AGENDA
COUNCIL MEETING
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
April 22, 2025
3:00 pm
Council Chambers

A. ADOPTION OF AGENDA

B. DELIGATIONS

C. MINUTES/NOTES

1. Council Committee Minutes
   - April 8, 2025
2. Council Meeting Minutes
   - April 8, 2025
3. Coffee with Council – Summerview
   - April 15, 2025

D. UNFINISHED BUSINESS

a) Maycroft Residents Response Letter
b) Northback Response to MD Questions
c) AUC Visual Impact Assessment Response Letter

E. BUSINESS ARISING FROM THE MINUTES

a) Southwest Alberta Community Foundation
b) Castle Mountain Resort
c) AltaLink – Wildfire Mitigation Program

F. COMMITTEE REPORTS / DIVISIONAL CONCERNS

1. Councillor Tony Bruder – Division 1
2. Reeve Rick Lemire – Division 2
3. Councillor Dave Cox– Division 3
4. Councillor Jim Welsch - Division 4
5. Councillor John MacGarva – Division 5

G. ADMINISTRATION REPORTS

1. Operations

a) Public Works Department Report
   - Report from Public Works dated April 16, 2025
   - Schedule A – Shop/Fleet Report
b) Utilities & Infrastructure Report
   - Report from Utilities & Infrastructure dated April 15, 2025
c) Water Shortage Response Plan - Implementation Report & Spring 2025 Revision
   - Report from Utilities & Infrastructure dated April 16, 2025
d) Bylaw 1359-25 – Amendment to Utility Bylaw
   - Being Presented for First Reading

2. Finance

3. Planning and Community Services

4. Municipal

a) CAO Report
   - Report from Administration, dated April 17, 2025

H. CORRESPONDENCE

1) For Action

2) For Information

a) Municipal Affairs Statutes Amendment Act 2025
   - Letter from Municipal Affairs
b) Community Outreach Updates from Mission and Fraser Lake, BC Community Members
   - Letter from Toth Family
c) Coffee with Council Thank you
   - Email from Phil and Esther Burpee

I. NEW BUSINESS

J. CLOSED MEETING SESSION

K. ADJOURNMENT

MINUTES
REGULAR COUNCIL COMMITTEE MEETING
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
Tuesday, April 8, 2025, 11:00 am
Council Chambers

Present: Reeve Rick Lemire, Deputy Reeve Tony Bruder, Councillors Dave Cox, John MacGarva and Jim Welsch.

Staff: CAO Roland Milligan, Director of Corporate Services Meghan Dobie, Public Works Manager Alan McRae, Development Officer Laura McKinnon, Utilities & Infrastructure Manager David Desabrais, Health and Safety Specialist Michelle Stuart, Financial Services Clerk Sara-Lynn McKenzie, and Executive Assistant Jessica McClelland.

Reeve Rick Lemire called the meeting to order, the time being 11:00 am.

1. Approval of Agenda

Councillor Dave Cox

Moved that the agenda for the April 8, 2025, Committee Meeting be amended to include:

2) Delegations
a) Correction of Name from “Lethbridge Community Foundation” to “Southwest Alberta Community Foundation”

3) Closed
d) License of Occupation – FOIP Sec. 24.1

AND THAT the agenda be accepted as amended.

Carried

2. Delegation

a) Southwest Alberta Community Foundation

Charleen Davidson, the Southwest Community Foundation Executive Director, attended the meeting to discuss the Southwest Alberta Community Foundation's work. Currently, there are 14 Community Foundations in Alberta. Southwest Alberta Community Foundation covers the area from the BC border to Taber and North to Nanton. 202 Community Foundations in Canada are all independent but collaborate.

The funds given out are invested in donation funds. During COVID, some Government Funds were given to the foundation to cover the offset. A few funds are specifically for rural areas, namely the Henry S. Varley Fund and the Community Priorities Grants. The new Pincher Creek fund is also still considered an “emerging fund” until its account is at $10k.

Anyone can donate or start a fund through the foundation and receive a tax receipt. This is one way to ensure that donated funds stay in your community. The community foundation only takes 1% of the funds to allow the foundation to continue operating and attracting more donations. Charleen stated that if anyone is interested in donating and has questions on where the money can go, they should reach out to the Southwest Alberta Community Foundation, and they will assist them through the process.

Charleen Davidson left the meeting at this time, the time being 11:31 am.

Gavin Scott, Senior Planner with Oldman River Regional Services Commission (ORRSC) and Dean Parkinson, with Castle Mountain Resort, attended the meeting at this time.

3. Closed Session

Councillor Dave Cox

Moved that Council move into closed session to discuss the following, the time being 11:37 pm.

a) 11:30 am - Castle Mountain – FOIP Sec. 16.1

Gavin Scott and Dean Parkinson left the meeting at this time, the time being 12:23 pm.

b) Public Works Call Log – FOIP Sec. 24.1
c) Curling Club Update – FOIP Sec. 16.1
d) Extended Producer Responsibility – FOIP Sec. 24.1
e) License of Occupation – FOIP Sec. 24.1

Councillor Jim Welsch

Moved that Council move out of closed session, the time being 1:20 pm.

Carried

2. Delegation

b) AltaLink - Wildfire Mitigation Program

Colin Harvey, Municipal and Community Relations Manager and Brian Kelly, Emergency Response Program Manager with AltaLink, and Cody Webster Fortis Stakeholder Relations Manager, attended the meeting at this time to update the Council on the AltaLink Wildfire Mitigation Program.

Colin overviewed how AltaLink has responded to the increase in large and more severe wildfires. Electricity issues start less than 10% of wildfires, and AltaLink has become a leader in prevention. Through continuous monitoring, preparation, and community engagement, the Wildfire Mitigation Program plan focuses on protecting communities while providing safe and reliable power.

AltaLink representatives left the meeting at this time, the time being 1:52 pm.

4. Tax Discussion

The Director of Corporate Services overviewed the 2025 tax year Bylaw (Bylaw 1357-25), including the requisitions from Alberta School Foundation Fund, Holy Spirit School, Pincher Creek Foundation and Designated Industrial Property (DIP), the increase in assessments, and general municipal taxes.
Bylaw 1357-25 will be presented for all three readings and approval at the afternoon Council meeting.

The MD will promote the province's senior tax deferral program through advertising and social media.

5. Health and Safety Review

Health and Safety Specialist Michelle Stuart presented the Health and Safety Review to the Council from September 2024 to March 2025.

Events have included equipment damage, near misses, personal injuries and property damage, but the numbers are significantly low.

The COR Audit was in August 2024, and the results achieved were 89%. The audit identified three key areas for improvement, and the Joint Health and Safety Committee will formulate a plan to improve in these areas. Michelle also spoke on the Health and Safety Incentive Plan and how it increased hazard awareness and encouraged employees to be more vigilant in their surroundings.

Michelle Stuart left the meeting at this time, the time being 2:15 pm.

6. Round Table

- Suggestion made that the Divisional Councillor chair the Coffee with Council

7. Adjournment

John MacGarva

Moved that the committee meeting adjourn at 2:26 pm.

Carried

_____
REEVE

_____
CHIEF ADMINISTRATIVE OFFICER

MINUTES
MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
REGULAR COUNCIL MEETING
APRIL 8, 2025

The Regular Meeting of Council of the Municipal District of Pincher Creek No. 9 was held on Tuesday, April 8, 2025 at 3:00 pm, in the Council Chambers of the Municipal District Administration Building, Pincher Creek, Alberta.

PRESENT Reeve Rick Lemire, Deputy Reeve Tony Bruder, and Councillors Dave Cox, John MacGarva and Jim Welsch.

STAFF CAO Roland Milligan, Public Works Manager Alan McRae, Director of Corporate Services Meghan Dobie, Utilities & Infrastructure Manager David Desabrais, Development Officer Laura McKinnon and Executive Assistant Jessica McClelland.

Reeve Rick Lemire called the meeting to order at 3:00 pm.

A. ADOPTION OF AGENDA

Councillor Dave Cox 25/161

Moved that the agenda for April 8, 2025, be amended to include:

Unfinished Business

a) Pincher Creek Emergency Services Commission Reserves

Finance

a) Bylaw No. 1357-25, the 2025 Tax Rate Bylaw

AND THAT the agenda be approved as amended.

Carried

B. DELEGATIONS

C. MINUTES

1) Council Committee Meeting Minutes – March 25, 2025

Councillor Dave Cox 25/162

Moved that the minutes of the Council Committee Meeting of March 25, 2025 be approved as presented.

Carried

2) Council Meeting Minutes - March 25, 2025

Councillor Tony Bruder 25/163

Moved that the minutes of the Council Meeting of March 25, 2025 be approved as presented.

Carried

3) Utility Open House Notes

Councillor Jim Welsch 25/164

Moved that the notes of the utility open house be received as information.

Carried

D. UNFINISHED BUSINESS

E. BUSINESS ARISING FROM THE MINUTES

a) Parks Canada/Waterton Lakes National Park

Councillor Tony Bruder 25/165

Moved that the presentation from Parks Canada on Waterton Lakes National Park, be received as information.

Carried

b) Pincher Creek Emergency Services Commission Reserves

Councillor Dave Cox 25/166

Moved that Council rescind resolutions 25/158 and 25/159.

Carried

F. COMMITTEE REPORTS / DIVISIONAL CONCERNS

1. Councillor Tony Bruder – Division 1
   - Waterton Biosphere
   - Crowsnest Pincher Creek Landfill Association
2. Reeve Rick Lemire – Division 2
   - Mayors and Reeves (was unable to attend)
   - Alberta SouthWest
   - Pincher Creek Emergency Services Commission
3. Councillor Dave Cox– Division 3
   - Pincher Creek Emergency Services Commission
   - Castle Mountain Community Association
   - Chinook Arch Regional Library (CARLS)
4. Councillor Jim Welsch - Division 4
   - Coffee with Council next week
5. Councillor John MacGarva – Division 5
   - Pincher Creek Housing Committee
   - Lundbreck Citizens Council

Councillor Tony Bruder 25/167

Moved to accept the Committee Reports as information.

Carried

G. ADMINISTRATION REPORTS

1. Operations

a) Public Works Operations Report

Councillor John MacGarva 25/168

Moved that Council receive the Public Works Operations Report, including Schedule A – Shop/Fleet Report, for the period March 15, 2025, to March 30, 2025, as information.

Carried

b) Policy C-PW-009 Dust Control – Schedule A

Councillor Dave Cox 25/169

Moved that Schedule A for policy C-PW-009 Dust Control be approved as amended.

Carried

Councillor Jim Welsch 25/170

Moved that policy C-PW-009 Dust Control be amended to change #15 to “Public Works will apply dust control to the roads as outlined in Schedule "A" to Policy C-PW-009 as approved by Council annually”,

AND THAT the policy be approved as discussed.

Carried

Reeve Rick Lemire left the meeting at 4:15 pm, and Deputy Reeve Tony Bruder assumed the chair.

c) Amendment to Corporate Policy C-FIN-500 Resale and Materials and Supplies

Councillor John MacGarva 25/171

Moved that policy C-FIN-500 Resale and Materials and Supplies be approved as presented.

Carried

d) Utilities & Infrastructure Report

Councillor Dave Cox 25/172

Moved that the Utilities & Infrastructure report for March 12, 2025, through April 1, 2025, be received as information.

Carried

Reeve Rick Lemire returned to the meeting and assumed the chair, the time being 4:27 pm.

e) Utility Bylaw Rates Discussion - Feedback and Path Forward

Councillor Dave Cox 25/173

Moved that the Utility Rate discussion be received as information.

Carried

2. Finance

a) 2025 Tax Rate Bylaw No. 1357-25

Councillor Dave Cox 25/174

Moved that Bylaw No. 1357-25, being the 2025 Tax Rate Bylaw, be given first reading.

Carried

Councillor Jim Welsch 25/175

Moved that Bylaw No. 1357-25, being the 2025 Tax Rate Bylaw, be given second reading.

Carried

Councillor Tony Bruder 25/176

Moved that Bylaw No. 1357-25, being the 2025 Tax Rate Bylaw, be presented for third reading.

Carried Unanimously

Councillor John MacGarva 25/177

Moved that Bylaw No. 1357-25, being the 2025 Tax Rate Bylaw, be given third and final reading.

Carried

3. Development and Community Services

a) Western Mud Slingers Event July 5, 2025 Mud Bog SW 7-6-28 W4M

Councillor Dave Cox 25/178

Moved that Council, acting in their capacity as the Licensing Officer pursuant to Bylaw No. 918A, grant the applicant a license for the mud racing event planned for July 5, 2025.

Carried

4. Municipal

a) CAO Report

Councillor Dave Cox 25/179

Moved that Council receive for information, the CAO Report for the period March 24, 2025 to April 4, 2025.

Carried

H. CORRESPONDENCE

A. For Action

a) Let's Celebrate Nurses - National Nursing Week May 12 to May 18, 2025

Councillor Tony Bruder 25/180

Moved that Administration post the National Nursing Week declaration to the MD's social media.

Carried

b) Castle Mountain Community Association - Request for Letter of Support

Councillor Dave Cox 25/181

Moved that Council grant the letter of support for Castle Mountain Community Association.

Carried

c) Joint Funding Alternative Use of Funds - Request from Syncline Castle Trails Association

Councillor Jim Welsch 25/182

Moved that Council approve the request for the alternative use of joint funds from Syncline Castle Trails Association.

Carried

d) South Canadian Rockies Tourism Association - Invitation to Meeting May 8, 2025

Councillor Dave Cox 25/183

Moved that any interested Councillor be authorized to attend the South Canadian Rockies Tourism Association on May 8, 2025.

Carried

B. For Information

Councillor Jim Welsch 25/184

Moved that the following be received as information:

a) Recreation Advisory Committee Minutes
   - January 16, 2025
b) Day on the Creek
   - Waterton Biosphere Event May 15, 2025
c) Burmis Watercraft Inspection Station
   - Letter from Honourable Rebecca Schultz, Minister of Environment and Protected Areas

Carried

d) MD Disaster Recovery Program Denial - Letter from Honourable Mike Ellis, Minister of Public Safety and Emergency Services

Councillor Tony Bruder 25/185

Moved that a letter be sent to the Minister of Public Safety and Emergency Services stating that the MD is highly disappointed in the denial of funding through the Disaster Recovery Program.

Carried

I. NEW BUSINESS

J. CLOSED SESSION

Councillor Dave Cox 25/186

Moved that Council move into closed session to discuss the following, the time being 5:25 pm.

a) Road Closure Request – FOIP Sec. 24.1

Councillor Dave Cox 25/187

Moved that Council move out of closed session, the time being 5:34 pm.

Carried

a) Road Closure Request

Councillor John MacGarva 25/188

Moved that Council deny the request to close and consolidate the undeveloped road plan to the South of NE 20-7-2 W5M.

Carried

Minutes
Council Meeting
Municipal District of Pincher Creek No. 9
April 8, 2025

K. ADJOURNMENT

Councillor John MacGarva 25/189

Moved that Council adjourn the meeting, the time being 5:35 pm.

Carried

_____
REEVE

_____
CHIEF ADMINISTRATIVE OFFICER

Coffee with Council – Division 4
Tuesday, April 15, 2025
6:00 pm
Summerview Hall (Heritage Acres)

Attendees:

Reeve Rick Lemire, Deputy Reeve Tony Bruder, Councillors Dave Cox, John MacGarva, and Jim Welsch, CAO Roland Milligan, Public Works Manager Alan McRae, Development Officer Laura McKinnon, and Executive Assistant Jessica McClelland.

Audience:

Approximately 11 residents from the Division 4 area

Welcome from Councillor Jim Welsch

- Welcomed all to the meeting and thanked everyone for coming out
- Introduced Councillors and MD staff

The following topics were discussed with Council and the public:

Dust Control
- The Public Works Manager explained the application process of MG30
- Operators gravel roads prior to dust control
- Residents can apply online and deadline is May 1

Residents asked Councillor Welsch how he is enjoying being a Councillor
- It has been a positive experience
- Will be one year since By-election in May

Bylaw Officer (Community Peace Officer):
- Vehicle has been ordered and is being outfitted
- CPO starts in July
- CPO will be able to enforce Provincial statutes/animal control as well as MD Bylaws
- An open house will be planned once the person is on staff to talk to the public about what the program will include
- Residents questioned the number of sheriffs in the area
- Rumours of the Sheriff's being based out of Burmis weigh scales station
- An increase in the Sheriff's presence has assisted with speeding and crime in the community

Rural Crime:
- Crime statistics are low
- MD hosted an open house with the RCMP for people with concerns, not a single resident attended
- Rural crime watch hasn't been very active
- Each division needs a representative to spearhead rural crime watch
- More volunteers are needed for the success of the program

Water Concerns:
- MD now has dedicated staff for water concerns

Coffee with Council – Division 4
Tuesday April 15, 2025

- New vertical intakes have been installed at the dam
- Water restrictions may still happen, but not to the severity of last year
- Discussion on how water licenses work
- Councillors met with Ministers to speed the permitting process up
- No funding was approved to cover the cost of water hauling, MD has appealed the denial

Federal Funding:
- Resident questioned if the MD has had issues accessing Federal funding – the MD has not

Beaver Mines water/wastewater and Castle water are all operational

Utility Rates:
- MD needs to increase utility rates to cover future repairs on infrastructure
- MD is still very low in fees

Population:
- MD has seen a slight population increase
- Lots of houses have been built – mostly secondary homes, it doesn't affect population numbers

Business Licensing:
- MD will begin business licensing to find out what businesses we even have in the MD
- Mostly for planning and emergency reasons – MD has no idea the number of beds in the area

Weed Concerns:
- A lot of blue weed along the roadside
- Blue weed coming from the Crowsnest Pass
- Staff poorly trained – in the eyes of residents
- Large educational component for residents

New Residents in the Area:
- Comment was made to have a "welcome package" for new residents to include items such as "Code of the West" and the weed booklets
- Possible update to Development Permits to include this information

Snow removal. Residents pushing snow onto roads cause safety issues.
- MD is aware and has a policy
- More education to the public
- CPO will be able to assist with offences

ATV's on Municipal Roads:
- MD was looking at a Bylaw to allow ATV's on Municipal roads

Airport:
- History of the MD Airport was discussed
- Would like development to happen, but needs sewer and water for that to happen
- Pre-COVID there was a Regional Airport Committee, but it stalled out
- The Town was a part, then backed away from the table

Coffee with Council – Division 4
Tuesday April 15, 2025

- MD received $1 million in grants to upgrade lights and the runway
- In discussion with the Town on how to get water and sewer to the airport

Pincher Station Development:

- Only dirt work is happening, Davis Group owns the land, and they are storing equipment

Highway 3 Twinning:

- Will still be many years before it's happening in our area

Palmer Plant:

- The history of the companies was discussed
- Application is at AESO, and they are looking at the room for power in that system
- No application has been made to the MD to date

Eco Centre:

- One person commented they would like it open 7 days a week
- Survey results were discussed, which showed, that most people are happy with the centre and certainly with the main attendant, Steve
- It's very clean and organized

Deadstock Bin Program:

- A bin will be delivered to Division 4, which had to be moved as it was being misused
- More education is needed for users
- Requested more signage on the bin

Landfill:

- The history of the incinerator was discussed
- It would have used ag plastics and wood, and could have been used for deadstock
- Cardston County had a compost facility for cattle and it was successful
- Largest cost of the program is trucking the animals to Lethbridge for disposal

Hometown Awards:

- Council discussed the Hometown Award
- $1000 to one student from each of the three high schools in the community

Bright Lights at Castle:

- Resident had concerns of lights seen near Castle Mountain
- Possibly lights from cat on mountain doing construction work for the new lift

Update on Firehall Renovations:

- Shared cost with the Town
- Still at tender price – so total cost is unknown at this time
- Renovating a building was still ½ the cost of building new

Gravel Sales:

- MD is looking at possibly moving away from selling gravel to residents
- MD needs the resource for our projects, and there are many private gravel sales available

Coffee with Council – Division 4
Tuesday April 15, 2025

- No culverts will be sold to residents, as they can source them elsewhere

Roads:

- Residents see lots of gravel in the ditches
- Road maintenance and changes to vehicles were discussed
- MD does have a younger crew who are still training

Meeting concluded at 8:05 pm

Maycroft , MD of Pincher Creek #9

April 11,2025

Reeve and Councillors,

We have received your email regarding the Maycroft Road, and we are writing at this time to clarify that the dust control in 2025 will be at least equal to the dust control provided in 2024.

As regards to your proposal for additional paid dust control, we expect the MD to make the proposal to each affected rate payer individually, via written communication.

We again remind you that the Maycroft Road is heavily used by Government, Industry and Tourism traffic, as your numerous traffic counts have established. The majority of the traffic on the Maycroft Road includes, fish and wildlife, fire fighting personnel and equipment accessing the main camp in the forestry, rock quarry traffic, timber harvesting traffic, various government personnel with projects on the forestry and the tourism traffic, which includes RV's, trailers with off road vehicles, horseback riders, campers, anglers and hunters. This probably doesn't cover all the activities that are accessed via the Maycroft Road.

This is a destination road and the funding for road maintenance, including dust control, should not be the financial responsibility of the Maycroft rate payers. The government, starting at the MD level, needs to advocate for a permanent solution for the dust pollution created on this major artery.

Again, we will highlight the concerns we have as citizens:

Does the road meet Alberta Safety Standards given the very rough road surface (except immediately after grading) and visibility issues caused by traffic and related dust and the liability that may expose the MD?

School buses of risk of not been seen.

Significant dust pollution affecting, humans, native grassland, cattle and a major water tributary, the North Fork of the Old Man River.

As concerned citizens we have presented this issue to the MD, our MLA and forwarded our concerns to the appropriate Alberta Government Ministers. This has been and continues to be an ongoing matter for decades and a concrete solution is imperative.

Maycroft Ratepayers and Residents

Heather Smith, Tim and Mary Swinton, Rob and Ericka Nichols, Ida Dennis, Tom and Monica Moulson, Jan and Neila Horejsi, Einar and Judy Nelson, Sheldon Goodkey, Neil and Charlene Goodkey, Jessie Young, Jo-dee and Kyle Thomson, Jillian Lynn Lawson, Rob Lothian, Lorna Brown, Howard Samoil, Joanne Archibald, James and Lisa Murphy, Shellyanne and Val Dennis, Alex Pourbaix, Logan and Emily Nelson

CC : Chelsea Petrovic, MLA for Livingstone Macleod

Hon. Devin Dreeshen. Minister of Transportation and Economic Corridors

Hon. Joseph Schow, Minister of Tourism and Sport

Db

Outlook

Fw: Responses to the question from MD Pincher Creek to Northback

From Roland Milligan <AdminCAO@mdpinchercreek.ab.ca>
Date Tue 2025-04-08 7:47 AM
To Jessica McClelland <AdminExecAsst@mdpinchercreek.ab.ca>

3 attachments (4 MB)

Borealis_Multiple-Lines-of-Defence_Technical-Memorandum-to-CAC_MAR-25-2025_FINAL[40754181].pdf; 40754183.pdf; 40754776.pdf;

Good Morning Jessica,
We can put this on the agenda for the 22nd.
Thanks,

Roland Milligan
Chief Administrative Officer
M.D. of Pincher Creek No. 9
Box 279
1037 Herron Avenue
Pincher Creek, AB T0K1W0
Phone: 403-627-3130
Email: AdminCAO@mdpinchercreek.ab.ca

From: Daina Lazzarotto <daina.lazzarotto@northback.ca>
Sent: April 8, 2025 7:19 AM
To: Roland Milligan <AdminCAO@mdpinchercreek.ab.ca>
Subject: Responses to the question from MD Pincher Creek to Northback

Hi Roland,
Below is a response from Northback CEO, Mike Young, regarding the questions posed from our delegation in February.

We appreciate your patience while we prepared our response.

I believe I heard in a council meeting with the Livingstone Landowners Group that the MD of Pincher Creek has been monitoring selenium levels, would you be able to share that information with us?

If more questions arise, please pass those along to me and we will provide a response.

Thanks

Daina

Dear MD of Pincher Creek Council,

The Coal Association of Canada (https://coal.ca/), of which we're members, commissioned a report by Guy Gilron on selenium management/mitigation/treatment in the coal mining industry which I've attached here. Guy also recently appeared in a video interview with Bridge City News, and has co-authored several articles, one of which I've included herein from the Canadian Journal of Mining; this article is a very good summary of modern selenium management, mitigation and treatment in coal mining.

Guy Gilron is a seasoned environmental scientist and the Principal of Borealis Environmental Consulting Inc., based in North Vancouver. He holds a B.Sc. (Biology/Chemistry) and an M.Sc. in Marine Ecology, both from the University of Guelph, and is a Registered Professional Biologist (RPBio) in British Columbia. With over 35 years of experience in environmental science consulting and the mining industry, Guy has held senior roles including Vice President of Environmental and Regulatory Affairs at Cardero Coal and Director of Environmental Science at Teck Resources. His core expertise lies in **ecotoxicology, water quality assessment, and ecological and human health risk assessment**—fields in which he is widely recognized for his depth of knowledge and practical insight.

Guy has contributed to multiple advisory boards and professional organizations, including the Mining Association of British Columbia, Wildlife Preservation Canada, the Society of Environmental Toxicology and Chemistry (SETAC) and the Canadian Ecotoxicity Workshop (CEW).

He also serves as the Executive Secretariat and Technical Lead for the North American Selenium Working Group (NASWG) https://www.namc.org/selenium.html. In this role, he provides scientific and technical leadership on selenium-related issues, guiding research, policy development, and regulatory engagement.

Guy, along with Gord McKenna, Director of the Landform Design Institute, submitted a comprehensive report and presentation to the Alberta Coal Policy Committee in 2021 and their written submission is included above.

I am happy to arrange for Guy to meet with the council at your convenience.

Kind regards,

Mike Young

NORTHBACK

Mike Young
Chief Executive Officer

C: 368.997.7100
mike.young@northback.ca

1910, 525 8th Ave SW
Calgary, AB T2P 1G1

TECHNICAL MEMORANDUM

To:	Robin Campbell, President (Coal Association of Canada)
From:	Guy Gilron, MSc, RPBio, Senior Environmental Scientist (Borealis Environmental Consulting Inc.)
Subject:	Selenium Management Strategies, Selenium Treatment Systems, including Demonstrated Selenium Reductions using Various Treatment Systems
Date:	March 25, 2025

1.0 Introduction and Objective

1.1 Context

Recent environmental concerns related to metallurgical coal mine developments in Canada have focussed on water quality, with an emphasis on the potential for elevated selenium concentrations downstream of mining operations. These concerns are based mainly on challenges of legacy mining operations in particular, in the Elk River Valley region of British Columbia. Based on recent reporting on the topic of coal developments in the media, there appear to be common misunderstandings regarding the progress that has been made in the management, mitigation and treatment of selenium at coal mining operations (Gilron *et al*., 2022).

1.2 Objective of this memorandum

The objective of this technical memorandum is to provide the Coal Association of Canada with an independent, third-party summary updating current selenium management practices in North America. This summary specifically describes the various management measures, addresses the challenges of the efficacy, efficiency, and sustainability of various treatment approaches/systems, with a focus on demonstrated removal efficiencies of treatment systems currently being implemented and operated at various operations.

2.0 Selenium: Ecological Impacts

Selenium is a naturally-occurring metalloid that is essential for living organisms; however, at elevated concentrations in the aquatic environment, it can be harmful to egg-laying vertebrates (*e.g.,* fish, birds). The complex dietary (food chain) transfer of organic selenium from periphyton to benthic invertebrates to fish and aquatic birds can result in reproductive effects in the eggs and in 2nd generation larval fish and aquatic birds (Janz *et al*., 2010).

While selenium occurs naturally in many of the marine shales and coal-bearing rock formations across British Columbia and Alberta. In the mining sector, elevated selenium in aquatic ecosystems can result from seepage from waste rock and tailings. The most common selenium species present in aquatic environments are selenate and selenite. These compounds are soluble in water and have the potential – when converted to organic chemical species (*e.g.,* seleno-methionine, seleno-cysteine) - to bioaccumulate in aquatic organisms (Janz *et al*., 2010).

Bioaccumulation of selenium in aquatic organisms is an environmental concern that has led to the regulation of selenium via the development, publication, and promulgation of environmental monitoring guidance, benchmarks/guidelines/standards, and effluent permit limits.

This has resulted in research, testing and implementation of:

- various selenium mitigation strategies (aimed at minimizing selenium from leaching from waste rock); and,
- treatment technologies (aimed at removing selenium from mine effluent).

3.0 "Multiple Lines of Defence" Strategy – Selenium Management

Modern mining techniques being proposed and adopted recently have employed strategies intended to prevent/avoid/mitigate selenium releases at source, backed up by modern water treatment technologies – passive, semi-passive, and active - using a "multiple lines of defence" approach (Gilron & McKenna, 2022, 2021). This approach is accomplished by using one, or a combination of, various principles and methods, including (but not limited to):

- clean water diversions;
- selective handling and placement of waste rock;
- engineered placement of material to limit exposure to oxygen and water (suboxia); and,
- dry stacking methods that prevent selenium being oxidized and becoming mobile in the aquatic environment.

Implementing these measures during mine planning and design ensures that selenium concentrations remain controlled and strictly monitored. This not only protects water resources, but also reduces long-term financial and regulatory risks. The approach builds on industry experience and commits to responsible, science-based methods of mining, management, and effluent control.

These strategies significantly reduce the risk of selenium leaching into receiving waters, setting a higher environmental standard for responsible coal mining. While significantly reducing the amount of contact water to be treated, the above-mentioned mitigation measures could still result in water requiring treatment; modern water treatment technologies will ensure that selenium concentrations are safe prior to release into the aquatic environment (see Table 1; below).

Table 1. Examples of Treatment Technologies used for Selenium Removal from Industrial Effluents

Treatment type	Examples
Filtration	Active treatment with filters can remove total Se
Membrane Separation	Reverse osmosis (Active)
Resins	Ion Exchange (Active)
Biological Reduction	Biochemical reactors (Active or Semi-passive), "brand name" units: • Suez ABMet™ • Frontier SeHawk® • Envirogen Fluidized Bed Bioreactor • Veolia AnoxKaldnes™
Biological Oxidation	Moving bed bioreactors (Active) Aerated gravel beds (Active)
Chemical Oxidation	Ozonation, peroxide, etc.
Photolysis	Photocatalysis, developmental, for reduction.
Electrochemical Reduction	BQE Water Selen-IX™

4.0 Selenium Treatment Technologies

Treatment technologies to remove selenium can be either natural features or engineered systems – or a combination of the two; these generally remove selenium from effluent, prior to discharge into the receiving environment. These treatment technologies range from passive (capitalizing on natural processes; *e.g.,* wetlands), to semi-passive (a combination of both natural and engineered systems) to active (completely engineered; *e.g.,* a treatment plant) systems. In addition, these systems can use - as their basis - either physical, biological or chemical transformations. Most selenium management programs at mining, and other industrial sector, operations can apply a combination of mitigation measures and treatment technologies, within a broader on-site water management system (McKenna & Gilron, 2021).

There are currently a number of engineered selenium removal treatment systems used at various industrial operations, including metal and coal mines, and hydroelectric facilities. Some examples are provided in Table 1; additional detail pertaining to the range and effectiveness of these

systems is provided in publicly-available documents, including integrative reports (*e.g.,* Golder Associates, 2020).

4.1 Overall suitability and feasibility of implementing a treatment approach for selenium control

Due to the availability of multiple selenium removal technologies, a treatment technology for a mining project is generally selected based on site-specific needs. Although the majority of physico-chemical methods can be used in a wide variety of climates, the same is not true for biological systems. Only some biological treatment technologies that can be used in northern climates and therefore, prior to selecting a treatment system, the feasibility and sustainability of each technology needs to be evaluated and weighed. The following outlines considerations for the evaluation of suitability and feasibility of a treatment system:

- Physico-chemical systems have the advantage of a shorter lag time when starting up the system after a pause of some sort, when comparing to biological treatment systems. Since physico-chemical systems do not involve the use of living organisms, re-starting systems after an unexpected pause is relatively easy when compared to the accommodations required to support the growth of microbes after a delay in operations.
- Bed Bioreactor systems (*e.g.,* FBR) have high maintenance and labor costs. Active biological systems usually need to undergo a significant amount of treatability testing to determine retention times, removal rates, etc. These studies can be time-consuming and expensive to implement (Golder Associates, 2020).
- Some biological treatment systems are available as pre-configured units so they can be installed at mines in shorter time intervals and the systems can be scaled (up or down) depending on site requirements. *In situ* bioreactors (biological treatment) have lower energy consumption and lower maintenance requirements. Moreover, these bioreactors do not usually require the construction of treatment plants and therefore, eliminate costs associated with facility infrastructure and maintenance (Golder, 2020).
- *In situ* biological treatments (*i.e.,* saturated rock fills and biochemical reactors) are better suited for northern sites where resources are limited, so treatments requiring high energy consumption treatments (*i.e.,* non-biological treatments, bed bioreactors) are not as feasible. Active biological treatment systems are the most expensive to implement, while passive systems are the least expensive.

4.2 Evaluation criteria and key considerations for treatment systems

Biological and non-biological treatment systems have both been demonstrated to be effective in the removal of selenium. Every treatment technology type has both advantages and disadvantages. The suitability of the treatment technology is mostly based on alignment with site-specific needs and conditions. When selecting a selenium treatment system, there are many factors to consider, including, but not limited to the following:

- cost and timing to develop and implement the system;
- how weather/climatic conditions can affect the efficacy and operation of the system;
- resource availability to implement the system;
- availability of space to accommodate the system; and,
- energy requirements to operate the system.

No single treatment technology fulfills every requirement for every/any type of mine. Instead, treatment technologies must be selected (and modified, if necessary) based on site-specific needs. Table 2 (below) evaluates and compares the key criteria for the two types of treatment system types.

Table 2. Comparison of key criteria of biological and non-biological systems (relative)

Criteria	Biological Treatment Systems	Non-Biological Treatment Systems
Final effluent concentrations	Higher (*i.e.,* > 10 ppb)	Lower (*i.e.,* <5 ppb)
Climatic condition suitability	Less effective in colder climates	Better in colder climates
Stability of by-product	Less stable	More stable
Cost to implement	Less expensive	More expensive
Flow in different seasons	Less flexible	More flexible
Timing to implement	Variable	Short time to implement
Resource requirements	Variable	High resource requirements
Space availability	Variable	Requires more space
Energy requirements	Variable	Lower energy requirements

5.0 Demonstrated Selenium Reductions at Coal Mining Operations

During the past five years, publicly-available information regarding the efficacy of treatment systems – specifically, the percentage removal of selenium from effluent discharges - has been reported via research papers, conference proceedings papers and commercial documentation; a summary is provided in Table 3, below.

Table 3. Summary of treatment methods employed at coal mines, and associated selenium reductions

Operation (Location)	Selenium Reductions (%)	Treatment Method(s)	Reference
EVR Elk Valley Mines (Southeast BC)	four water treatment facilities removing between **95% and 99%** of selenium from treated water	Treatment Plant and Saturated Rock Fills	Mackie *et al.*, 2022
Conuma Brule Mine (Northeast BC)	removal **up to 94%** (with concentrations decreasing from ~200 µg/L to 20 µg/L).	*In situ* anaerobic bioreactor	Kona & Atuke, 2022; Miller *et al.*, 2019
Simplot Smoky Canyon Mine (Idaho, USA)	removal of **91%** of the influent total selenium load (Simplot 2021)	Water Treatment Plant [Reverse osmosis and flotation bioreactor (aeration reactor)]	Technical memorandum
Confidential (Southwestern USA)	% removal from ≥ **~85% to > 90%** .	Selen-IX™, non-biological	Kratochvil *et al.*, 2022
Trend Mine (Northeast BC)	reduce selenium **up to 96.4%** (with concentrations decreasing from 130 µg/L to 5 µg/L	ABMet	Wastewater Digest article

In addition, the North American Selenium Working Group has, over the past two decades, commissioned white papers on a regular basis, to provide publicly-available state-of-knowledge updates on various technologies, their efficacy, their advantages, disadvantages, and implementation across various industrial sectors, including the metallurgical coal mining sector:

- State-of-Knowledge on Selenium Treatment Technologies – NAMC SWG White Paper Addendum (Golder Associates, 2020)
- Addendum to Review of Available Technologies for the Removal of Selenium from Water (CH2M Hill, 2013)
- Review of Available Technologies for the Removal of Selenium from Water (CH2M Hill, 2010).

These are available on the North American Selenium Working Group website: namc.org/selenium.html.

6.0 Summary

This technical memorandum provides an independent, third-party assessment of current selenium management strategies in the coal mining sector, with a focus on North America. Selenium, while essential for biological functions, can pose ecological risks at elevated concentrations, particularly in aquatic environments. Modern coal mining operations are addressing selenium concerns through a "multiple lines of defence" strategy, incorporating mitigation measures such as selective waste rock handling, clean water diversions, and advanced treatment technologies.

The memorandum outlines various selenium treatment technologies, including biological, chemical, and physical removal methods, categorized as passive, semi-passive, or active systems. The effectiveness of these treatment systems varies based on site-specific factors, with demonstrated selenium reductions at coal mining operations ranging from 85% to 99%. Selection of appropriate treatment methods depends on criteria such as cost, climatic conditions, resource availability, and energy requirements.

By implementing proactive selenium management strategies, coal mining operations can minimize environmental impacts while ensuring regulatory compliance. The findings presented support a science-based approach to selenium mitigation, reinforcing the industry's commitment to sustainable and responsible mining practices.

Closure

I trust that this Technical Memorandum meets your requirements at the present time. Please do not hesitate to contact the undersigned at your convenience to discuss any aspects of this Memorandum.

Sincerely,

BOREALIS ENVIRONMENTAL CONSULTING INC.

Guy Gilron, MSc, RPBio
Senior Environmental Scientist/Principal

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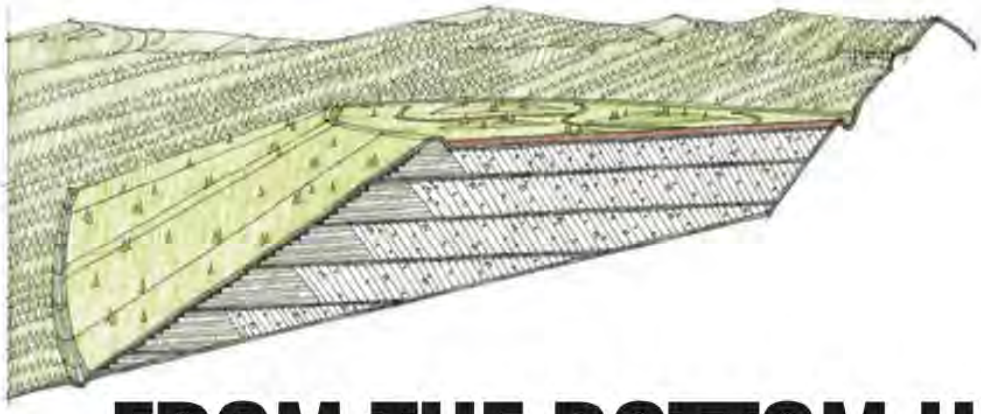
> By Gord McKenna and Guy Gilron



FROM THE BOTTOM UP

A proactive approach of landform design and source control

Increasingly, two related trends in mine design are becoming apparent. One is mining with the end in mind, or effective landform design (the emerging practice of designing and building truly sustainable mining landscapes from the very outset). The other involves building mine rockpiles that limit the generation and release of potential contaminants within the rockpile (source control) using both old and new technologies, combined with siting and constructing these mining landforms to facilitate the collection and treatment of leachates (leachate control). Together, these trends illustrate a fundamental shift in approach, especially for mines at the permitting stage. At a practical level, it shows the transition from proposing modest measures to control the production and transport of leachate from rockpiles, and then employing adaptive management should conditions worsen, to a proactive approach of limiting water and oxygen fluxes in the design and construction of these landforms that allows for effective capture and treatment of leachates. This strategy better manages the risks by "mining with the end in mind" and adhering to the principles of landform design (see June/July, 2021 issue of CMJ). This article describes how your mine can benefit from these novel approaches.

To illustrate this approach, we provide a simplified example drawn from recent efforts to control selenium leaching from metallurgical coal mine rockpiles under neutral pH conditions (this approach is similar for acid rock drainage elsewhere). At many mines, acid rock drainage and metal leaching (ARD/ML), especially from rockpiles, poses a significant problem, often evidenced by bright orange, iron-rich acidic seepage waters. Neutral mine drainage with elevated metals and metalloids can also be an issue. At some coal mines, selenium is present in the mined rock at concentrations of about 2 ppm. When the rock is blasted and stacked loosely in piles, water and oxygen entering the rockpile cause natural bacteria (the bugs) in the rockpile to oxidize selenium, in turn producing selenate, which is easily leached, reporting to the toe of the rockpile at aqueous concentrations in the range of about 50 ppb and higher. These neutral pH leachate waters flow into local creeks, wetlands, and lakes, potentially leading to bioaccumulation up the food chain, with impacts to fish and bird populations. To manage this situation, many mines employ expensive, long-term seepage and surface water collection facilities, paired with active water treatment plants. Key questions for consideration are how can we "do better," especially for new mines? How can we reduce costs and risks? Can we reduce the need for long-term treatment?

"Doing better" means reducing costs, risks and the need for long term treatment.

To address this issue, landform design can be employed to establish mine rockpiles that restrict contaminant mobility. Initially, a governance team and a multi-disciplinary technical team are established; a design basis memorandum (DBM), which outlines land uses, goals, objectives, and criteria, is clearly set out; and designs are formulated and modelled and subjected to various risk assessments. Pre-planned contingencies are then developed in the case of poor performance, and a monitoring plan is established to identify whether contingencies need to be implemented.

The team subsequently monitors the system to ensure that the rockpile is built to design specifications and is performing as intended. A key part of the DBM is to establish acceptable concentrations and leachate loading to the receiving environment. Generally, no single technology or scheme can be relied upon to control leachate. Instead, the use of multiple technologies in a multiple-lines-of-defence approach is used to provide reasonable assurance that the leachates can be effectively managed. This involves incorporating mining and rock handling methods, source control, water management, and mitigation measures (e.g., collection and treatment) into the system from the beginning.

CONTINUED ON PAGE 18

Ready for prime time?

Mine proponents, regulators, and local communities may be concerned if the proposed technologies are not "proven." For example, they may still be in the research or development stages. Questions pertaining to technology readiness quickly arise: "Can we rely on a new technology, or do we need to budget for full active water treatment?" Historically, the promise of perfect control and blending of mine wastes and creating anoxic conditions within mine rockpiles, which often resulted in less than stellar results, set source control back several decades. Part of the problem was over-promising and failing to clarify expectations, and part of it was being on the "bleeding edge" of new technologies or testing fallible techniques. Many technologies fail when scaling from the lab scale to the commercial scale.

To meet this challenge, we adapted a scoring system, or technology readiness level (TRL), for use in landform design and associated mitigation measures. It is based on a formulation developed by NASA for space flight technologies. The system provides a simple method to assess technologies and decide on the degree to which they can be relied upon at full commercial scale. The table below illustrates a recent rating using this scoring system to evaluate selenium management in Rocky Mountain coal mines.

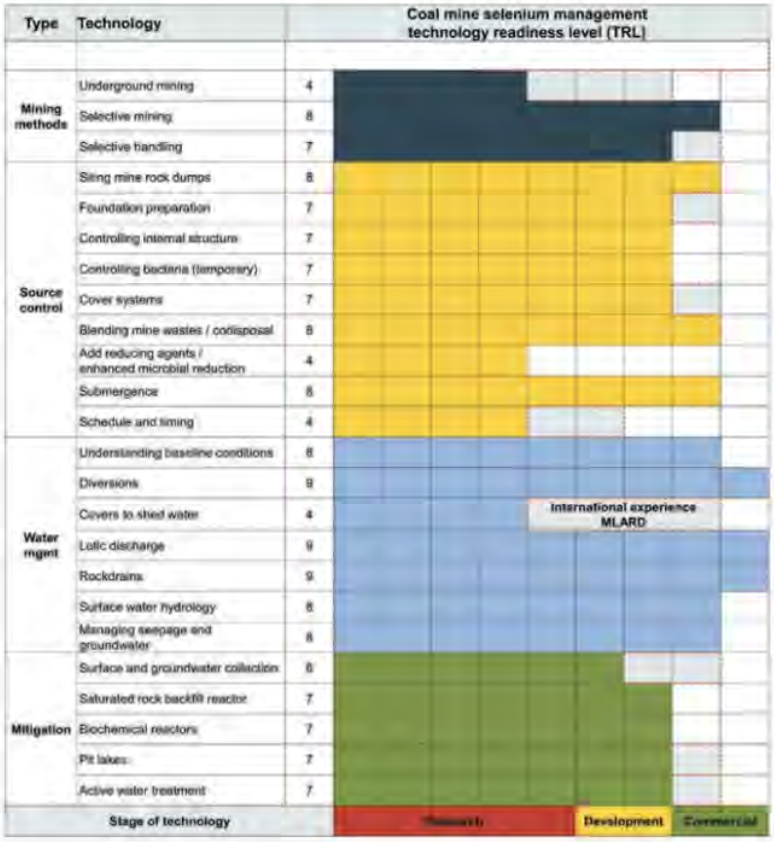
The choice of mining technology can have a tremendous impact on ultimate leachate production rates. Underground mining produces much less ARD-ML risk since it produces so much less rock than open pit mining. But underground mining is not an option for most major mines. However, selective mining and handling of mine rock is a common technique, though one that requires much greater quality assurance and quality control (QA/QC) by qualified and empowered professionals in the field.

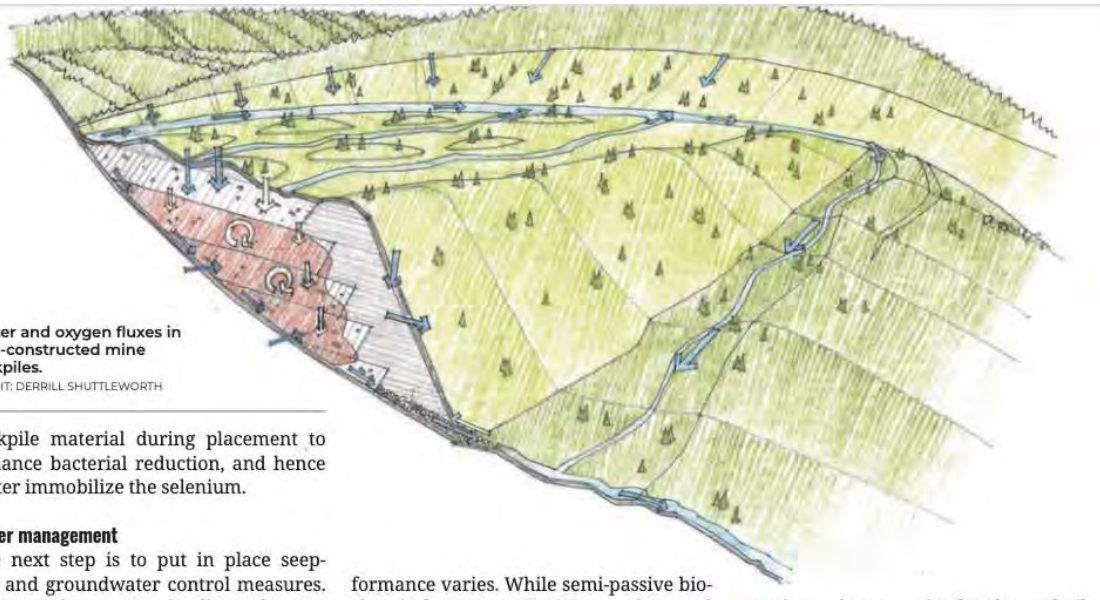
Much research has been conducted on source control for ARD, as well as for selenium leaching. What is becoming a common practice is the multiple-lines-of-defence approach described above. This approach helps control the production of leachates through a combination of effective rockpile design, careful placement, and a robust cover system. The first step is to limit the flux of oxygen into and within the rockpile. This measure maximizes the size of a suboxic zone (in which oxygen concentrations are a few percent versus the 21% in the atmosphere) that will form and limits the volume of water percolating into the rockpile (either from precipitation, run-on from above the rockpile, or as groundwater inputs from the sides of the rockpile).

Source control starts with siting the mine rockpiles. While short hauls and good geotechnical foundation conditions are critical, the landform also needs to be located in an area conducive to the collection of leachates. This usually means avoiding areas in which leachate can percolate into pervious overburden or jointed bedrock with a direct path to the receiving streams. Instead, it requires siting the landform in an area of groundwater discharge in which leachate collection can be conducted reliably. Sometimes a liner under the rockpile will accomplish this objective.

Next, the rockpile is built in layers from the bottom up to control the migration of oxygen within the landform during construction and after reclamation. Traditional end dumping creates long sloping zones of cobbles and coarse boulders that literally allow air to whistle through the landform. Instead, constructing thinner lifts, with compacted low permeability surfaces between lifts, limits gas transport, expanding the size of the suboxic zone. Sometimes, it may be necessary to add or blend mine waste or other materials between lifts to control gas flows, always keeping in mind the need for geotechnical stability (as outlined in the DBM). At the boundaries, engineered covers restrict air and water flux into the rockpile, as do wide zones of compacted, finer-grained materials on the downslope faces. And any rock material that is saturated will not oxidize, and as noted below – and under the right conditions – will reduce and precipitate selenium. Nutrients may be added to the

NASA Technology Readiness Level (TRL) system for spaceflight adapted to landform design, employed to classify selenium management technologies for metallurgical coal mines.





Water and oxygen fluxes in well-constructed mine rockpiles.
CREDIT: DERRILL SHUTTLEWORTH

rockpile material during placement to enhance bacterial reduction, and hence better immobilize the selenium.

Water management

The next step is to put in place seepage and groundwater control measures. Clean surface water is directed away from the rockpile with diversions (either above or on the rockpile), and a cover system is installed as soon as practical to limit water percolation and oxygen influx into the rockpile. Several diverse types of covers can be employed (e.g., soil covers, membranes) depending on the level of performance required. Lentic waters (those that are slow-moving such as wetlands and lakes) are much more susceptible to selenium bioaccumulation. Therefore, wherever possible, the rockpile is designed to discharge into lotic (fast-moving) waters such as a local stream or river. This is key to protecting downstream aquatic resources, particularly fish populations.

Inevitably, no matter how well a rockpile is designed and constructed, some leachate will be produced, especially during construction before the cover system can be completed. Mitigation of the leachates draining from the rockpile is part of the design and the monitoring and maintenance program and focuses on collection and treatment. If the rockpile is well sited, surface and groundwater collection can be highly effective. Recently, there has been much interest in the use of saturated rock backfills (SRFs) to precipitate selenium. To this end, major pilots, prototypes, and field monitoring are underway that are supported by laboratory studies and a solid theoretical base. Active water treatment is generally considered a commercial technology; even so, these systems need to be adapted to each mine site and performance varies. While semi-passive biochemical reactors (BCRs) are also used commercially, they are typically limited to modest flow rates.

The new strategy

The strategy is tiered and includes these stages: understand the materials and reactions, choose a site for the rockpile that is economical and supports water management for leachate control, construct the rockpile from the bottom up in layers to limit oxygen, blend the waste materials or "add food for the bugs"

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during placement, and as soon as practical, install a robust cover system. If feasible, the creation of an SRF to promote selenium precipitation is designed into the landform, typically by dumping leachates into a mined-out pit. Mines will often consider using an active treatment system for several years or decades to manage the stored leachates produced before the installation of the cover. Then, when flows, concentrations, and loads are adequately reduced, they switch to a semi-active system for long-term treatment.

The example of selenium management has some unique features; however, with customization, this technique is also applicable to many other methods of mine waste management, including ARD, and for tailings facilities. Although this approach is more effective for new rockpiles, the process of creating a DBM, selecting the technologies, and employing landform design more generally can also be applied to existing active or closed mining landforms, albeit with a reduced set of options available.

In any mine closure and reclamation scenario, there is always inherent residual risk. Failing to understand and accept that risk is a major impediment to every mining stage, from permitting to successful reclamation and aftercare. Getting agreement on residual risk is critical to achieving an acceptable outcome. Some risks come from the adoption of innovative technologies, some from uncertainty in the geological conditions and material properties, some in design and operations, and some in long-term materials and water management.

Ultimately, residual risks will fall to the regulator and local communities, necessitating the establishment of a collaborative approach by the mine proponent with these groups throughout all phases of the mining life cycle, from exploration through to permitting, mine development, the decades of operations and progressive reclamation, closure, and final reclamation, and on into the future. It is not easy. Employing the landform design approach, with clearly defined goals and objectives, thoughtful design, pre-planned contingencies, and an integral monitoring program, within a collaborative stakeholder approach, can be effective at helping mines managing these risks. Then management in turn can provide better assurance for the long-term health of wildlife and wild spaces in the area, generate a better relationship between mines and local communities, and foster a better public reputation for the industry at large. Mining with the end in mind.

Additional guidance

See www.landformdesign.com, the Landform Design Institute's website, for more how-to guidance on building from the bottom up. **CMJ**

Gord McKenna is a geotechnical engineer with McKenna Geotechnical in Delta, BC, and the founding chair of the Landform Design Institute. Guy Gilron is a senior environmental scientist with Borealis Environmental in North Vancouver, BC.

To: Alberta Coal Policy Committee

From: Guy Gilron, Borealis Environmental Consulting Inc
Gord McKenna, McKenna Geotechnical Inc

Date: 2021-06-07

Subject: **Written submission on selenium management**

1. Introduction

Alberta's Coal Policy Committee invited Mr. Guy Gilron and Dr. Gord McKenna to provide an independent brief – in advance of discussions on June 9th, 2021 – regarding various aspects of selenium management at Rocky Mountain coal mines. Six questions were provided to Guy and Gord, for consideration prior to those discussions[1].

As requested, we've provided background on our areas of expertise, a statement of our independence, and a statement regarding conflict of interest. Next, each of the questions is briefly addressed and we've followed up with recommendations to the Committee. We have also provided some high-level messages for your consideration. A short PowerPoint slide deck will be used to present this information to the Committee to support the discussion. Additional related information is presented in Gilron and McKenna (2021) and LDI (2021).

2. Expertise

GUY GILRON, RPBio, MSc, BSc, ICD.D
Senior Environmental Scientist, Independent Director
Borealis Environmental Consulting Inc. North Vancouver, BC Canada

Guy Gilron has 30 years of experience in ecotoxicology and ecological and human health risk assessment relating specifically to anthropogenic effects on aquatic and terrestrial ecosystems. Guy has expertise in the development, evaluation and application of water quality guidelines and criteria in numerous jurisdictions in North America and beyond.

Prior to his work as Principal of Borealis Environmental, he served as VP Environment/Regulatory Affairs for Cardero Coal Ltd, and Director, Environmental Science for Teck Resources, based in Vancouver, BC, Canada. In the latter position, Guy contributed scientific input to the Elk Valley Selenium Task Force (EVSTF), a government/industry forum that addressed water quality issues and research in the Elk Valley downstream of Teck Coal mines. In addition to contributing to various research initiatives and publications related to selenium risk assessment, including "Ecological Assessment of Selenium in the Aquatic Environment" (Chapman *et al*., 2010), Guy has played a key role in numerous multi-stakeholder working groups related to selenium assessment, management, and treatment, specifically: the EVSTF; the Canadian Industry Selenium Working Group; the Alberta Selenium Working Group; the North American Metal Council Selenium Working Group (NAMC-SWG),

[1] As directed in an email from Fiona Salkie, Director, Coal Policy Secretariate dated 2021-06-02.

the latter for which he serves as Executive Secretariat; most recently, Guy has served as Science Advisor to the Coal Association of Canada, and several of its members, in support of proposed *Coal Mining Effluent Regulations* multi-stakeholder consultations. Guy has worked on various aspects of environmental aspects of the following representative coal projects:

Operating mines:

- Conuma Coal (Brule Mine) 2018-2020
- Teck Coal (Elk Valley Mines) 2006-2011

Development projects:

- Allegiance Coal (Tenas Project) 2017-2021
- Montem Resources (Tent Mountain) 2020-2021
- CanAus Coal / North Coal (Michel Creek) 2015-2018
- Cabin Ridge Project (with MGI) 2021
- Ram River Coal (Aries Project) 2019-2020

Closed coal mines:

- Smoky River Coal Mine / (sub to BGC) for AER 2017
- Bullmoose Mine for Teck Cominco 2004-2007
- Quintette Mine for Teck Cominco 2004-2007

As part of a multi-year effort by the NAMC-SWG, Guy has served as the technical lead for the group, evaluating various water quality guidelines/criteria and risk assessments for selenium. Guy has been involved as a technical reviewer of the Environment Canada and Health Canada Selenium Risk Assessment/Risk Management documents, the draft USEPA water quality criterion for selenium, and has prepared (together with GEI consultants and Windward Environmental) a state-of-science review of selenium guidelines and criteria in North America, on behalf of the American Petroleum Institute and the NAMC-SWG.

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GORD MCKENNA PhD, PEng, PGeol
Geotechnical Engineer, Landform Designer,
McKenna Geotechnical Inc. Delta, BC Canada

Gord McKenna is a geotechnical engineer and geologist who builds mining landforms and watersheds. He possesses over 30 years of experience in the mining industry in mine operations and as an international consultant for oil sands, coal, diamond, and metal mines, regulators, Indigenous peoples, and local communities. He is also an adjunct professor in the Civil and Environmental Engineering Department at the University of Alberta and the founding chair of the Landform Design Institute.

Gord and his teams have designed and built 23 reclaimed watersheds that cover 44 square kilometers and host 37 wetlands and 101 kilometres of streams. He has been a lead contributor to several manuals involving landform design, mine reclamation, and tailings, has co-authored 100 technical papers, and led over 40 landform design courses. He sits on eight geotechnical / tailings review boards across Canada.

Gord was a member of the Strategic Advisory Panel on Selenium Management (2010–2012) and has been involved with supporting research and designing mining landforms to manage selenium, working with numerous Rocky Mountain coal mines and local communities.

Gord has worked on the following coal projects:

- WCC Wolverine Coal geotechnical design (Norwest) 2004-2006
- Teck Cardinal River / Cheviot reclamation audit (Norwest) 2006
- Strategic Advisory Panel for Selenium Management (BGC) 2010-2012
- Teck Coal R&D / landform design (BGC/MGI) 2013-2020
- Coal Valley geotechnical design (BGC) 2013
- CanAus Coal / North Coal landform design (BGC/MGI) 2015-2021
- AER Smoky River Coal / (BGC/MGI/Borealis) geo-environmental investigation 2017
- Livingstone Landowners Group (MGI) engineering review 2019-2020
- Cabin Ridge (MGI/Borealis) Project selenium position paper 2021
- TransAlta Keephills Ash Lagoon (KCB/MGI) landform design 2021

Gord worked on behalf of the Livingstone Landowners from 2019 to 2020 reviewing the engineering / landform design aspects of the proposed Benga Grassy Mountain Coal Project and appeared before the Joint Review Panel as an expert witness.

www.mckennageotechnical.com
www.landformdesign.com
www.gordmckenna.com

McKENNA GEOTECHNICAL

3. Independence

Guy Gilron and ***Gord McKenna*** are independent professional technical consultants who work for the mining industry, various associations, Indigenous communities, local communities, and regulators in Canada and internationally.

Mr. Gilron founded Borealis Environmental Consulting Inc. (Borealis) to generate, apply and integrate scientific data, information, and principles to inform environmental policy and management. Since Borealis' inception in 2013, Guy's work has been categorized as follows: 70% related to coal, metal mines, oil sands projects in Canada and internationally, 15% for industry associations and multi-stakeholder forums, and about 15% (volunteer/professional) as: a Senior Editor of an International Scientific Journal (*Integrated Environmental Assessment and Management*); and, as a Board Member/Vice President for the non-profit organizations, Wildlife Preservation Canada, and the Canadian Ecotoxicity Workshop.

Guy is a Registered Professional Biologist (RPBio; accredited by the British Columbia College of Applied Biology (CAB)) with reciprocity with the Alberta Society of Professional Biologists and the United Kingdom Society of Biology. Mr. Gilron has 'right to practice' in British Columbia under the newly-enacted *Professional Governance Act*. As an RPBio, Guy adheres to the CAB Code of Ethics, which includes requirements for professional practice, including objectivity and independence when providing evidence or testimony.

The majority of Guy's work at Borealis relates to the use of science in supporting the environmental sustainability of mining industry projects. The consulting industry in this field of practice is relatively small; consulting scientists rely on their integrity and professionalism, and accreditation holds them to account for protecting the public. Mr. Gilron's scientific publications (including peer-reviewed journal articles, conference proceedings, book chapters and contributions to regulatory consultations and guidance documents), his work as the Executive Secretariat of the multi-stakeholder North American Metals Council – Selenium Working Group, and his other volunteer work, together provide a profile of a well-recognized and balanced professional. As is the case with Dr. McKenna, Guy seeks to support common vision among diverse stakeholders, sustainable resource use, and socio-economically viable coal mining.

Dr. McKenna founded McKenna Geotechnical partly to be able to provide independent advice to clients. Since inception in 2017, about 5% of its work is landform design for coal mines, about 5% for Indigenous and local communities, and 2% for regulators (contributing to technical guides). About 70% of his work is for oil sands, diamond, and metal mines in Canada and internationally, and about 20% (volunteer) for the University of Alberta, other universities, and for the Landform Design Institute.

Gord is a professional engineer and geologist registered with the Association of Professional Engineers and Geoscientists of Alberta). McKenna Geotechnical Inc. has an APEGA permit to practice in Alberta. The following is extracted from the APEGA code of ethics:

- "Professional engineers and geoscientists shall recognize that professional ethics is founded upon integrity, competence, dignity and devotion to service. This concept shall guide their conduct at all times….
- Professional engineers and geoscientists shall, in their areas of practice, hold paramount the health, safety and welfare of the public and have regard for the environment….
- Professional engineers and geoscientists shall conduct themselves with integrity, honesty, fairness and objectivity in their professional activities."

Given that Gord does most of his work for the mining industry, some can argue that there is a potential conflict of interest. And the geotechnical consulting industry is small enough that few practitioners are truly independent. However, Gord's publications (through the University of Alberta, various conferences, textbook chapters and design guides, the recent work for Livingstone Landowners and presentation to the JRP, his review work for First Nations, his work on the Selenium Panel, and his work and publications through the Landform Design Institute) paint a broader view. Gord seeks to help the various parties set common visions, and "mine with the end in mind" to jointly achieve successful reclamation paints a more balanced approach, for which he is known.

4. Declaration of perceived conflicts of interest relating to this issue

We disclose the following activities pertaining to the Coal Policy Committee (the Committee) discussions, to ensure transparency to the Committee:

1. Guy was invited by the Committee (through a recommendation from Robert Bell of Montem Resources and Robin Campbell of the Coal Association of Canada) to appear before them as an independent scientist with expertise in selenium management.
2. Gord was invited by the Committee to appear before them as an independent scientist with expertise in landform design as it relates to mine design and its use in selenium mitigation techniques.
3. In May 2021, Guy and Gord were retained by the Cabin Ridge Project to develop a White Paper on the state of practice for selenium management for two purposes: submission to the Coal Policy Committee; and, to guide Cabin River Project's mine design. Cabin Ridge has asked us to appear with them, at a separate time, before the Committee.
4. Gord has been invited by Livingstone Landowners Group to appear before the Committee as an independent expert to highlight issues he presented to the Joint Review Panel for Benga's Grassy Mountain Project.
5. Guy was invited by the Coal Association of Canada to appear before the Committee as an independent expert to support discussions related to water quality, selenium management, ecological and human health impacts, and water treatment technologies.
6. Guy was invited by Ram River Coal to appear before the Committee as an independent expert to support discussions related to water quality, selenium management and water treatment technologies.
7. Guy and Gord were both recently interviewed by Bob Weber of The Canadian Press and – based on this interview - an article on Alberta coal mine reclamation and selenium management appeared in Canadian newspapers in May of 2021 (e.g., https://www.cbc.ca/news/canada/calgary/coal-mines-alberta-environment-community-1.60381030).

QUESTIONS and ANSWERS

5. **What are the current world practices (standards) (best available technologies or practices) for managing selenium contamination as a result of surface coal mine activities?**

Selenium is an issue in some areas with respect to agricultural runoff and mine waste a well as some wastewater treatment plant effluents. There are issues related to atmospheric deposition, vegetation uptake in reclaimed mine lands, and in waters downstream of metal mines, coal mines, and power generating stations. The following are areas in which selenium is elevated in waters downstream of operations: Alaskan metal mines, BC metal mines, BC/AB coal mines, Chinese coal mines, eastern US coal mines, US phosphate mines, and US and SK uranium mines. There are likely other regions with mine waste selenium issues that a cursory review did not reveal.

A review of the selenium management state of practice for Rocky Mountain coal mines in British Columbia and Alberta was recently completed by Gilron and McKenna (2021). Based on this review, the general approach employed by the sector is one of multiple-line-of defense, as part of a mine design / landform design process. Figure 1 provides a summary of the technologies employed under four categories – selective mining and handling, source control, water management, and mitigation.

A full international review of selenium management has not yet been conducted; however, the Electric Power Research Institute (EPRI) holds a biennial "Selenium Summit", which explores the state of the science for selenium treatment (https://www.epri.com/events/E53440E6-BEC4-43AF-9072-B709BDE0EF23). A cursory review reveals that the geology and production of selenium is well understood (see Stillings 2017), especially for US geography.

With respect to the mining sector, the cursory review indicates that outside of northeast and southeast BC and Rocky Mountain coal mining, the main selenium management strategies employed are mitigations (e.g., collection of surface water and the use of active and semi-passive water treatment technologies. There are several vendors who supply commercial-scale active water treatment plants for selenium; several mines use semi-passive pit lakes, wetlands, and buried bioreactors to reduce selenium concentrations in runoff water. Much of the literature relates to court cases pertaining to exceedances of selenium water quality guidelines/criteria in downstream waters and the use of various selenium water treatment technologies. Golder (2020) was commissioned by the North American Metals Council Selenium Working Group to provide the most up-to-date review of selenium treatment technologies; their document details what is considered the current state of practice for water treatment.

Technologies for controlling metal leaching and acid rock drainage from hardrock mines are very similar to those being employed for selenium management. There is a rich literature based on decades of implementation at thousands of mines (INAP 2014) with practices and experience now being applied to Rocky Mountain coal mines for selenium management.

Our recommendation: The Government of Alberta should set out specific expectations for coal mines with regard to selenium management; this should include recognizing differences between historical/abandoned mines, proposed mines, existing mines, and closed mines. For each abandoned mine in the province, the Government of Alberta should determine which selenium management methods should be applied, and expedite implementation to meet the mine's EPEA permit goals/objectives/compliance criteria.

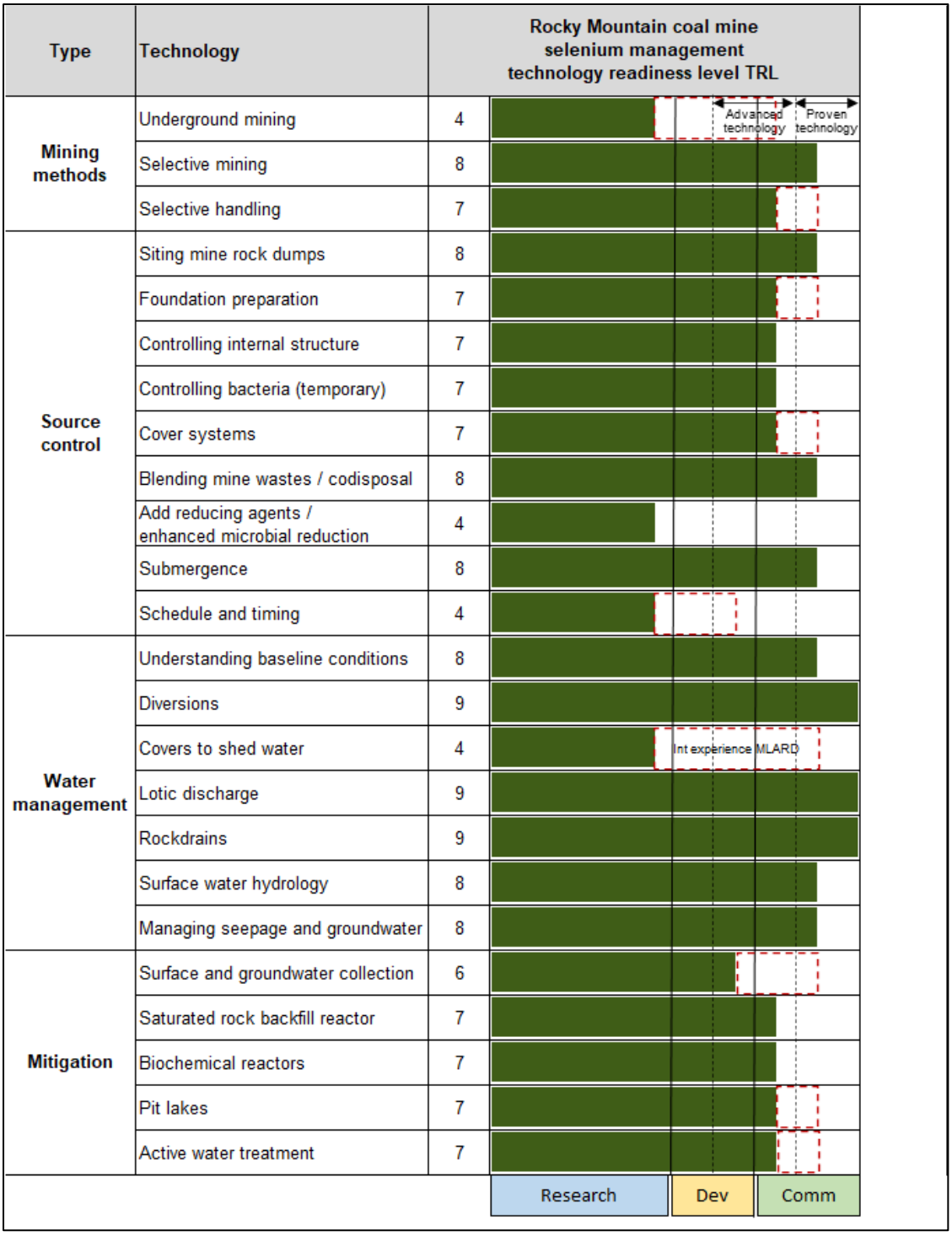


Figure 1. Technology Readiness Level for Rocky Mountain coal mine selenium management (adapted Gilron and McKenna, 2021)[2]

[2] Details of the technology readiness scoring are available in Gilron and McKenna (2021). The assessment tool has been adapted from NASA (2017). Dashed red extensions to the green bars indicate where metal leaching / acid rock drainage technology employed internationally exceeds that for selenium management at Rocky Mountain coal mines.

6. How is selenium monitored in surface and groundwater on and adjacent to coal mines?

Selenium is monitored at coal mines to varying degrees and for various purposes on, and adjacent to, mine sites (including operations or closed/dormant properties). The extent and intensity of these monitoring programs are related to the overall magnitude of exceedances of selenium in water on site, and, more importantly, leaving the site. This includes both surface water and groundwater, although there has generally been a stronger focus on surface water discharges.

The three major purposes for monitoring selenium in water are: understanding site water balance, research and development, and regulatory compliance. The approach and design of these monitoring programs will align specifically to the purposes listed above. For example, understanding site water balance is crucial for assessing the success and efficacy of any mitigations applied at the site; design of the monitoring program temporally (i.e., sampling frequency) and spatially (i.e., sampling locations) will be dictated mainly by site precipitation, topography and hydrology, and the location of mine rockpiles. Monitoring for research and development purposes is usually related to the evaluation of selenium mitigation strategies (e.g., passive treatment system, such as wetland or bioreactor; efficiency of saturated rock fills, cover performance, etc.). Finally, for regulatory compliance, monitoring is usually more 'prescribed', generally dictated by effluent permits; specifically, selenium is monitored routinely at final discharge point(s) ("end of pipe") and/or varying distances downstream of the discharge, beyond the initial dilution zone (usually several sampling locations). The data from the latter monitoring type are used to determine compliance with regulatory effluent limits, site-specific water quality objectives, and ambient water quality guidelines[3].

Groundwater quality (i.e., selenium concentrations in groundwater) is routinely monitored as part of the above-mentioned programs at mine sites, primarily to understand the relative proportion of aqueous selenium leaving a site that seeps into groundwater vs surface water runoff. The level of detail with respect to the spatial resolution of groundwater wells (for compliance) is inconsistent, and is generally not standardized.

Overall, the monitoring of aqueous selenium concentrations in surface water and groundwater should be considered "standard practice" across all coal mines (operating and closed) in Canada. Based on the recent focus on reducing selenium loadings and concentrations downstream of these coal mines, monitoring programs are becoming more comprehensive, and the resulting data are being used to understand, and more effectively manage, selenium.

See the recommendation that follows the next question below.

[3]Currently these are provincial, and site specific; federal *Coal Mining Effluent Regulation* limits are being proposed, but are not yet in place.

7. **What monitoring information is currently available for selenium in our river systems downstream from active and historic coal mining projects? Is selenium being monitored from the outflows from current and former underground and surface coal mines in the province?**

To the best of our knowledge, the only consistent monitoring information/data (water quality sampling and analysis) available with respect to aqueous selenium in river systems downstream of mines-in-development, active/operating coal mines, and closed or historic properties, comes from proponent companies (i.e., those conducting baseline studies, operating mines monitoring per permit requirements, and those managing dormant sites, post-closure). All of the above-mentioned activities are conducted according to specifications in *EPEA*[2] permits, are reported to Alberta Environment and Parks (AEP), and are publicly-available (however, they are likely to require *Freedom of Information Act* requests).

From our understanding, while sampling and analysis can be and are carried out by both provincial (i.e., Alberta Environment and Parks (AEP), Alberta Energy Regulator (AER)) and federal (Environment and Climate Change Canada; ECCC) enforcement officers visiting mines for environmental compliance inspections, there are no regular, routine monitoring programs conducted by either federal or provincial departments/ministries.

Cumulative effect watershed monitoring programs (either industry- or regulatory-driven), similar to the Regional Aquatics Monitoring Program (RAMP; http://www.ramp-alberta.org/ramp.aspx) applied in the Oil Sands region of Alberta, have not been established or implemented for water bodies downstream of active or historic coal mines.

Our recommendation: AEP should be consulted for an update specific to selenium monitoring in Alberta rivers and lakes in the vicinity of coal mines.

Our recommendation: That the Alberta Government promptly establish an integrated regional aquatic monitoring program for the Eastern Slopes that includes a formal water-quality sampling component with a database that is accessible on-line shortly after these data are collected. The program should also monitor fish tissue (and other biota) relative to selenium. The monitoring should be designed, carried out, and analyzed in collaboration with the mines, local communities, and Indigenous Peoples. The database and associated analyses should include surface water and groundwater sampling results from compliance monitoring by individual mines. The sampling should complement data from existing stream-flow measurement stations. Most importantly, this work should be linked to the Alberta Coal Policy.

8. Must a selenium management and mitigation plans be filed for current coal mining proposals? Are there standard conditions for handling selenium that must be applied to approvals for coalmines?

Yes. While selenium management and mitigation plans (SeMMP) have only recently (i.e., in the last 5-10 years) become a requirement for coal mines, it is currently an expectation that new coal mine proposals include SeMMPs for the purposes of: evaluating project sustainability (feasibility study), obtaining environmental assessment (EA) certificates, and, ultimately, for mine permitting (in Alberta (AB), under *EPEA*[4] permits; in British Columbia (BC), *Mines Act* permits). The development of SeMMPs are usually preceded by what is referred to as a "Selenium Management Options Analysis", the purpose of which is to evaluate the site-specific opportunities for managing/mitigating/treating selenium. Some examples: a given mine's location and site topography may make it difficult to establish a wetland or bioreactor; a pit lake could not be part of an underground mine, in a situation where an open pit is not available; active treatment (and associated cost and infrastructure) is not justified, given the magnitude of exceedance of selenium.

An example table of contents of a standardized SeMMP is provided below:

1.0 INTRODUCTION
2.0 REGULATORY FRAMEWORK
3.0 CURRENT CONDITIONS
4.0 SELENIUM CONCENTRATION PREDICTIONS
5.0 WATER QUALITY OBJECTIVES FOR SELENIUM
6.0 SELENIUM MANAGEMENT ACTIVITIES
7.0 AQUATIC ENVIRONMENTAL MONITORING PROGRAM
8.0 RECORD KEEPING AND REPORTING
9.0 ADAPTIVE MANAGEMENT
10.0 REFERENCES

APPENDICES
Appendix A Water Quality Sampling Results
Appendix B Selenium Management Options Analysis
Appendix C Conceptual Water Management Design
Appendix D Hydrology Report
Appendix E Selenium Load Balance Model
Appendix F Selenium Source Terms

SeMMPs are often linked to other aspects of site environmental management plans, including: site water management (dealing with other chemicals of concern, potential acid rock drainage), explosives management (since nitrate can often be co-treated with selenium), and calcite management. For this and other reasons (e.g., sensitivity of downstream receptors), it is crucial to develop an integrated approach to site water management, which includes the management of selenium.

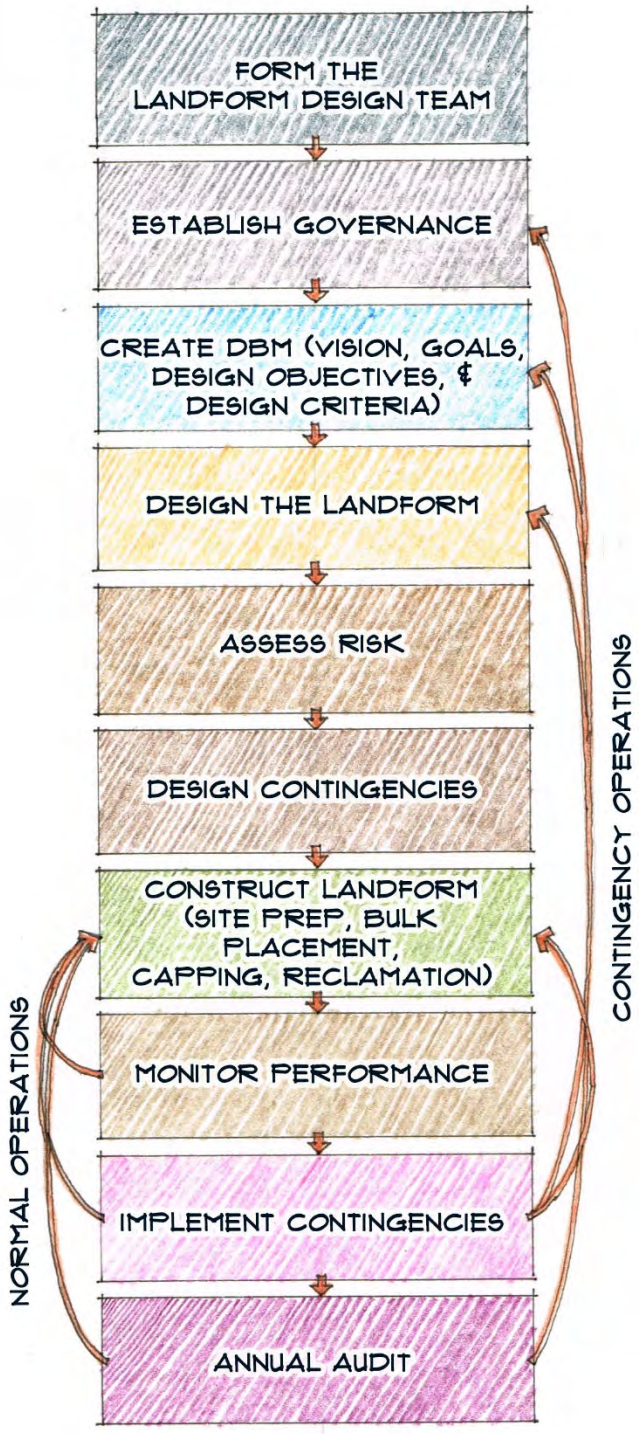
At some mines, given the potential for long-term semi-passive or active treatment of selenium after mine closure, SeMMPs are more often linked to the financial security bond for a mine (e.g., MFSP[5] in Alberta), given the potential significant expenditures associated with active selenium treatment systems and other non-treatment system mitigations (e.g., reclamation/development/monitoring of pit lakes).

[4] *EPEA - Environmental Protection and Enhancement Act*
[5] MFSP – Mine Financial Security Plan

In AB and BC, numerous operating coal mines (e.g., Teck Coal's Elk Valley mines; BC), proposed coal mine developments (e.g., Tent Mountain; AB, Michel Creek; BC), and mines in suspension (e.g., Grande Cache; AB) have comprehensive SeMMPs; these are to be considered in the realm of "standard practice".

See our recommendation at the end of the first question above.

9. Summary / main messages



- Elevated selenium in water downstream from coal mining is a serious issue, which can potentially have major impacts on the aquatic animals (fish, aquatic birds) and the sustainability of coal mining.

- Selenium needs to be managed and regulated, and both of these activities should be informed by the emerging science.

- Selenium management is a key aspect of landform design, mine design, construction, operation, reclamation, and aftercare.

- Selenium management should utilize a multi-pronged approach, which includes good design, the application, implementation and integration of various mitigation and treatment strategies and technologies, and a comprehensive monitoring program developed as part of the overall management system.

- Collaboration related to selenium management with all stakeholders is necessary to achieve a common vision and common goals.

- Selenium is the focus of this presentation. However, selenium management is just one of many environmental issues that need to be identified, designed for, and managed. The integration to achieve the vision, goals, and objectives for operating and reclaimed mine sites is the focus on landform design (LDI 2021), and a major focus of Rocky Mountain coal mining, more generally.

Figure 2. **Landform design process – selenium management is one aspect of this work. There are parallels (but also crucial differences) with adaptive management.**

10. Literature cited

Gilron G and McKenna G. 2021. Selenium management for Alberta coal mines: state of practice review. Consultants report prepared for the Cabin Ridge Project. Borealis Environmental Consulting and McKenna Geotechnical Inc. June 2. 62 pp.

Golder Associates. 2020. State-of-Knowledge on Selenium Treatment Technologies. Prepared for the North American Metals Council – Selenium Working Group. 41 pp.

INAP. 2014. Global acid rock drainage guide (the GARD guide). The International Network for Acid Prevention. 476 pp.

LDI. 2021. Mining with the end in mind: Landform design for sustainable mining. Position Paper 2021-01. March 2021. Landform Design Institute. Delta, BC, Canada. 78 pp.

NASA. 2017. Technology readiness levels demystified. NASA Website: https://www.nasa.gov/topics/aeronautics/features/trl_508.html. Accessed 2019-02-18.

Stillings LL. 2017. Selenium. Chapter Q of Critical Mineral Resources of the United States—Economic and Environmental Geology and Prospects for Future Supply. USGS Professional Paper 1802-Q. US Geological Survey. Reston Virginia. 68pp.

AUC
Alberta Utilities Commission

April 9, 2025

Rick Lemire (Reeve)
Municipal District of Pincher Creek No. 9
1037 Herron Avenue
PO Box 279
Pincher Creek, Alta. T0K 1W0

Dear Rick Lemire (Reeve):

Visual impact assessments

Thank you for your letter received on March 13, 2025.

The *Electric Energy Land Use and Visual Assessment Regulation* was enacted on December 6, 2024. Section 8 of the regulation sets out a requirement for applicants of all types of power plants to submit a visual impact assessment if they are located in certain zones defined in the regulation.

Interim information requirements for what a visual impact assessment should contain are in the appendix of Bulletin 2024-25: *Changes to interim information requirements for power plant applications*. In Bulletin 2024-25, the Alberta Utilities Commission provided initial direction on how the AUC will apply the *Electric Energy Land Use and Visual Assessment Regulation*. Parties can expect further opportunity to comment on these changes in 2025, as part of the consultation process for Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations, Hydro Developments and Gas Utility Pipelines.*

The *Electric Energy Land Use and Visual Assessment Regulation* states that "the Commission shall not accept any applications under Rule 007 for the construction or operation of a wind power plant in a buffer zone." Whether this section of the regulation applies to a particular application for repowering would depend on the nature of the proposal – the Commission generally cannot provide advice on the interpretation of a piece of legislation in the absence of a factual record.

Should you have any questions or need assistance with finding the information on the AUC website, please contact us at 310-4AUC (310-4282) or by email at info@auc.ab.ca.

Yours truly,

Kim Macnab
Executive Director
Facilities Division

Ec

AltaLink's Wildfire Mitigation Plan

Colin Harvey – Municipal and Community Relations Manager

Brian Kelly – Emergency Response Program Manager

April 8th, 2025

ALTALINK

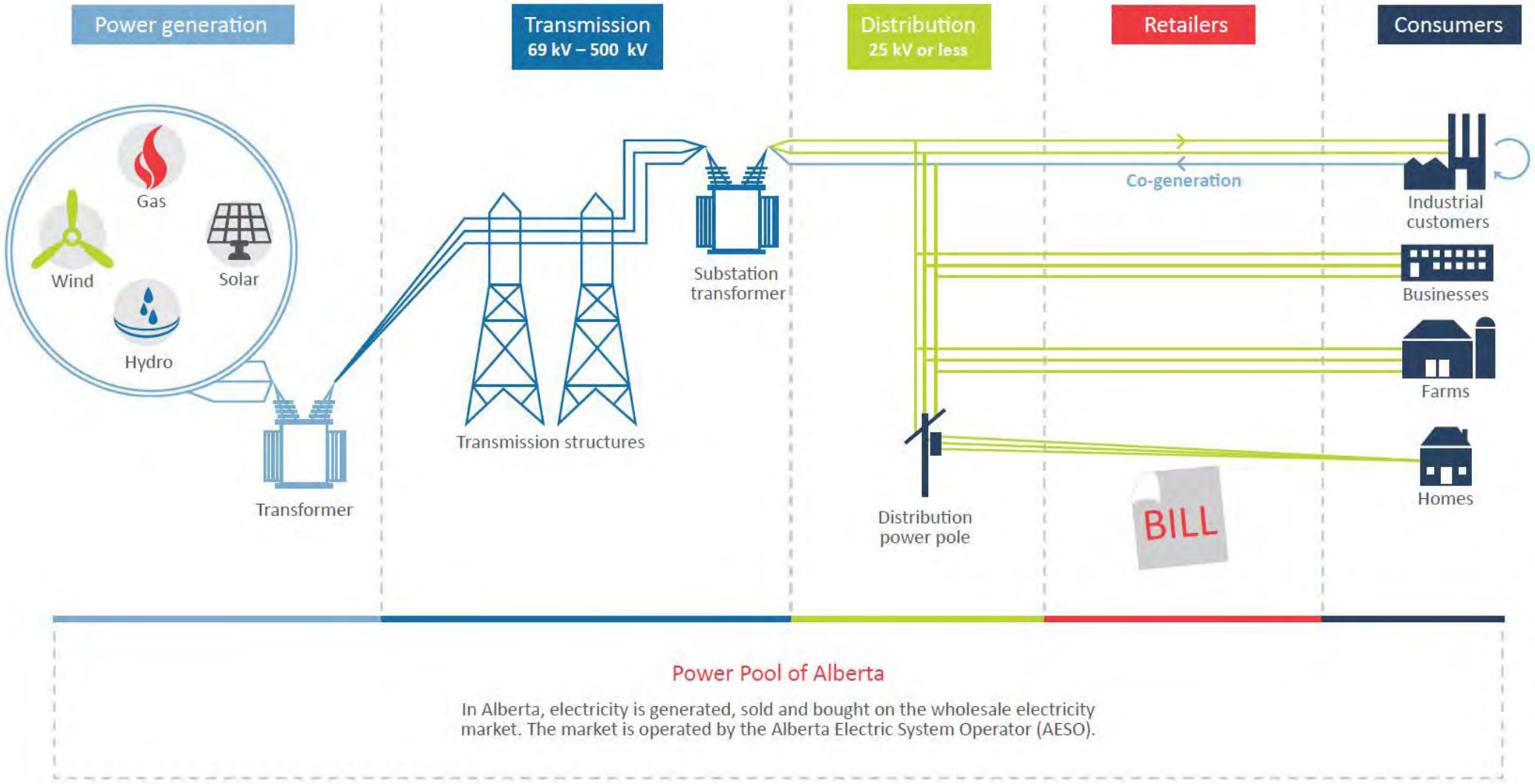
Sustainable Electricity Leader

Chef de file en matière d'électricité durable

AltaLink is Alberta's largest electricity transmission provider

- 100% focused on energy solutions
- More than 13,400 km of lines and 310 substations
- Backbone of Alberta's electricity grid
- Serving 85% of Albertans
- Owned by Berkshire Hathaway Energy

The flow of power in Alberta



Wildfires are becoming larger and more severe

- Since 2023 in Alberta:
  - 2,200 fires reported
  - 2.9 million hectares burned
- Damage to AltaLink assets in 2023 required our largest restoration effort to date
- On average, less than 10% of fires in Alberta have been started by electricity infrastructure
  - Regardless of the number, the risk remains
  - AltaLink is committed to reducing the likelihood that our infrastructure contributes to the ignition of a catastrophic fire
- AltaLink is a leader in wildfire mitigation in Canada
  - Implemented program in 2019
  - Continue to enhance and expand mitigation efforts

AltaLink's wildfire mitigation plan is focused on protecting communities while providing safe, reliable power

Expanding preparedness: Ongoing engagement with industry partners, government agencies, emergency services and communities

ENHANCED SITUATIONAL AWARENESS MONITORING

Situational awareness: Implementation of enhanced weather monitoring and fire weather forecasting, including cameras and weather stations

FACILITY WILDFIRE RISK REDUCTION PROGRAMS

Strengthening: System modifications and upgrades to reduce risk and impact

FIRE THREAT MAPS

Risk based approach: Scientific analysis to define geographic areas where ignition from electric facilities could initiate an impactful wildfire

INCREMENTAL OPERATIONAL PRACTICES

Incremental maintenance and inspections: Increased vegetation management activities and inspection frequency

EXTREME RISK DAYS

Enhanced operational practices: Deploy additional resources for monitoring and assessment

Last Resort

PUBLIC SAFETY POWER SHUT OFF

Public Safety Power Shutoff (PSPS): Triggered as a last resort preventative measure to ensure public safety during extreme fire weather events

Public Safety Power Shutoff (PSPS): a last-resort fire prevention measure

Public Safety Power Shutoff is a tool to help keep people and communities safe

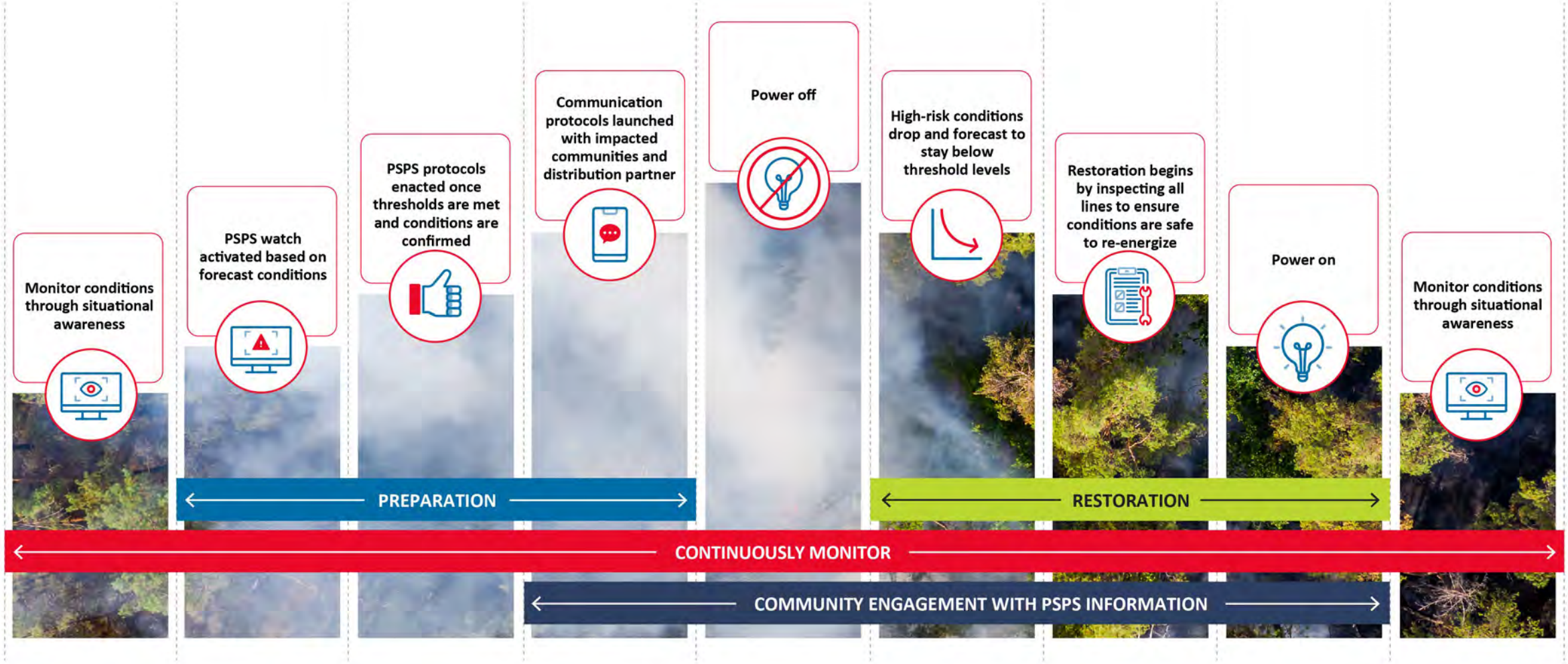
What is a Public Safety Power Shutoff?

- We proactively shut off power during extreme and dangerous weather conditions that can result in catastrophic wildfires
- Used as a last-resort preventative measure
- Each situation is unique – no single factor drives a Public Safety Power Shutoff

Public Safety Power Shutoff factors

We monitor a range of factors before executing a Public Safety Power Shutoff, such as:

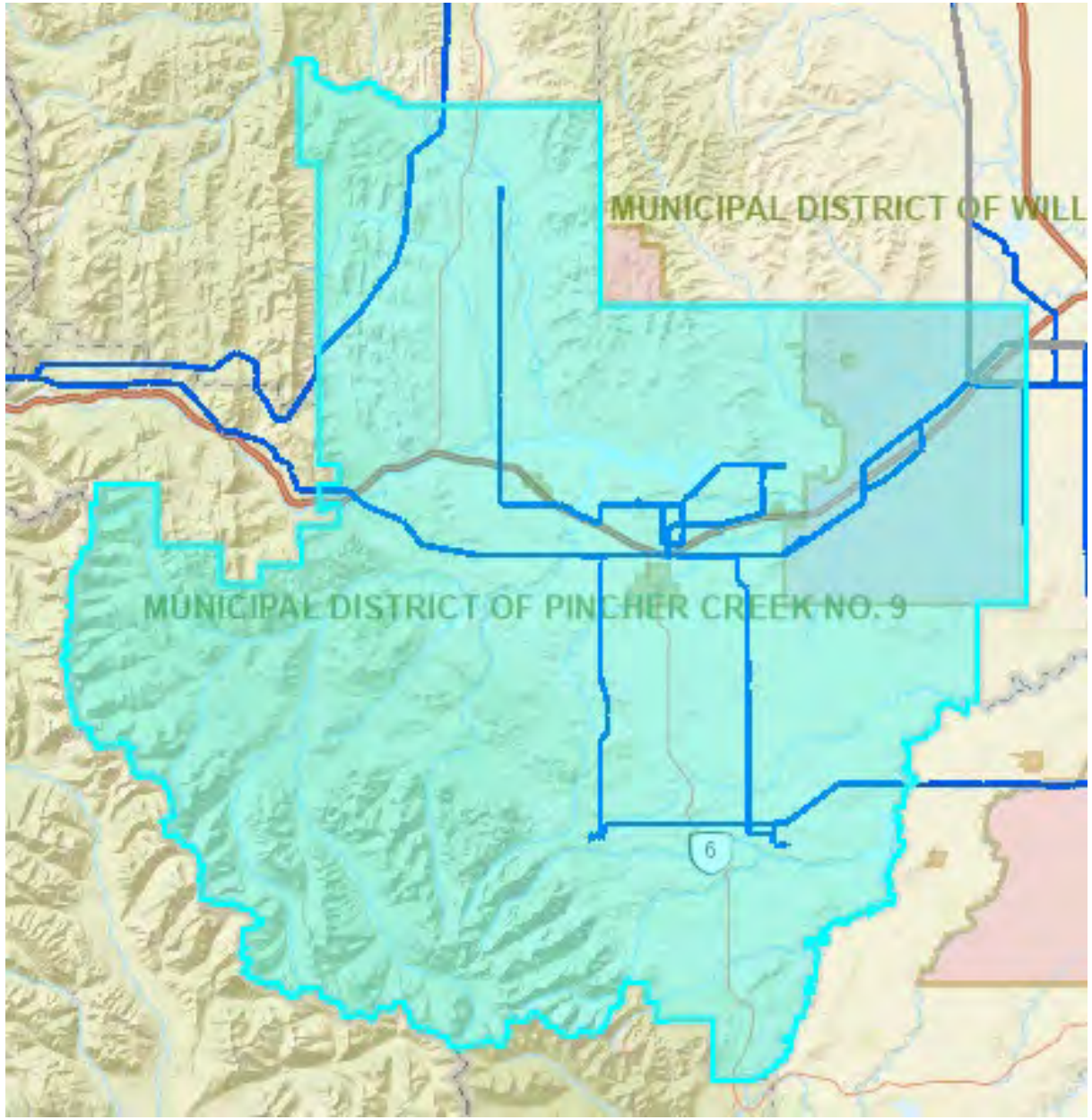
Public Safety Power Shutoff process – The full picture



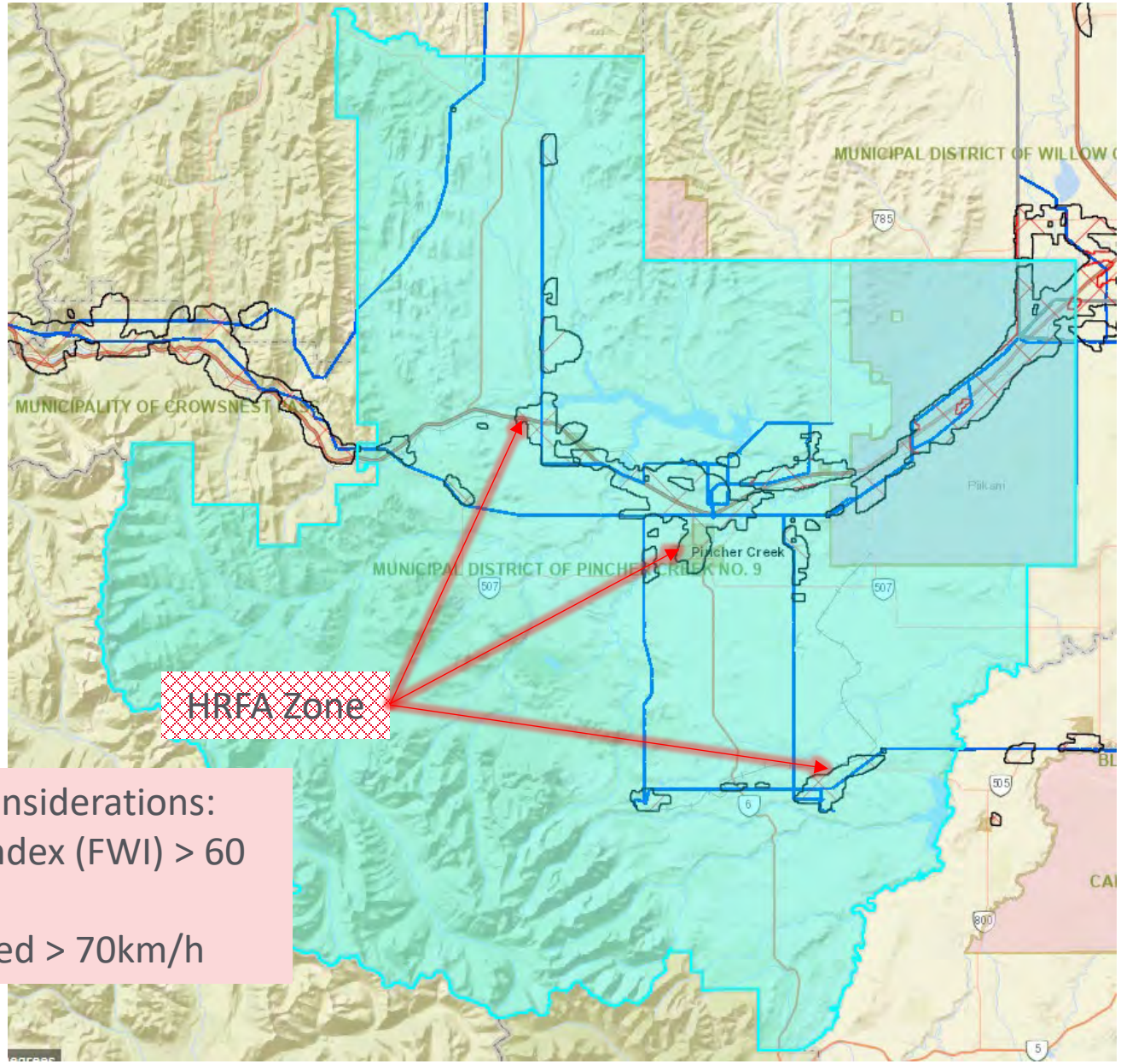
Public Safety Power Shutoff communications process

Weekly status email through wildfire season	Fire duty officers & emergency management leaders
7-day forecast	PSPS potential communicated through email Emergency Management lead notified
2-4 day forecast	ICS/Joint Information Centre activated Municipal leaders and critical customers notified
24-48 hours	Public notifications begin Information Officer updates at least twice daily
Day of potential shutoff	Public notifications continue regularly Information Officer updates continue regularly
Re-energization	Public notifications continue regularly Information Officer updates continue regularly

Pincher Creek – Connectivity Overview



Pincher Creek – Connectivity Overview



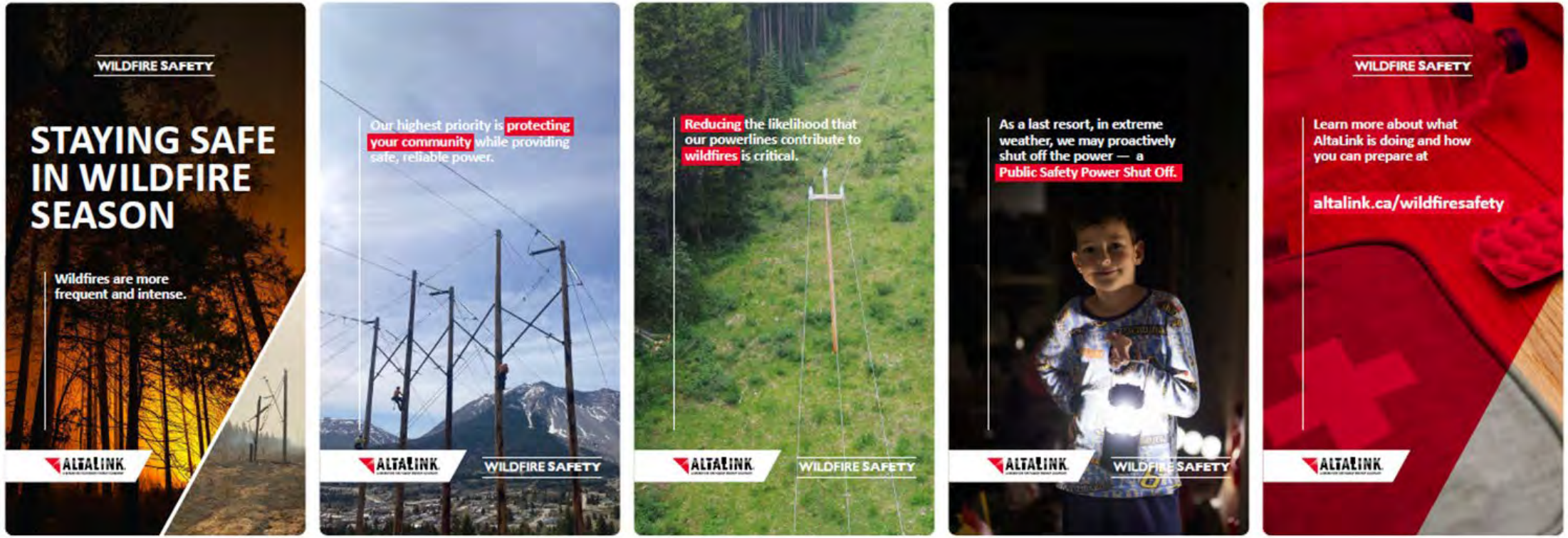
PSPS Condition Considerations:

- Fire Weather Index (FWI) > 60

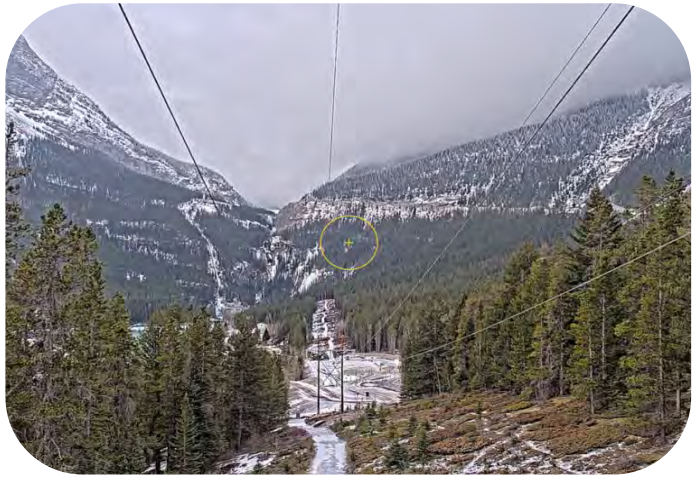
+

- Wind Gust Speed > 70km/h

Targeted community outreach aims to increase awareness and emergency preparedness

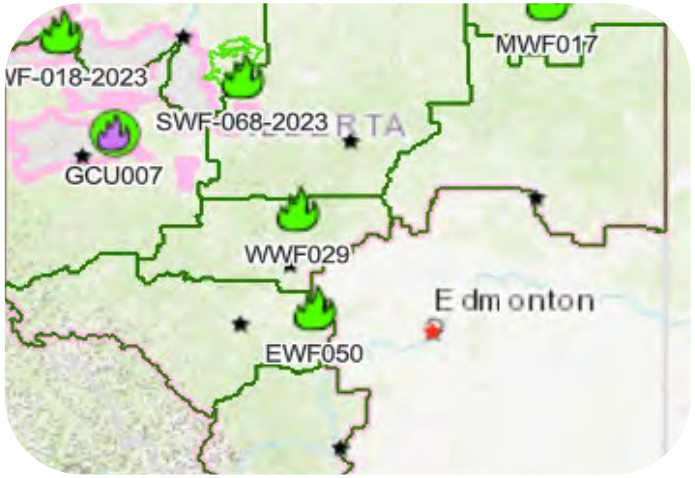


There are opportunities to leverage infrastructure and information sharing to improve collective response



Cameras

Weather stations

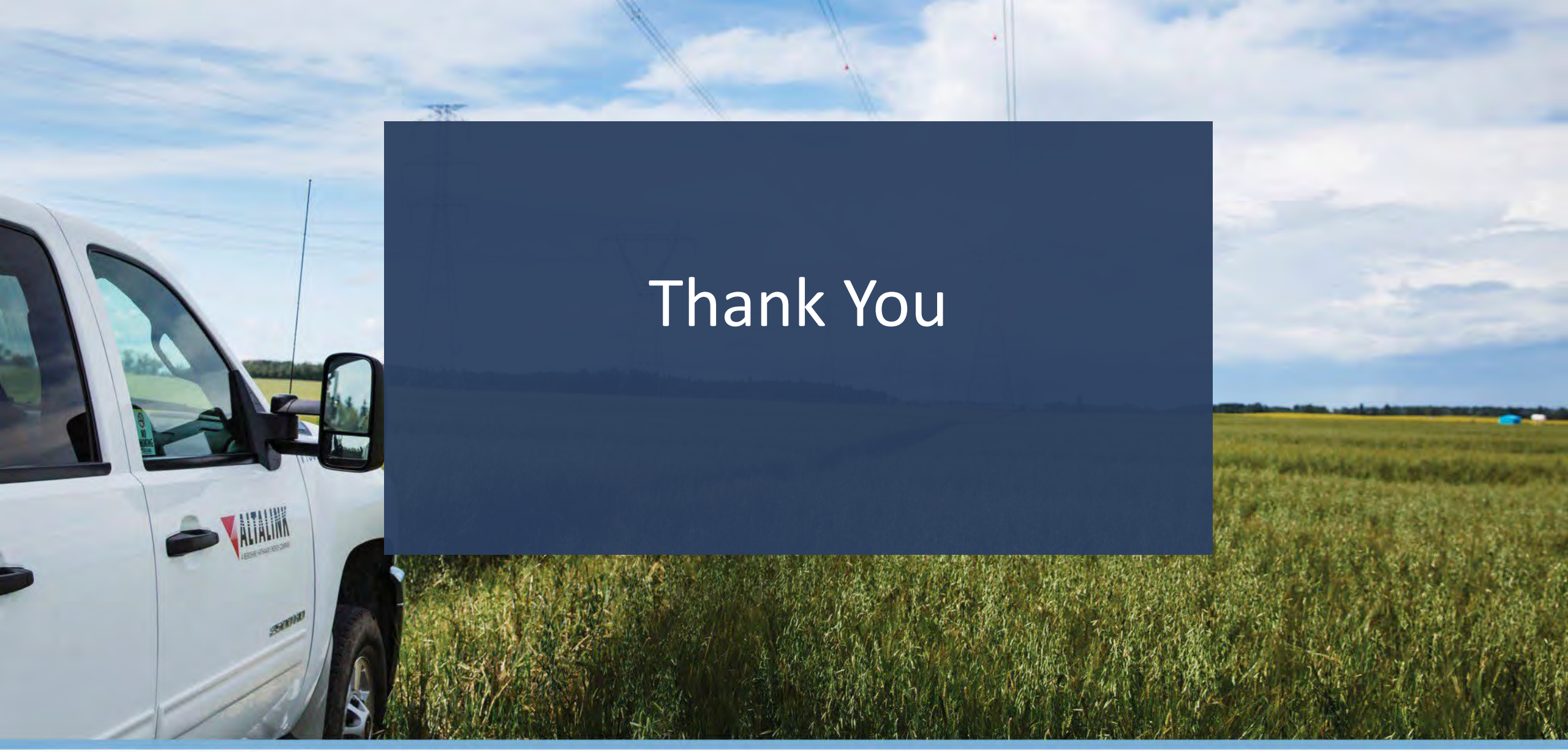


Real-time wildfire data

AltaLink Contact Information

- For general municipal inquiries
  - **Colin Harvey – Municipal and Community Relations Manager**
    - Phone: 403-861-4629
    - Email: Colin.Harvey@altalink.ca

- For emergency response planning and coordination
  - **Brian Kelly – Emergency Response Program Manager**
    - Phone: 403-861-7113
    - Email: Brian.Kelly@altalink.ca



Thank You

ALTALINK

Sustainable Electricity Leader

Chef de file en matière d'électricité durable

Recommendation to Council

TITLE: PUBLIC WORKS DEPARTMENT REPORT	
PREPARED BY: Alan McRae	**DATE: April 15, 2025**
DEPARTMENT: PUBLIC WORKS	
ATTACHMENTS: **1.Schedule A – Shop/Fleet Report**	

APPROVALS:

PW MANAGER	**April 15, 2025** **DATE**	**CAO**	2025/04/16 **DATE**

RECOMMENDATION:

THAT Council accept the Public Works Department Report for the period of March 31st to April 13th, 2025 as information.

-Divisional maintenance- grading and snow removal
-Hard surface maintenance- snow plowing and pothole patching
-Hamlet maintenance- snow removal
-Temporary snow fence removal- all divisions
-Bridge, cattle guard and culvert inspections
-Deliver water to AES shop and airport terminal
-Demo skid-steer mulcher

Events

JHSC inspection at AES facilities

FINANCIAL IMPLICATIONS:
None

PUBLIC WORKS REPORT SCHEDULE "A"

SHOP/FLEET OPERATIONAL REPORT

PREPARED BY: ALAN MCRAE	**DATE: April 15, 2025**
DEPARTMENT: PUBLIC WORKS	**ATTACHMENTS: N/A**

SHOP/FLEET OPERATIONS SUMMARY:

Graders

Unit #59-Service call- Intermittent electrical issue- run and then dies
Unit #61-Service call- Circle repairs
Unit #65- Circle repairs
Unit #70-Service call- Hyd oil leak on steer axle, hose ordered and replaced in field.
Unit #73-Service unit, blade slide repair

Heavy Trucks/Equipment

Demo Mulcher-hook up to skid-steer and test in yard prior to sending it out
Unit #41 (tractor)-R/R hydraulic oil leak
Unit #412 (plow truck)-T/S sand spinner not working
Unit #431 (water truck)-Boost and allow batteries to charge
Unit #434 (water truck)-Wash and inspect
Unit #435 (water truck)-Wash

Light Duty and Light Trailers

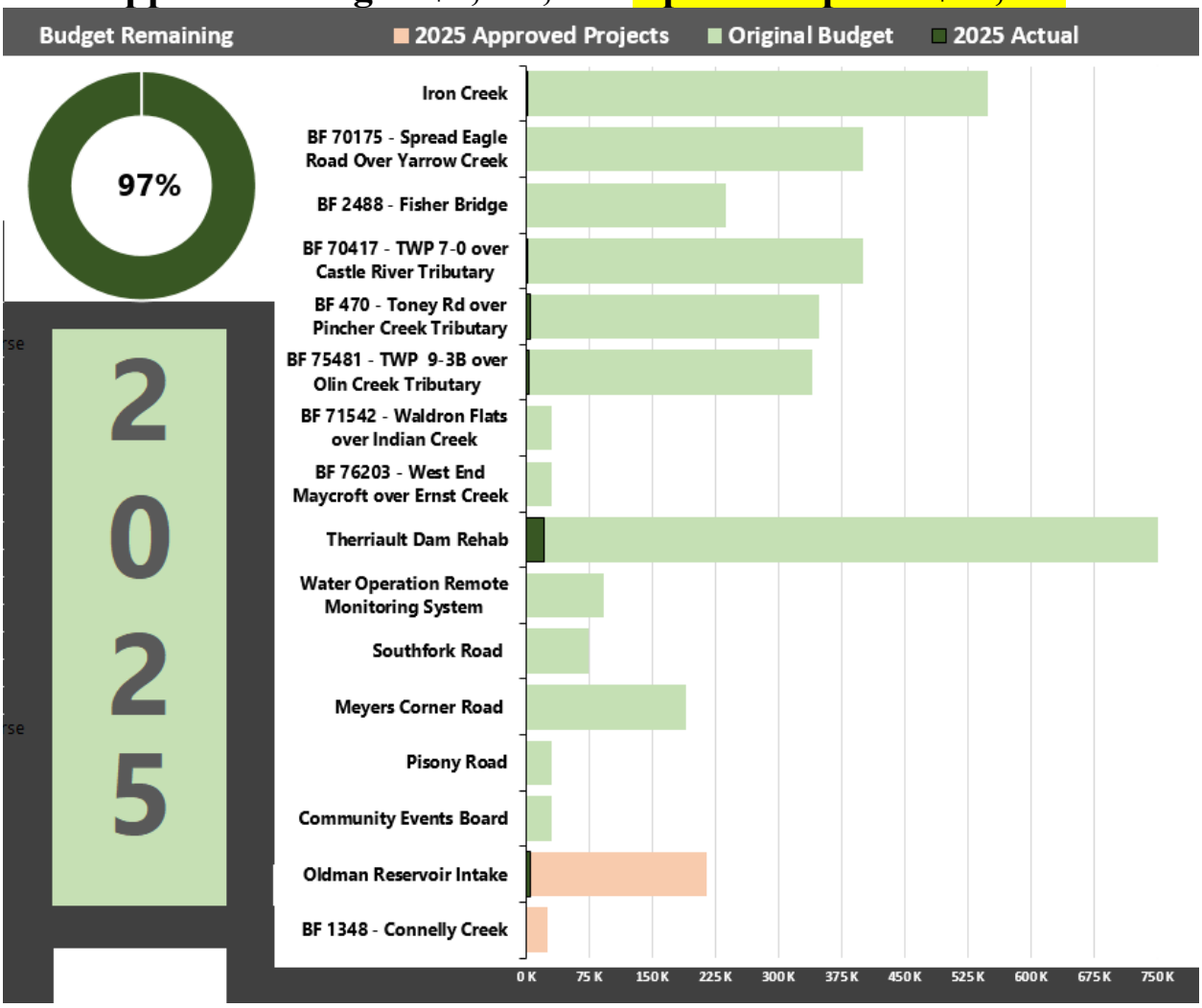
Unit #504- Remove headache rack, clean up glass from interior and exterior, reinstall headache rack after window replacement.

EVENTS

- JHSC Inspection at AES April 10th
- Shop clean-up
- RO closeouts

General Projects Budget Update

2025 Approved Budget: $3,847,000. Apr. 15th Spend: $38,232



Large Ongoing Projects (Pre-2025 Construction Start)

- **Beaver Mines Water Distribution, Collection System**
  - Construction complete. Awaiting rainstopper installation in a few manholes (warranty)

- **Beaver Mines Waste Facility/System**
  - Final turnover package received, GIS information received Jan 20th

- **Beaver Mines Forcemain & Lift Station**
  - Awaiting minor changes to Record drawings
  - Identified generator is missing lugs for load test. Awaiting response from Vendor

- **Oldman Reservoir Water Intake Low Level Project**
  - $1.68M grant application finalized Jan 30th, 2024

        - Approval received for $1.8M project, covering up to 75% of costs
    - DFPP (Drought and Flood Protection Program) grant application approved, topping up Capital Project and covering 70% of costs for a Drought Projects Assessment
    - One of two (2) new VFD installs went well. Manufacturer issue with the other
        - Manufacturer (Spartan Controls) tech site visit occurred Jan 16th
        - Additional site visit with manufacturer complete Feb 5th, anticipate install near end of April/start of May based on manufacturer correspondence

- **Bridge File 2488 – Fisher Bridge**, **NW-26-07-02-W5M**
    - Scour identified under existing abutment. Costed plan included in 2025 budget
    - DFO, Historical Resources, Public Lands Disposition submitted
        - DFO response received Sep 3rd with additional questions on work. Additional response received Nov. 29th indicating DFO is experiencing delays and directing MD to begin work on SARA permit
            - SARA permit submitted Dec. 19th. DFO confirmed receipt Feb 7th, indicating response by May 7th
        - Public Lands Disposition received Oct 3rd
        - Wind-blow hazard signs repaired under warranty

- **Watercourse Crossing Inspection & Remediation Project – 100% Grant funded**
    - Funding agreement signed Mar. 28th, 2023 for $1.55M
        - Extension received to March 31st, 2027
    - Discussion had with funder regarding alternate uses for remaining $600,000 in funds
        - Funder confirmed prelim. eng. is acceptable on BF 1348 Connelly Creek

- **WCR #2: S. Todd Creek Trib. under Chapel Rock Road, SE-23-009-03 W5M**
    - 100% grant funded
    - Work complete
    - Reassessment of road leveling required in Spring once thawed

Large Projects Planned for 2025 Implementation

Water Operations Remote Monitoring System Migration – *2025*

SCADA System Migration to VTScada. Includes replacement of main desktop at WTP, full migration programming and HMIs (Human Machine Interfaces), and licensing software

- Awarded Jan 22nd. Desktop computer arrived. Updated and delivered to MPE
- Kickoff meeting complete Feb 5th, anticipate on-site commissioning in June

Meyers Corner Road Culvert Replacement

Replace failed 900mm culvert via boring method

- Sizing and aquatic assessment complete by Roseke in 2024. Design complete for a bored 1.37m x 35m Smooth Walled Welded Pipe
    - Geotechnical work complete, confirmed mostly clay (suitable for drilling)
    - Survey and conceptual design drawing complete

- Contractor has confirmed unit pricing still stands. However, design length is 10m longer than original quote, increasing boring cost about $35,000
- Proceeding with ROW acquisition. Revised direction underway based on legal advice for land acquisitions. Will require:
  - Public Works ROW (outside bed + banks), + Provincial Roadway Reservation/Road Plan (bed and banks portion)
    - RDS submitted
  - IOP Reviewed, with land agents for next steps

Community Events Board, Admin Building

Single sided electric community events board on Admin building to advertise current events and upcoming meetings

- Project contingent on receiving required permits
  - Sign permit send to Town Apr. 11th. Anticipate decision during May 21st MSDA
- Quotes & comparison models reviewed by Council Mar. 25th
- PO placed on Genoptic Smart Display P10 with Sign City, anticipate 4-6 weeks for delivery, pending down payment

- **Bridge File 70175 – Yarrow Creek Bridge Rehabilitation, NW-22-003-030 W4M**

Perform a pile splice repair on two piles in the west abutment, replace the east pile cap, place fill and riprap at the west headslope, minor wheel guard repairs & repairs to timber span, channel realignment, and west abutment riprap work

- Preliminary Engineering & Design complete
- Sensitive stream habitat, SARA permit required. Construction window of August
  - DFO SARA permit approval received Jan 15th
- Water Survey of Canada notified regarding measurement which needs to be moved
- Land signoff taking longer than anticipated due to environmental easement questions. Information provided regarding environmental easement
  - SALTS approval received Oct 3rd
- Direction given to closeout land acquisition with RDS for bed/banks portion. Refer to Meyers Corner for details

- **WCR #1: Iron Creek under Tapay (Carbondale) Road, LSD SE-15-006-03 W5M**
  Install new 4.7m x 2m x 15m L corrugated steel box culvert to remediate fish passage concerns on Iron Creek under the WCR program (100% funded)

- Tender for install awarded to TA Excavating alongside South Todd Creek Tributary
- Completion: September 30th, 2025
- Permit submissions have begun. DFO has indicated review period for Species At Risk Act (SARA) permit will be 90 days despite delays in processing to date
  - DFO SARA approval received July 16th, 2024
  - Revised application required due to work not occurring in 2024 per DFO request Jan. 2, 2025. Submitted Jan. 6th
  - Revised SARA permit received Mar. 11th
- Land signoff complete

- **Bridge File 70417 – TWN RD 70 over Castle River Trib., SE-05-007-01 W5M**

  6.1m clear span bridge with extensive rot and voids in piles and pile caps. Replace with two (2) 2m x 27m L CSPs

  - Prelim. engineering complete Oct. 8th
  - Design and tender to include staged construction cost (optional), extended detour may be feasible
  - Design work kicked off Oct. 31st, 2025. STIP application submitted Nov. 26th
  - Design complete, reviewed and under finalization
  - Proceeding with RDS disposition and land

- **Bridge File 00470 – Toney Rd over Pincher Creek Trib., SE-02-006-01 W5M**

  1.6m x 43m L culvert with significant perforations and minor deflections. Install Steel Wall Pipe Liner (SWPL)

  - Prelim. eng. complete Oct. 7th. Recommendation is installation of a steel wall pipe liner. Level 2 barrel inspection confirmed 1.4m liner is feasible
  - Design work kicked off November 5th, 2024. STIP application submitted Nov. 26th
  - Design complete and reviewed
  - Proceeding with RDS disposition and land

- **Bridge File 75481 – TWN RD 93B over Olin Creek Trib., SW-23-009-01 W5M**

  1.5m x 24m L culvert with high deflection and corrosion. Replace with two (2) 1.2m x 36m L CSPs

  - Preliminary engineering complete Oct. 11th. STIP application submitted Nov. 26th
  - Design complete, pending MD review

- **Therriault Dam – Rehabilitation Work**

  Geotechnical and Hydrogeology study complete in 2023. 2024 preliminary engineering determined most economically viable solution to address undersized spillway/overtop potential. 2025 work includes detailed design work, regulatory submissions, and (pending regulatory approval and grant funding), tender/construction

  - RFP released on ACP Nov. 14th. Due back Dec. 6th for detailed design, regulatory work, tendering, and construction administration
    - High evaluation: MPE Engineering (80% weighted)
  - Design kicked off Jan 8th. Anticipated schedule:
    - Begin regulatory submissions mid March, 2025
    - Design completion mid April – June 2025
    - Timing of further works dependant on grant release timing (anticipated Spring/Summer 2025) as well as regulatory approval timing
  - Design work underway, anticipate preliminary cost options by Apr. 22nd followed by preliminary drawings

Large Projects Planned for 2026 Implementation

- **Southfork Hill Road**

  Emergent investigatory and repair work for the Southfork Hill slide issues

  - Geotechnical scope awarded and complete. Final geotech. report received Dec 9th
  - STIP application submitted Nov. 28th, 2024 with letters of support from Campground and nearby farming operation. Revision submitted Dec. 19th with additional letter of support from MLA and final geotech. report
    - Awaiting funding decision
  - Propose assessing need to begin work on detailed design, tender, and regulatory approvals after assessing Spring 2025 runoff effect on road conditions. Any work done prior to a grant decision would not be eligible for external funding
    - Condition similar to last year as of Mar. 31st, 2025

- **WCR #3: Connelly Creek under Connelly Road, LSD SW-03-008-02 W5M**

  Preliminary engineering to replace or remediate the 3m x 49m L (5.6m cover) structural plate corrugated steel pipe (SPCSP) and remediate fish passage under the WCR Program. Structure is #8 on 10 year capital plan.

  - Received funder guidance/approval to proceed with preliminary engineering under WCR program
  - Council approval received Mar. 11th, 2025
  - Preliminary engineering kicked off Apr. 3rd

- **Pisony Road over Cow Creek Tributary Culvert, LSD NE-01-009-03 W5M**

  Non-bridge sized culvert failing on dead end road. 2024 funds to assess appropriate replacement sizing and design. Stream flows all year and culvert is likely undersized

  - Preliminary engineering and basic aquatic assessment kicked off Jan. 31st, 2025 with Roseke. Reduced prelim. engine. scope compared to Bridge Files
  - Surveyed, pending QAES review
  - Anticipated construction 2026

- **Bridge File 71542 – Waldron Flats over Indian Creek, SE-07-010-01 W5M**

  2m x 2.2m x 32m L culvert with isolated perforations in the roof of 3 rings and 1 ring on the foot. Minor roof and sidewall deflection

  - Preliminary engineering and aquatic assessment kicked off Jan. 31st, 2025 with Roseke to determine appropriate replacement design or maintenance (liner). Currently, it is anticipated replacement will be required
  - Survey complete, drafted. Prelim. eng. underway
  - Anticipate construction 2026

- **Bridge File 76203 – West End Maycroft over Ernst Creek, NW-26-010-03 W5M**

2.5m x 1.8m x 20m L culvert with 3 cracked rings in sidewall with 85mm remaining. Deflection and corrosion also present

- Preliminary engineering and aquatic assessment kicked off Jan. 31st, 2025 with Roseke to determine if maintenance of cracked seams is feasible via weld, shotcrete beam, etc. or if replacement has a better lifecycle value
- Anticipate construction 2026
- Surveyor complete, drafted. Prelim. eng. underway

Studies and Planning Work

Lundbreck Lagoon Resiliency Analysis & Regionalization – *Engineering 2023/24*

Review Lagoons ability to take on more flow (both regular and high strength). Review Cowley Lagoons ability to do the same, and options for regionalization

- Project complete

Regional Drought Strategic Implementation Strategy & Raw Water Storage Project

- Grant application for a Drought Projects Assessment under DFPP
  - Approval received to cover up to 70% of costs
- Grant application for 3 month (25-year) forecasted volumes
  - Approval received for $3.4M project, up to 75% of costs. Signed and sent to ATEC
  - ATEC has confirmed stacking of AMMWP Raw Water Storage grant funds acceptable for the Drought Projects Assessment (Phase 2)
- Awarded to MPE for an upset engineering fee of $139,500 Mar. 27th. Engineering Service agreement signed Mar. 28th
- Data gathering underway, in person meeting scheduled Apr. 23rd to discuss initial findings and plan for next steps

Transportation Master Plan

$200,000 grant received from ACP to complete a Transportation Master Plan, consisting of a paved, gravel road condition assessment, culvert (non Bridge File) condition assessment, gravel pit analysis, airport runway assessment

- Gravel pit report complete
- Maycroft Road report underway
  - Cold mix areas and depth reviewed in detail internally to better inform prelim. assessment, sent to MPE along with cadastral/land acquisition details
  - Additional operating costs sent to MPE
- Gravel road, and culvert assessment methodology reviewed with MPE for Spring 2025 start along with paved road assessment. Anticipate completion Fall 2025
  - Ready, pending acceptable weather
- Airport load assessment work complete, data imports issue resolved. Draft report underway

Cridland Dam

Geotechnical work as recommended in 2021 Dam Safety Review due to observed seepage and unknown soil properties

- Site visit complete Apr. 1st, awaiting costed plan

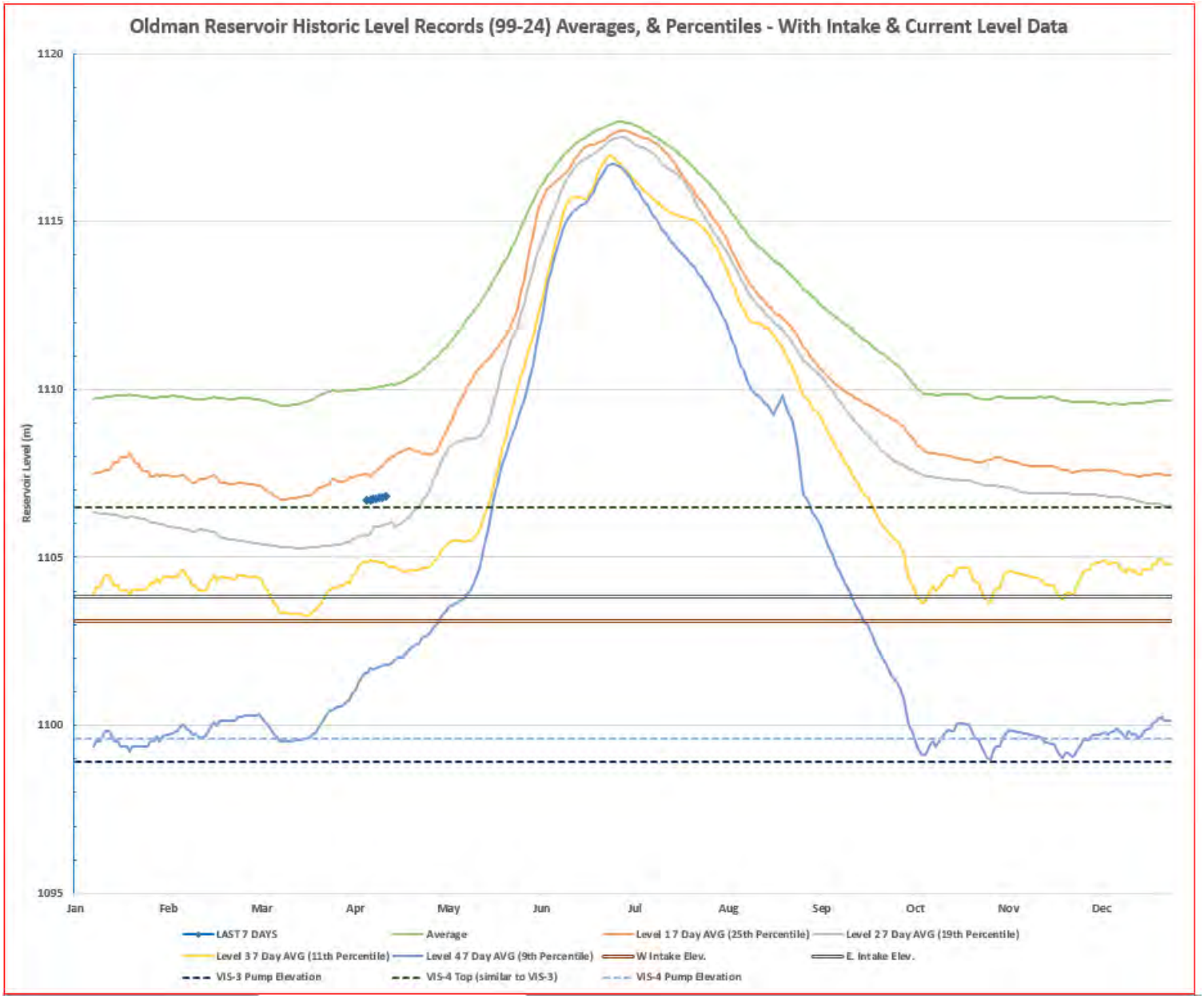
Miscellaneous

- 10 yr. bridge study update kicked off Jan. 27th, 2025 with Roseke. Data entry complete

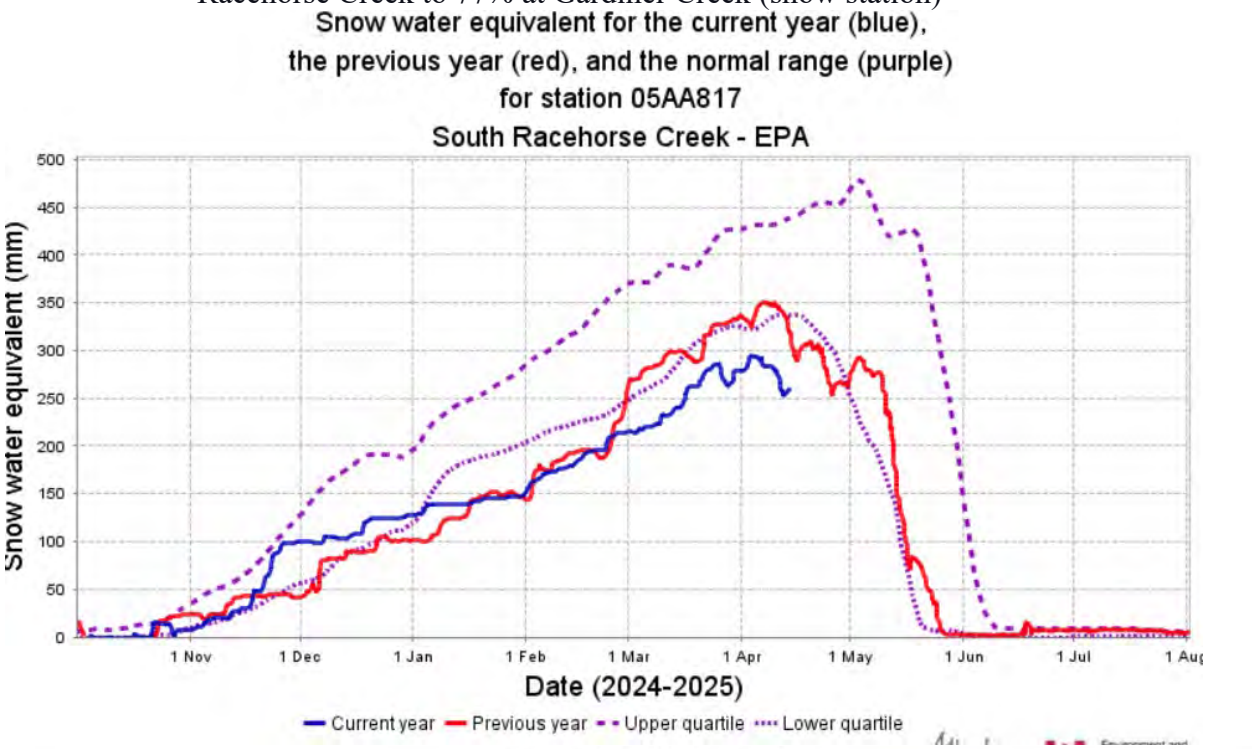
Operations Updates

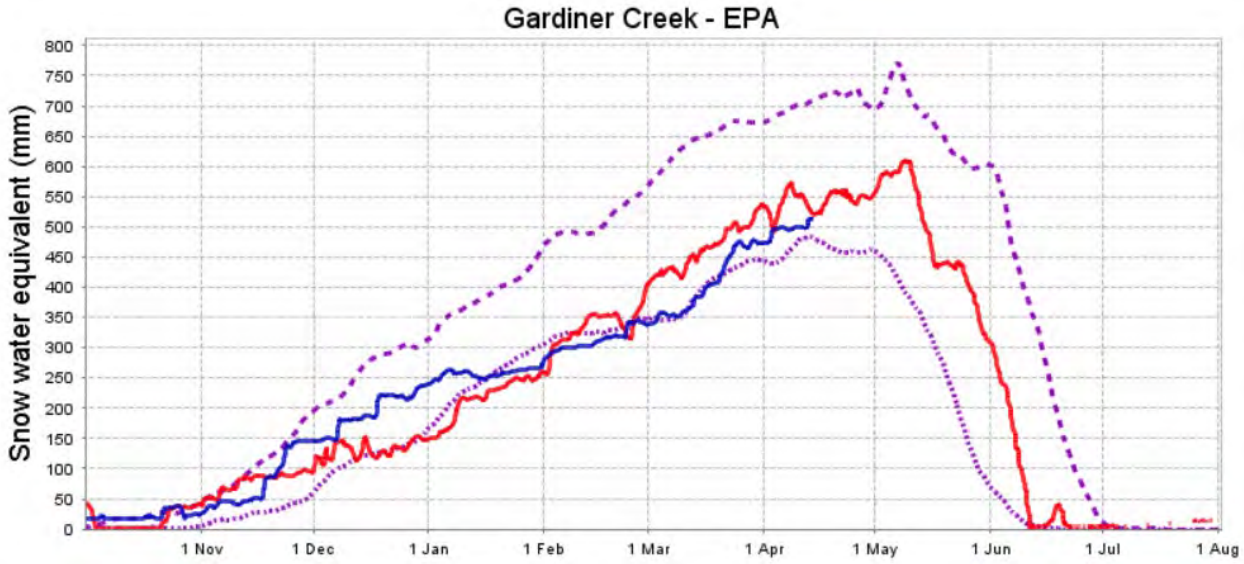
Reservoir & Snowpack Tracking

- Reservoir Volume Apr. 14th: 55.14% ~~Mar. 31st: 55.01%~~



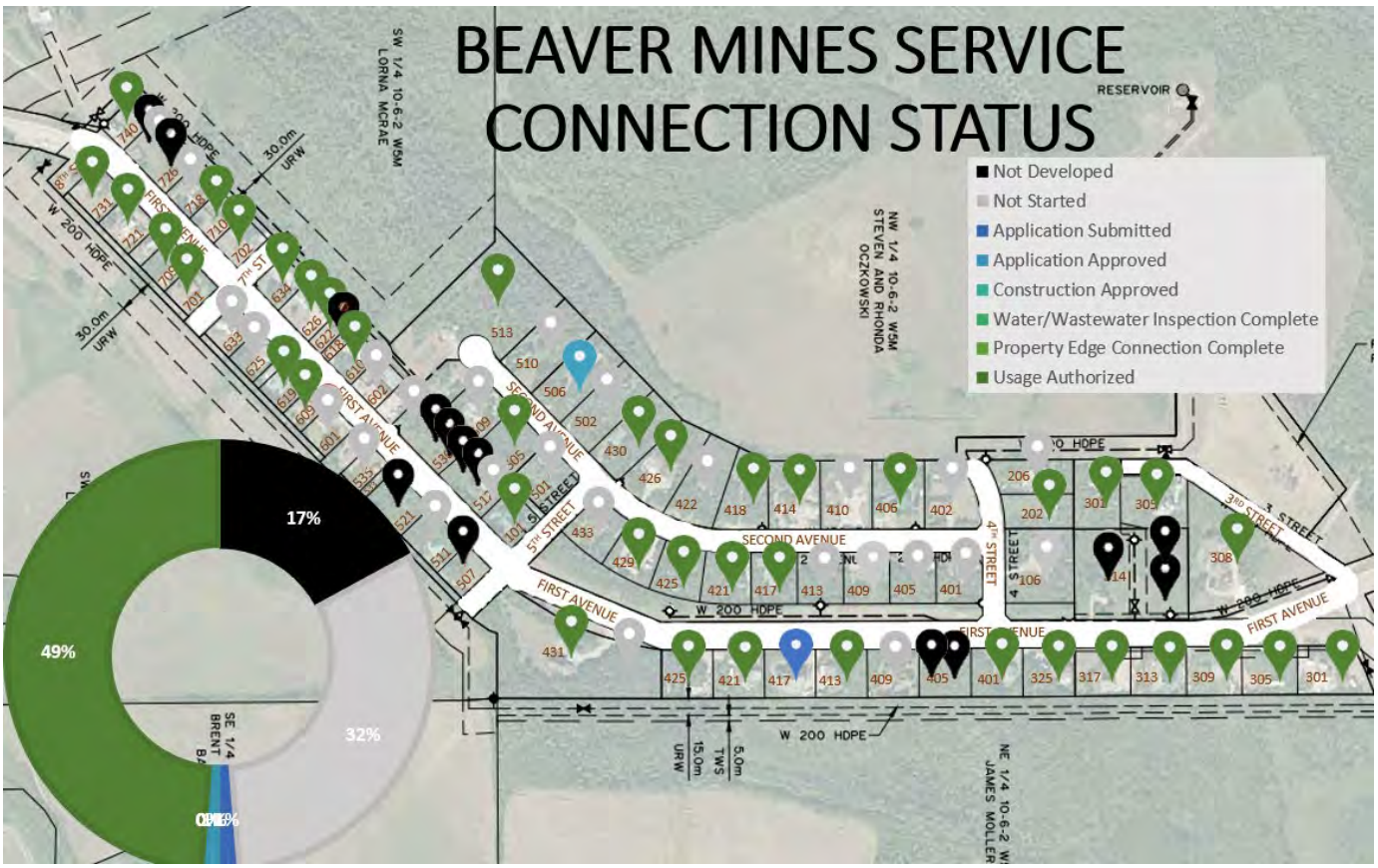
- AB Environment Water Supply (Snow Accumulation) March Update:
  - Runoff forecast: Much below average for the Mar. to Sep. 2025 period
  - Snowpack: much below average to below average, ranging from 59% at South Racehorse Creek to 77% at Gardiner Creek (snow station)





Beaver Mines Lot Servicing

- 42/68 developed applications received, 41 approved, 40 connected (59 %)
  - Fifteen (15) undeveloped fully serviced locations
- Hydrant flow testing in BM was completed by PCES and passed for fire flow. Fire Underwriters Survey requested more info Mar. 3rd, sent system details Mar. 12th



Standpipes

- Last known issue: Jan 10th, 2025 (global software cellular outage)

General Water Operations Updates Apr. 15th, 2025:

- Measuring setup in place to measure stormwater outflow from Lift Station area to neighboring property
- One (1) of two (2) treatment skids went down morning of Apr. 14th due to PVC fitting failure/leakage. Emergent repairs complete in house. Operational, but additional repairs required. Anticipate completion Apr. 22nd week
- Beaver Mines WWTP agitators have been tripping out. Investigating physical issues prior to attempting warranty claim
- Lundbreck Service Connection approved for new development on Patton Place
  - Construction underway, initial inspection complete Apr. 3rd
  - Issue with backsloping on MD side of the Service Connection, requires replacement of Sewer Service Connection and regrade. Anticipate completion prior to Council
- Two (2) additional application packages sent for new developments in Lundbreck
  - One (1) full application received, processing
- Rural Transmission Line application received along Cowley-> Lundbreck line, approved Apr. 11th
- Utility Services Guidelines Update for Lundbreck and Rural Users drafted, awaiting backdraft of typical drawings and review by MPE
- Lundbreck/Cowley reservoir inspections & cleaning underway starting April 15th (3 days anticipated)
- Letter sent to Cowley Mar 28th detailing various requests and proposed path forward for water assets, licenses, and amended operations contract

- Shelving upgrades arrived for WTP, organization underway
- Backflow preventer inspections awarded, to be complete in April
- Investigating source of meter read discrepancy between Beaver Mines and CMR, investigating with improving weather
- Smoke detector in Raw Water Station causing false alarms, replacement complete Apr. 11th
- Lundbreck Lagoon sludge survey complete, pending results
    - Aerator reinstall complete Apr. 11th. 1 aerator not working, diagnosing
- WWTP Generator having issues with level switch, servicing complete. Collicut will be replacing switch on warranty (April 14th)
- Water crisis report + related overhaul of Water Shortage Response Plan (WSRP) drafted
    - Submitted to AEPA for review
- Plant header upgrades awarded to DMT, anticipate install in April
- Pricing out Cowley reservoir hatch modifications to reduce safety hazard of opening fridge sized hatch on top of reservoir
- Investigating cause of small amounts of CO in Lift Station generator room and dry well
- Significant operations related work planned for 2025:
    - Plant health check for main treatment trains, obsolete instrumentation replacement, WWTP protection system for cows/vehicles, sewer flushing in select BM areas
- Private water line inspection complete South of Lundbreck. Initiating transfer of ownership for UROWS to MD
    - Site review complete Apr. 7th. Working towards engagement with other affected landowners

General Energy Related Updates April 14th, 2025:

- QUEST net zero accelerator
    - Second consultation on implementation strategy planned for end of May 2025
- Clean Energy Improvement Program
    - 23 pre-qualifications received (8 MD, 15 Town). Six (6) applications fully submitted, three (3) for MD, three (3) for Town
    - 1 project completed, added to Town tax roll
    - Social media advertisement to be sent out end of Mar. 2025
    - 3 deposit payments sent out
    - ABMunis transitioning to online approval system April 16th

Recommendation:
That the Utilities & Infrastructure report for April 2nd-15th is received as information.

Prepared by: David Desabrais Date: April 15th, 2025

Council Meeting Date: April 22nd, 2025

Recommendation to Council

TITLE: Water Shortage Response Plan – Implementation Report & Spring 2025 Revision			
PREPARED BY: David Desabrais		**DATE: April 16th, 2025**	
DEPARTMENT: Utilities & Infrastructure			
David Desabrais	25/04/16	**ATTACHMENTS:** **1. WSRP – Fall 2022 Revision** **2. WSRP – Spring 2025 Revision (Draft)**	
Department Supervisor	**Date**		
APPROVALS:			
	25/04/16		2025/04/16
Department Director	**Date**	**CAO**	**Date**

REQUEST:

That Council review the Water Shortage Response Plan (WSRP) – Spring 2025 Revision (Draft) and accept as information.

BACKGROUND:

- At Alberta Environment & Protected Area's (AEPA) request, a Water Shortage Response Plan (WSRP) revision began in Fall 2019 after the new intake installation in the Oldman Reservoir.
  - There was a brief period where temporary pumping and hauling was required during construction. Levels did not breach the intake elevations at that time.
- The revised WSRP was not put in place until Fall 2022 (***Attachment #1***). It required that the MD complete a report with recommendations and an update to the WSRP in the event of a significant implementation event, which occurred between Aug 16th, 2023 and July 5th, 2025.

IMPLEMENTATION REPORT (*Attachment #2 – Appendix D*)

There were many takeaways learned from the MD's 2023/2024 water supply crisis. Some of the most critical conclusions were:

- Hauling water for short duration crisis' may be feasible in the MD, but long duration hauling (2-3 weeks+) comes at an extreme cost which cannot be sustainability maintained.
- Shutting down commercial operations water use results in complications beyond costs, and should be avoided where feasible.
- The WSRP was ineffective in giving appropriate heads up to operations and would have also been ineffective in preventing a water shortage (the MD cannot prevent water shortages alone due to our minimal demand on the overall system).
- The MD's water use and restrictions have minimal to no impact on overall levels of the Oldman Reservoir.
- Hauling potable water comes at a similar cost as hauling raw water, despite the additional

consumption charges, and eases burden for water operators.

- Disaster Recovery Programs do not provide financial relief for water supply crises.
- It is likely that similar water levels will be seen in the Oldman Reservoir over the coming years and decades, and the MD must plan for such events.
- The location of the MD's existing intakes presents significant regulatory challenges during crises, as a variety of approvals and authorizations are required from various government branches and bodies prior to implementing solutions.

To minimize the impact of future shortages, the following changes were recommended to the WSRP:

Recommendation	What needs to be done?	Why is this required?	Current Status	Priority
Demand Reduction Enforcement	• Resources are required with enforcement expertise to monitor water usage during crises and enforce penalties	• The MD saw a roughly 20% drop in demand over the crisis, but believes this could have been higher with enforcement • Letters were issued to high water users, but anecdotal complaints of restriction flaunting could not be penalized financially	• 75% complete • MD in process of hiring a community peace officer	Medium
Construct new Intakes (to be used when levels are low)	• Emergently construct new intakes to prevent hauling needs	• Preventing/minimizing costly hauling is top priority. This cannot be achieved by demand reductions alone	• 90% complete • 2 new intakes constructed • Limited by hydrogeology	Very High
Improve winter hauling off-loads and tanker truck access	• Install winter proof off-takes for potable and raw water • Construct "through" access at WTP	• Winter hauling results in freeze/access issues with current off-takes • "Through" access allows for larger trucks, decreasing cost per load	• 100% complete • Complete during crisis	Very High
Improve trigger points and monitoring in WSRP	• Modify demand reduction triggers to take into account various factors aside from just reservoir level	• Demand reduction triggers based on level proved insufficient triggers of demand restrictions and insufficient to forecast demand decreases	• 100% complete • WSRP updated with trigger criteria guidance	Very High
Pre-template WSRP materials and release locations	• Create new template documents, posters, and social media posts for quick release during crisis	• Operations needs to focus on operational logistics during onset of restrictions. Pre-developed templates ease administrative burden and allow for efficient changes in stages • Changes to WSRP require changes to templates	• Underway • Anticipate Apr. 2025 completion	Medium
Add an additional stage to WSRP Demand Reduction	• Additional stage of restrictions	• Differences between Stage 2 and 3, along with 3 and 4 resulted in stark differences during original implementation, forcing some "off-script" demand reductions	• 100% complete • WSRP updated with trigger criteria guidance	Medium

Align WSRP heavy usage times with normal operations working hours where feasible	• Modify watering days to weekdays where feasible, especially for the most severe restriction stages	• Operators and Admin staff do not work weekends typically • Encouraging relatively heavier water use during weekends results in operating challenges • Much easier to manage supply challenges during week	• 100% complete • WSRP updated with trigger criteria guidance	Medium
Ensure all known water uses are clearly captured in WSRP demand reductions	• Add bulk fill stations, sewer fill stations, public institutions, and any other predicted uses to WSRP demand reductions	• Some uses were missing from WSRP, resulting in the need for on the fly decision making regarding certain user groups, and disagreements among user groups due to lack of official related releases	• 100% complete • WSRP updated with trigger criteria guidance	Medium
Complete a study/review of revised forecasted drought vulnerability and recommended future projects	• Complete a Drought Projects Assessment to analyze cost-benefit of various solutions to ensure the MD's long term water security needs are met in periods of drought	• New intakes may still have limitations compared to forecasted 25-year demand • Proactive projects necessary to avoid the need to augment water supply for extended periods if severe extended drought or other types of water shortages occur again in the future	• Kicked off • Underway, completion date TBD	High

REVISED WSRP (*Attachment #2*)

Based on the above lessons learned, the WSRP has been significantly overhauled and sent to AEPA for review prior to formal implementation. Additional key changes are as follows:

- Added permanent license information, additional information on the Oldman reservoir historic levels, operating conditions, and MD water system limitations.
- Modified demand reduction plans with additional stage and better defined user groups.
- Created tool to assist with identifying risk shortages and defining demand stage.
- Added details around supply augmentation methods.
- Included important contact list related to water shortages.

FINANCIAL IMPLICATIONS:

N/A

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

WATER SHORTAGE RESPONSE PLAN

Fall 2022

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APPENDIX A

Current Water Agreements with Rural and Commercial Users 22

1. BACKGROUND

The Municipal District of Pincher Creek No. 9 (MD) has developed a Water Shortage Response Plan (WSRP) to address the Water License requirements to submit to Alberta Environment and Parks (AEP) as an attachment to existing, ongoing, and future Water Act applications.

2. SCOPE OF WORK

In general, the tasks completed for the WSRP included the following:

1) Identify all connections to the regional water supply network, including raw water and potable water connections.
2) Develop a summary of all existing water licenses held by the Municipality.
3) Develop a comprehensive Water Shortage Response Plan for the region, incorporating the specific action items developed for each trigger.

3. SUMMARY OF WATER LICENCES

Approved Bylaw No. 1320-20, and the rural water utility agreement is in place. **Table 1** provides a summary of the water service connection points of use located on the waterlines. Each licence will be distributed accordingly to determine the maximum volume possible for each water user group, allowing them to appropriately divide the volume while not overstressing the line's capacity. These maximum design capacity volumes are from the consultant's projected 25-year average day demands for the Hamlets and Municipalities with the projected annual growth rate (2%) and per capita demands (500 lpcd). However, Alberta Environment and Parks will only grant for Municipal purposes enough water for a 10-year growth projection following their departmental policy in the province's southern region. There is no speculation of water beyond what is required for projected future growth, which is not allowed.

Table 1. Locations of Connection Points.

SERVICE LOCATIONS	
ID No.	LAND DESCRIPTION
1	SE26 7-2-W5M
2	NW24 7-2-W5M
3	NW24 7-2-W5M
4	NE24 7-2-W5M
5	NW19 7-1-W5M
6	NE19 7-1-W5M
7	NW20 7-1-W5M
8	NE20 7-1-W5M
9	SW28 7-1-W5M
10	NW28 7-1-W5M
11	NW21 7-1-W5M
12	SE22 7-1-W5M
13	SW10 6-2-W5M
14	NW34 6-1-W5M
15	SE29 6-1-W5M
16	SW29 6-1-W5M
17	SE30 6-1-W5M
18	SW30 6-1-W5M
19	SE25 6-2-W5M
20	SE24 6-2-W5M
21	NE23 6-2-W5M
22	SE22 6-2-W5M
23	SE15 6-2-W5M
24	SW4 6-2-W5M
25	NE25 5-3-W5M
26	NW25 5-3-W5M
27	SW22 5-3-W5M
28	SE21 5-3-W5M
29	SW16 5-3-W5M
30	SE01 5-4-W5M

MPE Engineering Ltd.

MUNICIPAL DISTRICT OF PINCHER CREEK

WATER SHORTAGE RESPONSE PLAN
REGIONAL WATER SYSTEM NETWORK
3 OF 3

SCALE:	DATE: MARCH 2022	JOB: 1770-018-00	FIGURE: 3

The following includes approved licences and the allocated volume of water for each user group.

1) The Village of Cowley water users has an approved annual allocation of 61,700 cubic meters (50.02 acre-feet).

2) Up to a maximum of 45,679 cubic metres (37 acre-feet) annually from the MD intake on the Oldman Reservoir for Municipal (rural community water supply) purposes (vicinity of Cowley and Lundbreck water users and Cowley to Beaver Mines water users);
   a. The Municipality will allocate 33,507 cubic meters (27.16 acre-feet) to vicinity of Cowley and Lundbreck water users' of the total 45,679 cubic meters.
   b. That the Cowley to Beaver Mines water users has the remaining 12,172 (9.8 acre-feet) cubic meters of the total 45,679 cubic meters (37.03 acre-feet) to accommodate the pressure flows based on the engineering design requirements.

3) The Hamlet of Lundbreck has an approved annual allocation of 98,765 (80.07 acre-feet) cubic meters.

4) The Hamlet of Beaver Mines (urban and rural) users will have 19,753 (16 acre-feet) cubic meters.
   a. The Hamlet of Beaver Mines will have a total of 29,753 (24.1 acre-feet) cubic meters, which includes 10,000 (8.1 acre-feet) cubic meters water consumption from a standpipe (bulk fill station).

5) The Castle Mountain Resort Inc. (CMR) will have a yearly allocation of 50,142 (40.65 acre-feet) cubic meters to supply population growth to a maximum of 225 accommodation units based on 3.5 people per unit at 260 lpcd and 100 RV units (200 litres per unit per day) on the Consultant's conceptual calculations. More than 225 accommodation units will require upgrades to re-engineering for new infrastructure as per the approved Area Structure Plan. There are currently 128 units at CMR.

6) The Castle Mountain Provincial Park shall have an annual allocation of 8,000 cubic meters (6.4 acre-feet) of water.
   a. The allocated water will be for Castle River Bridge Campground waterline, the Stockmen’s Association, Syncline, Beaver Mines Lake, future campgrounds and usage in the park.

The Municipality must have sufficient amounts of clean drinking water allocated to accommodate the regional water users. As a result, Alberta Environment and Parks is reviewing and working with the different Municipalities to find a solution that will benefit future growth after 10 years projection growth.

Table 2 outlines the water licences associated with the Oldman Dam Reservoir intake at SW 33-007- 01-W5.

Table 2. Licences and Water Users for Oldman Dam Reservoir.

Water Users	License No.	Annual Allocation (m^3/year)
Village of Cowley	00376911-00-00	61,700
Vicinity of Cowley & Lundbreck Water Users	00468025-00-00	33,507
Cowley to Beaver Mines Users	00468166-00-00	12,172
Hamlet of Lundbreck	00376909-00-00	98,765
Hamlet of Beaver Mines (Urban, Rural, & Standpipe Users)	00468027-00-00	29,753
Castle Mountain Resort Inc.	00468028-00-00	50,142
Castle Mountain Provincial Park	00405134-00-00	8,000

4. WATER LICENCES RESTRICTIONS

The Municipality reviewed the licences for restrictions on the available allocation. The following list summarizes the restriction details, which is followed in **Table 5**:

1) The first stage is when water levels reach an elevation of 1105.41 meters;
2) The second stage is activated when water levels reach an elevation of 1104.18 meters;
3) The third stage is activated when the water levels reach an elevation of 1103.09 meters,
4) The final stage of water restrictions is when water levels reach an elevation of 1102.09 meters.

The Municipality will also trigger a "water low" advisory to warm that restrictions are coming if water levels continue to drop when water levels reach an elevation of 1106.50 meters.

5. OLDMAN RESERVOIR – HISTORICAL WATER ELEVATIONS

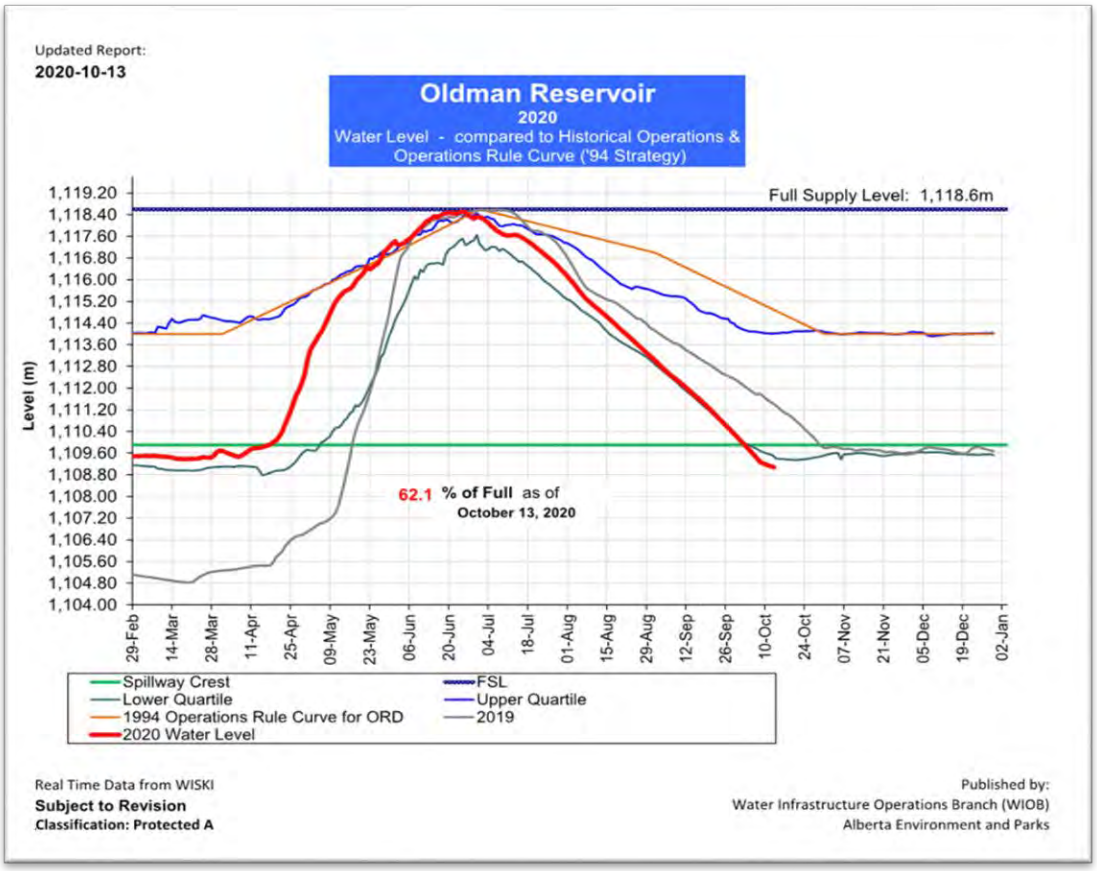
The raw water intake is located at the lowest point in the Oldman Reservoir (original riverbed channel), which had a maximum screen elevation of 1102.10 meters, as seen in **Drawing 1**. The mechanical intake is capable of operating at all water elevations above this point. At all water elevations below the intake, a flanged connection was designed and provided on the screens so the Municipality can pump water from lower elevations into the intake and continue to utilize the raw water pumps, depending on approval by Alberta Environment and Parks.

Table 3. Alberta Environment and Parks Historical Water Levels for the Oldman Reservoir from 1993 to 2019.

Years	*Minimum Water Elevations (m)*	*Average Water Elevations (m)*
1993	1109.10	1113.90
1994	1109.37	1113.67
1995	1109.37	1112.58
1996	1109.55	1112.18
1997	1108.64	1111.24
1998	1108.46	1112.26
1999	1108.00	1112.89
2000	1106.46	1112.62
2001	1090.53	1103.10
2002	**1088.45**	**1105.41**
2003	1106.50	1112.31
2004	1106.34	1112.20
2005	1113.62	1115.91
2006	1112.56	1115.08
2007	1108.96	1113.47
2008	1108.63	1112.91
2009	1112.80	1114.96
2010	1113.93	1115.25
2011	1109.49	1113.53
2012	1109.70	1113.39
2013	1112.95	1114.83
2014	1113.96	1115.11
2015	1111.78	1114.54
2016	1111.39	1113.83
2017	1104.11	1111.37
2018	1105.19	1109.40
2019	1104.82	1110.54

Since reaching a water elevation of 1088.45 meters in the summer of 2002 (**Table 3)**, the Oldman Reservoir storage in elevations has not recorded a water elevation below 1102.10 meters. This provides further evidence that the risk of a water shortage in the reservoir is minimal. The Municipality has also gathered information from Water Infrastructure & Operations Branch (WIOB) for the WSRP on full supply levels and capacity water levels when they are at 62.1 percent full. **Table 4** shows the information about the Historical Operations & Operations Rule Curve.

Table 4. Oldman Reservoir 2020 Water Levels Compared to Historical Operations & Operations Rule Curve.



6. WATER SHORTAGE RESPONSE

If a water shortage occurs within the reservoir, the Municipality will be required to initiate a response plan to reduce consumption and augment the available water supply when necessary. The following stages provide the various levels of response that the Municipality has developed to respond to varying water shortages. Based on the potential risk for a water shortage and the Oldman Reservoir's normal operation plan, the following criteria are based on historical elevations, full supply level of the dam is 1,118.6 meters and developed for the WSRP. **Table 5** provides brief descriptions of the types of water restrictions required. The Municipality has developed detailed response plans for residential and commercial use for all users discussed in the following section.

Table 5. Summary of Water Shortage Response Plan Trigger Criteria.

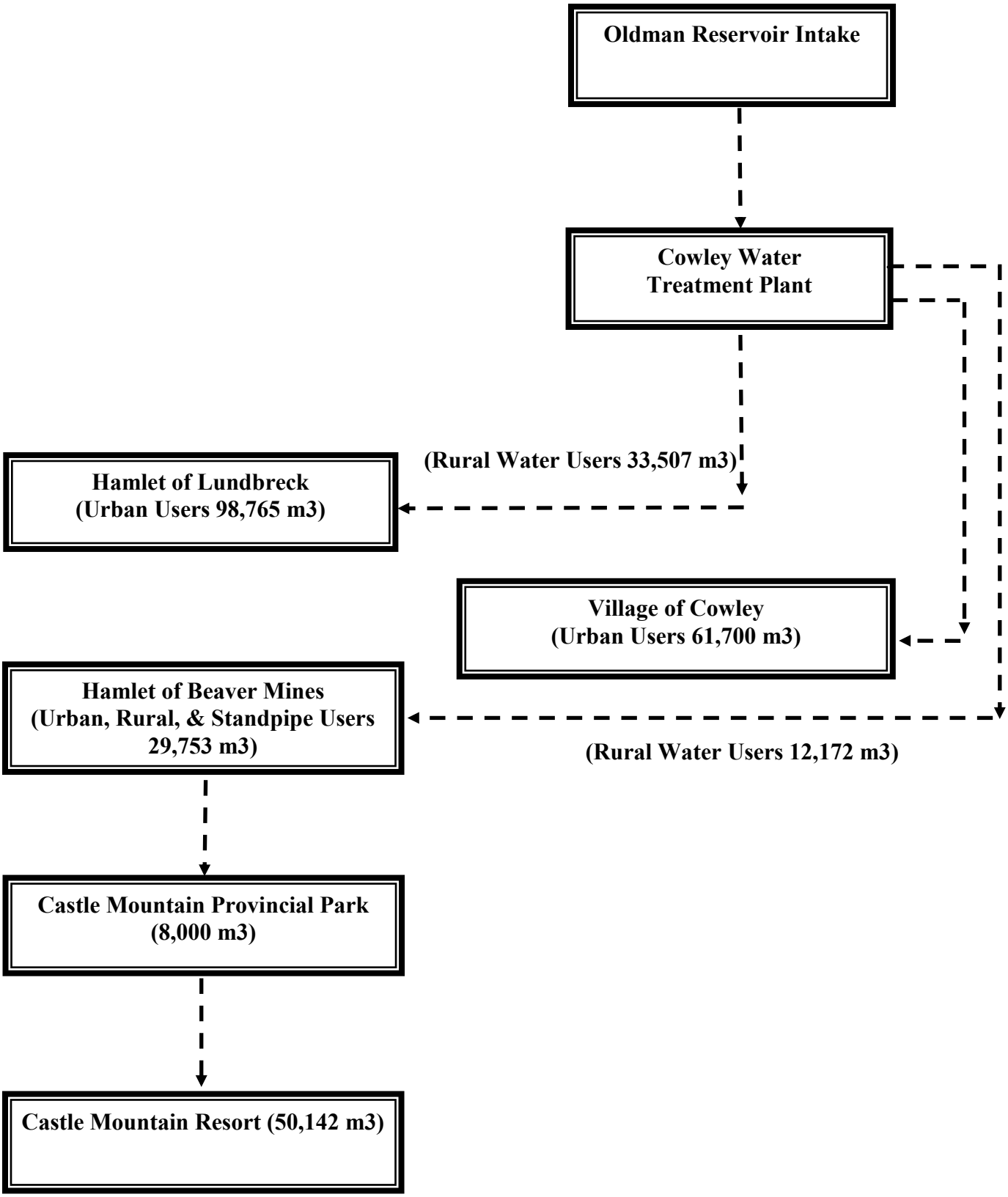
Reservoir Operating Level	Stage	Restriction Details
1118.8m to 1106.51	Normal Levels	No Restrictions
1106.50 to 1105.42	Warning	None; Advisory notices in affect to provide ample warming that water shortage restrictions are imminent
1105.41 to 1104.19	1	Begin limiting non-essential water use (i.e. lawn and garden watering limited to 3 days/week)
1104.18 to 1103.10	2	Further limit non-essential water use only (lawns and gardens watering limited to 2 days/week)
1103.09 to 1102.10	3	Further limit non-essential water use (i.e. lawn and garden watering limited to 1 day/week); Essential water use to be monitored.
1102.09 to 1088.45	4	Prohibit all water use associated with commercial; non-essential water use limited to sanitation purposes only; Monitor essential water use; water supply augmentation may be required.

An initial elevation of 1105.41 meters was selected to initiate the first stage of the WSRP. This was recorded to be the second-lowest average water level elevation since the Oldman Reservoir's historical water levels from 1993 to 2019. Implementing the WSRP at elevations of 1105.41 meters, or less, the objective is to prevent the Oldman Reservoir from being drawn down by residential and commercial use to an elevation of 1102.10 meters. At elevations below 1102.09 meters, diversion from the Oldman Reservoir for non-essential water use will be limited to sanitation and essential water use only.

7. ALLOCATED WATER USERS

The following single line diagram outlines the breakdown of the water flow direction from waterlines, annual allocated water for rural and urban users.

Diagram 1. Direction of Water Flow, Annual Allocated Water to Rural and Urban Users.



8. WATER RESERVOIR STORAGE CAPACITY

Water Reservoirs are in place for the Village of Cowley, Hamlets of Lundbreck and Beaver Mines, and Castle Mountain Resort Inc. The Reservoir's volume capacity will allow the Municipality to store, do maintenance repairs to waterlines when required. The following table outlines the location, water reservoir storage capacity, and anticipated days of storage.

Table 6. Summary of Available Reservoir Storage Capacity at Each Location.

Location	Storage Capacity (m^3)	Days of Storage
Village of Cowley (Water Treatment Plant)	1500 total (fire storage: 360 m^3 residential)	19 days in winter (current avg.) 4 days in summer (peak proj.)[1]
Hamlet of Lundbreck	1065 total (fire storage: 960 m^3 school)	9 days in winter (current avg.) 2 days in summer (peak proj.)
Hamlet of Beaver Mines	400 total (fire storage: 360 m^3 residential)	3-10 days (projected)
Castle Mountain Resort	495 total (fire storage not determined)	1 day the winter (peak proj.) 9 days in summer (current avg.)

[1]*The forecasted total regional max day demand based on the 2017 Castle Area Servicing Study was 1,468 m3/day. The WTP at Cowley would only have 1 day of storage at that rate, but this is an extreme and very unlikely scenario. The case shown here is assuming regional transfer from the Cowley Storage facility ceases during am emergency, where Cowley is the only draw during the emergency.*

9. WATER HAULING

In response to a water leak, the Municipality will have the ability to either haul water or draw from their already existing water licenses and use the water reservoirs built in the Hamlets of Beaver Mines and Lundbreck, Village of Cowley, and Castle Mountain Resort Inc. The Castle Mountain Resort can put in a temporary diversion licence (TDL) as an emergency backup plan, or they may be allowed to use their licence No. 00156342-00-00 for Commercial (Ski Resort) purposes from their water well. Castle Mountain Resort Inc. would do this when the Oldman Reservoir is at low critical limits or required as another option when waterline maintenance happens. However, Alberta Environment and Parks would need to approve the TDL as the water would be drawn from the Castle River.

10. DEMAND REDUCTION

The Municipality has developed the following response plans for residential and commercial users. The implemented strategies reduce water demand throughout various WSRP stages and ultimately eliminate all non-essential water use in extreme water shortages. The primary objective of demand reduction strategies is to avoid the need to implement water augmentation strategies. **Table 7** provides the Municipality's response plans for the various types of users utilizing the Oldman Reservoir Intake as a water source.

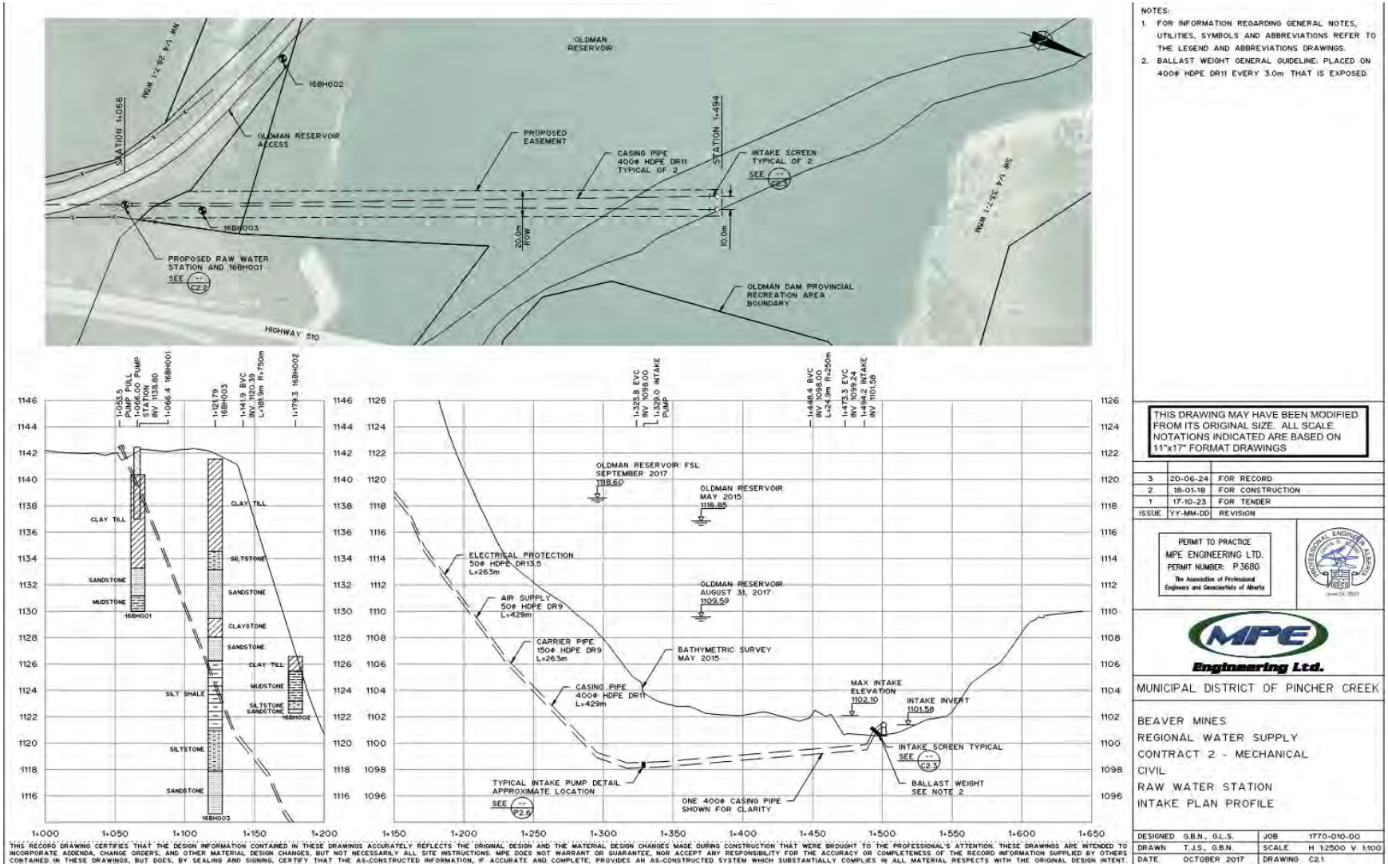
Table 7. ***Demand Reduction Strategy for Residential and Commercial Users.***

Line	Activity	Users	Normal / Warning	Stage 1	Stage 2	Stage 3	Stage 4
A	Lawn & Garden Manual Sprinklers	General	Anytime; Restrictions Voluntary	Watering Allowed 6am to 10am on assigned days.			Limited to sanitary and essential water use only, such as drinking water.
		Odd Addresses		Tues; Thurs; Sat.	Tues; Sat.	Sat. only	
		Even Addresses		Wed; Fri; Sun.	Wed; Sun.	Sun. only	
B	Lawn & Garden Automatic Sprinklers	General		Watering Allowed 12 am to 6 am on assigned days.			
		Odd Addresses		Tues; Thurs; Sat.	Tues; Sat.	Sat. only	
		Even Addresses		Wed; Fri; Sun.	Wed; Sun.	Sun. only	
C	Lawn & Aesthetic Garden Hand Watering	All Residents		Anytime	3 days per Line A 6am to 10am & 5pm to 12am	Wed. Only 6am to 10am & 7pm to 12am	
D	New Lawns and Landscaping	All Residents		Refer to Lines A to C	Permit Required	No New Permits Issued	
E	Garden Ponds, Fountains, & Water Features	Schedule as per Line A		Filling & Refilling 3 times Per Week	Filling & Refilling 2 times/week	Not allowed due to water levels	
F	Residents & Business using Pools, Hot Tubs, Outdoor Snow/Ice Making			Refer to Line A	Refer to Line A	Not allowed due to water levels except with CAO permission	
G	Cleaning Outdoor Surfaces		Use a broom, spring loaded nozzle or mop and bucket		Cleaning with a hose for health and safety only		
H	Vehicle (car, boat, etc.) Washing				Hand wash only with moderation		

11. MONITORING

The Municipality shall document any triggers of demand reduction in a single location. Stage 1 and 2 demand reductions shall require a brief report detailing the timeline of events and conclusions drawn from the triggers. Stage 3 demand reductions shall include a recommendations section for revising the water shortage response plan to prevent the future need for response. Stage 4 demand reductions shall require the Municipality to complete the same steps required for Stage 1-3 reduction. The Municipality shall also revise the water shortage response plan in the case of a Stage 4 reduction trigger in an effort to re-evaluate water supply outlooks and prevent future significant shortages.

Drawing 1. Beaver Mines Regional Water Supply Raw Water Station Intake Plan Profile.



NOTES:
1. FOR INFORMATION REGARDING GENERAL NOTES, UTILITIES, SYMBOLS AND ABBREVIATIONS REFER TO THE LEGEND AND ABBREVIATIONS DRAWINGS.
2. BALLAST WEIGHT GENERAL GUIDELINE: PLACED ON 400ϕ HDPE DR11 EVERY 3.0m THAT IS EXPOSED.

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MUNICIPAL DISTRICT OF PINCHER CREEK

BEAVER MINES
REGIONAL WATER SUPPLY
CONTRACT 2 - MECHANICAL
CIVIL
RAW WATER STATION
INTAKE PLAN PROFILE

DESIGNED	G.B.N., G.L.S.	JOB	1770-010-00
DRAWN	T.J.S., G.B.N.	SCALE	H 1:2500 V 1:100
DATE	OCTOBER 2017	DRAWING	C2.1

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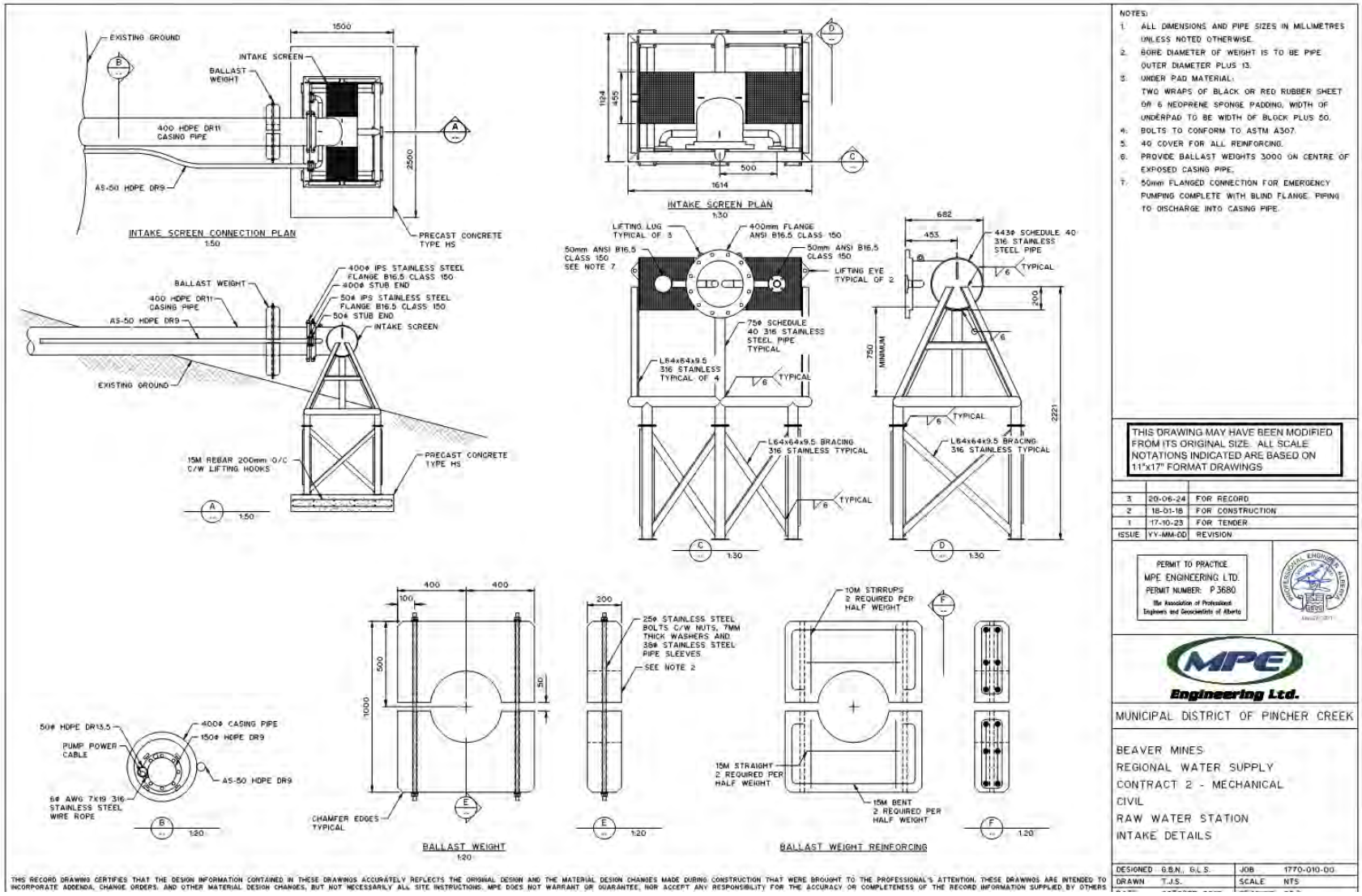
Drawing 2. Beaver Mines Regional Water Supply Raw Water Intake Details



NOTES:

1. ALL DIMENSIONS AND PIPE SIZES IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. BORE DIAMETER OF WEIGHT IS TO BE PIPE OUTER DIAMETER PLUS 13.
3. UNDER PAD MATERIAL: TWO WRAPS OF BLACK OR RED RUBBER SHEET 6ø 6 NEOPRENE SPONGE PADDING, WIDTH OF UNDERPAD TO BE WIDTH OF BLOCK PLUS 50.
4. BOLTS TO CONFORM TO ASTM A307.
5. 40 COVER FOR ALL REINFORCING.
6. PROVIDE BALLAST WEIGHTS 3000 ON CENTRE OF EXPOSED CASING PIPE.
7. 50mm FLANGED CONNECTION FOR EMERGENCY PUMPING COMPLETE WITH BLIND FLANGE. PIPING TO DISCHARGE INTO CASING PIPE.

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MUNICIPAL DISTRICT OF PINCHER CREEK

BEAVER MINES
REGIONAL WATER SUPPLY
CONTRACT 2 - MECHANICAL
CIVIL
RAW WATER STATION
INTAKE DETAILS

DESIGNED	G.B.N., G.L.S.	JOB	1770-010-00
DRAWN	T.J.S.	SCALE	NTS

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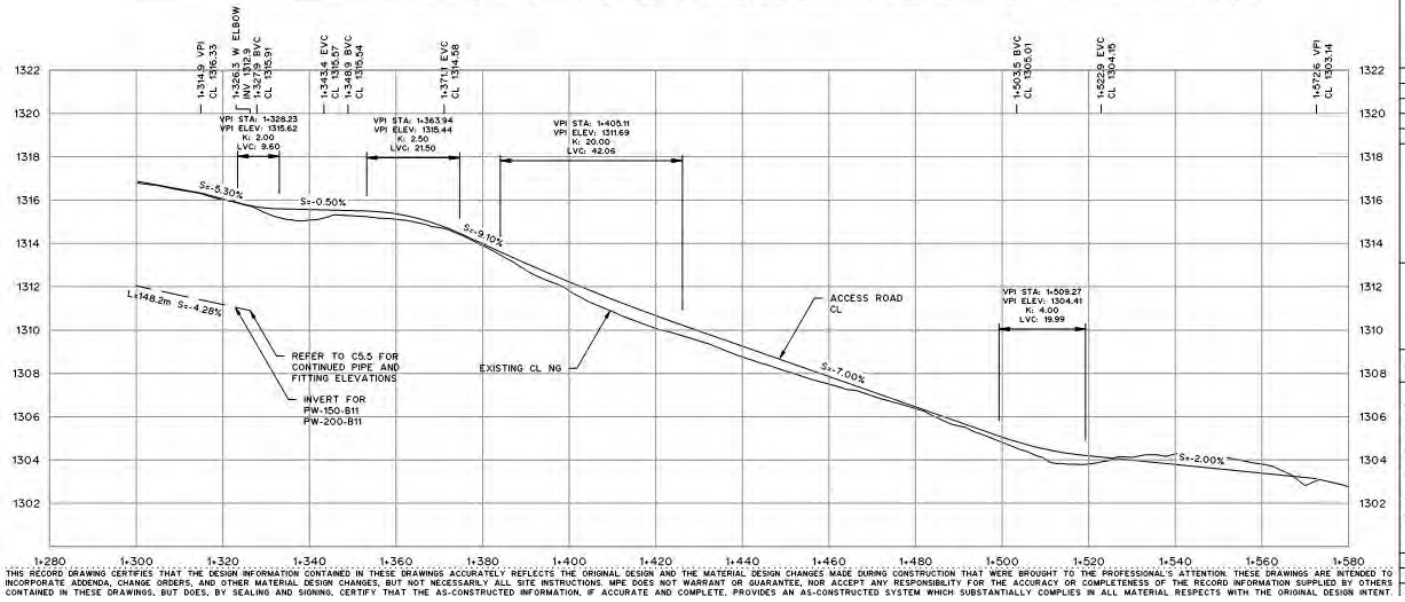

NOTES:
1. FOR INFORMATION REGARDING GENERAL NOTES, SYMBOLS AND ABBREVIATIONS, REFER TO THE LEGEND AND ABBREVIATIONS DRAWINGS.
2. MAINTAINED MINIMUM 2.5m COVER ON WATER MAINS. CONFIRM FITTING INVERTS IN FIELD.
3. S 100 PVC TO FOLLOW SAME GRADES AND ELEVATIONS AS W 200 PVC. CAP SANITARY AT PROPERTY LINE FOR FUTURE SERVICE TIE-IN.

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MUNICIPAL DISTRICT OF PINCHER CREEK

BEAVER MINES
REGIONAL WATER SUPPLY
CONTRACT 2 - MECHANICAL
CIVIL
ACCESS ROAD PLAN PROFILE
STATION 1+300 TO STATION 1+556.4

DESIGNED	T.J.S., G.L.S.	JOB	1770-010-00
DRAWN	T.J.S.	SCALE	H 1:000 V 1:200
DATE	OCTOBER 2017	DRAWING	C5.2

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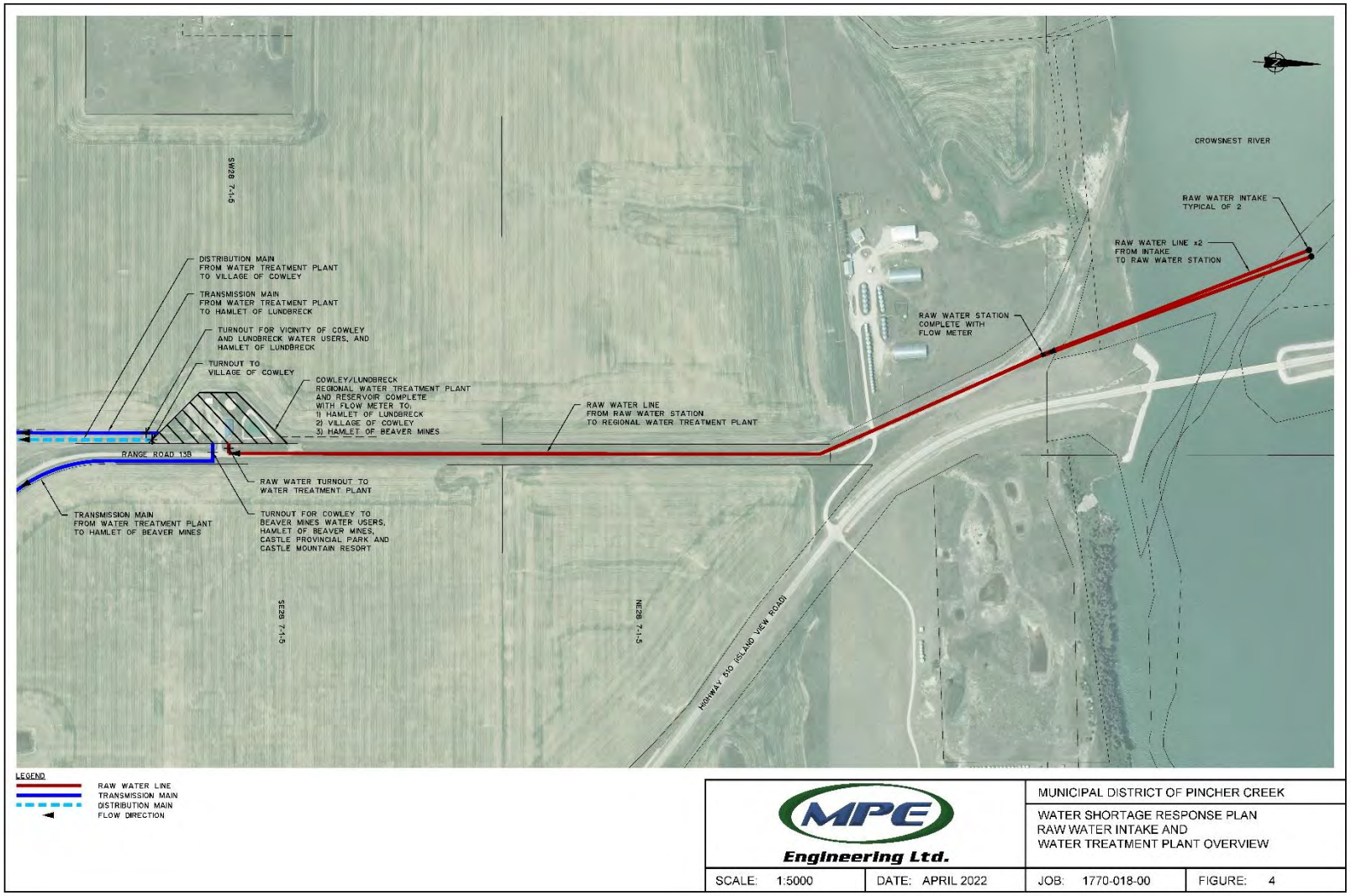
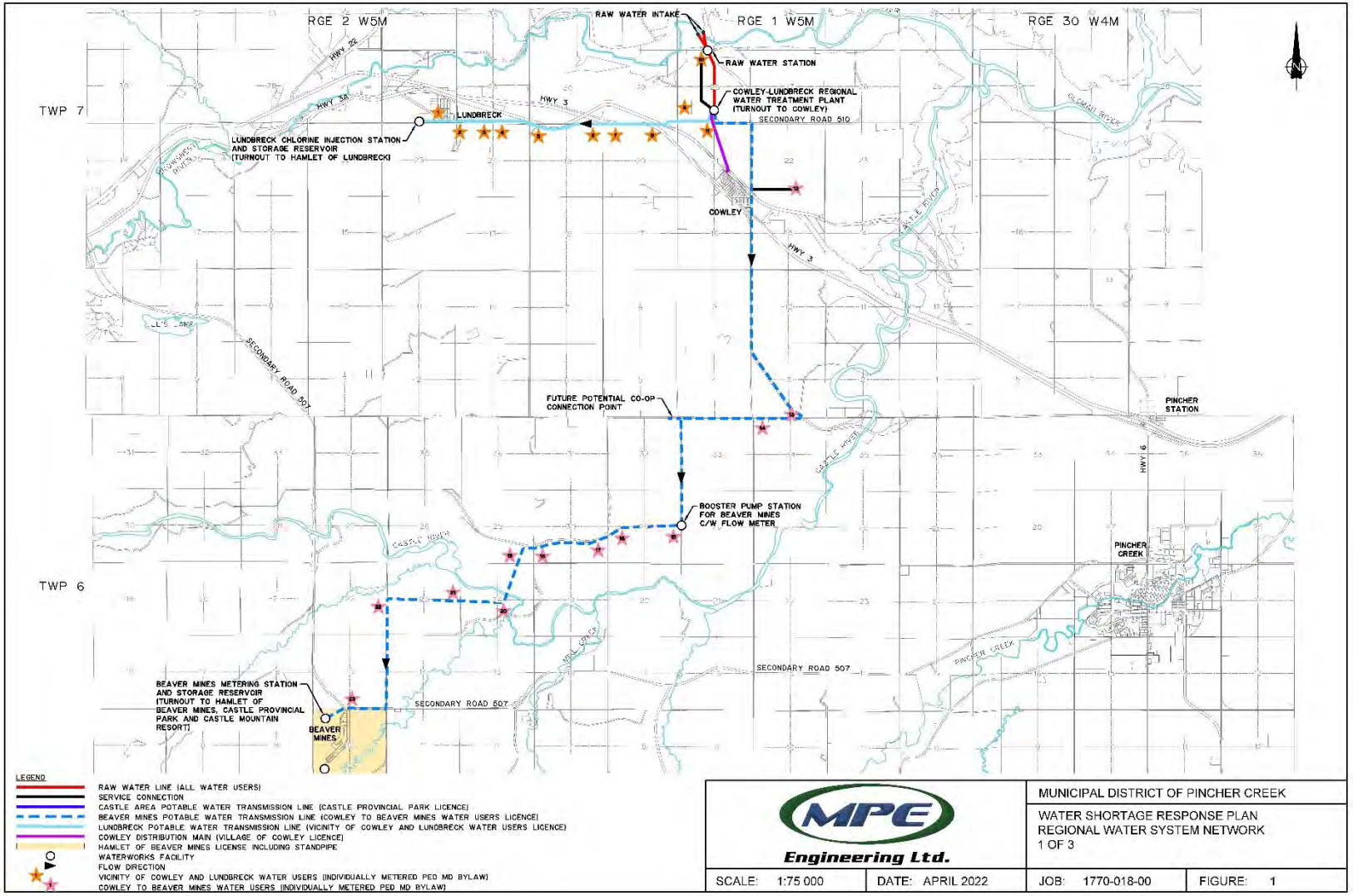
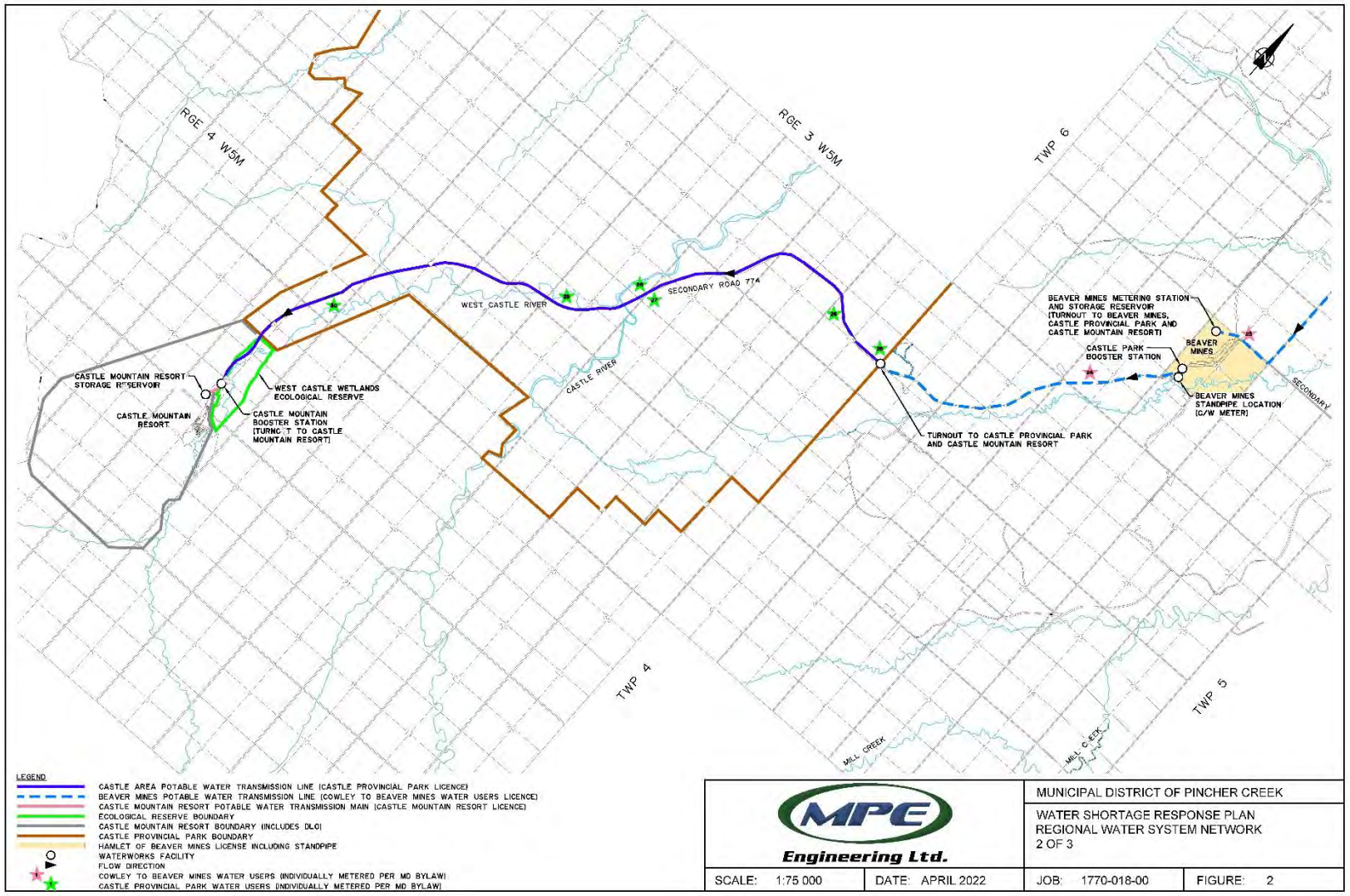
Drawing 3. Raw Water Intake and Water Treatment Plant Overview



Drawing 4. Vicinity of Lundbreck and Cowley Water User Connections to the Pipeline by Rural Residents (orange stars) and from Cowley to Beaver Mines. (pink stars)

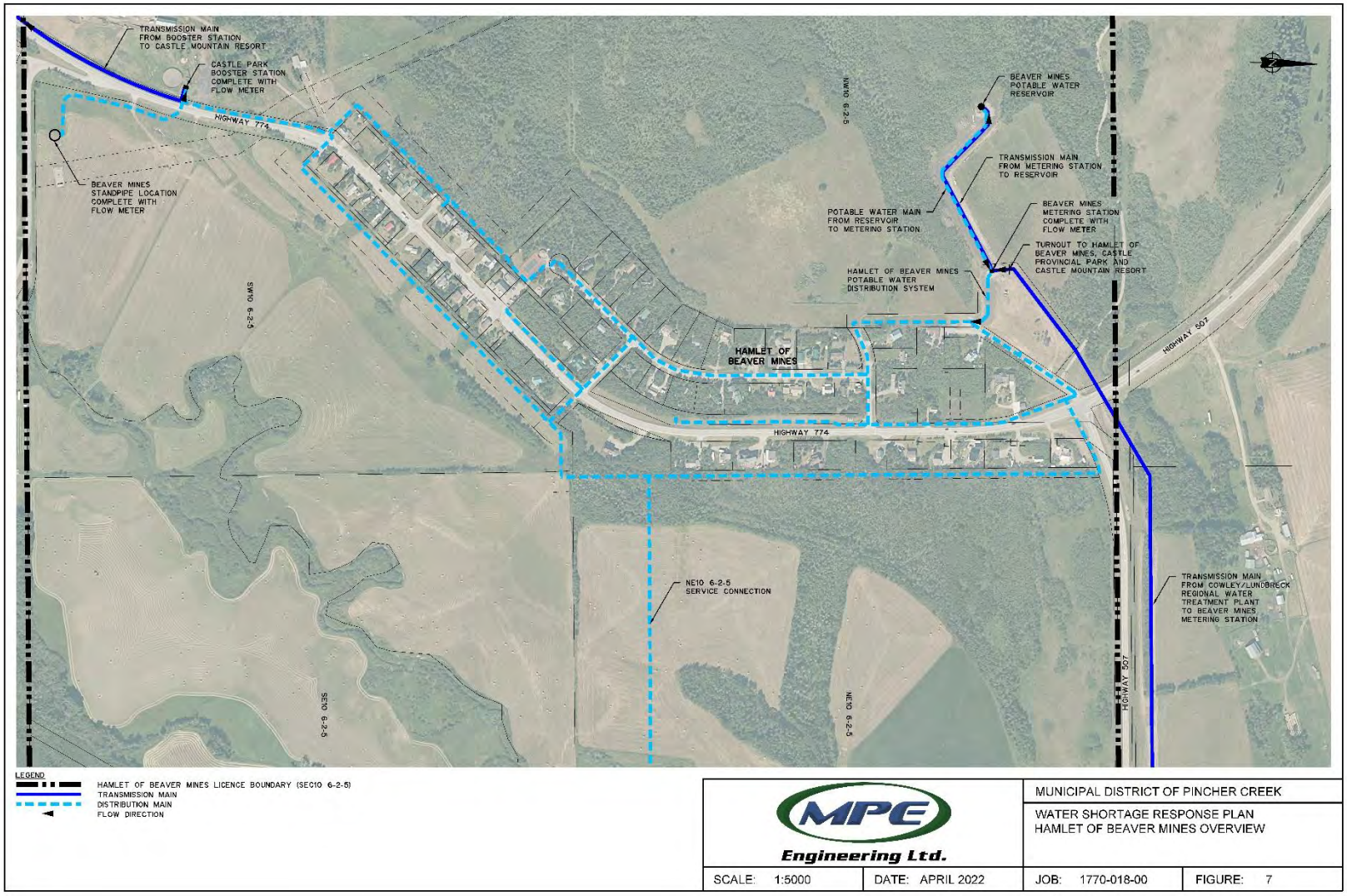


Drawing 5. Castle Area Regional Water Supply User Connections to the Pipeline by Castle Parks and Castle Mt Resort.

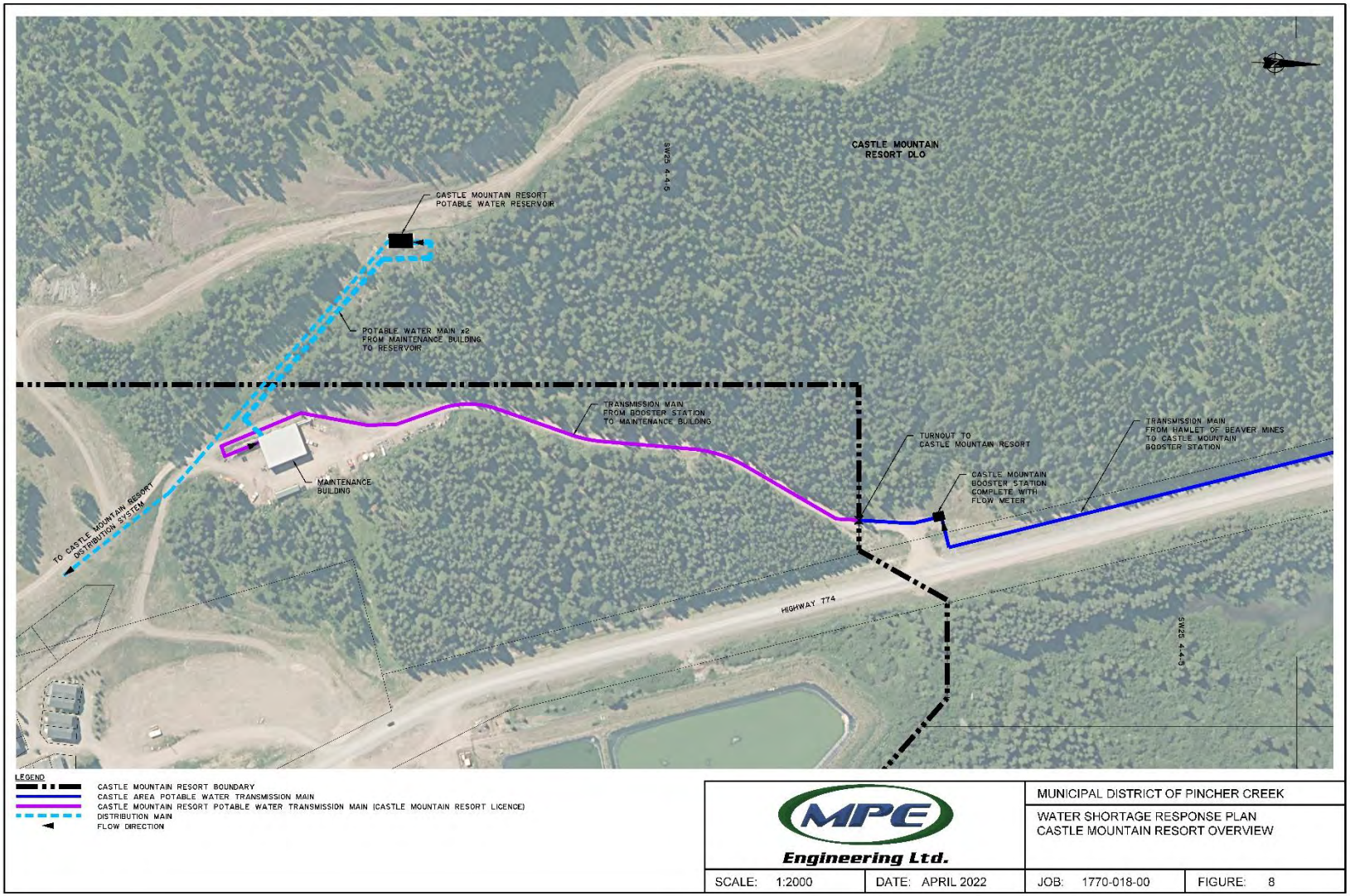


Drawing 6. Hamlet of Lundbreck Reservoir and Metering Station.

Drawing 7. Hamlet of Beaver Mines Overview



Drawing 8. Castle Mountain Resort Inc. Overview



APPENDIX A: Current Water Agreements with Rural & Commercial Users (As of November, 2022)

Note: Handwritten numbers on agreements correspond to individually metered sites "starred" on Drawings 4 & 5.

REMOVED FROM REPORT DUE TO CONFIDENTIAL INFORMATION

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

WATER SHORTAGE RESPONSE PLAN

Spring 2025

REVISION HISTORY

Revision	Release Notes
Fall 2022	• Original Release
Winter 2024	• Updated during draft permanent license review to include new WSRP figures
Spring 2025	• Major overhaul/redraft of to WSRP, taking into account 2023/2024 implementation lessons learned and new infrastructure installations • Added permanent license information, additional information on the Oldman reservoir and MD water system limitations • Modified demand reduction plans with additional stage and better defined user groups • Created tool to assist with identifying risk shortages and defining demand stage • Added details around supply augmentation methods • Included important contact list related to water shortages

WATER SHORTAGE RESPONSE PLAN IMPLMENTATION HISTORY

Implementation Dates	Details
August 16th, 2023 – June 13th, 2024	Stage 3: The MD of Pincher Creek implemented Stage 3 water restrictions after the level of the Oldman Reservoir dropped below the two (2) existing intakes (P1101/1102). The report related to this event can is included in Appendix C
June 13th, 2024 – July 5th, 2024	Stage 1: The MD dropped to Stage 1 from Stage 3 after the successful start-up of one (1) more drought resilient intake, following a rise in level of the Oldman Reservoir

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1. BACKGROUND

The Municipal District of Pincher Creek No. 9 (MD) has developed a Water Shortage Response Plan (WSRP) to address the Water License requirements from Alberta Environment and Protected Areas (AEPA) to plan for water shortages for the MD's Regional Water System.

The WSRP includes the following:

1) A summary all water licenses held by the MD
2) Details of all major connections to the regional water supply network, including raw water and potable water connections
3) Details related to potential water shortage concerns and proposed demand reduction triggering methods
4) A comprehensive plan for the regions response to water shortages with specific criteria action items for each stage

2. SUMMARY OF WATER LICENCES

Utility Bylaw No. 1344-22 (Bylaw) supports all individual Water Service Connections in the MD. The Hamlets of Lundbreck and Beaver Mines, Castle Mountain Resort, and the Village of Cowley all have Water Distribution Systems serving their respective developments on the MD's Regional Water System. There are also Rural Water Transmission Line users on the system. At time of this revision, the MD holds all water licenses for users on the system, excluding the Village of Cowley.

The descriptions below are a summary of all licences along with allocated volumes provided throughout the regional water system, with all licenses drawing raw water from the MD's four (4) intakes in the Oldman Reservoir:

1) **Village of Cowley:** Annual allocation of 61,700 m^3 (50.02 acre-feet)
2) **Rural Transmission Line Users:** Annual allocation of 45,679 m^3 (37 acre-feet). Serving vicinity of Cowley and Lundbreck water users and Cowley to Beaver Mines water users;
    a. **Vicinity of Cowley and Lundbreck Transmission Line Users:** Annual allocation of 33,507 m^3 (27.16 acre-feet)
    b. **Cowley to Beaver Mines Transmission Line Users:** Annual allocation of 12,172 m^3 (9.8 acre-feet)
3) **Hamlet of Lundbreck**: Annual allocation of 98,765 m^3 (80.07 acre-feet)
4) **Hamlet of Beaver Mines (urban and rural):** Annual allocation of 19,753 m^3 (16 acre-feet)
    a. The Hamlet of Beaver Mines (urban and rural) has a total annual allocation of 29,753 m^3 (24.1 acre-feet), which includes 10,000 m3 (8.1 acre-feet) cubic meters water consumption from a standpipe (bulk fill station)
5) **Castle Mountain Resort Inc. (CMR)**: Annual allocation of 50,142 m^3 (40.65 acre-feet) to supply population growth to a maximum of 225 accommodation units based on 3.5 people per unit at 260 lpcd and 100 RV units (200 litres per unit per day)
6) **Castle Provincial Park & Area:** Annual allocation of 10,500 m^3 (8.5 acre-feet)
    a. Includes allocation for the Castle River Bridge Campground waterline, the Stockmen's Association, Syncline, Beaver Mines Lake, future campgrounds and future Rural Transmission Line usage downstream of the Hamlet of Beaver Mines (within Sections 29,30,32,33-005-02-W5M and Sections 3,4-006-05-W5M)

The MD must have sufficient amounts of clean drinking water allocated to accommodate the regional water users. As a result, AEPA is reviewing and working with the different Municipalities to find a solution that will benefit future growth after 10 years projection growth.

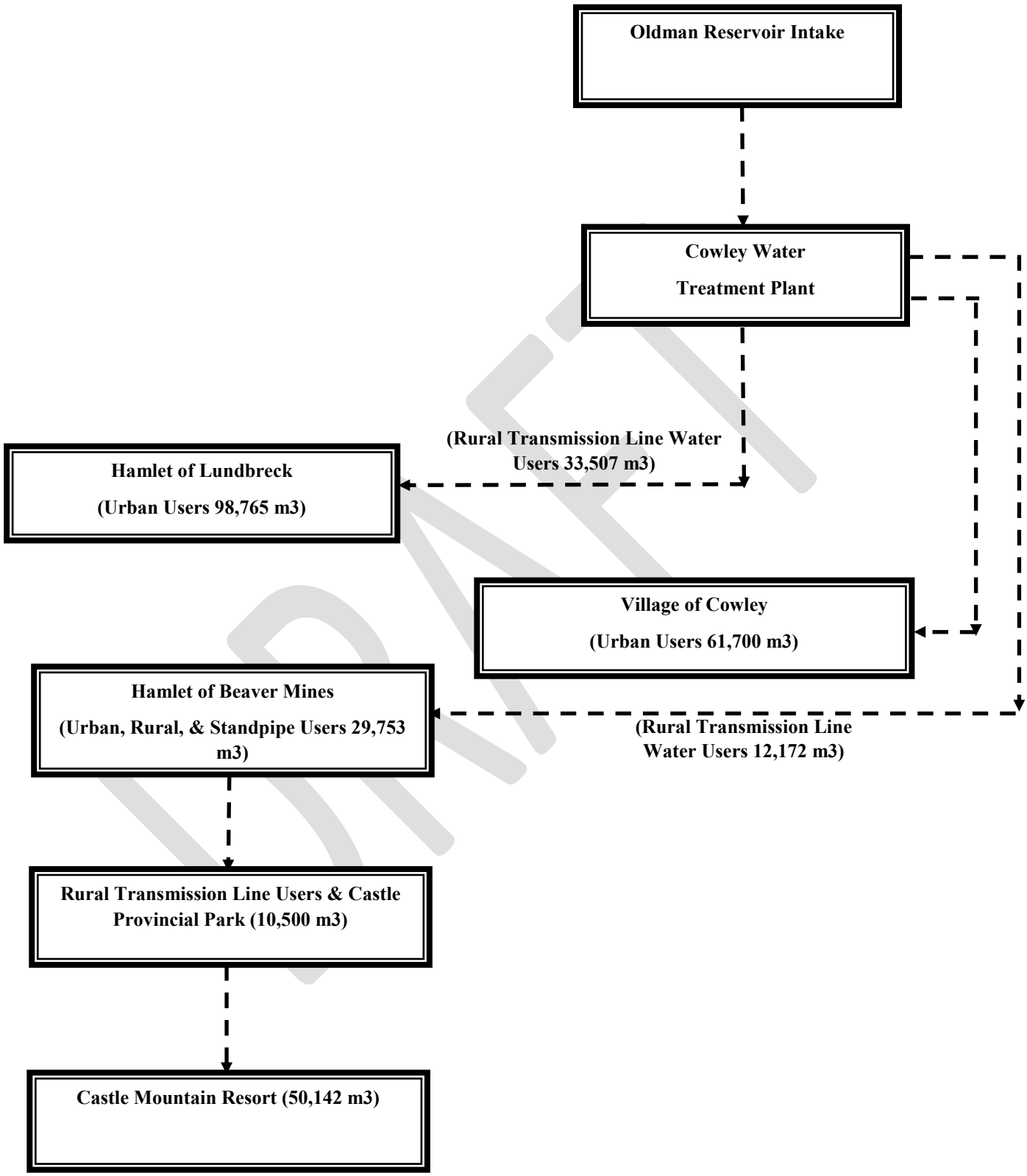
Table 1 outlines the water licences associated with the Oldman Dam Reservoir intakes at SW 33-007- 01-W5.

TABLE 1: LICENSES AND WATER USERS OF THE MD'S REGIONAL WATER SYSTEM

Water Users	License No.	Priority Number	Annual Allocation (m^3/year)
Village of Cowley	00376911-00-00	1989-03-31-016	61,700
Vicinity of Cowley & Lundbreck Water Users	00468025-00-00 (DAUT0017045)	2003-11-05-032	33,507
Cowley to Beaver Mines Users	00468166-00-00 (DAUT0017048)	2003-11-05-031	12,172
Hamlet of Lundbreck	00376909-00-00 (DAUT0015885)	1978-09-11-001 – 24,691 m^3 1983-08-23-001 – 24,691 m^3 1985-08-09-001 – 49,383 m^3	98,765
Hamlet of Beaver Mines (Urban, Rural, & Standpipe Users)	00468027-00-00 (DAUT0017046)	2003-11-05-030	29,753
Castle Mountain Resort Inc.	00468028-00-00 (DAUT0017047)	2003-11-05-028	50,142
Castle Provincial Park & Area User	00405134-00-00 (DAUT0018143)	2003-11-05-029	10,500

The following flowchart outlines the process flow of water throughout the regional Transmission and Distribution Systems, along with the licensed water allocations for each user group.

FIGURE 1: DIRECTION OF WATER FLOW, ANNUAL ALLOCATED WATER TO RURAL AND URBAN USERS



2.1. RURAL TRANMISSION LINE USERS

Appendix A – Table 11 provides a summary of the water service connection points of use located on Transmission Water Lines. The MD has rural water utility agreements in place for Transmission Line Users. Water usage is limited with flow restrictors set to 1 GPM. Each agreement will be distributed accordingly to determine the maximum volume possible for each water user group, allowing appropriate division of volume without exceeding the Transmission Water Lines capacities. The maximum design capacity volumes are from projected 25-year average day demands (out to 2042) for the Hamlets and Municipalities with projected annual growth rate (2%) and per capita demands (500 lpcd). However, AEPA will only grant for Municipal purposes enough water for a 10-year growth projection following their departmental policy in the province's southern region. There is no speculation of water beyond what is required for projected future growth.

2.2. WATER LICENCES RESTRICTIONS

All of the licenses above on the system have restrictions related to Instream Objective's (IOs). The measuring station for these objectives is "Segment 5 and 6 (Oldman River Reservoir to LNID Weir Confluence", measured at Station – Oldman River near Brocket (05AA024). IO's can be viewed on the https://rivers.alberta.ca website by enabling "Water Management". As long as IO's are being met, it is not anticipated that rate of flow requirements will be placed on MD or Cowley water licenses. Based on the location of IO measurement (directly downstream of the controlled dam), IO's are not anticipated to be the driving factor related to Water License Restrictions under most scenarios. However, under the conditions of all water licenses, if in effect, the MD would be subject to diversion limitations should daily flow fall below IO's or should Alberta Environment & Protected Areas (AEPA) decided to amend the licenses to convert IO's to Water Conservation Objectives. IO's are presented in **Table 2** below.

TABLE 2: INSTREAM OBJECTIVES PLACED UPON MD REGIONAL WATER LICENSES

SCHEDULE 1

OLDMAN RIVER INSTREAM OBJECTIVES ("IO")
SEGMENT 5 AND 6 (OLDMAN RIVER RESERVOIR TO LNID WEIR CONFLUENCE)
Station – Oldman River near Brocket (05AA024)

LICENCE NO. 00468025-00-00
FILE NO. OO468025

UNITS: CUBIC METRES PER SECOND (CMS)

NOTE: WHERE IDENTICAL NATURAL FLOW VALUES OCCUR IN A WEEKLY COLUMN BELOW - THE "IO" FOR THE FIRST OCCURRING VALUE SHOULD BE USED.

NATURAL FLOW FOR THE 7 DAY PERIOD BEGINNING:

	Apr 02	Apr 09	Apr 16	Apr 23	Apr 30	May 07	May 14	May 21	May 28	Jun 04	Jun 11	Jun 18	Jun 25	Jul 02	Jul 09	Jul 16	Jul 23	Jul 30	Aug 06	Aug 13	Aug 20	Aug 27	"IO"
<	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	88.7	63.5	44.2	34.7	27.0	23.3	20.3	16.6	13.9	12.1	11.4	8.5
>=	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	88.7	63.5	44.2	34.7	27.0	23.3	20.3	16.6	13.9	12.1	11.4	8.5
>=	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	92.0	67.8	48.8	36.6	29.5	24.5	21.1	17.4	14.2	12.6	11.5	9.0
>=	10.5	10.3	10.3	10.3	19.2	22.0	42.4	42.3	39.5	36.4	37.4	98.2	74.9	52.5	40.0	33.3	25.7	22.4	17.8	15.4	14.2	12.3	10.0
>=	12.6	16.8	24.6	33.9	47.7	71.3	100.0	126.5	128.9	120.4	115.7	105.2	77.6	62.9	44.5	38.7	29.1	23.2	18.9	16.4	15.4	13.4	11.0
>=	14.5	18.6	26.9	36.9	55.3	83.7	111.7	133.1	137.4	131.7	128.5	110.2	82.6	65.7	54.0	40.3	31.0	24.8	20.4	17.7	16.6	14.8	12.0
>=	15.7	21.5	31.1	40.9	60.9	92.2	123.9	138.4	147.1	153.5	138.3	116.4	90.9	71.4	57.9	42.8	32.5	25.7	21.8	18.2	17.0	15.2	13.0
>=	16.9	22.3	36.2	44.3	68.7	94.4	136.4	153.4	152.1	161.8	142.4	119.0	94.5	79.4	59.6	45.2	33.7	27.0	22.5	18.7	17.3	16.0	14.0
>=	17.3	23.4	38.0	50.8	75.1	97.8	141.1	167.5	157.7	171.9	146.9	127.5	99.8	84.0	61.1	47.9	34.5	28.3	22.9	18.8	18.1	16.7	15.0
>=	17.3	23.5	39.0	55.0	78.6	103.1	148.9	173.4	161.0	183.7	150.5	137.7	107.9	90.3	63.2	49.7	37.1	29.5	23.6	19.1	19.3	17.7	16.0
>=	18.5	24.2	41.1	56.0	82.6	107.6	152.9	179.6	171.2	187.4	152.8	139.6	118.6	92.0	68.8	53.1	39.7	29.8	24.8	20.4	20.0	18.7	17.0
>=	19.6	26.4	44.1	61.4	87.6	112.0	161.3	186.2	182.2	195.5	160.7	150.6	119.4	97.3	75.8	54.3	40.1	30.7	25.3	20.9	21.0	19.3	18.0
>=	22.9	31.4	46.8	67.9	95.4	116.6	164.4	195.2	189.0	205.5	174.8	157.3	136.1	100.3	78.9	55.1	41.8	32.0	26.0	23.9	22.0	21.0	19.0
>=	24.8	32.0	48.9	69.4	103.9	118.9	166.5	203.5	193.2	215.4	178.2	159.4	144.8	104.7	81.1	56.5	44.2	33.5	27.7	24.7	23.0	22.3	20.0
>=	26.3	40.3	50.2	74.2	105.7	124.8	169.2	211.9	211.3	219.9	204.5	161.0	153.2	106.0	81.8	60.1	46.1	33.8	29.1	25.5	23.8	23.6	21.0
>=	28.3	45.9	51.9	81.9	106.3	141.6	178.4	218.4	216.1	231.3	206.6	164.3	155.1	110.4	82.5	63.6	48.4	34.0	30.0	26.1	24.8	24.1	22.0
>=	28.5	46.0	52.2	82.4	106.4	145.4	181.9	218.4	218.5	232.3	206.7	167.8	155.1	111.9	82.9	63.7	48.4	34.2	30.2	26.2	24.9	24.2	23.0
>=	28.7	46.1	52.6	82.9	106.5	149.3	185.4	218.4	220.8	233.3	206.8	171.4	155.2	113.4	83.3	63.8	48.5	34.3	30.3	26.3	25.0	24.3	24.0
>=	28.9	46.1	53.0	83.4	106.7	153.2	188.9	218.4	223.2	234.3	206.9	175.0	155.2	114.9	83.7	63.8	48.5	34.5	30.4	26.4	25.1	25.0	25.0
>=	29.1	46.2	53.3	83.9	106.8	157.0	192.4	218.4	225.6	235.3	207.0	178.5	155.3	116.4	84.1	63.9	48.6	34.6	30.5	26.5	26.0	26.0	26.0
>=	29.3	46.3	53.7	84.4	106.9	160.9	195.9	218.4	227.9	236.3	207.1	182.1	155.3	117.9	84.6	64.0	48.6	34.8	30.7	28.2	28.2	27.9	27.0

	Sep 03	Sep 10	Sep 17	Sep 24	"IO"		Oct 01	Oct 08	Oct 15	Oct 22	"IO"		Oct 29	Nov 05	Nov 12	Nov 19	Nov 26	"IO"
<	11.6	11.3	10.5	11.4	8.5	<	8.5	8.5	8.5	8.5	8.5	<	6.5	6.5	6.5	6.5	6.5	6.5
>=	11.6	11.3	10.5	11.4	8.5	>=	8.5	8.5	8.5	8.5	8.5	>=	6.5	6.5	6.5	6.5	6.5	6.5
>=	11.9	11.9	11.6	11.7	9.0	>=	9.0	9.0	9.0	9.0	9.0	>=	7.0	7.0	7.0	7.0	7.0	7.0
>=	12.6	12.2	12.0	12.7	10.0	>=	11.5	11.5	11.1	11.0	10.0	>=	8.0	8.0	8.0	8.0	8.0	8.0
>=	13.2	12.8	13.0	13.1	11.0	>=	12.5	12.3	11.8	12.5	11.0	>=	9.0	9.1	9.0	9.0	9.0	9.0
>=	13.5	14.0	14.2	13.8	12.0	>=	13.7	12.7	13.6	13.8	12.0	>=	11.3	10.6	10.0	10.0	10.0	10.0
>=	14.7	14.6	14.7	14.3	13.0	>=	15.0	14.4	14.3	14.4	13.0	>=	12.9	12.8	11.3	11.0	11.0	11.0
>=	16.1	15.1	14.9	14.9	14.0	>=	16.1	15.6	15.1	15.4	14.0	>=	13.8	13.8	12.6	12.0	12.0	12.0
>=	17.0	16.2	15.6	15.5	15.0	>=	16.7	16.5	17.4	16.9	15.0	>=	15.7	14.2	13.2	13.0	13.0	13.0
>=	18.3	16.5	17.3	16.4	16.0	>=	18.3	20.8	20.4	21.7	16.0	>=	17.4	14.9	14.3	14.0	14.0	14.0
>=	18.9	17.3	19.6	19.9	17.0	>=	24.3	23.5	23.0	23.6	17.0	>=	19.2	16.8	15.7	15.0	15.0	15.0
>=	20.5	19.2	22.2	21.1	18.0	>=	24.3	23.8	24.0	23.7	18.0	>=	21.2	19.5	17.2	16.0	16.0	16.0
>=	20.9	19.9	22.3	21.1	19.0	>=	24.4	24.1	25.1	23.8	19.0	>=	23.7	21.8	18.0	17.0	17.0	17.0
>=	20.9	20.6	22.3	21.1	20.0	>=	24.4	24.4	26.1	23.9	20.0	>=	23.8	22.1	18.4	18.0	18.0	18.0
>=	21.0	21.3	22.4	21.2	21.0							>=	24.0	22.3	19.0	19.0	19.3	19.0
>=	22.7	23.3	22.5	23.4	22.0							>=	24.1	22.6	20.1	20.4	20.8	20.0

NOTE: THE "IO FOR THE PERIOD FROM DECEMBER 3 TO APRIL 1 INCLUSIVE IS 6.5 CMS.
< LESS THAN NATURAL FLOW
>= GREATER THAN OR EQUAL TO NATURAL FLOW

April 30, 2024
Dated

Designated Director under the Act

3. OLDMAN RESERVOIR – PUMP SYSTEMS & HISTORICAL WATER ELEVATIONS

3.1. RAW WATER INTAKE FUNCTION & ASSOCIATED RESERVOIR LEVELS

The MD has four (4) raw water intakes. All of the intakes are located North of Cowley in the Oldman Reservoir. P1101 and P1102 were drilled from high ground near the Reservoir, and breach the bed of the reservoir near the historic riverbed channel of the Crowsnest River.

P1101 and P1102 breach the surface of the reservoir during periods of extreme low water in the reservoir. Due to access difficulty and extreme turbidity of passing water during such water levels, these intakes become unusable for a period of time and difficult to augment flow into. They are equipped with flanged connections which can be removed, making it possible to pump pre-filtered water, or less turbid water from lower elevations into these existing intakes. During the 2023/2024 water supply crisis, it was possible after 3 ½ months of breach to place a temporary pumping setup in the reservoir near the historic Crowsnest River with pre-filtration installed to meet demand requirements. The setup needed to be manned to function effectively and while more affordable then trucking, came at significant cost. Details related to the setup are included in the Implementation Report in **Appendix C.**

P1103 and P1104 were constructed in 2024, and are Vertical Infiltration Structures (VIS'), capable of drawing water during periods of low reservoir level from the unconfined aquifer with limited hydraulic connection to the historic Crowsnest River in the Oldman Reservoir. **Table 3** below summarizes the capacity limitations of the intake systems.

TABLE 3: LIMITATIONS OF INTAKE PUMP SYSTEMS

Pumping Scenarios	Max Theoretical Pumping Production (m m^3/d)	Capacity Limitation	Daily Summer Production Shortfall vs. Forecasted (m^3/d)	Daily Winter Production Shortfall vs. Forecasted (m^3/d)	Annual Production Shortfall vs. Forecasted (m^3)
All intakes functioning	Greater than 1,552	Capacity of Water Treatment Plant, Transmission Pipelines, etc.	N/A		
3 of 4 intakes functioning	Greater than 1,552	Capacity of Water Treatment Plant, Transmission Pipelines, etc.			
1 reservoir (P1101/1102) intake functioning	Greater than 1,552	Capacity of Water Treatment Plant, Transmission Pipelines, etc.			
2 VIS intakes functioning with reservoir level above VIS intakes	Likely exceeds 1000	**Untested and difficult to theoretically calculate. Dependant on reservoir level*			
2 VIS intakes functioning with reservoir level below VIS intakes	533	Drawdown of aquifer (Long term theoretical yield)	315[1]	413[1]	132,970[1]
VIS-4 intake functioning with reservoir level below VIS intakes	227	Drawdown of aquifer (Long term theoretical yield)	591[1]	689[1]	233,490[1]
No intakes functioning	0	Ability to truck and pump water to plant via temporary means	795	893	308,060

[1]Assumes 90% of max. theoretical pumping rate can be maintained on average.

In 2024, total water usage was less than 110,000 m^3. However, at full forecasted buildout of the regional system, annual usage needs could exceed 300,000 m^3, with average day demands of roughly 800-900 m^3, depending on the season. **Table 4** below summarizes important levels and volumes of the Oldman Reservoir as it relates to elevations of the MD's intakes:

TABLE 4: PUMP SYSTEM LEVELS VS. CORRESPONDING RESERVOIR VOLUME

Pump System	Level Description	Level (m)	Corresponding Reservoir Volume (%)
P1101	Top of Intake Exposed	1103.85	47
	Bottom of Intake Assembly Accessible	1101.11	41
P1102	Top of Intake Exposed	1103.10	45
	Bottom of Intake Assembly Accessible	1100.36	39
P1103 (VIS-3)	Top of Casing Flange	1106.31	54
	Pump Intake[1]	1098.93	36
P1104 (VIS-4)	Top of Casing Flange	1106.49	55
	Pump Intake[1]	1098.87	35

[1]*P1103 and P1104 are capable of continuing to draw water past this elevation per the theoretical limitations presented in* ***Table 2.***

Drawings of the intake systems including elevations are included in **Appendix A.**

3.2. WATER SYSEMS – RESERVOIR STORAGE CAPACITY

Water Reservoirs are in place for the Village of Cowley, Hamlets of Lundbreck and Beaver Mines, and Castle Mountain Resort Inc. The Reservoir capacities allow the MD to store treated water to do maintenance, or repairs to waterlines when required. **Table 5** outlines the location, water reservoir storage capacity, and anticipated days of storage of each treated water reservoir in the Regional Water System

TABLE 5: SUMMARY OF TREATED WATER STORAGE CAPACITIES BY LOCATION

Location	Storage Capacity (m^3)	Days of Storage
Village of Cowley (Water Treatment Plant)	1500 total (fire storage: 360 m^3 residential)	19 days in winter (current avg.) 4 days in summer (peak proj.)[1]
Hamlet of Lundbreck	1065 total (fire storage: 960 m^3 school)	9 days in winter (current avg.) 2 days in summer (peak proj.)
Hamlet of Beaver Mines	400 total (fire storage: 360 m^3 residential)	3-10 days (projected)
Castle Mountain Resort	495 total (fire storage not determined)	1 day the winter (peak proj.) 9 days in summer (current avg.)

[1]*The forecasted total regional max day demand based on the 2017 Castle Area Servicing Study was 1,468* m^3*/day. The WTP at Cowley would only have 1 day of storage at that rate, but this is an extreme and very unlikely scenario. The case shown here is assuming regional transfer from the Cowley Storage facility ceases during am emergency, where Cowley is the only draw during the emergency.*

3.3. OLDMAN RESERVOIR – HISTORIC LEVELS & PHYSICAL CHARACTERISTICS

A graph of historic reservoir levels for all years between 1999-2023 is shown in **Figure 2** below. Critical pump intake levels have also been shown for reference.

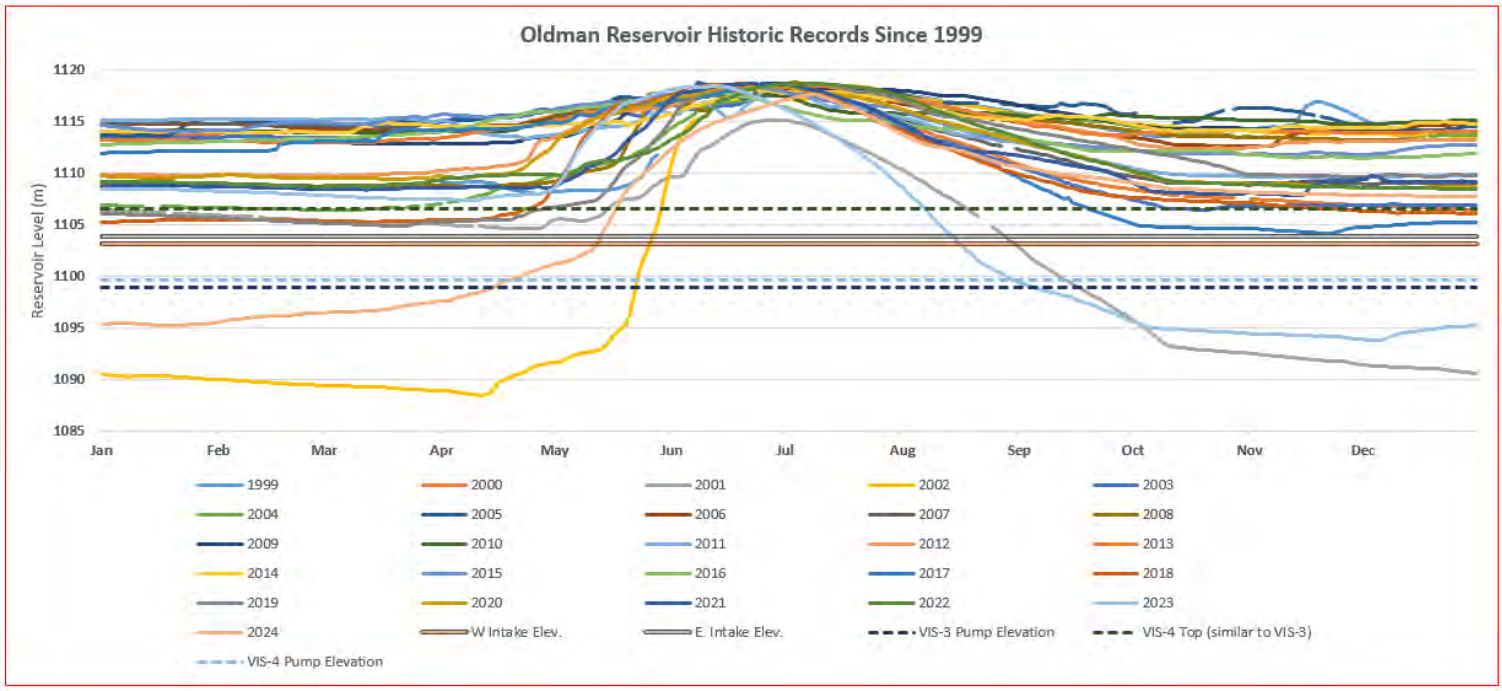


FIGURE 2: OLDMAN RESERVOIR HISTORIC LEVELS AND CRITICAL RESERVOIR LEVELS OF THE MD INTAKES

Figure 2 was created using data from the AEPA Rivers Alberta Outflow of the Oldman Reservoir data source, along with Water Survey of Canada (WSC) Data on the Oldman River Fork upstream of the dam. It is important to note that once the Oldman Reservoir drops below a certain level (roughly 1107-1108m), the Oldman River Fork Level (WSC Data) no longer reads reservoir level accurately, as the Oldman River at that location will be above the elevation of the Oldman Reservoir. Therefore, AEPA Outflow Data from downstream of the dam should be primarily used to assess shortage risks. The following rules were used when combining the data sources:

1) Use AEPA Data flow wherever available
    a. Where discrepancies exist between the data sources, use AEPA data as main source unless it is clear an instrumentation/data read error had occurred from surrounding datapoints (use WSC data for where data read errors exist)
2) Fill gaps in historic data with WCS data when reservoir level exceeds 1108m
3) Leave gaps where not possible (i.e. mid August 2019 is below 1108m and AEPA data is unavailable during the time frame)

The physical characteristics of the Oldman Reservoir Dam as provided by Alberta Agriculture & Irrigation (AAI) are shown in **Figure 3** below.

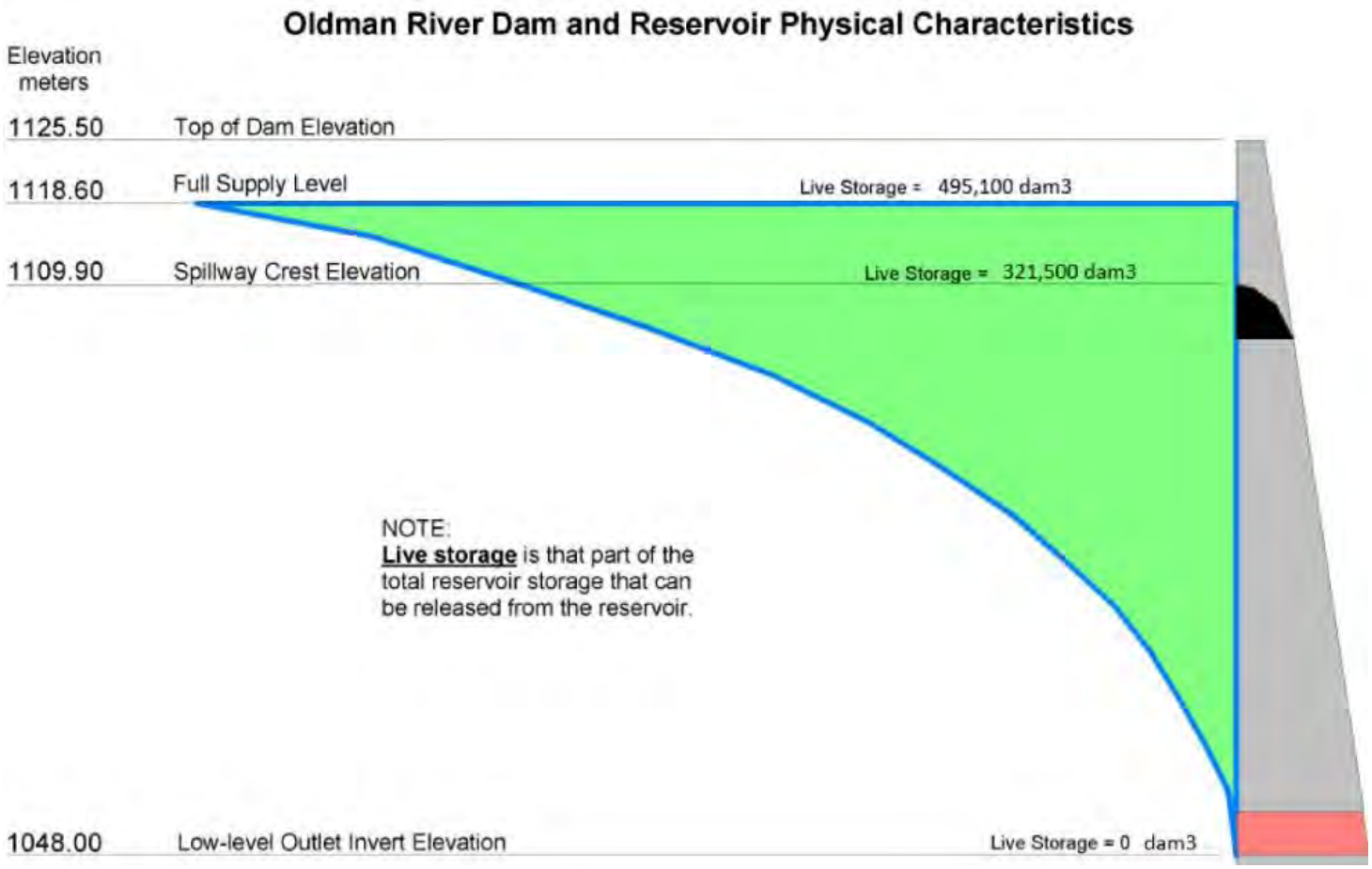


FIGURE 3: OLDMAN RIVER RESERVOIR PHYSICAL CHARACTERISTICS (TO SCALE)

3.4. OLDMAN RESERVOIR – CONTROL & USER GROUP COMPARISONS

AAI controls the reservoir based on the 1994 Operations Rule Curve alongside the Fish Rule Curve, as shown in the **Figures 4 & 5** below. Reservoir releases are made to meet the irrigation demand and Licensed Flow Requirements as determined by the Fish Rule Curve (FRC). They are intended to follow a percentage of natural flows, determined on a daily basis.

Natural flows indicate what the flow would be at a location if the flow wasn't regulated by a dam. For Segment 6, Natural Flow is calculated as a function of reservoir storage gain and outflows. The main downstream user is Lethbridge North Irrigation District (LNID). The Lethbridge Northern Headworks Canal has a maximum capacity of 46.5 m^3/s, and a total annual license allocation of 412,540,000 m^3. The MD's annual licensed water allocations represent 0.07% of LNID's. Since 2001, LNID has taken an average of 57% of their licensed yearly volume.

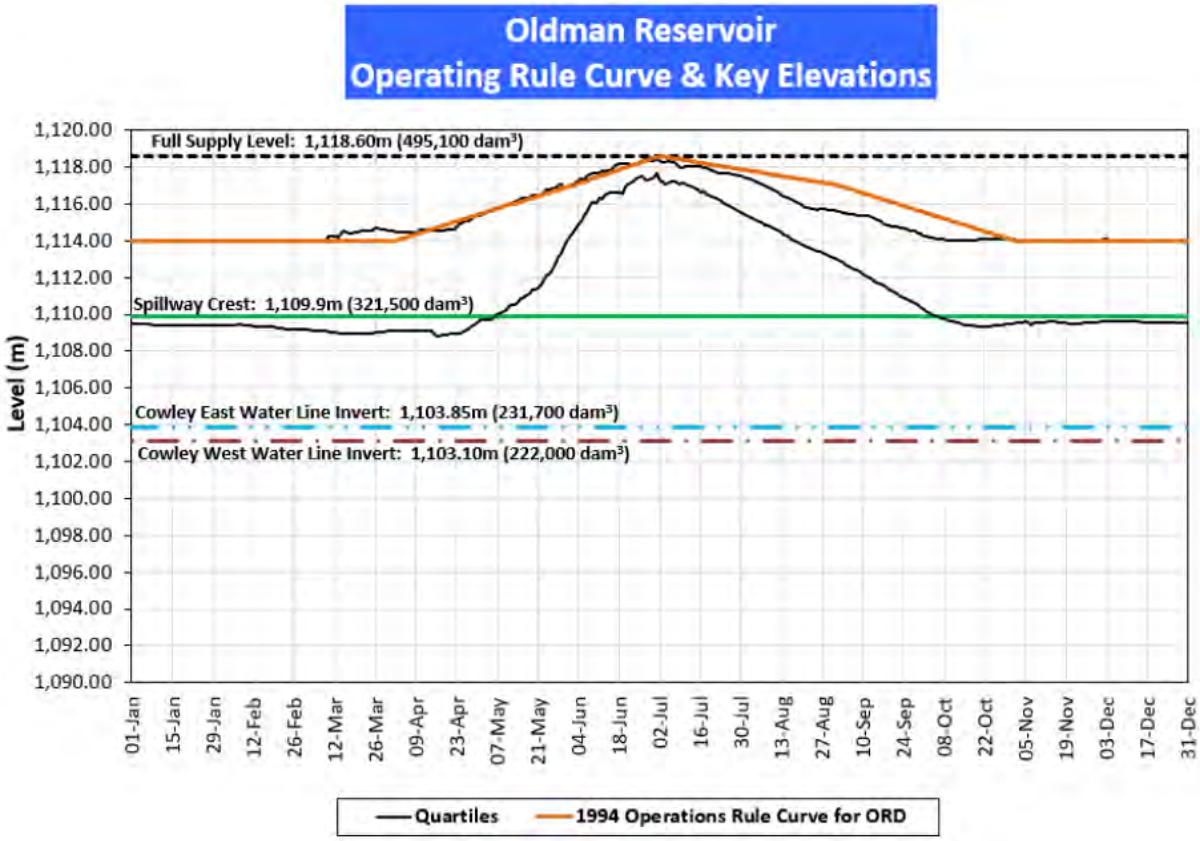


FIGURE 4: ALBERTA AGRICULTURE & IRRIGATION 1994 OPERATIONS RULE CURVE

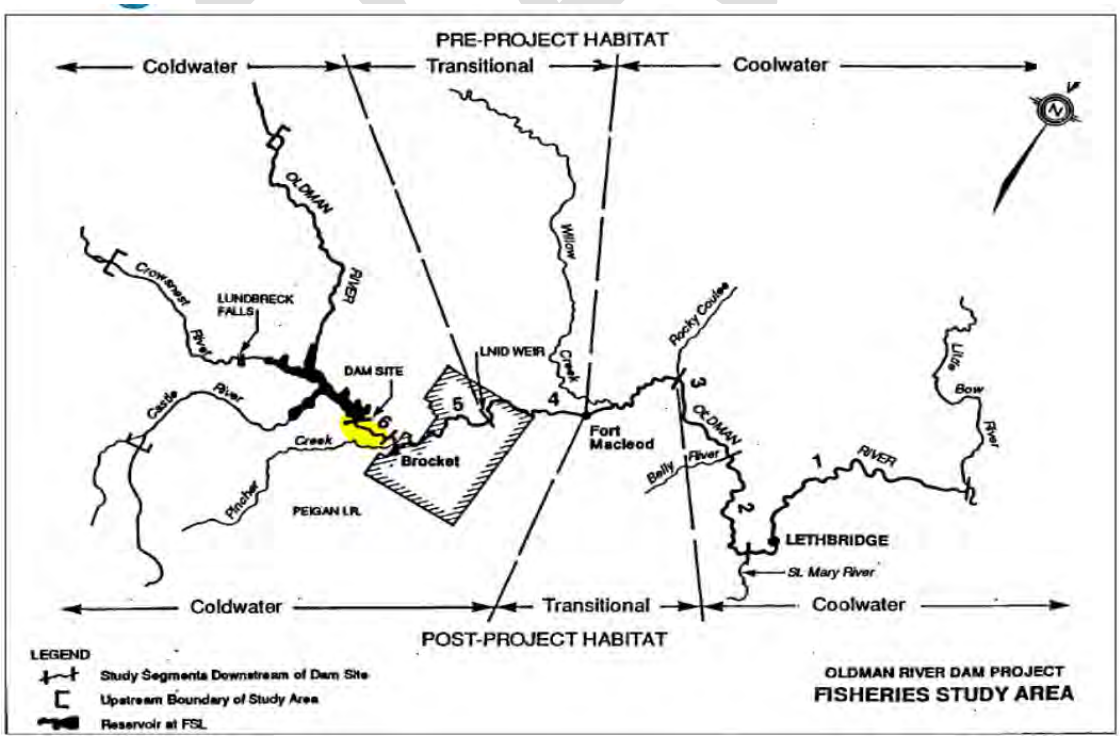


FIGURE 5: FISH RULE CURVE AREAS (SEGMENT 6 HIGHLIGHTED. MD SUBJECT TO RESTRICTIONS IN THIS SECTION)

TABLE 6: FISH RULE CURVE EXAMPLE (SEGMENT 4)

Segment 4. Values for Recommended Fish Rule Curve Flows with Naturalized Flows

LNID Weir to Rocky Coulee Confluence flow in cubic ***metres*** per second

% Exceed	Apr Nat	Apr FRC	May Nat	May FRC	Jun Nat	Jun 1-15 FRC	Jun 16-30 FRC	Jul Nat	Jul FRC	Aug Nat	Aug FRC	Sep Nat	Sep FRC	Oct Nat	Oct FRC	Nov Nat	Nov FRC
10	79.6	27.0	215.6	27.0	251.0	27.0	27.0	99.0	27.0	37.0	27.0	29.4	22.0	32.2	20.0	25.7	20.0
20	51.8	27.0	173.3	27.0	196.2	27.0	27.0	89.5	27.0	30.6	27.0	22.9	22.0	23.4	20.0	20.0	20.0
30	46.0	23.0	159.3	23.0	171.5	23.0	22.7	71.8	22.7	25.8	22.7	18.2	18.0	19.3	17.5	16.9	16.9
40	40.0	19.0	136.7	19.0	153.9	19.0	18.3	57.2	18.3	22.8	18.3	17.1	16.0	14.7	14.7	14.6	14.6
50	34.4	15.0	128.2	15.0	140.6	15.0	14.0	51.7	14.0	19.3	14.0	13.3	13.0	13.4	12.5	12.9	12.5
60	30.2	13.3	114.5	13.3	125.3	13.3	12.0	40.5	12.0	16.5	12.0	12.3	11.3	12.6	11.5	12.5	11.3
70	23.9	11.7	100.4	11.7	108.4	11.7	10.0	34.6	10.0	15.0	10.0	11.0	9.7	11.5	10.5	11.0	10.2
80	19.3	10.0	90.1	10.0	95.4	10.0	8.5	31.8	8.5	14.3	8.5	10.3	8.5	9.6	9.5	8.8	8.8
90	15.0	10.0	69.7	10.0	68.9	10.0	8.5	23.5	8.5	12.7	8.5	9.4	8.5	8.0	8.5	7.4	7.4

The operating plan is also subject to downstream constraints. In Winter (Dec. 1 – Mar. 15), the flow requirement upstream of Belly River is 6.5 m^3/s, and at Lethbridge is 11.5 m^3/s. IO of the South Saskatchewan River at Medicine Hat is 42.5 m^3/s (includes Oldman and Bow contributions), with Saskatchewan requiring a minimum 50% of flows crossing border.

3.5. OLDMAN RESERVOIR – HISTORICAL & OPERATING DATA CONCLUSIONS

Based on historic data, it would appear that the Operations Curve is met only about 25% of the time. Therefore, historic data is more useful to check when planning for future scenarios.

The historic data shows that the Oldman Reservoir level can fluctuate heavily with extreme lows possible during drought years. The level has dropped below the East Intake (P1101) & West Intake (P1102) elevation during the 2001/2002 season (prior to the installation of these intakes) and the 2023/2024 season. The intakes were constructed in 2019/2020. It would appear such an event could occur somewhere between 1:10 and 1:20 years, based on the limited 25 year dataset available. Therefore, it is important to prepare for such inevitable scenarios, despite the operations curve desired levels.

3.6. MD WATER SYSTEM LIMITATIONS DURIGING PERIODS OF DROUGHT – SUMMARY

Limitations related to available flow from P1103 and P1104 are highly hypothetical and impossible to fully test while the reservoir level is high. The ability to draw from P1103 and P1104 will be affected by the level of the Oldman Reservoir. The most severe hypothetical scenario would be when the level drops below all pump intakes (1098.9m) as shown in **Table 3.**

Initial pump test results during construction of P1103 and P1004 calculated that the MD should be able to draw a combined 533 m3/d from the intakes (based on the theoretical long term yield of these intakes), due to their hydraulic connection to the Crowsnest River. It's possible this estimate may be overly conservative, but there would be a desire to avoid testing excess draw as this could result in a need for water source augmentation (trucking) if the limit was met after a sustained period of time, prematurely drawing down aquifer levels.

The overall demand on the Reservoir and Oldman River system are extremely small compared to overall water basin needs. The reservoir holds 495,000 dam^3. The forecasted annual demand from the MD system (roughly 300,000 m^3) makes up 0.06% of this volume.

The primary reason for water restrictions on the MD regional system is to avoid the need to augment supply due to demand exceeding supply system capabilities.

4. WATER SHORTAGE RESPONSE PLAN

As mentioned in the sections above, the primary reason for water restrictions on the MD regional system would be to avoid the need to augment supply by reducing demand. Augmenting water supply could be necessary under a few scenarios:

1) Major failure somewhere in the Transmission/Distribution system (piping/tanks/pumps) reducing MD's ability to transfer water via existing infrastructure to all customers
2) Major leak in Transmission/Distribution system that cannot be easily isolated, temporarily increasing overall system demand
3) Contamination of raw water supply beyond treatment capabilities of water plant
4) Reservoir water level drops below P1101 and P1102 intakes, and supply cannot keep up with demand due to:
    a) Consistent customer demand exceeding 533 m^3/d (Theoretical long term yield of P1103 and P1104)
    b) Temporary downtime on P1103 or P1104 intakes or treatment processes related failure in water plant decreasing available supply

Scenarios 1 to 3 (or similar) would generally be unforeseeable, and the level of response would be dependant on the severity of the issue.

Scenario 4 can be planned for, with water restrictions put in place in an attempt to avoid costly water supply augmentation wherever feasible. There may be other potential scenarios that cannot be easily foreseen.

If a water shortage occurs, the MD will be required to initiate a response plan to reduce consumption. In more severe scenarios, augmentation of available water supply could be necessary.

4.1. WATER SHORTAGE – SEVERITY ASSESSMENT

The MD has thoroughly reviewed historic levels in the Oldman reservoir in relation to critical elevations to create a tool to guide the MD's Water Shortage Response Plan, the "Water Shortage Response Plan Stage Recommendation Calculator". The tool is intended to be used in conjunction with this WSRP to help recommend restriction stages for various water shortage scenarios.

The tool takes into account:

Water Conservation Risks

- Current reservoir levels as they compare to average water levels during the same time frame for historical records from 1999-2024 are also used to assess potential seasonal shortages by comparing:
    - Lower quartile and various lower percentile cases from the historical data
    - The pace of which reservoir levels are dropping compared to historical averages
- Alberta Environment & Protected Areas (AEPA) Rivers Alberta Water Supply Forecasts and the status of Snow Pillows (Snow water equivalent) in the Oldman River Basin

System Operations Risks

- Acute failures or system contaminations, the level of impact on transmission and distribution systems (i.e. a few residents vs. multiple Hamlets), as well as the length of time anticipated to address downtimes
- Anticipated upcoming raw water pump availability of the four (4) available intakes, and anticipated downtime related to unavailable pumps

Demand Risks

- Acute leaks in the transmission or distribution system which cannot be easily isolated/bypassed, along with the severity, and length of time anticipated to resolve
- Actual demand over last 48 hours and 7 days

The tool combines these risks to provide a *Total Water Shortage Risk Score*, which guides a stage recommendation intended to limit system demands and risk.

More details related to the tools calculations and an example calculation are shown in **Appendix B.**

Note that tool is not all encompassing and should only be used by Managers and Senior Water Operations as a basis for decision recommendations related to shortages. There may be other factors related to a specific shortage that were not accounted for during the development of the tool that the user must take into account alongside the tools recommendations.

Managers and Senior Water Operations should be cognisant of the work required to change stages, and confusion continued rule changes can cause among the public when selecting a shortage stage. Avoid rapid fluctuations in Stage prescriptions when reasonable.

The tool can be found on the MD Server at:

- *\\mdserver\Documents\Infrastructure\MyDocuments\Facilities\04_Water\00_General\02_Water Shortage Response\01_Plan*
- For unprotected access, contact senior water management or the MD IT department

Revision 0 was published at the same time as this WSRP Revision.

4.2. WATER SHORTAGE – DEMAND REDUCTION

Table 7 provides brief descriptions of the types of water restrictions required. **Tables 8-10** contain detailed response plans for residential, commercial/industrial, institutional, and bulk water/sewer fill users. The plans implement strategies to reduce water demand throughout various stages of the WSRP, and ultimately eliminate all non-essential water use in extreme water shortages. The primary objective of the demand reduction strategies is to avoid or minimize the need to implement water augmentation strategies.

TABLE 7: SUMMARY OF WATER SHORTAGE RESPONSE PLAN TRIGGER CRITERIA

Stage	Restriction Details
Normal Levels	No Restrictions
Warning	None; Advisory notices in effect to provide ample warning that water shortage restrictions are likely/imminent and encourage limiting usage
1	Begin limiting non-essential water use (i.e. lawn and garden watering limited to 4 days/week)
2	Further limit non-essential water use only (lawns and gardens watering limited to 2 days/week)
3	Further limit non-essential water use (i.e. lawn and garden watering limited to 1 day/week); Essential water use to be monitored. Alternatives put in place where feasible
4	Prohibit all automated water use; non-essential water use limited to sanitation purposes and food gardens only; Monitor essential water use; water supply augmentation may be required.
5	All non-essential water user prohibited; non-essential water use limited to sanitation purposes only; Monitor essential water use; water supply augmentation required.
State of Emergency	All non-essential water use prohibited; limit essential water use; Additional restrictions may be necessary; significant resources required to maintain water supply augmentation

TABLE 8: DEMAND REDUCTION STRATEGY FOR RESIDENTIAL USERS

<table>
<tr><th>Line</th><th colspan="2">Activity</th><th>Normal/ Warning</th><th>Stage 1</th><th>Stage 2</th><th>Stage 3</th><th>Stage 4</th><th>Stage 5</th></tr>
<tr><td rowspan="3">A</td><td rowspan="3">Lawn & Aesthetic Garden Manual Sprinkling</td><td>General</td><td rowspan="9">No Restrictions
Recommended that watering occur between 6AM-10AM; 7PM-11PM</td><td colspan="3">Watering allowed on assigned days 6AM-10AM; 7PM-11PM</td><td rowspan="3">PROHIBITED
Use of MD water through sprinklers for all forms of lawn, garden, and aesthetic plant watering prohibited</td><td rowspan="11">PROHIBITED
MD water use prohibited pending approval</td></tr>
<tr><td>Odd Address Schedule</td><td>Mon;Tues;Thurs;Sat.</td><td>Tues; Fri</td><td>Tues</td></tr>
<tr><td>Even Address Schedule</td><td>Tues;Wed;Fri;Sun.</td><td>Mon; Thurs</td><td>Mon</td></tr>
<tr><td rowspan="3">B</td><td rowspan="3">Lawn & Aesthetic Garden Automatic Sprinkling</td><td>General</td><td colspan="3">Watering allowed on assigned days 12AM-6AM</td></tr>
<tr><td>Odd Address Schedule</td><td>Mon;Tues;Thurs;Sat.</td><td>Tues; Fri</td><td>Tues</td></tr>
<tr><td>Even Address Schedule</td><td>Tues;Wed;Fri;Sun.</td><td>Mon; Thurs</td><td>Mon</td></tr>
<tr><td>C</td><td colspan="2">Lawn & Aesthetic Garden Micro or Drip Irrigation</td><td rowspan="3">Any day between 6AM-10AM; 7PM-11PM</td><td>4 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td><td>2 Days, Sched. Per Line A 6AM-10AM; 7PM-11PM</td><td rowspan="2">1 Day, Sched. Per Line A 6AM-10AM & 7PM-12AM</td></tr>
<tr><td>D</td><td colspan="2">Lawn & Aesthetic Garden Hand Watering</td><td>4 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td><td>2 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td></tr>
<tr><td>E</td><td colspan="2">New Lawns and Landscaping</td><td>Permit Required
Refer to Lines A-D</td><td>No new permits issued</td><td rowspan="2">PROHIBITED
Use of MD water for new lawns, landscaping, pools, hot tubs prohibited</td></tr>
<tr><td>F</td><td colspan="2">Garden Ponds, Fountains, Water Features, Ice/Arena, Hot Tubs, Pools</td><td>Fill & Refill 2 times/week (Wed; Sun)</td><td>Fill & Refill 1 time/week (Wed)</td><td>Fill & Refill for health & safety only</td></tr>
<tr><td>G</td><td colspan="2">Cleaning Outdoor Surfaces (driveways, sidewalks, etc.)</td><td colspan="2" rowspan="2">No Restrictions
Use of brush and bucket, spring loaded nozzle, and/or wand washer permitted</td><td colspan="3">Cleaning with a hose and/or wand wash for health and safety only.</td></tr>
<tr><td>H</td><td colspan="2">Vehicle (car, boat, etc.) Washing</td><td colspan="3">Wand wash only.</td></tr>
<tr><td>I</td><td colspan="2">Artificial Turf and Tracks</td><td colspan="5">Cleaning with a hose and/or wand wash for health and safety only.</td></tr>
<tr><td>J</td><td colspan="2">Essential Watering (personal food garden)</td><td colspan="2">No Restrictions
Recommended that watering occur between 6AM-10AM; 7PM-11PM</td><td colspan="2">Any day between 6AM-10AM;7PM-11PM</td><td>4 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td><td>2 Days, Sched. per Line A 6AM-10AM; 7PM-11AM</td></tr>
<tr><td>K</td><td colspan="2">Essential Water Use (drinking, sanitary, cooking, cleaning, laundry, personal cleaning)</td><td colspan="3">No Restrictions</td><td colspan="2">Limit essential use where feasible and reuse water</td><td>2 Days, Sched. per Line A 9AM-8PM;
Limit laundry, cleaning (when feasible)</td></tr>
</table>

TABLE 9: DEMAND REDUCTION STRATEGY FOR COMMERCIAL/INDUSTRIAL USERS

<table>
<tr><th>Line</th><th colspan="2">Activity</th><th>Normal/ Warning</th><th>Stage 1</th><th>Stage 2</th><th>Stage 3</th><th>Stage 4</th><th>Stage 5</th></tr>
<tr><td rowspan="3">A</td><td rowspan="3">Lawn & Aesthetic Garden for Sale Manual Sprinkling</td><td>General</td><td rowspan="11">No Restrictions
Recommended that watering occur between 6AM-10AM; 7PM-11PM</td><td colspan="3">Watering allowed on assigned days 6AM-10AM; 7PM-11PM</td><td rowspan="4">PROHIBITED
Use of MD water through sprinklers for all forms of lawn, garden, and aesthetic plant watering prohibited</td><td rowspan="11">PROHIBITED
MD water use prohibited pending approval
2 Days, Sched. per Line A 9AM-8PM;
Limit laundry, cleaning (when feasible)</td></tr>
<tr><td>Odd Address Schedule</td><td>Mon;Tues;Thurs;Sat.</td><td>Tues; Fri</td><td>Wed</td></tr>
<tr><td>Even Address Schedule</td><td>Tues;Wed;Fri;Sun.</td><td>Mon; Thurs</td><td>Thurs</td></tr>
<tr><td rowspan="3">B</td><td rowspan="3">Lawn & Aesthetic Garden for Sale Automatic Sprinkling</td><td>General</td><td colspan="3">Watering allowed on assigned days 12AM-6AM</td></tr>
<tr><td>Odd Address Schedule</td><td>Mon;Tues;Thurs;Sat.</td><td>Tues; Fri</td><td>Wed</td></tr>
<tr><td>Even Address Schedule</td><td>Tues;Wed;Fri;Sun.</td><td>Mon; Thurs</td><td>Thurs</td></tr>
<tr><td>C</td><td colspan="2">Lawn & Aesthetic Garden for Sale Micro or Drip Irrigation</td><td rowspan="3">No Restrictions
Recommended that watering occur between 6AM-10AM; 7PM-11PM</td><td rowspan="2">Any day between 6AM-10AM; 7PM-11PM</td><td rowspan="2">4 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td><td rowspan="2">2 Days, Sched. Per Line A 6AM-10AM; 7PM-11PM</td></tr>
<tr><td>D</td><td colspan="2">Lawn & Aesthetic Garden for Sale Hand Watering</td></tr>
<tr><td>E</td><td colspan="2">New Lawns and Landscaping</td><td rowspan="2">Permit Required
Refer to Lines A-D</td><td rowspan="2">No new permits issued</td><td rowspan="2">PROHIBITED
Use of MD water for new lawns, landscaping, pools, hot tubs prohibited</td></tr>
<tr><td>F</td><td colspan="2">Garden Ponds, Fountains, Water Features, Ice/Arena, Hot Tubs, Pools</td><td>Fill & Refill 2 times/week (Wed; Sun)</td><td>Fill & Refill 1 time/week (Wed)</td><td>Fill & Refill for health & safety only</td></tr>
<tr><td>G</td><td colspan="2">Cleaning Outdoor Surfaces (driveways, sidewalks, etc.)</td><td colspan="2">No Restrictions
Use of brush and bucket, spring loaded nozzle, and/or wand washer permitted</td><td colspan="3">Cleaning with a hose and/or wand wash for health and safety only.</td></tr>
<tr><td>H</td><td colspan="2">Vehicle Washing Commercial, Fleets, Dealers</td><td colspan="2">No Restrictions
Use a commercial car wash or spring-loaded nozzle</td><td colspan="3">Wand wash and automated car washes only.</td></tr>
<tr><td>I</td><td colspan="2">Artificial Turf and Tracks</td><td colspan="5">Cleaning with a hose and/or wand wash for health and safety only.</td></tr>
<tr><td>J</td><td colspan="2">Essential Food Business Watering For Sale</td><td colspan="3">No Restrictions
Recommended that watering occur between 6AM-10AM; 7PM-11PM</td><td>Any day between 6AM-10AM;7PM-11PM</td><td>4 Days, Sched. per Line A 6AM-10AM; 7PM-11PM</td></tr>
<tr><td>K</td><td colspan="2">Essential Business Water Use (drinking, sanitary, cooking, cleaning, brewing, primary business functions)</td><td colspan="3">No Restrictions</td><td colspan="2">Limit essential use where feasible via bottled/ or trucked water from other sources, and reuse water</td></tr>
</table>

TABLE 10: DEMAND REDUCTION STRATEGY FOR INSTITUTIONAL, PUBLIC, AND COMMUNITY USES

<table>
<tr><th>Line</th><th>Activity</th><th>Normal/ Warning</th><th>Stage 1</th><th>Stage 2</th><th>Stage 3</th><th>Stage 4</th><th>Stage 5</th></tr>
<tr><td>A</td><td>Bulk Water Fill Stations</td><td colspan="3">Refer to planned end use in Tables 8, 9, and 10. Restrictions still apply depending on usage purpose</td><td colspan="3">PROHIBITED
Use of MD Water (Cowley, Beaver Mines Bulk Fill) prohibited, excluding during shutdowns to Town of Pincher Creek bulk fill station. Use alternate treated water sources such as Town of Pincher</td></tr>
<tr><td>B</td><td>Sanitary RV Stations</td><td colspan="3">Cleaning with a hose and/or wand wash for health and safety only. No water filling allowed (non-sanitary)</td><td colspan="3">PROHIBITED
Use alternate treated water sources such as Town of Pincher</td></tr>
<tr><td>C</td><td>School Yards, Sports Fields, and Baseball Diamonds</td><td>No Restrictions
Recommended watering occur between 6AM-10AM; 7PM-11PM</td><td>Mon;Tues;Thurs;Sat
6AM-10AM; 7PM-11PM</td><td>Tues; Fri
6AM-10AM; 7PM-11PM</td><td>Thurs
6AM-10AM; 7PM-11PM.
Minimum application to maintain usability</td><td colspan="2" rowspan="3">PROHIBITED
Use of MD treated water for all irrigation and recreational purposes is prohibited</td></tr>
<tr><td>D</td><td>Aesthetic Fountains and Water Features</td><td colspan="2">No Restrictions
Recirculating water only</td><td>Filling prohibited unless recycled, reclaimed, or rainwater</td><td>Filling and refilling prohibited. Drain to avoid health & safety issues</td></tr>
<tr><td>E</td><td>Parks and Cemeteries</td><td rowspan="2">No Restrictions
Recommended watering occur between 6AM-10AM; 7PM-11PM</td><td rowspan="2">Mon;Tues;Thurs;Sat
6AM-10AM; 7PM-11PM</td><td rowspan="2">Tues; Fri
6AM-10AM; 7PM-11PM</td><td rowspan="2">Thurs
6AM-10AM; 7PM-11PM.
Minimum application to maintain usability</td></tr>
<tr><td>F</td><td>Aesthetic Lawns and Grass Boulevards</td></tr>
<tr><td>G</td><td>Municipal Water and Sewer Main Flushing and Hydrant Maintenance</td><td colspan="2">No Restrictions</td><td colspan="4">Unscheduled safety or public health reasons only. Flushing to ensure free chlorine residual only.</td></tr>
<tr><td>H</td><td>Artificial Turfs and Tracks</td><td colspan="4">Cleaning with a hose and/or wand wash for health and safety only.</td><td colspan="2">PROHIBITED
Use of MD treated water for recreational purposes is prohibited</td></tr>
<tr><td>I</td><td>Fleet Vehicle Washing</td><td colspan="2">No Restrictions
Use of brush and bucket, spring loaded nozzle, and/or wand washer permitted</td><td colspan="3">Wand wash and automated wash only. Restrict washing to essential only</td><td colspan="2">PROHIBITED
Use alternate sources</td></tr>
<tr><td>J</td><td>Essential Water Use (drinking, sanitary, cleaning)</td><td colspan="3">No Restrictions</td><td colspan="2">Limit essential use where feasible and reuse water</td><td>Use alternate sources wherever possible</td></tr>
<tr><td>K</td><td>Use of water from alternate sources (untreated, Town of Pincher Creek treated)</td><td colspan="6">Restrictions do not fall under this Water Shortage Response Plan. Refer to alternate source for restrictions</td></tr>
</table>

The water use restrictions in **Tables 8-10** above apply to all facilities controlled and operated by the MD and other communities on the MD's treated water system, including, but not limited to facilities operated by Castle Mountain Resort, the Village of Cowley, and Castle Provincial Park.

4.3. SUPPLY AUGMENTATION

In response to a water leak, isolated contamination, a break in the Transmission/Distribution system, or an extreme water shortage event, the MD may be forced to augment water supply to some or all communities. During a water shortage event caused by a drop in reservoir levels, temporary pumping solutions can be very challenging and costly. Depending on the anticipated length of downtime and current ability to meet supply versus demand with available pumping systems, it is anticipated that temporary water hauling will be more effective over the course of most water shortage events. This assumption should be confirmed prior to implementing any long term (1+ month) trucking plans, if necessary.

4.3.1. WATER HAULING

Where localized or complete demand cannot be met throughout the MD's water system, trucking may be required. The MD has the ability to accept both raw and treated water at the WTP. **Appendix A – Figure 6** summarizes important locations related to water hauling.

4.3.1.1. RAW WATER

Raw water must be trucked to the WTP. There is a dedicated raw water offload port located on the Old Cowley WTP building. This activity requires full time operator oversight. A Temporary Diversion License (TDL) from AEPA will be required to haul raw water. Possible fill locations include downstream of the reservoir and the Todd Creek Day Use Area. The Oldman River Hydro Station can also be setup to draw raw water from, although such an operation requires the facility be manned at additional cost. ATCO currently owns and operates the site.

4.3.1.2. TREATED WATER

Treated water can be trucked to various locations in the system if necessary. Trucking potable water in requires full time operator oversight. There is a dedicated treated water offload port located on the Old Cowley WTP building. Alternate potential fill locations are shown in **Appendix A – Figure 6**, although it is preferable to unload at the WTP whenever feasible to ensure operator oversight. Large truck access is also much easier at the WTP as a through road exists. Hydrants could be used as fill locations throughout the system with additional operator oversight, when necessary. The MD could also hire water trucks to be staitioned for direct delivery to customers in severe cases. There are contractors in the Town of Pincher Creek whom have dedicated fill ports which can be used for treated water hauling. Operators must ensure the trucks are certified to haul potable water only, and verify source water compatibility.

4.3.2. TEMPORARY RAW WATER PUMPING

In severe water shortage scenarios, temporary raw water pumping setups may be feasible or necessary to reduce the cost of water supply augmentation. During a water shortage event caused by a drop in reservoir levels, temporary pumping solutions become very challenging due to factors such as:

- High silt content of the flowing Crowsnest River near the intakes
- Winter freezing/work challenges (if applicable)
- Access challenges in reservoir (saturated reservoir bed, snow/ice)
- Permitting requirements to draw from River near the existing intakes

Refer to the Implementation report in **Appendix C** for details on the temporary pump setup installed in December, 2023.

A significant drop in reservoir level can be expected to dramatically increase silt content of surface water for an extended period. Other temporary setups may be feasible to pump directly to the MD's Raw Water Intake Building. Access to water (reservoir becomes very muddy as levels drop), pre-filtration requirements (WTP cannot handle excess raw water turbidity), and temperature considerations (reservoir levels typically drop approaching Winter) limit the ability to implement solutions related to temporary pumping.

5. MONITORING

The MD shall document any triggers of demand reduction in a single location.

Stage 1 and 2 demand reductions shall require a brief report detailing the timeline of events and conclusions drawn from the triggers.

Stage 3 demand reductions shall include a recommendations section for revising the water shortage response plan to prevent the future need for response.

Stage 4 and above demand reductions shall require the Municipality to complete the same steps required for Stage 1-3 reduction. The Municipality shall also revise the water shortage response plan in the case of a Stage 4 reduction trigger in an effort to re-evaluate water supply outlooks and prevent future significant shortages.

APPENDIX A – Regional Water System WSRP - Tables & Figures

TABLE 11: LIST OF TRANSMISSION LINE WATER CONNECTIONS

SERVICE LOCATIONS	
ID No.	LAND DESCRIPTION
1	SE26 7-2-W5M
2	NW24 7-2-W5M
3	NW24 7-2-W5M
4	NE24 7-2-W5M
5	NW19 7-1-W5M
6	NE19 7-1-W5M
7	NW20 7-1-W5M
8	NE20 7-1-W5M
9	SW28 7-1-W5M
10	NW28 7-1-W5M
11	NW21 7-1-W5M
12	SE22 7-1-W5M
13	SW10 6-2-W5M
14	NW34 6-1-W5M
15	SE29 6-1-W5M
16	SW29 6-1-W5M
17	SE30 6-1-W5M
18	SW30 6-1-W5M
19	SE25 6-2-W5M
20	SE24 6-2-W5M
21	NE23 6-2-W5M
22	SE22 6-2-W5M
23	SE15 6-2-W5M
24	SW4 6-2-W5M
25	NE25 5-3-W5M
26	NW25 5-3-W5M
27	SW22 5-3-W5M
28	SE21 5-3-W5M
29	SW16 5-3-W5M
30	SE01 5-4-W5M

MPE
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MUNICIPAL DISTRICT OF PINCHER CREEK

WATER SHORTAGE RESPONSE PLAN
REGIONAL WATER SYSTEM NETWORK
3 OF 3

SCALE:	DATE: JANUARY 2024	JOB: 1770-018-00	FIGURE: 3

FIGURE 6: WATER SUPPLY AUGMENTATION - IMPORTANT LOCATIONS

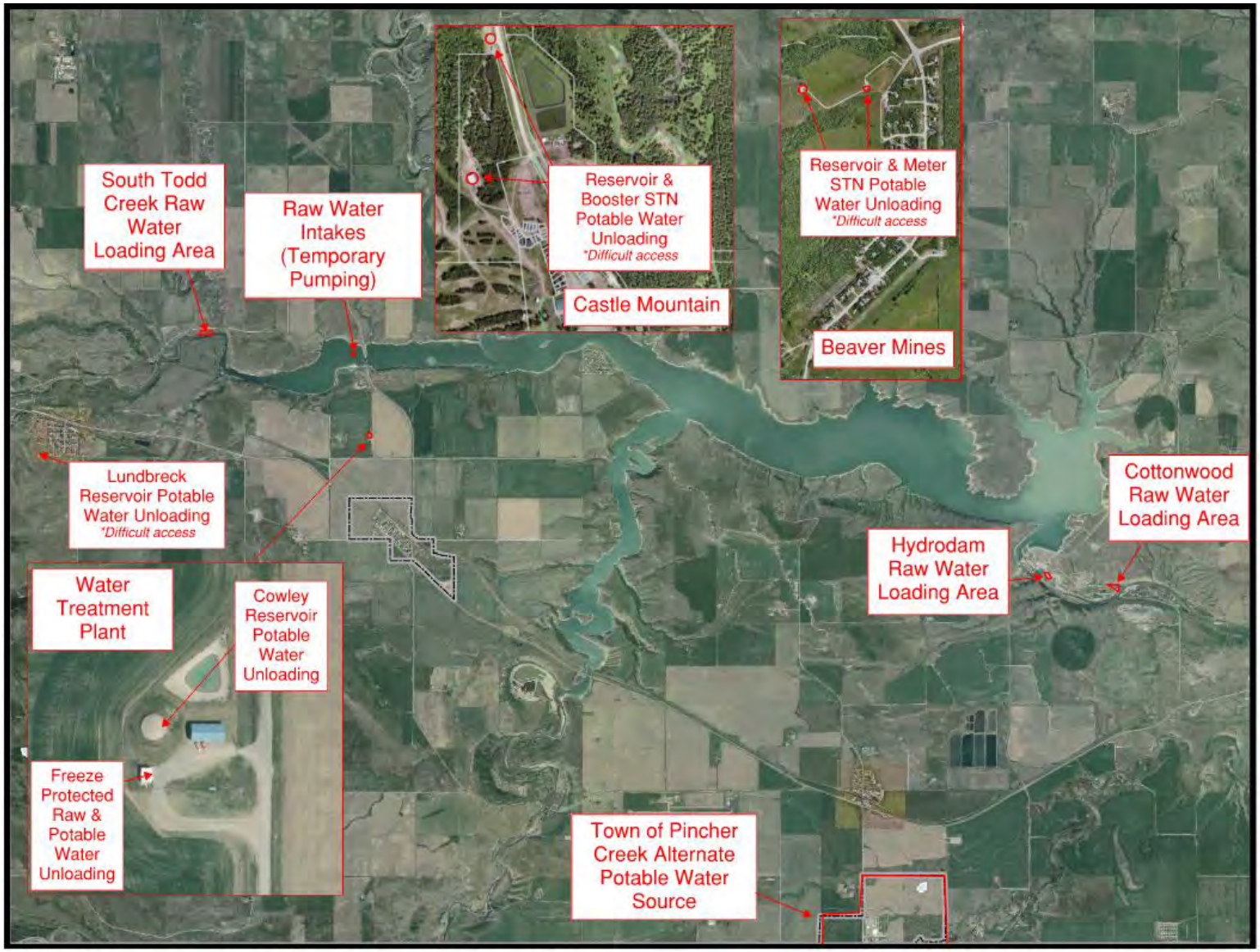


FIGURE 7: REGIONAL WATER SUPPLY RAW WATER STATION INTAKE P&ID (P1101/02/03/04)

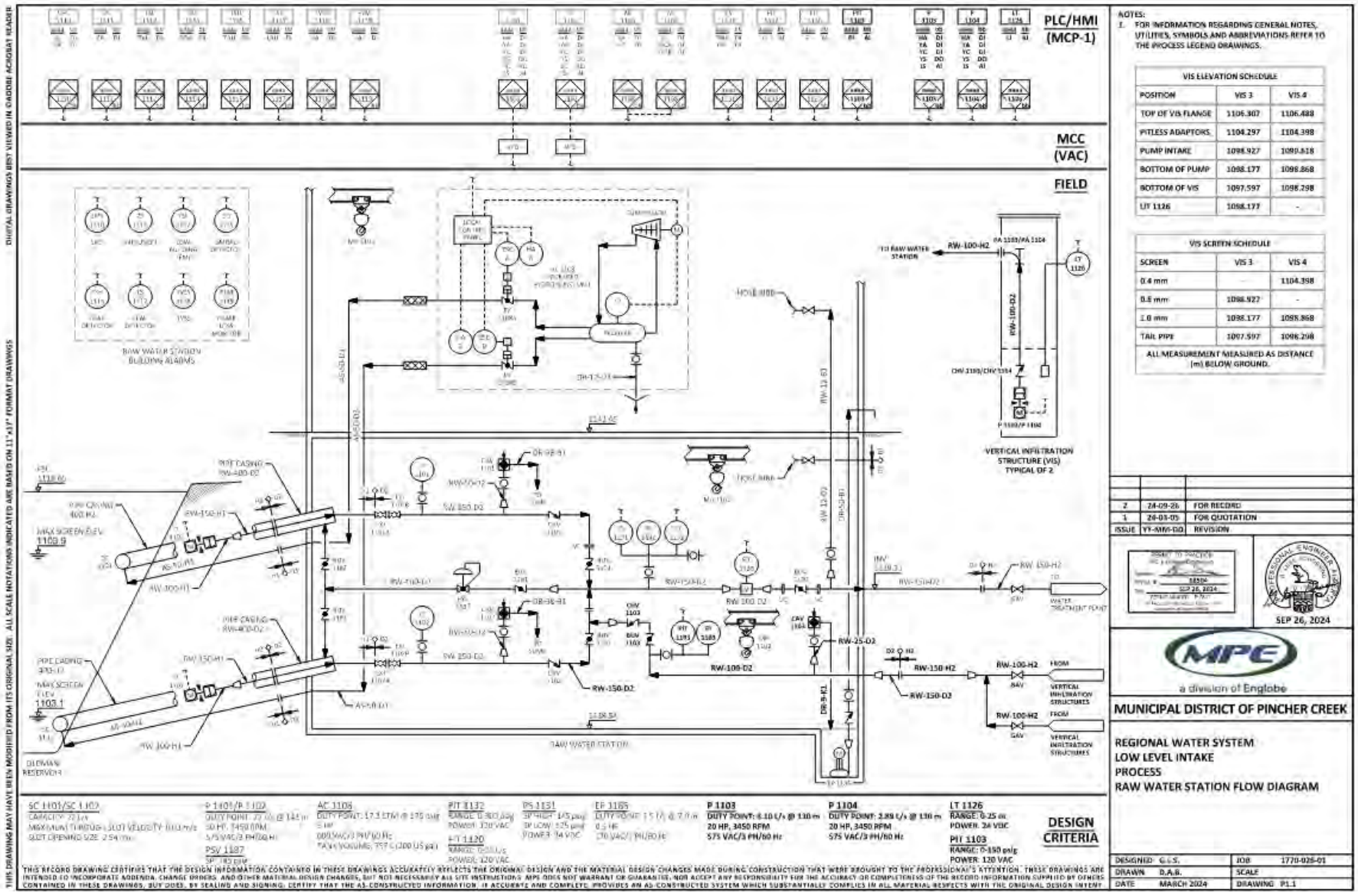


FIGURE 8: REGIONAL WATER SUPPLY – INTAKE SITE PLAN (P1103/1104)

FIGURE 9: REGIONAL WATER SUPPLY – INTAKE SITE PLAN & PROFILE (P1103/1104; P1101/02 NOT SHOWN)

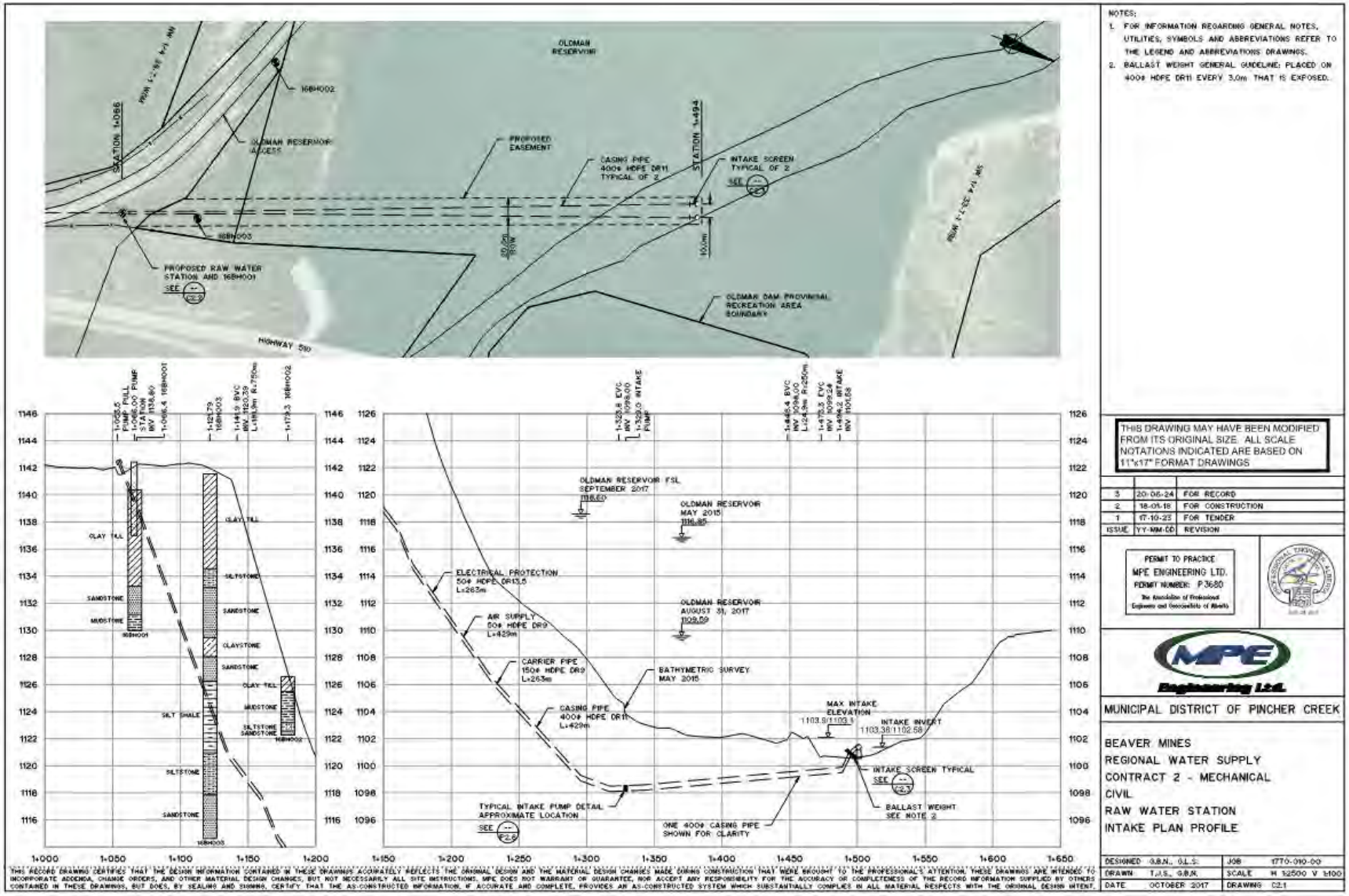
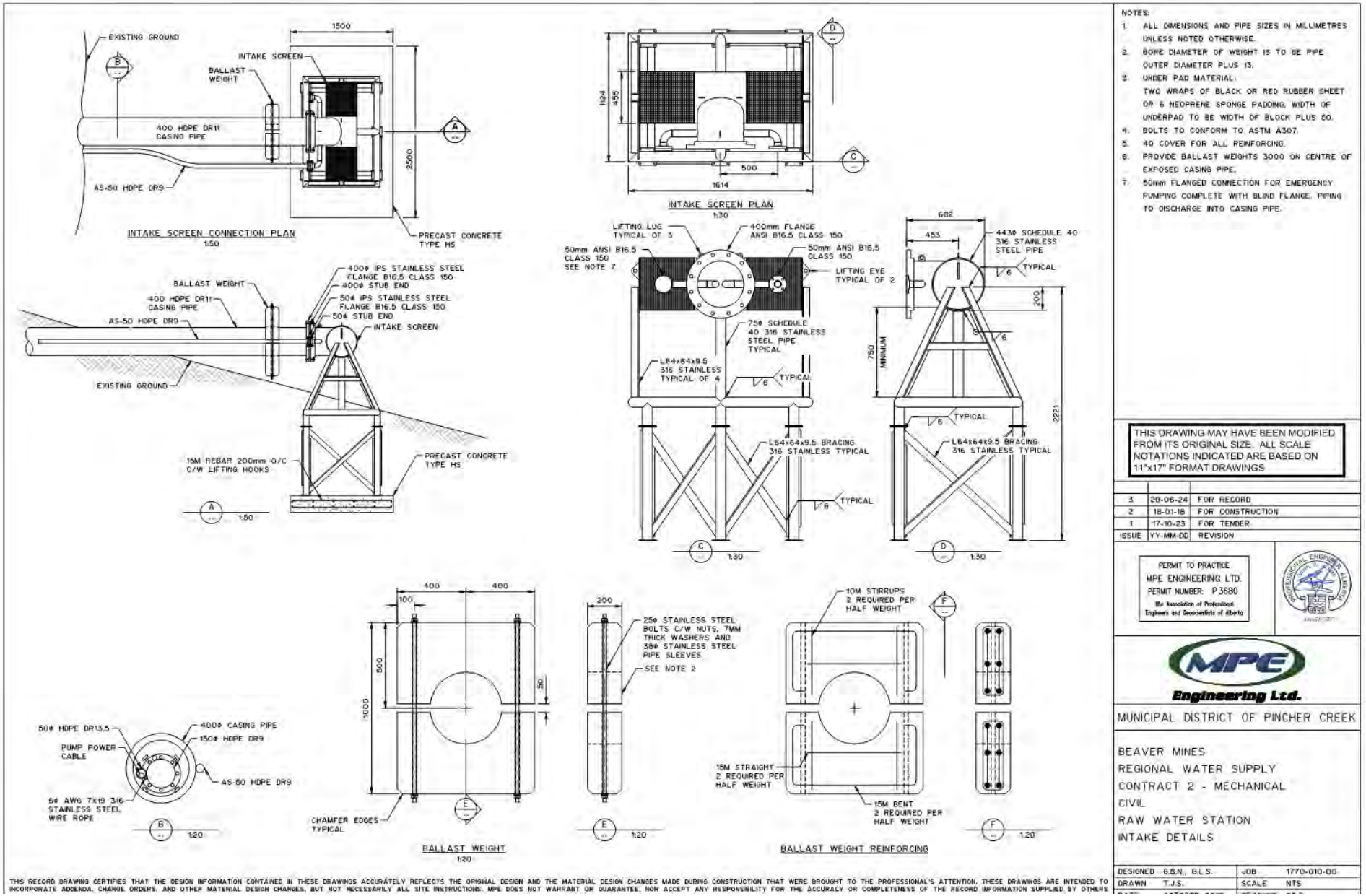


FIGURE 10: REGIONAL WATER SUPPLY RAW WATER INTAKE DETAILS (P1101/02)



NOTES:
1. ALL DIMENSIONS AND PIPE SIZES IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. BORE DIAMETER OF WEIGHT IS TO BE PIPE OUTER DIAMETER PLUS 13.
3. UNDER PAD MATERIAL:
   TWO WRAPS OF BLACK OR RED RUBBER SHEET ON 6 NEOPRENE SPONGE PADDING. WIDTH OF UNDERPAD TO BE WIDTH OF BLOCK PLUS 50.
4. BOLTS TO CONFORM TO ASTM A307.
5. 40 COVER FOR ALL REINFORCING.
6. PROVIDE BALLAST WEIGHTS 3000 ON CENTRE OF EXPOSED CASING PIPE.
7. 50mm FLANGED CONNECTION FOR EMERGENCY PUMPING COMPLETE WITH BLIND FLANGE. PIPING TO DISCHARGE INTO CASING PIPE.

THIS DRAWING MAY HAVE BEEN MODIFIED FROM ITS ORIGINAL SIZE. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS

ISSUE	YY-MM-DD	REVISION
3	20-06-24	FOR RECORD
2	18-01-18	FOR CONSTRUCTION
1	17-10-23	FOR TENDER

PERMIT TO PRACTICE
MPE ENGINEERING LTD.
PERMIT NUMBER: P 3680
The Association of Professional Engineers and Geoscientists of Alberta

MPE Engineering Ltd.

MUNICIPAL DISTRICT OF PINCHER CREEK

BEAVER MINES
REGIONAL WATER SUPPLY
CONTRACT 2 - MECHANICAL
CIVIL
RAW WATER STATION
INTAKE DETAILS

DESIGNED	G.B.N., G.L.S.	JOB	1770-010-00
DRAWN	T.J.S.	SCALE	NTS

THIS RECORD DRAWING CERTIFIES THAT THE DESIGN INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN AND THE MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION THAT WERE BROUGHT TO THE PROFESSIONAL'S ATTENTION. THESE DRAWINGS ARE INTENDED TO INCORPORATE ADDENDA, CHANGE ORDERS, AND OTHER MATERIAL DESIGN CHANGES, BUT NOT NECESSARILY ALL SITE INSTRUCTIONS. MPE DOES NOT WARRANT OR GUARANTEE, NOR ACCEPT ANY RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE RECORD INFORMATION SUPPLIED BY OTHERS

FIGURE 11: RAW WATER INTAKE AND WATER TREATMENT PLANT OVERVIEW

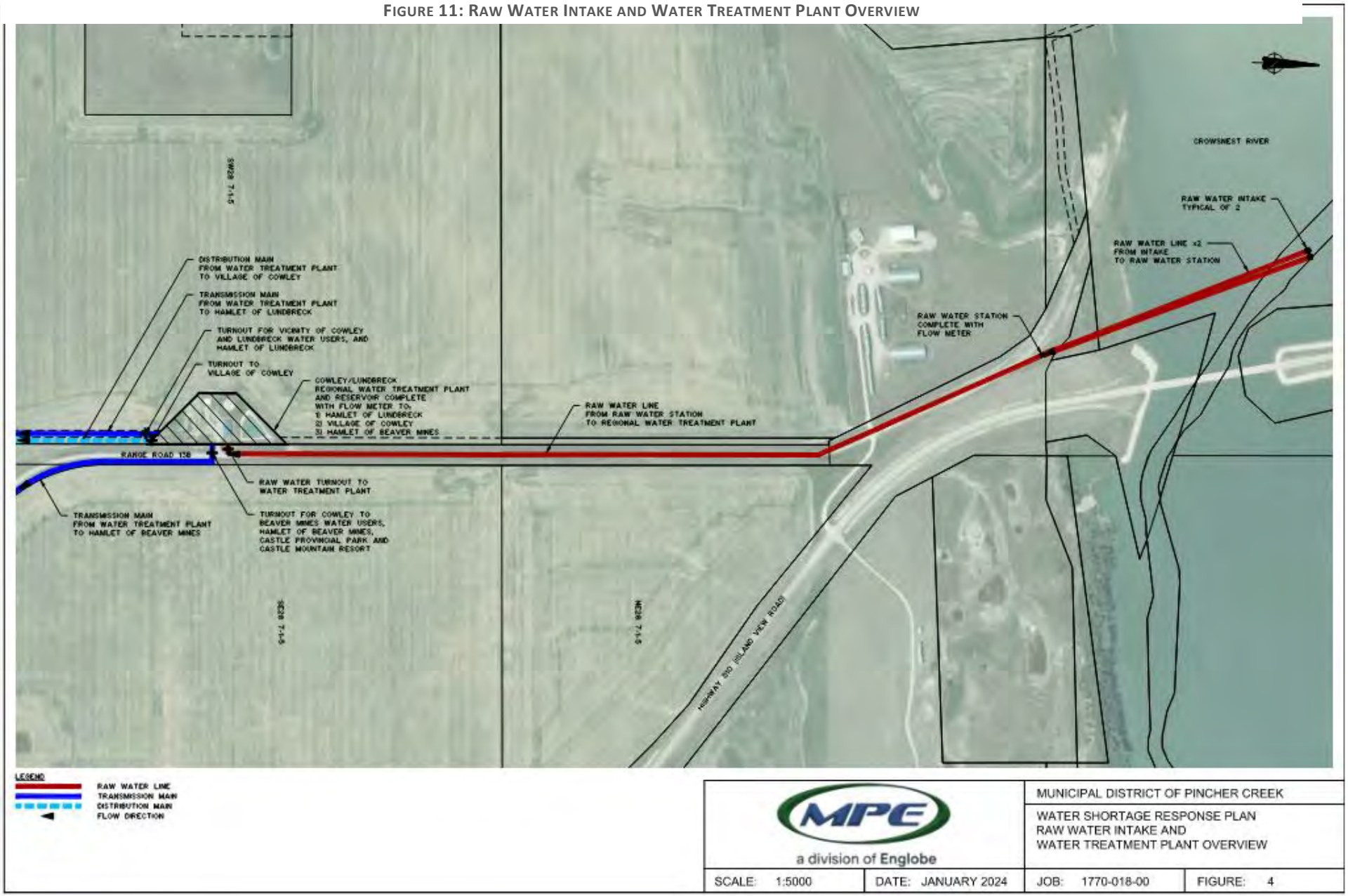


FIGURE 12: VICINITY OF LUNDBRECK AND COWLEY (ORANGE STARS) & COWLEY TO BEAVER MINES (PINK STARS) WATER USERS –TRANSMISSION PIPELINE CURBSTOPS

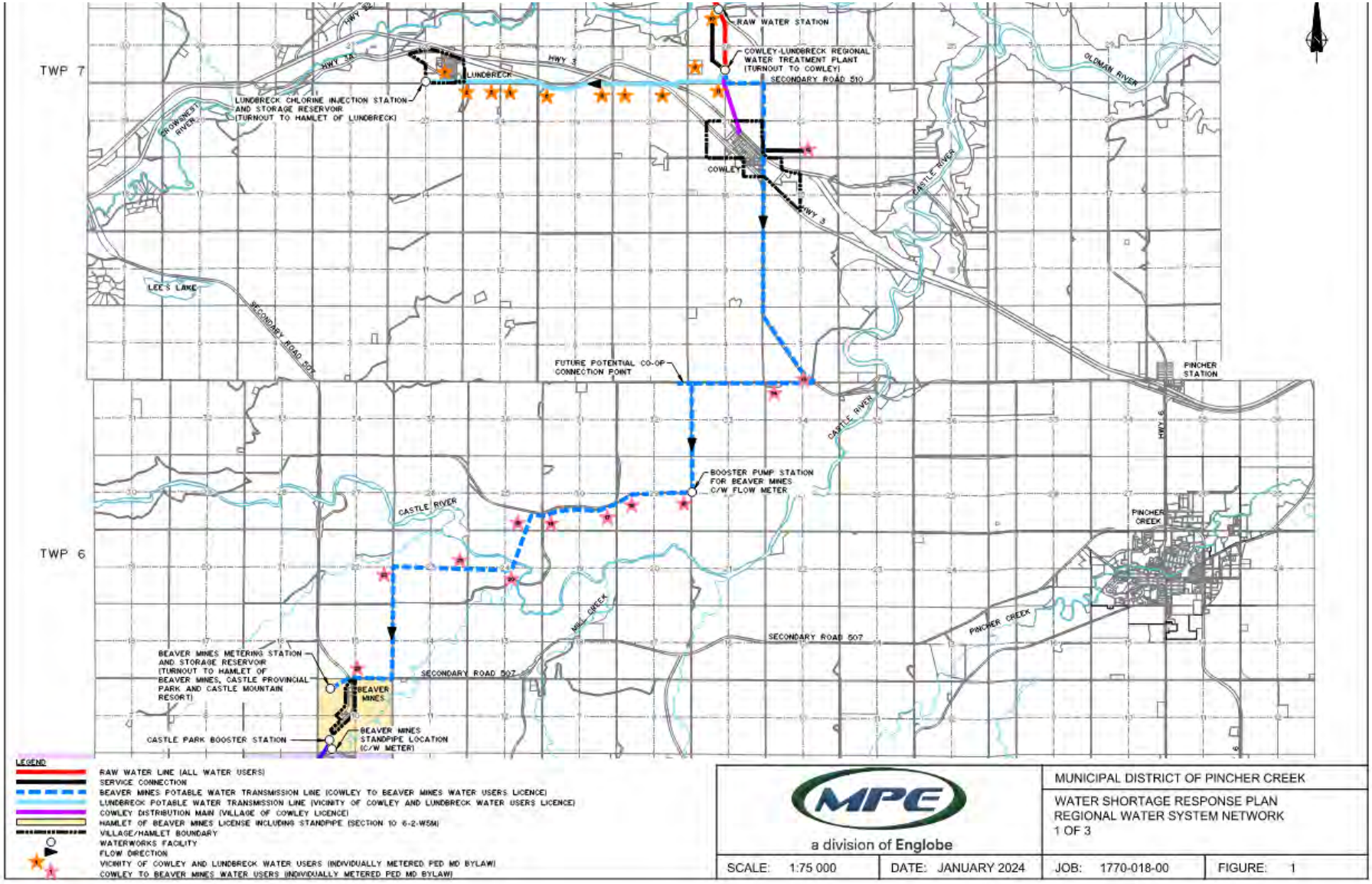


FIGURE 13: BEAVER MINES TO CASTLE MOUNTAIN RESORT (CASTLE PARKS) WATER USERS (GREEN STARS) –TRANSMISSION PIPELINE CURBSTOPS & CASTLE MOUNTAIN RESORT CONNECTION

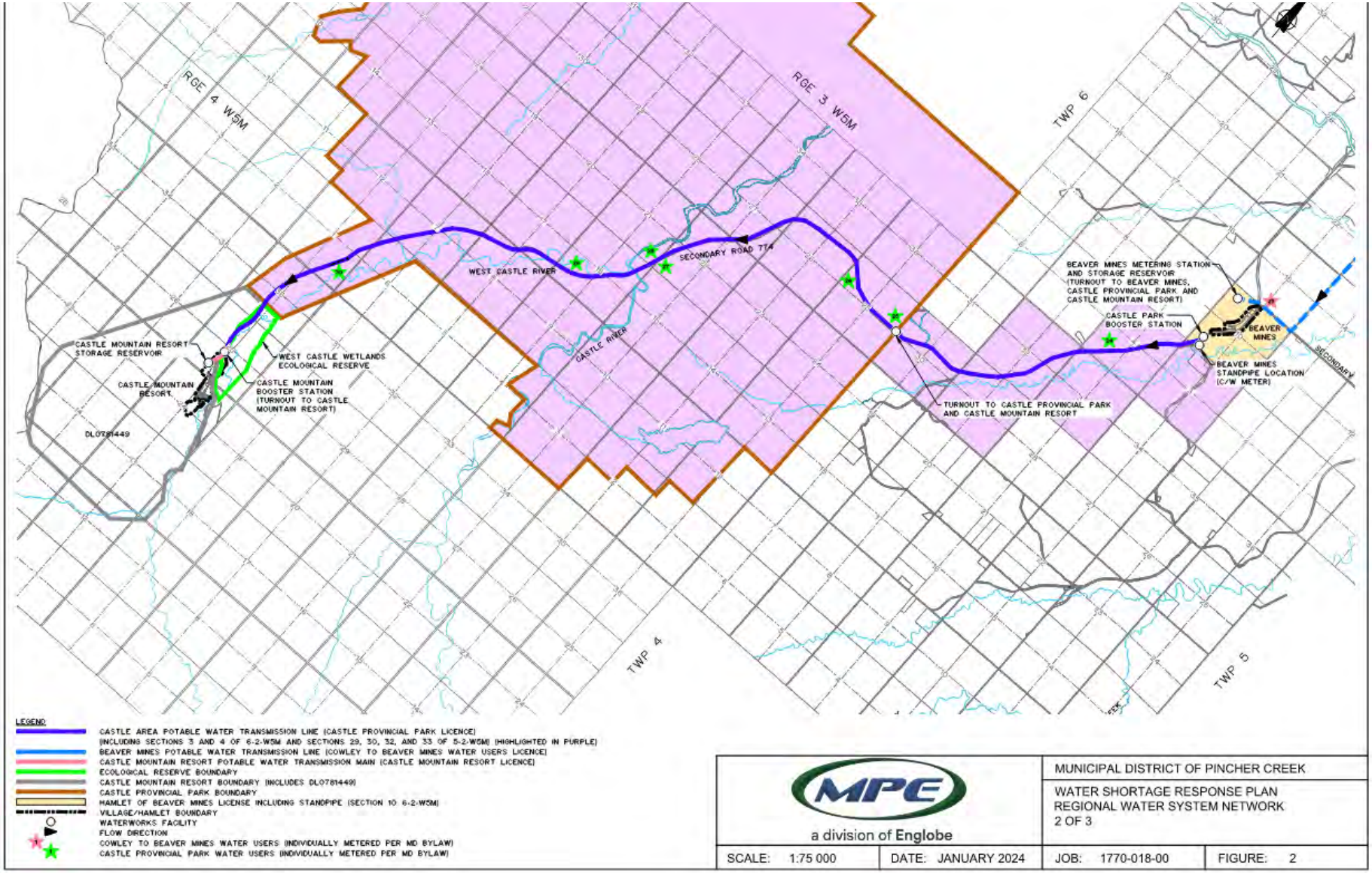


FIGURE 14: HAMLET OF LUNDBRECK CONNECTION & RESERVOIR

FIGURE 15: HAMLET OF BEAVER MINES OVERVIEW

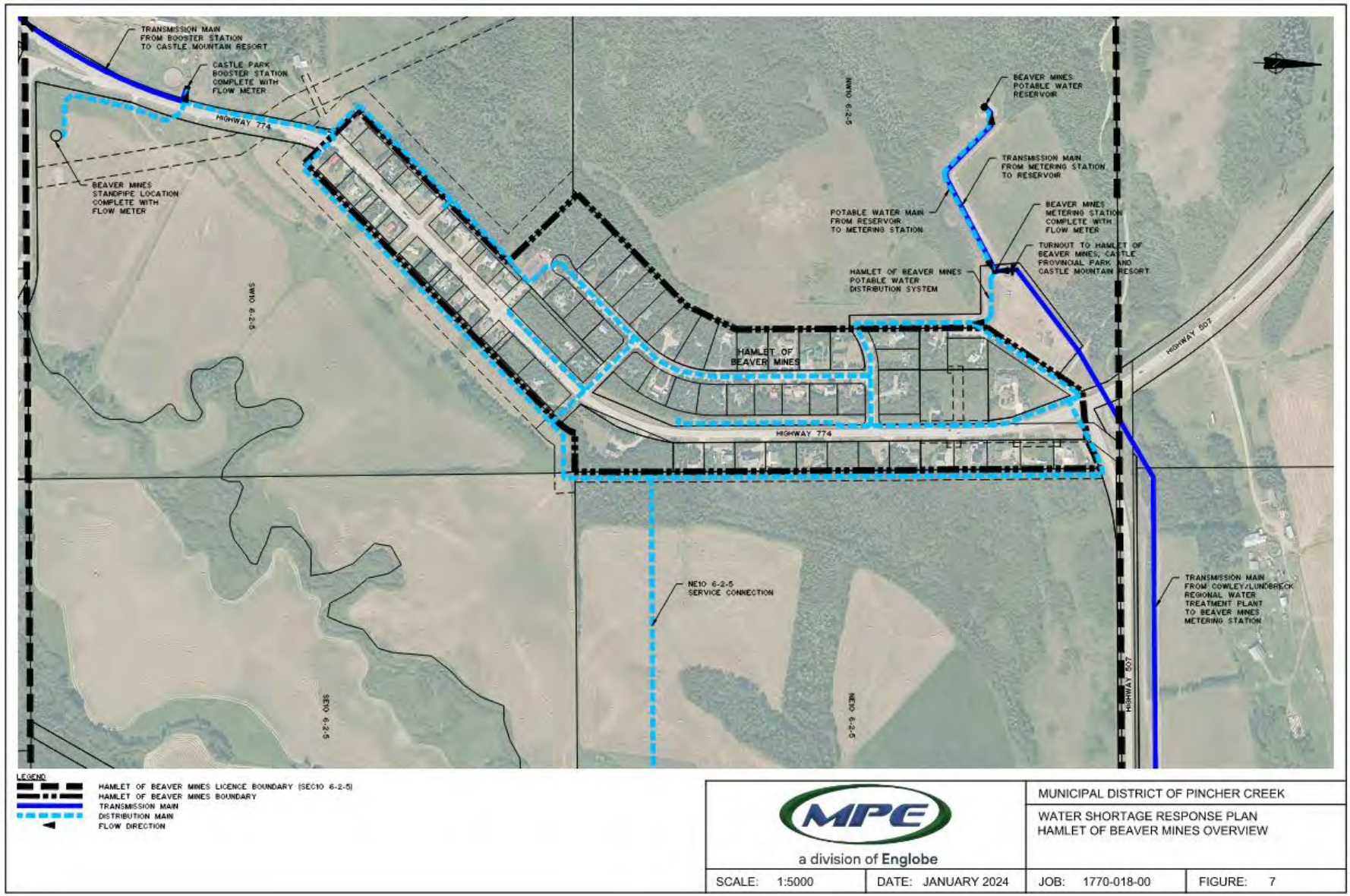
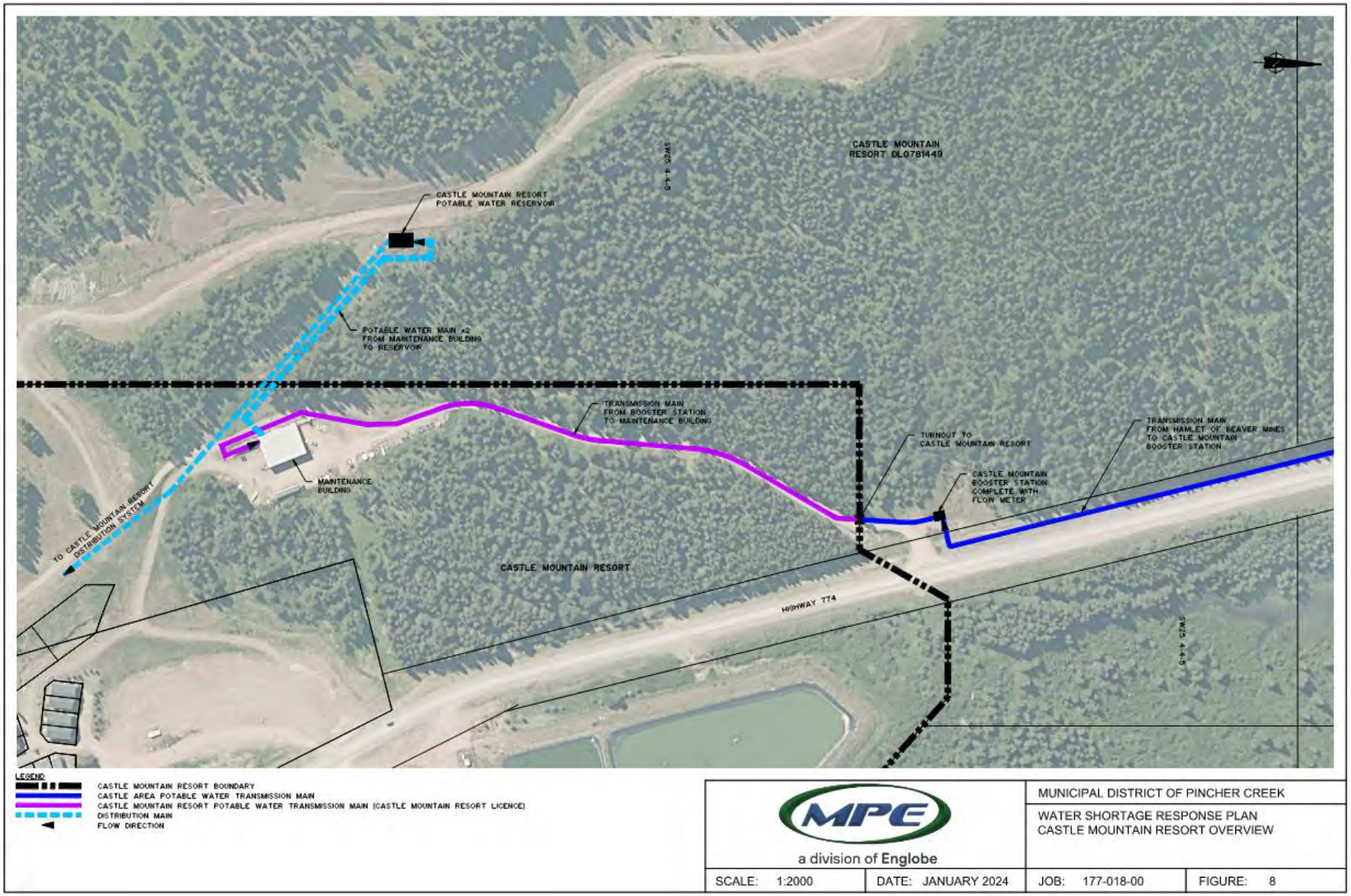


FIGURE 16: CASTLE MOUNTAIN RESORT OVERVIEW



APPENDIX B – Water Shortage Response Plan Tool (Information & Example)

The MD has thoroughly reviewed historic levels in the Oldman reservoir in relation to critical elevations to create a tool to guide the MD's Water Shortage Response Plan, the "Water Shortage Response Plan Stage Recommendation Calculator". The tool is intended to be u The MD has thoroughly reviewed historic levels in the Oldman reservoir in relation to critical elevations to create a tool to guide the MD's Water Shortage Response Plan, the "Water Shortage Response Plan Stage Recommendation Calculator". The tool is intended to be used in conjunction with this WSRP to help recommend restriction stages for various water shortage scenarios.

HOW TO USE THE TOOL

1) The "Water Stage Calculator" Tab and "Rivers Alberta Nav. Instruction" Tab provide guidance on how to use the tool to assess potential changes in water shortages

EXAMPLE CASE

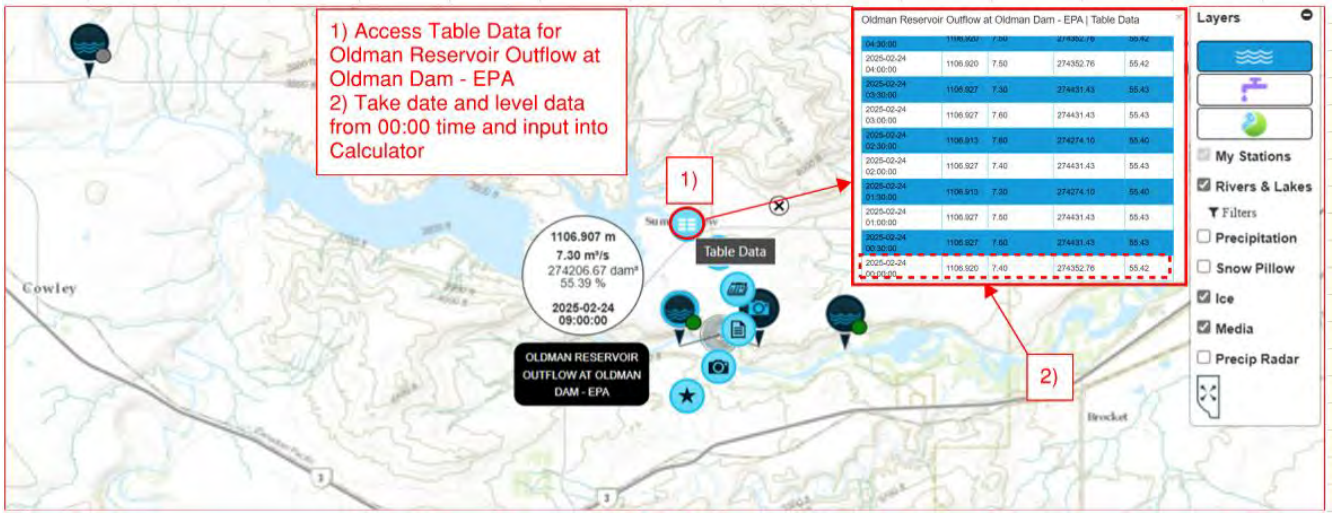
Dates: February 27th – March 5th, 2025

Scenario: Fire at Beaver Mines Booster Station. Anticipate 2 weeks to get bypass temporary booster pump setup operational. Supply augmentation required due to rapidly dropping levels in Beaver Mines and Castle Mountain Reservoir. Currently operating off P1101 only due to maintenance/commissioning of other pumps

1) Fill in Dates and last 7 days level data from rivers.alberta.ca "Oldman Reservoir Outflow at Oldman Dam - EPA" Station Table Data, using Midnight Time Stamps (00:00:00) for selected level (Refer to "Rivers Alberta Nav. Instruction" tab for guidance)

CURRENT INFORMATION		HISTORICAL WATER LEVEL DATA FROM 1999-2004 FOR FEB 27 TO MAR 5				
1) Current Date	Level (@ 00:00)	Average	Level 1 (25th PERCENTILE)	Level 2 (19th PERCENTILE)	Level 3 (11th PERCENTILE)	Level 4 (9th PERCENTILE)
27-Feb	1106.97	1109.73	1107.20	1105.47	1104.44	1100.29
28-Feb	1106.97	1109.73	1107.18	1105.45	1104.43	1100.30
01-Mar	1106.90	1109.72	1107.17	1105.44	1104.42	1100.30
02-Mar	1106.93	1109.72	1107.16	1105.42	1104.41	1100.31
03-Mar	1106.93	1109.71	1107.15	1105.41	1104.40	1100.32
04-Mar	1106.91	1109.68	1107.09	1105.39	1104.26	1100.21
05-Mar	1106.91	1109.66	1107.03	1105.38	1104.11	1100.09
AVERAGE	*1106.00*	*1109.71*	*1107.14*	*1105.42*	*1104.35*	*1100.26*
SLOPE	*-0.0086*	*-0.0111*	*-0.0242*	*-0.0129*	*-0.0483*	*-0.0278*

Remainder of data calculated from historic values



2) Review latest rivers.alberta.ca "Water Supply Forecast" as it relates to Oldman River Basin and assess severity of mountain runoff concerns qualitatively by filling "Water Supply Forecast Status" below (Refer to "Rivers Alberta Nav. Instruction" tab for guidance)

Mountain runoff forecasts (natural volumes for March to September 2025)

Milk River basin (comparison plot)

- Much below average for the March to September 2025 period

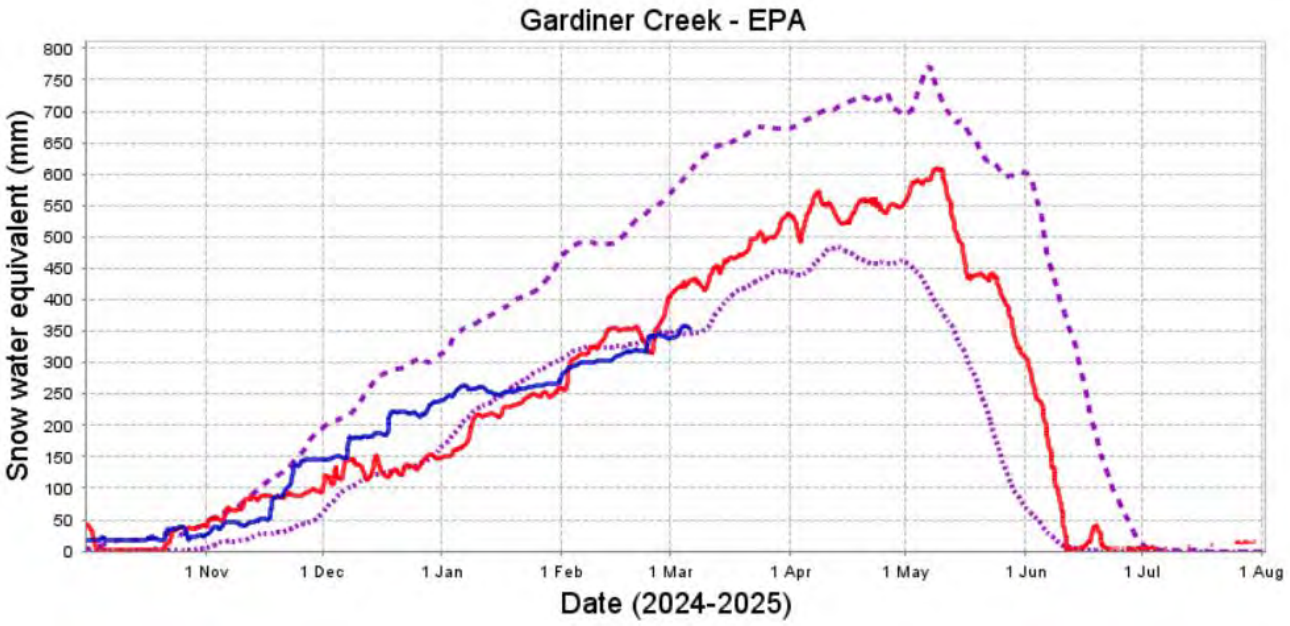
Oldman River basin (comparison plot)

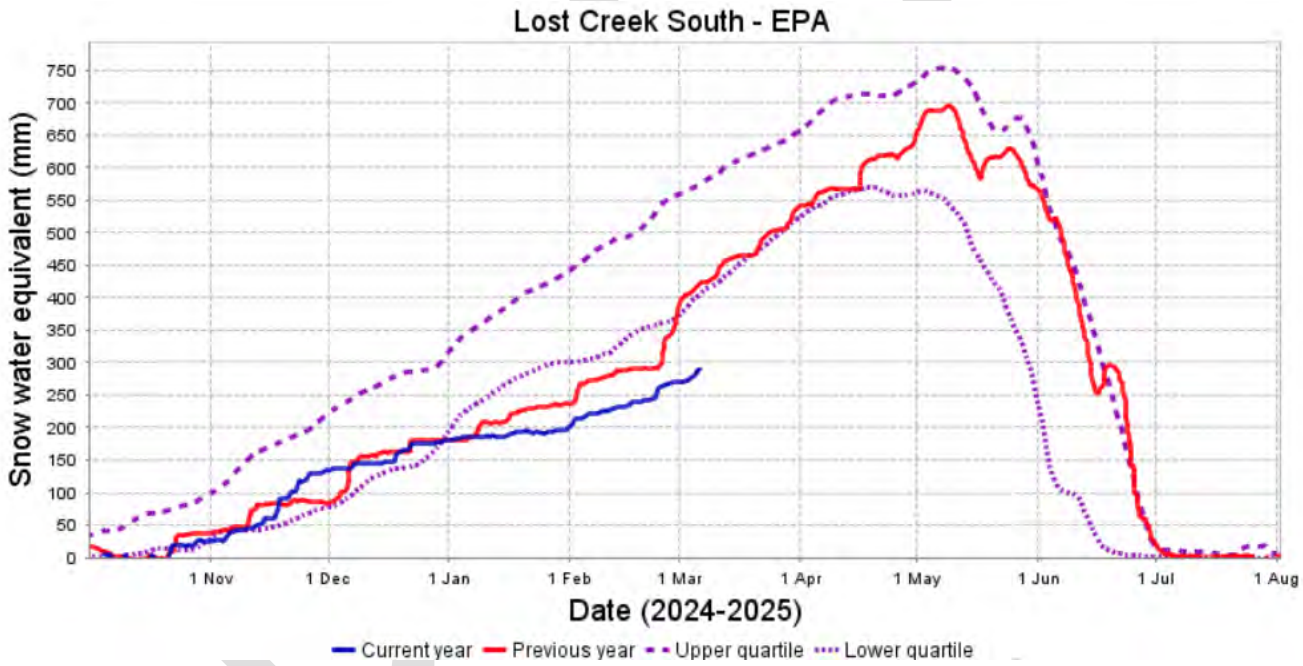
- Much below average to below average for the March to September 2025 period

Water Supply Forecast as of February 1, 2025 - Oldman River Basin (Natural Flows)

	Volume Forecast for March 1 to September 30, 2025					
Locations	Volume in dam^3	Volume as a % of Average	Probable Range as a % of Average	Potential Minimum as % of Average	Forecast Ranking (lowest to highest)	Recorded March-September 2024 Volume as a % of Average
St. Mary River	*448,000	67	57-82	49	7/99	86
Belly River	181,000	78	70-85	63	13/99	76
Waterton River	418,000	76	66-87	57	17/99	80
Oldman River near Brocket	654,000	66	58-75	50	12/99	66
Oldman River at Lethbridge	1,776,000	63	50-76	39	13/99	62

3) Review "Snow Pillow" rivers.alberta.ca yearly depth data in the area to determine approximate snow pillow depth in basin running into Oldman Reservoir (South Racehorse Creek, Gardiner Creek. Akimina Pass 2 and Lost Creek South may also referenced due to proximity, although they don't flow into basin) (Refer to "Rivers Alberta Nav. Instruction" tab for guidance)





Review of data indicates Water Supply Forecast of "High Risk expressed", with a Snow Pillow Status of "Under lower quartile"

WATER AVAILABILITY RISK SCORE *Review "How to Use This Tool" and "Rivers Alberta Nav. Instruction" Tab for Fill Instructions*			
Water Supply Forecast Status	High risk expressed	3	Points
Snow Pillow Status	Under lower quartile	1	Points

4) Fill Failure Or Contamination in Transmission/Distribution System Risk Score in consultation with operations
Major failure in system present, effecting 2 communities or more (Beaver Mines, Castle Mountain Resort) with expected downtime of 2 weeks

SYSTEM OPERATIONS RISK SCORES			
FAILURE OR CONTAMINATION IN TRANSMISSION/DISTRIBUTION SYSTEM RISK SCORE *Fill this section if there is a major failure (unrelated to raw water pump downtime) or contamination event somewhere in the Water System limiting ability to distribute water*			
Expected Downtime Length	Under 1 month	2	Points
Customers affected	2 Communities or Hamlets	4	Multiplier
FAILURE/CONTAMINATION RISK SCORE		**24**	**Score**

5) Fill Raw Water Pump Supply Score in consultation with operations
Currently only P1101 available for next week, anticipate being able to bring on P1102 if necessary within 10 days

RAW WATER PUMP SUPPLY RISK SCORE *Fill section based on anticipated pump availability 1 week from forecast* *"Use chart on this page to identify if levels are trending toward losing/gaining P1101/P1102 (W.E. Intake Elevation)*			
Anticipated time to bring 1 additional pump online	Under 1 week	1	Points
Predicted Intake Availability in 7 days	P1101 or PP1102 only	2	Multiplier
PUMP SUPPLY RISK SCORE		**1.8**	**Score**

6) Fill Leak in Transmission/Distribution System Risk Score in consultation with operations
No major leaks. Line isolation is possible around booster station.

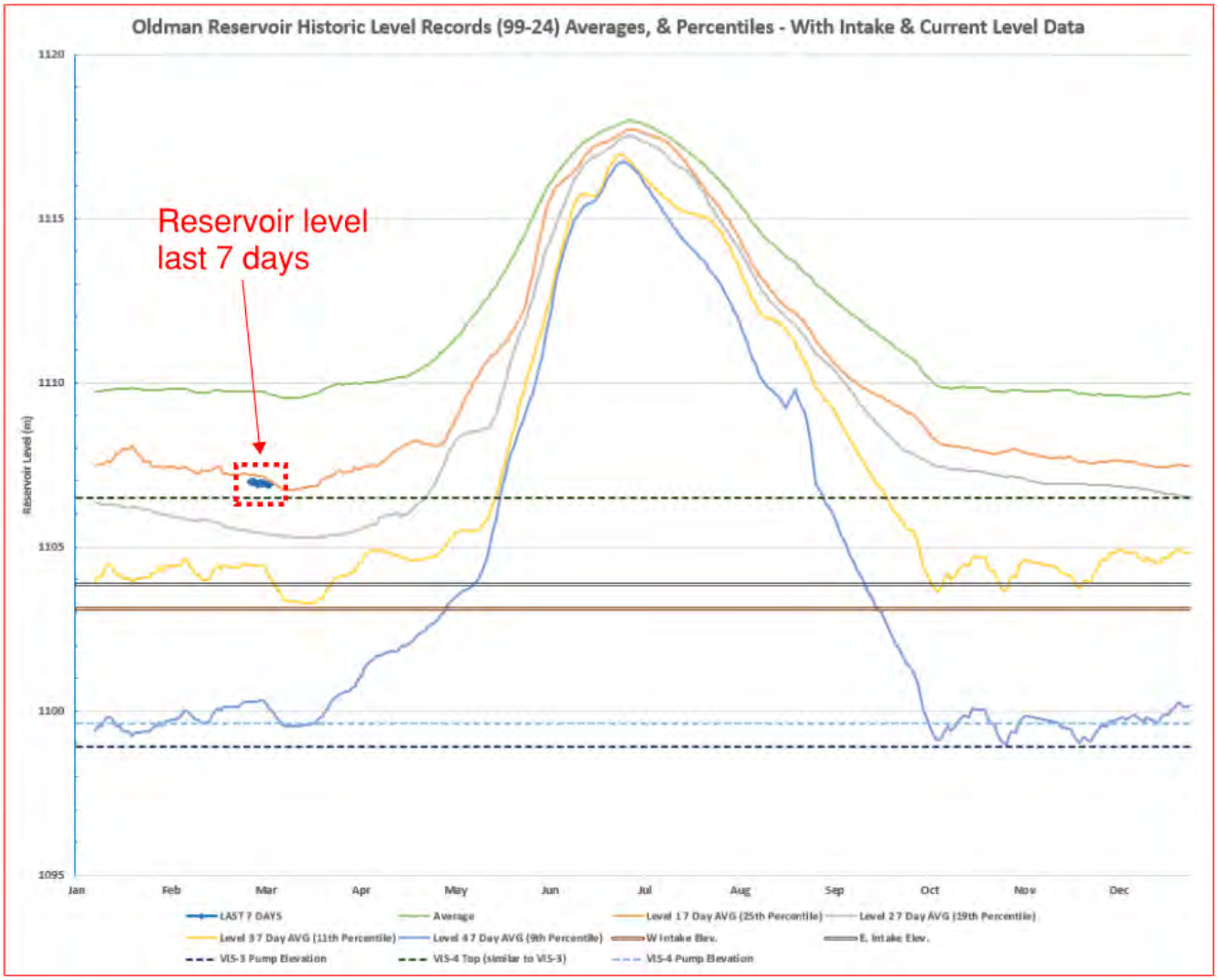
DEMAND RISK SCORES			
LEAK IN TRANSMISSION/DISTRIBUTION SYSTEM RISK SCORE *Fill section based on anticipated leak severity (if it cannot be easily isolated/bypassed) and anticipated time to repair*			
Expected Time to Repair	No failures present	0	Points
Severity Estimate	Under 50 m3/d	1	Multiplier
LEAK RISK SCORE		**0**	**Score**

7) Fill Average Raw Water Demand Risk Score in consultation with operations
Current 48 demand of 250 m^3/d*, average 7 day demand 230* m^3/d

AVERAGE RAW WATER DEMAND RISK SCORE *Fill section based on average demand for raw water over previous 2 and 7 days respectively*			
Average Raw Water Demand Past 48 Hours	250	1.03	Points
Average Raw Water Demand Past 7 Days	230	1.00	Points
DEMAND RISK SCORE		**3.06**	**Score**

8) Review Risk Scores & Reservoir Level Chart

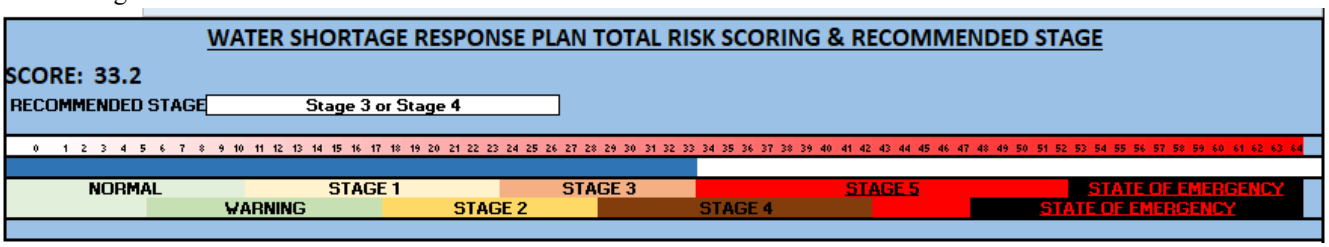
TOTAL WATER SHORTAGE RISK SCORE		
RESERVOIR LEVEL RISK	0.5	Score
WATER AVAILABILITY RISK	5.8	Score
FAILURE RISK	24.0	Score
SUPPLY/DEMAND RISK CALCULATION	3.0	Score
TOTAL	33.2	Score



Review of scoring shows:

- *A low reservoir risk score (levels are stable, but slightly below the lower quartile of average)*
- *A high water availability risk score (snow packs are below lower quartile, and water supply forecasts express concern)*
- *A significant failure risk score (2 communities requiring augmentation for roughly 2 weeks)*
- *A slight supply/demand risk (pump availability is limited and additional failures could result in severe supply issues)*

9) Review stage recommendation



This is a severe water shortage event requiring augmentation. If everything was functioning properly and water supply was not a current concern, the recommendation would be Stage 2 or perhaps 3 restrictions until the failure could be bypassed.

However, due to other risks, such as water supply availability, and potential of supply concerns (with 1 pump operational), a Stage 4 (or at least 3) recommendation should be considered.

Depending on water operators current capacity to maintain safe flows to all communities, it may be feasible to only release Stage 4 restrictions for water users downstream of the Booster Station fire. A lesser stage could be considered for the remainder of the regional system unaffected by the failure.

DEVELOPER INFORMATION

This tool uses various calculations and multipliers based on trial and error scenarios to make a stage recommendation. The Workbook is protected. The calculations, multipliers, and factors could be edited in future revisions if the user of the tool has concerns with the stage recommendation weighting.

Below is a summary of how the calculations work:

- **TOTAL WATER SHORTAGE RISK SCORE**
  - The total risk score is calculated as a summation of the Reservoir Level Risk Score, the Water Availability Risk Score, the Failure Risk Score, and the Supply/Demand Risk Calculation Score

$$TWSR_S = RLR_S + WAR_S + FR_S + SDRC_S$$

- **RESERVOIR RISK SCORE**
  - The reservoir risk score is calculated by multiplying the water level average points with the pace of reservoir drop (slope) multiplier, multiplied by the reservoir risk factor

$$RLR_S = WLA_p * RS_M * RR_f$$

- **WATER LEVEL AVERAGE POINTS**
  - The water level average points are calculated by comparing the average water level over the last 7 days with the average percentiles for various reservoir levels (i.e. 25th percentile, 19th, etc.), and applying points based on the 7 day averages percentiles in the Reservoir Level Lookups and Multipliers Table

$$If(7Day_{AVG} > Level_1 7Day_{AVG})\ Then\ WLA_p = WL_{P0},$$
$$ElseIf(\ 7Day_{AVG} > Level_2 7Day_{AVG}) Then\ WLA_p = WL_{P1}$$
$$ElseIf(...$$

- **PACE OF RESERVOIR DROP (SLOPE) MULTIPLIER**
  - The pace of reservoir drop (slope) multiplier is calculated by comparing the average slope (pace of drop) over the last 7 days with the average percentiles for various reservoir levels (i.e. 25th percentile, 19th, etc.), and applying points based on the 7 day averages percentiles in the "Lists and Factors" Reservoir Level Lookups and Multipliers Table

$$If(7Day_{SLOPE} - 7Day_{SLOPEAVG} > SlopeComparison_0)\ Then\ RS_M = RR_{M0},$$
$$ElseIf(7Day_{SLOPE} - 7Day_{SLOPEAVG} > SlopeComparison_1)\ Then\ RS_M = RR_{M1}$$
$$ElseIf(...$$

- **WATER AVAILABILITY RISK SCORE**
  - The water availability risk score is calculated by multiplying the water supply forecast status points with the water availability risk factor, and summing the result with the multiplication of the snow pillow status points and the snow pillow status factor

$$\boldsymbol{WAR_S = WSF_p * WSF_f + SPS_p * SPS_f}$$

  - Points are looked up based on the selected risk in the "List and Factors" Table Score Lookups
- **FAILURE/CONTAMINATION RISK SCORE**
  - The failure/contamination risk score is calculated by multiplying the failure/contamination downtime points with the failure/contamination multiplier and the failure/contamination factor

$$\boldsymbol{FR_S = FD_p * FD_M * FD_f}$$

  - Multiplier and points are looked up based on the selected risk in the "List and Factors" Table Score Lookups
- **SUPPLY/DEMAND RISK CALCULATION SCORE**
  - The supply/demand risk calculation score is calculated by multiplying the pump supply risk score (+1) with the summation of the leak risk score and the demand risk score multiplied by the supply/demand risk factor

$$\boldsymbol{SDRC_S = (RWPSR_S + 1) * (LR_s + ADR_s) * SDR_f}$$

- **RAW WATER PUMP SUPPLY RISK SCORE**
  - The raw water pump supply risk score is calculated by multiplying the pump downtime points with the pump availability multiplier and the pump supply risk factor

$$\boldsymbol{RWPSR_S = PD_p * PA_M * PS_f}$$

  - Multiplier and points are looked up based on the selected risk in the "List and Factors" Table Score Lookups
- **LEAK RISK SCORE**
  - The leak risk score is calculated by multiplying the leak downtime points with the leak severity multiplier and the leak risk factor

$$\boldsymbol{LR_s = LD_p * LS_M * LR_f}$$

  - Multiplier and points are looked up based on the selected risk in the "List and Factors" Table Score Lookups
- **AVERAGE DEMAND RISK SCORE**
  - The average demand risk score is calculated by adding the average demand over last 48 hour points multiplied by the respective factor with the with the average demand over the last 7 days points multiplied by the respective factor

$$\boldsymbol{ADR_s = AD_{48P} * AD_{48f} + AD_{7DP} * AD_{7Df}}$$

- **AVERAGE DEMAND OVER LAST 48 HOURS POINTS**
  - The average demand over last 48 hours is 1 if the demand is under 227 m^3/d, and is 2 if the demand is 1000 m^3/d. Any other value over 227 m^3/d is calculated using the slope of the line equation for points based on the above rule

$$\boldsymbol{If(AD_{48} \leq 227)\ ) \ Then\ AD_{48P} = 1,}$$
$$\textbf{Else } \boldsymbol{AD_{48P} = mx + b, where}$$
$$\boldsymbol{m = \frac{1}{773}, x = AD_{48}, b = 0.706}$$

The lists and factors table is as follows at time of this WSRP revision:

Score Lookups												Reservoir Level Lookups & Multipliers					Factors									
Timelines	Points	Customers effected	Multiplier	Leak Severity	Points	Intakes Operable	Points	Snow Pillow Status	Points	Water Supply Forecast	Points	7 Day Averages	Percentiles	Water Level Points	Slope Comparisons	Reservoir Slope Risk Multiplier	Reservoir Risk Factor	Supply Forecast Factor	Snow Pillow Forecast Factor	Failure Risk Factor	Pump Risk Factor	Leak Risk Factor	Demand 48 Hour Risk Factor	Demand 72 Hour Risk Factor	Supply Demand Factor
No failures present	0	Under 3 properties	0	Under 50 m3	1	All intakes	0	Above upp	-1	No major	0	Level 1 7 D	0.25	0	0	1	0.5	1.5	1.25	3	0.9	1	1.25	1.75	0.35
Under 48 hrs	0	Under 10 properties	1	Under 100 m	1.5	3 Intakes	1	Within qua	0	Low risk e	1	Level 2 7 D	0.19	1	-0.1	1.5									
Under 1 week	1	Under 25 properties	2	Under 250 m	2	P1101 or PP1102 only	2	Under low	1	Medium ri	2	Level 3 7 D	0.112	3	-0.2	2									
Under 1 month	2	1 Community or Hamlet	3	Under 500 m	2.5	P1103 and P1104 only	3	Less than	2	High risk e	3	Level 4 7 D	0.094	4		2.5									
Greater than 1 month	3	2 Communities or Hamlets	4	500 m3/d or	3	P1103 only	4	Snow Melt	3					6											
		2+ Communities or all Custo	5			P1104 only	5																		
						No intakes	6																		

An example complete printout of the WSRP Stage Recommendation Calculator at time of this WSRP revision is shown in the following page.

WATER SHORTAGE RESPONSE PLAN
STAGE RECOMMENDATION CALCULATOR

About this tool

This tool is intended to be used in conjunction with the MD of Pincher Creek's Water Shortage Response Plan to help recommend restriction stages for various water shortage scenarios.

This tool is not all encompassing and should only be used by Managers and Senior Water Operations as a basis for decision recommendations related to shortages. There may be other factors related to a specific shortage that were not accounted for during the development of the tool that the user must take into account alongside the tool recommendations.

General Tool Tips & Information

- "DataSet&Table" Tab contains full historical level backgrounds from 1999 to 2024, used for reservoir calculations throughout
- "Units and Factors" Tab contains lookup lists, drop down lists, and factors used for calculations
- The tool has been locked so to prevent accidental modification. Contact MD IT staff for access passwords if modification required for future revision
- "Graphs" Tab contains additional historic graphs for information and comparison sake
- Green background cells are inputs, grey are calculated. Other background colours may also be used to communicate severity

HOW TO USE THIS TOOL

1) Fill in Dates and last 7 days level data from rivers.alberta.ca "Oldman Reservoir Outflow at Oldman Dam - EPA" Station Table Data, using Midnight Time Stamps (00:00:00) for selected level (Refer to "Rivers Alberta Nav. Instruction" tab for guidance)
2) Review latest rivers.alberta.ca "Water Supply Forecast" as it relates to Oldman River Basin and assess severity of mountain runoff concerns qualitatively by filling "Water Supply Forecast Status" below
3) Review "Snow Pillow" rivers.alberta.ca yearly depth data in the area to determine approximate snow pillow depth in basin running into Oldman Reservoir (South Racehorse Creek, Gladstone Creek, Akamina Pass 2 and Lost Creek South may also referenced due to proximity, although they don't flow into basin)
4) Fill remainder of inputs in consultation with water operations crew

CURRENT INFORMATION		HISTORICAL WATER LEVEL DATA FROM 1999-2004 FOR MAR 13 TO MAR 19				
Current Date	Level (@ 00:00)	Average	Level 1 (25th PERCENTILE)	Level 2 (19th PERCENTILE)	Level 3 (11th PERCENTILE)	Level 4 (5th PERCENTILE)
13-Mar	1106.84	1109.53	1106.74	1105.30	1103.33	1099.53
14-Mar	1106.83	1109.54	1106.76	1105.29	1103.32	1099.54
15-Mar	1106.83	1109.55	1106.78	1105.29	1103.32	1099.55
16-Mar	1106.81	1109.57	1106.80	1105.28	1103.31	1099.56
17-Mar	1106.82	1109.59	1106.81	1105.28	1103.30	1099.57
18-Mar	1106.81	1109.62	1106.83	1105.28	1103.30	1099.59
19-Mar	1106.79	1109.64	1106.84	1105.29	1103.29	1099.61
AVERAGE	1106.80	1109.58	1106.79	1105.29	1103.31	1099.57
SLOPE	-0.0074	0.0162	0.0143	-0.0015	-0.0061	0.0108

WATER SHORTAGE RESPONSE PLAN TOTAL RISK SCORING & RECOMMENDED STAGE

SCORE: 11.3

RECOMMENDED STAGE: Warning or Stage 1

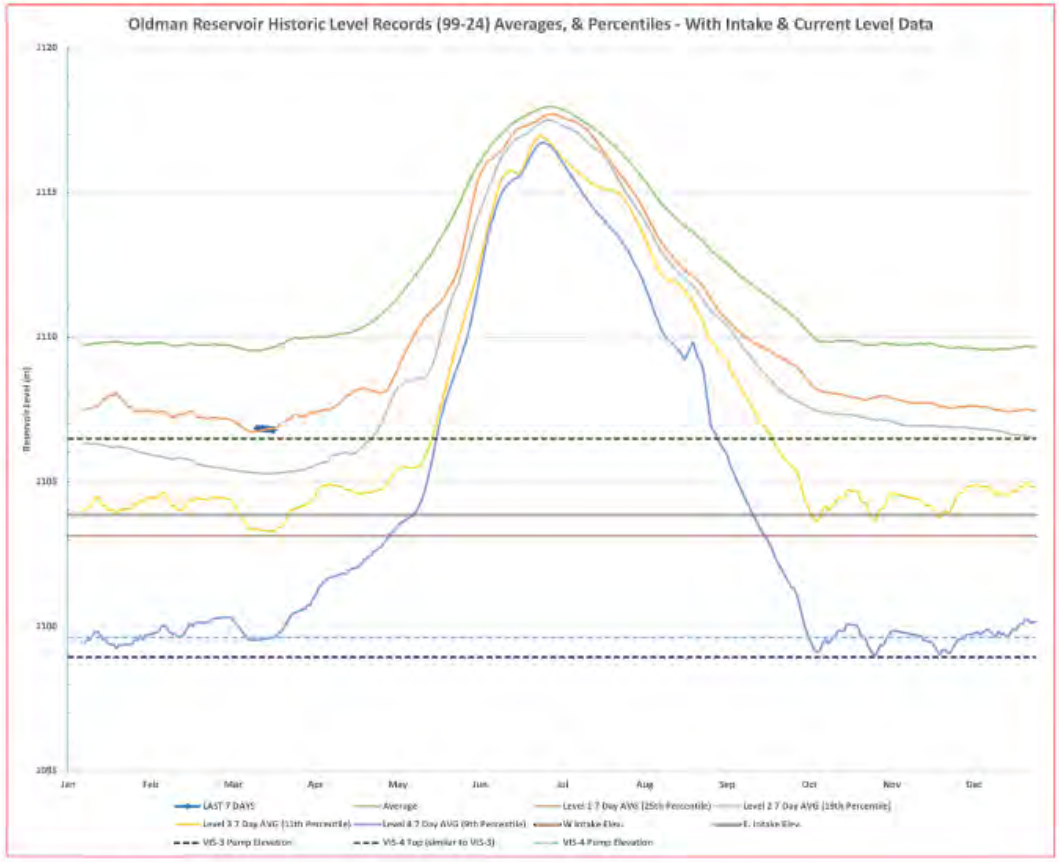
NORMAL | STAGE 1 | STAGE 3 | STAGE 5 | STATE OF EMERGENCY
WARNING | STAGE 2 | STAGE 4 | STATE OF EMERGENCY

WATER CONSERVATION RISK SCORES			
RESERVOIR LEVEL RISK SCORE			
Water Level Average		1	Points
Rate of Reservoir Drop (Slope) Multiplier		1.5	Multiplier
RESERVOIR LEVEL RISK SCORE		0.75	Score
WATER AVAILABILITY RISK SCORE			
Review "How to Use This Tool" and "Rivers Alberta Nav. Instruction" Tab for fill instructions			
Water Supply Forecast Status	High risk expressed	5	Points
Snow Pillow Status	Under lower quartile	1	Points
WATER AVAILABILITY RISK SCORE		5.75	Score

SYSTEM OPERATIONS RISK SCORES			
FAILURE OR CONTAMINATION IN TRANSMISSION/DISTRIBUTION SYSTEM RISK SCORE			
Fill this section if there is a major failure (unrelated to raw water pump downtime) or contamination event somewhere in the Water System limiting ability to distribute water			
Expected Downtime Length	No failures present	0	Points
Customers affected	2 Communities or Hamlets	4	Multiplier
FAILURE/CONTAMINATION RISK SCORE		0	Score
RAW WATER PUMP SUPPLY RISK SCORE			
Fill section based on anticipated pump availability 1 week from forecast			
Use chart on WA page to identify if levels are trending toward losing/gaining P1101/P1103 (E. Intake Elevation)			
Anticipated time to bring 1 additional pump online	Under 1 month	2	Points
Predicted Intake Availability in 7 days	P1101 or PP1103 only	2	Multiplier
PUMP SUPPLY RISK SCORE		3.6	Score

DEMAND RISK SCORES			
LEAK IN TRANSMISSION/DISTRIBUTION SYSTEM RISK SCORE			
Fill section based on anticipated leak severity (if it cannot be easily isolated/bypassed) and anticipated time to repair			
Expected Time to Repair	No failures present	0	Points
Severity Estimate	Under 50 m3/d	1	Multiplier
LEAK RISK SCORE		0	Score
AVERAGE RAW WATER DEMAND RISK SCORE			
Fill section based on average demand for raw water over previous 2 and 7 days respectively			
Average Raw Water Demand Past 48 Hours	230	1.00	Points
Average Raw Water Demand Past 7 Days	230	1.00	Points
DEMAND RISK SCORE		3.01	Score

TOTAL WATER SHORTAGE RISK SCORE		
RESERVOIR LEVEL RISK	0.8	Score
WATER AVAILABILITY RISK	5.8	Score
FAILURE RISK	0.0	Score
SUPPLY/DEMAND RISK CALCULATION	4.8	Score
TOTAL	11.3	Score

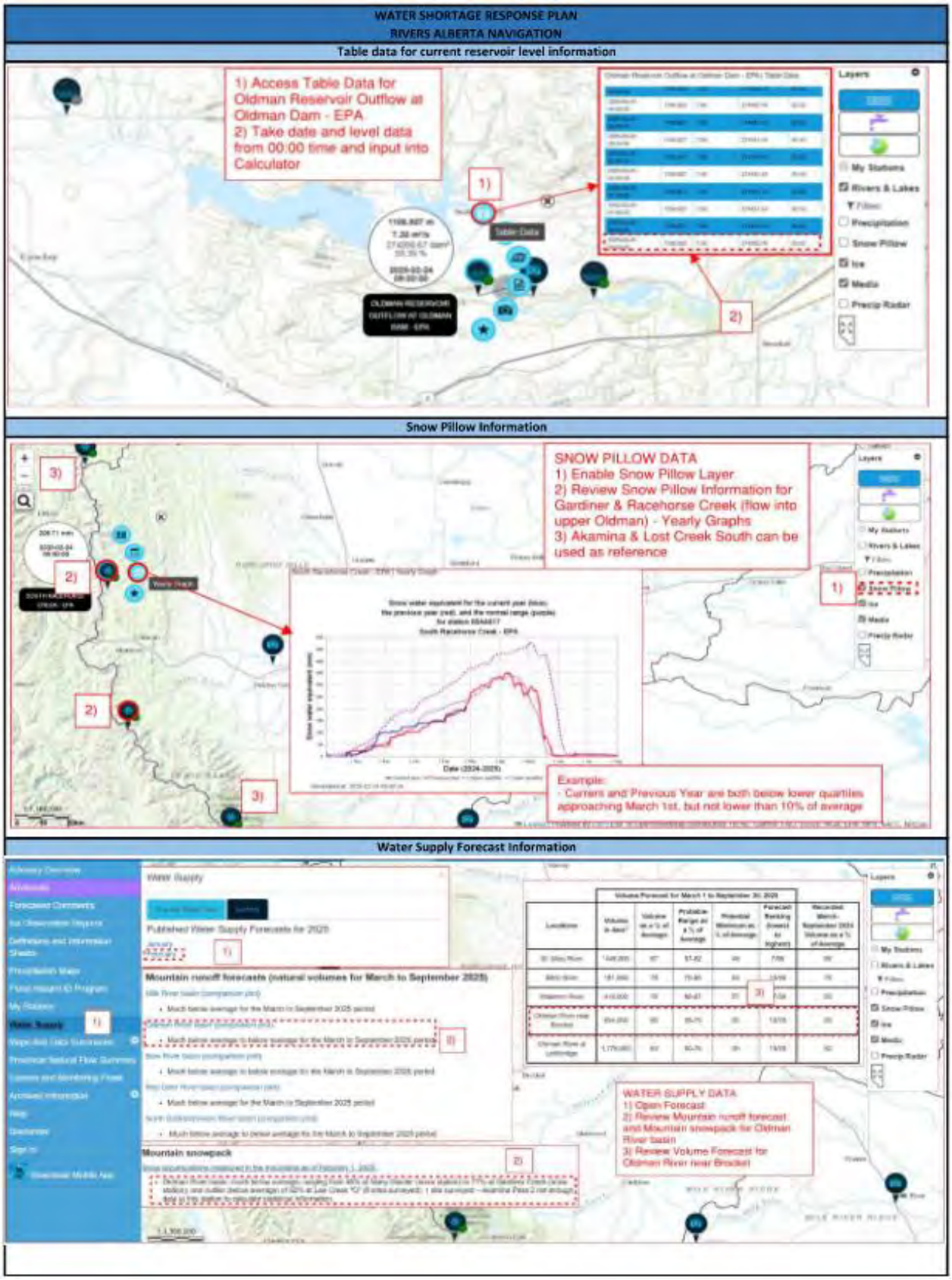


REVISION HISTORY:

Revision: 0 **Date:** Mar. 19, 2025 WSRP Release: Winter 2025 Notes: Original release

\\mdserver\Documents\Infrastructure\MyDocuments\Facilities\04_Water\00_General\02_Water Shortage Response\01_Plan

Rivers Alberta Data Assistance Guides (from Tool Printout)



APPENDIX C – Water Shortage Contact List

Available contractors experienced in water supply augmentation may change over time. At time of this WSRP revision, **Table 12** of contractors and important contacts which may required during various water shortage scenarios, including, but not limited to, supply augmentation:

TABLE 12: SUPPLY AUGMENTATION/WATER SHORTAGE CONTACTS

Company/ Organization	Location	Name	Phone Number	Email	Specialty
Alberta Environment & Protected Areas	Lethbridge, AB	David Hunt	(403) 381-5994	David.Hunt@gov.ab.ca	Water Approval Team Lead
		Chad Moore	(403) 382-4450 (403) 331-9503	Chad.Moore@gov.ab.ca	Drinking Water Operations Specialist
		Jeff Gutsell	(403) 381-5301	Jeff.Gutsell@gov.ab.ca	Hydrogeologist
		Ibidabo William-West	(403) 948-8540	Ibidabo.William-West@gov.ab.ca	EPEA Municipal Approvals
Alberta Agriculture & Irrigation	Lethbridge, AB	Paul Elser	(403) 381- 2589 (403) 308-3025	Paul.elser@gov.ab.ca	Director, Southern Operations
		Joe Harrington	(403) 381-5846	Joe.harrington@gov.ab.ca	Agriculture Water Specialist
		Scott Gerber	(403) 627 5544	Scott.Gerber@gov.ab.ca	Oldman Dam Operator
Alberta Forestry & Parks	Lethbridge, AB	Tamara Stanley	(403) 382-4094 (587) 220-1261	Tamara.Stanley@gov.ab.ca	Parks Land Use Officer, South
		Peter Swain	(403) 382-4100 (403) 952-9750	peter.swain@gov.ab.ca	Director, South Region
Alberta Arts, Agriculture, & Status of Women		Wendy Unfreed	(780) 431 2343		HRA Approvals
		Martina Purdon			
Alberta Transportation & Economic Corridors	Lethbridge, AB	Leah Olsen	(403) 388-3105 (403) 308-2601	Leah.olsen@gov.ab.ca	Development/Planning Technologist – ATEC Permits
Pincher Creek Emergency Services	Pincher Creek, AB	Main Line	(403) 627-5333		Emergency Services, Fire
Pincher Creek Regional Emergency Management Organization (PCREMO)	Pincher Creek, AB	Brett Wuth	(403) 627-2460	pcremo-dem@mdpinchercreek.ab.ca	Regional Emergency Management
ATCO Electric	Calgary, AB	Brent Stenson	(780) 446 -7582	Brent.Stenson@atco.com	ATCO Dam Operations Advisor

Company/ Organization	Location	Name	Phone Number	Email	Specialty
Riteline Electric	Pincher Creek, AB	Main Office	(403) 627-5756	Reception@ritelineelectric.ca	Electrical Contractor
Mountain Earth Electric	Crowsnest Pass, AB	Dylan Zoratti	(403) 632-9065	zoratti11@hotmail.com	Electrical Contractor – Owner/Contractor
Crooked Tree Landscaping	Crowsnest Pass, AB	Chad Oberholtzer	(403) 583-1346	crookedtreelandscaping@gmail.com	Irrigation
Rocky Mountain Bobcat	Pincher Creek, AB	Lyle Reimer	(403) 627-5991	rmbs@platinum.ca	Excavation, Water, & Sewer Repair
Westerra Earthworks	Crowsnest Pass, AB	Lannie Donaldson	(403) 563-6825	lannie@westerraearthworks.com	Excavation, Water, & Sewer Repair
Vidmar Contracting	Lethbridge, AB	Dakota Vidmar	(403) 360 4365	vidmarcontracting91@gmail.com	Excavation, Water, & Sewer Repair. Temporary Pumping Setups
Mcgills Industrial Services	Lethbridge, AB	Main Office	(587) 800-0115	carriermcgill@gmail.com	Sewer Flushing
Cascade Energy	Pincher Creek, AB	Randy Wittkopf	(403) 627-8144 (403) 627-5252	RWittkopf@cascade-energy.ca	Potable & Raw Water Hauling, Tank/Equipment Rentals
Kris Larson Trucking	Pincher Creek, AB	Kris Larson	(403) 339-6179	klarsontrucking@gmail.com	Potable & Raw Water Hauling
South West Waste Management	Pincher Creek, AB	Main Office	(403) 627-2242	info@southwestwaste.ca	Vac Truck, Potable & Raw Water Hauling
CNP Septic	Crowsnest Pass, AB	Main Office	(403) 562-8585		Vac Truck
Pincher Plumbing	Pincher Creek, AB	Mike Bates	(403) 627-7810		Plumbing
J Bee'z Crane	Pincher Creek, AB	Main Office	(403) 627-7647	admin@jbeeztruckandcrane.ca	Cranes/Lifting
Elkorn Welding	Pincher Creek, AB	Kevin Stover	(403) 952-9969	kevinstover76@gmail.com	Welding, Fabrication
Thunder Mountain Welding	Cowley, AB	Nathan Duh	(403) 339-0371	nathan@thundermountainwelding.net	Welding, Fabrication
DMT Mechanical	Lethbridge, AB	Darren Guenther	(403) 328-9424 (403) 915-8114	darren@dmtmechanical.com	Mechanical Contractor, Industrial Plumbing, Pump Removal/Replacement, Project Coordination
Dollmans Drilling	Pincher Creek, AB	Sheldon Dolman	(403) 627-8828	dwwinc@gmail.com	Local Water Driller, Aquifer Expertise

Company/ Organization	Location	Name	Phone Number	Email	Specialty
Camfield Groundwater Services	Lethbridge, AB	Kevin Bland	(403) 308-9767	kevin@camdril.com	Local Water Driller, Aquifer Expertise
Access Water Wells	Edson, AB	Grant Sroka	(780) 725-1371	grant@accesswaterwells.com	Large Bore Drilling, Aquifer Expertise
BGC Engineering	Calgary, AB	Paul Bauman	(403) 818-7201	PBauman@bgcengineering.ca	Hydrogeophysical mapping
Waterline Resources	Calgary, AB	Blake Hiebert	(587) 393-6864 (403) 510-0456	bhiebert@waterlineresources.com	Hydrogeology
MPE Engineering	Lethbridge, AB	Luke Schoening	(403) 317-3649 (403) 795-0434	lschoening@mpe.ca	Water/Wastewater Design, Engineering, Procurement, Construction
Arrow Archaeology Limited	Coaldale, AB	Neil Mirau	(403) 330-8376 (403) 345-2812	nmirau@shaw.ca	Archeology, Historical Resources
Green Plan LTD.	Southern AB	Scott Taylor	(403) 650-8792	staylor@green-plan.com	Environmental Consulting, QAES Assessments
Rusch Equipment	Red Deer, AB	Cam Scott	(780) 916-7284	Cam.s@ruschequipment.ca	Water Transfer Contractor, Heated Water Transfer

APPENDIX D – Implementation Report (Aug. 23 – Jul. 24)

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MUNICIPAL DISTRICT OF PINCHER CREEK

WATER SHORTAGE RESPONSE PLAN

IMPLEMENTATION REPORT

AUGUST 16th, 2023 – JULY 5th, 2024

Project: FAC_04_00_02_02_01
Date: Mar 19th, 2025
By: David Desabrais
Utilities & Infrastructure Manager

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BACKGROUND

The Municipal District of Pincher Creek No. 9 (MD) has a Water Shortage Response Plan (WSRP) as a requirement under the various water licenses served by the regional water system. The WSRP requires a report after a severe implementation to assess effectiveness, including recommendations for improvement to prevent future significant shortages. A severe implementation of the WSRP occurred between August 2023 and May 2024, with demand reductions in effect until July, 2024.

WATER SHORTAGE RESPONSE PLAN IMPLEMENTATION

TIMELINE OF CRITICAL EVENTS

The table below contains a timeline of critical events related to the MD's August 2023-July, 2024 water shortage. Note that many other less consequential events occurred over the course of the implementation which are not shown here. Refer to project folder and notes for full details and timelines:

Event	Date	Description
1	Aug. 15th, 2023	• East Intake Raw Water Pump (RWP) went down overnight (after recent maintenance) • Operator indicated we would need to remove pump and began setting up contractor to complete work • Operator indicated turbidity concerns • *The pump intake had actually breached surface, which was not discovered at the time*
2	Aug. 16th, 2023	• Operator discovered East RWP breached surface, with roughly 4" left of water over West RWP • Contacted AEPA, began lining up water trucks for hauling • Implemented Stage 3 restrictions effective immediately
3	Aug. 17th, 2023	• Lost ability to draw from West RWP overnight • Began hauling both potable (from Town of Pincher Creek) and raw water (from downstream of dam) • Pincher Creek Regional Emergency Management Organization (PCREMO) activated to Class 3
4	Oct. 4th, 2023	• PCREMO deescalated to Class 2
5	Oct 28th, 2023	• Initial geotechnical drilling complete with track mounted auger
6	Nov. 7th, 2023	• Water Treatment Plant (WTP) road and winter hauling upgrades complete
7	Dec. 19th, 2023	• Temporary pumping setup operational in reservoir (reduced hauling)
8	Mar. 7th, 2024	• Awarded drilling scope for VIS project to Access Water Wells
9	Mar. 18th, 2024	• Began placement of rig matting for drill pads in reservoir and VIS construction
10	Mar. 28th, 2024	• Remainder of scope (pipeline + electrical) for new intake project awarded to Porter Tanner

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Event	Date	Description
11	Apr. 12th, 2024	• Geophysical mapping with BGC Engineering begins alongside additional well testing following development concerns of initial VIS locations
12	Apr. 17th, 2024	• Relocation of VIS intakes complete, testing phases underway
13	Apr. 21st, 2024	• Removed temporary pumping setup from reservoir due to increasing levels
14	May 10th, 2024	• Relocated intake (VIS-3) begins pumping directly to WTP
15	May 11th, 2024	• Hauling ceases
16	Jun. 12th, 2024	• One old intake brought back online, allowing MD to pump from VIS-3 and one old intake
17	Jun. 13th, 2024	• Water restrictions lowered to Stage 1
18	Jul. 5th, 2024	• Water restrictions removed

RESPONSE

As indicated in the Timeline of Critical Events, the MD entered a severe water crisis starting mid-August, 2023. Water supply augmentation was required until mid-May, 2024, with water restrictions in effect until July 2024. Ongoing drought conditions resulted in water levels in the Oldman Reservoir falling well below the operating rule curve (published and controlled by Alberta Agriculture and Irrigation). Consequently, the raw water intakes for the WTP were exposed and no longer capable of drawing water. These intakes were the only available source of raw water for the WTP and as such, there was a complete loss of sustainable water supply to the impacted communities.

The additional cost to water operations exceeded $1,500,000. Water hauling cost was about $810,000 in 2023 and $300,000 in 2024 (to supplement the temporary pump setup). The temporary pump setup cost about $350,000 to setup, takedown, and operate for about 5 months. Modifications for winter hauling resulted in a one time $40,000 cost. Additional costs for weekend/overtime staffing, excess chemical treatment, equipment wear, etc. were not broken out.

The cost to supply water over the course of the crisis was roughly $22/m3 (70,000 m3 at a cost of $1,500,000).

15 GB of internal links to all crisis project information are saved in the folder below including information related to all options investigate, 225 pages of exported notes related to the crisis, and hundreds of related pictures, videos and drone footage:

- \\mdserver\Documents\Infrastructure\MyDocuments\Facilities\04_Water\Emergency

INITIAL RESPONSE

The Fall 2022 Water Shortage Response Plan (WSRP) triggered restrictions based on levels in the Oldman Reservoir. The MD was aware that levels in the reservoir were dropping sharply as early as July 27th, 2023, and was tracking levels at minimum on a weekly basis, in preparation for a potential water shortage. The MD was using the Rivers Alberta Water Survey of Canada level to track levels (05AA032), which unfortunately (inaccurately) continued to show levels above the initial trigger points previously developed, as demonstrated below:

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Timestamp	Level (m)	Capacity (dam³)	% Full (%)
2023-08-17 12:10:00	1107.777	287281.70	58.03
2023-08-17 12:05:00	1107.776	287265.60	58.03
2023-08-17 12:00:00	1107.778	287297.80	58.03
2023-08-17 11:55:00	1107.776	287265.60	58.03
2023-08-17 11:50:00	1107.774	287233.40	58.02
2023-08-17 11:45:00	1107.776	287265.60	58.03
2023-08-17 11:40:00	1107.775	287249.50	58.02
2023-08-17 11:35:00	1107.776	287265.60	58.03
2023-08-17 11:30:00	1107.774	287233.40	58.02
2023-08-17 11:25:00	1107.776	287265.60	58.03
2023-08-17 11:20:00	1107.774	287233.40	58.02
2023-08-17 11:15:00	1107.774	287233.40	58.02
2023-08-17 11:10:00	1107.774	287233.40	58.02
2023-08-17 11:05:00	1107.775	287249.50	58.02

It was discovered in hindsight that the 05AA032 site is physically located on the North Fork of the Oldman Reservoir and would no longer have been able to track reservoir level accurately after 1108m, as it would simply be measuring the river level, as opposed to the reservoir level. The table below summarized the trigger levels of the WSRP alongside the approximate timelines at which those levels were reached based on historic data using the EPA Rivers Alberta level tracker:

Reservoir Level (m)	Stage	Timeline
1118.8m to 1106.51	Normal Levels	Up to Aug 6th, 2023
1106.50 to 1105.42	Warning	Aug 6th - 10th, 2023
1105.41 to 1104.19	1	Aug 10th –14th, 2023
1104.18 to 1103.10	2	Aug 14th – 16th, 2023
1103.09 to 1102.10	3	Aug 16th – 20th, 2023
1102.09 to 1088.45	4	Aug 20th, 2023 – May 9th, 2024

Per the Fall 2022 WSRP, the MD went from normal water levels to the most severe stage of reservoir levels in fourteen (14) days. Operators discovered a breach of the intakes August 15th & 16th, respectively. Stage 3 restrictions were implemented immediately. Stage 4 restrictions were never implemented as this would have ceased commercial operations completely for MD businesses for over 6 months, including water usage by Castle Mountain Resort (CMR), and the various smaller commercial operators in Lundbreck, Cowley, and Beaver Mines. The MD needed to focus its resources on dealing with the shortage as opposed to dealing with legal and other ramifications related to commercial business closures.

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SUPPLY AUGMENTATION - WATER HAULING

The MD began hauling water on August 17th, 2023, continuing until May 11th, 2024. The cost for this operation was roughly $25/m3. Treated water was initially hauled directly to the reservoir at the WTP, using the Town of Pincher Creek (TOPC) potable water supply (through commercial operation water fills). Raw Water was hauled from downstream of the Oldman Dam, on the North side of the River where the bridge crosses the Oldman River. In total, roughly 50,000 m3 of water was hauled over the course of the water crisis. Raw water was hauled to the hydrant located just outside of the WTP, East of the access road.

The MD required a Temporary Diversion License (TDL) to pump raw water from downstream of the dam through AEPA.

Hauling raw water became difficult over the winter months due to freezing of the Oldman River along with truck hose/pump freezing. An agreement was reached with ATCO to pull water from their fire protection system at the Oldman Dam later in the crisis, but this agreement did not end up getting utilized due to high cost, difficult access, liability concerns, among other reasons.

WATER HAULING UPGRADES

The MD completed construction of a “through” access road at the WTP in November, 2023 to make hauling to the plant easier for larger trucks. New “winter ready” fill ports were added to the old Cowley Water Treatment Plant, at the WTP site. These haul ports were used in conjunction with the direct reservoir fill for the remainder of the crisis.

SUPPLY AUGMENTATION - TEMPORARY PUMPING SETUP

The MD implemented a temporary raw water pumping setup in the Oldman reservoir in mid-December, 2023 to help reduce the cost of water supply augmentation. The following presented challenges in the type of setup which could be installed and the reasoning for the late December, 2023 installation (as opposed to earlier in the crisis):

- High silt content of the flowing River by the intakes
- Winter freezing/challenges
- Access challenges in reservoir (saturated reservoir bed, snow/ice, drifting)
- Permitting requirements to draw from River near the existing intakes, which included:
  - Alberta Forestry and Parks – Temporary Field Authorization
  - Alberta Environment & Protected Areas - Water Act Temporary Diversion License
  - Alberta Agriculture & Irrigation – Temporary Access Authorization
  - Department of Fisheries & Oceans – Request for Review

The site needed to be fully manned and in constant communication with water operators for operational and safety purposes. Pictures of one potential solution located in the Oldman Reservoir (historic Crowsnest River), pumping into the existing intakes is shown in the figures below. The setup consisted of:

- Sump pump (Tsurumi KTZ 3 Phase 3” low HP pump) sized for 10 L/s flow, minimal head pressure , pumping water into a custom built settling tank

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- Additional pump sized at same flow requirement, pumping water through 2 series, 2 parallel manual pre-filtration setup housed in an insulated upside down sea can. Manual cleaning of filters may be necessary as often as every 20 minutes depending on raw water turbidity
- Flange and pipe works to connect to existing intake casing pipe
- Generator for heating and running pumps
- Access matting (seasonal and ground condition dependant)

Figure 1: Inside Seacan. Manual pre-filtration setup flowing to existing intake casing

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Figure 2: Site overview prior to settling tank installation. Bypass pumping ongoing. Intake overhangs Crowsnest River

Figure 3: Casing for old intakes with connections installed on custom blind flange

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Figure 4: Seacan with cutout shown. Insulated for Winter use

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Figure 5: Site Overview. Pump on right on davit arm for lowering/raising daily

Figure 6: Winter/Spring overview with settling tank installed

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Figure 7: Settling tank top view while filling. Requires additional pump (not shown) and nightly emptying

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Figure 8: Settling tank in shop. Drain valves shown

SUPPLY AUGMENTATION ALTERNATIVES

Many different alternatives were considered to supply temporary (as well as permanent) water to the WTP over the course of the crisis. Below is a brief summary of some of the alternate considered options and why they did not end up getting implemented:

- Trash pump (or equivalent) setup from reservoir directly to:
  - Raw water site/water treatment plant
    - *Extreme turbidity, access difficulties for equipment, gensets, etc., and the moving reservoir volume made this unfeasible*
  - Raw Water storage
    - Large Volume (over Winter) rental/purchase
      - *Not economical with rental fees and heating costs*
    - Small Volume (mitigate need to operate over weekends, etc.) rental/purchase
      - *More economical to staff over weekends then rent + heat small volume tanks*
- Temporary treatment plant at alternate location (Castle River – near old intakes)
  - *Long lead delivery. Difficult to forecast 4-8 months out what status of water crisis would be. High Cost*
- Groundwater well
  - Closer to South Todd Creek

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        - *Not economical. Cannot place a groundwater well in Oldman Reservoir area per AEPA*
    - Closer to existing intakes
        - *Cannot place a groundwater well in reservoir per AEPA*
    - *Consultation with groundwater well drillers and review of available data indicated likelihood of successful drill for volumes required would be low unless installed in the Oldman Reservoir bed. Also, a different type of approval for WTP would be necessary along with a different treatment process*
- Full service water transfer contractor providing long distance pumping services
    - From reservoir
        - *Not economical. Quoted via multiple contractors*
    - From upstream clean source (South Todd Creek area)
        - *Not economical*
    - One time bulk transfer into large volume (over Winter) temporary storage tanks
        - *Not economical + concerns related to impact of failures/downtime*

More details on augmentation supply options considered can be found in the emergency file folder, with related presentations to the MD Council under the "Council" folder.

INTAKE CONSTRUCTION

The MD began construction on new low level intakes within the Oldman Reservoir (ORLLI Project) in March of 2024 after receiving the following approvals:

- Alberta Water Act Authorization
- Alberta Agriculture/Irrigation Works
- Alberta Public Lands Disposition
- Alberta Public Lands Temporary Field Authorization (TFA)
- Alberta Roadside Development Permit
- Alberta Historical Resources Approval
- Canada CNWA Notification of Minor Works
- Canada DFO Request for Review

The objective of this project was to provide an opportunity to draw raw water from the Crowsnest River near the existing intakes during times of extreme low water levels. By May 2024, the MD had two (2) intakes constructed. These intakes have flow limitations based on the hydrogeology of the area. At time of this report, the MD is still working on closing out the electrical portion of this scope of work so that all four (4) intakes can run simultaneously.

The scope of installation for the two (2) raw water infiltration structures included the following:

- Structures capable of drawing water from the Crowsnest River aquifer through natural gravel deposits in the historical floodplain that surrounds the natural river channel
- Raw water pipelines and electrical connection from the infiltration structures to the existing pipeline conveyance and control building
- Process, mechanical, electrical, and controls installations within the existing control building

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The ORLLI Project was conceptualized under an accelerated timeframe and was of urgent priority to complete due to unknowns around how long the 2023/2024 drought situation would last. The MD moved forward with beginning construction of Phase 1 in late 2023 after receiving fast-tracked approvals from various Government bodies. Construction is anticipated to be fully complete by May 2025. Constructing vertical structures near the existing intakes was the most timely & cost effective option available to the MD at the time. Other mitigation strategies were looked at and high level costed, such as:

- Raw water storage (Large or small volume)
- Horizontally constructed intakes
- Additional work near the newly constructed intakes to increase production

DEMAND REDUCTION EFFECTIVENESS

It is difficult to accurately compare usage pre-water crisis with the water used during the crisis. The MD started connecting the community of Beaver Mines to the regional water system in October of 2023. Usage would have been expected to be naturally higher from Aug. 23 – May 24 it the water supply crisis did not occur.

There were also some gaps in reporting during the crisis as operators switched between supply augmentation methods. Roughly 70,500 m3 of water was used during the crisis. The same period during the previous year saw about 82,640 m3 of water use. Beaver Mines total water usage in 2024 was about 6,200 m3. Castle Mountain Resort (CMR) also makes up a significant portion of demand over the Winter, with usage being very seasonally dependant based on user visits.

If we roughly normalize 2022/2023 consumption vs. 2023/2024, a 17-22% reduction in demand was seen over the course of the crisis.

HISTORICAL & FUTURE RISK

The most severe water related hazard facing the MD is drought impacts on our intakes in the Oldman Reservoir. Due to dropping water levels last year, the MD was forced to haul water and utilize a temporary pumping setup until May 10th, 2024 at an unplanned operational cost exceeding $1.5M.

Historical data shows a similar event occurring in 2001, prior to the relocation of the MD's intakes to the Oldman Reservoir. It would appear such an event could occur somewhere between 1:10 and 1:20 years, based on the limited data available (the reservoir was only constructed in the 90s). The MD anticipates the likelihood may increase over time with more demands on the South Saskatchewan River Basin.

CONCLUSIONS

There were some major takeaways learned from the MD’s 2023/2024 water supply crisis. Some of the most critical conclusions are:

- Hauling water for short duration crisis’ may be feasible in the MD, but long duration hauling (2-3 weeks+) comes at an extreme cost which cannot be sustainability maintained
- Shutting down commercial operations water use results in complications beyond costs, and should be avoided where feasible

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- The WSRP was ineffective in giving appropriate heads up to operations and would have also been ineffective in preventing a water shortage (the MD cannot prevent water shortages alone due to our minimal demand on the overall system)
- The MD's water use and restrictions have minimal to no impact on overall levels of the Oldman Reservoir
- Hauling potable water comes at a similar cost as hauling raw water, despite the additional consumption charges, and eases burden for water operators
- Disaster Recovery Programs do not provide financial relief for water supply crisis
- It is likely that similar water levels will be seen in the Oldman Reservoir over the coming years and decades, and the MD must plan for such events
- The location of the MD's existing intakes presents significant regulatory challenges during crisis', as a variety of approvals and authorizations are required from various government branches and bodies prior to implementing solutions

RECOMMENDATIONS

To minimize the impact of future shortages, the following changes are recommended regarding the MD's Water Shortage Response Planning, including the current completion status at time of this reports publishing:

Recommendation	What needs to be done?	Why is this required?	Current Status	Priority
Demand Reduction Enforcement	• Resources are required with enforcement expertise to monitor water usage during crisis' and enforce penalties	• The MD saw a roughly 20% drop in demand over the crisis, but believes this could have been higher with enforcement • Letters were issued to high water users, but anecdotal complaints of restriction flaunting could not be penalized financially	• 75% complete • MD in process of hiring a community peace officer	Medium
Construct new Intakes (to be used when levels are now)	• Emergently construct new intakes to prevent hauling needs	• Preventing/minimizing costly hauling is top priority. This cannot be achieved by demand reductions alone	• 90% complete • 2 new intakes constructed • Limited by hydrogeology	Very High
Improve winter hauling off-loads and tanker truck access	• Install winter proof off-takes for potable and raw water • Construct "through" access at WTP	• Winter hauling results in freeze/access issues with current off-takes • "Through" access allows for larger trucks, decreasing cost per load	• 100% complete • Complete during crisis	Very High
Improve trigger points and monitoring in WSRP	• Modify demand reduction triggers to take into account various factors aside from just reservoir level	• Demand reduction triggers based on level proved insufficient triggers of demand restrictions and insufficient to forecast demand decreases	• 100% complete • WSRP updated with trigger criteria guidance	Very High

P.O. BOX 279
PINCHER CREEK, ALBERTA
T0K 1W0
phone: 403-627-3130 • fax: 403-627-5070
email: info@mdpinchercreek.ab.ca
www.mdpinchercreek.ab.ca

Recommendation	What needs to be done?	Why is this required?	Current Status	Priority
Pre-template WSRP materials and release locations	• Create new template documents, posters, and social media posts for quick release during crisis	• Operations needs to focus on operational logistics during onset of restrictions. Pre-developed templates ease administrative burden and allow for efficient changes in stages • Changes to WSRP require changes to templates	• Underway • Anticipate Apr. 2025 completion	Medium
Add an additional stage to WSRP Demand Reduction	• Additional stage of restrictions	• Differences between Stage 2 and 3, along with 3 and 4 resulted in stark differences during original implementation, forcing some "off-script" demand reductions	• 100% complete • WSRP updated with trigger criteria guidance	Medium
Align WSRP heavy usage times with normal operations working hours where feasible	• Modify watering days to weekdays where feasible, especially for the most severe restriction stages	• Operators and Admin staff do not work weekends typically • Encouraging relatively heavier water use during weekends results in operating challenges • Much easier to manage supply challenges during week	• 100% complete • WSRP updated with trigger criteria guidance	Medium
Ensure all known water uses are clearly captured in WSRP demand reductions	• Add bulk fill stations, sewer fill stations, public institutions, and any other predicted uses to WSRP demand reductions	• Some uses were missing from WSRP, resulting in the need for on the fly decision making regarding certain user groups, and disagreements among user groups due to lack of official related releases	• 100% complete • WSRP updated with trigger criteria guidance	Medium
Complete a study/review of revised forecasted drought vulnerability and recommended future projects	• Complete a Drought Projects Assessment to analyze cost-benefit of various solutions to ensure the MD's long term water security needs are met in periods of drought	• New intakes may still have limitations compared to forecasted 25-year demand • Proactive projects necessary to avoid the need to augment water supply for extended periods if severe extended drought or other types of water shortages occur again in the future	• Kicked off • Underway, completion date TBD	High

APPENDIX E – Current Water Agreements with Rural & Commercial Users (As of March, 2025)

Note: Handwritten numbers on agreements correspond to Transmission Line sites on Table 12 which can be individually metered and are "starred" on Figures 12 and 13.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9
IN THE PROVINCE OF ALBERTA
BYLAW No. 1359-25

A Bylaw of the Municipal District of Pincher Creek No. 9, in the Province of Alberta for the purpose of amending Bylaw No. 1344-22, being the Utility Bylaw.

WHEREAS, pursuant to Part 1, Section 3, of the Municipal Government Act, the purposes of a municipality include providing services, facilities or other things that, in the opinion of Council, are necessary or desirable for all or a part of the municipality;

AND WHEREAS, pursuant to Part 2, Section 7, of the Municipal Government Act, a council of a municipality may pass bylaws for municipal purposes respecting public utilities and the enforcement of bylaws;

NOW **THEREFORE** the Council of the Municipal District of Pincher Creek No. 9, in the Province of Alberta, duly assembled, enacts as follows:

1. This Bylaw may be cited as "UTILITY BYLAW AMENDMENT BYLAW NO. 1359-25"

2. Amendment for the complete replacement of Schedule "E" of Utility Bylaw 1344-22 per the attached Schedule "E".

3. This Bylaw comes into force and effect upon third and final passing thereof.

Read a first time this ___ day of _____, 2025

Read a second time this ___ day of _____, 2025

Read a third and final time this ___ day of _____, 2025

_____
REEVE

_____
CHIEF ADMINISTRATIVE OFFICER

SCHEDULE "E" – BYLAW No. 1359-25
RATES, FEES, AND CHARGES

(1) All base and flat rates shown are for 2 months of use, and billed every 2 months, unless indicated otherwise

(2) Where Solid Waste Services pricing has not been indicated in the tables below, the Customer is responsible to provide their own Solid Waste Services, or shall have an agreement with the MD directly to define rate for Solid Waste Services. Solid Waste Services are only provided within the Collection Area

(3) The MD's Land Use Bylaw shall be used as a first basis of defining which type of Customer is being served. The Chief Administrative Officer may define the type of Customer where additional guidance is required

1. New Service Connection Fees

The amounts payable for connecting the Private Water Line or Private Drainage Line, or both, on a Customer's Property to the MD's Water Main and/or Wastewater Main, as applicable, to complete a new Service Connection so that Water Services and/or Wastewater Services to the Customer's Property may be commenced, are as follows:

(1) Water Services Only: Actual cost incurred by the MD in relation to the connection, plus 5%;

(2) Wastewater Services Only: Actual cost incurred by the MD in relation to the connection, plus 5%;

(3) Combined Water/Wastewater Services: Actual cost incurred by the MD in relation to the connection, plus 5%;

and such amounts shall be paid in accordance with the Utility Services Guidelines.

2. Distribution System (Hamlet - Urban) Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Residential - Hamlet of Lundbreck								
- Water Services	$30.00	$1.44	$40.00	$1.70	$50.00	$2.01	$60.00	$2.30
- Wastewater Services	$18.00	-	$24.00	-	$30.00	-	$36.00	-
- Solid Waste Services	$22.50	-	$25.00	-	$27.50	-	$30.00	-
Residential - Hamlet of Beaver Mines								
- Water Services	$30.00	$1.44	$40.00	$1.70	$50.00	$2.01	$60.00	$2.30
- Wastewater Services	$21.00	$0.06 (per m^3 water used)	$30.00	$0.13 (per m^3 water used)	$39.00	$0.19 (per m^3 water used)	$48.00	$0.25 (per m^3 water used)
- Solid Waste Services	$22.50	-	$25.00	-	$27.50	-	$30.00	-
Commercial - Hamlet of Lundbreck								
- Water Services	$55.00	$1.70	$60.00	$1.90	$65.00	$2.10	$70.00	$2.30
- Wastewater Services	$56.25	-	$62.50	-	$68.75	-	$75.00	-
- Solid Waste Services	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)
Commercial - Hamlet of Beaver Mines								
- Water Services	$55.00	$1.70	$60.00	$1.90	$65.00	$2.10	$70.00	$2.30
- Wastewater Services	$62.50	$0.06 (per m^3 water used)	$75.00	$0.13 (per m^3 water used)	$87.50	$0.19 (per m^3 water used)	$100.00	$0.25 (per m^3 water used)
- Solid Waste Services	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)	$40.00	$40.00 (per additional trip)
Industrial - Hamlets								
- Water Services	$75.00	$1.70	$100.00	$1.90	$125.00	$2.10	$150.00	$2.30
- Wastewater Services	$75.00	-	$100.00	-	$125.00	-	$150.00	-

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Institutional - School								
- Water Services	$112.50	$1.70	$175.00	$1.90	$237.50	$2.10	$300.00	$2.30
- Wastewater Services	$87.50	-	$125.00	-	$162.50	-	$200.00	-
Manufactured Home Park								
- Water Services	$105.00	$1.70	$160.00	$1.90	$215.00	$2.10	$270.00	$2.30
- Wastewater Services	$87.50	-	$125.00	-	$162.50	-	$200.00	-
Community/Non-Profit								
- Water Services	$10.00	$0.58	$20.00	$1.15	$30.00	$1.73	$40.00	$2.30
- Wastewater Services	$7.50	-	$15.00	-	$22.50	-	$30.00	-

3. Transmission System (Rural User) Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Non-Cistern Connection (Residential – Non Cistern)								
- Water Services	$56.25	$1.82	$87.50	$2.31	$118.75	$2.81	$150.00	$3.30
Cistern Connection								
- Water Services	$40.00	$1.44	$60.00	$1.70	$80.00	$2.01	$100.00	$2.30

(1) A Cistern Connection is defined as meeting the requirements of Schedule B, Section (9)(1). Other Transmission System (Rural User) Connections shall be considered "Non-Cistern" rate Customers

4. Bulk Water Fill Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate/day)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Bulk Fill (Standpipes)								
- Water Services	-	$2.64	-	$3.31	-	$3.31	-	$3.97
Fire Hydrants								
- Water Services	$5.38	$2.64	$5.75	$3.31	$6.13	$3.31	$6.50	$3.97

5. Transmission System Province (Parks) Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Province (Parks)								
- Water Services	$600.00	$1.70	$800.00	$1.90	$1,000	$2.10	$1,200	$2.30

(1) The Province handles Wastewater and Solid Waste outside of this Bylaw. Repair and replacement of the Distribution System within the Parks Zone will be as per Agreement with the Crown. The MD does not own nor maintain the Provincial Distribution Systems.

6. Village of Cowley Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Village of Cowley								
- Water Services	$600.00	$1.44	$800.00	$1.70	$1,000	$2.01	$1,200	$2.30

(1) Repair and replacement of the Distribution System within the Village of Cowley will be as per agreements with the Village. The MD does not own nor maintain Cowley's Distribution System

7. Transmission System Castle Mountain Resort Inc. (CMR) Rates

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Castle Mountain Resort								
- Water Services	$5,500	$1.70	$6,000	$1.90	$6,500	$2.10	$7,000	$2.30

(1) CMR has its own system for Wastewater and a separate agreement for Solid Waste Services. Repair and replacement of the Distribution system within the Resort will be the sole responsibility of CMR. The MD does not own nor maintain CMR's Water or Wastewater Systems

8. Unmetered Services

Customer	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)	Base (flat rate)	Consumption ($/m^3$)
Residential - Hamlets								
- Water Services (less than 2" meter size)	$200.00	-	$225.00	-	$250.00	-	$275.00	-
- Water Services (2" or greater meter size)	$250.00	-	$280.00	-	$310.00	-	$340.00	-
Other (Commercial, Industrial, Etc.) - Hamlets								
- Water Services (less than 2" meter size)	$250.00	-	$280.00	-	$310.00	-	$340.00	-
- Water Services (2" or greater meter size)	$265.00	-	$310.00	-	$355.00	-	$400.00	-
Transmission Line Users								
- Water Services (less than 2" meter size)	$250.00	-	$280.00	-	$310.00	-	$340.00	-
- Water Services (2" or greater meter size)	$265.00	-	$310.00	-	$355.00	-	$400.00	-

9. Over-strength Wastewater Surcharges

(1) The following Over Strength Surcharges and Additional Over Strength Surcharges are hereby established:

	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Over Strength Surchange (per kg of Over Strength Surchange Mass)	Additional Over Strength Surcharge (per kg of Additional Over Strength Surcharge Mass)	Over Strength Surchange (per kg of Over Strength Surchange Mass)	Additional Over Strength Surcharge (per kg of Additional Over Strength Surcharge Mass)	Over Strength Surchange (per kg of Over Strength Surchange Mass)	Additional Over Strength Surcharge (per kg of Additional Over Strength Surcharge Mass)	Over Strength Surchange (per kg of Over Strength Surchange Mass)	Additional Over Strength Surcharge (per kg of Additional Over Strength Surcharge Mass)
Over Strength Surchange - Hamlets								
- Biochemical Oxygen Demand (BOD)	$0.16	$0.16	$0.17	$0.17	$0.18	$0.18	$0.19	$0.19
- Chemical Oxygen Demand (COD)	$0.16	$0.16	$0.17	$0.17	$0.18	$0.18	$0.19	$0.19

	2025		Effective Jan. 1 2026		Effective Jan. 1 2027		Effective Jan. 1 2028	
	Over Strength Surchange (per kg of Over Strength Surchange Mass)	**Additional Over Strength Surcharge** (per kg of Additional Over Strength Surcharge Mass)	**Over Strength Surchange** (per kg of Over Strength Surchange Mass)	**Additional Over Strength Surcharge** (per kg of Additional Over Strength Surcharge Mass)	**Over Strength Surchange** (per kg of Over Strength Surchange Mass)	**Additional Over Strength Surcharge** (per kg of Additional Over Strength Surcharge Mass)	**Over Strength Surchange** (per kg of Over Strength Surchange Mass)	**Additional Over Strength Surcharge** (per kg of Additional Over Strength Surcharge Mass)
- Oil and Grease (O&G) – Animal and Vegetable + Mineral and synthetic/hydrocarbon	$0.16	$0.16	$0.17	$0.17	$0.18	$0.18	$0.19	$0.19
- Total Suspended Solids (TSS)	$0.107	$0.107	$0.115	$0.115	$0.122	$0.122	$0.13	$0.13
- Total Kjedahl Nitrogen (TKN)	$1.06	$1.06	$1.13	$1.13	$1.19	$1.19	$1.26	$1.26
- Total Phosphorus (TP)	$6.66	$6.66	$7.08	$7.08	$7.50	$7.50	$7.92	$7.92

(2) For greater certainty, when the Measured Substance Concentration exceeds the corresponding Additional Over Strength Concentration Limit, an Additional Over Strength Surcharge will be payable in addition to, not in lieu of, the applicable Over Strength Surcharge.

10. Additional Fees & Services

(1) The fees and charges payable for additional Water and Wastewater Services are as follows:

(1) Water Turn-On/Turn-Off Charge (at Customer request): $75.00 per visit

(2) Supply of Meter: Actual cost incurred by the MD in obtaining the Meter + 5%

(3) Meter Installation/Removal Charge: Actual cost incurred by the MD + 5%

(4) Meter Test Charge: $200.00

(5) Meter Repairs or Other Costs Associated with Meters: Actual cost incurred by the MD + 5%

(2) A late payment charge of 1.5% per month, not compounded, will be applied to all charges on a Customer's Account, if the Customer's payment is not received by the MD within 30 days from the date of issuance of the bill in respect of the charges.

(3) A dishonoured cheque charge of $25.00 will be applied for each cheque returned for insufficient funds.

CHIEF ADMINISTRATIVE OFFICER'S REPORT

April 7, 2025, to April 18, 2025

Discussion:

Apr 8	Council Committee and Council Meeting
Apr 10	Safety Inspection at Airport
Apr 14	Senior Management Team Meeting
Apr 15	Coffee with Council Div 5, Summerview Hall
Apr 16	Joint Health and Safety Committee
Apr 17	Communications Strategy Mtg.
Apr 17	CPO Update Meeting with Consultant
Apr 18	Good Friday Statutory Holiday

Upcoming

Apr 21	Easter Monday Statutory Holiday
Apr 22	Council Committee and Council Meeting
Apr 24	Admin Staff and Safety Meetings
Apr 25-26	Tradeshow

RECOMMENDATION:

That Council receive for information, the Chief Administrative Officer's report for the period April 7, 2025, to April 18, 2025.

Prepared by: Roland Milligan, CAO Date: April 17, 2025

Respectfully presented to: Council Date: April 22, 2025

ADMINISTRATIVE SUPPORT ACTIVITY
April 3, 2025 to April 17, 2025

Correspondence from the Last Council:

- Maycroft Road Residents
- Minister of Public Safety and Emergency Services
- Castle Mountain Letter of Support
- Parks Canada

Advertising/Social:

- Easter Closure – MD Offices and Eco Centre
- Coffee with Council – Summerview Hall
- Seniors Property Tax Deferral Program
- Dust Control Reminder
- Employment Opportunity Seasonal Labour
- 2025 Gravel Hauling
- Council Package for April 8, 2025
- Foothills Forage & Grazing Association
- Municipal Election

Other Activities:

- Information Officer Training with REMO

Invites to Council:

- Rural Crime Watch – has not responded
- Community Foundation – April 8, 2025

Upcoming Dates of Importance:

- Coffee with Council Summerview – April 15, 2025
- Regular Committee, Council – April 22, 2025
- Pincher Creek & District Trade Show – April 25 and 26, 2025
- Volunteer Appreciation Dinner – April 30, 2025

ALBERTA
MUNICIPAL AFFAIRS
Office of the Minister
MLA, Calgary-Hays

April 8, 2025

I am pleased to share that today, our government tabled Bill 50, the *Municipal Affairs Statutes Amendment Act, 2025.* Bill 50 makes amendments to the *Municipal Government Act* (*MGA*), *Local Authorities Election Act* (*LAEA*), *New Home Buyer Protection Act* (*NHBPA*), and the *Safety Codes Act* (*SCA*) to modernize municipal processes.

The proposed amendments will strengthen local governance and reduce conflict by repealing code of conduct provisions and granting Ministerial authority to establish procedures of council. The amendments also clarify the accountability of chief administrative officers and strengthen oversight authorities of appointed Official Administrators.

Also included are amendments regarding Intermunicipal Collaboration Frameworks (ICFs) which would clarify the required content of ICFs and strengthen the dispute resolution process to ensure ICFs are adopted and implemented effectively.

Changes are also proposed to the *LAEA* to clarify administrative requirements in advance of the October 2025 municipal and school board elections. In addition, we are allowing for the use of elector assistance terminals which enable voters who live with visual or physical impairments to vote independently and privately. We are also proposing amendments to residency requirements so that residents displaced by last year's wildfire in Jasper can vote and run for office, provided they intend to return to the community.

Finally, proposed changes to the *NHBPA* and the *SCA* address stakeholder concerns with the current new home buyer protection program, the quality of new homes, affordability, and red tape.

I invite you to read Bill 50. A copy of the Bill can be found here: https://www.assembly.ab.ca/assembly-business/bills/bills-by-legislature. Additional information about the proposed amendments is also available here: www.alberta.ca//modernizing-municipal-processes.

…/2

ALBERTA
MUNICIPAL AFFAIRS
Office of the Minister
MLA, Calgary-Hays

I will be hosting a town hall for stakeholders to share additional information and answer questions about the proposed amendments. The town hall will take place virtually on April 16, 2025, at 6:00 PM. Please send the names and email addresses of your representative(s) who will attend to ma.engagement@gov.ab.ca. Individuals identified by your organization will receive a link ahead of the town hall.

Sincerely,

Ric McIver
Minister

Outlook

Municipal District of Pincher Creek - Community Outreach Updates from Mission and Fraser Lake, BC Community Members

From Michelle Toth <mtoth3311@gmail.com>

Date Sun 2025-04-13 10:20 AM

To reception@pinchercreek.ca <reception@pinchercreek.ca>; development@pinchercreek.ca <development@pinchercreek.ca>; Tony Bruder <CouncilDiv1@mdpinchercreek.ab.ca>; Rick Lemire <CouncilDiv2@mdpinchercreek.ab.ca>; Dave Cox <CouncilDiv3@mdpinchercreek.ab.ca>; Jim Welsch <CouncilDiv4@mdpinchercreek.ab.ca>; John MacGarva <CouncilDiv5@mdpinchercreek.ab.ca>; MDInfo <MDInfo@mdpinchercreek.ab.ca>

4 attachments (6 MB)

Truth and Reconciliation Commission of Canada Calls to Action.pdf; Community Group Mailing List and Addresses.pdf; Calls to Action and CRITR Booklet Packages (ie. for Canadian and American Bar Associations) Photo A.jpeg; Calls to Action and CRITR Booklet Packages (ie. for Canadian and American Bar Associations) Photo B.jpeg;

Good morning,

May this message find you well and be one of many other community post-it notes shared with you all of acknowledgement and appreciation of community connectivity near and far. If possible, would community members be able to share the ongoing updates of community acknowledgement moments, such as these, with one another to honour the ongoing collective acknowledgements and discussions already occurring locally and globally towards continued resolution, restoration and community? In hopes that we may have more opportunities to share in foundations of restorative acknowledgement as we collectively approach community-based resolutions together.

I know that I am not the only one when I share how humanity is need of shared resolutions and restorations, and I know that I am not alone in acknowledging how community members, such as myself and so many others, across North America and the world are in need of better understanding and honouring of history, healing and Truth and Reconciliation with all Indigenous communities across Indigenous lands.

Over the last year, after experiencing illegal termination of employment, I began to realize the need for the average everyday community member to acknowledge and support community interconnectivity as a daily practice if we truly were to honour and commit towards refinement as humanity locally and globally.

I began to question, if I, as a first generation born Canadian of an immigrant European family, were to experience illegal termination in 2025 within a community outside of a major city--what must other community members still be experiencing in subtle to other profound ways still amidst all the discussions and resolutions for restoration I have heard discussed locally and globally? What must Indigenous community members on Indigenous Lands still be facing amidst challenging steps towards Truth and Reconciliation acknowledgement shared by and with all our diverse communities in 2025 still?

As a result of a much needed community awakening towards community restoration, and honour to so many experiencing far more challenging hardships than my family and I can even begin to fathom--

out of much needed respect from community to community and individual yet collective shared sorrow and shame in not understanding and knowing how to better connect to have discussions of understanding of the hardships faced by Indigenous communities still to this day--we began to mail over 700 handwritten letters to numerous individuals, organizations, and industries, both locally and globally, including every head of US State Governor, majority of RCMP detachments, DFO offices, Canadian and American Bar Associations, United Nations High Commissioner for Human Rights, major Transport Canada Authorities along with dozens of Indigenous Nations, Councils, and Governments have received the same letter(s) sharing gratitude of commitment towards acknowledgement:

> ***"Thank you for acknowledgement and progress made with communities across our interconnected humanity of shared histories, both locally and globally, in bridging a foundation for restoration and resolution. Thank you for practicing daily acknowledgement of humans, identity, history and culture, along with restorative justice as foundations of which society standards stem from. May we continue to honour acknowledgement of history of people and of land--to honour truth, identity, humans, history, and rights, both locally and globally--in bridging a foundation for restoration and resolution with communities upon Indigenous Lands as we honour all Indigenous Nations and honour commitment to Truth and Reconciliation together. May we continue to honour acknowledgement of humanity, history, and rights upon Indigenous Lands as we progress towards committed focus upon community-based restoration and resolution with humanity."***
>
> And/or have received this letter of acknowledgement:
>
> ***"Thank you for continued daily practice and focus upon community restoration and resolution, both locally and globally, in welcoming the opportunity for communities across Indigenous Lands to acknowledge interconnected histories to guide us towards a shared focus in honouring Truth and Reconciliation together across all communities and nations. May we continue to honour acknowledgement of community-based resolutions and restoration as pillars of support that humbly remind of the need for a foundation set with restorative justice as we commit to honouring and reconnecting our diverse communities, cultures, and histories as a shared daily practice."***
>
> In addition to the letters mailed over these last few months, where my family and I reside, the surrounding District of Vanderhoof Council, Village of Fraser Lake Council, Village of Burns Lake Council, along with Canadian and American Bar Associations have been emailed/mailed a package that contains:

- a handwritten 'Thank you acknowledgement letter' (*same as above)*
- 'Truth and Reconciliation Calls to Action' document (*attached to this email*)
- 'Connecting Resilience Indigenous Truth and Reconciliation: Business Edition Workbook' (*found at Staples Canada*)

From our family and communities, we hope the outreach update from Mission/Fraser Lake, BC, may be a 'community care package of acknowledgement' during times of celebration, of challenges faced, of resolutions focused upon for each of us as community to be reminded of our interconnectivity near and far that welcomes the opportunity for us to set a standard at the average community member level of support that community councils, staff and volunteers can count upon in bridging stronger community connectivity, individually and collectively, as we honour our shared histories with restorative justice as a daily foundation and understanding shared local to global.

We hope that the information shared from the letters mailed, to the documents mailed to other villages/towns where my family and I reside, to the mailing/email lists included--may provide additional secured footholds for other village, town, and city councils, staff and volunteers to share in additional opportunities for discussions with numerous individuals, organizations, corporations, and governments regarding community-based restorative justice needs their community needs--in honour for us all to welcome more shared rest stops of acknowledgement across all of our diverse communities with restorative justice as we continue to honour resolutions and restorative justice needs locally and globally together as diverse members of humanity.

May community always be a foundation of supportive restoration and resolution for everyone near and far and a humble reminder of the foundation set with and for restorative justice as we commit to honouring and reconnecting our diverse communities, cultures, and histories as a shared daily practice.

From one human to another, thank you all for sharing in a moment of community connection--amplified by our shared acknowledgement of community around us all--at any given moment,

Toth. M. Family

On the lands of Leq'á:mel, Semá:th,
Kwantlen, Sq'éwlets, Máthexwi, Xwchíyò:m, Chowéthel and q̓íc̓əy̓ nations (Mission, BC)

C: (778) 548-7197
mtoth3311@gmail.com
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Towns/Villages/Cities/Governments notified via email of community outreach updates across British Columbia so far include:

Alert Bay; Anmore; Armstrong; Ashcroft; Belcarra; Cache Creek; Canal Flats; Clinton; Granisle; Greenwood; Hazelton; Kaslo; Keremeos; Lytton; Mission; Port Alice; Port Clements; Sayward; Silverton; Slocan; Tahsis; Zeballos; Lower Post (Daylu Dena Council); Fireside (Liard First Nation); Fort Nelson First Nation Chief and Council; Sun Peaks Resort Municipality; Village of Harrison Hot Springs; Village of Masset; Village of McBride; City of Kamloops; Village of Chase; Village of Midway; Columbia Shuswap Regional District members; City of Vernon; City of Enderby; Village of Lumby; District of Sicamous; Village of Nakusp; City of Abbotsford; City of Chilliwack; District of Hope; Yale First Nation Chief and Council; Fraser Valley Regional District; Halfway River First Nation; City of Quesnel; Heiltsuk Nation

Towns/Villages/Cities/Governments notified via email of community outreach updates across Yukon so far include:

Yukon Legislative Assembly; CIty of Dawson; Vuntut Gwitchin First Nation

Towns/Villages/Cities/Governments notified via email of community outreach updates across Alberta so far include:

Municipal District of Acadia No. 34; City of Grande Prairie; Municipal District of Greenview; Saddle Hills County; Yellowhead County; Clear Hills County; Clearwater County; County of Northern Lights; Municipal District of Bighorn; Rocky View County

Towns/Villages/Cities notified via email of community outreach updates across Nova Scotia so far include:

Town of Amherst; Town of Annapolis Royal; Town of Clark's Harbour

Truth and Reconciliation
Commission of Canada

Truth and Reconciliation Commission of Canada: Calls to Action

Truth and Reconciliation Commission of Canada: Calls to Action

2015

Truth and Reconciliation Commission of Canada, 2012
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Calls to Action

In order to redress the legacy of residential schools and advance the process of Canadian reconciliation, the Truth and Reconciliation Commission makes the following calls to action.

Legacy

Child welfare

1. We call upon the federal, provincial, territorial, and Aboriginal governments to commit to reducing the number of Aboriginal children in care by:
    i. Monitoring and assessing neglect investigations.
    ii. Providing adequate resources to enable Aboriginal communities and child-welfare organizations to keep Aboriginal families together where it is safe to do so, and to keep children in culturally appropriate environments, regardless of where they reside.
    iii. Ensuring that social workers and others who conduct child-welfare investigations are properly educated and trained about the history and impacts of residential schools.
    iv. Ensuring that social workers and others who conduct child-welfare investigations are properly educated and trained about the potential for Aboriginal communities and families to provide more appropriate solutions to family healing.
    v. Requiring that all child-welfare decision makers consider the impact of the residential school experience on children and their caregivers.
2. We call upon the federal government, in collaboration with the provinces and territories, to prepare and publish annual reports on the number of Aboriginal children (First Nations, Inuit, and Métis) who are in care, compared with non-Aboriginal children, as well as the reasons for apprehension, the total spending on preventive and care services by child-welfare agencies, and the effectiveness of various interventions.
3. We call upon all levels of government to fully implement Jordan's Principle.
4. We call upon the federal government to enact Aboriginal child-welfare legislation that establishes national standards for Aboriginal child apprehension and custody cases and includes principles that:
    i. Affirm the right of Aboriginal governments to establish and maintain their own child-welfare agencies.
    ii. Require all child-welfare agencies and courts to take the residential school legacy into account in their decision making.
    iii. Establish, as an important priority, a requirement that placements of Aboriginal children into temporary and permanent care be culturally appropriate.
5. We call upon the federal, provincial, territorial, and Aboriginal governments to develop culturally appropriate parenting programs for Aboriginal families.

Education

6. We call upon the Government of Canada to repeal Section 43 of the *Criminal Code of Canada*.
7. We call upon the federal government to develop with Aboriginal groups a joint strategy to eliminate

educational and employment gaps between Aboriginal and non-Aboriginal Canadians.

8. We call upon the federal government to eliminate the discrepancy in federal education funding for First Nations children being educated on reserves and those First Nations children being educated off reserves.

9. We call upon the federal government to prepare and publish annual reports comparing funding for the education of First Nations children on and off reserves, as well as educational and income attainments of Aboriginal peoples in Canada compared with non-Aboriginal people.

10. We call on the federal government to draft new Aboriginal education legislation with the full participation and informed consent of Aboriginal peoples. The new legislation would include a commitment to sufficient funding and would incorporate the following principles:

    i. Providing sufficient funding to close identified educational achievement gaps within one generation.

    ii. Improving education attainment levels and success rates.

    iii. Developing culturally appropriate curricula.

    iv. Protecting the right to Aboriginal languages, including the teaching of Aboriginal languages as credit courses.

    v. Enabling parental and community responsibility, control, and accountability, similar to what parents enjoy in public school systems.

    vi. Enabling parents to fully participate in the education of their children.

    vii. Respecting and honouring Treaty relationships.

11. We call upon the federal government to provide adequate funding to end the backlog of First Nations students seeking a post-secondary education.

12. We call upon the federal, provincial, territorial, and Aboriginal governments to develop culturally appropriate early childhood education programs for Aboriginal families.

Language and culture

13. We call upon the federal government to acknowledge that Aboriginal rights include Aboriginal language rights.

14. We call upon the federal government to enact an Aboriginal Languages Act that incorporates the following principles:

    i. Aboriginal languages are a fundamental and valued element of Canadian culture and society, and there is an urgency to preserve them.

    ii. Aboriginal language rights are reinforced by the Treaties.

    iii. The federal government has a responsibility to provide sufficient funds for Aboriginal-language revitalization and preservation.

    iv. The preservation, revitalization, and strengthening of Aboriginal languages and cultures are best managed by Aboriginal people and communities.

    v. Funding for Aboriginal language initiatives must reflect the diversity of Aboriginal languages.

15. We call upon the federal government to appoint, in consultation with Aboriginal groups, an Aboriginal Languages Commissioner. The commissioner should help promote Aboriginal languages and report on the adequacy of federal funding of Aboriginal-languages initiatives.

16. We call upon post-secondary institutions to create university and college degree and diploma programs in Aboriginal languages.

17. We call upon all levels of government to enable residential school Survivors and their families to reclaim names changed by the residential school system by waiving administrative costs for a period of five years for the name-change process and the revision of official identity documents, such as birth certificates, passports, driver's licenses, health cards, status cards, and social insurance numbers.

Health

18. We call upon the federal, provincial, territorial, and Aboriginal governments to acknowledge that the current state of Aboriginal health in Canada is a direct result of previous Canadian government policies, including residential schools, and to recognize and implement the health-care rights of Aboriginal people as identified in international law, constitutional law, and under the Treaties.

19. We call upon the federal government, in consultation with Aboriginal peoples, to establish measurable goals to identify and close the gaps in health outcomes

between Aboriginal and non-Aboriginal communities, and to publish annual progress reports and assess long-term trends. Such efforts would focus on indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services.

20. In order to address the jurisdictional disputes concerning Aboriginal people who do not reside on reserves, we call upon the federal government to recognize, respect, and address the distinct health needs of the Métis, Inuit, and off-reserve Aboriginal peoples.

21. We call upon the federal government to provide sustainable funding for existing and new Aboriginal healing centres to address the physical, mental, emotional, and spiritual harms caused by residential schools, and to ensure that the funding of healing centres in Nunavut and the Northwest Territories is a priority.

22. We call upon those who can effect change within the Canadian health-care system to recognize the value of Aboriginal healing practices and use them in the treatment of Aboriginal patients in collaboration with Aboriginal healers and Elders where requested by Aboriginal patients.

23. We call upon all levels of government to:

    i. Increase the number of Aboriginal professionals working in the health-care field.

    ii. Ensure the retention of Aboriginal health-care providers in Aboriginal communities.

    iii. Provide cultural competency training for all health-care professionals.

24. We call upon medical and nursing schools in Canada to require all students to take a course dealing with Aboriginal health issues, including the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, and Indigenous teachings and practices. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

Justice

25. We call upon the federal government to establish a written policy that reaffirms the independence of the Royal Canadian Mounted Police to investigate crimes in which the government has its own interest as a potential or real party in civil litigation.

26. We call upon the federal, provincial, and territorial governments to review and amend their respective statutes of limitations to ensure that they conform to the principle that governments and other entities cannot rely on limitation defences to defend legal actions of historical abuse brought by Aboriginal people.

27. We call upon the Federation of Law Societies of Canada to ensure that lawyers receive appropriate cultural competency training, which includes the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

28. We call upon law schools in Canada to require all law students to take a course in Aboriginal people and the law, which includes the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

29. We call upon the parties and, in particular, the federal government, to work collaboratively with plaintiffs not included in the Indian Residential Schools Settlement Agreement to have disputed legal issues determined expeditiously on an agreed set of facts.

30. We call upon federal, provincial, and territorial governments to commit to eliminating the overrepresentation of Aboriginal people in custody over the next decade, and to issue detailed annual reports that monitor and evaluate progress in doing so.

31. We call upon the federal, provincial, and territorial governments to provide sufficient and stable funding to implement and evaluate community sanctions that will provide realistic alternatives to imprisonment for Aboriginal offenders and respond to the underlying causes of offending.

32. We call upon the federal government to amend the Criminal Code to allow trial judges, upon giving reasons, to depart from mandatory minimum sentences and restrictions on the use of conditional sentences.

33. We call upon the federal, provincial, and territorial governments to recognize as a high priority the need to address and prevent Fetal Alcohol Spectrum Disorder (FASD), and to develop, in collaboration with Aboriginal people, FASD preventive programs that can be delivered in a culturally appropriate manner.

34. We call upon the governments of Canada, the provinces, and territories to undertake reforms to the criminal justice system to better address the needs of offenders with Fetal Alcohol Spectrum Disorder (FASD), including:

    i. Providing increased community resources and powers for courts to ensure that FASD is properly diagnosed, and that appropriate community supports are in place for those with FASD.

    ii. Enacting statutory exemptions from mandatory minimum sentences of imprisonment for offenders affected by FASD.

    iii. Providing community, correctional, and parole resources to maximize the ability of people with FASD to live in the community.

    iv. Adopting appropriate evaluation mechanisms to measure the effectiveness of such programs and ensure community safety.

35. We call upon the federal government to eliminate barriers to the creation of additional Aboriginal healing lodges within the federal correctional system.

36. We call upon the federal, provincial, and territorial governments to work with Aboriginal communities to provide culturally relevant services to inmates on issues such as substance abuse, family and domestic violence, and overcoming the experience of having been sexually abused.

37. We call upon the federal government to provide more supports for Aboriginal programming in halfway houses and parole services.

38. We call upon the federal, provincial, territorial, and Aboriginal governments to commit to eliminating the overrepresentation of Aboriginal youth in custody over the next decade.

39. We call upon the federal government to develop a national plan to collect and publish data on the criminal victimization of Aboriginal people, including data related to homicide and family violence victimization.

40. We call on all levels of government, in collaboration with Aboriginal people, to create adequately funded and accessible Aboriginal-specific victim programs and services with appropriate evaluation mechanisms.

41. We call upon the federal government, in consultation with Aboriginal organizations, to appoint a public inquiry into the causes of, and remedies for, the disproportionate victimization of Aboriginal women and girls. The inquiry's mandate would include:

    i. Investigation into missing and murdered Aboriginal women and girls.

    ii. Links to the intergenerational legacy of residential schools.

42. We call upon the federal, provincial, and territorial governments to commit to the recognition and implementation of Aboriginal justice systems in a manner consistent with the Treaty and Aboriginal rights of Aboriginal peoples, the *Constitution Act, 1982*, and the *United Nations Declaration on the Rights of Indigenous Peoples*, endorsed by Canada in November 2012.

Reconciliation

Canadian Governments and the *United Nations Declaration on the Rights of Indigenous People*

43. We call upon federal, provincial, territorial, and municipal governments to fully adopt and implement the *United Nations Declaration on the Rights of Indigenous Peoples* as the framework for reconciliation.

44. We call upon the Government of Canada to develop a national action plan, strategies, and other concrete measures to achieve the goals of the *United Nations Declaration on the Rights of Indigenous Peoples*.

Royal Proclamation and Covenant of Reconciliation

45. We call upon the Government of Canada, on behalf of all Canadians, to jointly develop with Aboriginal peoples a Royal Proclamation of Reconciliation to be issued by the Crown. The proclamation would build on the Royal Proclamation of 1763 and the Treaty of Niagara of 1764, and reaffirm the nation-to-nation relationship between Aboriginal peoples and the Crown. The proclamation would include, but not be limited to, the following commitments:

i. Repudiate concepts used to justify European sovereignty over Indigenous lands and peoples such as the Doctrine of Discovery and *terra nullius*.

ii. Adopt and implement the *United Nations Declaration on the Rights of Indigenous Peoples* as the framework for reconciliation.

iii. Renew or establish Treaty relationships based on principles of mutual recognition, mutual respect, and shared responsibility for maintaining those relationships into the future.

iv. Reconcile Aboriginal and Crown constitutional and legal orders to ensure that Aboriginal peoples are full partners in Confederation, including the recognition and integration of Indigenous laws and legal traditions in negotiation and implementation processes involving Treaties, land claims, and other constructive agreements.

46. We call upon the parties to the Indian Residential Schools Settlement Agreement to develop and sign a Covenant of Reconciliation that would identify principles for working collaboratively to advance reconciliation in Canadian society, and that would include, but not be limited to:

    i. Reaffirmation of the parties' commitment to reconciliation.

    ii. Repudiation of concepts used to justify European sovereignty over Indigenous lands and peoples, such as the Doctrine of Discovery and *terra nullius*, and the reformation of laws, governance structures, and policies within their respective institutions that continue to rely on such concepts.

    iii. Full adoption and implementation of the *United Nations Declaration on the Rights of Indigenous Peoples* as the framework for reconciliation.

    iv. Support for the renewal or establishment of Treaty relationships based on principles of mutual recognition, mutual respect, and shared responsibility for maintaining those relationships into the future.

    v. Enabling those excluded from the Settlement Agreement to sign onto the Covenant of Reconciliation.

    vi. Enabling additional parties to sign onto the Covenant of Reconciliation.

47. We call upon federal, provincial, territorial, and municipal governments to repudiate concepts used to justify European sovereignty over Indigenous peoples and lands, such as the Doctrine of Discovery and *terra nullius,* and to reform those laws, government policies, and litigation strategies that continue to rely on such concepts.

Settlement Agreement Parties and the *United Nations Declaration on the Rights of Indigenous Peoples*

48. We call upon the church parties to the Settlement Agreement, and all other faith groups and interfaith social justice groups in Canada who have not already done so, to formally adopt and comply with the principles, norms, and standards of the *United Nations Declaration on the Rights of Indigenous Peoples* as a framework for reconciliation. This would include, but not be limited to, the following commitments:

    i. Ensuring that their institutions, policies, programs, and practices comply with the *United Nations Declaration on the Rights of Indigenous Peoples*.

    ii. Respecting Indigenous peoples' right to self-determination in spiritual matters, including the right to practise, develop, and teach their own spiritual and religious traditions, customs, and ceremonies, consistent with Article 12:1 of the *United Nations Declaration on the Rights of Indigenous Peoples*.

    iii. Engaging in ongoing public dialogue and actions to support the *United Nations Declaration on the Rights of Indigenous Peoples*.

    iv. Issuing a statement no later than March 31, 2016, from all religious denominations and faith groups, as to how they will implement the *United Nations Declaration on the Rights of Indigenous Peoples*.

49. We call upon all religious denominations and faith groups who have not already done so to repudiate concepts used to justify European sovereignty over Indigenous lands and peoples, such as the Doctrine of Discovery and *terra nullius*.

Equity for Aboriginal People in the Legal System

50. In keeping with the *United Nations Declaration on the Rights of Indigenous Peoples*, we call upon the federal government, in collaboration with Aboriginal organizations, to fund the establishment of Indigenous law institutes for the development, use, and

understanding of Indigenous laws and access to justice in accordance with the unique cultures of Aboriginal peoples in Canada.

51. We call upon the Government of Canada, as an obligation of its fiduciary responsibility, to develop a policy of transparency by publishing legal opinions it develops and upon which it acts or intends to act, in regard to the scope and extent of Aboriginal and Treaty rights.

52. We call upon the Government of Canada, provincial and territorial governments, and the courts to adopt the following legal principles:

    i. Aboriginal title claims are accepted once the Aboriginal claimant has established occupation over a particular territory at a particular point in time.

    ii. Once Aboriginal title has been established, the burden of proving any limitation on any rights arising from the existence of that title shifts to the party asserting such a limitation.

National Council for Reconciliation

53. We call upon the Parliament of Canada, in consultation and collaboration with Aboriginal peoples, to enact legislation to establish a National Council for Reconciliation. The legislation would establish the council as an independent, national, oversight body with membership jointly appointed by the Government of Canada and national Aboriginal organizations, and consisting of Aboriginal and non-Aboriginal members. Its mandate would include, but not be limited to, the following:

    i. Monitor, evaluate, and report annually to Parliament and the people of Canada on the Government of Canada's post-apology progress on reconciliation to ensure that government accountability for reconciling the relationship between Aboriginal peoples and the Crown is maintained in the coming years.

    ii. Monitor, evaluate, and report to Parliament and the people of Canada on reconciliation progress across all levels and sectors of Canadian society, including the implementation of the Truth and Reconciliation Commission of Canada's Calls to Action.

    iii. Develop and implement a multi-year National Action Plan for Reconciliation, which includes research and policy development, public education programs, and resources.

    iv. Promote public dialogue, public/private partnerships, and public initiatives for reconciliation.

54. We call upon the Government of Canada to provide multi-year funding for the National Council for Reconciliation to ensure that it has the financial, human, and technical resources required to conduct its work, including the endowment of a National Reconciliation Trust to advance the cause of reconciliation.

55. We call upon all levels of government to provide annual reports or any current data requested by the National Council for Reconciliation so that it can report on the progress towards reconciliation. The reports or data would include, but not be limited to:

    i. The number of Aboriginal children—including Métis and Inuit children—in care, compared with non-Aboriginal children, the reasons for apprehension, and the total spending on preventive and care services by child-welfare agencies.

    ii. Comparative funding for the education of First Nations children on and off reserves.

    iii. The educational and income attainments of Aboriginal peoples in Canada compared with non-Aboriginal people.

    iv. Progress on closing the gaps between Aboriginal and non-Aboriginal communities in a number of health indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services.

    v. Progress on eliminating the overrepresentation of Aboriginal children in youth custody over the next decade.

    vi. Progress on reducing the rate of criminal victimization of Aboriginal people, including data related to homicide and family violence victimization and other crimes.

    vii. Progress on reducing the overrepresentation of Aboriginal people in the justice and correctional systems.

56. We call upon the prime minister of Canada to formally respond to the report of the National Council for Reconciliation by issuing an annual "State of Aboriginal Peoples" report, which would outline the government's plans for advancing the cause of reconciliation.

Professional Development and Training for Public Servants

57. We call upon federal, provincial, territorial, and municipal governments to provide education to public servants on the history of Aboriginal peoples, including the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

Church Apologies and Reconciliation

58. We call upon the Pope to issue an apology to Survivors, their families, and communities for the Roman Catholic Church's role in the spiritual, cultural, emotional, physical, and sexual abuse of First Nations, Inuit, and Métis children in Catholic-run residential schools. We call for that apology to be similar to the 2010 apology issued to Irish victims of abuse and to occur within one year of the issuing of this Report and to be delivered by the Pope in Canada.

59. We call upon church parties to the Settlement Agreement to develop ongoing education strategies to ensure that their respective congregations learn about their church's role in colonization, the history and legacy of residential schools, and why apologies to former residential school students, their families, and communities were necessary.

60. We call upon leaders of the church parties to the Settlement Agreement and all other faiths, in collaboration with Indigenous spiritual leaders, Survivors, schools of theology, seminaries, and other religious training centres, to develop and teach curriculum for all student clergy, and all clergy and staff who work in Aboriginal communities, on the need to respect Indigenous spirituality in its own right, the history and legacy of residential schools and the roles of the church parties in that system, the history and legacy of religious conflict in Aboriginal families and communities, and the responsibility that churches have to mitigate such conflicts and prevent spiritual violence.

61. We call upon church parties to the Settlement Agreement, in collaboration with Survivors and representatives of Aboriginal organizations, to establish permanent funding to Aboriginal people for:

    i. Community-controlled healing and reconciliation projects.

    ii. Community-controlled culture- and language-revitalization projects.

    iii. Community-controlled education and relationship-building projects.

    iv. Regional dialogues for Indigenous spiritual leaders and youth to discuss Indigenous spirituality, self-determination, and reconciliation.

Education for reconciliation

62. We call upon the federal, provincial, and territorial governments, in consultation and collaboration with Survivors, Aboriginal peoples, and educators, to:

    i. Make age-appropriate curriculum on residential schools, Treaties, and Aboriginal peoples' historical and contemporary contributions to Canada a mandatory education requirement for Kindergarten to Grade Twelve students.

    ii. Provide the necessary funding to post-secondary institutions to educate teachers on how to integrate Indigenous knowledge and teaching methods into classrooms.

    iii. Provide the necessary funding to Aboriginal schools to utilize Indigenous knowledge and teaching methods in classrooms.

    iv. Establish senior-level positions in government at the assistant deputy minister level or higher dedicated to Aboriginal content in education.

63. We call upon the Council of Ministers of Education, Canada to maintain an annual commitment to Aboriginal education issues, including:

    i. Developing and implementing Kindergarten to Grade Twelve curriculum and learning resources on Aboriginal peoples in Canadian history, and the history and legacy of residential schools.

    ii. Sharing information and best practices on teaching curriculum related to residential schools and Aboriginal history.

    iii. Building student capacity for intercultural understanding, empathy, and mutual respect.

    iv. Identifying teacher-training needs relating to the above.

64. We call upon all levels of government that provide public funds to denominational schools to require such schools to provide an education on comparative religious studies, which must include a segment on

Aboriginal spiritual beliefs and practices developed in collaboration with Aboriginal Elders.

65. We call upon the federal government, through the Social Sciences and Humanities Research Council, and in collaboration with Aboriginal peoples, post-secondary institutions and educators, and the National Centre for Truth and Reconciliation and its partner institutions, to establish a national research program with multi-year funding to advance understanding of reconciliation.

Youth Programs

66. We call upon the federal government to establish multi-year funding for community-based youth organizations to deliver programs on reconciliation, and establish a national network to share information and best practices.

Museums and Archives

67. We call upon the federal government to provide funding to the Canadian Museums Association to undertake, in collaboration with Aboriginal peoples, a national review of museum policies and best practices to determine the level of compliance with the *United Nations Declaration on the Rights of Indigenous Peoples* and to make recommendations.

68. We call upon the federal government, in collaboration with Aboriginal peoples, and the Canadian Museums Association to mark the 150th anniversary of Canadian Confederation in 2017 by establishing a dedicated national funding program for commemoration projects on the theme of reconciliation.

69. We call upon Library and Archives Canada to:

    i. Fully adopt and implement the *United Nations Declaration on the Rights of Indigenous Peoples* and the *United Nations Joinet-Orentlicher Principles*, as related to Aboriginal peoples' inalienable right to know the truth about what happened and why, with regard to human rights violations committed against them in the residential schools.

    ii. Ensure that its record holdings related to residential schools are accessible to the public.

    iii. Commit more resources to its public education materials and programming on residential schools.

70. We call upon the federal government to provide funding to the Canadian Association of Archivists to undertake, in collaboration with Aboriginal peoples, a national review of archival policies and best practices to:

    i. Determine the level of compliance with the *United Nations Declaration on the Rights of Indigenous Peoples* and the *United Nations Joinet-Orentlicher Principles*, as related to Aboriginal peoples' inalienable right to know the truth about what happened and why, with regard to human rights violations committed against them in the residential schools.

    ii. Produce a report with recommendations for full implementation of these international mechanisms as a reconciliation framework for Canadian archives.

Missing Children and Burial Information

71. We call upon all chief coroners and provincial vital statistics agencies that have not provided to the Truth and Reconciliation Commission of Canada their records on the deaths of Aboriginal children in the care of residential school authorities to make these documents available to the National Centre for Truth and Reconciliation.

72. We call upon the federal government to allocate sufficient resources to the National Centre for Truth and Reconciliation to allow it to develop and maintain the National Residential School Student Death Register established by the Truth and Reconciliation Commission of Canada.

73. We call upon the federal government to work with churches, Aboriginal communities, and former residential school students to establish and maintain an online registry of residential school cemeteries, including, where possible, plot maps showing the location of deceased residential school children.

74. We call upon the federal government to work with the churches and Aboriginal community leaders to inform the families of children who died at residential schools of the child's burial location, and to respond to families' wishes for appropriate commemoration ceremonies and markers, and reburial in home communities where requested.

75. We call upon the federal government to work with provincial, territorial, and municipal governments, churches, Aboriginal communities, former residential school students, and current landowners to develop and implement strategies and procedures for the ongoing identification, documentation, maintenance, commemoration, and protection of residential school cemeteries or other sites at which residential school children were buried. This is to include the provision of

appropriate memorial ceremonies and commemorative markers to honour the deceased children.

76. We call upon the parties engaged in the work of documenting, maintaining, commemorating, and protecting residential school cemeteries to adopt strategies in accordance with the following principles:

    i. The Aboriginal community most affected shall lead the development of such strategies.

    ii. Information shall be sought from residential school Survivors and other Knowledge Keepers in the development of such strategies.

    iii. Aboriginal protocols shall be respected before any potentially invasive technical inspection and investigation of a cemetery site.

National Centre for Truth and Reconciliation

77. We call upon provincial, territorial, municipal, and community archives to work collaboratively with the National Centre for Truth and Reconciliation to identify and collect copies of all records relevant to the history and legacy of the residential school system, and to provide these to the National Centre for Truth and Reconciliation.

78. We call upon the Government of Canada to commit to making a funding contribution of $10 million over seven years to the National Centre for Truth and Reconciliation, plus an additional amount to assist communities to research and produce histories of their own residential school experience and their involvement in truth, healing, and reconciliation.

Commemoration

79. We call upon the federal government, in collaboration with Survivors, Aboriginal organizations, and the arts community, to develop a reconciliation framework for Canadian heritage and commemoration. This would include, but not be limited to:

    i. Amending the Historic Sites and Monuments Act to include First Nations, Inuit, and Métis representation on the Historic Sites and Monuments Board of Canada and its Secretariat.

    ii. Revising the policies, criteria, and practices of the National Program of Historical Commemoration to integrate Indigenous history, heritage values, and memory practices into Canada's national heritage and history.

    iii. Developing and implementing a national heritage plan and strategy for commemorating residential school sites, the history and legacy of residential schools, and the contributions of Aboriginal peoples to Canada's history.

80. We call upon the federal government, in collaboration with Aboriginal peoples, to establish, as a statutory holiday, a National Day for Truth and Reconciliation to honour Survivors, their families, and communities, and ensure that public commemoration of the history and legacy of residential schools remains a vital component of the reconciliation process.

81. We call upon the federal government, in collaboration with Survivors and their organizations, and other parties to the Settlement Agreement, to commission and install a publicly accessible, highly visible, Residential Schools National Monument in the city of Ottawa to honour Survivors and all the children who were lost to their families and communities.

82. We call upon provincial and territorial governments, in collaboration with Survivors and their organizations, and other parties to the Settlement Agreement, to commission and install a publicly accessible, highly visible, Residential Schools Monument in each capital city to honour Survivors and all the children who were lost to their families and communities.

83. We call upon the Canada Council for the Arts to establish, as a funding priority, a strategy for Indigenous and non-Indigenous artists to undertake collaborative projects and produce works that contribute to the reconciliation process.

Media and Reconciliation

84. We call upon the federal government to restore and increase funding to the CBC/Radio-Canada, to enable Canada's national public broadcaster to support reconciliation, and be properly reflective of the diverse cultures, languages, and perspectives of Aboriginal peoples, including, but not limited to:

    i. Increasing Aboriginal programming, including Aboriginal-language speakers.

    ii. Increasing equitable access for Aboriginal peoples to jobs, leadership positions, and professional development opportunities within the organization.

    iii. Continuing to provide dedicated news coverage and online public information resources on issues of concern to Aboriginal peoples and all Canadians,

including the history and legacy of residential schools and the reconciliation process.

85. We call upon the Aboriginal Peoples Television Network, as an independent non-profit broadcaster with programming by, for, and about Aboriginal peoples, to support reconciliation, including but not limited to:

    i. Continuing to provide leadership in programming and organizational culture that reflects the diverse cultures, languages, and perspectives of Aboriginal peoples.

    ii. Continuing to develop media initiatives that inform and educate the Canadian public, and connect Aboriginal and non-Aboriginal Canadians.

86. We call upon Canadian journalism programs and media schools to require education for all students on the history of Aboriginal peoples, including the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations.

Sports and Reconciliation

87. We call upon all levels of government, in collaboration with Aboriginal peoples, sports halls of fame, and other relevant organizations, to provide public education that tells the national story of Aboriginal athletes in history.

88. We call upon all levels of government to take action to ensure long-term Aboriginal athlete development and growth, and continued support for the North American Indigenous Games, including funding to host the games and for provincial and territorial team preparation and travel.

89. We call upon the federal government to amend the Physical Activity and Sport Act to support reconciliation by ensuring that policies to promote physical activity as a fundamental element of health and well-being, reduce barriers to sports participation, increase the pursuit of excellence in sport, and build capacity in the Canadian sport system, are inclusive of Aboriginal peoples.

90. We call upon the federal government to ensure that national sports policies, programs, and initiatives are inclusive of Aboriginal peoples, including, but not limited to, establishing:

    i. In collaboration with provincial and territorial governments, stable funding for, and access to, community sports programs that reflect the diverse cultures and traditional sporting activities of Aboriginal peoples.

    ii. An elite athlete development program for Aboriginal athletes.

    iii. Programs for coaches, trainers, and sports officials that are culturally relevant for Aboriginal peoples.

    iv. Anti-racism awareness and training programs.

91. We call upon the officials and host countries of international sporting events such as the Olympics, Pan Am, and Commonwealth games to ensure that Indigenous peoples' territorial protocols are respected, and local Indigenous communities are engaged in all aspects of planning and participating in such events.

Business and Reconciliation

92. We call upon the corporate sector in Canada to adopt the *United Nations Declaration on the Rights of Indigenous Peoples* as a reconciliation framework and to apply its principles, norms, and standards to corporate policy and core operational activities involving Indigenous peoples and their lands and resources. This would include, but not be limited to, the following:

    i. Commit to meaningful consultation, building respectful relationships, and obtaining the free, prior, and informed consent of Indigenous peoples before proceeding with economic development projects.

    ii. Ensure that Aboriginal peoples have equitable access to jobs, training, and education opportunities in the corporate sector, and that Aboriginal communities gain long-term sustainable benefits from economic development projects.

    iii. Provide education for management and staff on the history of Aboriginal peoples, including the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, Indigenous law, and Aboriginal–Crown relations. This will require skills based training in intercultural competency, conflict resolution, human rights, and anti-racism.

Newcomers to Canada

93. We call upon the federal government, in collaboration with the national Aboriginal organizations, to revise the information kit for newcomers to Canada and its citizenship test to reflect a more inclusive history of the diverse Aboriginal peoples of Canada, including

information about the Treaties and the history of residential schools.

94. We call upon the Government of Canada to replace the Oath of Citizenship with the following:

> I swear (or affirm) that I will be faithful and bear true allegiance to Her Majesty Queen Elizabeth II, Queen of Canada, Her Heirs and Successors, and that I will faithfully observe the laws of Canada including Treaties with Indigenous Peoples, and fulfill my duties as a Canadian citizen.

Truth and Reconciliation Commission of Canada

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Outlook

Fwd: Coffee with Council

From Jim Welsch <CouncilDiv4@mdpinchercreek.ab.ca>
Date Wed 2025-04-16 9:45 AM
To Jessica McClelland <AdminExecAsst@mdpinchercreek.ab.ca>

Good Morning Jessica
Just received this from Phil & Esther
I thought it was a very good evening as well
Thanks to all the administration that attended
Jim

Sent from my iPhone

Begin forwarded message:

From: Phil Burpee [redacted]
Date: April 16, 2025 at 8:52:06 AM MDT
To: Jim Welsch <CouncilDiv4@mdpinchercreek.ab.ca>
Subject: Coffee with Council

Jim,

Would you please pass along our appreciation to Council and Admin. for the excellent and informative meeting last night. The topics covered were interesting and timely, and the responses from both Councillors and Admin. reps were comprehensive and thoughtful. It's too bad it was rather poorly attended. Without civic engagement, it makes your task as decision-makers and administrators that much more challenging.

We feel the MD is in competent and capable hands and thank you all for your ongoing efforts to see to the well-being of all us rate-payers.

And hey! - nobody griped about roads!! Gotta be a first.

Best regards,

Phil and Esther