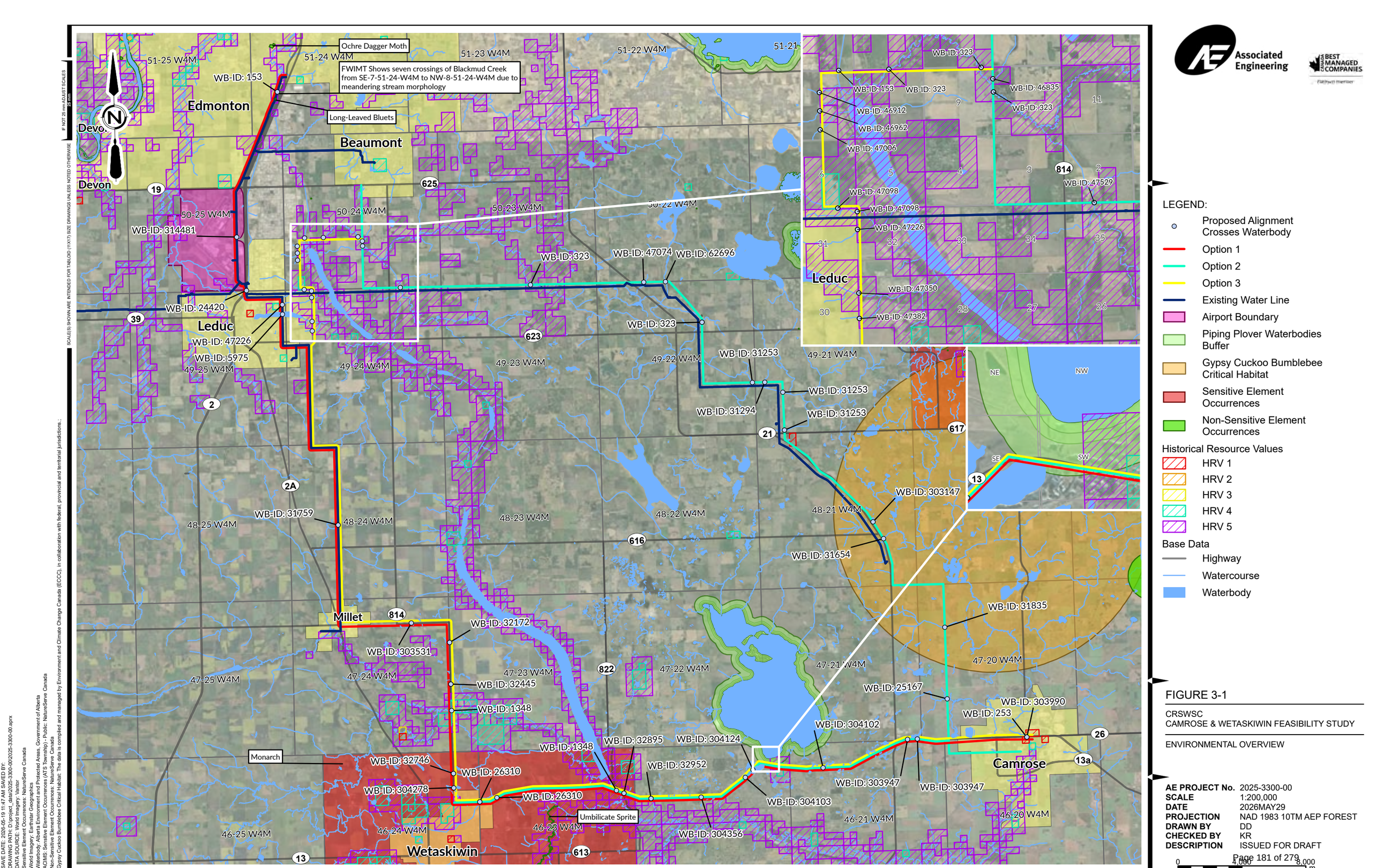
Edmonton
Devon
Beaumont
Leduc
Millet
Monarch
Camrose
Wetaskiwin
Umbilicate Sprite

51-25 W4M | 51-24 W4M | 51-23 W4M | 51-22 W4M | 51-21
50-25 W4M | 50-24 W4M | 50-23 W4M | 50-22 W4M
49-25 W4M | 49-24 W4M | 49-23 W4M | 49-22 W4M | 49-21 W4M
48-25 W4M | 48-24 W4M | 48-23 W4M | 48-22 W4M | 48-21 W4M
47-25 W4M | 47-24 W4M | 47-23 W4M | 47-22 W4M | 47-21 W4M | 47-20 W4M
46-25 W4M | 46-24 W4M | 46-23 W4M | 46-21 W4M | 46-20 W4M

WB-ID: 153
WB-ID: 314481
WB-ID: 24420
WB-ID: 47226
WB-ID: 5975
WB-ID: 323
WB-ID: 47074
WB-ID: 62696
WB-ID: 31253
WB-ID: 31294
WB-ID: 303147
WB-ID: 31654
WB-ID: 31759
WB-ID: 32172
WB-ID: 303531
WB-ID: 32445
WB-ID: 1348
WB-ID: 32746
WB-ID: 26310
WB-ID: 304278
WB-ID: 32895
WB-ID: 32952
WB-ID: 304124
WB-ID: 304103
WB-ID: 304356
WB-ID: 31835
WB-ID: 25167
WB-ID: 304102
WB-ID: 303947
WB-ID: 303990
WB-ID: 253
WB-ID: 46835
WB-ID: 46912
WB-ID: 46962
WB-ID: 47006
WB-ID: 47098
WB-ID: 47529
WB-ID: 47350
WB-ID: 47382

19 | 625 | 39 | 623 | 2 | 2A | 21 | 617 | 814 | 616 | 822 | 13 | 613 | 26 | 13a

NE | NW | SE | SW



LEGEND:

- Proposed Alignment Crosses Waterbody
- Option 1
- Option 2
- Option 3
- Existing Water Line
- Airport Boundary
- Piping Plover Waterbodies Buffer
- Gypsy Cuckoo Bumblebee Critical Habitat
- Sensitive Element Occurrences
- Non-Sensitive Element Occurrences

Historical Resource Values

- HRV 1
- HRV 2
- HRV 3
- HRV 4
- HRV 5

Base Data

- Highway
- Watercourse
- Waterbody

FIGURE 3-1

CRSWSC
CAMROSE & WETASKIWIN FEASIBILITY STUDY

ENVIRONMENTAL OVERVIEW

AE PROJECT No.	2025-3300-00
SCALE	1:200,000
DATE	2026MAY29
PROJECTION	NAD 1983 10TM AEP FOREST
DRAWN BY	DD
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 4,000 8,000 m

IF NOT 25 mm ADJUST SCALES
SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

SAVE DATE: 2026-05-19 11:47 AM SAVED BY:
DRAWING PATH: D:\project_data\2025-3300-00\2025-3300-00.aprx
DATA SOURCE: World Imagery: Vantor
Sensitive Element Occurrences: NatureServe Canada
World Imagery: Earthstar Geographics
Waterbody: Alberta Environment and Protected Areas, Government of Alberta
Airport Boundary: Alberta Transportation and Economic Corridors (AS Ownership)
Non-Sensitive Element Occurrences: NatureServe Canada, Public: NatureServe Canada
Gypsy Cuckoo Bumblebee Critical Habitat: The data is compiled and managed by Environment and Climate Change Canada (ECCC), in collaboration with federal, provincial and territorial jurisdictions. ;

3.1 Land Use

Alberta is divided into two broad land management areas: the Green Area, which is generally forested Crown land, and the White Area, which is generally privately owned developed/settled land. All alignments are within the White Area.

All alignments intersect primarily agricultural land use and some country residential (Camrose County 2025, County of Wetaskiwin 2024, Leduc County 2025). Options 1 and 3 intersect agricultural land outside the road right-of-way between Leduc and Millet. Option 3 also intersects agricultural land outside the road right-of-way between Beaumont and Leduc. These stretches will likely require greater temporary access considerations. The twinning of the existing waterline for Option 1 between Nisku and Leduc intersects Edmonton International Airport lands, which are owned by Transport Canada.

All alignments intersect Crown land reservations (Alberta Environment and Protected Areas 2026) between Wetaskiwin and Camrose. A Crown land reservation is a "record within the public land registry that identifies and provides notice to users that a specified management intent as supported by policy and government programs applies to a parcel of crown land" (Government of Alberta 2026h). Table 3-1 presents the details of the Crown land reservations.

Table 3-1 Crown Land Reservations

Reservation Number	Reservation Holder	Purpose	Reason	Effective Date
CLR780086	Department of Environment and Water	Water management	Infrastructure protection	March 1, 1978
CLR850010	Red Deer Office – Fish and Wildlife Department of Sustainable Resource Development	Fish and wildlife resources	Multi-species habitat conservation	April 22, 1985
CLR900321	Department of Environment and Water	Water management	Infrastructure protection	November 27, 1990
CLR920229	Vermilion Office – Fish and Wildlife Department of Sustainable Resource Development	Fish and wildlife resources	Waterfowl habitat and population conservation	October 27, 1992

3.2 Soils and Topography

Government soil databases provide cursory information on the soil types that intersect the alignment options. Soil polygons from the Agricultural Region of Alberta Soil Inventory Database are detailed in Appendix A. Option 1 primarily intersects Chernozemic soils, with some Solonetzic soils from south Edmonton to Wetaskiwin. Option 2 primarily intersects Chernozemic soils from Beaumont to Highway 21 north of Township Road 480 and Solonetzic soils from south of Township Road 480 to Camrose. Option 3 primarily intersects Chernozemic soils, with some Gleysolic and Solonetzic soils between Beaumont and Wetaskiwin. All three options primarily intersect Chernozemic soils, with some Solonetzic and Gleysolic soils between Wetaskiwin and Camrose.

All options primarily intersect previously disturbed soils in existing roads and agricultural areas. Options 1 and 3 will likely involve more considerations for handling of agricultural soils than Option 2. The maximum and average slopes for each option were determined using the elevation profile in Google Earth Pro V. 7.3.6.9285 (2024) and are detailed in Table 3-2.

Table 3-2 Topography

Alignment Option	Maximum Slope	Average Slope
1	8.6%	0.7%
2	14.2%	2.1%
3	8.9%	0.8%

Clubroot (*Plasmodiophora brassicae*) is a known agricultural pest in Alberta. Field infestations have been documented in Edmonton, Leduc County, the County of Wetaskiwin, and Camrose County, based on 2024 surveyor results (Government of Alberta 2026c). Clubroot is anticipated to be a concern for all options.

3.3 Surface Water and Aquatic Resources

All options are within the North Saskatchewan River basin. The basin hydrology includes the North Saskatchewan River, starting in the ice fields of Banff National Park and flowing eastward across Alberta. Inflow to the North Saskatchewan River is from the Clearwater, Sturgeon, and Vermilion Rivers. The basin covers around 80, 000 km^2, approximately 9% of Alberta by area (Canada Water Portal 2012). The options are located in the Hydrologic Unit Code (HUC) 6 watershed boundaries of Whitemud–Blackmud Creeks and Upper Battle River–Pigeon Lake (Government of Alberta 2020e).

3.3.1 Waterbody Crossings

Associated searched FWMIS to identify waterbody crossings for the alignment options. Option 2 involves fewer waterbody crossings than Options 1 and 3 (Table 3-3). The waterbodies and their respective *Water Act* Code of Practice classifications are listed in Table B-1 of Appendix B. The alignment options may involve multiple crossings of the same waterbody within the same Alberta Township System quarter section due to stream morphology.

Shallow open water and lake crossings are concentrated along Highway 13 between Camrose and Wetaskiwin for all options. The twinning of Option 1 intersects Telford Lake for approximately 500 m.

There is evidence of recreational watercraft use of Pipestone Creek (Barnetson 2022, Adventure Alberta 2025), which will be crossed by all alignments. Pipestone Creek may be considered navigable under the *Canadian Navigable Waters Act* (RSC 1985, c. N-22).

Table 3-3 Waterbody Crossings

Alignment Option	Number of Waterbody Crossings
1	31
2	26
3	31

3.3.2 Wetlands

Associated searched AbaData3 using the Alberta Biodiversity Monitoring Institute Wetland Inventory map layer to identify the potential for impacts to wetlands. Option 3 involves fewer crossings of mapped wetlands than Options 1 and 2. Most of the mapped wetlands are marshes, which are concentrated south of Hay Lakes for Option 2 and along Highway 13 between Camrose and Wetaskiwin for all three options. Wetland information is summarized in Table 3-4.

Table 3-4 Wetland Crossings

Wetland Type	Option 1	Option 2	Option 3
Marsh	25	32	22
Swamp	10	9	8
Shallow open water	12	9	10
Total	47	50	40

3.3.3 Fish and Fish Habitat

Associated searched FWMIS to identify the fish species that have been documented in the impacted waterbodies. Fish have been documented at several of the anticipated waterbody crossings, including Blackmud Creek, Clearwater Creek, Pipestone Creek, and several unnamed tributaries. Telford Lake is also documented to be fish-bearing, with records of brook stickleback (*Culaea inconstans*) and fathead minnow (*Pimephales promelas*). No provincially or federally listed fish species have been identified in the anticipated waterbody crossings. The full listing of fish species in the identified waterbody crossings is provided in Table B-2 of Appendix B. Instream work is not anticipated per the current project understanding.

Two invasive species have been documented at the anticipated waterbody crossings. Prussian carp (*Carassius gibelio*) have been documented in Pipestone Creek and northern crayfish (*Faxonius virilis*) have been documented in Blackmud Creek. Prussian carp are thought to have been introduced through illegal transfer and live release and are associated with declines of native fish, benthic invertebrates, and plankton (Alberta Invasive Species Council 2025). Northern crayfish are native to the Beaver River watershed in Alberta but have spread into other river drainages through bait bucket releases and may further the decline of native species by competing for resources and altering habitat (Alberta Invasive Species Council 2024).

The Whitemud–Blackmud Creeks HUC6 is in the Yellow zone for whirling disease, indicating high to moderate risk for transferring the pathogen. The Upper Battle River–Pigeon Lake HUC6 is in the White zone for whirling disease, indicating low risk (Government of Alberta 2020c). All options intersect both zones.

3.4 Vegetation

All alignment options are in the Central Parkland natural subregion of the Parkland natural region. This subregion is characterized by cultivated lands, with a mosaic of aspen and prairie vegetation in remnant native parkland areas. Only an estimated 5% of the region remains in natural vegetation. Croplands of wheat, barley, and canola cover about 80% of the plains, and grasslands dominated by smooth brome and Kentucky bluegrass are common. Native grasslands are rare; western porcupine grass (*Hesperostipa curtiseta*), June grass (*Bromus tectorum*), blue grama (*Bouteloua gracilis*), and pasture sagewort (*Artemisia frigida*) occur on dry, sandy soils, and cover of plains rough fescue (*Festuca hallii*), slender wheatgrass (*Elymus trachycaulus*), and forbs increases as soil moisture increases. Common cattail (*Typha latifolia*.), sedge (*Carex* sp.), or bulrush (*Scirpus* sp.) marshes with willow (*Salix* sp.) shrublands are common on wet, poorly drained soils (Natural Regions Committee 2006, Alberta Parks 2015).

Trembling aspen (*Populus tremuloides*) forests are generally found in the upland areas, with a diverse understorey of snowberry (*Symphoricarpos albus*), saskatoon (*Amelanchier alnifolia*), beaked hazelnut (*Corylus cornuta*), choke cherry (*Prunus virginiana*), bunchberry (*Cornus canadensis*), and wild lily-of-the-valley (*Maianthemum canadense*). Balsam poplar (*Populus balsamifera*) forests are present on moister sites and in depressions, often with white spruce (*Picea glauca*) and trembling aspen, and a diverse understorey that includes red osier dogwood (*Cornus sericea*), pussy willow (*Salix discolor*), northern gooseberry (*Ribes oxyacanthoides*), green alder (*Alnus alnobetula*), bracted honeysuckle (*Lonicera involucrate*), tall lungwort (*Mertensia paniculata*), mitrewort (*Mitella nuda*), and red baneberry (*Actaea rubra*). Shrub communities, including buckbrush (*Symphoricarpos occidentalis*), silverberry (*Elaeagnus commutate*), prickly rose (*Rosa acicularis*), choke cherry, and saskatoon, occur on moderately well drained sites in moister locations (Natural Regions Committee 2006, Alberta Parks 2015).

Associated searched the ACIMS database for records of rare plant species along the alignment options. ACIMS contains data on elements of biodiversity for conservation planning purposes, including information on vertebrates, invertebrates, plants (vascular and non-vascular), lichens, fungi, landforms, and ecological communities, and assigns elements a subnational rank (S-Rank) to describe the element's conservation status. One non-sensitive element occurrence, long-leaved bluets (*Houstonia longifolia*), last observed in 2007, was returned for Option 1. Long-leaved bluets are designated S-Rank S3 in Alberta, indicating a moderate risk of extirpation. No sensitive or non-sensitive element occurrences of vegetation were returned for Options 2 or 3.

While a comprehensive list of noxious and prohibited noxious weed species along the alignments is not available, a search of EDDMapS shows reported occurrences of Canada thistle (*Cirsium arvense*), common tansy (*Tanacetum vulgare*), and yellow toadflax (*Linaria vulgaris*) in Leduc County, Camrose County, and the County of Wetaskiwin. Leafy spurge (*Euphorbia virgata*) has also been reported in Camrose County and the County of Wetaskiwin.

3.5 Wildlife

Associated searched AbaData3 and FWMIS to identify the presence of sensitive wildlife zones and wildlife species. A full listing of species observations returned through FWMIS is provided in Table C-1, in Appendix C.

3.5.1 Mammals

The alignment options are not located within any sensitive wildlife zones for mammals; however, wildlife may be present near or in the project area at any time. FWMIS indicates three mammal species within 2 km of all options. Of these species, two are federally listed in Schedule 1 of the *Species at Risk Act* (SARA) (SC 2002, c. 29).

The American badger, *taxus* subspecies (*Taxidea taxus taxus*), found in Alberta, is listed as Special Concern on Schedule 1 of SARA due to habitat loss and degradation and roadkill (Government of Canada, 2026b). It should be noted that the *taxus* subspecies has been de-activated by COSEWIC and merged into the Kootenay/Prairies/Rainy River population; the Kootenay/Prairies/Rainy River population is under consideration for addition to Schedule 1 of SARA (Government of Canada 2026a). Individuals of this population remain listed in Schedule 1 under the *taxus* subspecies (Government of Canada 2026a). Utility corridors, including pipelines, are not considered a threat to the species (COSEWIC 2012).

The little brown bat (*Myotis lucifugus*) is listed as Endangered in Schedule 1 of SARA and under the provincial *Wildlife Act* (RSA 2000, c. W-10) largely due to the threat of white nose syndrome. Additional threats include destruction of maternal colonies, chemical contamination, and change in forest structure. This species overwinters in mines and caves and establishes summer maternity colonies in large-diameter trees or in buildings (Government of Canada 2026d). Overwintering habitat is unlikely to be found within 2 km of the alignment options. Maternal colonies are unlikely to be found along road allowances or in agricultural fields, but there are several tree stands that may contain suitable trees and should be investigated further, as follows: between Leduc and Wetaskiwin (Options 1 and 3), between Hay Lakes and Millet (Option 2), and near Camrose (all options). Under the *Wildlife Act*, birthing roosts of bats may not be removed between June 1 and August 31.

3.5.2 Birds

The FWMIS database returned previous observations of 33 bird species within 2 km of the proposed alignments. Of these species, seven are listed in Schedule 1 of SARA:

- Bank swallow (*Riparia riparia*): Threatened
- Barn swallow (*Hirundo rustica*): Threatened
- Bobolink (*Dolichonyx oryzivorus*): Threatened

- Canada warbler (*Wilsonia canadensis*): Threatened
- Horned grebe (*Podiceps auritus*): Special Concern
- Short-eared owl (*Asio flammeus*): Special Concern
- Western grebe (*Aechmophorus occidentalis*): Special Concern (also listed as Threatened under the Alberta *Wildlife Act*)

The project is located within the sensitive raptor range for bald eagles (*Haliaeetus leucocephalus*) and in the sharp-tailed grouse (*Tympanuchus phasianellus*) survey zone. The FWMIS database returned records of bald eagle and sharp-tailed grouse within 2 km of all alignment options. The alignments generally follow road rights-of-way, which are unlikely to contain preferred habitat for bald eagles or sharp-tailed grouse. This may be confirmed before construction.

All options intersect the 200 m piping plover (*Charadrius melodus*) buffer on the south end of Bittern Lake, between Wetaskiwin and Camrose. Piping plover nesting typically occurs on gravel substrate in habitats with wide, sparsely vegetated beaches (Alberta Piping Plover Recovery Team 2010). The sensitive timing window for piping plover nesting sites is April 15 to July 31. Intersection of the alignments with nesting habitat for piping plovers may be confirmed before construction.

All options are located in the B4 migratory bird nesting zone, with a general annual nesting period from April 14 to August 28 (Environment and Climate Change Canada 2025a). Vegetation clearing and ground disturbance activities may impact migratory birds, particularly during the breeding season. Migratory birds and their nests and eggs are protected federally under the *Migratory Birds Convention Act, 1994* (SC 1994, c. 22). Other sensitive species, such as raptors, may nest as early as March and are protected provincially under the *Wildlife Act* (Government of Alberta 2011). Restrictions are generally triggered by the habitat, species type, activity type, and potential for disturbance during construction. Table C-2, in Appendix C, summarizes the sensitive timing windows and recommended setbacks for the species identified within 2 km of the alignment options.

3.5.3 Amphibians

The FWMIS database returned previous records of Canadian toad (*Anaxyrus hemiophrys*) within 2 km of Options 1 and 3 and boreal toad (*Anaxyrus boreas*) within 2 km of Option 2. The boreal toad is listed as Special Concern in Schedule 1 of SARA due to the threat of chytrid fungus and the species' vulnerability to habitat fragmentation and degradation (Environment and Climate Change Canada 2020). The shallow open waters between Camrose and Wetaskiwin may provide suitable breeding habitat for boreal toads.

3.5.4 Reptiles

The FWMIS database returned previous observations of plains garter snakes (*Thamnophis radix*) within 2 km of all options. Although this species is not federally or provincially listed as a species at risk, the dens (hibernacula) of snakes are protected year-round under the *Wildlife Act*. Hibernacula have been found in slump banks, meander scrapes and fissures, sinkholes, rocky outcrops, and mammal burrows. These features are often associated with river valleys and are often located on south- to southeast-facing slopes (Government of Alberta 2020b). Garter snakes may also overwinter in anthropogenic structures, including rock piles, building foundations, bridges, and underground spaces around buried utilities and pipelines (Alberta Conservation Association 2019). Hibernacula may be found within the project area.

3.5.5 Invertebrates

The ACIMS spatial data indicates two sensitive element occurrences of monarch butterflies (*Danaus plexippus*) near Wetaskiwin. Monarchs are listed as Endangered in Schedule 1 of SARA (Government of Canada 2026e), with the use of pesticides and herbicides identified as a primary threat (Environment and Climate Change Canada 2016). One non-sensitive element occurrence of umbilicate sprite (*Promenetus umbilicatellus*) is reported in a tributary of Pipestone Creek, within 2 km of all alignment options between Camrose and Wetaskiwin. Another non-sensitive element occurrence of ochre dagger moth (*Acronicta morula*) was reported within 2 km of Option 1 in south Edmonton. The umbilicate sprite and ochre dagger moth are both designated S-Rank SU, indicating that the species are currently unrankable due to lack of information or substantially conflicting information.

Option 2 intersects critical habitat for the gypsy cuckoo bumble bee (*Bombus bohemicus*) (Government of Canada 2026c), which is listed as Endangered in Schedule 1 of SARA (Government of Canada 2026e). The decline in host species, the introduction of pathogens and invasive species, and the use of pesticides, herbicides, and fungicides have been identified as the primary threats to the gypsy cuckoo bumble bee. The development of utilities is not considered an activity likely to result in the destruction of critical habitat, though herbicides used to control invasive weeds may destroy foraging habitat (Environment and Climate Change Canada 2025b).

3.6 Historical and Cultural Resources

3.6.1 Historic Resource Value Listings

This project will require a clearance under the *Historical Resources Act* (RSA 2000, c. H-9) as it is a major pipeline project. All options will cross land with provincially designated historic resource value (HRV) listings of 5a,p (high potential for archaeological or paleontological historic resources) and 4a (contains an archaeological historic resource that may require avoidance or assessment). All options also intersect HRV 1h sites. A value of HRV 1 indicates a World Heritage Site or a site designated under the *Historical Resources Act* as a Provincial Historic Resource, and work on land designated as HRV 1 requires ministerial approval. The HRV 1h listings intersected by the project are detailed in Table 3-5. These features will likely require avoidance.

Table 3-5 Historic Resource Value 1h Listings Intersected by the Project

Alignment Option	ATS Location	Provincial Historic Resource
1, 3	SW-2-47-20-W4M	Camrose Public Library
1, 3	NW-34-46-20-W4M	Camrose Normal School/Rosehaven
1, 3	NW-34-46-20-W4M	Canadian Northern railway station
2	NW-32-48-21-W4M	Hay Lakes telegraph station

3.6.2 Cultural Considerations

Environmental impacts from pipeline construction may affect First Nations Treaty Rights and traditional land uses. The alignment options are on Treaty 6 territory and in Region 10 of the Metis Nation of Alberta Association.

The following First Nations reserves are near the alignment options in Treaty 6:

- Enoch Cree Nation Reserve No. 135, in Parkland County, northwest of Option 3;
- Pigeon Lake Reserve No. 138A, in the County of Wetaskiwin, west of the endpoint of the alignments in Wetaskiwin; and
- Louis Bull Reserve No. 138B and Ermineskin Reserve No. 138, both in the County of Wetaskiwin and Ponoka County, southwest of the endpoint of the alignments in Wetaskiwin.

3.7 Potential Contamination

Associated searched AbaData for active oil and gas wells and pipelines, and the Alberta environmental records viewer for open long-term management cases within the project area. AbaData showed no active oil or gas wells within 200 m of the alignment options. Table 3-6 shows the approximate number of active pipeline crossings and active long-term management cases within 200 m for all options. Most of the long-term management cases for Options 1 and 3 are along 48 Ave. in Camrose. The most recent incident date is February 11, 2013, for DLTM0012478, located at the junction of Highway 13 and Highway 21 for all alignments. The overall potential for environmental contamination is considered low.

Table 3-6 Number of Pipeline Crossings and Long-Term Management Cases for Each Alignment Option

Alignment	Number of Crossings	Number of Cases
1	69	14
2	67	1
3	66	14

4 REGULATORY FRAMEWORK

The anticipated regulatory permitting considerations are outlined in Table 4-1, which are based on current legislation. The compliance considerations for specific regulations are outlined in Table 4-2. The permit and regulatory requirements should be revisited when the preferred alignment for the project is selected and the designs progress.

Table 4-1 Anticipated Regulatory Permits

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
Federal			
Fisheries Act (RSC 1985, c. F-14) Request for review	Work that may impact fish and fish habitat, or work completed below the high-water mark of a fish-bearing waterbody	Where trenchless methods (such as horizontal directional drilling are used near water, the Fisheries and Oceans Canada measures to protect fish and fish habitat (Fisheries and Oceans Canada, 2025) can be followed, and no request for review is required. If open cut or trenched methods are used near water, a request for review may be required.	Fisheries and Oceans Canada N/A (3–4 months if request for review is required)
Impact Assessment Act (SC 2019, c. 28, s. 1) Environmental effects evaluation	Specific to Option 1 Work that may cause adverse environmental impacts on federally owned land	Twinning of the existing waterline from Edmonton to Millet for Option 1 passes through Transport Canada–owned land, leased by the ERAA, and may trigger federal review. The requirements will be determined through consultation with the ERAA.	ERAA Timeline at ERAA discretion
Canadian Navigable Waters Act (RSC 1985, c. N-22) Approval	Construction of a work under a non-scheduled navigable water	Pipestone Creek may be considered navigable under the Act. Where trenchless methods are used (e.g., horizontal directional drilling), an approval will not be required.	Transport Canada N/A (3 months if approval is required)

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
Provincial			
Environmental Protection and Enhancement Act (RSA 2000, c. E-12) *Conservation and Reclamation Regulation* (Alberta Reg. 115/1993) Conservation and reclamation approval	Construction of a Class I pipeline	It is expected that a conservation and reclamation approval will be required for all options due to the length of each option, regardless of the pipe diameter.	Alberta Environment and Protected Areas 3–6 months
Historical Resources Act (RSA 2000, c. H-9) Approval	Ground disturbance within a provincially designated historic resource value area	Extensive ground disturbance projects require an approval for the proposed project works. Applications for approval are submitted to the Historic Resources Management Branch of Alberta Arts, Culture and Status of Women for assessment of resources within the project area. A historic resources impact assessment may be required as part of this project, following direction provided by Alberta Culture.	Alberta Culture 3–4 months An extended time frame will be required if a historic resources impact assessment is required.
Public Lands Act (RSA 2000, c. P-40) Temporary field authorization	Temporary occupation of Crown-claimed lands	Pipeline crossings under existing permissions (e.g., within the road right-of-way) should not require an approval under this Act. Temporary/short-term use (e.g., laydowns) may require a temporary field authorization. Applications for a temporary field authorization are submitted to Alberta Forestry and Parks via email.	Alberta Forestry and Parks 1 month

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
Water Act (RSA 2000, c. W-3) Approval	Utility installation where the conditions of the Code of Practice cannot be met	Where the project's waterbody crossings (including wetland crossings) cannot follow the Code of Practice for Pipelines and Telecommunication Lines Crossing Waterbodies (Government of Alberta 2013), an approval will be required. Twinning of the existing waterline below Telford Lake for Option 1 will require approval. Approvals may be required for the waterbody crossings along Highway 13 between Camrose and Wetaskiwin for all options. Applications for an approval will be submitted through DRAS, supplemented by the design drawings. Additional project details may be required, including the construction specifications and schedule. A pre-consultation assessment request must be submitted to the Aboriginal Consultation Office in support of this application. The results of the Indigenous consultation process are required before the licence may be issued.	Alberta Environment and Protected Areas 3–4 months
Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body Notification	Utility installation where the conditions of the Code of Practice can be met	Where the project's watercourse crossings (including wetland crossings) can follow the Code of Practice for Pipelines and Telecommunication Lines Crossing Waterbodies (Government of Alberta 2013), a Code of Practice notification will be required for all watercourse and wetland crossings. Notifications must be submitted through DRAS at least 14 days before work begins and require stamped and signed engineering drawings of the crossings. For crossings of Class A, B, or C watercourses, recommendations from a qualified aquatic environmental specialist may be required.	Alberta Environment and Protected Areas At least 14 days before the activity begins

Legislation and Permit	Application Trigger	Anticipated Project-Specific Requirements	Regulatory Agency and Timeline
		Wetland crossings have additional submission requirements where temporary or permanent impacts occur. For temporary impacts associated with pipeline construction, a wetland impact assessment form will need to be submitted. The project must meet all the conditions in the applicable Code of Practice. If the conditions cannot be met, an approval will be required.	
Water Act Licence	Operation of a "works" as defined in the *Water (Ministerial) Regulation* (Alberta Reg. 43/1997)	The application will be submitted through DRAS and will be supplemented by project design drawings and a hydrological assessment. Complex projects may require additional project details, including the construction specifications, schedule, operational plans, water requirements, and method of operation. The Government of Alberta requires a fee for a licence, depending on the volume of water applied for. A pre-consultation assessment request must be submitted to the Aboriginal Consultation Office in support of this application. The results of the Indigenous consultation process are required before the licence is issued.	Alberta Environment and Protected Areas 3–4 months

Table 4-2 Regulatory Compliance Recommendations

Legislation and Description	General Practices for Complying with the Act
Federal	
Migratory Birds Convention Act, *1994* (SC 1994, c. 22) This Act protects migratory birds, their eggs, and their active nests.	Consider whether any activities that may disturb migratory birds, their eggs, or active nests (e.g., vegetation clearing) will occur in the project area. Vegetation clearing may impact migratory birds, especially during the breeding season. Vegetation clearing should therefore be scheduled to occur outside the migratory bird nesting period (as defined by the federal government), as this period is associated the greatest likelihood of encountering/impacting nesting birds. If vegetation clearing cannot be avoided during the migratory bird nesting period, a qualified environmental professional should evaluate the site and determine whether any active nests are present that may be impacted by the proposed activities. This evaluation may involve surveys (with appropriate provincial permits) that are species-appropriate and vegetation-appropriate. The environmental professional may provide recommendations for operating around migratory birds and may establish appropriate buffers (i.e., zones in which no construction activities, equipment, or personnel are permitted) around nests. **Project specific:** The project area is located in migratory bird nesting zone B4, with a general migratory bird breeding period of April 14 to August 28 (Environment and Climate Change Canada, 2025a).
Species at Risk Act (SC 2002, c. 29) This Act regulates activities that may impact species at risk or species of concern, and/or their habitat.	Consider whether any species listed in Schedule 1 of the Act are known to occur in the project area. If any wildlife are encountered during project construction, they should not be harassed or disturbed, as per federal and provincial legislation. **Project specific:** Schedule 1 species have been documented in the project area previously. Refer to Table C-1, in Appendix C, for a full listing. Option 2 intersects critical habitat for the gypsy cuckoo bumblebee (*Bombus bohemicus*). The destruction of the critical habitat of a protected species is prohibited under Section 61(1) of the Act.

Legislation and Description	General Practices for Complying with the Act
Provincial	
Agricultural Pests Act (RSA 2000, c. A-8) This Act regulates species that may interfere with agricultural productivity.	Appropriate measures to mitigate the spread of agricultural pests should be used. **Project specific:** The project area is within an area with known occurrences of clubroot (*Plasmodiophora brassicae*). Mitigation measures should be incorporated and best management practices followed. For example, equipment and tools should be disinfected before entering worksites.
Soil Conservation Act (RSA 2000, c. S-15) This Act mandates that landholders prevent soil loss or deterioration from occurring or from continuing.	Appropriate measures to prevent soil loss or deterioration must taken. If soil loss or deterioration is taking place, the loss or deterioration must be stopped from continuing. **Project specific:** Appropriate best management practices for soil conservation (e.g., control wind and water erosion of soil during construction) must be used in all areas affected by soil disturbance during construction.
Weed Control Act (RSA 2008, c. W-5.1) This Act regulates weed species listed in Schedule 1 (prohibited noxious weeds) and Schedule 2 (noxious weeds).	The prohibited noxious weed species listed in Schedule 1 of the Act shall be destroyed and the spread of the noxious weed species listed in Schedule 2 shall be controlled/prevented. **Project specific:** A comprehensive list of weed species in the project area is not available. Canada thistle (*Cirsium arvense*), common tansy (*Tanacetum vulgare*), leafy spurge (*Euphorbia virgata*), and yellow toadflax (*Linaria vulgaris*) have been reported in the County of Wetaskiwin and Camrose County. During construction, any prohibited noxious weeds encountered must be destroyed, and any noxious weeds encountered must be controlled (consult an environmental professional). Mitigation measures to prevent the spread of weeds typically involve routine and specific cleaning of equipment before entering the project site and before operation at a subsequent site.
Wildlife Act (RSA 2000, c. W-10) This Act prohibits the wilful molestation, disruption, or destruction or wildlife or a house, nest, or den of wildlife.	Consider whether any wildlife, their nests, or dens will be disturbed as part of the project activities. Sensitive raptors may nest as early as March (Government of Alberta 2011). **Project specific**: Tree clearing after March 15 should account for potential impacts to nesting sensitive raptors if trees to be cleared contain appropriate raptor habitat. Implications similar to those in the *Migratory Birds Convention Act, 1994* apply. If bird surveys are planned as a mitigation measure during the migratory bird nesting period, a permit under this Act will be required by the qualified environmental professional conducting the study.

Legislation and Description	General Practices for Complying with the Act
	Plains garter snakes (*Thamnophis radix*) have been documented within 2 km of the project area, and suitable habitat for snake hibernacula may exist in the project area. Little brown bats (*Myotis lucifugus*) have been documented within 2 km of the project area, and all options intersect tree stands that may contain suitable habitat for maternal roosts. Tree stands intersected by the preferred alignment should be assessed for maternal roosts before construction. Under the *Wildlife Regulation* (Alberta Reg. 143/1997), maternal roosts must not be removed between June 1 and August 31.
Municipal	
Bylaw 796 (Camrose County 1988) This Bylaw controls the removal of topsoil in Camrose County.	Removing topsoil from Camrose County is prohibited without a permit. **Project specific:** Consider whether topsoil will be removed from Camrose County within the project area. If topsoil is removed as part of the project, a permit will be required.
Policy 11.34 – Clubroot of Canola (Camrose County 2014) This policy aims to prevent the establishment and spread of clubroot in Camrose County.	Sanitation measures and best management practices should be followed to prevent the spread of clubroot.
Policy 62.2.3 – Control of Clubroot Disease in Canola (County of Wetaskiwin 2022) This policy aims to prevent the growth and spread of clubroot in canola crops in the County of Wetaskiwin.	**Project specific:** The project area is within an area with known occurrences of clubroot. Sanitation practices should be developed for personnel, vehicles, and equipment that will be involved in soil disturbance. Best management practices should be adhered to.

DRAS – Digital Regulatory Assurance System; ERAA – Edmonton Regional Airport Authority

5 OPTION COMPARISON

The baseline environmental features reviewed for the alignment options are summarized in Table 5-1. Each option was compared based on the presence or absence of environmental features and was given a score:

- 0 – considered to have a lesser environmental impact; and
- 1 – considered to have a greater environmental impact.

Where two or more options are assigned the same score, the environmental impacts are anticipated to be similar between the options. Additional permitting requirements were also considered in making the overall recommendation.

Table 5-1 Summary of Environmental Sensitivities for Alignment Options

Environmental Factor	Option 1	Option 2	Option 3	Summary	Recommendation
Land use	1	0	1	All options intersect similar land uses. Option 1 passes through federally owned lands.	Option 2. The agricultural lands between Leduc and Millet intersected by Options 1 and 3 may require greater temporary access considerations. Option 1 may trigger additional permitting requirements under the *Impact Assessment Act* (SC 2019, c. 28, s. 1).
Soils	1	0	1	All options traverse primarily pre-disturbed soils along road allowances or agricultural areas. Options 1 and 3 will likely require greater disturbance and reclamation of agricultural soils.	Option 2. Option 2 will intersect primarily disturbed soils within road allowances, which will allow reclamation to pre-existing conditions.
Vegetation	1	0	0	All options are in the Central Parkland natural subregion. Vegetation is anticipated to be similar along all options.	Option 2 or 3. Option 1 may intersect with rare plant species. No rare plant species are reported for Options 2 and 3.

Environmental Factor	Option 1	Option 2	Option 3	Summary	Recommendation
Surface water and aquatic resources	1	0	1	Option 1 intersects Telford Lake. Options 1 and 3 involve the greatest number of waterbody crossings. All options may require approval under the *Water Act* (RSA 2000, c. W–3) for waterbody crossings between Camrose and Wetaskiwin.	Option 2. Option 1 will require approval under the *Water Act* for twinning the waterline under Telford Lake. Option 2 involves the fewest waterbody crossings.
Wildlife	0	1	0	All options affect wildlife habitat.	Options 1 or 3. Option 2 intersects critical habitat for the gypsy cuckoo bumblebee (*Bombus bohemicus*), which is listed as Endangered in Schedule 1 of the *Species at Risk Act* (SC 2002, c. 29).
Historic resources	1	1	1	All options will require approval under the *Historical Resources Act* (RSA 2000, c. H-9). All options will intersect HRV 1h listings.	All options. The selected option will require avoidance of HRV 1h listings.
Cultural resources	0	0	0	All options are in proximity to reserves.	All options. All options may require First Nations consultation.
Contamination	1	0	1	All options intersect a similar number of pipelines. Options 1 and 3 are in proximity to more long-term management cases.	Option 2. Option 2 passes near fewer active long-term management cases, which reduces the potential of encountering contamination.
Scoring	6	2	5		
Overall recommendation					Option 2, if the HRV 1h in NW-32-48-21-W4M can be avoided.

HRV – historic resource value

6 PLANNING RECOMMENDATIONS

When the preferred alignment is selected, the permitting requirements should be revisited in the next stage of design. Regulatory permits and approvals should be obtained before construction begins, and during construction, all conditions must be followed. The following planning recommendations should also be considered during the project design:

Soils

- If open cut methods are used, salvage and stockpile topsoil and subsoil separately to prevent admixing.
- To prevent the spread of clubroot, incorporate the applicable best management practices outlined in the Alberta Clubroot Management Plan (Alberta Clubroot Management Committee 2014) into the project-specific environmental construction operations plan.
- Develop a conservation and reclamation plan for approval under the *Environmental Protection and Enhancement Act* (RSA 2000, c. E-12). The *Conservation and Reclamation Regulation* (Alberta Reg. 115/1993) under the Act requires that soils be restored to their equivalent land use capabilities after construction; this would require information on the soil conditions before disturbance, including topsoil and subsoil depth. Seasonal restrictions apply to pre-existing soil sampling, with fieldwork completed from May to October.

Surface Water and Aquatic Resources

- Consider trenchless construction techniques for the project and specifically for environmentally sensitive areas, such as wetlands and watercourse crossings.
- Consult a wetland professional during preliminary design to delineate wetlands in the project area and provide recommendations for mitigation and avoidance, and to support regulatory permitting. Seasonal restrictions apply to wetland delineation, with fieldwork completed from May to October.
- Consult a qualified environmental professional to assess watercourse crossings and potential impacts on fish and fish habitat, if trenchless construction cannot be used.
- Develop a plan to dispose of drilling fluids away from any surface water features, in accordance with the requirements under the *Environmental Protection and Enhancement Act*.
- Implement all applicable measures from the Decontamination Protocol for Work in or Near Water (Government of Alberta 2020a) to prevent the spread of whirling disease.

Vegetation

- Ensure tools and equipment arrive on site clean and free of soil and vegetation to reduce the risk of transfer of weeds and pathogens.
- Remove prohibited noxious weeds and control noxious weeds on the project site, in accordance with the *Weed Control Act* (SA 2008, c. W-5.1).

Wildlife

- When an alignment is selected, submit a detailed information request for location data for garter snake hibernacula to the provincial wildlife contact for the Spruce Grove district of the South region.
- Plan for the required vegetation clearing activities to take place outside the migratory bird nesting period. Land clearing activities proposed from March 15 to August 28 should be reviewed by a qualified

environmental professional to determine whether any due diligence actions are required (e.g., lek surveys, nest surveys).

- Work within the 200 m piping plover buffer (see Section 3.5.2) should occur outside the sensitive timing window of April 15 to July 31. Where possible, work within the buffer should follow existing disturbances.
- Any use of herbicides for weed control should be done in accordance with the latest Health Canada Pesticides Regulatory Directorate regulations and the *Pesticide (Ministerial) Regulation* (Alberta Reg. 43/1997) of the *Environmental Protection and Enhancement Act* to protect SARA-listed invertebrates. If Option 2 is selected, consult with Environment and Climate Change Canada for best practices to prevent destruction of critical habitat for the gypsy cuckoo bumble bee.

Historic Resources

- Incorporate avoidance measures for HRV 1h listings in the project design. If avoidance is not possible, consult with Alberta Arts, Culture and Status of Women early in the project design.

CLOSURE

This report was prepared for the Capital Region Southwest Water Services Commission to identify the baseline environmental features present along three waterline alignment options and to present regulatory requirements and planning recommendations for the proposed water transmission line.

The services provided by Associated Engineering Alberta Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practising under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,

Associated Engineering Alberta Ltd.

Lauren Dombroski, BIT
Environmental Scientist

Deanna Joly, P.Ag.
Regulatory Planner

REFERENCES

AbaData Inc. 2026. AbaData3. Available at: AbaData 3. Accessed March 4, 2026.

Adventure Alberta. 2025. Kayaking in the Edmonton Area – Places to Go Kayaking Near Edmonton. Available at: https://adventurealberta.ca/kayaking-near-edmonton/. Accessed March 18, 2026.

Agricultural Pests Act, RSA 2000, c. A-8.

Alberta Clubroot Management Committee. 2014. Alberta Clubroot Management Plan. Available at: https://open.alberta.ca/publications/7089438/resource/2883d945-9938-4655-906a-415744cb3314. Accessed May 20, 2026.

Alberta Conservation Association. 2019. Reptiles of Alberta. Available at: https://www.ab-conservation.com/downloads/avamp/aca_reptiles_of_alberta.pdf. Accessed March 6, 2026.

Alberta Environment and Protected Areas. 2026. Crown Land Reservations. Available at: https://geodiscover.alberta.ca/geoportal/rest/metadata/item/858dfab29e4f4361934095b312f1b5c9/html. Accessed February 25, 2026.

Alberta Invasive Species Council. 2024. Northern Crayfish. Available at: https://abinvasives.ca/wp-content/uploads/2024/04/UR_FS-NorthernCrayfish.pdf. Accessed March 6, 2026.

Alberta Invasive Species Council. 2025. Prussian Carp. Available at: https://abinvasives.ca/wp-content/uploads/2021/02/250814-FS-Prussian-Carp-1.pdf. Accessed March 6, 2026.

Alberta Parks. 2015. Natural Regions and Subregions of Alberta: A Framework for Alberta's Parks. Alberta Tourism, Parks and Recreation. Available at: https://www.albertaparks.ca/media/6256258/natural-regions-subregions-of-alberta-a-framework-for-albertas-parks-booklet.pdf. Accessed March 5, 2026.

Alberta Piping Plover Recovery Team. 2010. Alberta Piping Plover Recovery Plan, 2010-2020. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 18. Edmonton. Available at: https://open.alberta.ca/dataset/9eae688e-e1dc-4a58-b9b9-de4834985c3c/resource/08bc6994-1cd1-4389-b2d5-b6a0848ccffa/download/2010-sar-albertapipingploverrecoveryplan2010-2020.pdf. Accessed April 21, 2026.

Barnetson, B. 2022. Pipestone Creek at Coal Lake. Available at: https://edmontoncanoeing.blogspot.com/2022/06/pipestone-creek-at-coal-lake.html. Accessed March 18, 2026.

Camrose County. 1988. Bylaw No. 796. Available at: camrosecounty.civicweb.net/document/198471/. Accessed May 20, 2026.

Camrose County. 2014. Policy No. 11.34, Clubroot of Canola. Available at: camrosecounty.civicweb.net/document/27422/. Accessed May 20, 2026.

Camrose County. 2025. Land Use District Map. Available at: https://county.camrose.ab.ca/wp-content/uploads/2025/05/2025-Land-Use-District-Map-Bylaw-1541-1.pdf. Accessed May 20, 2026.

Canada Water Portal. 2012. North Saskatchewan River Basin. Available at: https://waterportal.ca/north-saskatchewan-river-basin/. Accessed March 4, 2026.

Canadian Navigable Waters Act, RSC 1985, c. N-22.

Conservation and Reclamation Regulation, Alberta Reg. 115/1993.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2012. COSEWIC Assessment and Status Report on the American Badger *Taxidea taxus* in Canada. Available at: https://ecprccsarstacct.z9.web.core.windows.net/files/SARAFiles/legacy/cosewic/sr_blaireau_am_badger_1113_e.pdf. Accessed March 27, 2026.

County of Wetaskiwin 2022. Policy No. 62.2.3, Control of Clubroot Disease in Canola. Available at: https://www.county.wetaskiwin.ab.ca/DocumentCenter/View/120/Control-of-Clubroot-Disease-in-Canola-Policy-6223. Accessed May 20, 2026.

County of Wetaskiwin. 2024. Bylaw 2024/66, Land Use Bylaw. Available at: https://www.county.wetaskiwin.ab.ca/DocumentCenter/View/444/Land-Use-Bylaw-2024-66?bidId=. Accessed May 20, 2026.

Environment and Climate Change Canada. 2016. Management Plan for the Monarch (*Danaus plexippus*) in Canada. *Species at Risk* Management Plan Series. Available at: https://ecprccsarstacct.z9.web.core.windows.net/files/SARAFiles/legacy/plans/mp-monarch-e-final.pdf. Accessed April 14, 2026.

Environment and Climate Change Canada. 2020. Management Plan for the Western Toad (*Anaxyrus boreas*), Calling and Non-Calling Populations, in Canada. *Species at Risk* Management Plan Series. Available at: https://ecprccsarstacct.z9.web.core.windows.net/files/SARAFiles/legacy/plans/mp_western_toad_calling_non-calling%20_populations_final_e.pdf. Accessed May 19, 2026.

Environment and Climate Change Canada. 2025a. Nesting Periods. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#_zoneB_calendar. Accessed March 6, 2026.

Environment and Climate Change Canada. 2025b. Recovery Strategy for the Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*) in Canada. *Species at Risk Act* Recovery Strategy Series. Available at: https://ecprccsarstacct.z9.web.core.windows.net/files/SARAFiles/00020670-RECFIN_DT0102-en-rs_gypsy_cuckoo_bumble_bee_e_final.pdf. Accessed April 9, 2026.

Environmental Protection and Enhancement Act, RSA 2000, c. E-12.

Fisheries and Oceans Canada. 2025. Measures to protect fish and fish habitat. Available at: https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. Accessed May 29, 2025.

Fisheries Act, RSC 1985, c. F-14.

Google Earth Pro V 7.3.6.9285. 2024. Leduc, Wetaskiwin, and Camrose, Alberta. 53°07'46.83" N 113°13'01.06" W, eye alt 34.88 km. Airbus 2026, Landsat/Copernicus, Maxar Technologies 2026. Accessed February 27, 2026.

Government of Alberta. 2011. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta. Available at: https://open.alberta.ca/dataset/e269aad8-3664-402a-b7cb-77abe89e9617/resource/6195d2d4-9f7d-43e5-ada5-81a8210fae38/download/3054250-2011-recommended-land-use-guidelines-protection-wildlife-species-habitat.pdf. Accessed May 29, 2026.

Government of Alberta. 2013. Code of Practice for Pipelines and Telecommunication Lines Crossing a Waterbody. Available at: https://open.alberta.ca/publications/pipeline. Accessed May 29, 2026.

Government of Alberta. 2020a. Decontamination Protocol for Work in or Near Water. Available at: https://open.alberta.ca/dataset/9b126cfd-b637-4dd2-838e-b43d12c8993a/resource/d89b106e-af61-4858-a991-12caadd0869d/download/aep-decontamination-protocol-for-work-in-or-near-water.pdf. Accessed May 20, 2026.

Government of Alberta. 2020b. Sensitive Snake Species and Hibernacula Range. Available at: https://open.alberta.ca/dataset/856f23c2-0256-4c27-8b3b-14384996c179/resource/6a4bb00b-0c5e-4f10-b420-7f188de72471/download/aep-science-support-document-sensitive-snake-species-and-hibernacula-range.pdf. Accessed March 6, 2026.

Government of Alberta. 2020c. Whirling Disease Decontamination Risk Zone. Available at: https://open.alberta.ca/dataset/c240b099-18cb-4037-91fa-4038de4012f7/resource/ac3a4e79-8fba-4a8c-ae91-7662134d7407/download/aep-whirling-disease-decontamination-risk-zone-map-2020-08.pdf. Accessed May 20, 2026.

Government of Alberta. 2026a. ACIMS Data Search Map. Available at: https://geospatial.alberta.ca/portal/apps/webappviewer/index.html?id=9a78e3bb5a78474eba5a2844ff07fc7b. Accessed March 4, 2026.

Government of Alberta. 2026b. Alberta Soil Information Viewer. Available at: https://soil.agric.gov.ab.ca/agrasidviewer/. Accessed February 27, 2026.

Government of Alberta. 2026c. Cumulative Clubroot Infestations in Alberta. Available at: https://www.alberta.ca/cumulative-clubroot-infestations-in-alberta. Accessed February 27, 2026.

Government of Alberta. 2026d. ERV – Long Term Management. Available at: https://geospatial.alberta.ca/erv-ltm/. Accessed March 6, 2026.

Government of Alberta. 2026e. Fish and Wildlife Internet Mapping Tool – Public. Available at: https://geospatial.alberta.ca/FWIMT_Pub/Viewer/?TermsOfUseRequired=true&Viewer=FWIMT_Pub. Accessed March 4, 2026.

Government of Alberta. 2026f. GeoDiscover Alberta. Available at: https://geodiscover.alberta.ca/geoportal/. Accessed February 25, 2026.

Government of Alberta. 2026g. Alberta Register of Historic Places. Available at: https://hermis.alberta.ca/ARHP/Default.aspx?DeptID=1. Accessed May 20, 2026.

Government of Alberta. 2026h. Land Use Reservation Program. Available at: https://www.alberta.ca/land-use-reservation-program. Accessed May 19, 2026.

Government of Canada. 2026a. American Badger (Taxidea taxus), Kootenay/Prairies/Rainy River population. Available at: https://species-registry.canada.ca/index-en.html#/species/3051-2554. Accessed March 6, 2026.

Government of Canada. 2026b. American Badger taxus subspecies (Taxidea taxus taxus). Available at: https://species-registry.canada.ca/index-en.html#/species/623-880. Accessed March 6, 2026.

Government of Canada. 2026c. Critical Habitat for Species at Risk National Dataset – Canada. Available at: https://open.canada.ca/data/en/dataset/47caa405-be2b-4e9e-8f53-c478ade2ca74. Accessed March 6, 2026.

Government of Canada. 2026d. Little Brown Myotis (Myotis lucifugus). Available at: https://species-registry.canada.ca/index-en.html#/species/1173-848. Accessed March 6, 2025.

Government of Canada. 2026e. Species at risk public registry. Available at: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. Accessed March 5, 2026.

Historical Resources Act, RSA 2000, c. H-9.

Impact Assessment Act, SC 2019, c. 28, s. 1.

Migratory Birds Convention Act, 1994, SC 1994, c. 22.

Natural Regions Committee. 2006. Natural Region and Subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Government of Alberta. Pub. No. T/852. Available at: https://open.alberta.ca/dataset/dd01aa27-2c64-46ca-bc93-ca7ab5a145a4/resource/98f6a93e-c629-46fc-a025-114d79a0250d/download/2006-nrsrcomplete-may.pdf. Accessed March 5, 2026.

Leduc County. 2025. Bylaw No. 14-25, Leduc County Land Use Bylaw. Available at: https://www.leduc-county.com/public/download/files/288918. Accessed May 20, 2026.

Pesticide (Ministerial) Regulation, Alberta Reg. 43/1997.

Public Lands Act, RSA 2000, c. P-40.

Soil Conservation Act, RSA 2000, c. S-15.

Species at Risk Act, SC 2002, c. 29.

University of Georgia - Center for Invasive Species and Ecosystem Health (University of Georgia). 2026. EDDMapS. Available at: http://www.eddmaps.org/. Accessed March 5, 2026.

Water Act, RSA 2000, c. W-3.

Water (Ministerial) Regulation, Alberta Reg. 43/1997.

Weed Control Act, SA 2008, c. W-5.1.

Wildlife Act, RSA 2000, c. W-10.

Wildlife Regulation, Alberta Reg. 143/1997

APPENDIX A – SOILS

Table A-1 Soil Types Intersected by the Alignment Options

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
1	South Edmonton	14364	MMO7/U1l Malmo (80%), Miscellaneous Solonetzic (20%)	Eluviated Black Chernozem on fine textured water-laid sediments.	Includes Solonetzic soils. Undulating, low relief landform with a limiting slope of 2%.
1	South Edmonton	14379	ZUN1/SC1l Miscellaneous Undifferentiated Mineral (100%)	Miscellaneous undifferentiated mineral soils.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. V-shaped valley landform with a limiting slope of 15%.
1	Between south Edmonton and Nisku	14407	KVG1/U1h Kavanagh (80%), Miscellaneous Solonetzic (20%)	Black Solodized Solonetz on medium textured softrock.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
1	Between south Edmonton and Nisku	14356	LOMM6/U1l Looma (40%), Malmo (40%), Angus Ridge (20%)	Orthic Dark Gray Chernozem on very fine textured materials (not till) over medium textured till. Eluviated Black Chernozem on fine textured water-laid sediments.	Includes soils that are coarser textured than the dominant or co-dominant soils. Undulating, low relief landform with a limiting slope of 2%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
1	Between Nisku and Leduc	14377	ZDL1/DL Miscellaneous Disturbed Land (100%)	Miscellaneous undifferentiated mineral soils.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Disturbed land (urban, open pit mines, gravel pits).
1	Between Nisku and Leduc	14375	POPOxp1/U1l Ponoka (40%) (Paralithic substrate at 30–99 cm), Ponoka (40%), Angus Ridge (20%)	Eluviated Black Chernozem on medium textured materials (not till) over softrock. Eluviated Black Chernozem on medium textured sediments deposited by wind and water.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, low relief landform with a limiting slope of 2%.
1	Leduc	14418	ZDL1/DL Miscellaneous Disturbed Land (100%)	Miscellaneous undifferentiated mineral soils.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Disturbed land (urban, open pit mines, gravel pits).
1	Telford Lake, Leduc	14419	ZWA1/W3 Miscellaneous Water (100%)	Miscellaneous water.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Large single water body.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Range Rd. 243, between Beaumont and Hay Lakes Range Rd. 243, between Beaumont and Hay Lakes	14255	AG2s/U1h Angus Ridge (60%), Hobbema (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
2	Range Rd. 243, between Beaumont and Hay Lakes	14247	AGHB10/U1h Angus Ridge (35%), Hobbema (35%), Miscellaneous Solonetzic (15%), Miscellaneous Gleysol (15%)	Eluviated Black Chernozem on medium textured till. Eluviated Black Chernozem on medium textured materials over medium or fine textured till.	Includes poorly drained and Solonetzic soils Undulating, high relief landform with a limiting slope of 4%.
2	Range Rd. 243 and Township Rd. 500, between Beaumont and Hay Lakes	14253	AGS1/U1h Angus Ridge (80%), Hobbema (20%)	Eluviated Black Chernozem on medium textured till.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14259	MMO6/U1h Malmo (60%), Ponoka (20%), Navarre (20%)	Eluviated Black Chernozem on fine textured water-laid sediments.	Includes soils that are coarser textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Township Rd. 500, between Beaumont and Hay Lakes	14261	ZGW1/U1l Miscellaneous Gleysol (100%)	Gleysolic soils on undifferentiated materials.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, low relief landform with a limiting slope of 2%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14597	MCML9/U1h Macola (35%), Mico (35%), Looma (10%), Rolly View (10%), Misc Gleysol (10%)	Orthic Dark Gray Chernozem on very fine textured water-laid sediments. Dark Gray Luvisol on very fine textured water-laid sediments.	Includes poorly drained soils and soils that are coarser textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14609	RLV2/H1l Rolly View (60%), Uncas (20%), Miscellaneous Gleysol (20%)	Orthic Dark Gray Chernozem on medium textured till.	Includes poorly drained soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14608	RLV2/H1l Rolly View (60%), Uncas (20%), Miscellaneous Gleysol (20%)	Orthic Dark Gray Chernozem on medium textured till.	Includes poorly drained soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14428	CMDU1/U1h Camrose (50%), Duagh (50%)	Black Solodized Solonetz on medium textured till. Black Solonetz on fine textured water-laid sediments.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Township Rd. 500, between Beaumont and Hay Lakes	14606	RLV1/H1l Rolly View (80%), Angus Ridge (20%)	Orthic Dark Gray Chernozem on medium textured till.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Township Rd. 500, between Beaumont and Hay Lakes	14605	RLUC2/U1h Rolly View (35%), Uncas (35%), Angus Ridge (15%), Miscellaneous Gleysol (15%)	Orthic Dark Gray Chernozem on medium textured till. Dark Gray Luvisol on medium textured till.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
2	Range Rd. 222A, between Beaumont and Hay Lakes	14422	AGMM2/U1h Angus Ridge (35%), Malmo (35%), Navarre (15%), Miscellaneous Gleysol (15%)	Eluviated Black Chernozem on medium textured till. Eluviated Black Chernozem on fine textured water-laid sediments.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
2	Between Range Rd. 222A and Range. Rd. 222, between Beaumont and Hay Lakes	14424	AGS2/H1l Angus Ridge (80%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Range Rd. 222, between Beaumont and Hay Lakes	14425	AGS1/U1h Angus Ridge (60%), Rolly View (20%), Camrose (20%)	Eluviated Black Chernozem on medium textured till.	Includes Solonetzic soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Range Rd. 222 and Township Rd. 492, between Beaumont and Hay Lakes	14429	CMO16/U1h Camrose (80%), Angus Ridge (20%)	Black Solodized Solonetz on medium textured till.	Includes Chernozemic soils. Undulating, high relief landform with a limiting slope of 4% (U1h).
2	Township Rd. 492, between Beaumont and Hay Lakes	14426	AGS7/U1h Angus Ridge (60%), Rolly View (20%), Camrose (20%)	Eluviated Black Chernozem on medium textured till.	Includes Solonetzic soils. Undulating, high relief landform with a limiting slope of 4%.
2	Range Rd. 215 and Township Rd. 492, between Beaumont and Hay Lakes	14431	DUWK19/U1l Duagh (35%), Wetaskiwin (35%), Malmo (15%), Miscellaneous Gleysol (15%)	Black Solonetz on fine textured water-laid sediments. Black Solodized Solonetz on fine textured water-laid sediments.	Includes poorly drained and Chernozemic soils. Undulating, low relief landform with a limiting slope of 2%.
2	Highway 21, between Hay Lakes and Camrose	14454	AGS2/H1l Angus Ridge (60%), Uncas (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Highway 21, between Hay Lakes and Camrose	14462	AGS7/U1h Angus Ridge (60%), Norma (20%), Camrose (20%)	Eluviated Black Chernozem on medium textured till.	Includes Solonetzic soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Highway 21, between Hay Lakes and Camrose	14443	AGRL18/H1l Angus Ridge (35%), Rolly View (35%), Morinville (10%), Camrose (10%), Miscellaneous Gleysol (10%)	Eluviated Black Chernozem on medium textured till. Orthic Dark Gray Chernozem on medium textured till.	Includes poorly drained soils and soils that are finer textured than the dominant or co-dominant soils. Hummocky, low relief landform with a limiting slope of 6%.
2	Highway 21, between Hay Lakes and Camrose	15017	CMO19/U1h Camrose (60%), Norma (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on medium textured till.	Includes poorly drained and Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.
2	Highway 21 and Township Rd. 480 between Hay Lakes and Camrose	15058	WKN2/U1h Wetaskiwin (60%), Duagh (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on fine textured water-laid sediments.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
2	Highway 21, Township Rd. 480, and Range Rd. 205, between Hay Lakes and Camrose	15026	CMO19/U1h Camrose (60%), Norma (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on medium textured till.	Includes poorly drained and Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
2	Range Rd. 205, between Hay Lakes and Camrose	14975	CMO16/H5l Camrose (60%), Norma (20%), Kavanaugh (20%)	Black Solodized Solonetz on medium textured till.	Includes Chernozemic soils. Hummocky over bedrock, low relief landform with a limiting slope of 6%.
2	Range Rd. 205, between Hay Lakes and Camrose	14946	ARM19/U1l Armena (60%), Miscellaneous Gleysol (20%), Camrose (10%), Looma (10%)	Black Solodized Solonetz on medium textured materials over medium (or fine textured till.	Includes poorly drained and Chernozemic soils. Undulating, low relief landform with a limiting slope of 2%.
2	Range Rd. 205, between Hay Lakes and Camrose	14962	CMNR2/U1h Norma (35%), Camrose (35%), Kavanaugh (15%), Miscellaneous Gleysol (15%)	Black Solodized Solonetz on medium textured till. Solonetzic Black Chernozem on medium textured till.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
3	Township Rd. 562	11761	ZGW20/SC1l Miscellaneous Gleysol (80%), Miscellaneous Undifferentiated Mineral (20%)	Gleysolic soils on undifferentiated materials.	Includes rapidly to imperfectly drained soils. Valley with floodplain, low relief landform with slopes ranging from 1–5% on the floodplain and up to 15% on the side slopes.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
3	Township Rd. 562	11806	ZUN2/SC1h Miscellaneous Undiff. Mineral (60%), Miscellaneous Gleysol (20%)	Miscellaneous undifferentiated mineral soils.	Includes poorly drained soils. Valley (steep slopes) with floodplain landform with slopes ranging from 1–5% on the floodplain and up to 35% on the side slopes.
3	Township Rd. 562	14248	AGHB7/U1l Angus Ridge (40%), Hobbema (40%), Miscellaneous Solonetzic (20%)	Eluviated Black Chernozem on medium textured till. Eluviated Black Chernozem on medium textured materials over medium or fine textured till.	Includes Solonetzic soils. Undulating, low relief landform with a limiting slope of 2%.
3	Township Rd. 562	14253	AGS1/U1h Angus Ridge (80%), Hobbema (20%)	Eluviated Black Chernozem on medium textured till.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Leduc	14408	KVG16/U1h Kavanagh (80%), Angus Ridge (20%)	Black Solodized Solonetz on medium textured softrock.	Includes Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Range Rd. 245, between Leduc and Millet	14411	KVG2/U1h Kavanagh (60%), Camrose (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on medium textured softrock.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
1, 3	Range Rd. 245, between Leduc and Millet	14404	HBPO17/U1l Hobbema (30%), Ponoka (30%), Camrose (30%), Morinville (10%)	Eluviated Black Chernozem on medium textured materials over medium or fine textured till. Eluviated Black Chernozem on medium textured sediments deposited by wind and water.	Includes soils that are finer textured than the dominant or co-dominant soils and Solonetzic soils. Undulating, low relief landform with a limiting slope of 2%.
1, 3	Range Rd. 245, Range Rd. 244, between Leduc and Millet	14256	AGS2/U1h Angus Ridge (60%), Hobbema (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Range Rd. 244, between Leduc and Millet	14252	AGS1/U1h Angus Ridge (80%), Hobbema (20%)	Eluviated Black Chernozem on medium textured till.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Range Rd. 244, between Leduc and Millet, and Township Rd. 475, between Millet and Wetaskiwin	14479	PHS2/U1h Peace Hills (60%), Ukalta (20%), Miscellaneous Gleysol (20%)	Orthic Black Chernozem on moderately coarse textured sediments deposited by wind or water.	Includes poorly drained soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
1, 3	Millet	14486	ZDL1/DL Miscellaneous Disturbed Land (100%)	Miscellaneous undifferentiated mineral soils.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Disturbed land (urban, open pit mines, gravel pits).
1, 3	Township Rd. 475 and Highway 814 between Millet and Wetaskiwin	14469	HLMD2/D21 Helliwell (40%), Mundare (40%), Miscellaneous Gleysol (20%)	Orthic Dark Gray Chernozem on very coarse textured sediments deposited by wind or water. Orthic Black Chernozem on very coarse textured sediments deposited by wind or water.	Includes poorly drained soils. Parabolic dune, low relief landform with a limiting slope of 6%.
1, 3	Township Rd. 475 and Highway 814 between Millet and Wetaskiwin	14482	POK18/U1h Ponoka (60%), Malmo (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured sediments deposited by wind and water.	Includes poorly drained soils and soils that are finer textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Highway 814, between Millet and Wetaskiwin	14470	KVG19/U1h Kavanagh (60%), Ferintosh (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on medium textured softrock.	Includes poorly drained and Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
1, 3	Highway 814, between Millet and Wetaskiwin	14477	PHS1/U1h Peace Hills (80%), Mundare (20%)	Orthic Black Chernozem on moderately coarse textured sediments deposited by wind or water.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
1, 3	Highway 814, between Millet and Wetaskiwin	14487	ZUN2/SC1h Miscellaneous Undiff. Mineral (80%), Miscellaneous Gleysol (20%)	Miscellaneous undifferentiated mineral soils.	Includes poorly drained soils. Valley (steep slopes) with floodplain landform with slopes ranging from 1–5% on the floodplain and up to 35% on the side slopes.
1, 3	Highway 814, between Millet and Wetaskiwin	14532	NVR10/U1l Navarre (60%), Wetaskiwin (20%), Malmo (10%), Miscellaneous Gleysol (10%)	Gleyed Black Chernozem on fine textured water-laid sediments.	Includes poorly drained and Solonetzic soils. Undulating, low relief landform with a limiting slope of 2%.
All	Camrose	15063	ZDL1/DL Miscellaneous Disturbed Land	Miscellaneous undifferentiated mineral soils.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Disturbed land (urban, open pit mines, gravel pits).

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
All	Highway 13, Camrose to Wetaskiwin	11762	ZGW20/SC2 Miscellaneous Gleysol (80%), Miscellaneous Undifferentiated Mineral (20%)	Gleysolic soils on undifferentiated materials.	Includes rapidly to imperfectly drained soils. Valley with terraces landform with slopes ranging from 1–5% on terraces and up to 35% on the side slopes.
All	Highway 13, Camrose to Wetaskiwin	14481	PHS6/U1h Peace Hills (80%), Ferintosh (20%)	Orthic Black Chernozem on moderately coarse textured sediments deposited by wind or water.	Includes soils that are coarser textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
All	Highway 13, Camrose to Wetaskiwin	14526	MMWK1/U1l Malmo (40%), Wetaskiwin (40%), Navarre (20%)	Eluviated Black Chernozem on fine textured water-laid sediments. Black Solodized Solonetz on fine Both textured water-laid sediments.	May include soils that are not strongly contrasting from the dominant or co-dominant soils. Undulating, low relief landform with a limiting slope of 2%.
All	Highway 13, Camrose to Wetaskiwin	14464	CMKV19/H1l Peace Hills (30%), Camrose (30%), Kavanagh (30%), Miscellaneous Water (10%)	Black Solodized Solonetz on medium textured till. Black Solodized Solonetz on medium textured softrock.	Includes poorly drained and Chernozemic soils. Hummocky, low relief landform with a limiting slope of 6%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
All	Highway 13, Camrose to Wetaskiwin	14450	AGS10/H1l Angus Ridge (60%), Camrose (20%), Norma (10%), Miscellaneous Gleysol (10%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained and Solonetzic soils. Hummocky, low relief landform with a limiting slope of 6%.
All	Highway 13, Camrose to Wetaskiwin	14453	AGS18/U1h Angus Ridge (60%), Looma (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils and soils that are finer textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
All	Highway 13, Camrose to Wetaskiwin	14455	AGS2/H1l Angus Ridge (60%), Uncas (20%), Miscellaneous Gleysol (20%)	Eluviated Black Chernozem on medium textured till.	Includes poorly drained soils. Hummocky, low relief landform with a limiting slope of 6%.
All	Highway 13, Camrose to Wetaskiwin	14999	CMO16/U1h Camrose (80%), Norma (20%)	Black Solodized Solonetz on medium textured till.	Includes Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.
All	Highway 13, Camrose to Wetaskiwin	14461	AGS7/H1l Angus Ridge (80%), Camrose (20%)	Eluviated Black Chernozem on medium textured till.	Includes Solonetzic soils. Hummocky, low relief landform with a limiting slope of 6%.

Alignment Option	Location	Soil Polygon	Soil Landscape Model/Series	Soil Type	Description
All	Highway 13, Camrose to Wetaskiwin	14484	POK5/U1h Ponoka (60%), Malmo (20%), Angus Ridge (10%), Hobbema (10%)	Eluviated Black Chernozem on medium textured sediments deposited by wind and water.	Includes soils that are finer textured than the dominant or co-dominant soils. Undulating, high relief landform with a limiting slope of 4%.
All	Highway 13, Camrose to Wetaskiwin	15027	CMO19/U1h Camrose (60%), Norma (20%), Miscellaneous Gleysol (20%)	Black Solodized Solonetz on medium textured till.	Includes poorly drained and Chernozemic soils. Undulating, high relief landform with a limiting slope of 4%.
All	Highway 13, Camrose to Wetaskiwin	14532	NVR10/U1l Navarre (60%), Wetaskiwin (20%), Malmo (10%), Miscellaneous Gleysol (10%)	Gleyed Black Chernozem on fine textured water-laid sediments.	Includes poorly drained and Solonetzic soils. Undulating, low relief landform with a limiting slope of 2%.

APPENDIX B – SURFACE WATER AND AQUATIC RESOURCES

Table B-1 Watercourse Crossings for the Alignment Options

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
1	NW-8-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	NW-8-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	NW-8-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	NW-8-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	NE-7-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	SE-7-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	SE-7-51-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
1	SW-14-48-21-W4M	ID 314481 unnamed lake	No fish sampled to date	N/A	N/A**	N/A

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
1	SE-2-50-25-W4M	ID 24420 unnamed watercourse	BRST, FTMN	1	C	April 16 to June 30
1	SE-36-49-25-W4M	ID 47226 unnamed tributary to Saunders Lake	No fish sampled to date	1	C	April 16 to June 30
1	SE-36-49-25-W4M	ID 5975 Telford Lake	BRST, FTMN	N/A	N/A**	N/A
2	NW-10-50-24-W4M	ID 46835 unnamed tributary to Clearwater Creek	No fish sampled to date	1	D	N/A
2	NW-10-50-24-W4M	ID 323 Clearwater Creek	BRST, LKCH	4	D	N/A
2	SW-2-50-24-W4M	ID 47529 unnamed tributary to Clearwater Creek	No fish sampled to date	3	D	N/A
2	NW-34-49-23-W4M	ID 323 Clearwater Creek	BRST, LKCH	3	D	N/A
2	NE-32-49-22-W4M	ID 47074 Unnamed tributary to Clearwater Creek	No fish sampled to date	1	C	April 16 to June 30
2	NE-33-49-22-W4M	ID 62696 Unnamed tributary to Clearwater Creek	No fish sampled to date	2	C	April 16 to June 30
2	SW-26-49-22-W4M	ID 323 Clearwater Creek	BRST, LKCH	3	D	N/A
2	NE-12-49-22-W4M	ID 31253 tributary to unnamed watercourse	No fish sampled to date	2	Unclassified*	N/A

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
2	NW-7-49-21-W4M	ID 31294 tributary to unnamed watercourse	No fish sampled to date	1	Unclassified*	N/A
2	NW-8-49-21-W4M	ID 31253 unnamed watercourse	No fish sampled to date	3	Unclassified*	N/A
2	SW-5-49-21-W4M	ID 31253 unnamed watercourse	No fish sampled to date	3	Unclassified*	N/A
2	NW-14-48-21-W4M	ID 303147 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
2	NE-11-48-21-W4M	ID 31654 unnamed tributary to Camrose Creek	BRST	3	D	N/A
2	SW-29-47-20-W4M	ID 31835 unnamed tributary to Camrose Creek	No fish sampled to date	3	C	April 16 to June 30
2	NW-8-47-20-W4M	ID 25167 unnamed tributary to Camrose Creek	BRST, FTMN	2	C	April 16 to June 30
3	SE-16-50-24-W4M	ID 323 Clearwater Creek	BRST, LKCH	4	D	N/A
3	SE-17-50-24-W4M	ID 323 Clearwater Creek	BRST, LKCH	4	D	N/A
3	SE-18-50-24-W4M	ID 153 Blackmud Creek	BRST, FTMN, LKCH, LNDC, LNSC, NOCY, WHSC	5	C	April 16 to June 30
3	NW-7-50-24-W4M	ID 46912 unnamed tributary to Blackmud Creek	No fish sampled to date	1	C	April 16 to June 30

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
3	SW-7-50-24-W4M	ID 46962 unnamed tributary to Blackmud Creek	BRST, FTMN, LKCH	1	C	April 16 to June 30
3	SW-7-50-24-W4M	ID 47006 unnamed tributary to Saunders Lake	No fish sampled to date	1	C	April 16 to June 30
3	SE-6-50-24-W4M	ID 47098 unnamed watercourse	No fish sampled to sate	1	C	April 16 to June 30
3	NE-31-49-24-W4M	ID 47098 unnamed tributary to Saunders Lake	No fish sampled to date	2	C	April 16 to June 30
3	NE-31-49-24-W4M	ID 47226 unnamed tributary to Saunders Lake	No fish sampled to date	1	C	April 16 to June 30
3	NE-30-49-24-W4M	ID 47350 unnamed tributary to Saunders Lake	No fish sampled to date	2	C	April1 6 to June 30
3	SE-30-49-24-W4M	ID 47382 unnamed tributary to Saunders Lake	No fish sampled to date	1	C	April 16 to June 30
1, 3	NE-17-48-24-W4M	ID 31759 unnamed tributary to Pipestone Creek	No fish sampled to date	1	D	N/A
1, 3	SE-35-47-24-W4M	ID 303531 unnamed lake	No fish sampled to date	N/A	N/A**	N/A

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
1, 3	SW-30-47-23-W4M	ID 32172 unnamed tributary to Coal Lake	No fish sampled to date	1	C	April 16 to June 30
1, 3	NW-18-47-23-W4M	ID 32445 unnamed tributary to Pipestone Creek	No fish sampled to date	1	C	April 16 to June 30
1, 3	NW-7-47-23-W4M	ID 1348 Pipestone Creek	BRST, FTMN, LKCH, PRCR, WHSC	5	C	April 16 to June 30
1, 3	SW-36-46-24-W4M	ID 32746 unnamed tributary to Pipestone Creek	No fish sampled to date	1	C	April 16 to June 30
1, 3	NW-25-46-24-W4M	ID 304278 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
1, 3	NW-34-46-20-W4M	ID 253 Camrose Creek	BRST, FTMN	5	D	N/A
1, 3	NE-34-46-20-W4M	ID 303990 unnamed lake	BRST, FTMN	N/A	N/A**	N/A
All	SE-30-46-23-W4M	ID 26310 unnamed tributary to Pipestone Creek	BRST, FTMN	2	C	April 16 to June 30
All	SE-30-46-23-W4M	ID 26310 unnamed tributary to Pipestone Creek	BRST, FTMN	2	C	April 16 to June 30
All	SW-25-46-23-W4M	ID 1348 Pipestone Creek	BRST, FTMN, LKCH, PRCR, WHSC	5	C	April 16 to June 30
All	SE-25-46-23-W4M	ID 32895 unnamed tributary to Pipestone Creek	No fish sampled to date	1	C	April 16 to June 30

Alignment	ATS Location	Watercourse ID/Common Name	Fish Sampled to Date	Strahler Order	Class	Restricted Activity Period (RAP)
All	SE-30-46-22-W4M	ID 32952 unnamed tributary to Pipestone Creek	No fish sampled to date	1	C	April 16 to June 30
All	SE-28-46-22-W4M	ID 304356 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
All	NW-26-46-22-W4M	ID 304103 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
All	SE-35-46-22-W4M	ID 304124 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
All	SW-32-46-21-W4M	ID 304102 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
All	SW-1-47-21-W4M	ID 303947 unnamed lake	No fish sampled to date	N/A	N/A**	N/A
All	SE-1-47-21-W4M	ID 303947 unnamed lake	No fish sampled to date	N/A	N/A**	N/A

* – Watercourse is unmapped and not connected to any mapped waterbodies. Confirm classification and requirements with Alberta Environment and Protected Areas. ** – Identified as a lake on the Fisheries and Wildlife Management Information System and is unclassified under the *Water Act* Code of Practice for Pipelines and Telecommunication Lines. Additional applications may be required under other regulations. BRST – brook stickleback; FTMN – fathead minnow; LKCH – lake chub; LNDC – longnose dace; LNSC – longnose sucker; NOCY – northern crayfish; PRCR – Prussian carp; WHSC – white sucker

Table B-2 Fish Species Previously Recorded in the Identified Waterbody Crossings

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Preferred Habitat
Brook stickleback	*Culaea inconstans*	NL	Secure	Streams, ponds, and lakes in or near vegetation[3]
Fathead minnow	*Pimephales promelas*	NL	Secure	Streams, lakes, and ponds in aquatic vegetation[3]
Lake chub	*Couesius plumbeus*	NL	Secure	Rivers, streams, and lakes[3]
Longnose dace	*Rhinichthys cataractae*	NL	Secure	Rivers and streams with fast flowing water[3]
Longnose sucker	*Catostomus catostomus*	NL	Secure	Bottoms of rivers, streams, and lakes[3]
Northern crayfish	*Faxonius virilis*	NL	NL	Slow, warm streams with vegetation, logs, and rocks[4]
Prussian carp	*Carassius gibelio*	NL	Exotic/Alien	Still water or slow-flowing rivers with submerged vegetation[5]
Rainbow trout	*Oncorhynchus mykiss*	NL	Secure	Open meadow streams in cool, oxygen-rich waters; introduced in shallow pothole lakes[6]
White sucker	*Catostomus commersoni*	NL	Secure	Bottoms of rivers, streams, and lakes[3]

[1] Government of Canada. 2026. Species at risk public registry. Available from: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. Accessed March 5, 2026.[2] Government of Alberta. 2025. Wild Species Status Search. Available from: https://www.alberta.ca/lookup/wild-species-status-search.aspx. Accessed March 5, 2026.[3] Derlukewich, S., and Critchley, D. 2017. *Fishes of Alberta Field Identification*, 4th Ed. School of Fish.
[4] Alberta Invasive Species Council. 2024. Northern Crayfish. Available from: https://abinvasives.ca/wp-content/uploads/2024/04/UR_FS-NorthernCrayfish.pdf. Accessed March 6, 2026.[5] Alberta Invasive Species Council. 2025. Prussian Carp. Available from: https://abinvasives.ca/wp-content/uploads/2021/02/250814-FS-Prussian-Carp-1.pdf. Accessed March 6, 2026.[6] Joynt, A., and Sullivan, M. G. 2016. *Fish of Alberta*. Lone Pine Publishing, Edmonton, AB. NL – not listed; Secure – not at risk, may be at risk, or sensitive; Exotic/Alien – introduced as a result of human activities

APPENDIX C – WILDLIFE

Table C-1 Wildlife Species Previously Identified within 2 km of the Alignment Options

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
Amphibians							
Canadian toad	*Anaxyrus hemiophrys*	NL	May be at risk	Y	N	Y	River valleys or lakes with sandy borders, requires wetlands for breeding[3]
Boreal toad	*Anaxyrus boreas*	Special Concern	Sensitive	N	Y	N	Wetlands, riparian areas, and upland sites including forests and meadows; breeds in shallow, sandy margins of lakes, ponds, and streams[4]
Reptiles							
Plains garter snake	*Thamnophis radix*	NL	Sensitive	Y	Y	Y	Meadows and prairies near sources of water[5]
Birds							
American bittern	*Botaurus lentiginosus*	NL	Sensitive	N	Y	N	Marshes with tall vegetation[6]
American kestrel	*Falco sparverius*	NL	Sensitive	Y	Y	Y	Open areas[6]

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
American white pelican	*Pelecanus erythrorhynchos*	NL	Sensitive	Y	Y	Y	Forages in shallow protected waters, nests on islands in large lakes[6]
Bald eagle	*Haliaeetus leucocephalus*	NL	Sensitive	Y	Y	Y	Near lakes and rivers[6]
Bank swallow	*Riparia riparia*	Threatened	Sensitive	Y	Y	Y	Forages over marshes, meadows, and water; nests colonially in vertical sandbanks[6]
Barn swallow	*Hirundo rustica*	Threatened	May be at risk	Y	Y	Y	Forages over fields and ponds; nests on anthropogenic structures[6]
Barred owl	*Strix varia*	NL	Sensitive	Y	Y	Y	Mature forest, particularly hardwood swamps[6]
Black tern	*Chlidonias niger*	NL	Sensitive	Y	Y	Y	Over water; nests on marshy ponds with emergent vegetation[6]
Black-throated green warbler	*Dendroica virens*	NL	Sensitive	Y	N	N	Riparian deciduous trees[6]
Bobolink	*Dolichonyx oryzivorus*	Threatened	Sensitive	Y	Y	Y	Nests in open fields and damp meadows; forages in weedy fields[6]

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
Broad-winged hawk	*Buteo platypterus*	NL	Sensitive	Y	N	Y	Wooded areas[6]
Brown creeper	*Certhia americana*	NL	Sensitive	Y	N	N	Mature woods[6]
Canada warbler	*Wilsonia canadensis*	Threatened	May be at risk	Y	N	N	Deciduous undergrowth of mature forests, often near streams or low areas[6]
Cape May warbler	*Dendroica tigrina*	NL	Sensitive	Y	N	Y	Mature coniferous forests[6]
Common yellowthroat	*Geothlypis trichas*	NL	Sensitive	Y	N	Y	Weedy and marshy habitats in low, wet areas[6]
Eared grebe	*Podiceps nigricollis*	NL	Sensitive	Y	Y	Y	Nests on shallow ponds and lakes with emergent vegetation, forages on open water[6]
Eastern kingbird	*Tyrannus tyrannus*	NL	Sensitive	Y	Y	Y	Semi-open habitats with a mix of grassy fields and trees, often near water[6]
Eastern phoebe	*Sayornis phoebe*	NL	Sensitive	Y	Y	Y	Open woods and woodland edges, near buildings and water[6]

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
Great blue heron	*Ardea herodias*	NL	Sensitive	Y	Y	Y	Forages in open habitats from fields to shallow water; nests colonially in trees in standing water[6]
Great gray owl	*Strix nebulosa*	NL	Sensitive	Y	Y	Y	Mixed forests[6]
Horned grebe	*Podiceps auritus*	Special Concern	Sensitive	Y	Y	Y	Nests on ponds with emergent vegetation[6]
Northern goshawk	*Accipiter gentilis*	NL	Sensitive	Y	N	Y	Mixed forests with wetlands or other openings[6]
Northern pygmy owl	*Glaucidium gnoma*	NL	Sensitive	Y	N	N	Broken mixedwood forests with clearings or patches of brush[6]
Pied-billed grebe	*Podilymbus podiceps*	NL	Sensitive	Y	Y	Y	Shallow ponds and marshes with emergent vegetation[6]
Pileated woodpecker	*Dryocopus pileatus*	NL	Sensitive	Y	Y	Y	Mature hardwood and coniferous forests[6]
Purple martin	*Progne subis*	NL	Sensitive	Y	Y	Y	Nests in manmade martin houses near open water; forages over any open habitat[6]

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
Sharp-tailed grouse	*Tympanuchus phasianellus*	NL	Sensitive	Y	Y	Y	Grassy habitat where prairie and woodland mix[6]
Short-eared owl	*Asio flammeus*	Special Concern	May be at risk	Y	Y	Y	Open fields, grasslands, or marshes[6]
Sora	*Porzana carolina*	NL	Sensitive	Y	Y	Y	Wet marshy habitats[6]
Trumpeter swan	*Cygnus buccinator*	NL	Sensitive	Y	Y	Y	Shallow marshy ponds or lakes surrounded by trees[6]
Western grebe	*Aechmophorus occidentalis*	Special Concern	At risk	Y	Y	Y	Shallow lakes with emergent vegetation[6]
Western wood-pewee	*Contopus sordidulus*	NL	May be at risk	Y	Y	Y	Mature deciduous and mixedwoods forests and forest edges[6]
White-winged scoter	*Melanitta deglandi*	NL	Sensitive	Y	Y	Y	Nests on large lakes in the boreal forest[6]
Mammals							
American badger	*Taxidea taxus*	Special Concern	Sensitive	Y	Y	Y	Non-forested grassland and shrubland[7]
Little brown bat	*Myotis lucifugus*	Endangered	May be at risk	Y	Y	Y	Forages mainly over water, females establish summer maternity colonies in buildings or large-diameter trees[8]

Common Name	Scientific Name	Species At Risk Status[1]	Alberta Wild Species General Status[2]	Option 1 (Y/N)	Option 2 (Y/N)	Option 3 (Y/N)	Preferred Habitat
Long-tailed weasel	*Mustela frenata*	NL	May be at risk	N	Y	N	Crop fields and small wooded areas; nest in hollow logs, under rock piles, or under structures[9]

[1] Government of Canada. 2026. Species at risk public registry. Available from: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. Accessed March 5, 2026. [2] Government of Alberta. 2025. Wild Species Status Search. Available from: https://www.alberta.ca/lookup/wild-species-status-search.aspx. Accessed March 5, 2026. [3] Government of Alberta. 2002. Alberta's Canadian toad. Available from: https://open.alberta.ca/dataset/417892dc-d442-4640-9e5c-5976194cb679/resource/2e410353-85a6-454f-ae82-ef1852f9d2aa/download/sar-canadiantoad-factsheet-mar2002.pdf. Accessed March 5, 2026. [4] COSEWIC. 2012. COSEWIC assessment and status report on the Western Toad *Anaxyrus boreas* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 71 pp. Available from: https://ecprccsarstacct.z9.web.core.windows.net/files/SARAFiles/legacy/cosewic/sr_Western%20Toad%20_2013_e.pdf. Accessed March 5, 2026. [5] Dewey, T. 2011. Thamnophis radix, Animal Diversity Web. Available from: https://animaldiversity.org/accounts/Thamnophis_radix/. Accessed March 5, 2026. [6] Sibley, D. A. 2016. Sibley Birds West, 2nd Ed. Alfred A. Knopf, New York. [7] Government of Canada. 2026. American Badger taxus subspecies (Taxidea taxus taxus). Available from: https://species-registry.canada.ca/index-en.html#/species/623-880. Accessed March 6, 2026. [8] Government of Canada. 2026. Little Brown Myotis (Myotis lucifugus). Available from: https://species-registry.canada.ca/index-en.html#/species/1173-848. Accessed March 6, 2026. [9] Newell, T. 2002. Mustela frenata, Animal Diversity Web. Available from: https://animaldiversity.org/accounts/Mustela_frenata/. Accessed March 6, 2026. NL – not listed; Special concern – may become threatened or endangered due to a combination of biological traits and identified threats; Threatened – Likely to become endangered; Endangered – facing imminent extirpation or extinction; Sensitive – not at risk but may require special attention to prevent the species from becoming so; May be at risk – may be at risk of extinction or extirpation; At risk – known to be at risk, legal designation as threatened or endangered in Alberta.

Table C-2 Sensitive Timing Windows and Recommended Setback Distances

Species	Location	Time of Year	Low Disturbance	Medium Disturbance	High Disturbance
Sharp-tailed grouse	Leks	March 15 – June 15	500 m	500 m	500 m
		June 16 – March 14	100 m	100 m	500 m
Sensitive raptor species (Bald eagle)	Nesting sites	March 15 – July 15	1000 m	1000 m	1000 m
		July 16 – March 14	50 m	100 m	100 m
Short-eared owl	Active nest and surrounding habitat	April 1 – July 15	100 m	100 m	100 m
Piping plover waterbodies	Nesting sites	April 15 – July 31	100 m	200 m	200 m
		August 1 – April 14	100 m	100 m	200 m

APPENDIX B - DESKTOP GEOTECHNICAL STUDY

THURBER

Camrose and Wetaskiwin Regional Water Supply Feasibility Desktop Study

Capital Region Southwest Water Services Commission
County of Camrose and Wetaskiwin, Alberta

Client Name: Associated Engineering Alberta Ltd.
Date: May 7, 2026
File: 85418

THURBER

TABLE OF CONTENTS

1. INTRODUCTION 1
2. PROJECT DESCRIPTION 1
3. METHODS OF ASSESSMENT 2
4. TOPOGRAPHY 2
5. GEOLOGY 3
   - 5.1 Surficial Geology 3
   - 5.2 Bedrock Geology 5
   - 5.3 Water Course Crossing Locations 5
6. PRELIMINARY GEOTECHNICAL ASSESSMENT 6
   - 6.1 General 6
   - 6.2 Preliminary Evaluation and Recommendations 7
7. FURTHER WORK 9
8. CLOSURE 11

REFERENCES

STATEMENT FOR USE AND INTERPRETATION OF REPORT

APPENDICES

APPENDIX A

- Preliminary Alignments Drawing (by AE)
- Drawings 85418-1a to 85418-1c
- Drawings 85418-2a to 85418-2n
- Drawings 85418-3a to 85418-3c

DRAFT

1. INTRODUCTION

This report presents the results of a preliminary geotechnical desktop study carried out by Thurber Engineering Ltd. (Thurber) for the Capital Region Southwest Water Services Commission (CRSWSC) regional water supply to the City of Camrose, City of Wetaskiwin, and portions of the County of Wetaskiwin.

The study was carried out in general accordance with our proposal to Mr. Chris Parfitt, P.Eng., of Associated Engineering Alberta Ltd. (AE), dated December 18, 2025.

It is a condition of this report that Thurber's performance of its professional services will be subject to the attached Statement for Use and Interpretation of Report.

2. PROJECT DESCRIPTION

We understand that AE is conducting a feasibility study for CRSWSC to supply potable water to the City of Camrose, City of Wetaskiwin, and portions of the County of Wetaskiwin. The CRSWSC sources its water from EPCOR, with the transfer point located just outside Nisku city limits.

AE is currently considering three alignments as shown in the AE preliminary alignment drawing, provided in Appendix A:

- Alignment 1: Begins in Beaumont, extends southeast to Camrose, and then continues southwest to Wetaskiwin
- Alignment 3: Starts in Edmonton, runs south towards Leduc and Wetaskiwin, and then northeast to Camrose.
- Alignment 6: Begins in Beaumont, proceeds southwest to Leduc, continues south to Wetaskiwin, and then northeast to Camrose.

The drawing also indicates the existing CRSWSC pipelines along the proposed alignments and highlights the new alignments. The new alignments are located:

- between Beaumont and Leduc.
- from Millet going south towards Wetaskiwin and then northeast towards Camrose.
- in Camrose County along Highway 21, going north from Camrose.

The proposed alignment is expected to occupy an approximately 10 m wide right-of-way (ROW). Pipeline construction is anticipated to use either open-cut or trenchless methods, with trenchless construction being the preferred approach.

DRAFT

3. METHODS OF ASSESSMENT

The assessment included the following activities:

- Collect and summarize geological information from publicly available sources.
- Review publicly available water well data.
- Review available satellite imagery to identify geological constraints such as locations where weak slope colluvium and muskeg deposits (if any) may be present.
- Review of LiDAR 15 data, to identify topographic features and help delineate locations of potential instability within the river and creek valley slopes.

We understand that the proposed alignments will be installed near or within road ROWs and will follow existing CRSWSC pipelines where feasible. Accordingly, this study focuses primarily on the new alignment segments where no existing CRSWSC pipelines are present.

The overall site plan containing the proposed alignments is shown on Drawing 85418-1a, in Appendix A. The bedrock surface topography and surficial deposit thickness maps are shown in Drawing 85418-1b, and the surficial geology map is shown in Drawing 85418-1c, both of which are also included in Appendix A. The bedrock topography is taken from the published bedrock topography (Slattery and Barker, 2008).

To facilitate the presentation of the new alignments, the study area is divided into two areas: the North Study Area and the South Study Area. The South Study Area is further subdivided into five blocks: Blocks A through E. Drawings 85418-2a to 85418-2n highlight the South Study Area, and Drawings 85418-3a to 85418-3c highlight the North Study Area.

The bedrock topography was refined following the review of lithology information from available water well records. The surficial geology shown on the drawings was updated based on interpretation of LiDAR and satellite imagery.

A total of 1,068 water well records were reviewed for the North Study Area, and 3,526 water well records were reviewed for the South Study Area. The water well locations are shown on the drawings.

4. TOPOGRAPHY

Drawing 85418-1a shows the general geography and topography of the entire study area. The area in the northwest corner is a low relief where the large proglacial lake named “Glacial Lake Edmonton” existed during the retreat of the continental Laurentide ice sheet. The rest of the area is a flat plateau with small ridges and depressions. This area was covered by mostly stagnant ice sheet, which produced most of today's surficial deposits. A large, dominant channel

DRAFT

extends from the northwest to the southeast corners of the study area, which was created by water draining from the Glacial Lake Edmonton. As the ice retreated and the North Saskatchewan River Valley became unblocked, water from the lake was drained through this valley, leaving an abandoned channel in the study area. At present, this abandoned channel is a chain of narrow lakes and small waterways.

The South Study Area is located on the plateau on which the abandoned valley and one abandoned tributary valley were incised. The South Study Area alignment and topography are shown on Drawings 85418-2a and -2b in Appendix A.

The North Study Area is mostly located at the southeastern edge of the former Glacial Lake Edmonton and at the beginning of the dry valley. One tributary valley exists on the east side of the dry valley. The North Study Area alignment and topography are shown on Drawing 85418-3a.

Drawings 85418-2f, -2h, -2l, -2n, and -3c, included in Appendix A, show the ground surface slopes along the new alignments. Most of the terrain along the proposed new alignments is flat, with ground slope angles less than five degrees. The terrain steepens at valleys of the water crossings, indicated in Blocks A, B of the South Study Area, and the North Study Area, with ground slope angles greater than 10 degrees. There are some areas along the alignment that have ground slope angles greater than 10 degrees that are not within a valley, though these are more local, as shown in the north portion of Block A of the South Study Area.

5. GEOLOGY

5.1 Surficial Geology

A regional surficial geology map is presented on Drawing No. 85418-1c. Surficial deposits are glacial deposits formed during the last glaciation. Only limited Quaternary deposits at the channel bottom are interpreted to be non-glacial in origin. In some areas along the alignments, surficial deposits are thin or locally absent, particularly on the channel slopes.

Based on interpretation from the Surficial Geology of Alberta (Fenton et al., 2013), the following descriptions are provided for each of the surficial deposit units encountered along the proposed alignments:

- Moraine: till with gravel and boulders, some contorted bedrock. Till is unsorted sediment deposited directly from glacial ice. Till consists mainly of local bedrock material with a significant amount of igneous and metamorphic rocks derived from the Canadian Shield. The till contains approximately equal proportions of sand, silt, and clay, with approximately 10 percent gravel. The moraine deposits are present in the majority of the

DRAFT

study area, and they overlie the bedrock and underlie other surficial deposit units except in the areas at the channel slopes where the bedrock is exposed.

- Glaciofluvial Deposits: Glaciofluvial deposits are material deposited by glacial meltwater streams and sheets as glacial outwash. The glaciofluvial deposits include sand and gravel, commonly stratified with minor silt, but dominantly sand. The glaciofluvial deposits are present in small areas in Blocks A and D of the South Study Area.
- Glaciolacustrine Deposits: sand, silt and clay, with local ice-rafted stones. The glaciolacustrine sediments were deposited in proglacial lakes during the last retreat of the ice sheet. The glaciolacustrine deposits consist of layers of silt, clay, and fine sand. During the life of Glacial Lake Edmonton, melting icebergs brought till and other glaciolacustrine ice-rafted deposits. The glaciolacustrine deposits are underlain by moraine deposits and, where present, overlain by eolian deposits. The glaciolacustrine deposits are present in Blocks A and B of the South Study Area.
- Eolian Deposits: fine-grained sand and silt. The eolian deposits are derived from outwash sand and glaciolacustrine deposits, and they are usually located over the source material or at a short distance from the source material. Because the source material is glaciolacustrine deposits, the eolian deposits are deposited over the glaciolacustrine deposits or over the moraine deposits in close proximity to the glaciolacustrine deposits. The eolian deposits are present Blocks A and B of the South Study Area.
- Fluvial Deposits: In the study area, the fluvial deposits are a mixture of fluvial and lacustrine deposits. Fluvial deposits are recent sediments deposited by streams and lakes. Most of those sediments are deposited in the channel or the south tributary. Because of the origin of the fluvial deposits in the channel, the deeper portion of the deposits is typically composed of coarser material or meltwater and outwash sand and some gravel, overlain by a mixture of fluvial sand, silt and clay and lacustrine clay and silt. In the uppermost portion of the fluvial deposits, we expect a significant portion of lacustrine clay and silt with organic material.
- Colluvium Deposits: Colluvial deposits (material) are formed on the channel slopes and tributary slopes. The colluvial deposits result from gravitational movement and occur as slope and slump deposits. Some deposits may shift seasonally due to freezing and thawing, causing creeping. The colluvium can also move as slumps or landslides. Most of the colluvium deposits are in the North Study Area and in Blocks B and C of the South Study Area.
- Wetland-Organic Deposits. Organic deposits form in the channel and on flat areas with poor drainage. The organic deposits are mostly undifferentiated peat layers (woody to fibrous) formed in wetlands. The organic deposits in the channel are closely connected

DRAFT

with the fluvial deposits. The wetland-organic deposits are present around the Bittern Lake in Block C of the South Study Area.

The thickness of the surficial deposits is the difference between the bedrock surface and the ground surface elevations. The processes that created the bedrock surface were preglacial, mostly fluvial erosion, glacial erosion during the last glaciations, and meltwater erosion, mostly during the retreat of the Laurentide ice sheet. The ground surface is the result of glacial depositions and postglacial erosion by different processes. The surficial deposits are shown on the surficial deposits isopach maps (Drawings 85418-1b, -2c, and -3b) and in the elevation profiles shown in Drawings 85418-2f, -2h, -2j, -2l, -2n, -3c, included in Appendix A.

5.2 Bedrock Geology

Drawings 85418-1b, -2c, and -3b, included in Appendix A, presents the bedrock surface topography map within the study area.

The entire study area is underlain by a single bedrock unit, the Horseshoe Canyon Formation, according to the Bedrock Geology of Alberta (Prior et al., 2013).

The Horseshoe Canyon Formation is composed of deltaic and fluvial deposits of interbedded and interlensed sandstone, siltstone and shale. Most of the sediments consist of grey and white fine-grained, bentonitic, feldspathic sandstone with numerous coal seams and zones. Most beds contain some bentonite, but some contain a large amount. The bentonitic seams or beds are the major cause of slope instability. The bedrock is overlain by surficial deposits, except on the channel slopes, where it may be exposed or covered by a colluvial veneer.

5.3 Water Course Crossing Locations

Three crossing locations over water courses and adjacent to steep valley slopes were noted along the proposed alignments. The locations are shown on Drawing 85418-2f (Block A, South Study Area), Drawing 85418-2h (Block B, South Study Area), and Drawing 85418-3c (North Study Area), included in Appendix A.

Most of the noted crossings will be through the channel valley and tributary valley and with ground surface slopes greater than 10 degrees. These locations typically have thinner surficial deposits and indicate signs of potential instabilities (i.e. colluvium, valley disturbance).

DRAFT

6. PRELIMINARY GEOTECHNICAL ASSESSMENT

6.1 General

It is anticipated that a significant portion of the water line alignment will be installed using open trench techniques. However, a suitable trenchless method such as Horizontal Directional Drilling (HDD) will likely be required to install the line below watercourses and pipeline crossings (subject to pipeline depth at the crossing location). Shallow trenchless installation technologies such as Horizontal Auger Boring (HAB) or Pipe Ramming (PR) may also be used to install the line below the highways or local roads.

The stratigraphy is anticipated to vary along the alignment and may consist of sand, clay and/or silt or clay till. Bedrock elevation varies along the alignment and will likely be encountered when deep installations are completed for major crossings, in particular in the North Study Area where shallow bedrock was more prevalent. The groundwater table is expected to be encountered between 1 to 5 m below existing ground, based on general knowledge of terrain since there were no available test hole information or enough data from water well records.

The main geotechnical constraints/considerations along the alignments include the following:

- Glaciolacustrine and eolian deposits with high groundwater table, mostly present in Blocks A and B of the South Study Area.
- Potential slope instability at water course crossing locations (North Study Area, and Blocks A and B of South Study Area,) and presence of nearby top of valley slopes to the south of the proposed alignment (Block B of South Study Area).
- Pipeline and creek/river crossings. Pipeline companies should be contacted to confirm the depth of cover above the pipelines at potential crossing locations.
- Wetlands and organic deposits present to the north of the proposed alignment (Block C of South Study Area).

Specific to the proposed alignments, the main geotechnical constraints/considerations include:

- Alignment 1: Begins in Beaumont, extends southeast to Camrose, and then continues southwest to Wetaskiwin
  - Mostly glaciolacustrine and adjacent eolian deposits present with high groundwater table (Block B, South Study Area)
  - Water course crossing location (Block B, South Study Area)
- Alignment 3: Starts in Edmonton, runs south towards Leduc and Wetaskiwin, and then northeast to Camrose.

DRAFT

- Eolian and glaciolacustrine deposits present with high groundwater table (Block A, South Study Area)
- Mostly glaciolacustrine and adjacent eolian deposits present with high groundwater table (Block B, South Study Area)
- Two water course crossing locations (Blocks A and B, South Study Area)

- Alignment 6: Begins in Beaumont, proceeds southwest to Leduc, continues south to Wetaskiwin, and then northeast to Camrose.
  - Eolian and glaciolacustrine deposits present with high groundwater table (Block A, South Study Area)
  - Mostly glaciolacustrine and adjacent eolian deposits present with high groundwater table (Block B, South Study Area)
  - Three water course crossing locations (North Study Area, and Blocks A and B of South Study Area)

6.2 Preliminary Evaluation and Recommendations

In general, all underground utilities should be constructed below 3.5 m depth or alternatively be insulated to provide protection against frost heave. The insulation should be designed and installed as per the manufacturer/supplier's recommendations. The design of the pipes will also need to consider buoyancy where the depth of installation is shallow, and the groundwater table is high.

Open cut method is deemed suitable to construct most of the alignment outside potential crossing locations. However, high groundwater may be encountered along the alignment that spans the eolian and glaciolacustrine deposits. Temporary dewatering may be required during excavation and continuous dewatering will likely be required when sand is encountered within the depth of excavation. The dewatering of water bearing sand/gravel in eolian and sands of the glaciolacustrine deposits is anticipated to be difficult and will likely require dewatering points. If groundwater seepage is encountered in the clay moraine it should be handled with typical sumps and pumps. An experienced contractor with dewatering schemes should be consulted during the detailed design stage. A temporary shoring including trench boxes should be considered where space does not allow for open excavations. The temporary shoring should be designed and stamped by a Professional Engineer.

Temporary excavation side slopes are anticipated to be stable at slopes of 1H:1V and 1.5H:1V or flatter for clay and sand, respectively, assuming dry conditions. Cobbles or boulders may be present in the till deposits, and this may hinder the installation of the pipe.

DRAFT

Prior to installing utility pipes or bedding material, the base of the trench should be inspected. Any loose or disturbed material should be removed. If the trench base is situated in soft clays or saturated sands below the water table where the pipe support conditions may be poor, special bedding procedures may be required to improve pipe support conditions and reduce future settlement of the pipes. Such special bedding requirements may consist of sub-excavation and placement of a 500 mm thick layer of washed rock wrapped in a geotextile fabric in the base of the trench for support of the pipe bedding. This technique has been found to provide a better working surface in the trench base and facilitates trench drainage during pipe installation. However, it is important to note that the special bedding procedures do not eliminate the need to adequately dewater the base as pipes installed on a wet disturbed trench base could settle and distort once the trench is backfilled.

If native sand or silt is present at the base of trench level, it is important that it is dewatered to at least 1 m below the base of the trench before installing the pipe to avoid placing the pipe on a loose disturbed base which could settle and distort the pipe after the trench backfill is placed.

The pipe should be bedded and installed according to the manufacturer's specifications. Care should be taken such that the pipe is not in contact with rigid objects such as cobbles, rocks or hard bedrock pieces as this will cause a stress concentration in the pipe and may result in breakage.

Excavated inorganic native materials from the trenches may need to be re-worked to meet the compaction standards. However, silty sand is anticipated to be difficult to rework and place and imported fill may have to be placed at locations where eolian or glaciolacustrine deposits are encountered. If it is decided to use silty sand to backfill trenches, it should not be used in the upper 1 m of the trenches, particularly below roadways to reduce frost heave issues. Imported gravel should ideally be used to backfill trenches, particularly where the lines are installed below existing roadways and adjacent to pipelines, to reduce long term settlement issues and future maintenance plans.

HDD should be feasible to install the proposed pipeline below identified watercourse crossings. A specific "No-Drill zone" may have to be established at identified crossing locations and particularly at crossings with potential slope stability issues. For preliminary design purposes, it is recommended that the entry and exist points be located at least 20 m away from the crest of the valley slope or bridge approach fill. The pipe should be located at least 10 m below stream bed for valleys less than 4 m in height and 15 to 20 m for valleys greater than 4 m in height.

HDD may also be used to install the line at pipeline crossings and the entire alignment. However, HDD is anticipated to be difficult in saturated eolian or glaciolacustrine deposits and the likelihood of borehole collapse and frac-out is high.

DRAFT

Hydro-fracture analyses should be undertaken during the detailed design to confirm the bore path and the minimum depth of cover below stream beds and pipelines.

Shallow trenchless installation technologies such as HAB and PR may be used to complete shallow installations below roadways (if any). It should be noted that PR is more favorable than HAB when sand under high groundwater table is encountered along the drilling path. Temporary shoring and dewatering will likely be required when sand under high groundwater conditions is encountered at the entry and exit pits. A survey monitoring program should be established during construction to assess the impact of installation on roadways.

A contractor experienced with trenchless methods should be contacted during the detailed design stage to confirm the most suitable installation methods and quantify construction risks and mitigative measures. Regardless of the selected installation method, it should be designed to reduce the likelihood of:

- Damage to existing utility lines
- Subsidence or heave of existing roadways
- Frac-out or mud loss below existing roadways and watercourses.

Slope stability analyses should be undertaken at locations where potential or signs of instability are identified (based on the LiDAR data). This includes water course crossing locations and locations where the stream top of bank exists in the general vicinity of the proposed alignment. This is to determine a safe setback for the pipe from the top of the bank.

Permanent underground structures (e.g. manholes) founded below groundwater table will need to be designed to sustain buoyancy forces. Alternatively, a permanent sub-drainage system could be considered below the base of the structure to reduce the hydrostatic forces on the structure.

Consideration should be given for vibration monitoring during construction, particularly in the proximity of sensitive structures along the alignment.

7. FURTHER WORK

A detailed geotechnical investigation should be undertaken to provide more specific recommendations for the design and the construction of the proposed line.

The detailed geotechnical investigation should include the following:

- Site reconnaissance to assess any instability at watercourse crossing locations or potential instability locations identified during this study.

DRAFT

- Further desktop review specific to the selected watercourse crossing locations
- Drilling shallow test holes at a minimum spacing of approximately 200 m along the alignment. The recommended minimum spacing is to capture variability in ground conditions along the proposed alignment. The test holes should be terminated at least 2 m below the anticipated depth of the pipe.
- Where trenchless methods are to be used at watercourse crossing locations, drilling two test holes at each of the identified watercourse crossing locations to assess potential slope stability issues (if any) and provide recommendations for trenchless excavation. The test holes should be terminated 10 to 20 m below the base of the valley, depending on the crossing details and type.
- Where trenchless methods are to be used at deeper pipeline crossings, drilling one test hole at each side of the pipeline crossing locations to provide recommendations for trenchless excavations, if it is decided to install the line below the pipeline. The test holes should be terminated at least 10 m below the invert of the existing pipeline.

DRAFT

8. CLOSURE

This desktop study is based on available existing information and a general knowledge of subsurface conditions within the study area. Hence, the evaluations and recommendations presented within are preliminary in nature and only intended to help guide AE in selecting a preferred method and alignment for installation of the water line.

We trust this information meets your present needs. If you have any questions, please contact the undersigned at your convenience.

DRAFT

Milan Butorac, B.Sc., P.Geol.
Hydrogeologist

Mark Gallego, M.Eng., P.Eng.
Associate | Geotechnical Engineeer

Date: May 7, 2026
File: *85418*

Craig Campbell, M.Eng., P.Eng.
Partner | Senior Environmental Engineer

REFERENCES

Slattery, S.R. and Barker, A.A, 2008. Thickness of Quaternary and Neogene Sediments in the Edmonton-Calgary Corridor. *Alberta Geological Survey*. MAP 548.

Fenton, M.M, Waters, E.J., Pawley, S.M., Atkinson, N, Utting, D.J., Mckay, K, 2013. Surficial Geology of Alberta. *Alberta Geological Survey*. MAP 601.

Prior, G.J., Hatway, B., Glombick, P.M., Pana, D.I., Banks, C.J., Hay, D.C., Schneider, C.L., Grobe, M., Elgr, R., Weiss, J.A., 2013. Bedrock Geology of Alberta. *Alberta Geological Survey*. Map 600.

DRAFT

THURBER

STATEMENT FOR USE AND INTERPRETATION OF REPORT

1. STANDARD OF CARE
This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

2. COMPLETE REPORT
All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TOTHE WHOLE OF THE REPORT.

3. BASIS OF REPORT
The Report has been prepared for the specific site, development, design objectives, and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT
The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT**. Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

5. INTERPRETATION OF THE REPORT
a) **Nature and Exactness of Soil and Contaminant Description:** Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors is inherently judgement-based. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other parties making use of such documents or records with or without our express written consent need to be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) **Reliance on Provided Information:** The evaluation and conclusions contained in the Report have been prepared based on conditions in evidence at the time of site inspections and based on information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) **Design Services:** The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber is recommended to be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design need to be reported to Thurber immediately so that Thurber can address potential conflicts.

d) **Construction Services:** During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions to confirm and document that the site conditions do not materially differ from those conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. INDEPENDENT JUDGEMENTS OF CLIENT
The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or other parties who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes, but is not limited to, decisions made to develop, purchase, or sell land, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.

APPENDIX A

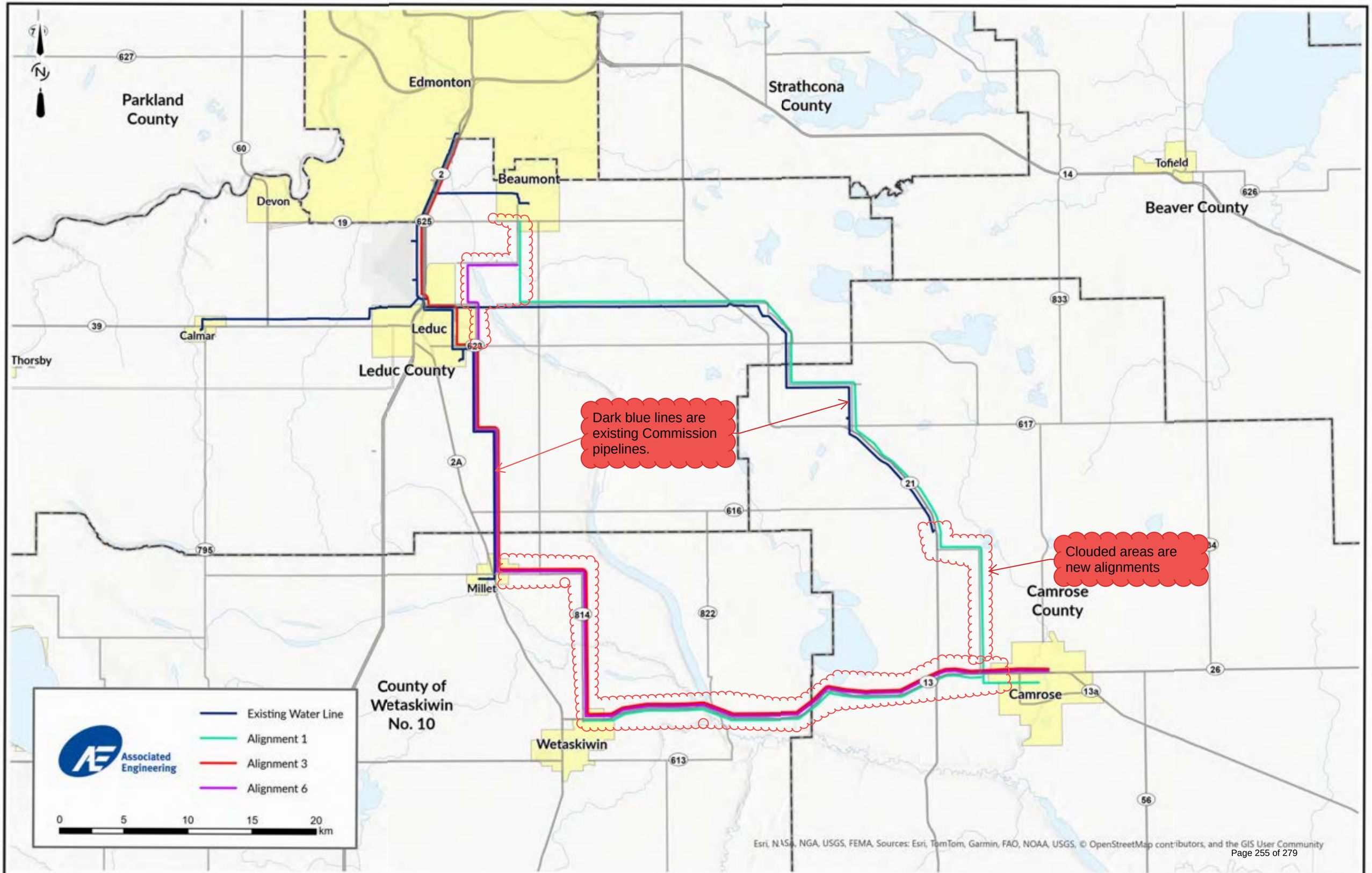
Preliminary Alignments Drawing (by AE)

Drawings 85418-1a to 85418-1c

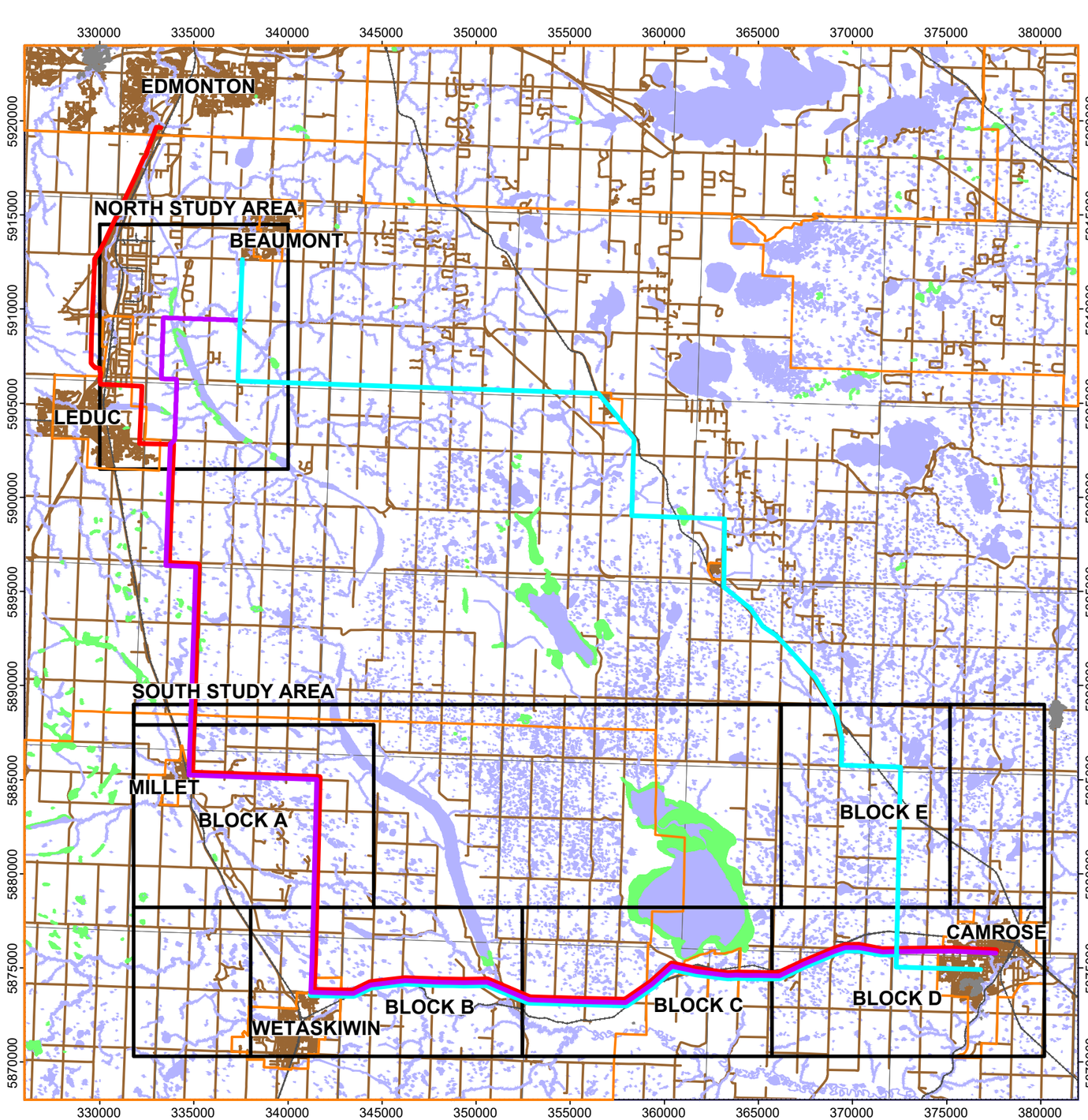
Drawings 85418-2a to 85418-2n

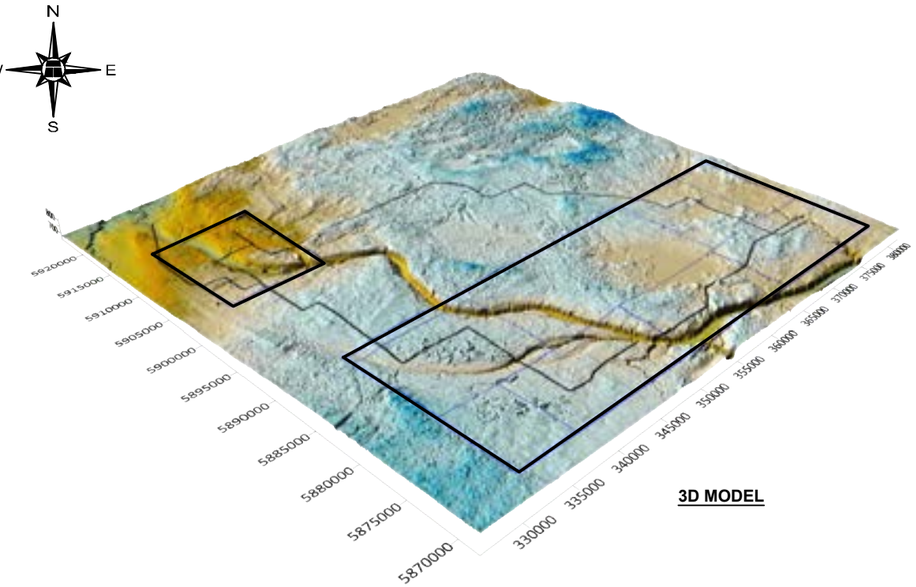
Drawings 85418-3a to 85418-3c

DRAFT


Parkland County
Edmonton
Strathcona County
Beaumont
Devon
Tofield
Beaver County
Calmar
Leduc
Thorsby
Leduc County
Dark blue lines are existing Commission pipelines.
Clouded areas are new alignments
Millet
Camrose County
Camrose
County of Wetaskiwin No. 10
Wetaskiwin
Existing Water Line
Alignment 1
Alignment 3
Alignment 6
Associated Engineering
0 5 10 15 20 km
Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-1a May 5, 2026.dwg - 1 - May. 07, 2026





LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- MUNICIPAL BOUNDARY
- ROAD
- MAPPED WATER BODY
- MAPPED WETLAND AREA

DRAFT

NOTE:
COORDINATES ARE IN UTM 12, NAD 83

0 2.5 5 7.5 10 12.5 15km

SCALE 1:250 000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

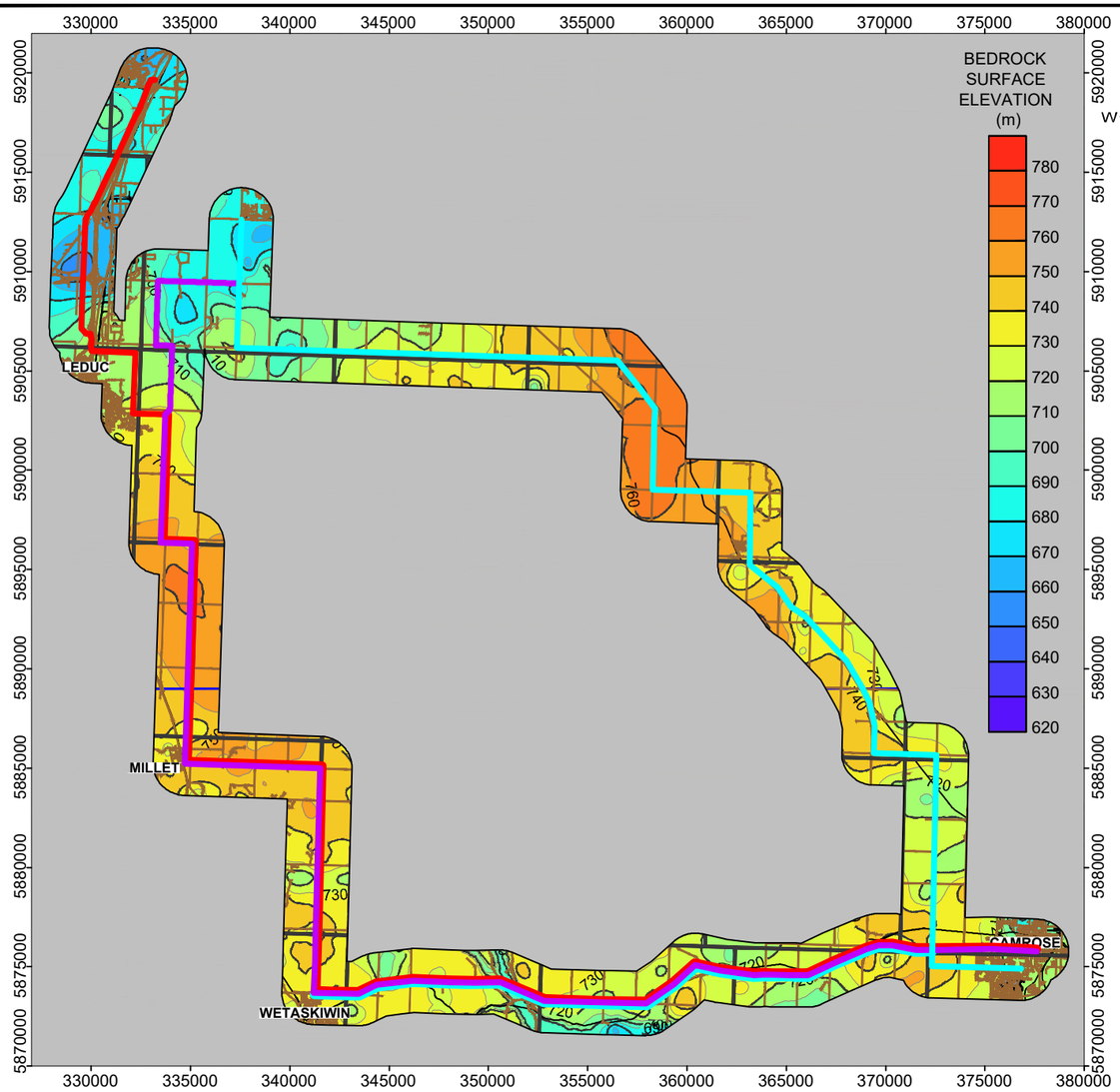
REGIONAL SITE PLAN

DWG No. 85418-1a

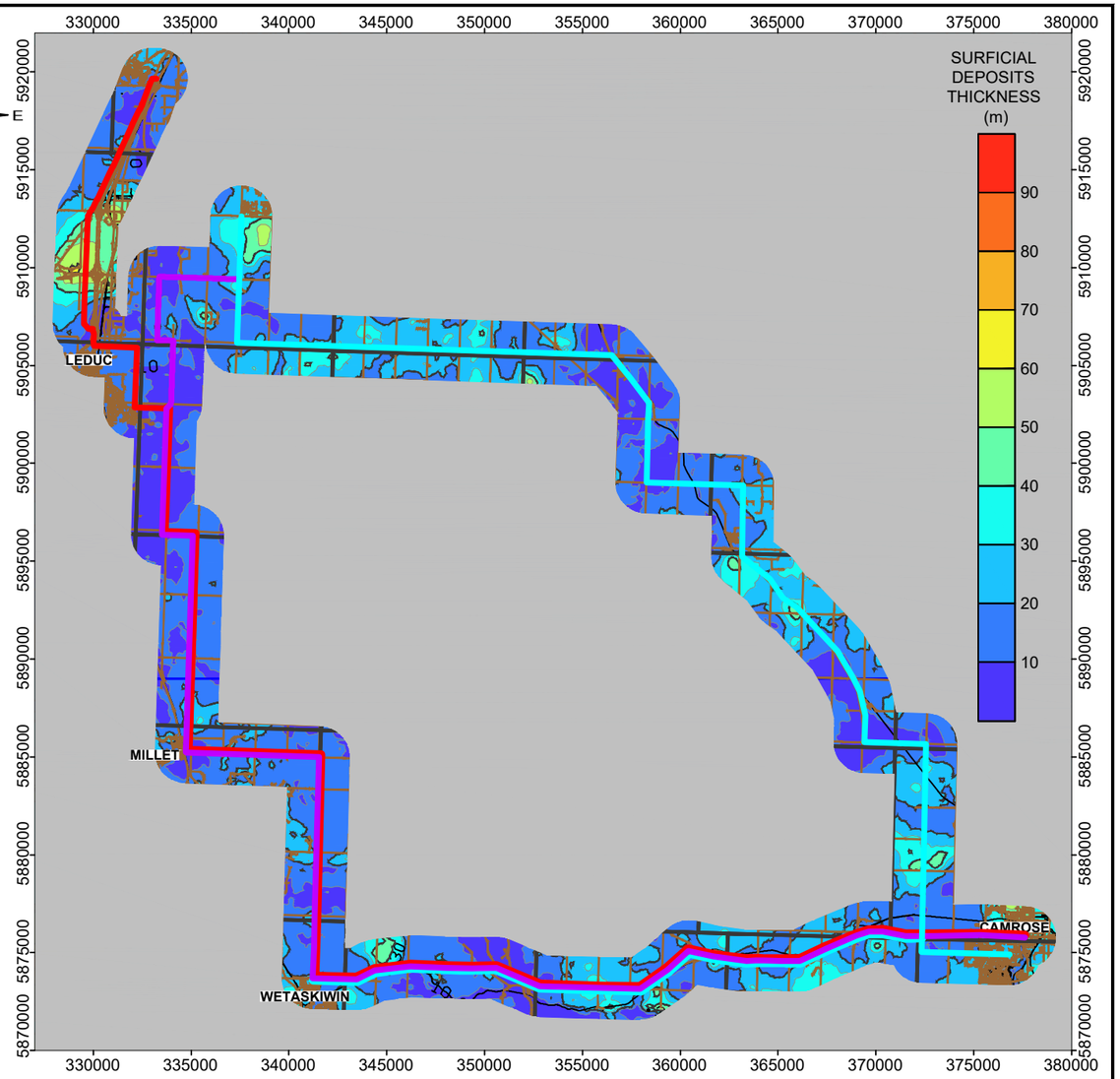
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:250 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-1b MAY 5, 2026.dwg - 1b - May. 07, 2026



BEDROCK TOPOGRAPHY



SURFICIAL DEPOSITS ISOPACH

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- COAL MINE

REFERENCE MAP:
SLATTERY, S.R. AND BARKER, A.A. THICKNESS OF QUATERNARY AND NEOGENE SEDIMENTS IN THE EDMONTON-CALGARY CORRIDOR. ALBERTA GEOLOGICAL SURVEY. MAP 548. PUBLISHED 2008.

NOTE:
COORDINATES ARE IN UTM 12, NAD 83

DRAFT

0 2.5 5 7.5 10 15 20 km
SCALE 1:300,000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

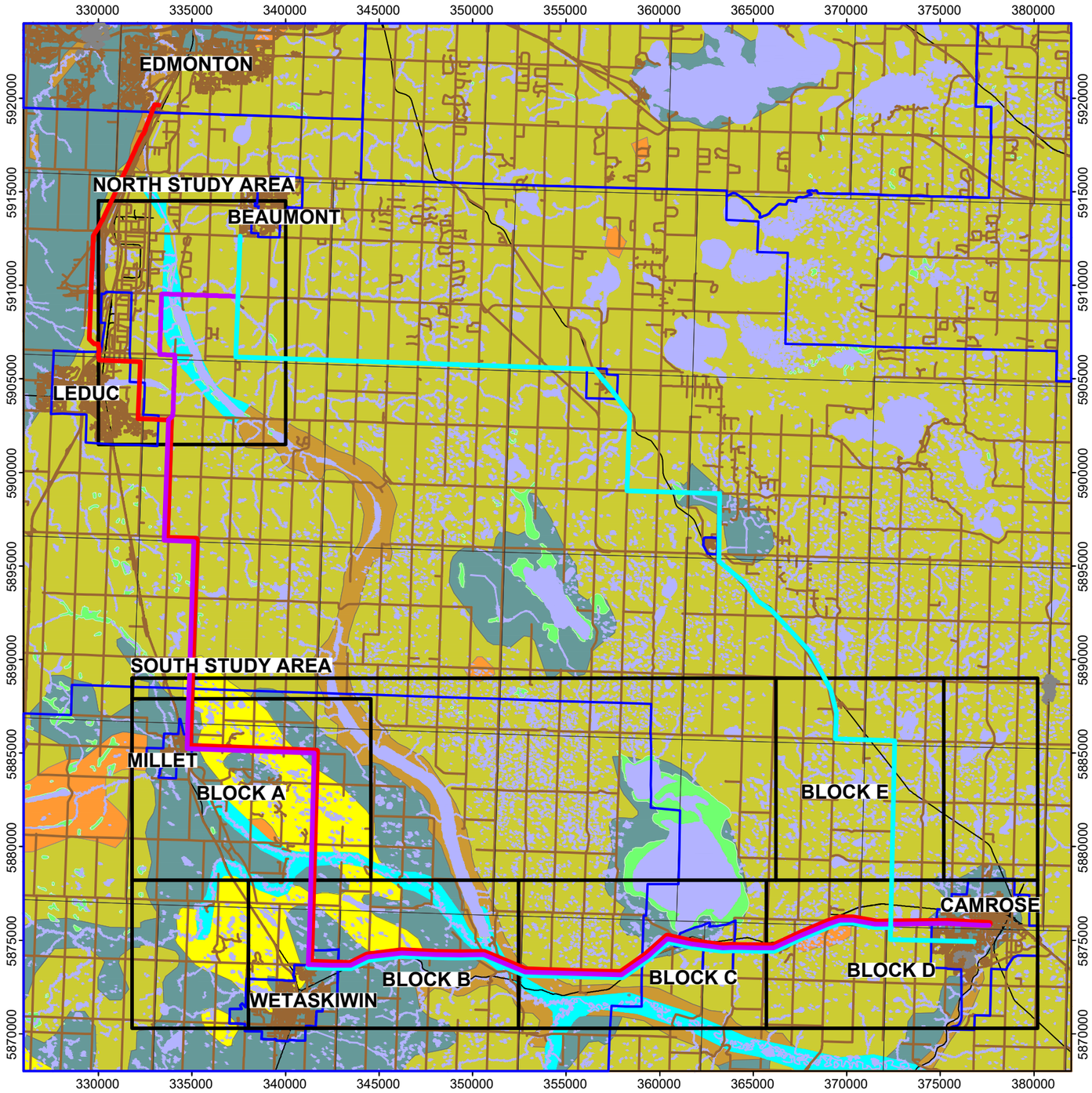
REGIONAL BEDROCK SURFACE TOPOGRAPHY

DWG No. 85418-1b

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:300 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-1c May 5, 2026.dwg - 1 - May. 07, 2026



N
W E
S

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- MUNICIPAL BOUNDARY
- ROAD
- MAPPED WATER BODY
- MAPPED WETLAND AREA
- FLUVIAL
- COLLUVIUM
- EOLIAN
- GLACIOLACUSTRINE
- GLACIOFLUVIAL
- MORAINE
- COAL MINE

DRAFT

REFERENCE MAP:
M.M.FENTON, E.J.WATERS, S.M.PAWLEY, N.ATKINSON, D.J.UTTING, AND K.MCKAY. SURFICIAL GEOLOGY OF ALBERTA. MAP 601. ALBERTA GEOLOGICAL SURVEY. PUBLISHED 2013.

NOTE:
COORDINATES ARE IN UTM 12, NAD 83

0 2.5 5 7.5 10 12.5 15km
SCALE 1:250 000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

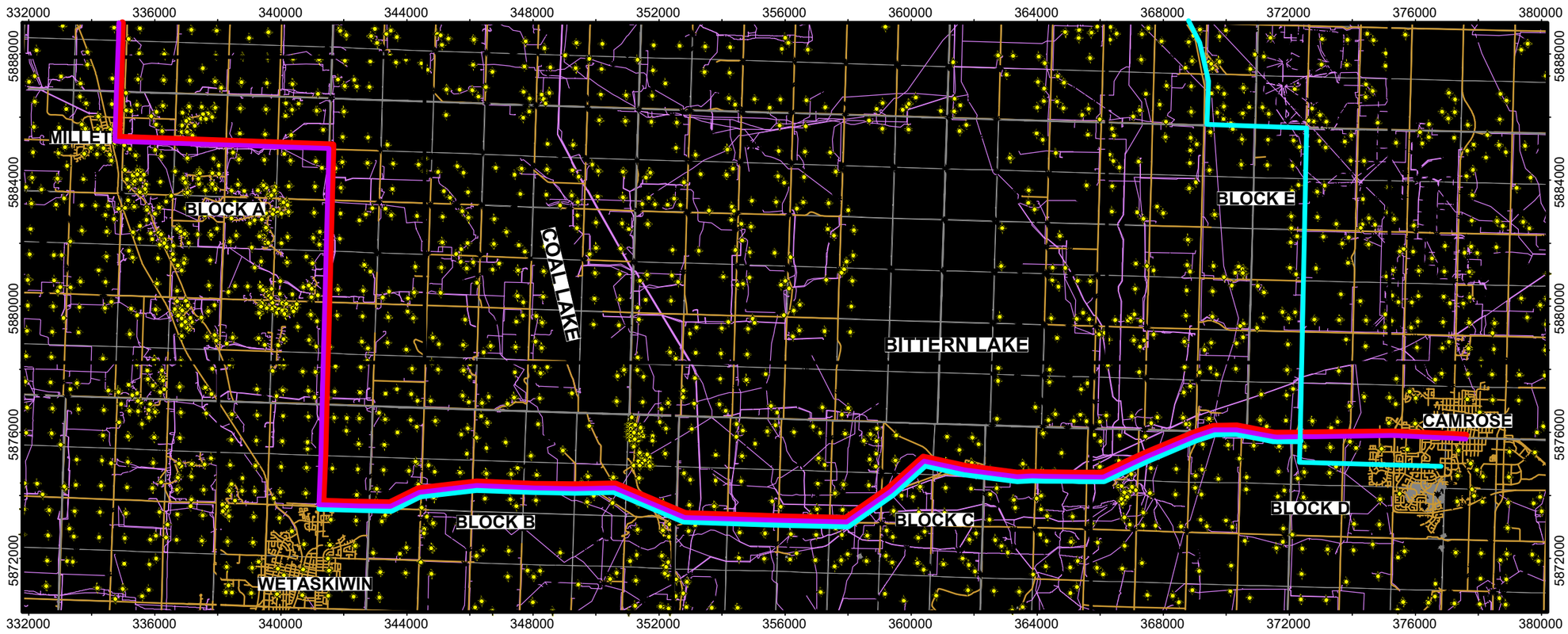
REGIONAL SURFICIAL GEOLOGY MAP

DWG No. 85418-1c

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:250 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2a May 5, 2026.dwg - 1 - May. 07, 2026



0 200 400 600 800m

SCALE 1:15000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- AER PIPELINE
- ROAD
- WATERLINE
- WATER WELL
- OIL AND GAS WELL

DRAFT

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

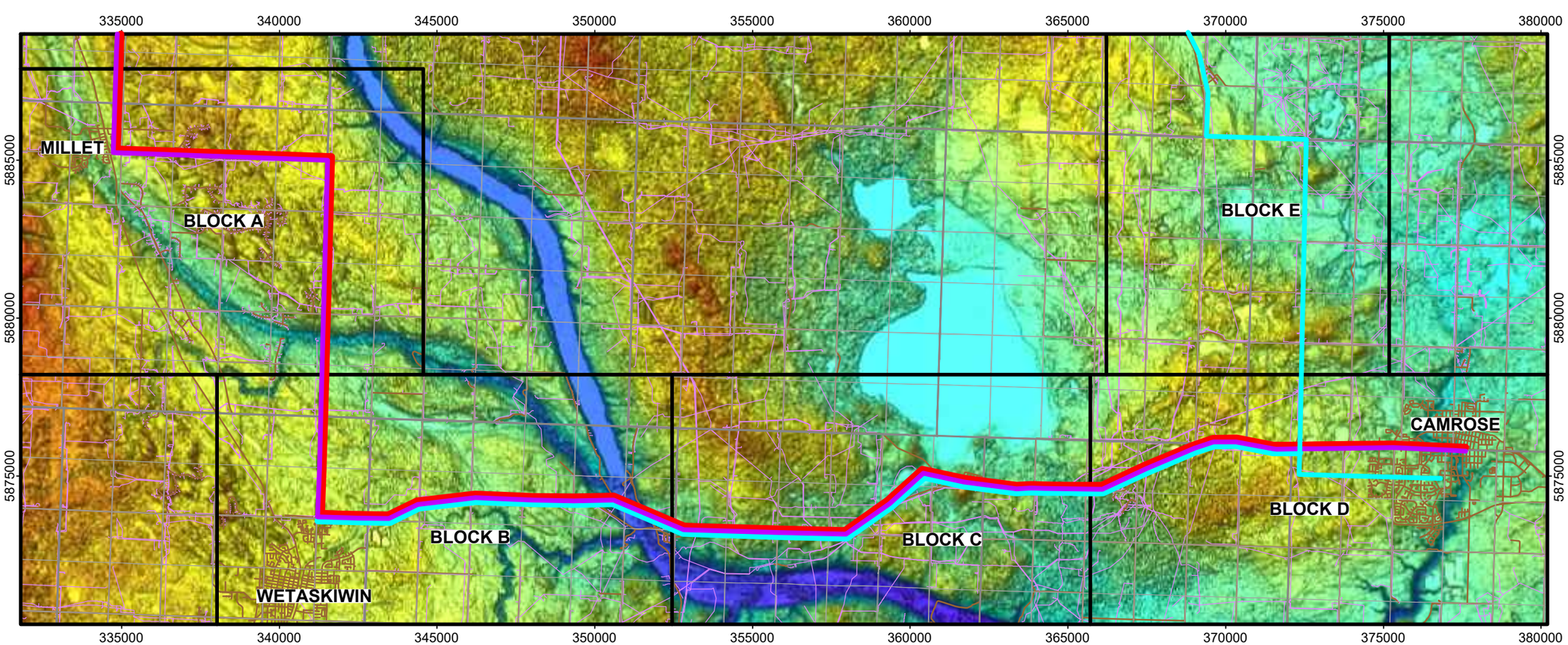
SITE MAP
(SOUTH STUDY AREA)

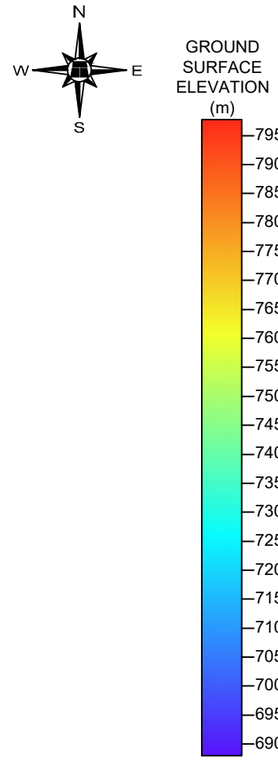
DWG No. 85418-2a

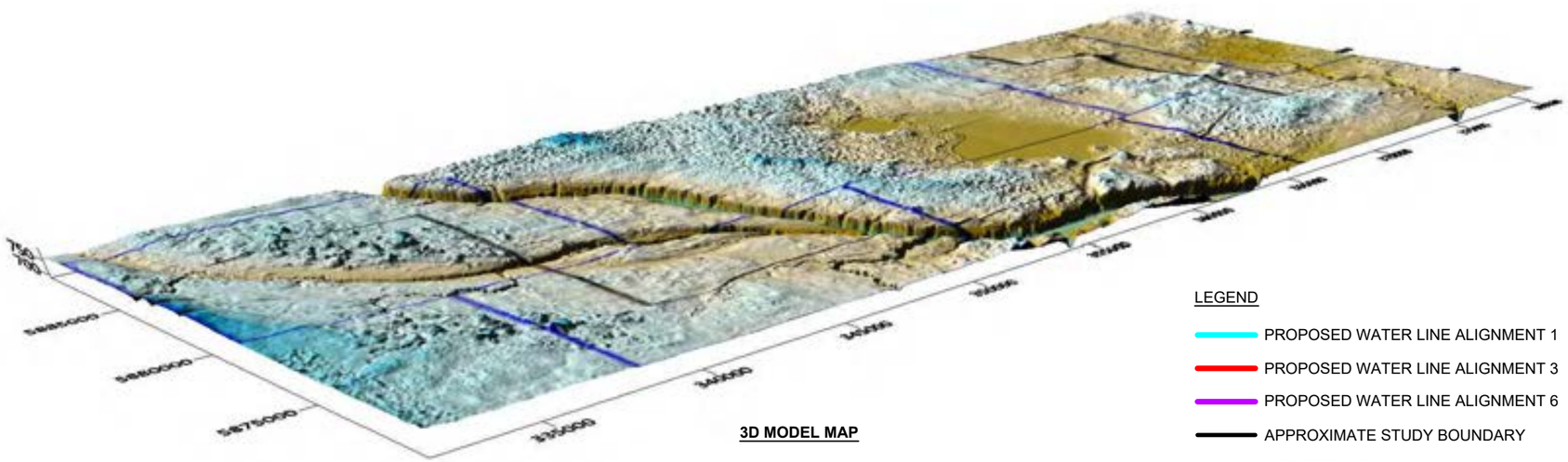
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:150 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2b May 5, 2026.dwg - 1 - May. 07, 2026







3D MODEL MAP

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- AER PIPELINE
- ROAD

DRAFT

0 200 400 600 800m

SCALE 1:15000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

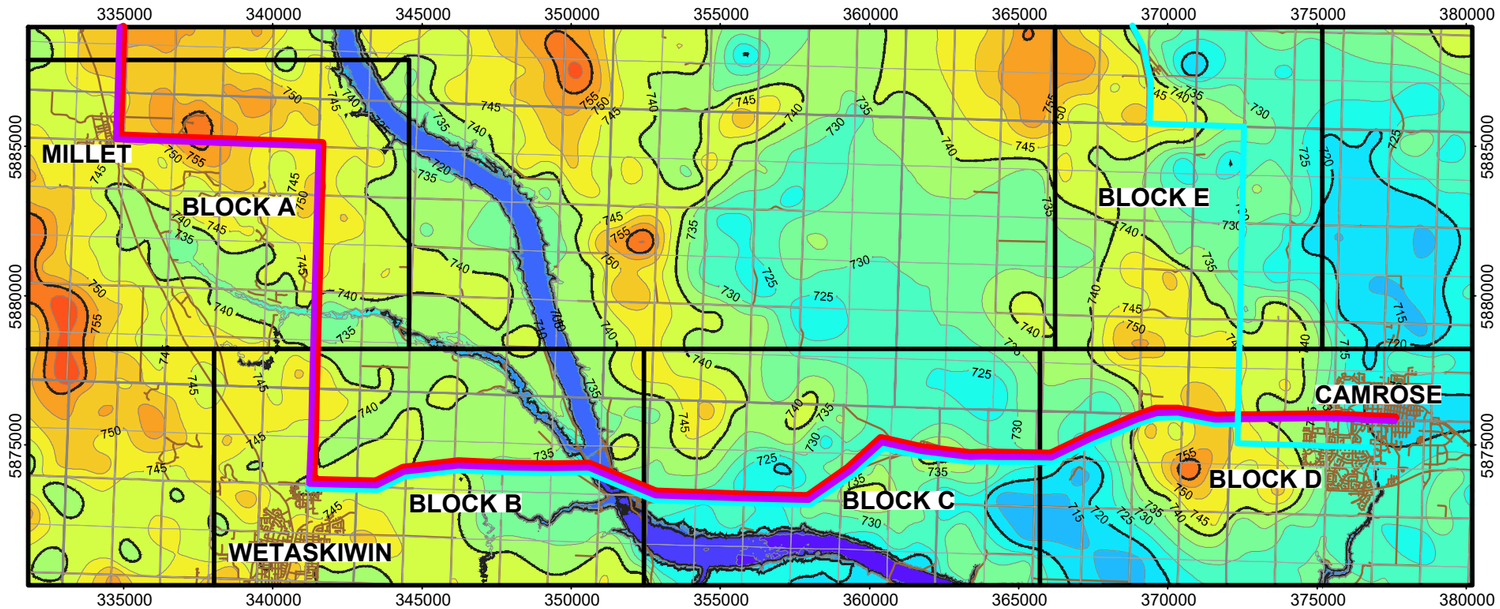
TOPOGRAPHY MAP
(SOUTH STUDY AREA)

DWG No. 85418-2b

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:150 000
DATE	MAY 2026
FILE No.	85418

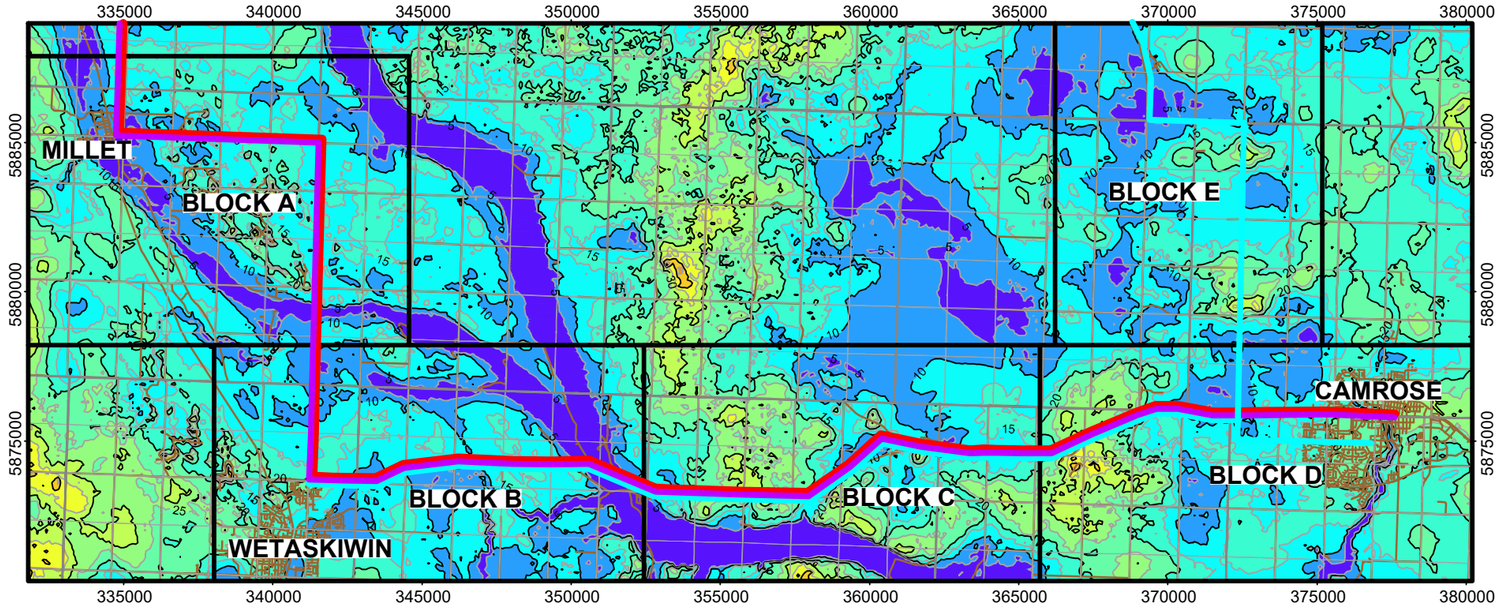
THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2c May 5, 2026.dwg - 1 - May. 07, 2026



BEDROCK SURFACE ELEVATION (m) (CONTOUR INTERVAL 5 m)

770
765
760
755
750
745
740
735
730
725
720
715
710
705
700
695
690
685
680



SURFICIAL DEPOSITS THICKNESS (m) (CONTOUR INTERVAL 5m)

50
45
40
35
30
25
20
15
10
5

N
W
E
S

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- ROAD

REFERENCES:

1. THE BEDROCK TOPOGRAPHY SURFACE IS GENERATED FROM LITHOLOGY DATA EXTRACTED FROM THE ALBERTA GOVERNMENT GROUNDWATER DATABASE.
2. THE SURFICIAL DEPOSITS ISOPACH MAP IS CONSTRUCTED AS THE DIFFERENCE BETWEEN THE GROUND SURFACE TOPOGRAPHY AND THE BEDROCK TOPOGRAPHY SURFACE.

DRAFT

NOTE:
COORDINATES ARE IN UTM 12, NAD 83

0 2 4 6 8 10 12 km
SCALE 1:200000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

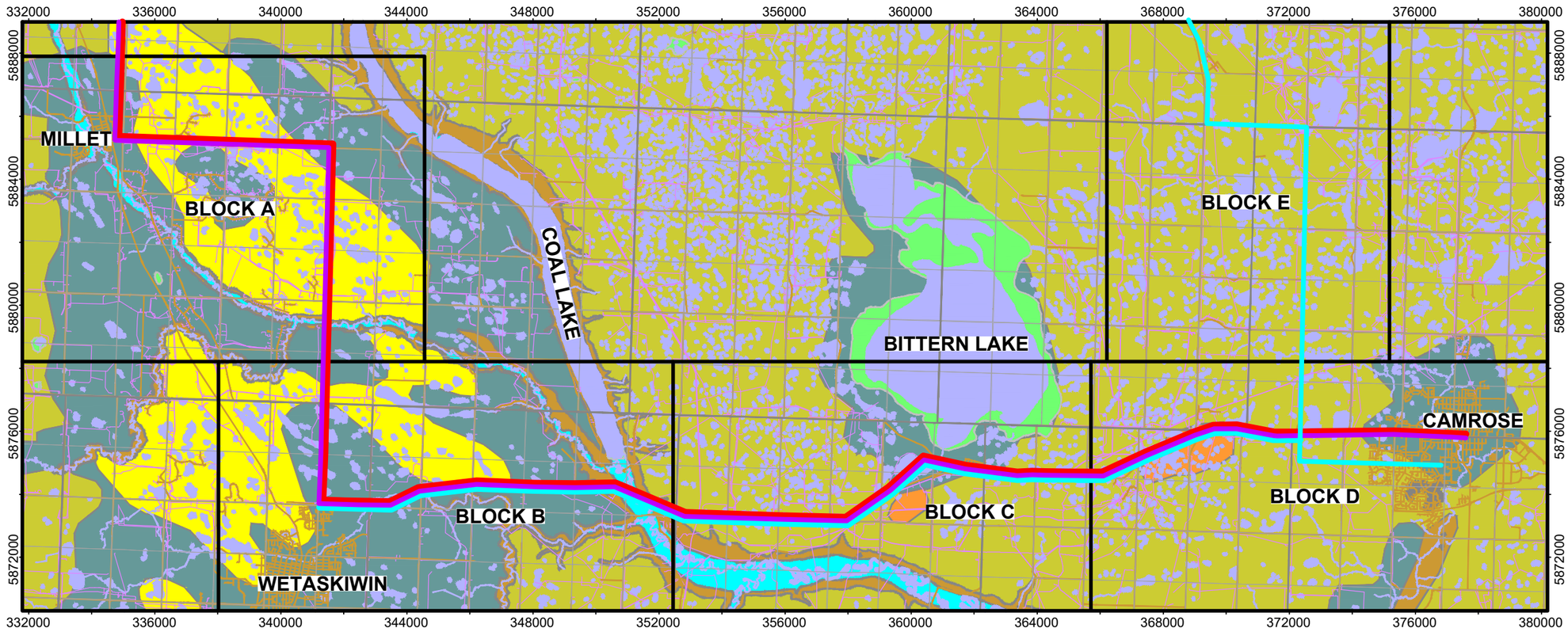
BEDROCK SURFACE TOPOGRAPHY (SOUTH STUDY AREA)

DWG No. 85418-2c

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:200 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2d May 5, 2026.dwg - 1 - May. 07, 2026



0 200 400 600 800m

SCALE 1:15000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- APPROXIMATE STUDY BOUNDARY
- AER PIPELINE
- ROAD

- MAPPED WATER BODY
- MAPPED WETLAND AREA
- FLUVIAL
- COLLUVIUM
- EOLIAN
- GLACIOLACUSTRINE
- GLACIOFLUVIAL
- MORAINE
- COAL MINE

DRAFT

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

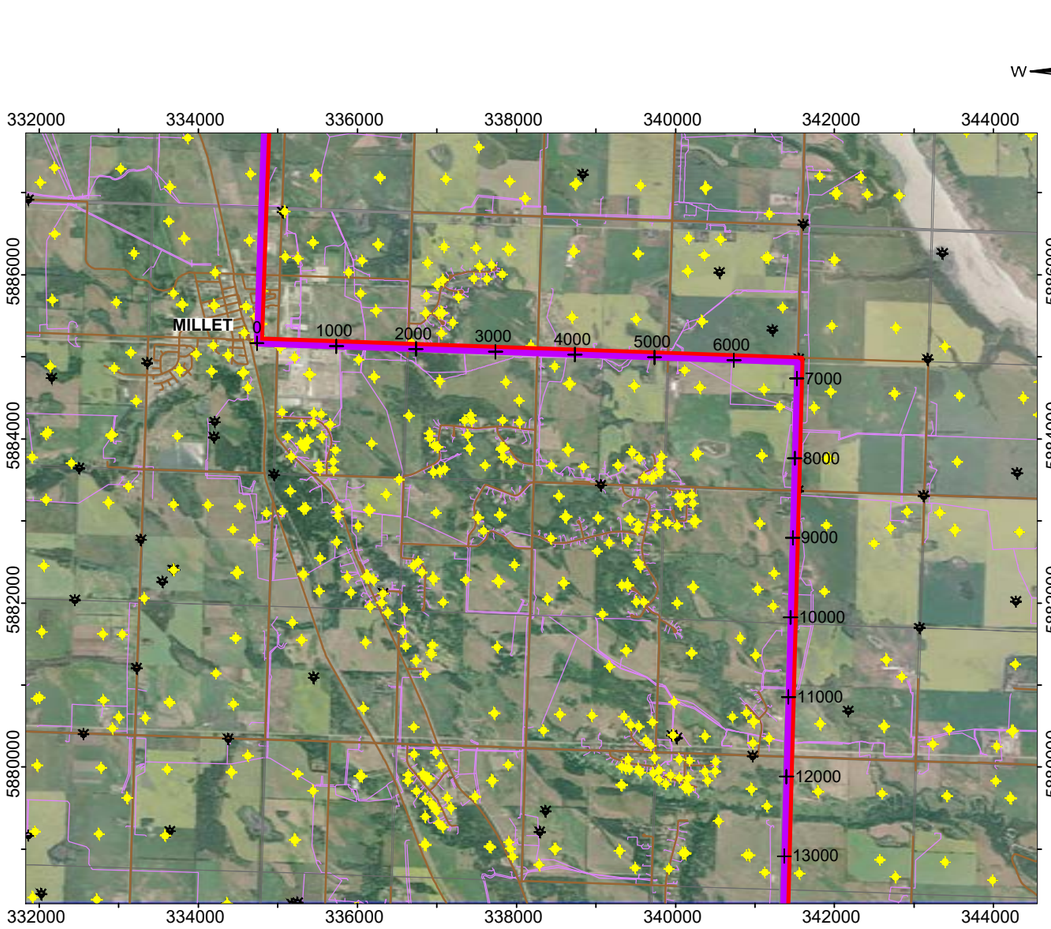
SURFICIAL GEOLOGY MAP
(SOUTH STUDY AREA)

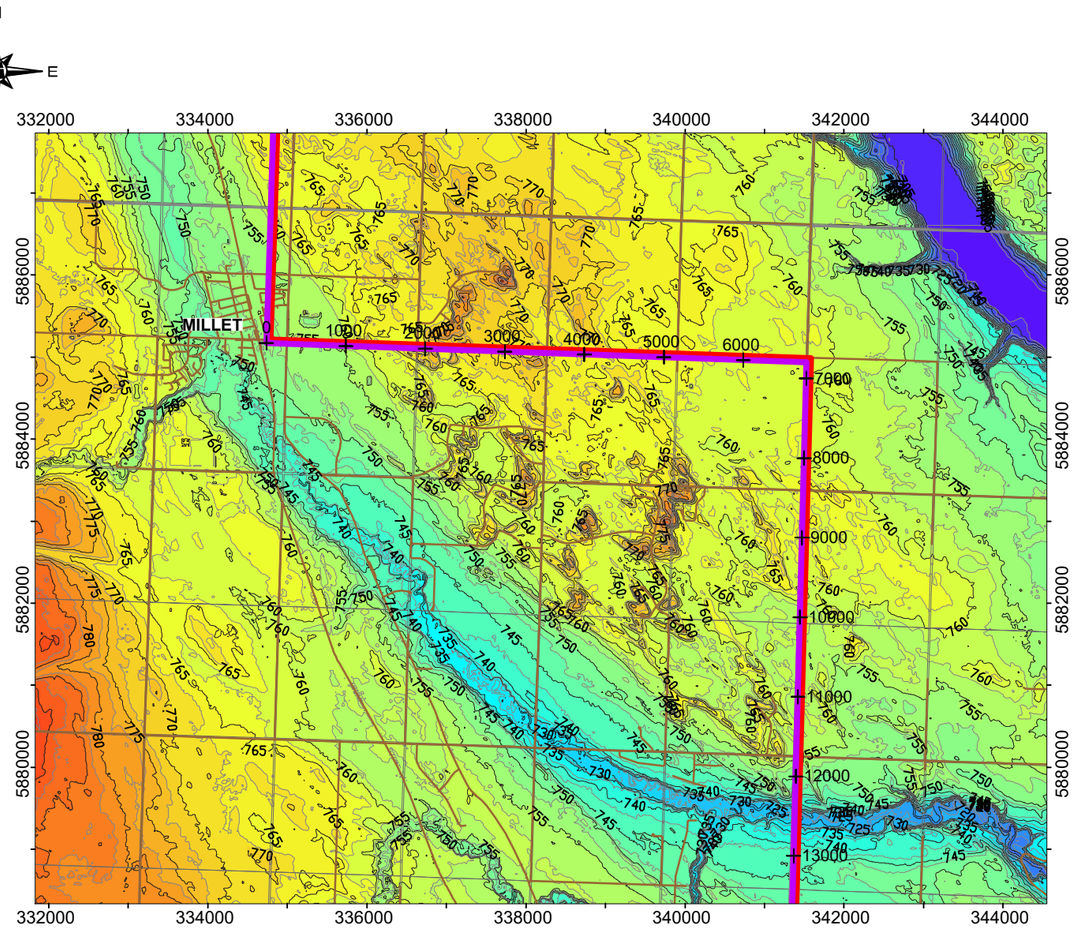
DWG No. 85418-2d

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:150 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2e May 5, 2026.dwg - 1 - May. 07, 2026





N
W
E
S

GROUND SURFACE CONTOURS (m)

795
790
785
780
775
770
765
760
755
750
745
740
735
730
725
720
715
710
705
700

0 1000 2000 3000 4000 5000m

SCALE 1:75000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- AER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL

DRAFT

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

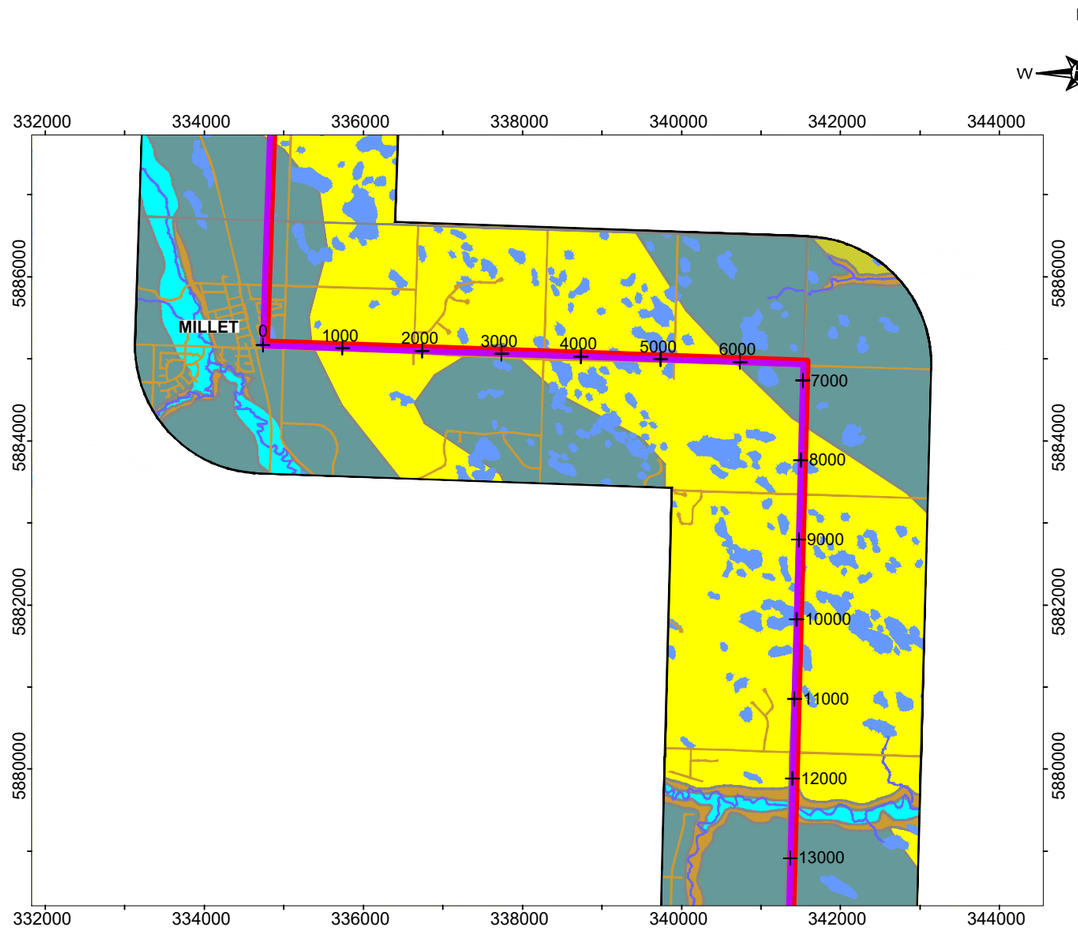
SITE MAP
(SOUTH STUDY AREA - BLOCK A)

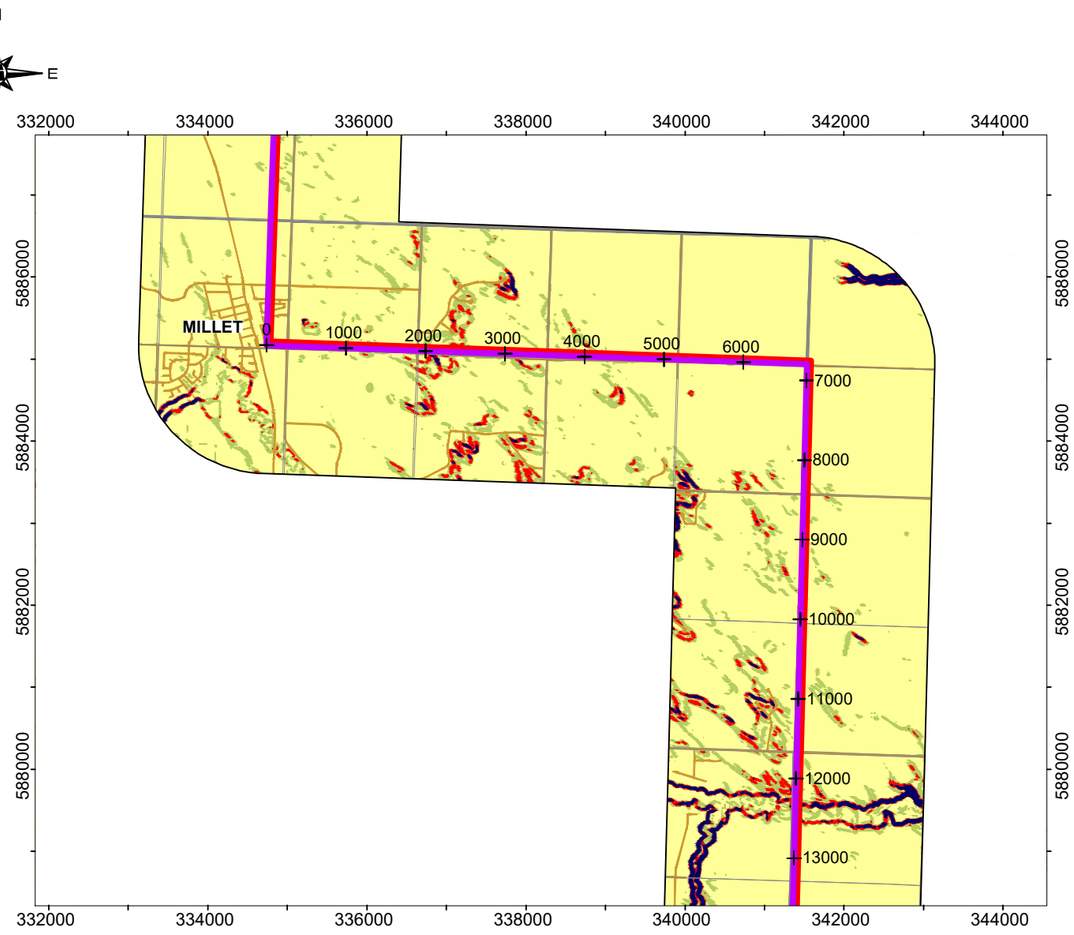
DWG No. 85418-2e

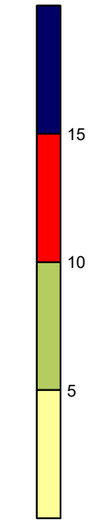
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2f May 5, 2026.dwg - 1 - May. 07, 2026





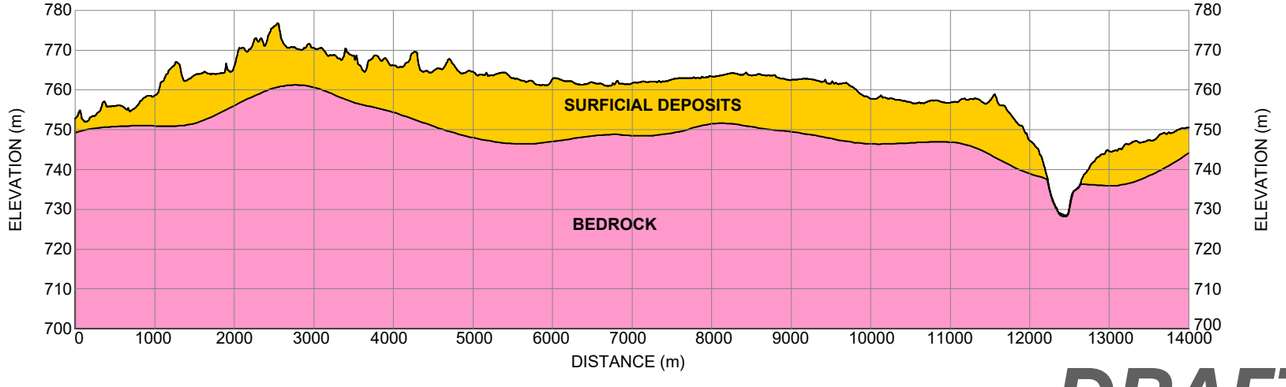


0 1000 2000 3000 4000 5000m

SCALE 1:75000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATER BODY
- FLUVIAL
- COLLUVIUM
- EOLIAN
- GLACIOLACUSTRINE
- MORAINE



PROFILE

SCALE: H 1:75000 V 1:15000

DRAFT

Associated Engineering

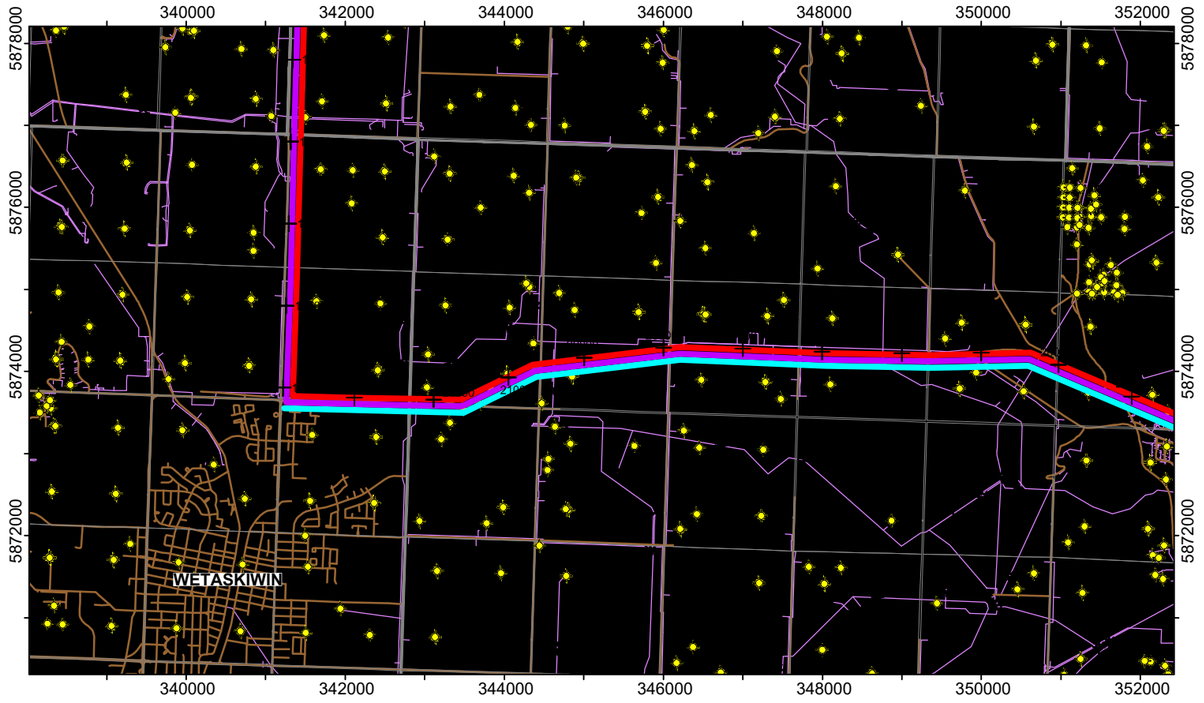
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE
(SOUTH STUDY AREA - BLOCK A)

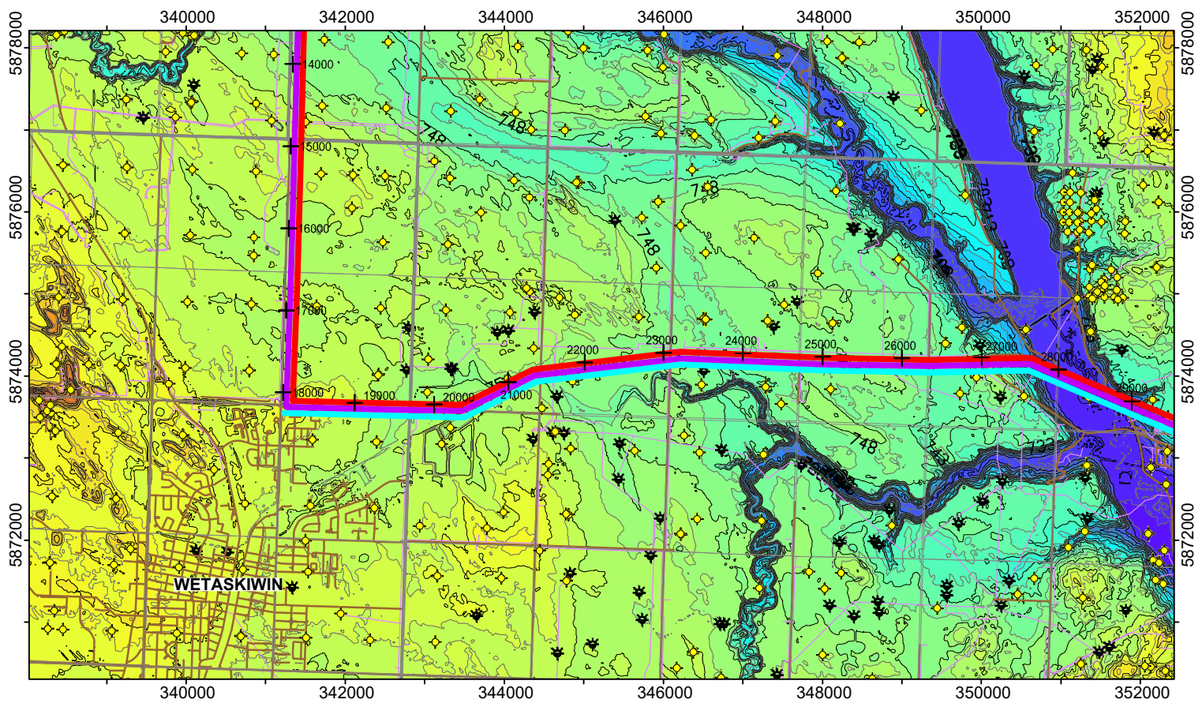
DWG No. 85418-2f

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2g May 5, 2026.dwg - 1 - May. 07, 2026





N
W E
S

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- AER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL

GROUND SURFACE CONTOURS (m)

795
790
785
780
775
770
765
760
755
750
745
740
735
730
725
720
715
710
705
700
695
690

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

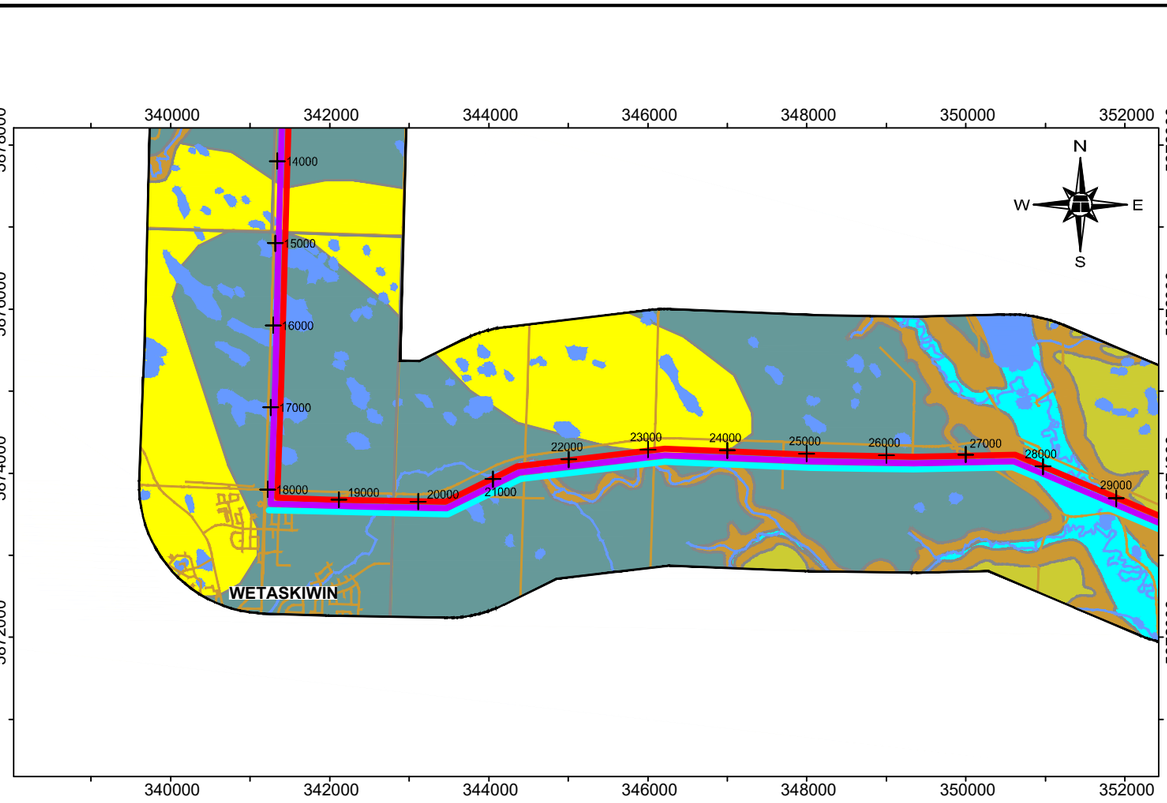
SITE MAP
(SOUTH STUDY AREA - BLOCK B)

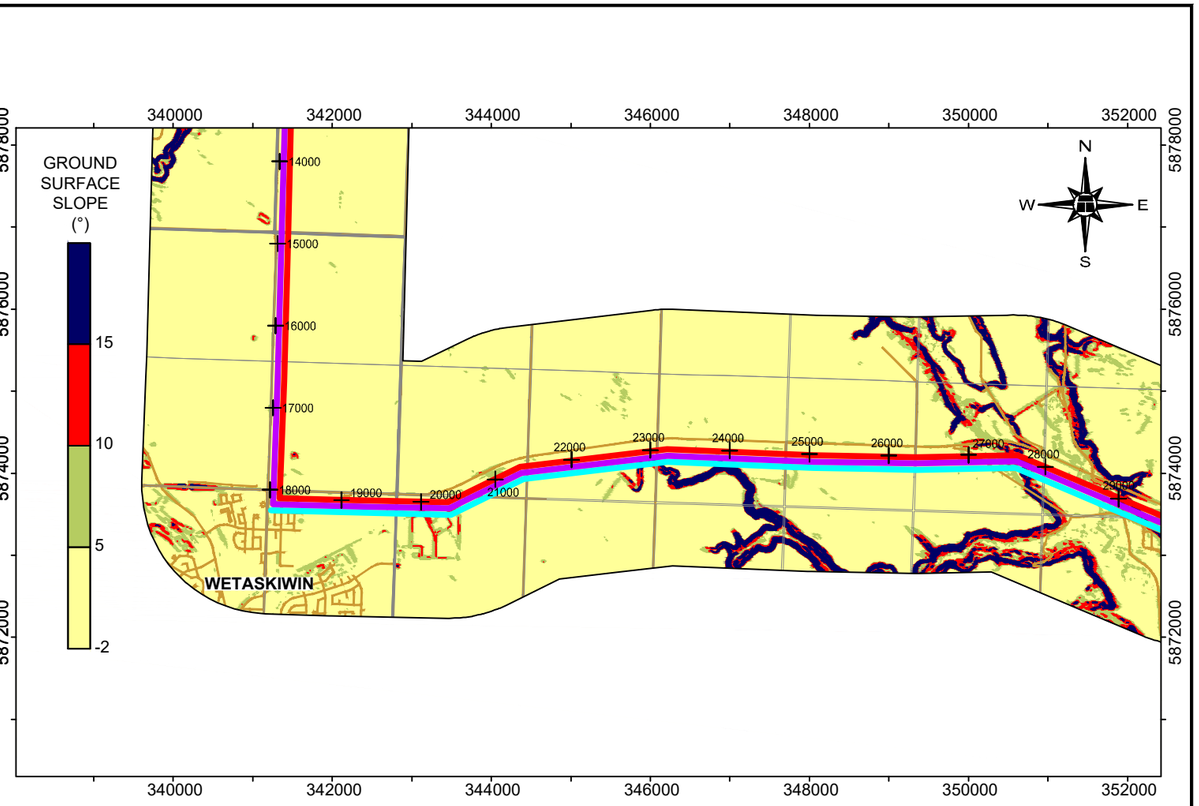
DWG No. 85418-2g

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

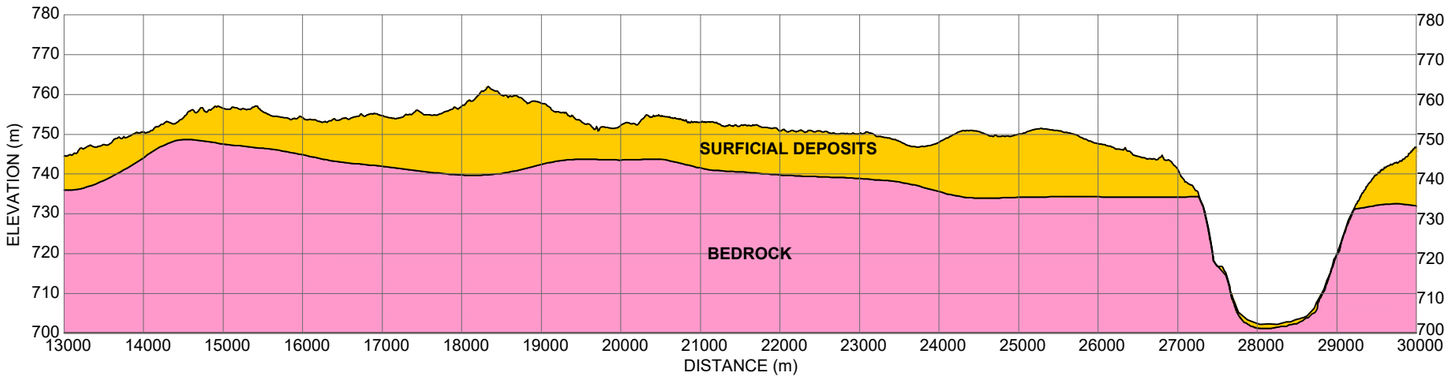
G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2h May 5, 2026.dwg - 1 - May. 07, 2026





LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATER BODY
- FLUVIAL
- COLLUVIUM
- EOLIAN
- GLACIOLACUSTRINE
- MORAINE



PROFILE
SCALE: H 1:75000 V 1:15000

DRAFT

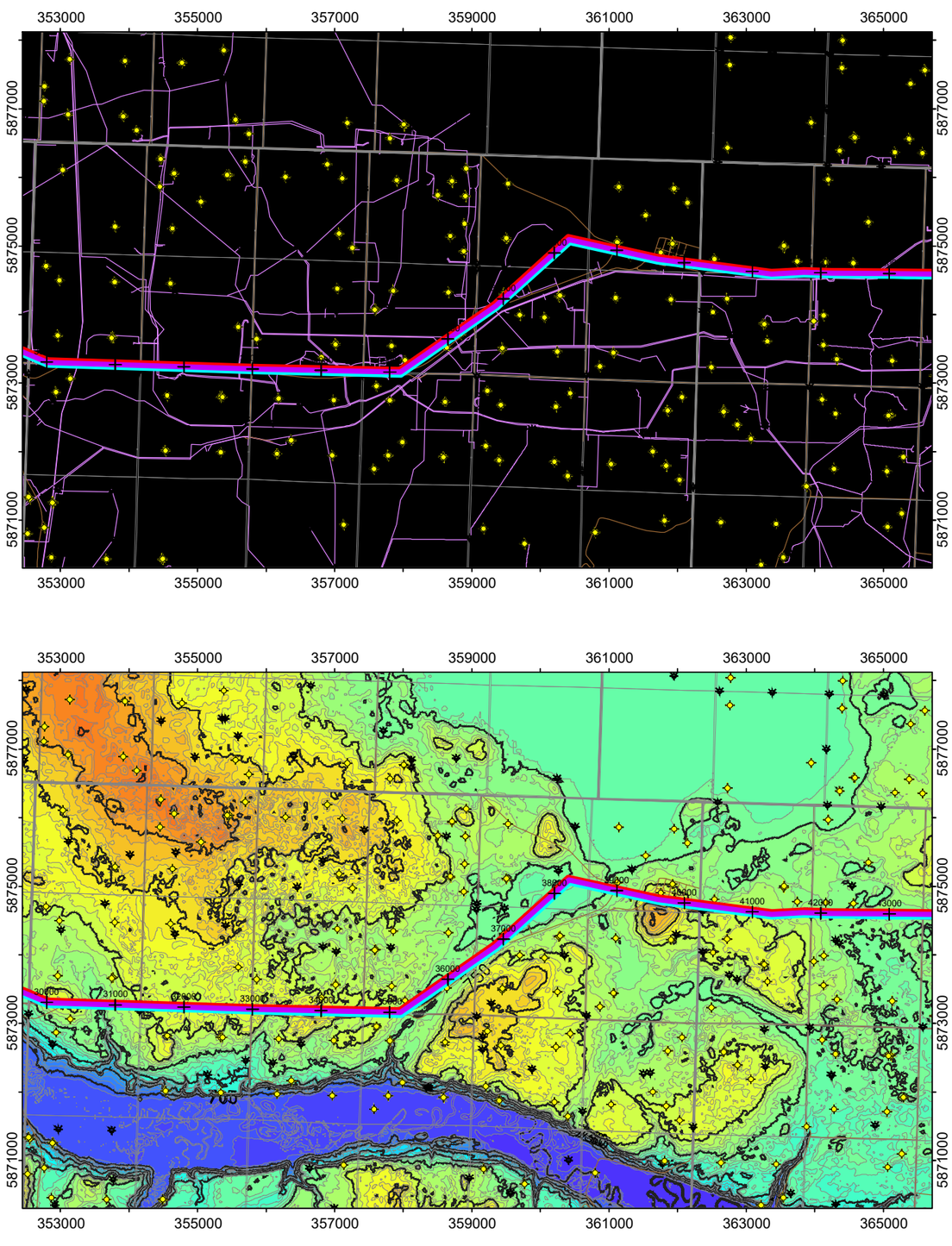
0 1000 2000 3000 4000 5000m
SCALE 1:75000

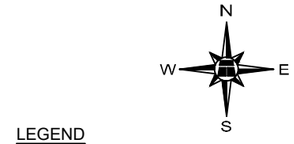
Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE (SOUTH STUDY AREA - BLOCK B)
DWG No. 85418-2h

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER





LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- AER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL

GROUND SURFACE CONTOURS (m)

790
785
780
775
770
765
760
755
750
745
740
735
730
725
720
715
710
705
700
695
690
685
680

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

SITE MAP
(SOUTH STUDY AREA - BLOCK C)

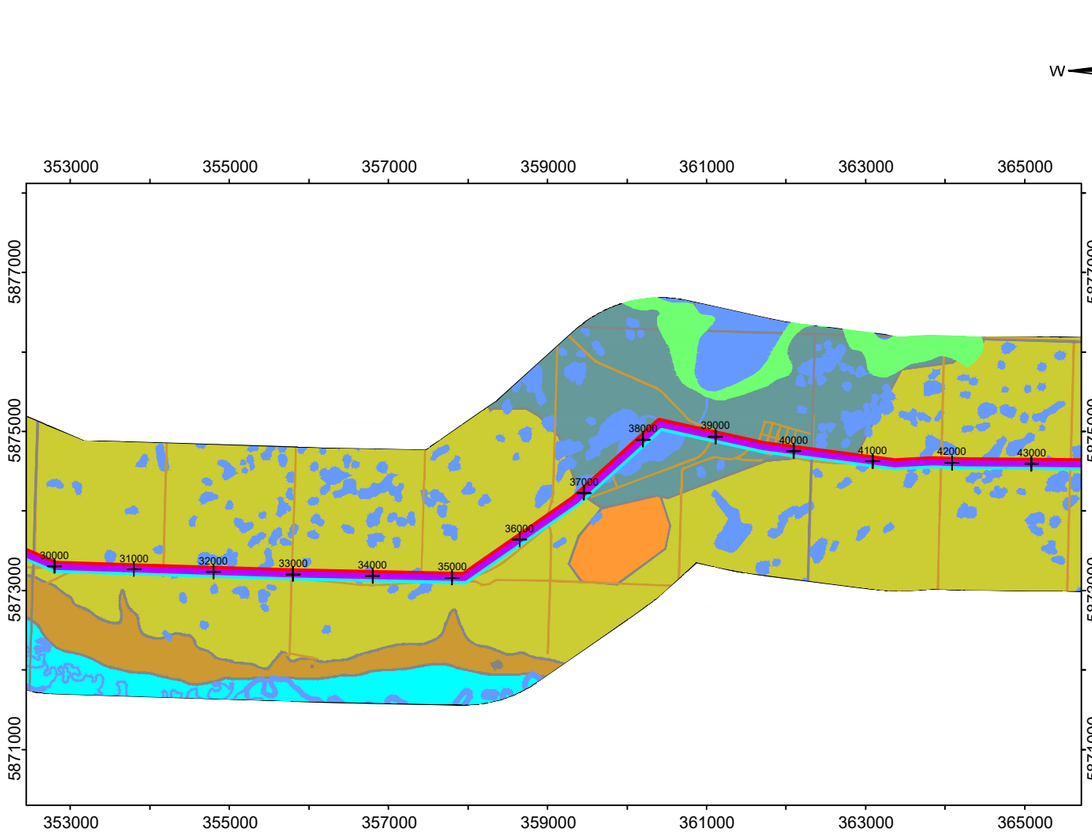
DWG No. 85418-2i

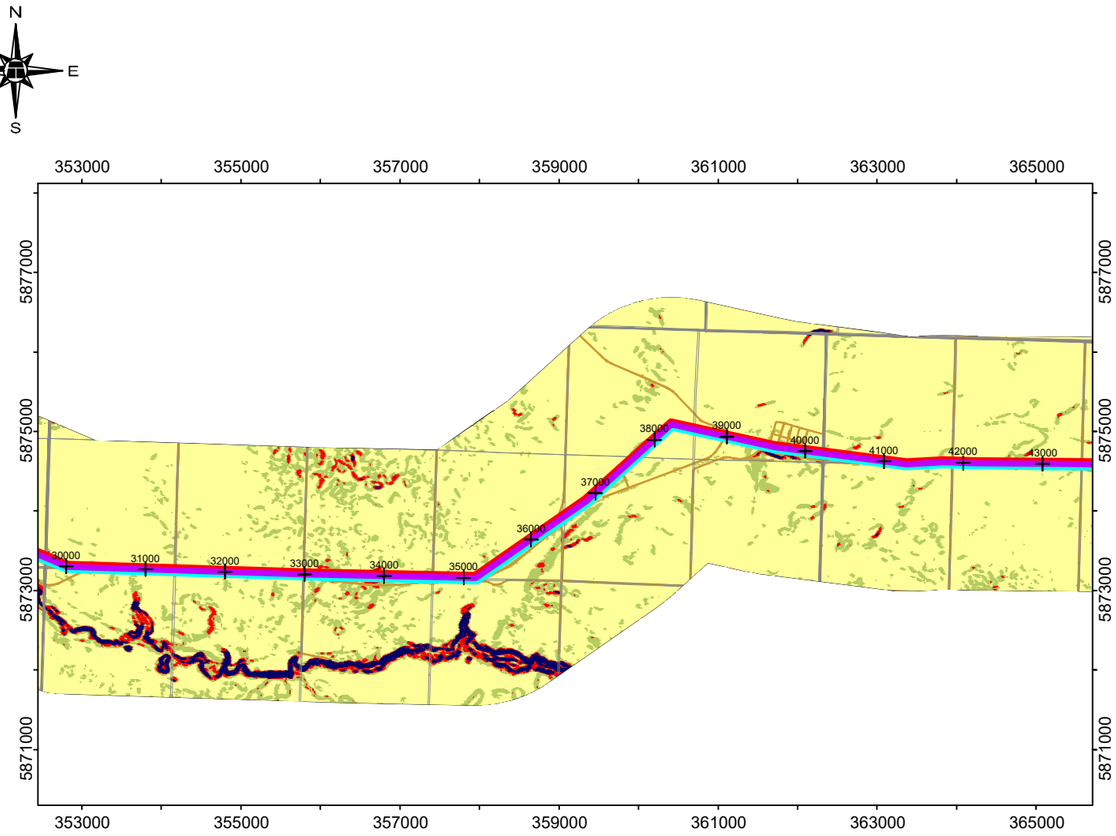
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

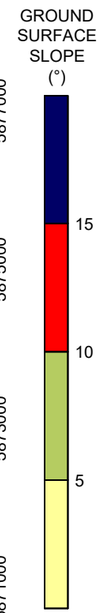
THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2i May 5, 2026.dwg - 1 - May. 07, 2026

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2j May 5, 2026.dwg - 1 - May. 07, 2026

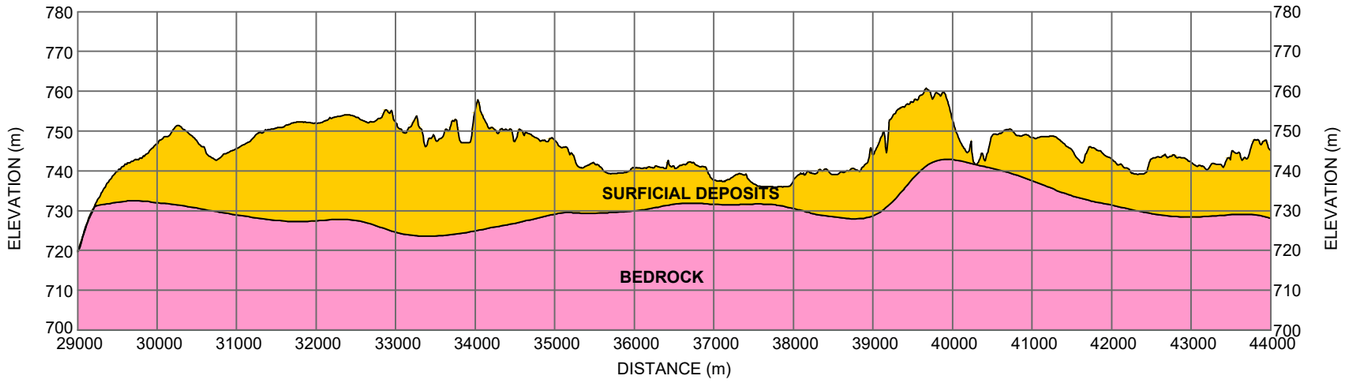






LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATERBODY
- WET LAND
- FLUVIAL
- COLLUVIUM
- GLACIOLACUSTRINE
- GLACIOFLUVIAL
- MORAINE
- COAL MINE



PROFILE
SCALE: H 1:75000 V 1:15000

DRAFT

0 1000 2000 3000 4000 5000m
SCALE 1:75000

Associated Engineering

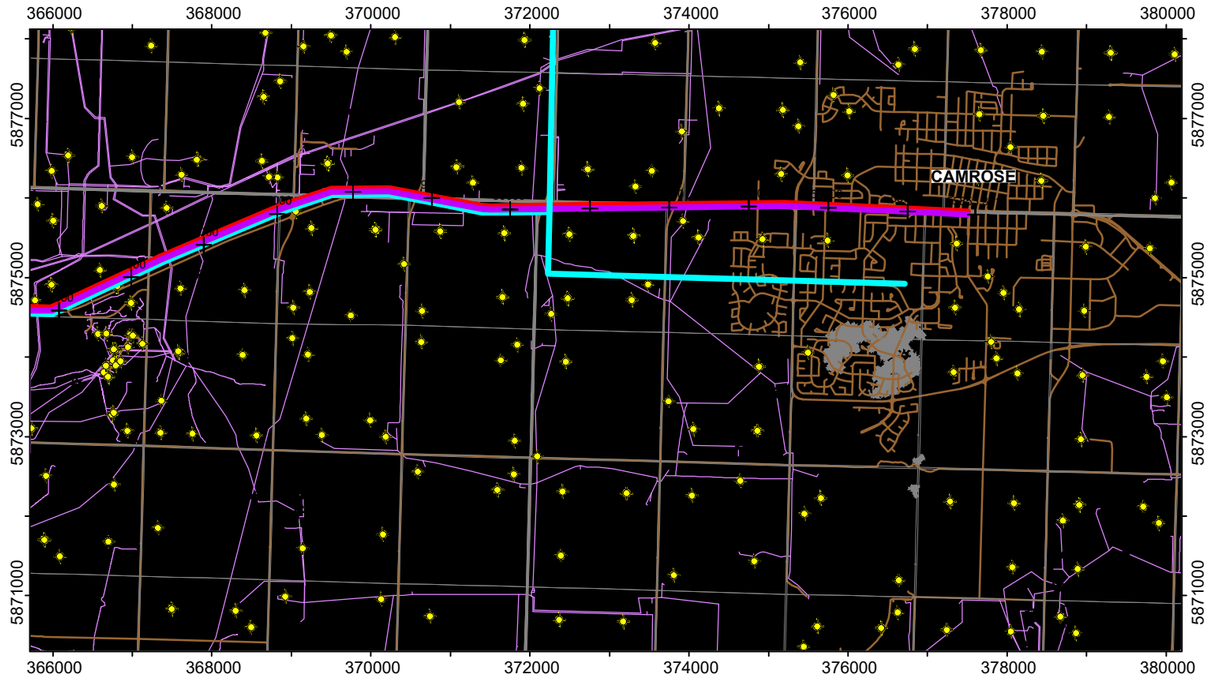
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE (SOUTH STUDY AREA - BLOCK C)

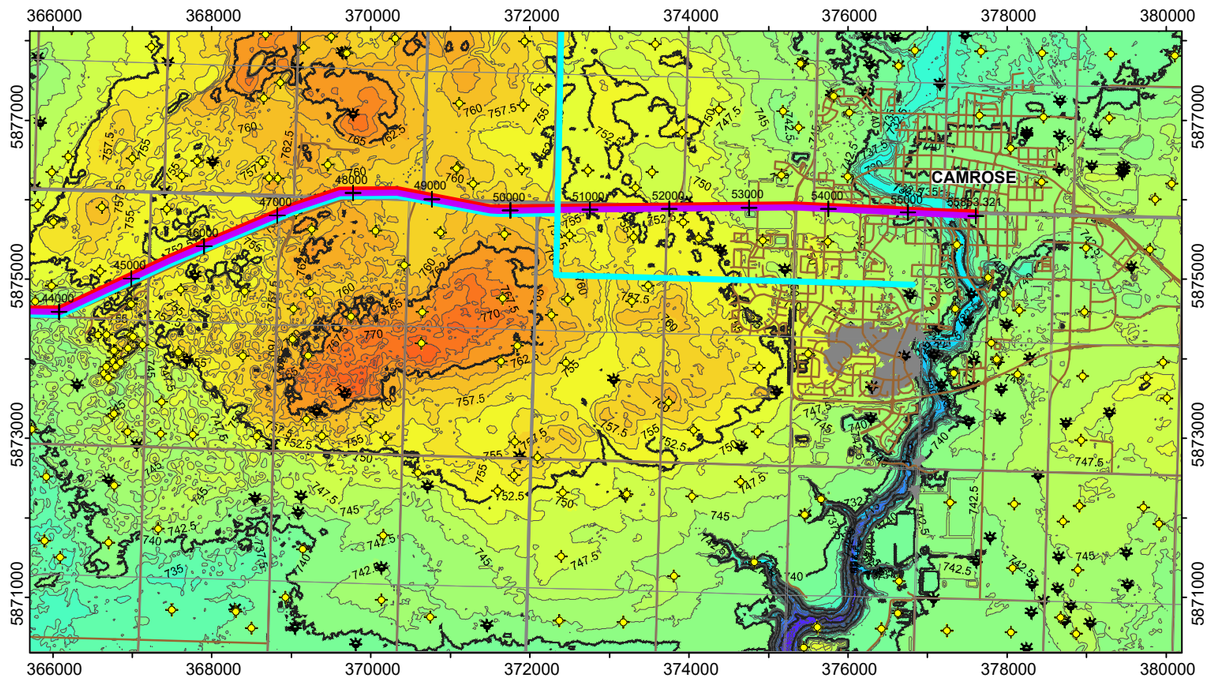
DWG No. 85418-2j

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2kMay 5, 2026.dwg - 1 - May. 07, 2026





N
W E
S

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- AER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL
- COAL MINE

GROUND SURFACE CONTOURS (m)

780
775
770
765
760
755
750
745
740
735
730
725
720
715
710
705
700
695
690

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

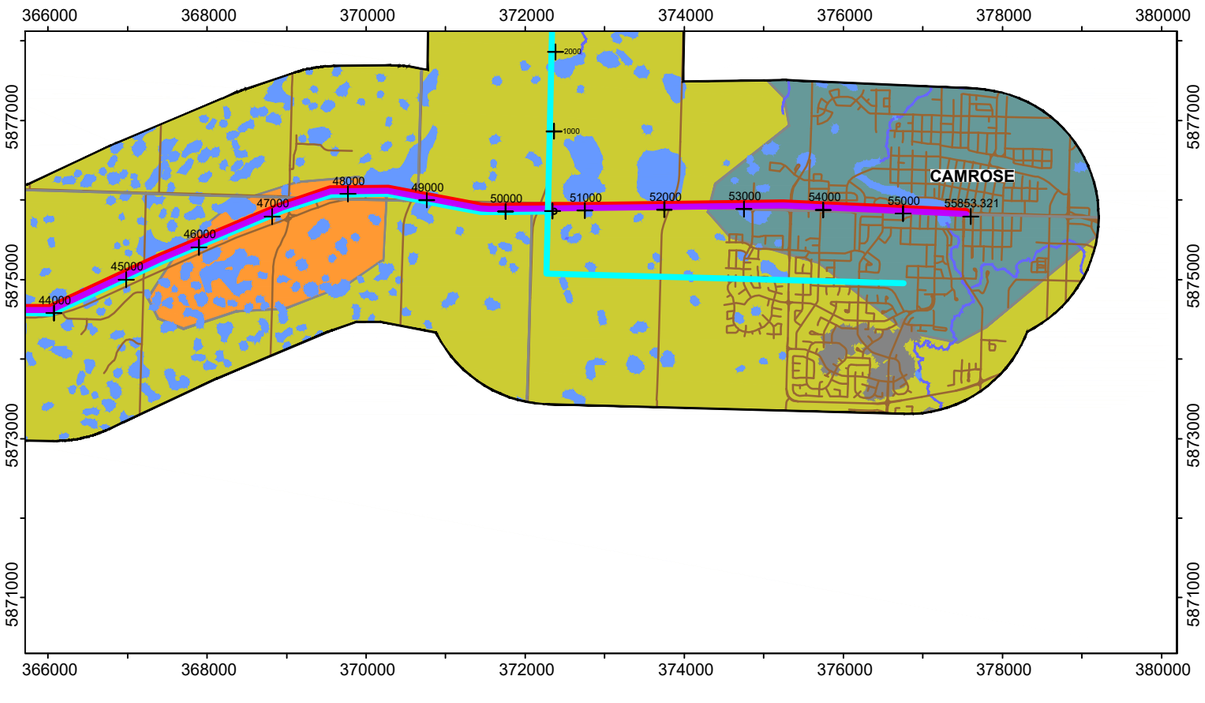
SITE MAP
(SOUTH STUDY AREA - BLOCK D)

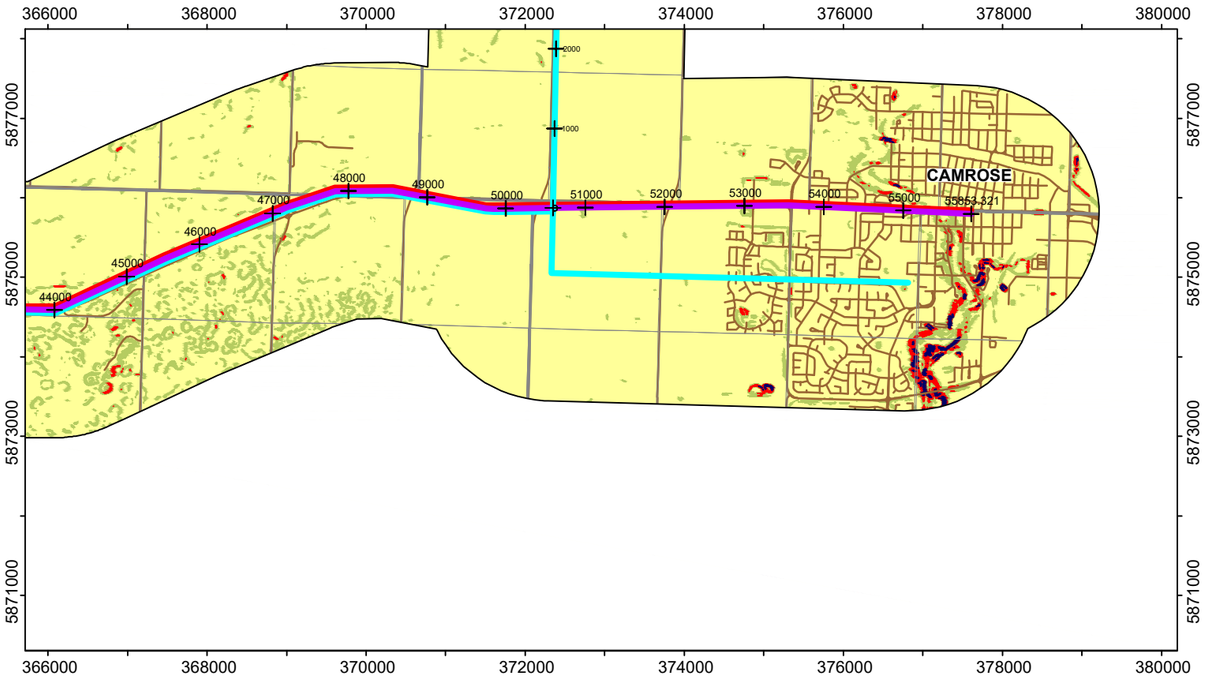
DWG No. 85418-2k

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

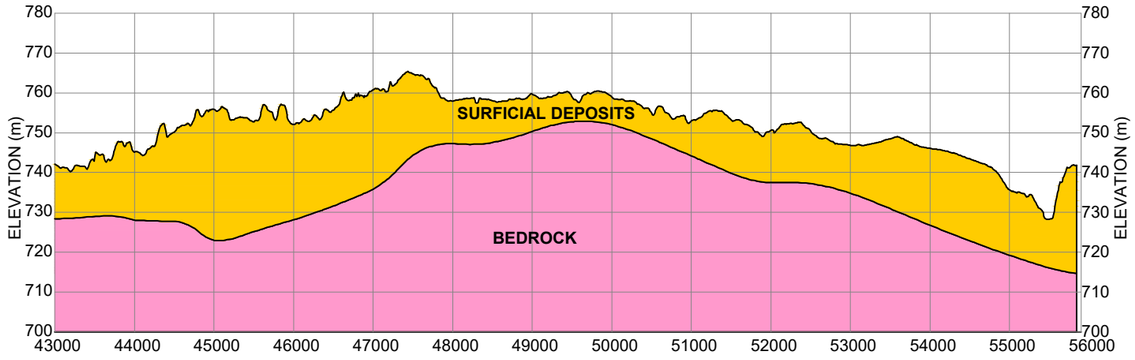
G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2I May 5, 2026.dwg - 1 - May. 07, 2026





LEGEND

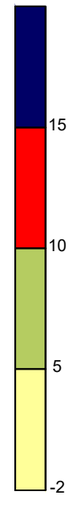
- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATERBODY
- COLLUVIUM
- GLACIOLACUSTRINE
- GLACIOFLUVIAL
- MORAINE
- COAL MINE



PROFILE

SCALE: H 1:75000 V 1:15000

GROUND SURFACE SLOPE (°)



DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

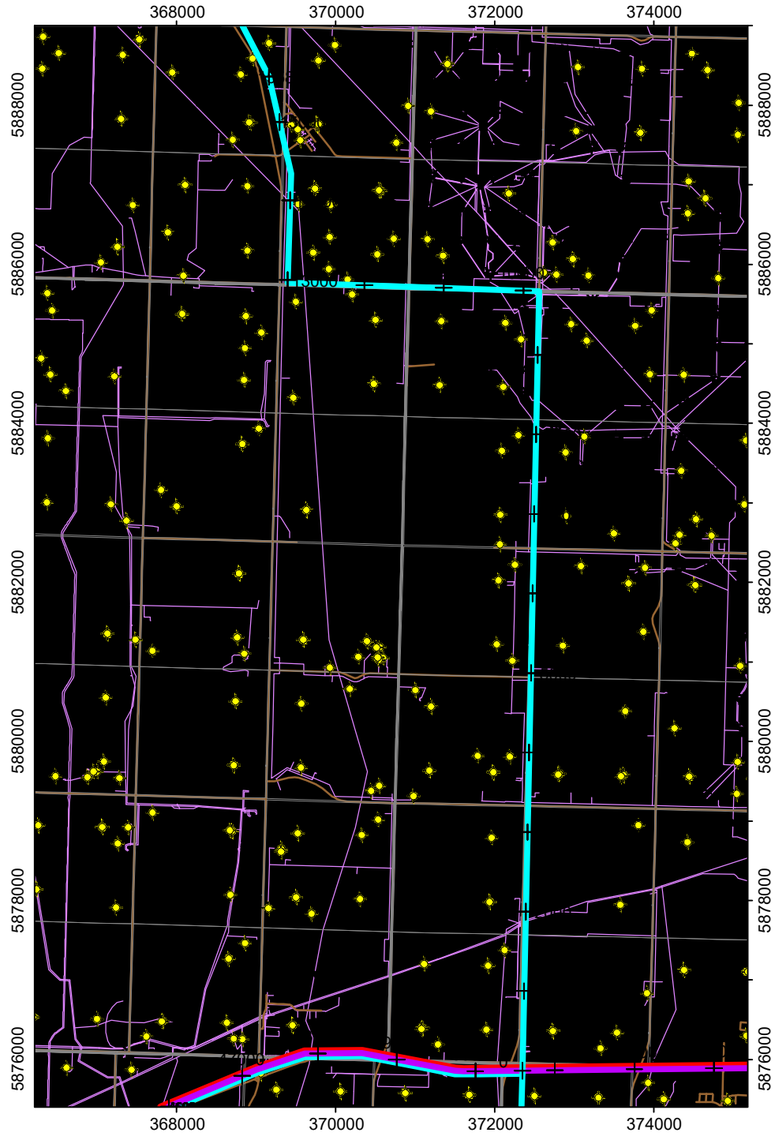
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE (SOUTH STUDY AREA - BLOCK D)

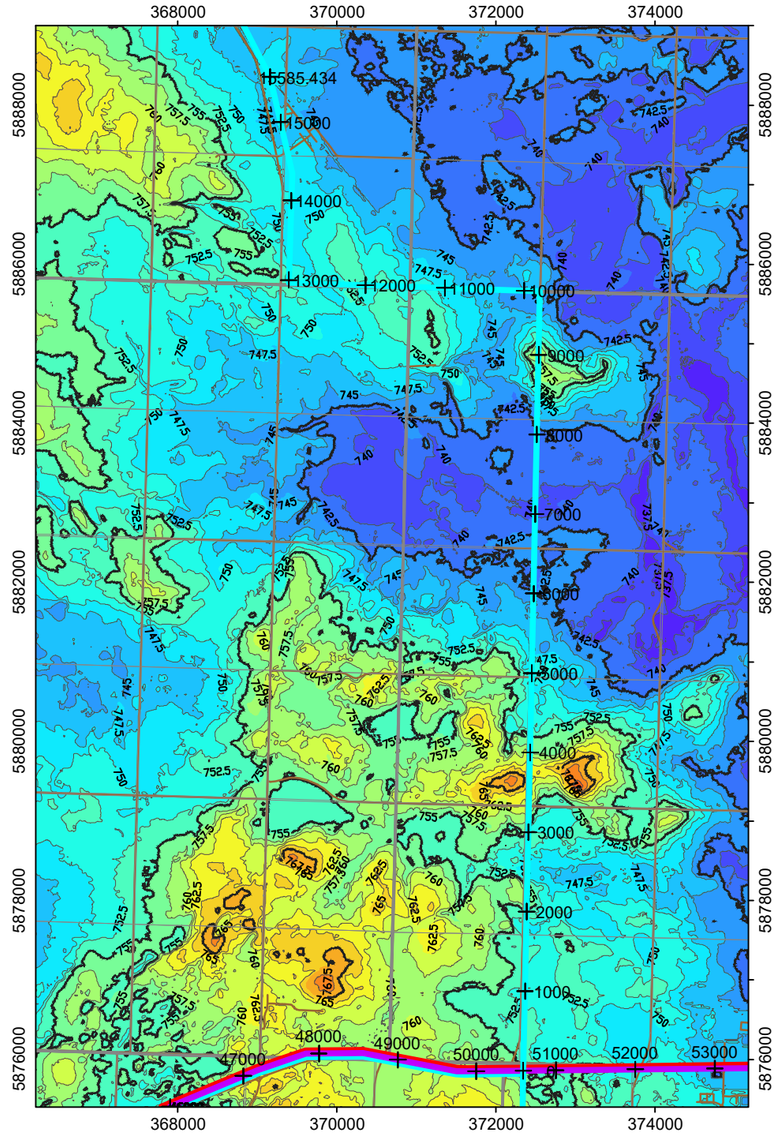
DWG No. 85418-2I

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2m May 5, 2026.dwg - 1 - May. 07, 2026





N
W E
S

GROUND SURFACE CONTOURS (m)

775.0
772.5
770.0
767.5
765.0
762.5
760.0
757.5
755.0
752.5
750.0
747.5
745.0
742.5
740.0
737.5
735.0
732.5
730.0

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- AER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

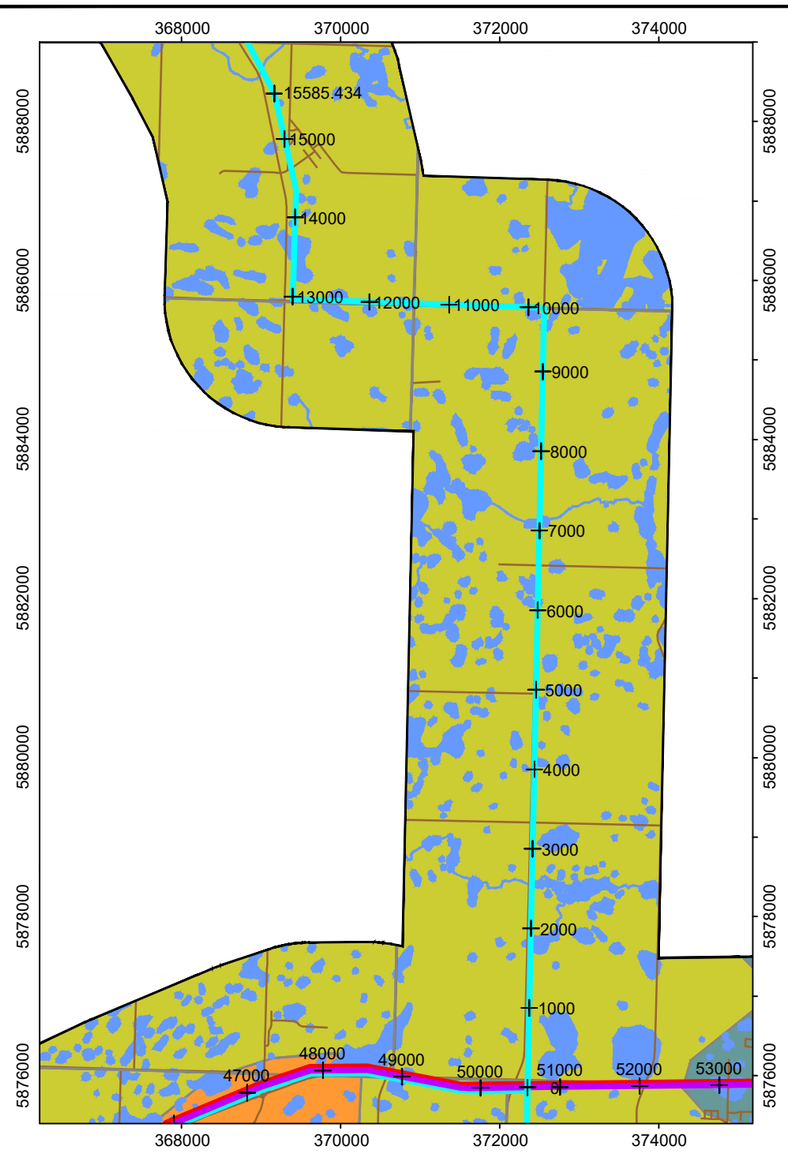
SITE MAP
(SOUTH STUDY AREA - BLOCK E)

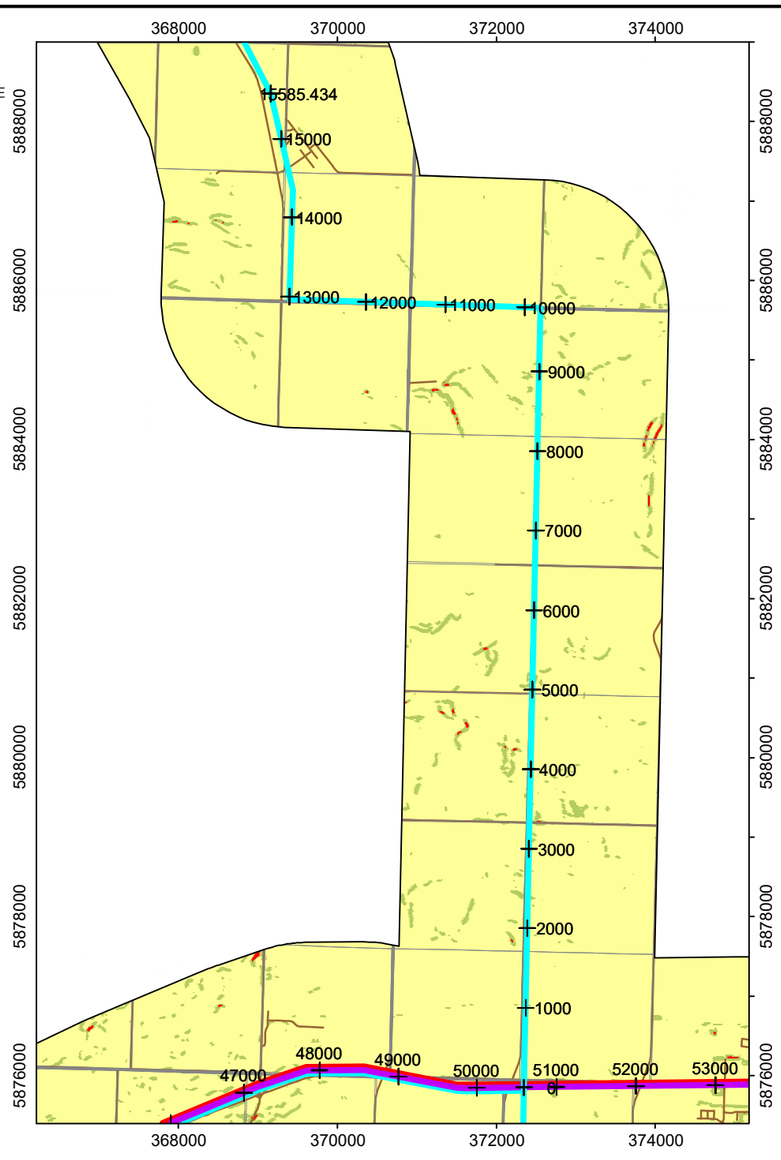
DWG No. 85418-2m

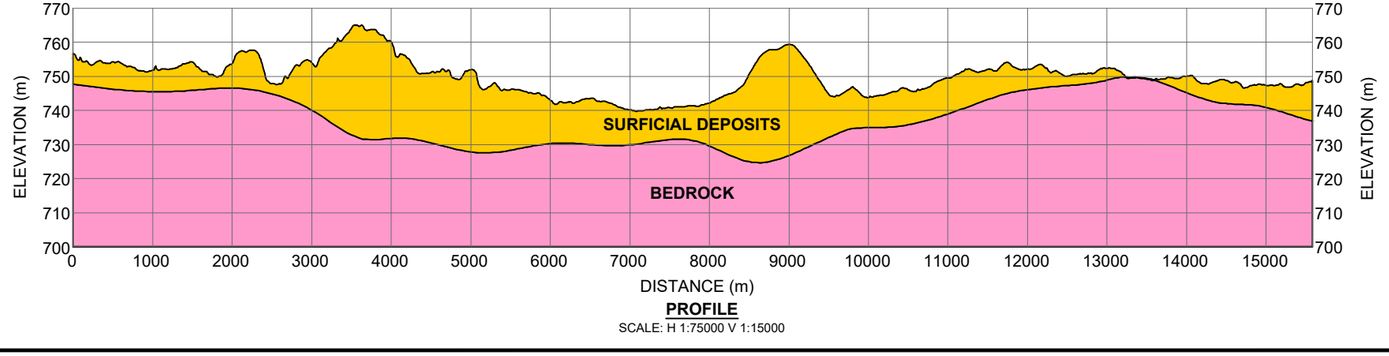
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-2n May 5, 2026.dwg - 1 - May. 07, 2026







PROFILE

SCALE: H 1:75000 V 1:15000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATER BODY
- COLLUVIUM
- GLACIOLACUSTRINE
- GLACIOFLUVIAL
- MORAINE

GROUND SURFACE SLOPE (°)

15
10
5

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

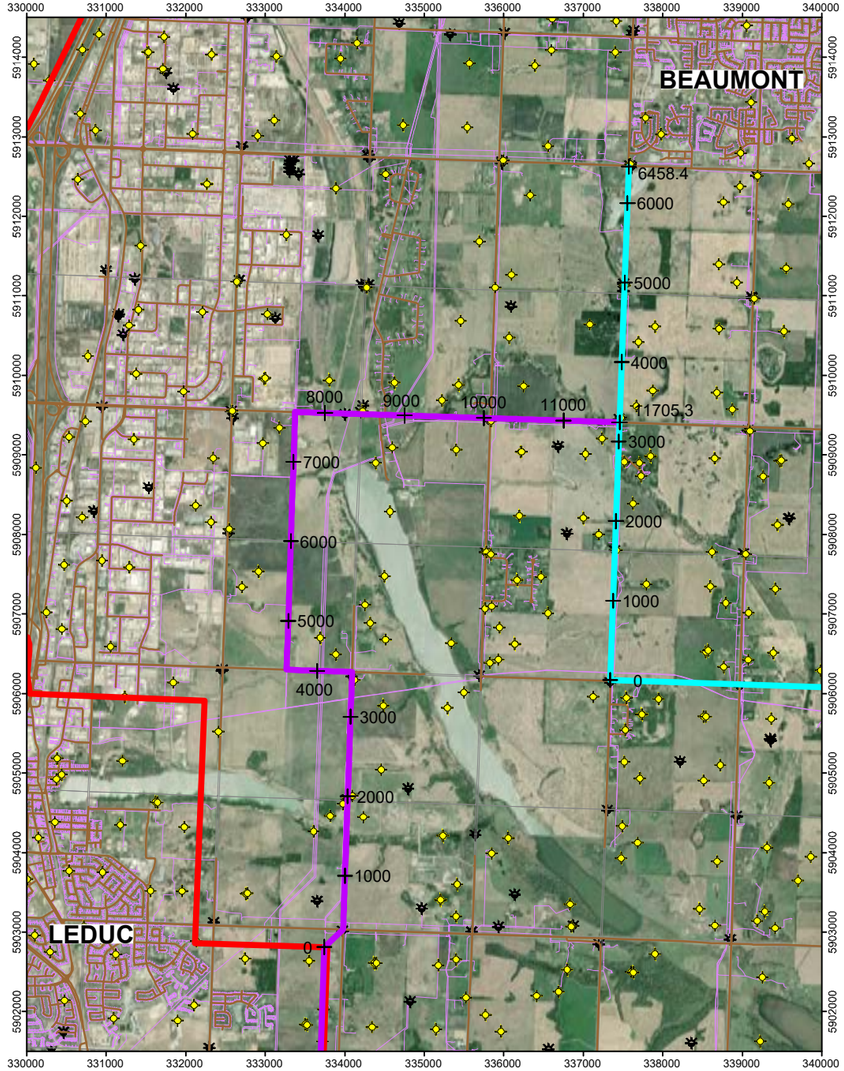
CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE
(SOUTH STUDY AREA - BLOCK E)

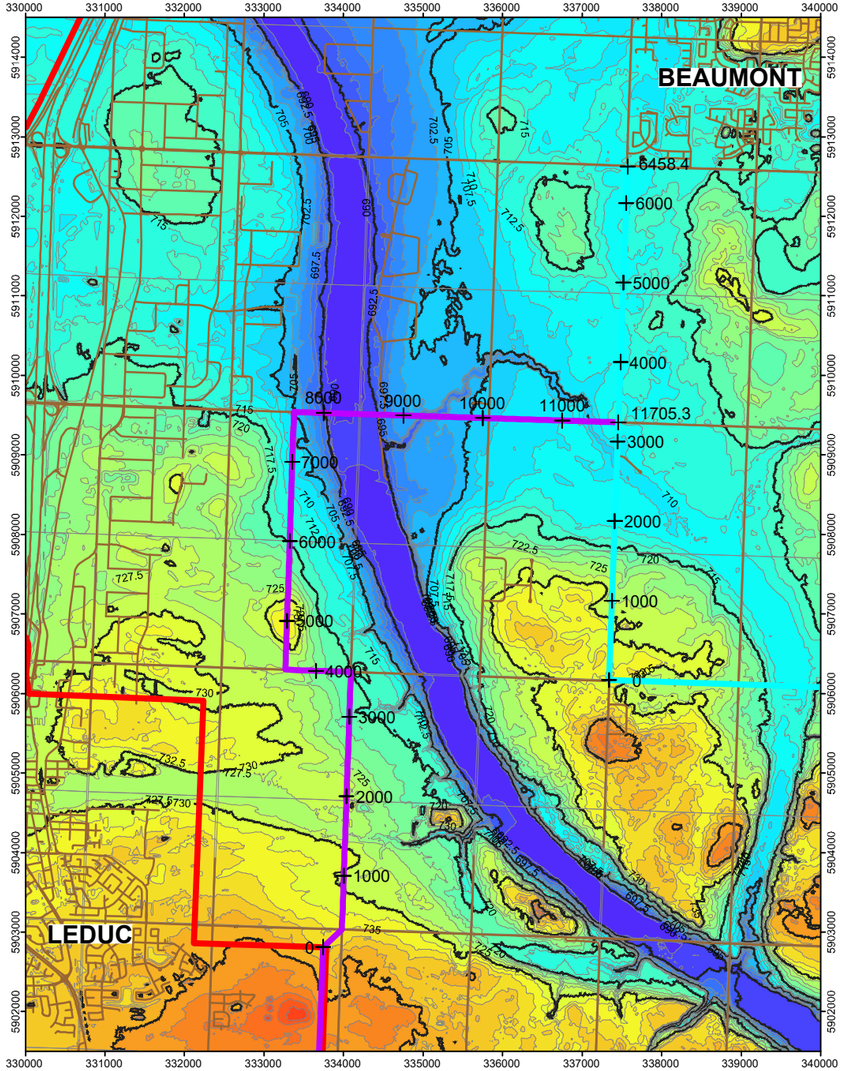
DWG No. 85418-2n

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

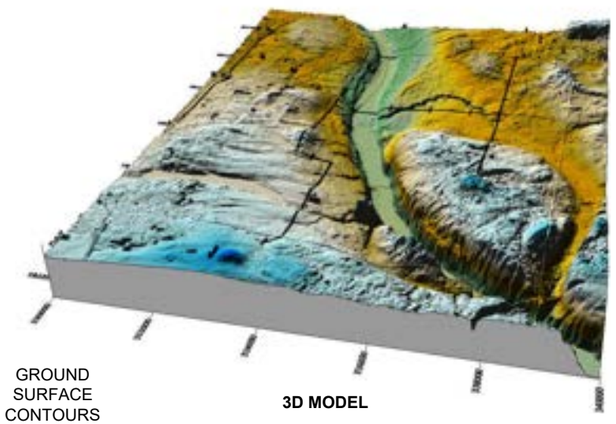
THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-3a May 5, 2026.dwg - 1 - May. 07, 2026





N
W E
S



3D MODEL

GROUND SURFACE CONTOURS (m)

755
750
745
740
735
730
725
720
715
710
705
700
695
690
685
680

0 1000 2000 3000 4000 5000m

SCALE 1:75000

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- PER PIPELINE
- ROAD
- WATER WELL
- OIL AND GAS WELL

DRAFT

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

SITE MAP
(NORTH STUDY AREA)

DWG No. 85418-3a

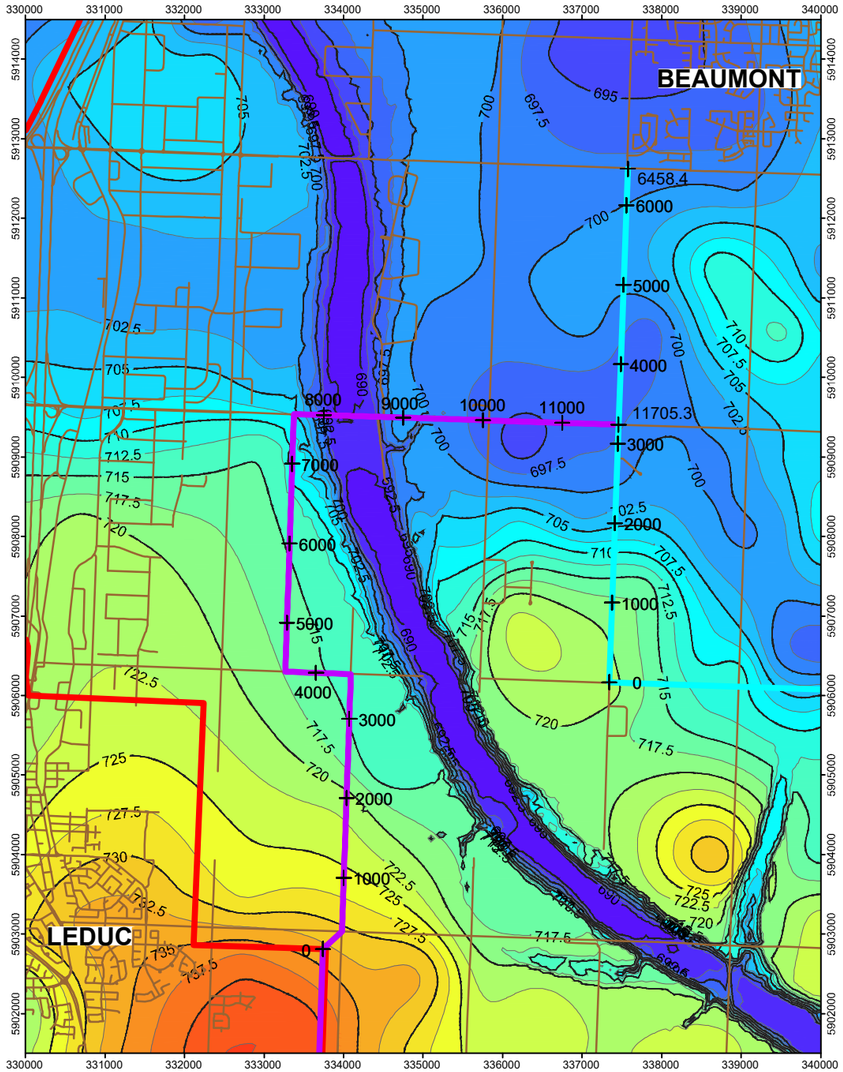
DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

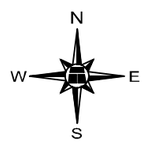
THURBER

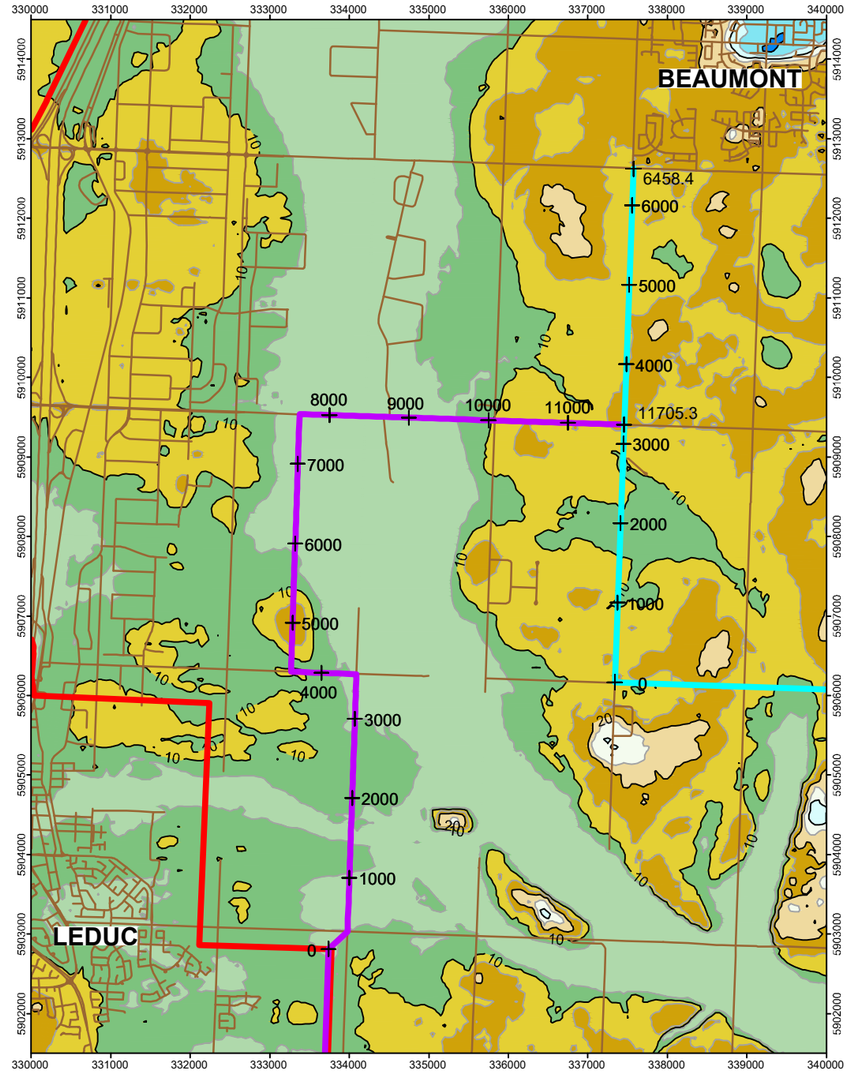
G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-3b May 5, 2026.dwg - 1 - May. 07, 2026

BEDROCK SURFACE ELEVATION (m) (CONTOUR INTERVAL 2.5 m)

742.5
740
737.5
735
732.5
730
727.5
725
722.5
720
717.5
715
712.5
710
707.5
705
702.5
700
697.5
695
692.5
690
687.5
685







SURFICIAL DEPOSITS THICKNESS (m) (CONTOUR INTERVAL 5 m)

40
35
30
25
20
15
10
5

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- WATER WELL
- OIL AND GAS WELL

DRAFT

0 1000 2000 3000 4000 5000m

SCALE 1:75000

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY

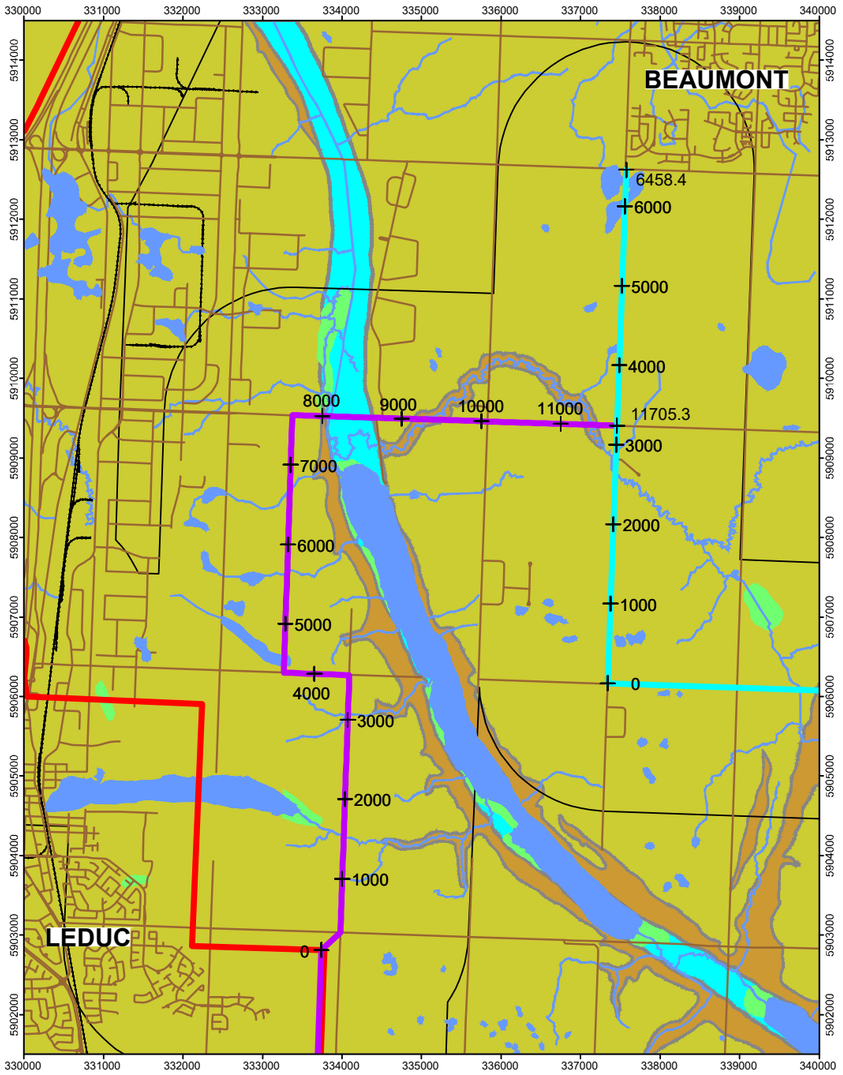
BEDROCK SURFACE TOPOGRAPHY
(NORTH STUDY AREA)

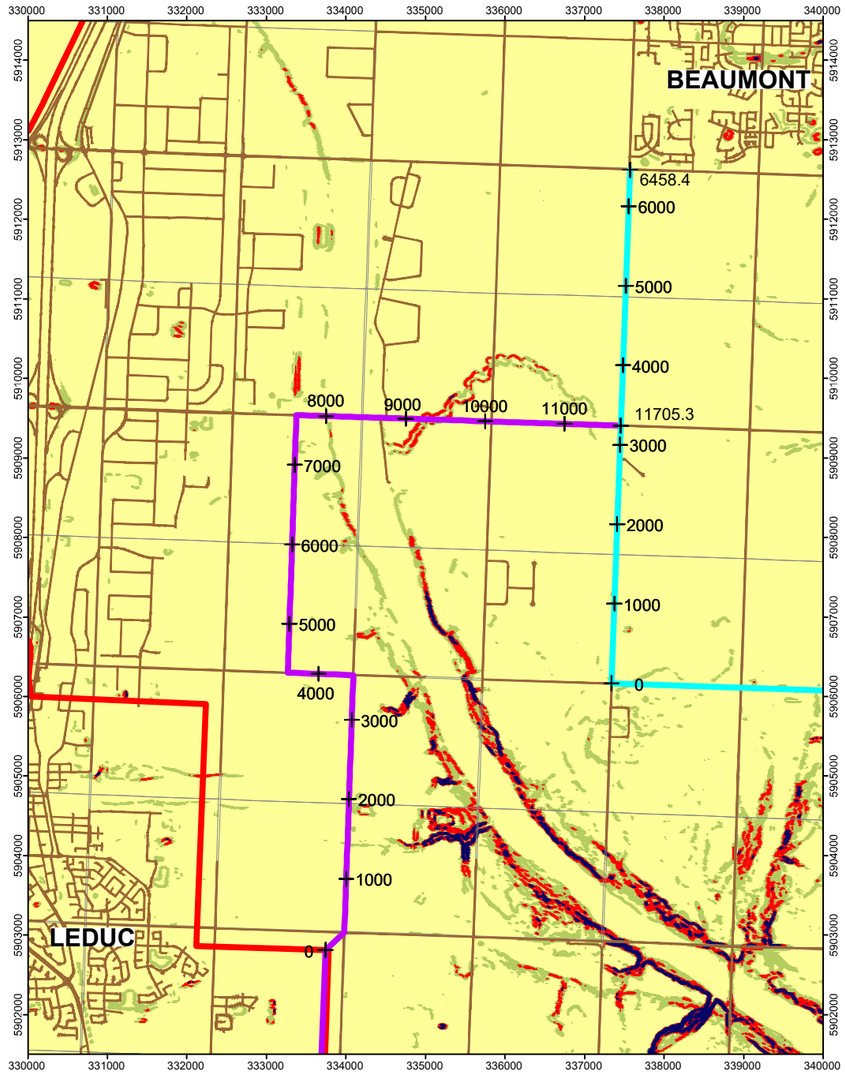
DWG No. 85418-3b

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

G:\85000\85418 CRSWSC - Camrose & Wetaskiwin Regional Water Supply - Feasibility Study\CAD\85418-3c May 5, 2026.dwg - 1 - May. 07, 2026





N
W
E
S

0 1000 2000 3000 4000 5000m

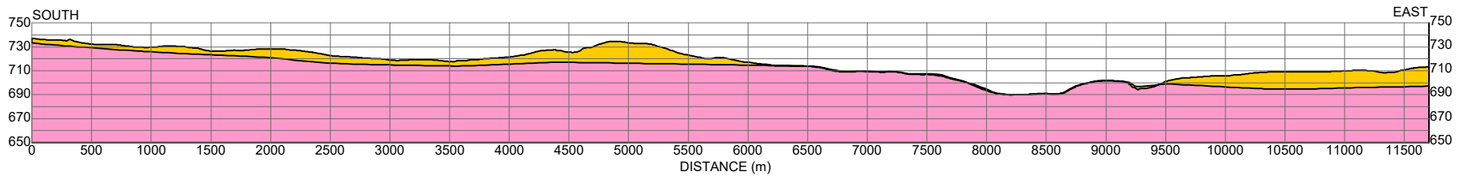
SCALE 1:75000

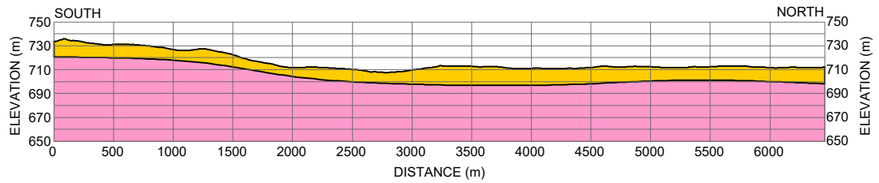
GROUND SURFACE SLOPE (°)

15
10
5

LEGEND

- PROPOSED WATER LINE ALIGNMENT 1
- PROPOSED WATER LINE ALIGNMENT 3
- PROPOSED WATER LINE ALIGNMENT 6
- ROAD
- MAPPED WATER BODY
- MAPPERD WETLAND AREA
- FLUVIAL
- COLLUVIUM
- MORAINE





LEGEND

- SURFICIAL DEPOSITS
- BEDROCK

PROFILES

SCALE: H 1:50000 V 1:5000

DRAFT

Associated Engineering

CAPITAL REGION SOUTHWEST WATER SERVICES COMMISSION
CAMROSE AND WETASKIWIN REGIONAL WATER SUPPLY
COUNTY OF CAMROSE AND WESTASKIWIN,
GEOTECHNICAL DESKTOP STUDY
SURFICIAL GEOLOGY AND GROUND SURFACE SLOPE MAPS WITH ELEVATION PROFILE (NORTH STUDY AREA)

DWG No. 85418-3c

DRAWN BY	ML
DESIGNED BY	MJB / MG
APPROVED BY	CAC
SCALE	1:75 000
DATE	MAY 2026
FILE No.	85418

THURBER

APPENDIX C - DETAILED COST BREAKDOWN

Quantities And Prices

Client:
CRSWSC
Project:
Camrose & Wetaskiwin Feasibility Study

Subject:
Cost Estimate

Proj. No. 2025-3300 | June 2026

			Alignment 1		
Item	Description	Unit	Quantity	Rate	Extension
1.0	Water Supply Line				
1.1	General Requirements	LS	1	$ 13,950,000	$ 13,950,000
2.0	Camrose & Wetaskiwin Supply Line				
2.3	1,050 mm Dia. Pipe (Highway 2)	m	7,100	$ 5,000	$ 35,500,000
2.1	900 mm Dia. pipe (Edmonton Urban)	m	5,800	$ 3,000	$ 17,400,000
2.2	900 mm Dia. pipe (Edmonton AHD)	m	5,200	$ 4,500	$ 23,400,000
2.3	900 mm Dia. pipe (Rural)	m	5,400	$ 2,400	$ 12,960,000
2.4	750 mm Dia. Pipe	m	45,200	$ 1,850	$ 83,620,000
2.5	600 mm Dia. Pipe	m	44,400	$ 1,600	$ 71,040,000
2.6	Trenchless Crossings	m	3,000	$ 3,500	$ 10,500,000
3.0	Nisku Booster Station Reconstruction	LS	1	$ 18,500,000	$ 18,500,000
4.0	Telford Lake Booster Station Decommissioning	LS	1	$ 50,000	$ 50,000
5.0	New Booster Station	LS	3	$ 1,500,000	$ 4,500,000
6.0	Commissioning	LS	1	$ 1,500,000	$ 1,500,000
	Total - Water Supply				$ 292,920,000
			Construction		$ 292,920,000
			Contingency (30%)		$ 87,876,000
			Non-Construction (15%)		$ 57,119,000
			Total Cost		$ 437,915,000

Quantities And Prices

Client:
CRSWSC
Project:
Camrose & Wetaskiwin Feasibility Study

Subject:
Cost Estimate

Proj. No. 2025-3300 | June 2026

Alignment 2

Item	Description	Unit	Quantity	Rate	Extension
1.0	Water Supply Line				
1.1	General Requirements	LS	1	$ 13,810,000	$ 13,810,000
2.0	Camrose & Wetaskiwin Supply Line				
2.1	900 mm Dia. Pipe (Edmonton Urban)	m	5800	$ 3,000	$ 17,400,000
2.2	900 mm Dia. Pipe (Edmonton AHD)	m	5200	$ 4,500	$ 23,400,000
2.3	900 mm Dia Pipe (Rural)	m	12100	$ 2,400	$ 29,040,000
2.4	750 mm Dia. Pipe	m	68900	$ 1,850	$ 127,465,000
2.5	500 mm Dia. Pipe	m	37700	$ 1,500	$ 56,550,000
2.6	Trenchless Crossings	m	4650	$ 3,500	$ 16,275,000
					$ -
3.0	Highway 21 Booster Station Decommissioning	LS	1	$ 50,000	$ 50,000
					$ -
4.0	New Booster Station	LS	3	$ 1,500,000	$ 4,500,000
					$ -
5.0	Commissioning	LS	1	$ 1,500,000	$ 1,500,000
					$ -
	Total - Water Supply				$ 289,990,000
			Construction:		$ 289,990,000
			Contingency (30%):		$ 86,997,000
			Non-Construction (15%)		$ 56,548,000
			Total Cost:		$ 433,535,000

Quantities And Prices

Client:
CRSWSC
Project:
Camrose & Wetaskiwin Feasibility Study

Subject:
Cost Estimate

Proj. No. 2025-3300 | June 2026

Alignment 3

Item	Description	Unit	Quantity	Rate	Extension
1.0	Water Supply Line				
1.1	General Requirements	LS	1	$ 12,600,000	$ 12,600,000
2.0	Camrose & Wetaskiwin Supply Line				
2.1	900 mm Dia. Pipe (Edmonton Urban)	m	5800	$ 3,000	$ 17,400,000
	900 mm Dia. Pipe (Edmonton AHD)	m	5200	$ 4,500	$ 23,400,000
2.2	900 mm Dia. Pipe (Rural)	m	12100	$ 2,400	$ 29,040,000
2.3	750 mm Dia. Pipe	m	54300	$ 1,850	$ 100,455,000
2.4	600 mm Dia. Pipe	m	37730	$ 1,600	$ 60,368,000
2.5	Trenchless Crossings	m	4350	$ 3,500	$ 15,225,000
3.0	Telford Lake Booster Station Decommissioning	LS	1	$ 50,000	$ 50,000.00
3.1					
4.0	New Booster Station	LS	3	$ 1,500,000	$ 4,500,000
3.3					$ -
5.0	Commissioning	LS	1	$ 1,500,000	$ 1,500,000
4.1					
4.2					
	Total - Water Supply				$ 264,538,000
			Construction:		$ 264,538,000
			Contingency (30%):		$ 79,361,000
			Non-Construction (15%)		$ 51,585,000
			Total Cost:		$ 395,484,000