



# PROPOSED BULK FUEL & CARDLOCK FACILITY CONCEPT PLAN

UNITED FARMERS OF ALBERTA

MOUNTAIN VIEW COUNTY  
NE-10-30-1-5



JULY 2026



## LAND ACKNOWLEDGEMENT

We acknowledge Treaty 7 territory—the traditional and ancestral territory of the Blackfoot Confederacy: Kainai, Piikani and Siksika as well as the Tsuu T’ina Nation and Stoney Nakoda First Nation. We acknowledge that this territory is home to the Métis Nation of Alberta, Region 3 within the historical Northwest Métis Homeland.

We acknowledge the many First Nations, Métis and Inuit who have lived in and cared for these lands for generations. We are grateful for the traditional Knowledge Keepers and Elders who are still with us today and those who have gone before us. We make this acknowledgment as an act of reconciliation and gratitude to those whose territory we reside on or are visiting.

JULY 2026

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UNITED FARMERS OF ALBERTA

MOUNTAIN VIEW COUNTY  
NE-10-30-1-5

SUBMITTED BY  
UNITED FARMERS OF ALBERTA

PREPARED BY  
CIMA+ | B&A



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# 1.0

SECTION 1.0

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# INTRODUCTION

Founded in 1909, United Farmers of Alberta (UFA) is an Alberta-based agricultural co-operative with more than 180,000 member-owners. UFA's network is comprised of 118 Petroleum locations, 34 Farm & Ranch Supply stores, 6 Fertilizer Blending Facilities and a support office located in Calgary, Alberta.

Independent Petroleum Agents and more than 1,100 UFA employees provide products, services and agricultural solutions to farmers, ranchers, members and commercial customers in Alberta, British Columbia and Saskatchewan.

## 1.1 PURPOSE OF THIS PLAN

This Concept Plan was prepared pursuant to the provisions of the Mountain View County Municipal Development Plan and Land Use Bylaw. It describes the rationale and motivation to facilitate the development of a proposed Bulk Fuel and Cardlock Facility at Highway 581 and Range Road 12 within a portion of NE-10-30-1-5, of which a land use redesignation and subdivision approval will be necessary prior to the advancement of a development permit application.

## 1.2 PROJECT RATIONALE

UFA is committed to investing in the Town of Carstairs and Mountain View County. As part of this commitment, UFA is investing in building a new site to better serve local and regional customers and members. The new site will replace the existing facility in the Town of Carstairs located on 9th Avenue N and Centre Street. The existing site is not adequate to support the proposed expansion; therefore, the site will be demolished and site remediation completed in accordance with all environmental requirements. Upon clearance from the Ministry of Environment, the site may be listed for sale. The new site has been selected within Mountain View County to enable substantial investment and better serve local and regional needs.

## 1.3 DEVELOPMENT PRINCIPLES

The UFA Concept Plan contemplates the development of a proposed Bulk Fuel and Storage and Cardlock Facility on approximately 6 acres of land situated at Range Road 12 and Highway 581. The proposed site location is currently zoned Agricultural (A) and is surrounded by lands zoned as Agricultural (A) and Agricultural (A2). After review of the MVC land use bylaw, a concurrent redesignation and subdivision application is being advanced. The proposed redesignation is from Agricultural (A) to Business Park District (I-BP) to facilitate land use change, subdivision and transaction of the parcel. Subsequent permit applications will follow contingent on the land use redesignation and subdivision outcomes.

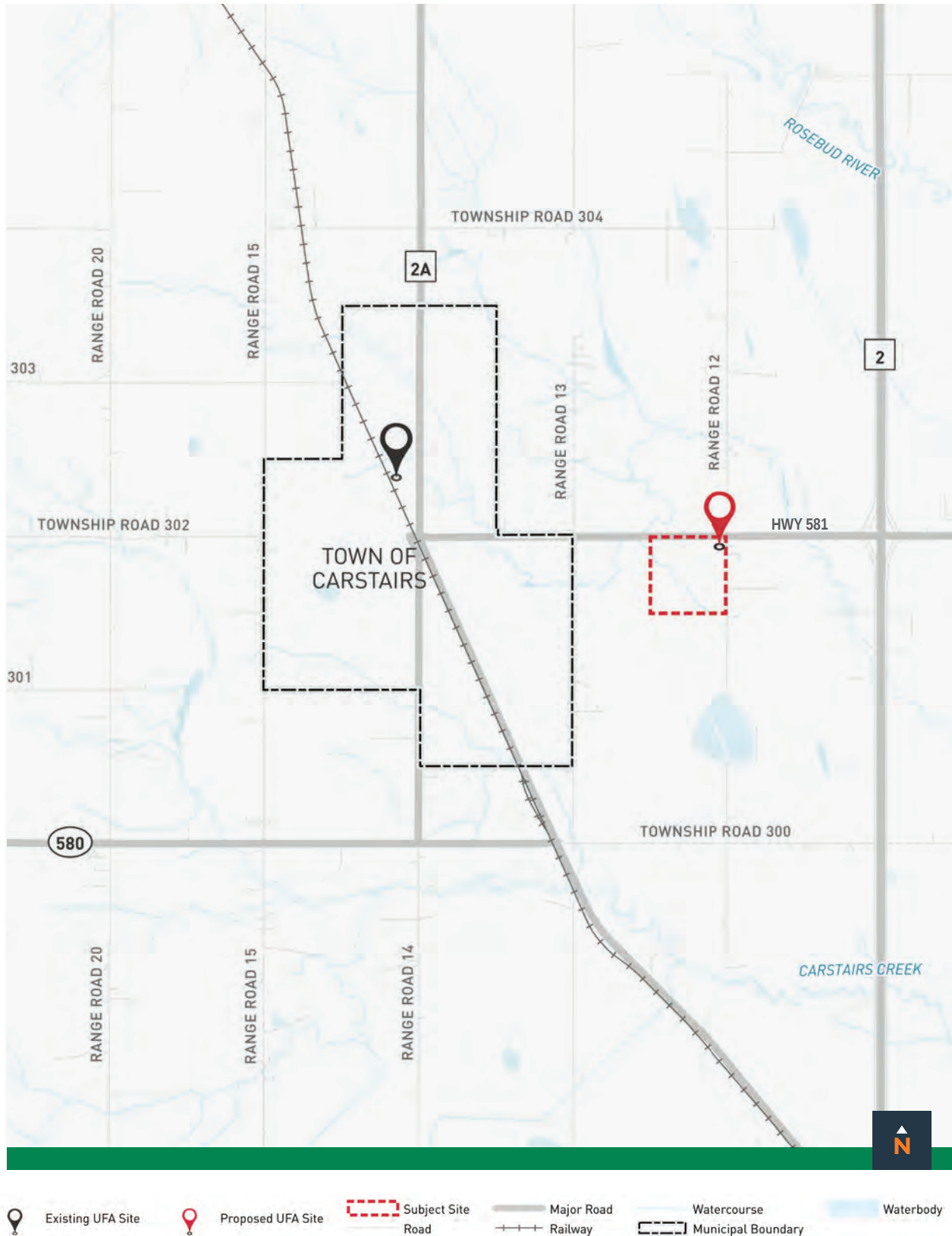
The UFA Concept Plan contemplates the development of a new Bulk Fuel Storage and Cardlock Facility on approximately 6 acres of land situated at Range Road 12 and Highway 581 (Pt. of NE-10-30-1-5) that incorporates the following considerations:

- + An appropriately designed Bulk Fuel Storage and Cardlock Facility that considers existing topography, vegetation, hydrology, stormwater management, connectivity with existing roads and relationships with existing established Agricultural operations located immediately adjacent to the Plan area.
- + Transportation Infrastructure designed to accommodate anticipated traffic volumes while providing appropriate turning radii for semi-trucks and local vehicles. Roadway geometry, roadway paving, access points, circulation patterns, and viewshed considerations will be incorporated to support safe sightlines, efficient vehicle movements, and overall transportation safety.
- + A Potable Water Cistern will be located on-site and supplied by a licensed water hauler on a scheduled basis to ensure adequate storage capacity is maintained for daily operations. The cistern will be designed to accommodate domestic water demands as determined during a detailed design phase.
- + A Wastewater Tank to accommodate projected wastewater demand, given the low anticipated wastewater volumes and the absence of municipal sanitary infrastructure in the area.
- + Stormwater Management measures to manage post-development runoff and limit discharge rates to pre-development levels through the construction of a dry pond, wet pond, or a low impact development (LID) system, such as an infiltration system. The specific stormwater management approach will be determined during the detailed design phase based on site-specific conditions and engineering design requirements.

## 1.4 CONCEPT PLAN OBJECTIVES

- a) Summarize existing conditions within the Plan area by identifying development opportunities and constraints.
- b) Establish a future subdivision concept with an integrated land use framework designed to facilitate a Bulk Fuel Storage and Cardlock Facility in accordance with the provisions of the Mountain View County Land Use Bylaw and Municipal Development Plan.
- c) Establish feasible strategies to implement required transportation, utility servicing, stormwater management infrastructure to support a new Fuel Storage and Cardlock Facility within the Plan area.
- d) Summarize the results of community communication and consultation implemented to inform surrounding landowners and interested stakeholders about the proposed development and provide opportunities for input into the planning process.

FIGURE 01: REGIONAL CONTEXT



2.0

SECTION 2.0

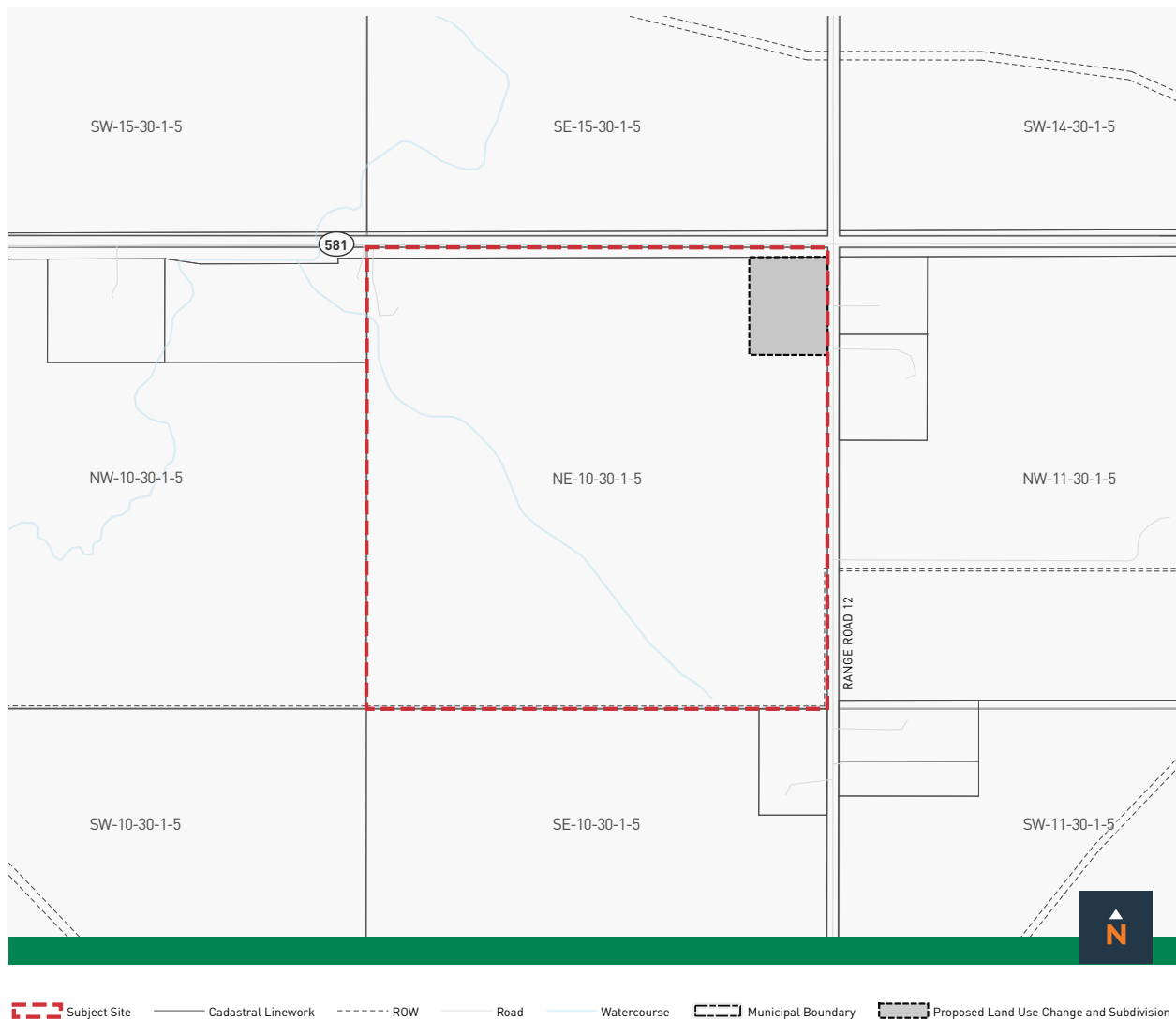
CONCEPT PLAN  
DESCRIPTION

## 2.1 LOCATION AND LEGAL DESCRIPTION

As shown on Figure 1: Regional Context, the Concept Plan area is illustrated within the broader context of the surrounding Mountain View County agricultural area and the Town of Carstairs.

As shown in Figure 2: Local Context, the Plan area is bound to the north by Highway 581 and to the east by Range Road 12, and to the west and south by existing agricultural operations. The study area includes one individually titled quarter section, legally described as NE-10-30-1-5.

FIGURE 02: LOCAL CONTEXT



## 2.2 EXISTING LAND USE

As shown on Figure 3: Existing Land Use, lands within the Plan area are currently designated Agricultural (A) in accordance with the County's Land Use Bylaw. The purpose of this district is to accommodate and promote agricultural land uses on larger parcels, while having regard for the rural, agricultural character of the area. The minimum parcel area permitted in this district is 32.37 ha (80.0ac) or the area in title at the time of passage of this Bylaw.

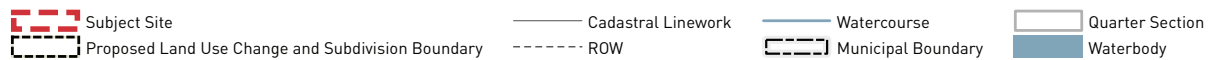
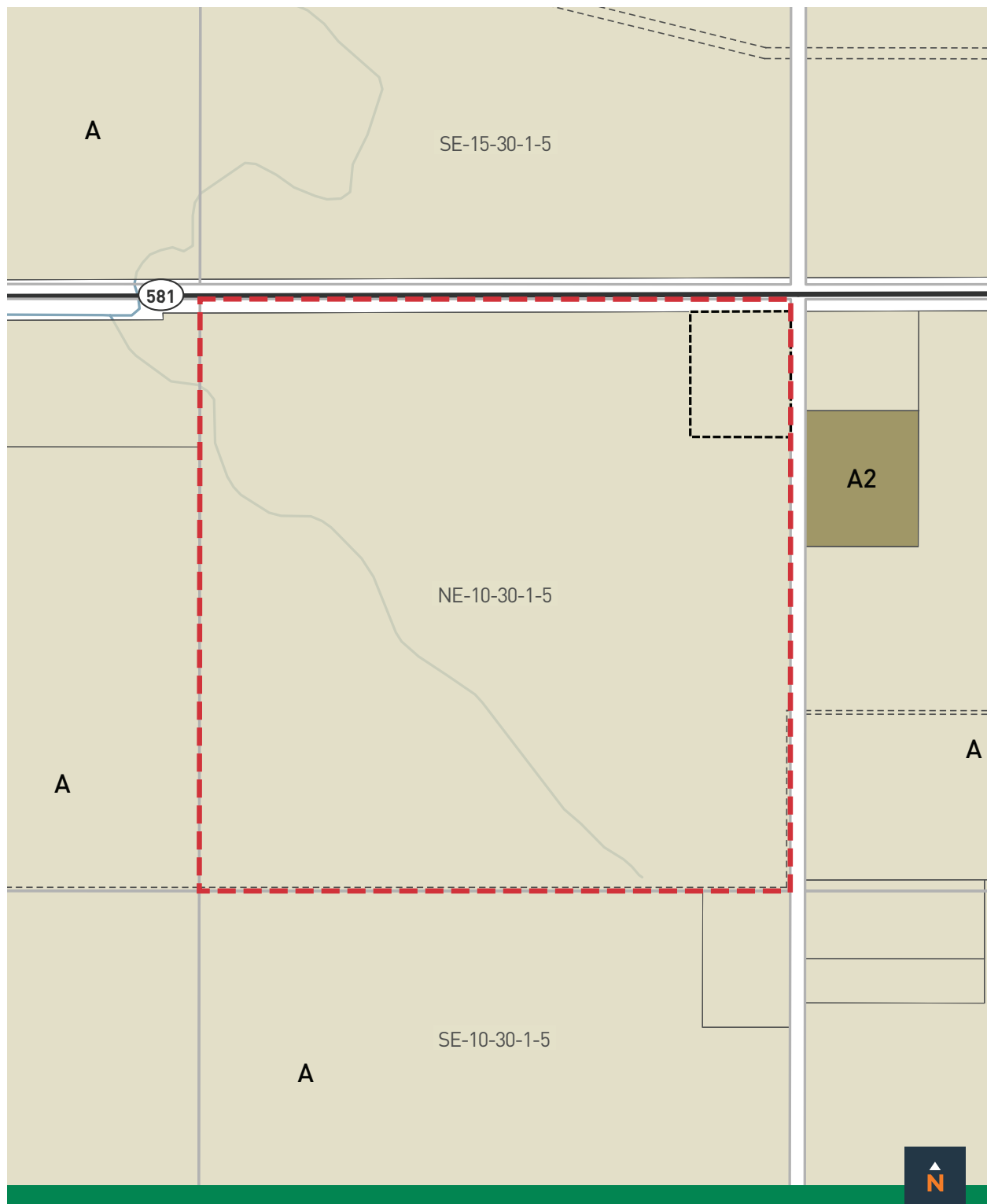
## 2.3 GEOTECHNICAL INVESTIGATION

At the time of this investigation, the site was vacant and unoccupied. The local topography is generally flat, with a gentle slope toward the northeast corner. Surface drainage on the site is anticipated to occur primarily through infiltration and overland flow toward localized site depressions and existing roadside ditches. The ground surface was grass covered, and no standing water was observed on the Site during the inspection.

On March 24, 2026, five geotechnical boreholes were drilled, three of which were completed as groundwater monitoring wells and two for soil monitoring as identified in **Figure 5**. The drilling was conducted using a track-mounted, continuous flight, 150 mm-diameter, solid-stem auger drill, operated by Evergreen Drilling Ltd. Supervision of the drilling, soil sampling, and logging of the various soil strata were performed by Amir Husain, E.I.T., of Nichols Environmental and Engineering. The geotechnical investigation concluded that that site is appropriate from a geotechnical perspective for the intended use.



FIGURE 03: EXISTING LAND USE





## 2.4 ENVIRONMENTAL SITE ASSESSMENTS AND CONSTRAINTS

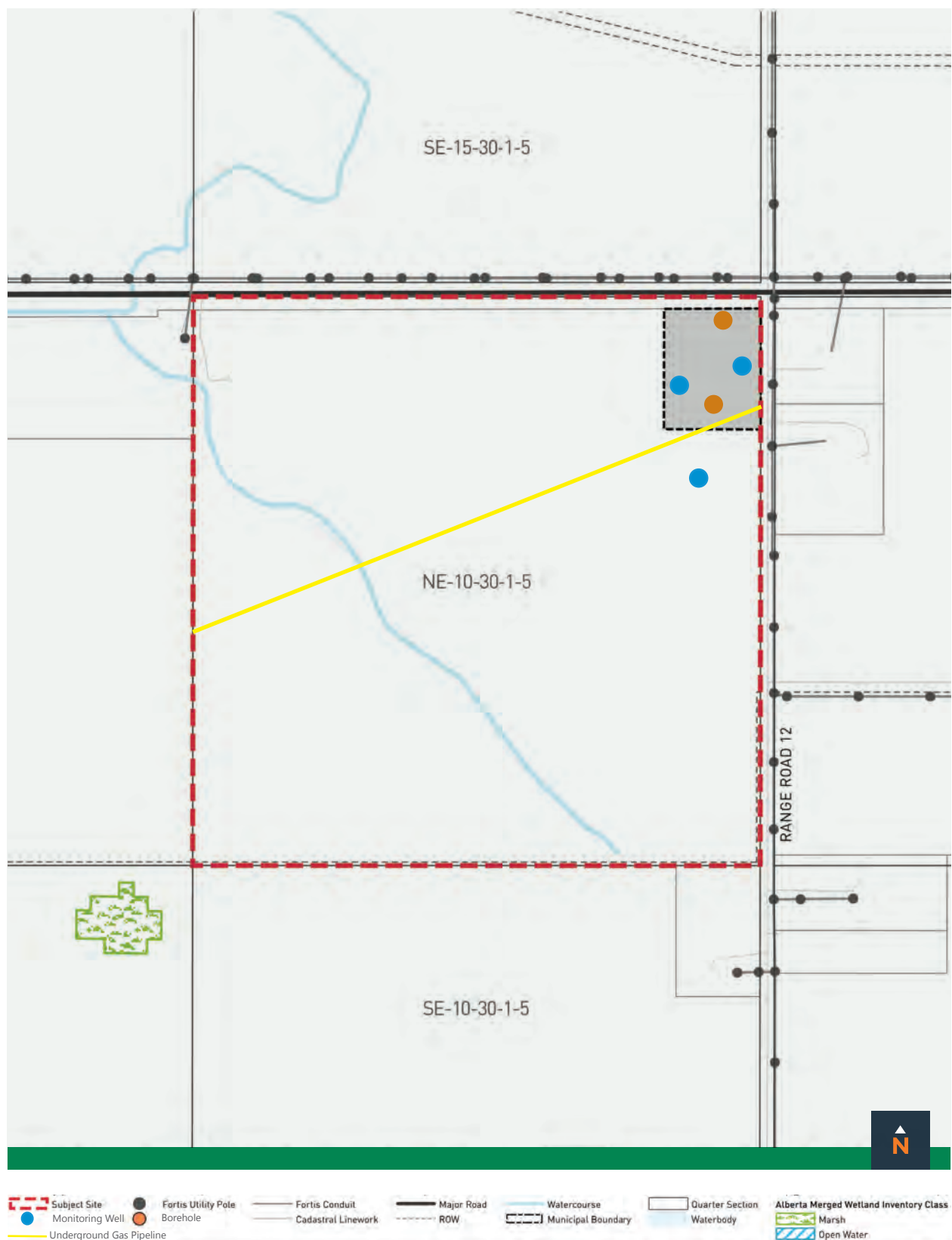
The Site appears to have been used for agricultural purposes since at least 1949, based on the review of historical aerial photographs, and is located within an area that has been predominantly agricultural. Regulatory correspondence identified an abandoned well located approximately 650 m west of the Site, as well as a low-pressure natural gas pipeline that bisects the Site. No reported spills, releases, or other environmental incidents have been associated with either the abandoned well or the natural gas pipeline.

The results of the Phase I and Phase II Environmental Site Assessments (ESAs) indicate that soil and groundwater concentrations of the analyzed parameters at the sampled locations were below the applicable regulatory guidelines. Based on these findings, no further environmental investigation is recommended for the Site at this time.

The proposed development has been planned to minimize environmental risk by avoiding both the identified environmentally sensitive area (ESA) and the adjacent watercourse. As shown on **Figure 5**, a small section of the underground natural gas pipeline extends through the southern portion of the Site. If required, the pipeline can be rerouted in consultation with the pipeline owner, Foothills Gas Co-op Ltd., as part of the development process.



FIGURE 05: ATTRIBUTES AND CONSTRAINTS



3.0



SECTION 3.0

PRELIMINARY DEVELOPMENT  
CONCEPT

## UFA is committed to supporting the continued growth and long-term prosperity of the Town of Carstairs and Mountain View County through strategic investment in critical agricultural and commercial infrastructure.

As part of this commitment, UFA is proposing the development of a new Bulk Fuel and Cardlock Facility designed to enhance fuel accessibility, improve service for local producers, businesses, and members, and meet the evolving needs of the surrounding region. This investment will strengthen the area's transportation and agricultural network while supporting economic growth and operational efficiency.

### 3.1 UFA BULK FUEL AND CARDLOCK FACILITY - PRELIMINARY SITE PLAN

As shown in Figure 6: Preliminary Development Concept, UFA is committed to supporting the continued growth and long-term prosperity of the Town of Carstairs and Mountain View County through strategic investment in critical agricultural and commercial infrastructure. As part of this commitment, UFA is proposing the development of a new Bulk Fuel and Cardlock Facility on the subject site to enhance fuel accessibility, improve service for local producers, businesses, transportation operators, and UFA members, and accommodate the evolving needs of the surrounding region. The proposed development will provide modern, efficient fuel services while strengthening the regional transportation and agricultural network, supporting economic growth, and reinforcing UFA's long-term commitment to the communities it serves.

The proposed development includes the following key components:

- + A modern Bulk Fuel and Cardlock Facility designed to serve agricultural, commercial, and public customers.
- + Convenient access to the regional transportation network to support efficient and safe vehicle movements.
- + On-site circulation designed to accommodate passenger vehicles, commercial vehicles, and semi-trucks with appropriate turning radii and sightlines.
- + Fuel storage and dispensing infrastructure designed in accordance with applicable regulatory and industry standards.
- + Stormwater management, landscaping, servicing, and lighting incorporated into the site design to support safe, efficient, and sustainable operations.
- + A development that contributes to the economic vitality of the Town of Carstairs and Mountain View County while supporting the long-term needs of the agricultural and commercial sectors.

### 3.2 OPERATIONS OVERVIEW

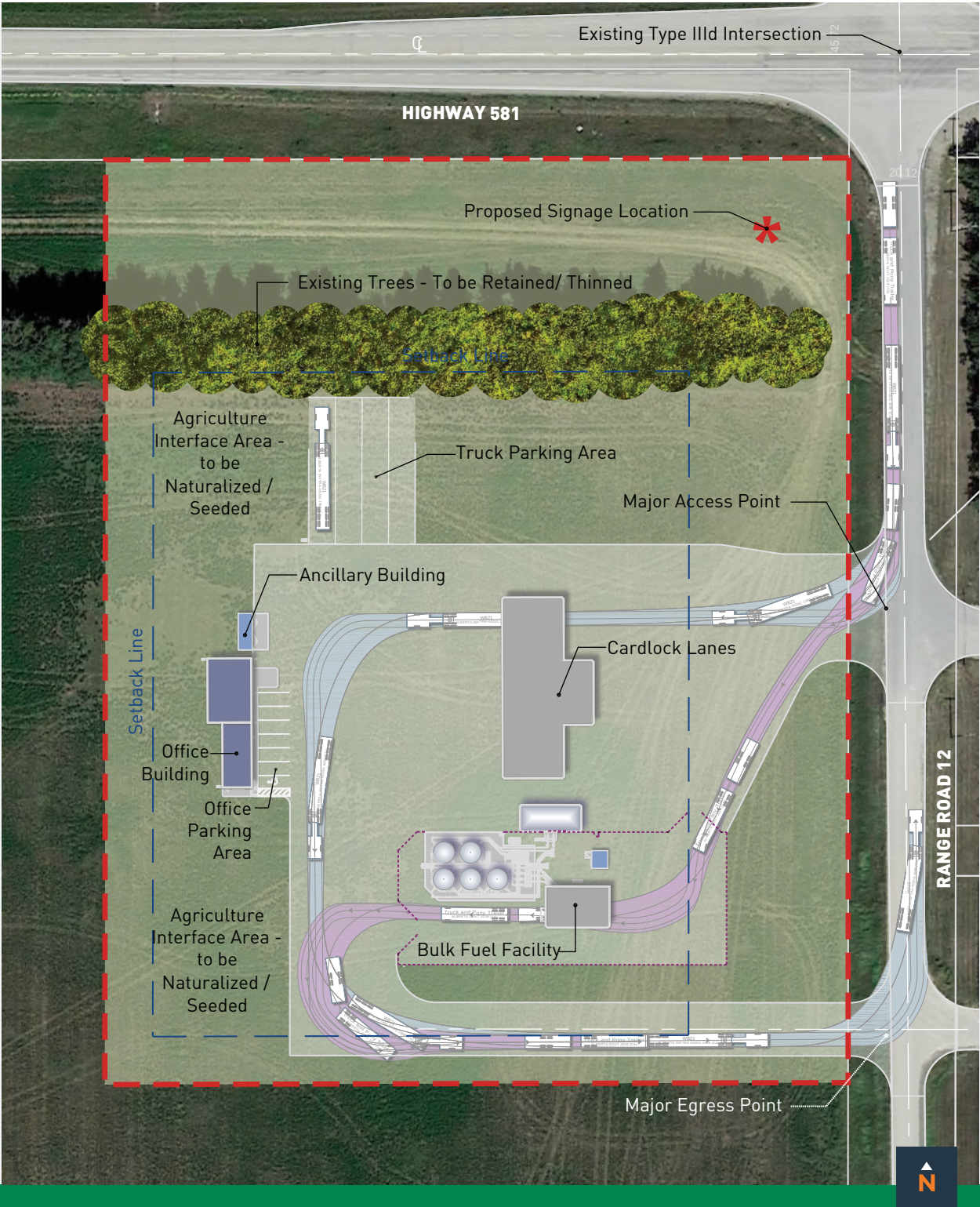
The office hours of operation will be from 8am to 5pm from Mondays to Fridays, while the cardlock facility will be open for members 24/7. There will be 1-2 employees on site during office hours. The average daily expected traffic volumes are expected to be about 30 heavy trucks, 3 agency delivery trucks, 80 passenger vehicles and 2-3 employee vehicles per day.

### 3.3 TRANSPORTATION IMPACT ASSESSMENT

A Transportation Impact Assessment (TIA) was completed and reviewed with TEC to evaluate the potential transportation impacts of the proposed Bulk Fuel and Cardlock Facility. The assessment concluded that the surrounding road network and the intersection of Highway 581 and Range Road 12 will continue to operate efficiently, with no material impacts from site-generated traffic under existing conditions or at the opening year, 10-year, and 20-year post-development horizons. As a result, no upgrades to the existing intersection, traffic signals, or intersection illumination are warranted. The only transportation improvement associated with the proposed development, and based on preliminary discussions with Mountain View County, will be the paving of Range Road 12 adjacent to the proposed development site to provide improved site access and support safe, efficient vehicle operations. For an in-depth analysis, please refer to the TIA in Appendix E.

UFA is committed to undertaking any additional transportation studies or analyses that may be required during subsequent stages of the Development Permit process, should the Land Use Redesignation and Subdivision Application receive approval. These studies will be completed in accordance with the requirements of the applicable reviewing authorities to ensure that transportation infrastructure, access, and operational considerations are appropriately addressed as the project advances through the approval process.

FIGURE 06: PRELIMINARY DEVELOPMENT CONCEPT



— Site Boundary    — Building Setback Line    - - - Fence

### 3.4 UTILITY SERVICING

The subject site is currently undeveloped agricultural land and is not serviced by municipal water and sanitary sewer infrastructure. Based on the rural nature of the surrounding area, no municipal utility services are available adjacent to the site for connection. at this time. As such, the proposed development is recommended to be serviced through private systems, including a water cistern and sewage holding tank, consistent with the preliminary development concept. The expected daily water demand is 28 persons per day, including 2 of the onsite personnel.

Wastewater generation at the proposed facility was estimated based on anticipated daily site usage. The same population and demand assumptions have been made for wastewater demands that were made for water consumption. It is our understanding that at some point in the future municipal servicing may be available adjacent to the subject site. Both water cistern and sanitary holding tanks can be located onsite to accommodate for future permanent connection. For the detailed servicing report, please refer to Appendix F.

### 3.5 STORMWATER MANAGEMENT

To manage post-development site runoff rates and limit discharge rates to pre-development levels, stormwater storage (e.g., dry pond, wet pond, or low impact development system such as an infiltration basin, to be finalized through detailed design) will be provided. Controlled outflow will be discharged from the storage into the Highway 581 drainage ditch system.

The conceptual stormwater analysis demonstrates that post-development runoff from the proposed UFA cardlock and bulk fuel facility can be effectively managed to meet pre-development discharge rates. The proposed dry pond storage system, combined with controlled outflow, is expected to limit peak discharge rates to pre-development levels while accommodating the increased runoff volume associated with site development. Please refer to Appendix G for the full stormwater report.

FIGURE 07: STORMWATER MANAGEMENT



# 4.0

## SECTION 4.0

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# MUNICIPAL POLICY FRAMEWORK

#### 4.1 INTERMUNICIPAL PLAN OVERVIEW

The site is located within the Intermunicipal Development Referral Area (IDP) with the Town of Carstairs. The IDP Referral Area is intended for potential long-term urban growth. A statutory requirement is that the Town of Carstairs will be circulated about any proposed development within this area.

#### 4.2 MUNICIPAL DEVELOPMENT PLAN OVERVIEW

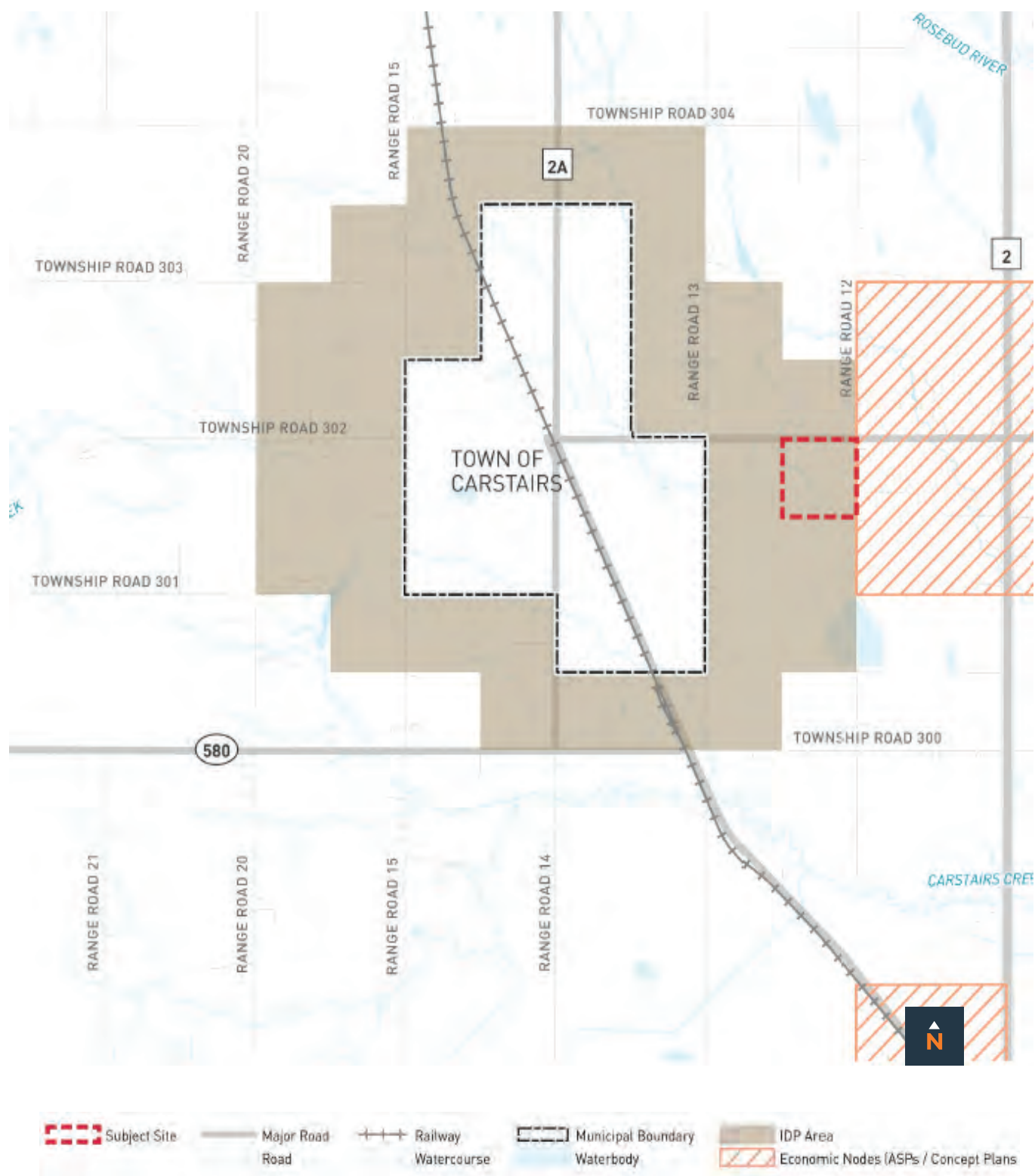
The site is located within the Agricultural Preservation Area and is directly west of an identified Economic Node with Partial development. The site does not contain any Environmentally Sensitive Areas (ESAs) that are identified within the MDP.

#### 4.3 LAND USE BYLAW OVERVIEW

As identified, a land use redesignation is required to rezone the site from Agricultural (A) to Business Park (I-BP) district. Mountain View County's Business, Commercial and Industrial Design Guidelines (Policy #6018 and Procedure #6018-01) are acknowledged and will be addressed at the time of a Development Permit Application, which will remain contingent on land use and subdivision approval.



FIGURE 08: MUNICIPAL POLICY CONTEXT MAP



# 5.0

## SECTION 5.0

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# IMPLEMENTATION FRAMEWORK

The implementation of the proposed Bulk Fuel and Cardlock Facility will occur through a phased process involving regulatory approvals, detailed design, and construction activities.

## 5.1 IMPLEMENTATION PROCESS

Following approval of the Land Use Redesignation and Subdivision, UFA will advance the project through detailed engineering and site design to confirm servicing, transportation, stormwater management, and operational requirements.

The implementation process will include coordination with the Town of Carstairs, Mountain View County to ensure the development meets all municipal and county standards. Detailed design will refine site-specific elements, including access, internal circulation, grading, drainage, utilities, landscaping, and safety requirements.

Upon completion of approvals and detailed design, construction activities will proceed, including site preparation, infrastructure improvements, and facility development. The project will be implemented in accordance with approved plans and regulatory requirements to support the safe and efficient operation of the facility and its long-term service to the surrounding agricultural and commercial community.

## 5.2 PROPOSED LAND USE

As shown on Figure 9: Proposed Land Use/Subdivision, lands within the Plan area are proposed to be redesignated to Business Park District (I-BP) in accordance with the County's Land Use Bylaw. The purpose of this district is to accommodate a broad range of commercial and industrial uses in business and industrial parks, some of which may have outdoor storage or work activities. Any nuisance associated with such uses should generally not extend beyond the boundaries of the site. The minimum Industrial Parcel size is 2.02 ha (5.0ac) (under Inter-Municipal agreements).

## 5.3 PROPOSED SUBDIVISION

The proposed subdivision will require 2.43 ha/6.0 ac to be subdivided from the current unsubdivided quarter section.

FIGURE 09: PROPOSED LAND USE AND SUBDIVISION



# 6.0

## SECTION 6.0

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# CONSULTATION AND ENGAGEMENT

## 6.1 PRE-APPLICATION WITH MOUNTAIN VIEW COUNTY

On April 27, 2026, representatives from UFA and CIMA+/B&A met with the Mountain View County Planning and Development Department to discuss the proposed project, applicable statutory planning and Land Use Bylaw (LUB) considerations, and application requirements for a future land use redesignation and subdivision.

The County advised that improvements to Range Road 12 would likely be required as part of the subdivision process, including, at a minimum, paving along the frontage of the proposed site, with potential roadway widening subject to further review.

Mountain View County confirmed that notification of landowners within a one-mile radius would be required and advised that it could facilitate the mail-out of engagement materials. The County also confirmed that engagement with the local Division Councillor prior to application submission would be acceptable with advance notice.

Finally, the County indicated that baseline and technical studies would be required to support the applications, with the specific requirements to be confirmed at a later date.



## 6.2 PRE-APPLICATION WITH TOWN OF CARSTAIRS

On April 27, 2026, representatives from UFA and CIMA+/B&A- met with the Town of Carstairs Planning and Development Department to provide an overview of the proposed project, recognizing the site is located within the Town of Carstairs–Mountain View County Intermunicipal Development Plan (IDP) referral area.

The Town expressed support for the proposal and confirmed it would not require review by the Intermunicipal Collaboration Committee, as the project was not considered a high-level intermunicipal matter. The Town identified several considerations related to future urban growth, including servicing, potential stub connections, and levies, noting that a deferred servicing caveat could be considered through the subdivision process. The Town also confirmed that no separate engagement would be required, as it was satisfied with the public engagement process to be undertaken by Mountain View County.

## 6.3 PRE-APPLICATION WITH ALBERTA TRANSPORTATION

CIMA+ Transportation Engineer, Michael Sydenham, was in conversations with Mat Reijnders from Alberta Transportation. Mat Reijnders provided direction and comments for the Traffic Impact Assessment to be conducted as part of the Land Use Redesignation and Subdivision Application.

## 6.4 SURROUNDING LANDOWNER NOTIFICATION

Mountain View County required the proponents to notify the surrounding landowners within a one-mile radius. A mail-out letter about the proposed project was prepared and sent out to 40 surrounding landowners that fell within the one-mile radius.

## 6.5 MOUNTAIN VIEW SEED CLEANING PLANT LTD.

Mountain View Seed Cleaning Plant Ltd. is the neighbour to the east of the proposed UFA site. The seed cleaning facility and UFA would share site access via RR12. It currently operates to clean cereal grains and canola, separates any seeds, and treats cereal grains. The seed cleaning facility's manager, Duane Trottier, was contacted by B&A/CIMA+ via phone call and mail-out letter. No response was received.

## 6.6 NOVA AGRICULTURE LTD.

Nova Agriculture Ltd. is listed as the adjacent landowner to the south of the quarter section that is to be subdivided. Upon investigation, Nova Agriculture Ltd is listed as a struck-off company and removed from the Alberta Corporate Registry on September 2, 2024. No further inquiries have been made.

# 7.0

SECTION 7.0

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## CONCLUSION

## 7.1 CONCLUSION

United Farmers of Alberta (UFA), an Alberta-based agricultural co-operative serving more than 180,000 member-owners since 1909, is proposing the development of a new Bulk Fuel Storage and Cardlock Facility on approximately 6 acres at the intersection of Highway 581 and Range Road 12 in Mountain View County.

The proposed facility represents a significant investment in the Carstairs and Mountain View County region and will replace UFA's aging facility within the Town of Carstairs, which is no longer capable of meeting current operational demands or supporting future growth. Relocating the facility will provide modern infrastructure, improve fuel accessibility for agricultural producers, commercial operators, transportation industries, and UFA members, while strengthening the region's agricultural and transportation network and supporting long-term economic development.

The proposed location is well suited for this development for several reasons. The site provides excellent access to the regional highway network, allowing safe and efficient movement of passenger vehicles and commercial transport while minimizing impacts on residential areas. The property is currently vacant agricultural land with sufficient size to accommodate the proposed facility, stormwater infrastructure, and safe vehicle circulation. Environmental and geotechnical investigations have confirmed the site is suitable for development, with no significant environmental concerns identified and soils appropriate for the intended use. The design also avoids environmentally sensitive features and incorporates comprehensive servicing solutions, including private water and wastewater systems, engineered stormwater management, and infrastructure designed to meet all applicable regulatory standards.

The proposal has been developed in accordance with the intent of Mountain View County's Municipal Development Plan and Land Use Bylaw. Approval of a land use redesignation from Agricultural (A) to Business Park (I-BP) and subdivision is required to facilitate the development, after which detailed engineering, permitting, and construction will proceed.

This project represents an opportunity to support continued investment in Mountain View County, provide critical infrastructure for the agricultural and commercial sectors, create long-term economic benefits, and ensure UFA can continue serving the evolving needs of the region.

UFA PROPOSED BULK FUEL & CARDLOCK FACILITY CONCEPT PLAN



A

APPENDIX A

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# LAND TITLE AND LANDOWNER NOTIFICATION LIST



## LAND TITLE CERTIFICATE

S  
LINC                      SHORT LEGAL                      TITLE NUMBER  
0018 768 168        5;1;30;10;NE                      231 012 970 +2

### LEGAL DESCRIPTION

MERIDIAN 5 RANGE 1 TOWNSHIP 30  
SECTION 10  
QUARTER NORTH EAST  
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS  
EXCEPTING:

| PLAN                 | NUMBER | HECTARES | ACRES MORE OR LESS |
|----------------------|--------|----------|--------------------|
| CARSTAIRS CONNECTION | 417JX  | 1.43     | 3.55               |

EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: MOUNTAIN VIEW COUNTY

REFERENCE NUMBER: 911 136 316

| REGISTERED OWNER(S) |            |                  |       |                |
|---------------------|------------|------------------|-------|----------------|
| REGISTRATION        | DATE (DMY) | DOCUMENT TYPE    | VALUE | CONSIDERATION  |
| 231 012 970         | 16/01/2023 | TRANSFER OF LAND |       | SEE INSTRUMENT |

### OWNERS

KITSTONE FARMS LTD.  
OF C/O 1623 - 96 AVENUE SW  
CALGARY  
ALBERTA T2V 5E5

(DATA UPDATED BY: CHANGE OF NAME 231015822)

### ENCUMBRANCES, LIENS & INTERESTS

| REGISTRATION |              |                                                                    |
|--------------|--------------|--------------------------------------------------------------------|
| NUMBER       | DATE (D/M/Y) | PARTICULARS                                                        |
| 761 037 415  | 30/03/1976   | UTILITY RIGHT OF WAY<br>GRANTEE - FOOTHILLS NATURAL GAS CO-OP LTD. |
| 951 116 280  | 25/05/1995   | UTILITY RIGHT OF WAY<br>GRANTEE - AGT LIMITED.                     |

( CONTINUED )

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ENCUMBRANCES, LIENS & INTERESTS

PAGE 2

REGISTRATION

# 231 012 970 +2

NUMBER      DATE (D/M/Y)      PARTICULARS  
-----

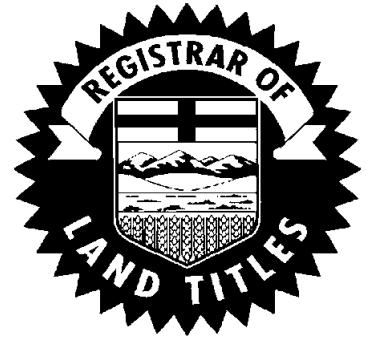
AS TO PORTION OR PLAN: 9510747  
TAKES PRIORITY OF CAVEAT 941177943  
REGISTERED ON JULY 7, 1994

TOTAL INSTRUMENTS: 002

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN  
ACCURATE REPRODUCTION OF THE CERTIFICATE OF  
TITLE REPRESENTED HEREIN THIS 16 DAY OF JULY,  
2026 AT 09:49 A.M.

ORDER NUMBER:    57779147

CUSTOMER FILE NUMBER:    2026-046



\*END OF CERTIFICATE\*

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED  
FOR THE SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER,  
SUBJECT TO WHAT IS SET OUT IN THE PARAGRAPH BELOW.

THE ABOVE PROVISIONS DO NOT PROHIBIT THE ORIGINAL PURCHASER FROM  
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PART OF THE ORIGINAL PURCHASER APPLYING PROFESSIONAL, CONSULTING  
OR TECHNICAL EXPERTISE FOR THE BENEFIT OF CLIENT(S).

| Name                                    |
|-----------------------------------------|
| 861699 ALBERTA LTD                      |
| ACREMAN, KATHRYN LOUISE                 |
| BAUSTAD, GREGORY HAROLD & HEATHER JOAN  |
| BELL, GERALDINE NIKI                    |
| BOUCHARD, BRIAN JOHN                    |
| BROWN, WESLEY DONALD & KELLY DEANNE     |
| CAMPBELL, GARRY C                       |
| CAMPBELL, LLOYD D & SUSAN J             |
| CAMPBELL, ROSS A                        |
| DALEY, RONALD WAYNE                     |
| DAVIES, DAN S                           |
| FUSION EQUITY MANAGEMENT INC.           |
| HARNACK, LYLE DOUGLAS                   |
| HIGH-TECH RIGGING LTD.                  |
| HOFFINGER, CATHERINE H                  |
| IMESON, ELLIOT & BEVERLY ELAINE         |
| JOHNSON, OLLIE B                        |
| K & K FAWNS HOLDINGS (2009) CORPORATION |
| KITSTONE FARMS LTD.                     |
| MARSHALL, WARD & BROOKE                 |
| MARSHALL, WARD & BROOKE                 |
| MORASCH, NORMAN GLENN & CARLA DEE       |
| MOUNTAIN VIEW SEED CLEANING PLANT       |
| MUNRO, RICHARD & ASHLEY                 |
| NIESSEN, TERRY JAMES & RONDA JEAN       |
| PETERSON, LINDA LEE                     |
| RASMUSSEN, DAVE BRUCE & BEVERLY ANNE    |
| REID, DAVID T & MARGUERITE A            |
| ROBSON, KURT                            |
| ROEDLER, DALE HERMAN                    |
| SCHMITT, RICHARD & JOANNE               |
| STOLEY, JAMES ROBERT                    |
| SULLIVAN, ANDREW & ANDREA               |
| THORLAKSON, BETTY ANN                   |
| TOWN OF CARSTAIRS                       |
| VAN TIGHEM, TAMMI SHALLAINE             |
| WATSON, MICHAEL R                       |
| WATSON, THERESA L                       |

## APPENDIX B

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# LANDOWNER LETTER OF AUTHORIZATION

Kitstone Farms Ltd.  
Mark Owerko  
Managing Partner  
6713 Fairmount Dr SE  
Calgary, AB T2H 0X6  
(403) 921-8246  
Mark@glandp.com

Mountain View County  
Planning & Development Services  
10-1408 Twp Rd 320  
Didsbury, AB, T0M 0W0

To Whom It May Concern,

With regards to NE-10-30-1-5, please be advised that I, **Mark Owerko**, of **Kitstone Farms Ltd.** am:

- ☐ The owner of the above-mentioned property, and that I authorize
- ☒ An officer or director of the owner(s) of the above-mentioned property, and that I am authorized by that owner to authorize

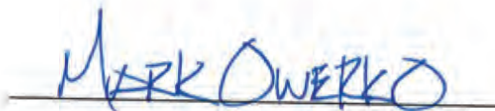
**B&A Studios/CIMA+** to apply for all **Land Use Redesignation and Subdivision Application** for the above-mentioned property.

I further agree to immediately notify Mountain View County, in writing, of any changes regarding the above information.

17/07/2026

Date

  
Signature

  
Name (printed)

## APPENDIX C

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ENVIRONMENTAL  
STUDIES

Note



Please refer to email  
attachment

D



APPENDIX D

# GEOTECHNICAL STUDIES

Note



Please refer to email  
attachment

APPENDIX E

TRANSPORTATION  
IMPACT ASSESSMENT

Note



Please refer to email  
attachment

APPENDIX F

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# SERVICING STUDY

# TECHNICAL MEMO

**Presented to:** David Lake, P.Eng

**Project:** UFA - Proposed Cardlock & Bulk Fuel Facility

**Version:** Rev. A

**Date:** 07-02-2026

**O/Ref.:** A0004838

**Object:** UFA - Proposed Cardlock & Bulk Fuel Facility Water Servicing Memo

## 1. Introduction

United Farmers of Alberta Co-operative Ltd. (UFA) has retained CIMA Canada Inc. (CIMA) to provide engineering support of the proposed development of lands owned by UFA. UFA is proposing the development of a new Cardlock and Bulk Fuel Facility on an approximately 2.43 ha (6.0 ac) parcel located in Mountain View County (MVC), Alberta, legally described as NE-10-30-1-W5. The site is situated at the northwest corner of the Highway 581 and Range Road 12 intersection, approximately 1.6 km west of the Highway 2 and Highway 581 interchange. This memorandum evaluates water and wastewater servicing options for a proposed development in MVC.

The subject lands are currently undeveloped agricultural lands and are bordered by existing agricultural and agri-industrial operations, including Mountain View Seed Cleaning Plant Ltd. and NOVA Agriculture Ltd.

Site access is proposed via Range Road 12, utilizing the existing intersection at Highway 581. The location provides convenient access to the regional transportation network, including Highway 2, and is intended to serve agricultural, commercial, and industrial users within MVC and the surrounding region.

The proposed development will include bulk fuel storage tanks, cardlock facilities, office and ancillary buildings, truck circulation areas, and supporting site infrastructure. The conceptual site plan can be seen in **Figure 1** below:



Figure 1: UFA Cardlock and Bulk Fuel Facility Site Concept Plan

## 2. Existing Utility Services

The subject site is currently undeveloped agricultural land and is not serviced by municipal water and sanitary sewer infrastructure. Based on the rural nature of the surrounding area, no municipal utility services are available adjacent to the site for connection. The existing land use can be seen in **Figure 2** below:

FIGURE 4 - Existing Land Use



Figure 2: Existing Land Use Map

As such, the proposed development is recommended to be serviced through private systems, including a water cistern and sewage holding tank, consistent with the preliminary development concept.

## 2.1.1 Water Demand & Servicing

To support discussions, preliminary water demand calculations were completed for the proposed development. Based on an estimated 1-2 employees on site per day in the site office, the development is anticipated to generate a population increase of approximately two people. Based on the preliminary development concept, the facility is expected to accommodate approximately 30 heavy trucks, 80 passenger vehicles.

For the purposes of this conceptual assessment, it has been assumed that approximately 30% of passenger vehicle users will access the washroom facilities, resulting in an estimated 24 users per day. In addition, it has been assumed that approximately 5% of heavy truck users will utilize the washroom facilities, resulting in an estimated 1.5 users per day. This value has been conservatively rounded up to 2 users. Including the 2 on-site employees, the estimated population for water demand is therefore 28 persons per day.

The Town of Carstairs Master Servicing Study specifies the water consumption rate for commercial and industrial area to be 25% of the Town's 322 L/person/ day total average daily demand (ADD). Therefore, using a unit water demand of 80.5 L/person/day, the estimated ADD is approximately 0.00186 L/s. Applying standard peaking factors, this corresponds to a maximum day demand (MDD) of approximately 0.00373 L/s and a peak hour demand (PHD) of approximately 0.00745 L/s.

**Table 2.1: Estimated Water Demand Calculations**

| Lots | Daily People | Total Population (p) | Design Flow Demand Rate (L/p/d) | Average Day Demand (ADD) (L/s) | Max Day Demand (MDD) (L/s) | Peak Hour Demand (PHD) (L/s) |
|------|--------------|----------------------|---------------------------------|--------------------------------|----------------------------|------------------------------|
| 1    | 28           | 28                   | 80.5                            | 0.026                          | 0.052                      | 0.104                        |

Based on the proposed site operations and a projected ADD of 0.026 L/s, a water cistern is considered the most practical and cost-effective servicing solution for the development. The facility is expected to have only two employees on site, resulting in minimal domestic water demand that does not justify the extension of municipal water infrastructure.

The proposed water cistern will be located on-site and supplied by a licensed water hauler on a scheduled basis to ensure adequate storage capacity is maintained for daily operations. The cistern will be designed to accommodate domestic water demands as determined during the detailed design phase.

The exact location, storage volume, and operational requirements of the water cistern will be confirmed through detailed design and in accordance with applicable regulatory and municipal requirements.

## 2.1.2 Wastewater Demand & Servicing

Wastewater generation at the proposed facility was estimated based on anticipated daily site usage. Based on the preliminary development concept, the facility is expected to accommodate approximately 30 heavy trucks, 80 passenger vehicles, and 2 employees per day.

The same population and demand assumptions have been made for wastewater demands that were made for water consumption.

| Lots | Daily People | Total Population (p) | Design Flow Generation Rate (L/p/d) | Average Day Demand (ADD) (L/s) | Max Day Demand (MDD) (L/s) | Peak Hour Demand (PHD) (L/s) |
|------|--------------|----------------------|-------------------------------------|--------------------------------|----------------------------|------------------------------|
| 1    | 28           | 28                   | 80.5                                | 0.026                          | 0.052                      | 0.104                        |

Given the low anticipated wastewater volumes and the absence of municipal sanitary infrastructure in the area, an on-site sewage holding tank is considered an appropriate servicing solution. The required holding tank volume will be determined during detailed design based on the estimated wastewater generation rate, desired pump-out frequency, and operational requirements. Appropriate freeboard and a factor of safety will be incorporated into the final tank sizing to ensure adequate storage capacity between scheduled pump-outs.

### 3. Conclusions

Based on the preliminary assessment, the proposed United Farmers of Alberta Co-operative Ltd. Cardlock and Bulk Fuel Facility can be adequately serviced through private water and wastewater systems. Given the absence of municipal water and sanitary infrastructure in the area, an on-site water cistern and sewage holding tank are considered appropriate servicing solutions.

The anticipated water demand and wastewater generation are minimal due to the limited number of employees and the nature of the proposed operations. Final sizing and design of the water cistern and sewage holding tank will be confirmed during detailed design in accordance with applicable regulatory requirements.

It is our understanding that at some point in the future municipal servicing may be available adjacent to the subject site. Both water cistern and sanitary holding tanks can be located onsite to accommodate for future permanent connection.

However, at this time, the proposed limited water and wastewater servicing strategy is considered appropriate for the development and will be refined during detailed design.

Prepared by:

Please refer to copy in email for copy with signature

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Darryl Reinhardt, P.L. (Eng.), Senior Director

APPENDIX G

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# STORMWATER MANAGEMENT REPORT

# TECHNICAL MEMORANDUM

**Presented to:** Mountain View County

**Project:** United Farmers of Alberta Co-operative Ltd. - Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)

**Version:** 1

**Date:** 3 July 2026

**O/Ref.:** A0004838

**Subject:** Conceptual Stormwater Analysis

## 1. Introduction

### 1.1 General

CIMA+ was retained by United Farmers of Alberta Co-operative Ltd. (UFA) to complete a Conceptual Stormwater Analysis memorandum for the proposed cardlock and bulk fuel facility in Mountain View County (MVC) at the southwest corner of the intersection of Highway 581 and Range Road 12, near the Town of Carstairs. The project location is shown in Figure 1. The legal land description is NE¼-10-30-1-W5. Conceptual drawings for the proposed facility are provided in Appendix A.

The site area is approximately 2.43 ha and is currently agricultural farmland. The proposed development will convert this area to paved driveways, parking lots, buildings, and landscaping.

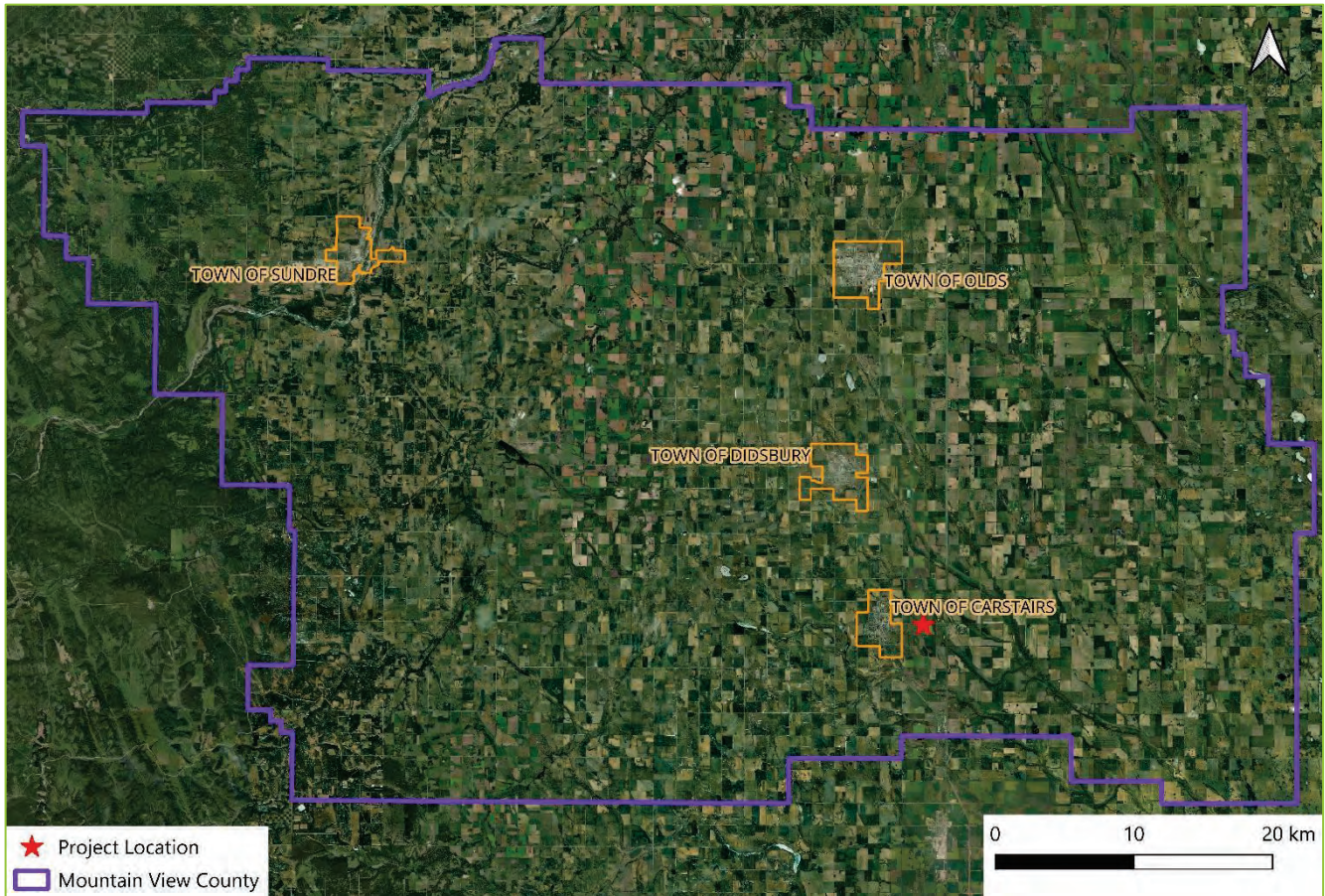
To manage post-development site runoff rates and limit discharge rates to pre-development levels, stormwater storage (e.g., dry pond, wet pond, or low impact development system such as an infiltration basin, to be finalized through detailed design) will be provided. Controlled outflow will be discharged from the storage into the Highway 581 drainage ditch system.

For this conceptual analysis, a dry pond has been assumed for stormwater storage, this may be revised during detailed design.

# TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. – Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 – Version 1  
CIMA+ Ref.: A0004838



*Figure 1: Project Location*

## 1.2 Objectives

This memo is prepared to support the development application with MVC. The specific objectives are to:

- Review existing drainage patterns and receiving systems
- Estimate pre- and post-development runoff rates and volumes produced by the 1:100-year 24-hour design storm event, based on the concept plan
- Identify conceptual stormwater management approaches, including flow routing and storage requirements
- Identify any downstream risks or constraints

## 1.3 Scope

The analysis and results presented in this memo are conceptual and should be confirmed through detailed design prior to construction.

## 1.4 Methodology

To analyse the pre- and post-development storm conditions onsite and estimate the pond storage requirements, computer simulations were performed using a PCSWMM model of the system. The PCSWMM Version 7.7.3920 Professional 2D software with SWMM5 Version 5.2.4 engine was used.

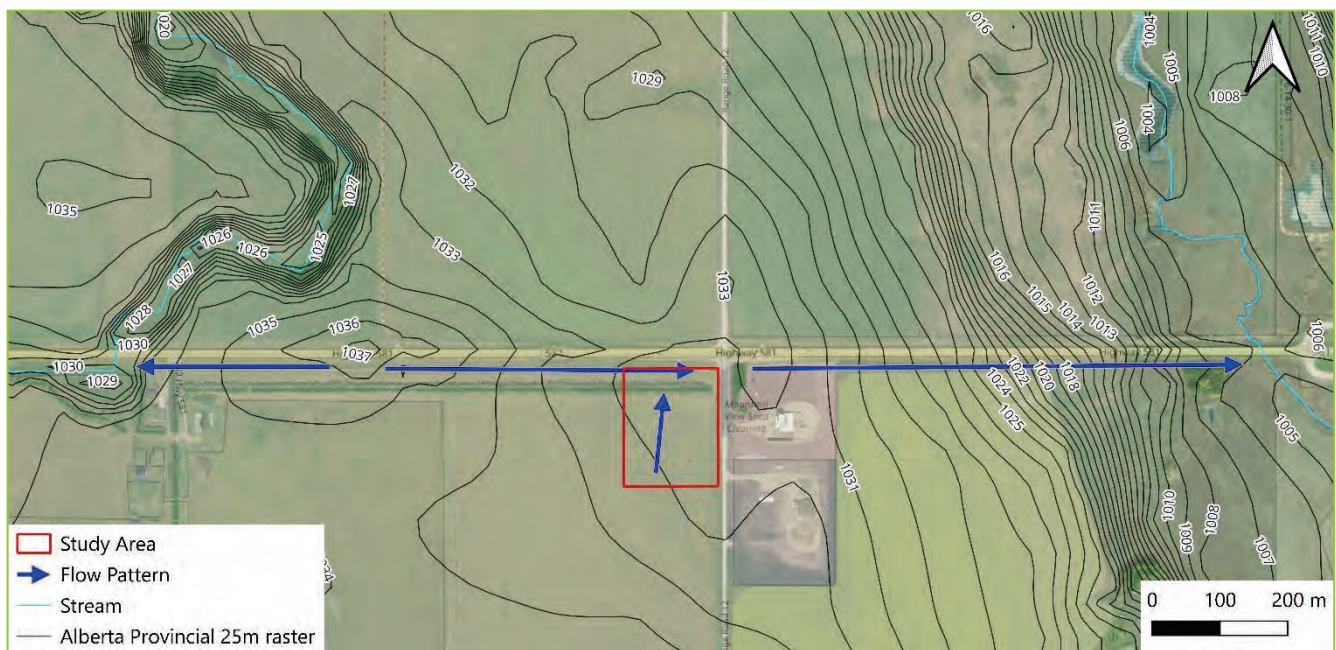
The 1:100-year 24-hour design storm event used in the simulation was obtained from the City of Calgary Stormwater Management & Design Manual (SMDM, 2011) Appendix K.

Hydrologic values used in the model were obtained from the City of Calgary SMDM (2011) and are given in Appendix B.

The infiltration method used in the model is the Horton method, which is an empirical formula based on a maximum infiltration rate and a decay time to the saturated infiltration rate. Infiltration parameters were also obtained from the City of Calgary SMDM (2011).

## 2. Existing Conditions

The existing drainage conditions onsite are shown below in Figure 2 and Figure 3. The site is located within the Rosebud River sub-watershed and generally drains from south to north toward the Highway 581 drainage ditch. This ditch discharges into a creek approximately 800 m east of the site, which ultimately drains to the Rosebud River.



**Figure 2: Existing Drainage Conditions - Site and Adjacent Areas**

Onsite runoff drains north towards the Highway 581 ditch as sheet flow. Offsite areas to the south and west also drain toward the site and ditch. To prevent offsite runoff from entering the developed site, drainage ditches will be constructed along the south and west boundaries to convey flows directly to the Highway 581 ditch.

# TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. - Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 - Version 1  
CIMA+ Ref.: A0004838

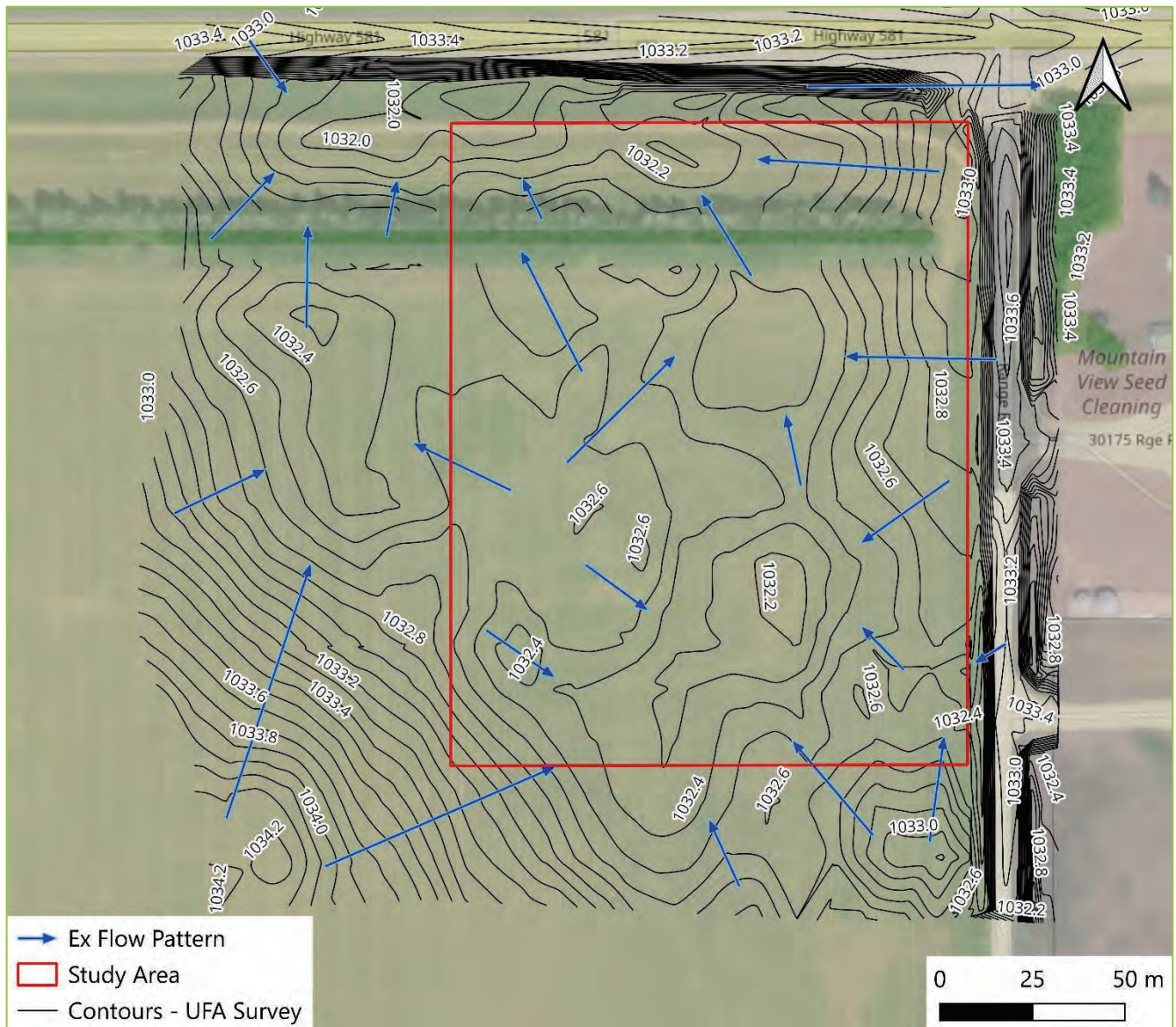


Figure 3: Existing Onsite Drainage Conditions

## 2.1 Peak Flow and Runoff Volume

The peak flow and runoff volume from the site based on the 1:100-year 24-hour storm event simulation are as follows:

- Peak flow = 38.9 L/s
- Runoff volume = 223 m<sup>3</sup>

### 3. Post Development

The post-development concept drawings are attached in Appendix A. The existing tree line along the north side of the site will be retained as-is. A stormwater storage facility (assumed dry pond for this analysis) will be constructed north of the tree line to provide storage and flow attenuation prior to discharge into the Highway 581 ditch system.

The developed site is estimated to be approximately 65% impervious. Runoff will be conveyed as sheet flow toward the storage facility. A flow control device (e.g., orifice) will be used to regulate discharge.

The site will be graded with a slope of 1% to promote sheet flow drainage towards the storage facility.

#### 3.1 Pond Sizing

Post-development drainage conditions and catchment properties are shown in Figure 4. For this analysis, the stormwater facility was modeled as a dry pond with the following parameters:

- Maximum depth: 1.5 m
- Side slopes: 5H:1V
- Surface area at high water level (HWL): 1,200 m<sup>2</sup>

An orifice control structure was sized such that the discharge at HWL does not exceed the allowable pre-development peak flow rate.

#### 3.2 Peak Flow and Runoff Volume

The peak flow and runoff volume from the site in the post-development condition, based on the 1:100-year 24-hour storm event simulation are as follows:

- Peak flow = 32.2 L/s
- Runoff volume = 1142 m<sup>3</sup>

The post-development peak discharge is lower than the pre-development peak flow due to flow control. However, total runoff volume increases due to reduced infiltration (pervious) area onsite.

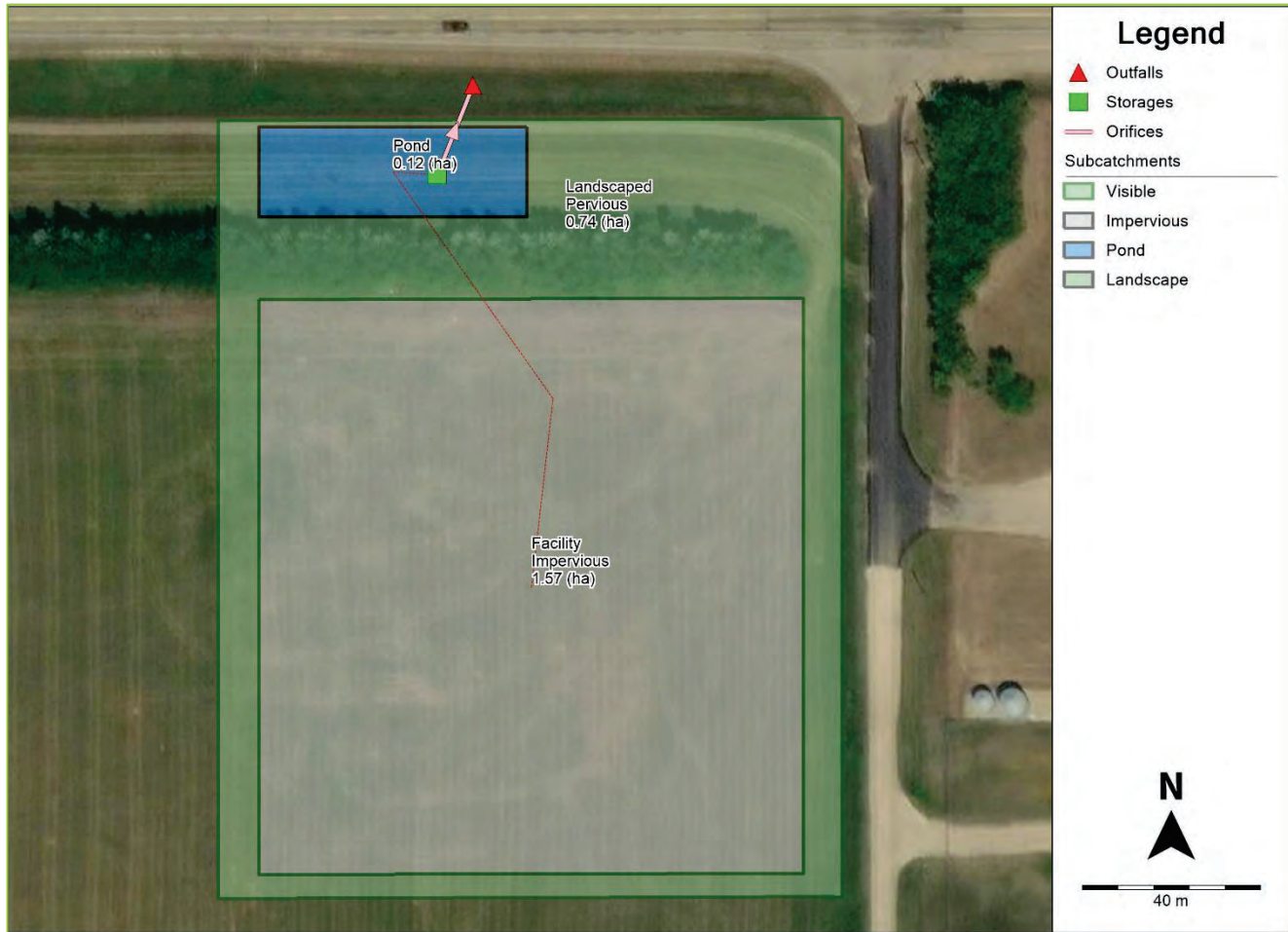
#### 3.3 Water Quality

Water quality treatment is expected to be provided by the Highway 581 roadside ditch itself. The City of Calgary Stormwater Management & Design Manual (2011) outlines that the vegetated swales are highly applicable to open spaces and can provide high pollutant removal (Table 8-1 and 8-2).

# TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. – Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 – Version 1  
CIMA+ Ref.: A0004838



**Figure 4: Post-Development Drainage Conditions (Conceptual)**

## 4. Conclusion

The conceptual stormwater analysis demonstrates that post-development runoff from the proposed UFA cardlock and bulk fuel facility can be effectively managed to meet pre-development discharge rates. The proposed dry pond storage system, combined with controlled outflow, is expected to limit peak discharge rates to pre-development levels while accommodating the increased runoff volume associated with site development.

Drainage controls, including perimeter ditches to redirect offsite flow and site grading toward the storage facility, are expected to maintain appropriate drainage patterns and prevent adverse impacts to adjacent lands. Discharge to the existing Highway 581 ditch system is considered feasible, with no significant downstream constraints identified at the conceptual level. The ditch system capacity, including any culverts, should be verified prior to construction.

The analysis confirms that the proposed stormwater management approach is suitable for the development. Final design details, including storage design and outlet control sizing, should be confirmed during detailed design prior to construction.

## TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. – Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 – Version 1  
CIMA+ Ref.: A0004838

### 5. Closure

CIMA+ trusts that the information contained in this memo meets your requirements. Please contact the undersigned if you have any questions or require additional information.

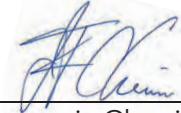
Prepared by:



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Ajay Muthukumar, M.Sc., EIT  
Engineer-in-Training  
Infrastructure – Water Resources  
[ajay.muthukumar@cima.ca](mailto:ajay.muthukumar@cima.ca)

Verified by:



---

Jean-Francois Chenier, P.Eng.  
Senior Project Manager, Associate Partner  
Infrastructure – Water Resources  
[jean-francois.chenier@cima.ca](mailto:jean-francois.chenier@cima.ca)

CC: Darryl Reinhardt, P.L. (Eng.), CIMA+

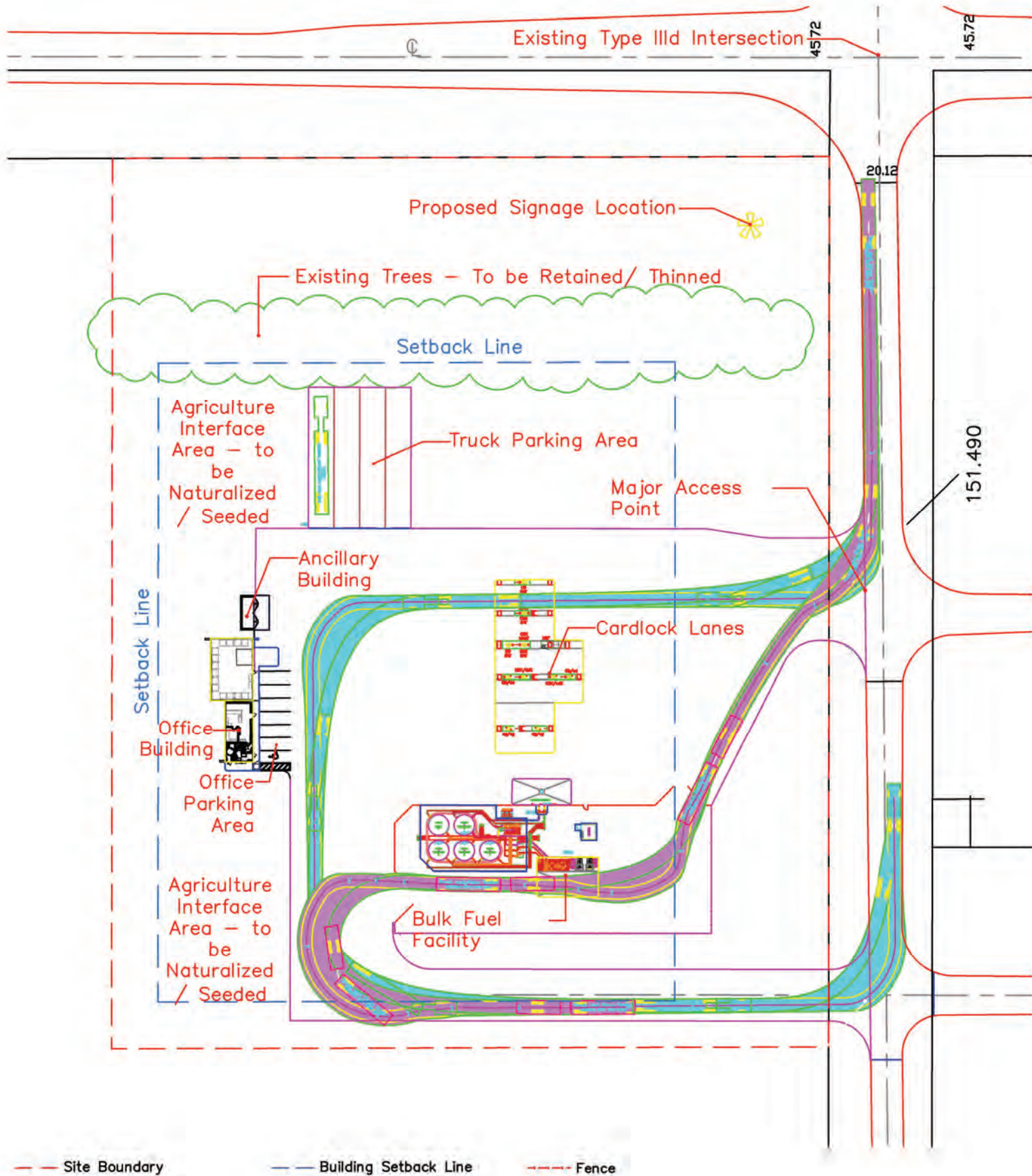
## TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. – Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 – Version 1  
CIMA+ Ref.: A0004838

## **Appendix A:** Conceptual Drawings

Note: Draft drawings provided for reference only



1:1000



# Bulk Fuel & Cardlock Facility – LUA & Subdivision

Proposed Subdivision  
 UFA Co-operative Limited  
 NE-10-30-1-W5  
 Mountain View, AB  
 June 2026

**CIMA+**



## TECHNICAL MEMORANDUM

United Farmers of Alberta Co-operative Ltd. – Cardlock and Bulk Fuel Facility (NE-10-30-1-W5)  
Conceptual Stormwater Analysis

3 July 2026 – Version 1  
CIMA+ Ref.: A0004838

### **Appendix B:** PCSWMM Input/Output



[TITLE]  
;;Project Title/Notes

[OPTIONS]  
;;Option Value  
FLOW\_UNITS CMS  
INFILTRATION HORTON  
FLOW\_ROUTING DYNWAVE  
LINK\_OFFSETS ELEVATION  
MIN\_SLOPE 0  
ALLOW\_PONDING NO  
SKIP\_STEADY\_STATE NO

START\_DATE 06/12/2026  
START\_TIME 00:00:00  
REPORT\_START\_DATE 06/12/2026  
REPORT\_START\_TIME 00:00:00  
END\_DATE 06/16/2026  
END\_TIME 00:00:00  
SWEEP\_START 01/01  
SWEEP\_END 12/31  
DRY\_DAYS 0  
REPORT\_STEP 00:01:00  
WET\_STEP 00:05:00  
DRY\_STEP 00:05:00  
ROUTING\_STEP 5  
RULE\_STEP 00:00:00

INERTIAL\_DAMPING PARTIAL  
NORMAL\_FLOW\_LIMITED BOTH  
FORCE\_MAIN\_EQUATION H-W  
VARIABLE\_STEP 0.75  
LENGTHENING\_STEP 0  
MIN\_SURFAREA 0  
MAX\_TRIALS 8  
HEAD\_TOLERANCE 0.0015  
SYS\_FLOW\_TOL 5  
LAT\_FLOW\_TOL 5  
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THREADS 20

[EVAPORATION]  
;;Data Source Parameters  
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CONSTANT 0.0  
DRY\_ONLY NO

[RAINGAGES]  
;;Name Format Interval SCF Source  
;;-----  
Calgary\_24h\_100y INTENSITY 0:05 1.0 TIMESERIES Calgary\_24h\_100y

[SUBCATCHMENTS]  
;;Name Rain Gage Outlet Area %Imperv Width %  
Slope CurbLen SnowPack  
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SC-1 Calgary\_24h\_100y OF-1 2.43 0 142.94 1.2

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PctRouted
;;-----
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100

[INFILTRATION]
;;Subcatchment   Param1    Param2    Param3    Param4    Param5
;;-----
SC-1              75        7.5      4.14      7          0

[OUTFALLS]
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;;-----
OF-1             1031.75   FREE
NO

[CURVES]
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SP10              0.05      90.961
SP10              0.065     138.941

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SP11              0.05      2.999
SP11              0.1       6.997
SP11              0.15     17.992
SP11              0.2      54.977
SP11              0.25    160.931
SP11              0.263   271.884

;From Storage Creator, Name = SP3; Minimum Elev. = 1031.768; Maximum Elev. =
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SP3              0.1      89.962
SP3              0.15    289.876
SP3              0.2     662.717
SP3              0.25   1251.466
SP3              0.3     1652.295
SP3              0.35    2063.12
SP3              0.388   2424.966

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SP4              0.05     173.926
SP4              0.085    340.855

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1032.309; Depth = 0.098

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[TIMESERIES]

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| Calgary_24h_100y | 0:10 | 1.103 |
| Calgary_24h_100y | 0:15 | 1.113 |
| Calgary_24h_100y | 0:20 | 1.122 |
| Calgary_24h_100y | 0:25 | 1.132 |
| Calgary_24h_100y | 0:30 | 1.143 |
| Calgary_24h_100y | 0:35 | 1.153 |
| Calgary_24h_100y | 0:40 | 1.163 |
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| Calgary_24h_100y | 1:00 | 1.208 |
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| Calgary_24h_100y | 1:10 | 1.232 |
| Calgary_24h_100y | 1:15 | 1.245 |
| Calgary_24h_100y | 1:20 | 1.257 |
| Calgary_24h_100y | 1:25 | 1.27  |
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| Calgary_24h_100y | 2:20 | 1.439 |
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|                  |      |         |
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| Calgary_24h_100y | 3:35 | 1.784   |
| Calgary_24h_100y | 3:40 | 1.815   |
| Calgary_24h_100y | 3:45 | 1.846   |
| Calgary_24h_100y | 3:50 | 1.88    |
| Calgary_24h_100y | 3:55 | 1.914   |
| Calgary_24h_100y | 4:00 | 1.95    |
| Calgary_24h_100y | 4:05 | 1.988   |
| Calgary_24h_100y | 4:10 | 2.028   |
| Calgary_24h_100y | 4:15 | 2.07    |
| Calgary_24h_100y | 4:20 | 2.113   |
| Calgary_24h_100y | 4:25 | 2.159   |
| Calgary_24h_100y | 4:30 | 2.208   |
| Calgary_24h_100y | 4:35 | 2.259   |
| Calgary_24h_100y | 4:40 | 2.313   |
| Calgary_24h_100y | 4:45 | 2.371   |
| Calgary_24h_100y | 4:50 | 2.432   |
| Calgary_24h_100y | 4:55 | 2.497   |
| Calgary_24h_100y | 5:00 | 2.566   |
| Calgary_24h_100y | 5:05 | 2.64    |
| Calgary_24h_100y | 5:10 | 2.719   |
| Calgary_24h_100y | 5:15 | 2.805   |
| Calgary_24h_100y | 5:20 | 2.897   |
| Calgary_24h_100y | 5:25 | 2.997   |
| Calgary_24h_100y | 5:30 | 3.105   |
| Calgary_24h_100y | 5:35 | 3.224   |
| Calgary_24h_100y | 5:40 | 3.354   |
| Calgary_24h_100y | 5:45 | 3.497   |
| Calgary_24h_100y | 5:50 | 3.656   |
| Calgary_24h_100y | 5:55 | 3.833   |
| Calgary_24h_100y | 6:00 | 4.033   |
| Calgary_24h_100y | 6:05 | 4.259   |
| Calgary_24h_100y | 6:10 | 4.519   |
| Calgary_24h_100y | 6:15 | 4.821   |
| Calgary_24h_100y | 6:20 | 5.176   |
| Calgary_24h_100y | 6:25 | 5.601   |
| Calgary_24h_100y | 6:30 | 6.12    |
| Calgary_24h_100y | 6:35 | 6.773   |
| Calgary_24h_100y | 6:40 | 7.624   |
| Calgary_24h_100y | 6:45 | 8.785   |
| Calgary_24h_100y | 6:50 | 10.488  |
| Calgary_24h_100y | 6:55 | 13.283  |
| Calgary_24h_100y | 7:00 | 18.961  |
| Calgary_24h_100y | 7:05 | 40.516  |
| Calgary_24h_100y | 7:10 | 168.138 |
| Calgary_24h_100y | 7:15 | 54.372  |
| Calgary_24h_100y | 7:20 | 31.748  |

|                  |       |        |
|------------------|-------|--------|
| Calgary_24h_100y | 7:25  | 23.236 |
| Calgary_24h_100y | 7:30  | 18.66  |
| Calgary_24h_100y | 7:35  | 15.763 |
| Calgary_24h_100y | 7:40  | 13.746 |
| Calgary_24h_100y | 7:45  | 12.251 |
| Calgary_24h_100y | 7:50  | 11.093 |
| Calgary_24h_100y | 7:55  | 10.166 |
| Calgary_24h_100y | 8:00  | 9.405  |
| Calgary_24h_100y | 8:05  | 8.768  |
| Calgary_24h_100y | 8:10  | 8.225  |
| Calgary_24h_100y | 8:15  | 7.756  |
| Calgary_24h_100y | 8:20  | 7.346  |
| Calgary_24h_100y | 8:25  | 6.985  |
| Calgary_24h_100y | 8:30  | 6.664  |
| Calgary_24h_100y | 8:35  | 6.376  |
| Calgary_24h_100y | 8:40  | 6.116  |
| Calgary_24h_100y | 8:45  | 5.88   |
| Calgary_24h_100y | 8:50  | 5.665  |
| Calgary_24h_100y | 8:55  | 5.468  |
| Calgary_24h_100y | 9:00  | 5.287  |
| Calgary_24h_100y | 9:05  | 5.119  |
| Calgary_24h_100y | 9:10  | 4.964  |
| Calgary_24h_100y | 9:15  | 4.819  |
| Calgary_24h_100y | 9:20  | 4.684  |
| Calgary_24h_100y | 9:25  | 4.558  |
| Calgary_24h_100y | 9:30  | 4.44   |
| Calgary_24h_100y | 9:35  | 4.329  |
| Calgary_24h_100y | 9:40  | 4.224  |
| Calgary_24h_100y | 9:45  | 4.125  |
| Calgary_24h_100y | 9:50  | 4.032  |
| Calgary_24h_100y | 9:55  | 3.943  |
| Calgary_24h_100y | 10:00 | 3.859  |
| Calgary_24h_100y | 10:05 | 3.78   |
| Calgary_24h_100y | 10:10 | 3.704  |
| Calgary_24h_100y | 10:15 | 3.631  |
| Calgary_24h_100y | 10:20 | 3.562  |
| Calgary_24h_100y | 10:25 | 3.496  |
| Calgary_24h_100y | 10:30 | 3.433  |
| Calgary_24h_100y | 10:35 | 3.373  |
| Calgary_24h_100y | 10:40 | 3.315  |
| Calgary_24h_100y | 10:45 | 3.259  |
| Calgary_24h_100y | 10:50 | 3.206  |
| Calgary_24h_100y | 10:55 | 3.154  |
| Calgary_24h_100y | 11:00 | 3.105  |
| Calgary_24h_100y | 11:05 | 3.057  |
| Calgary_24h_100y | 11:10 | 3.011  |
| Calgary_24h_100y | 11:15 | 2.967  |
| Calgary_24h_100y | 11:20 | 2.924  |
| Calgary_24h_100y | 11:25 | 2.883  |
| Calgary_24h_100y | 11:30 | 2.843  |
| Calgary_24h_100y | 11:35 | 2.805  |
| Calgary_24h_100y | 11:40 | 2.767  |
| Calgary_24h_100y | 11:45 | 2.731  |
| Calgary_24h_100y | 11:50 | 2.696  |
| Calgary_24h_100y | 11:55 | 2.662  |
| Calgary_24h_100y | 12:00 | 2.629  |
| Calgary_24h_100y | 12:05 | 2.597  |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 12:10 | 2.566 |
| Calgary_24h_100y | 12:15 | 2.536 |
| Calgary_24h_100y | 12:20 | 2.506 |
| Calgary_24h_100y | 12:25 | 2.478 |
| Calgary_24h_100y | 12:30 | 2.45  |
| Calgary_24h_100y | 12:35 | 2.423 |
| Calgary_24h_100y | 12:40 | 2.396 |
| Calgary_24h_100y | 12:45 | 2.371 |
| Calgary_24h_100y | 12:50 | 2.346 |
| Calgary_24h_100y | 12:55 | 2.321 |
| Calgary_24h_100y | 13:00 | 2.297 |
| Calgary_24h_100y | 13:05 | 2.274 |
| Calgary_24h_100y | 13:10 | 2.252 |
| Calgary_24h_100y | 13:15 | 2.229 |
| Calgary_24h_100y | 13:20 | 2.208 |
| Calgary_24h_100y | 13:25 | 2.187 |
| Calgary_24h_100y | 13:30 | 2.166 |
| Calgary_24h_100y | 13:35 | 2.146 |
| Calgary_24h_100y | 13:40 | 2.126 |
| Calgary_24h_100y | 13:45 | 2.107 |
| Calgary_24h_100y | 13:50 | 2.088 |
| Calgary_24h_100y | 13:55 | 2.069 |
| Calgary_24h_100y | 14:00 | 2.051 |
| Calgary_24h_100y | 14:05 | 2.034 |
| Calgary_24h_100y | 14:10 | 2.016 |
| Calgary_24h_100y | 14:15 | 1.999 |
| Calgary_24h_100y | 14:20 | 1.983 |
| Calgary_24h_100y | 14:25 | 1.966 |
| Calgary_24h_100y | 14:30 | 1.95  |
| Calgary_24h_100y | 14:35 | 1.935 |
| Calgary_24h_100y | 14:40 | 1.919 |
| Calgary_24h_100y | 14:45 | 1.904 |
| Calgary_24h_100y | 14:50 | 1.889 |
| Calgary_24h_100y | 14:55 | 1.875 |
| Calgary_24h_100y | 15:00 | 1.86  |
| Calgary_24h_100y | 15:05 | 1.846 |
| Calgary_24h_100y | 15:10 | 1.833 |
| Calgary_24h_100y | 15:15 | 1.819 |
| Calgary_24h_100y | 15:20 | 1.806 |
| Calgary_24h_100y | 15:25 | 1.793 |
| Calgary_24h_100y | 15:30 | 1.78  |
| Calgary_24h_100y | 15:35 | 1.767 |
| Calgary_24h_100y | 15:40 | 1.755 |
| Calgary_24h_100y | 15:45 | 1.743 |
| Calgary_24h_100y | 15:50 | 1.731 |
| Calgary_24h_100y | 15:55 | 1.719 |
| Calgary_24h_100y | 16:00 | 1.707 |
| Calgary_24h_100y | 16:05 | 1.696 |
| Calgary_24h_100y | 16:10 | 1.685 |
| Calgary_24h_100y | 16:15 | 1.673 |
| Calgary_24h_100y | 16:20 | 1.663 |
| Calgary_24h_100y | 16:25 | 1.652 |
| Calgary_24h_100y | 16:30 | 1.641 |
| Calgary_24h_100y | 16:35 | 1.631 |
| Calgary_24h_100y | 16:40 | 1.621 |
| Calgary_24h_100y | 16:45 | 1.611 |
| Calgary_24h_100y | 16:50 | 1.601 |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 16:55 | 1.591 |
| Calgary_24h_100y | 17:00 | 1.581 |
| Calgary_24h_100y | 17:05 | 1.572 |
| Calgary_24h_100y | 17:10 | 1.562 |
| Calgary_24h_100y | 17:15 | 1.553 |
| Calgary_24h_100y | 17:20 | 1.544 |
| Calgary_24h_100y | 17:25 | 1.535 |
| Calgary_24h_100y | 17:30 | 1.526 |
| Calgary_24h_100y | 17:35 | 1.517 |
| Calgary_24h_100y | 17:40 | 1.509 |
| Calgary_24h_100y | 17:45 | 1.5   |
| Calgary_24h_100y | 17:50 | 1.492 |
| Calgary_24h_100y | 17:55 | 1.484 |
| Calgary_24h_100y | 18:00 | 1.476 |
| Calgary_24h_100y | 18:05 | 1.467 |
| Calgary_24h_100y | 18:10 | 1.46  |
| Calgary_24h_100y | 18:15 | 1.452 |
| Calgary_24h_100y | 18:20 | 1.444 |
| Calgary_24h_100y | 18:25 | 1.436 |
| Calgary_24h_100y | 18:30 | 1.429 |
| Calgary_24h_100y | 18:35 | 1.421 |
| Calgary_24h_100y | 18:40 | 1.414 |
| Calgary_24h_100y | 18:45 | 1.407 |
| Calgary_24h_100y | 18:50 | 1.399 |
| Calgary_24h_100y | 18:55 | 1.392 |
| Calgary_24h_100y | 19:00 | 1.385 |
| Calgary_24h_100y | 19:05 | 1.378 |
| Calgary_24h_100y | 19:10 | 1.372 |
| Calgary_24h_100y | 19:15 | 1.365 |
| Calgary_24h_100y | 19:20 | 1.358 |
| Calgary_24h_100y | 19:25 | 1.352 |
| Calgary_24h_100y | 19:30 | 1.345 |
| Calgary_24h_100y | 19:35 | 1.339 |
| Calgary_24h_100y | 19:40 | 1.332 |
| Calgary_24h_100y | 19:45 | 1.326 |
| Calgary_24h_100y | 19:50 | 1.32  |
| Calgary_24h_100y | 19:55 | 1.313 |
| Calgary_24h_100y | 20:00 | 1.307 |
| Calgary_24h_100y | 20:05 | 1.301 |
| Calgary_24h_100y | 20:10 | 1.295 |
| Calgary_24h_100y | 20:15 | 1.289 |
| Calgary_24h_100y | 20:20 | 1.284 |
| Calgary_24h_100y | 20:25 | 1.278 |
| Calgary_24h_100y | 20:30 | 1.272 |
| Calgary_24h_100y | 20:35 | 1.266 |
| Calgary_24h_100y | 20:40 | 1.261 |
| Calgary_24h_100y | 20:45 | 1.255 |
| Calgary_24h_100y | 20:50 | 1.25  |
| Calgary_24h_100y | 20:55 | 1.244 |
| Calgary_24h_100y | 21:00 | 1.239 |
| Calgary_24h_100y | 21:05 | 1.234 |
| Calgary_24h_100y | 21:10 | 1.229 |
| Calgary_24h_100y | 21:15 | 1.223 |
| Calgary_24h_100y | 21:20 | 1.218 |
| Calgary_24h_100y | 21:25 | 1.213 |
| Calgary_24h_100y | 21:30 | 1.208 |
| Calgary_24h_100y | 21:35 | 1.203 |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 21:40 | 1.198 |
| Calgary_24h_100y | 21:45 | 1.193 |
| Calgary_24h_100y | 21:50 | 1.188 |
| Calgary_24h_100y | 21:55 | 1.184 |
| Calgary_24h_100y | 22:00 | 1.179 |
| Calgary_24h_100y | 22:05 | 1.174 |
| Calgary_24h_100y | 22:10 | 1.17  |
| Calgary_24h_100y | 22:15 | 1.165 |
| Calgary_24h_100y | 22:20 | 1.16  |
| Calgary_24h_100y | 22:25 | 1.156 |
| Calgary_24h_100y | 22:30 | 1.151 |
| Calgary_24h_100y | 22:35 | 1.147 |
| Calgary_24h_100y | 22:40 | 1.143 |
| Calgary_24h_100y | 22:45 | 1.138 |
| Calgary_24h_100y | 22:50 | 1.134 |
| Calgary_24h_100y | 22:55 | 1.13  |
| Calgary_24h_100y | 23:00 | 1.125 |
| Calgary_24h_100y | 23:05 | 1.121 |
| Calgary_24h_100y | 23:10 | 1.117 |
| Calgary_24h_100y | 23:15 | 1.113 |
| Calgary_24h_100y | 23:20 | 1.109 |
| Calgary_24h_100y | 23:25 | 1.105 |
| Calgary_24h_100y | 23:30 | 1.101 |
| Calgary_24h_100y | 23:35 | 1.097 |
| Calgary_24h_100y | 23:40 | 1.093 |
| Calgary_24h_100y | 23:45 | 1.089 |
| Calgary_24h_100y | 23:50 | 1.085 |
| Calgary_24h_100y | 23:55 | 1.081 |
| Calgary_24h_100y | 24:00 | 1.077 |

```
[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
```

```
[TAGS]
```

```
[MAP]
DIMENSIONS      -3524.1329      5713832.1381      -3370.3111      5714042.8299
UNITS           Meters
```

```
[COORDINATES]
;;Node      X-Coord      Y-Coord
;;-----
OF-1        -3460.078      5714023.253
```

```
[VERTICES]
;;Link      X-Coord      Y-Coord
;;-----
```

```
[POLYGONS]
;;Subcatchment X-Coord      Y-Coord
;;-----
SC-1         -3377.303      5714015.819
```

|      |           |             |
|------|-----------|-------------|
| SC-1 | -3377.461 | 5713842.088 |
| SC-1 | -3517.141 | 5713841.715 |
| SC-1 | -3516.984 | 5714015.446 |
| SC-1 | -3377.303 | 5714015.819 |

[SYMBOLS]

|         |         |         |
|---------|---------|---------|
| ;;Gage  | X-Coord | Y-Coord |
| ;;----- | -----   | -----   |

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

\*\*\*\*\*

Element Count

\*\*\*\*\*

Number of rain gages ..... 1  
 Number of subcatchments ... 1  
 Number of nodes ..... 1  
 Number of links ..... 0  
 Number of pollutants ..... 0  
 Number of land uses ..... 0

\*\*\*\*\*

Raingage Summary

\*\*\*\*\*

| Name             | Data Source      | Data Type | Recording Interval |
|------------------|------------------|-----------|--------------------|
| Calgary_24h_100y | Calgary_24h_100y | INTENSITY | 5 min.             |

\*\*\*\*\*

Subcatchment Summary

\*\*\*\*\*

| Name | Area | Width  | %Imperv | %Slope | Rain Gage        |
|------|------|--------|---------|--------|------------------|
| SC-1 | 2.43 | 142.94 | 0.00    | 1.2000 | Calgary_24h_100y |

Outlet  
 OF-1

\*\*\*\*\*

Node Summary

\*\*\*\*\*

| Name | Type    | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|------|---------|--------------|------------|-------------|-----------------|
| OF-1 | OUTFALL | 1031.75      | 0.00       | 0.0         |                 |

\*\*\*\*\*

Analysis Options

\*\*\*\*\*

Flow Units ..... CMS

Process Models:

Rainfall/Runoff ..... YES  
 RDII ..... NO  
 Snowmelt ..... NO  
 Groundwater ..... NO  
 Flow Routing ..... NO  
 Water Quality ..... NO  
 Infiltration Method ..... HORTON

Surcharge Method ..... EXTRAN  
 Starting Date ..... 06/12/2026 00:00:00  
 Ending Date ..... 06/16/2026 00:00:00  
 Antecedent Dry Days ..... 0.0  
 Report Time Step ..... 00:01:00  
 Wet Time Step ..... 00:05:00  
 Dry Time Step ..... 00:05:00

|                            | Volume<br>hectare-m | Depth<br>mm |
|----------------------------|---------------------|-------------|
| Runoff Quantity Continuity |                     |             |
| Total Precipitation .....  | 0.218               | 89.667      |
| Evaporation Loss .....     | 0.000               | 0.000       |
| Infiltration Loss .....    | 0.196               | 80.539      |
| Surface Runoff .....       | 0.022               | 9.183       |
| Final Storage .....        | 0.000               | 0.000       |
| Continuity Error (%) ..... | -0.060              |             |

|                            | Volume<br>hectare-m | Volume<br>10^6 ltr |
|----------------------------|---------------------|--------------------|
| Flow Routing Continuity    |                     |                    |
| Dry Weather Inflow .....   | 0.000               | 0.000              |
| Wet Weather Inflow .....   | 0.022               | 0.223              |
| Groundwater Inflow .....   | 0.000               | 0.000              |
| RDII Inflow .....          | 0.000               | 0.000              |
| External Inflow .....      | 0.000               | 0.000              |
| External Outflow .....     | 0.022               | 0.223              |
| Flooding Loss .....        | 0.000               | 0.000              |
| Evaporation Loss .....     | 0.000               | 0.000              |
| Exfiltration Loss .....    | 0.000               | 0.000              |
| Initial Stored Volume .... | 0.000               | 0.000              |
| Final Stored Volume .....  | 0.000               | 0.000              |
| Continuity Error (%) ..... | 0.000               |                    |

\*\*\*\*\*  
 Subcatchment Runoff Summary  
 \*\*\*\*\*

| Perv | Total<br>Runoff<br>mm | Total<br>Runoff<br>10^6 ltr | Total<br>Peak<br>Precip<br>Runoff<br>mm<br>CMS | Total<br>Runoff<br>Coeff<br>mm | Total<br>Evap<br>mm | Total<br>Infil<br>mm | Imperv<br>Runoff<br>mm |
|------|-----------------------|-----------------------------|------------------------------------------------|--------------------------------|---------------------|----------------------|------------------------|
| SC-1 | 9.18                  | 0.22                        | 89.67<br>0.04                                  | 0.00<br>0.102                  | 0.00                | 80.54                | 0.00                   |

Analysis begun on: Fri Jul 3 14:58:01 2026  
 Analysis ended on: Fri Jul 3 14:58:01 2026  
 Total elapsed time: < 1 sec



[TITLE]  
;;Project Title/Notes

[OPTIONS]  
;;Option Value  
FLOW\_UNITS CMS  
INFILTRATION HORTON  
FLOW\_ROUTING DYNWAVE  
LINK\_OFFSETS ELEVATION  
MIN\_SLOPE 0  
ALLOW\_PONDING NO  
SKIP\_STEADY\_STATE NO

START\_DATE 06/12/2026  
START\_TIME 00:00:00  
REPORT\_START\_DATE 06/12/2026  
REPORT\_START\_TIME 00:00:00  
END\_DATE 06/16/2026  
END\_TIME 00:00:00  
SWEEP\_START 01/01  
SWEEP\_END 12/31  
DRY\_DAYS 0  
REPORT\_STEP 00:01:00  
WET\_STEP 00:05:00  
DRY\_STEP 00:05:00  
ROUTING\_STEP 5  
RULE\_STEP 00:00:00

INERTIAL\_DAMPING PARTIAL  
NORMAL\_FLOW\_LIMITED BOTH  
FORCE\_MAIN\_EQUATION H-W  
VARIABLE\_STEP 0.75  
LENGTHENING\_STEP 0  
MIN\_SURFAREA 0  
MAX\_TRIALS 8  
HEAD\_TOLERANCE 0.0015  
SYS\_FLOW\_TOL 5  
LAT\_FLOW\_TOL 5  
MINIMUM\_STEP 0.5  
THREADS 20

[EVAPORATION]  
;;Data Source Parameters  
;;-----  
CONSTANT 0.0  
DRY\_ONLY NO

[RAINGAGES]  
;;Name Format Interval SCF Source  
;;-----  
Calgary\_24h\_100y INTENSITY 0:05 1.0 TIMESERIES Calgary\_24h\_100y

[SUBCATCHMENTS]  
;;Name Rain Gage Outlet Area %Imperv Width %  
Slope CurbLen SnowPack  
;;-----  
Facility Calgary\_24h\_100y Landscaped 1.57 100 157 1

|            |                           |      |     |     |   |
|------------|---------------------------|------|-----|-----|---|
| Landscaped | Calgary_24h_100y Pond     | 0.74 | 0   | 185 | 1 |
| 0          |                           |      |     |     |   |
| Pond       | Calgary_24h_100y Stg-Pond | 0.12 | 100 | 60  | 1 |
| 0          |                           |      |     |     |   |

[SUBAREAS]

| ;;Subcatchment | N-Imperv | N-Perv | S-Imperv | S-Perv | PctZero | RouteTo |
|----------------|----------|--------|----------|--------|---------|---------|
| PctRouted      |          |        |          |        |         |         |
| Facility       | 0.015    | 0.25   | 1.6      | 3.2    | 0       | OUTLET  |
| Landscaped     | 0.015    | 0.25   | 1.6      | 3.2    | 0       | OUTLET  |
| Pond           | 0.015    | 0.25   | 1.6      | 3.2    | 0       | OUTLET  |

[INFILTRATION]

| ;;Subcatchment | Param1 | Param2 | Param3 | Param4 | Param5 |
|----------------|--------|--------|--------|--------|--------|
| Facility       | 75     | 7.5    | 4.14   | 7      | 0      |
| Landscaped     | 75     | 7.5    | 4.14   | 7      | 0      |
| Pond           | 75     | 7.5    | 4.14   | 7      | 0      |

[OUTFALLS]

| ;;Name | Elevation | Type | Stage Data | Gated | Route To |
|--------|-----------|------|------------|-------|----------|
| OF-1   | 1031.75   | FREE |            | NO    |          |

[STORAGE]

| ;;Name   | Elev. | MaxDepth | InitDepth | Shape   | Curve Name/Params |
|----------|-------|----------|-----------|---------|-------------------|
| SurDepth | Fevap | Psi      | Ksat      | IMD     |                   |
| Stg-Pond | 1032  | 1.5      | 0         | TABULAR | Stg-Pond          |
| 0        | 0     |          |           |         |                   |

[ORIFICES]

| ;;Name | From Node | To Node | Type | Offset | Qcoeff |
|--------|-----------|---------|------|--------|--------|
| Gated  | CloseTime |         |      |        |        |
| OR-1   | Stg-Pond  | OF-1    | SIDE | 1032   | 0.6    |
| NO     | 0         |         |      |        |        |

[XSECTIONS]

| ;;Link  | Shape    | Geom1 | Geom2 | Geom3 | Geom4 |
|---------|----------|-------|-------|-------|-------|
| Barrels | Culvert  |       |       |       |       |
| OR-1    | CIRCULAR | 0.12  | 0     | 0     | 0     |

[CURVES]

| ;;Name   | Type    | X-Value | Y-Value |
|----------|---------|---------|---------|
| Stg-Pond | Storage | 0       | 225     |
| Stg-Pond |         | 1.5     | 1200    |

[TIMESERIES]

| ;;Name | Date | Time | Value |
|--------|------|------|-------|
|--------|------|------|-------|

;Calgary\_24h\_100y design storm, rain interval = 5 minutes, rain units = mm/hr.

|                  |      |       |
|------------------|------|-------|
| Calgary_24h_100y | 0:00 | 0     |
| Calgary_24h_100y | 0:05 | 1.094 |
| Calgary_24h_100y | 0:10 | 1.103 |
| Calgary_24h_100y | 0:15 | 1.113 |
| Calgary_24h_100y | 0:20 | 1.122 |
| Calgary_24h_100y | 0:25 | 1.132 |
| Calgary_24h_100y | 0:30 | 1.143 |
| Calgary_24h_100y | 0:35 | 1.153 |
| Calgary_24h_100y | 0:40 | 1.163 |
| Calgary_24h_100y | 0:45 | 1.174 |
| Calgary_24h_100y | 0:50 | 1.185 |
| Calgary_24h_100y | 0:55 | 1.197 |
| Calgary_24h_100y | 1:00 | 1.208 |
| Calgary_24h_100y | 1:05 | 1.22  |
| Calgary_24h_100y | 1:10 | 1.232 |
| Calgary_24h_100y | 1:15 | 1.245 |
| Calgary_24h_100y | 1:20 | 1.257 |
| Calgary_24h_100y | 1:25 | 1.27  |
| Calgary_24h_100y | 1:30 | 1.284 |
| Calgary_24h_100y | 1:35 | 1.297 |
| Calgary_24h_100y | 1:40 | 1.311 |
| Calgary_24h_100y | 1:45 | 1.326 |
| Calgary_24h_100y | 1:50 | 1.341 |
| Calgary_24h_100y | 1:55 | 1.356 |
| Calgary_24h_100y | 2:00 | 1.372 |
| Calgary_24h_100y | 2:05 | 1.388 |
| Calgary_24h_100y | 2:10 | 1.404 |
| Calgary_24h_100y | 2:15 | 1.421 |
| Calgary_24h_100y | 2:20 | 1.439 |
| Calgary_24h_100y | 2:25 | 1.457 |
| Calgary_24h_100y | 2:30 | 1.476 |
| Calgary_24h_100y | 2:35 | 1.495 |
| Calgary_24h_100y | 2:40 | 1.515 |
| Calgary_24h_100y | 2:45 | 1.535 |
| Calgary_24h_100y | 2:50 | 1.556 |
| Calgary_24h_100y | 2:55 | 1.578 |
| Calgary_24h_100y | 3:00 | 1.601 |
| Calgary_24h_100y | 3:05 | 1.624 |
| Calgary_24h_100y | 3:10 | 1.648 |
| Calgary_24h_100y | 3:15 | 1.674 |
| Calgary_24h_100y | 3:20 | 1.7   |
| Calgary_24h_100y | 3:25 | 1.727 |
| Calgary_24h_100y | 3:30 | 1.755 |
| Calgary_24h_100y | 3:35 | 1.784 |
| Calgary_24h_100y | 3:40 | 1.815 |
| Calgary_24h_100y | 3:45 | 1.846 |
| Calgary_24h_100y | 3:50 | 1.88  |
| Calgary_24h_100y | 3:55 | 1.914 |
| Calgary_24h_100y | 4:00 | 1.95  |
| Calgary_24h_100y | 4:05 | 1.988 |
| Calgary_24h_100y | 4:10 | 2.028 |
| Calgary_24h_100y | 4:15 | 2.07  |
| Calgary_24h_100y | 4:20 | 2.113 |
| Calgary_24h_100y | 4:25 | 2.159 |
| Calgary_24h_100y | 4:30 | 2.208 |
| Calgary_24h_100y | 4:35 | 2.259 |
| Calgary_24h_100y | 4:40 | 2.313 |

|                  |      |         |
|------------------|------|---------|
| Calgary_24h_100y | 4:45 | 2.371   |
| Calgary_24h_100y | 4:50 | 2.432   |
| Calgary_24h_100y | 4:55 | 2.497   |
| Calgary_24h_100y | 5:00 | 2.566   |
| Calgary_24h_100y | 5:05 | 2.64    |
| Calgary_24h_100y | 5:10 | 2.719   |
| Calgary_24h_100y | 5:15 | 2.805   |
| Calgary_24h_100y | 5:20 | 2.897   |
| Calgary_24h_100y | 5:25 | 2.997   |
| Calgary_24h_100y | 5:30 | 3.105   |
| Calgary_24h_100y | 5:35 | 3.224   |
| Calgary_24h_100y | 5:40 | 3.354   |
| Calgary_24h_100y | 5:45 | 3.497   |
| Calgary_24h_100y | 5:50 | 3.656   |
| Calgary_24h_100y | 5:55 | 3.833   |
| Calgary_24h_100y | 6:00 | 4.033   |
| Calgary_24h_100y | 6:05 | 4.259   |
| Calgary_24h_100y | 6:10 | 4.519   |
| Calgary_24h_100y | 6:15 | 4.821   |
| Calgary_24h_100y | 6:20 | 5.176   |
| Calgary_24h_100y | 6:25 | 5.601   |
| Calgary_24h_100y | 6:30 | 6.12    |
| Calgary_24h_100y | 6:35 | 6.773   |
| Calgary_24h_100y | 6:40 | 7.624   |
| Calgary_24h_100y | 6:45 | 8.785   |
| Calgary_24h_100y | 6:50 | 10.488  |
| Calgary_24h_100y | 6:55 | 13.283  |
| Calgary_24h_100y | 7:00 | 18.961  |
| Calgary_24h_100y | 7:05 | 40.516  |
| Calgary_24h_100y | 7:10 | 168.138 |
| Calgary_24h_100y | 7:15 | 54.372  |
| Calgary_24h_100y | 7:20 | 31.748  |
| Calgary_24h_100y | 7:25 | 23.236  |
| Calgary_24h_100y | 7:30 | 18.66   |
| Calgary_24h_100y | 7:35 | 15.763  |
| Calgary_24h_100y | 7:40 | 13.746  |
| Calgary_24h_100y | 7:45 | 12.251  |
| Calgary_24h_100y | 7:50 | 11.093  |
| Calgary_24h_100y | 7:55 | 10.166  |
| Calgary_24h_100y | 8:00 | 9.405   |
| Calgary_24h_100y | 8:05 | 8.768   |
| Calgary_24h_100y | 8:10 | 8.225   |
| Calgary_24h_100y | 8:15 | 7.756   |
| Calgary_24h_100y | 8:20 | 7.346   |
| Calgary_24h_100y | 8:25 | 6.985   |
| Calgary_24h_100y | 8:30 | 6.664   |
| Calgary_24h_100y | 8:35 | 6.376   |
| Calgary_24h_100y | 8:40 | 6.116   |
| Calgary_24h_100y | 8:45 | 5.88    |
| Calgary_24h_100y | 8:50 | 5.665   |
| Calgary_24h_100y | 8:55 | 5.468   |
| Calgary_24h_100y | 9:00 | 5.287   |
| Calgary_24h_100y | 9:05 | 5.119   |
| Calgary_24h_100y | 9:10 | 4.964   |
| Calgary_24h_100y | 9:15 | 4.819   |
| Calgary_24h_100y | 9:20 | 4.684   |
| Calgary_24h_100y | 9:25 | 4.558   |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 9:30  | 4.44  |
| Calgary_24h_100y | 9:35  | 4.329 |
| Calgary_24h_100y | 9:40  | 4.224 |
| Calgary_24h_100y | 9:45  | 4.125 |
| Calgary_24h_100y | 9:50  | 4.032 |
| Calgary_24h_100y | 9:55  | 3.943 |
| Calgary_24h_100y | 10:00 | 3.859 |
| Calgary_24h_100y | 10:05 | 3.78  |
| Calgary_24h_100y | 10:10 | 3.704 |
| Calgary_24h_100y | 10:15 | 3.631 |
| Calgary_24h_100y | 10:20 | 3.562 |
| Calgary_24h_100y | 10:25 | 3.496 |
| Calgary_24h_100y | 10:30 | 3.433 |
| Calgary_24h_100y | 10:35 | 3.373 |
| Calgary_24h_100y | 10:40 | 3.315 |
| Calgary_24h_100y | 10:45 | 3.259 |
| Calgary_24h_100y | 10:50 | 3.206 |
| Calgary_24h_100y | 10:55 | 3.154 |
| Calgary_24h_100y | 11:00 | 3.105 |
| Calgary_24h_100y | 11:05 | 3.057 |
| Calgary_24h_100y | 11:10 | 3.011 |
| Calgary_24h_100y | 11:15 | 2.967 |
| Calgary_24h_100y | 11:20 | 2.924 |
| Calgary_24h_100y | 11:25 | 2.883 |
| Calgary_24h_100y | 11:30 | 2.843 |
| Calgary_24h_100y | 11:35 | 2.805 |
| Calgary_24h_100y | 11:40 | 2.767 |
| Calgary_24h_100y | 11:45 | 2.731 |
| Calgary_24h_100y | 11:50 | 2.696 |
| Calgary_24h_100y | 11:55 | 2.662 |
| Calgary_24h_100y | 12:00 | 2.629 |
| Calgary_24h_100y | 12:05 | 2.597 |
| Calgary_24h_100y | 12:10 | 2.566 |
| Calgary_24h_100y | 12:15 | 2.536 |
| Calgary_24h_100y | 12:20 | 2.506 |
| Calgary_24h_100y | 12:25 | 2.478 |
| Calgary_24h_100y | 12:30 | 2.45  |
| Calgary_24h_100y | 12:35 | 2.423 |
| Calgary_24h_100y | 12:40 | 2.396 |
| Calgary_24h_100y | 12:45 | 2.371 |
| Calgary_24h_100y | 12:50 | 2.346 |
| Calgary_24h_100y | 12:55 | 2.321 |
| Calgary_24h_100y | 13:00 | 2.297 |
| Calgary_24h_100y | 13:05 | 2.274 |
| Calgary_24h_100y | 13:10 | 2.252 |
| Calgary_24h_100y | 13:15 | 2.229 |
| Calgary_24h_100y | 13:20 | 2.208 |
| Calgary_24h_100y | 13:25 | 2.187 |
| Calgary_24h_100y | 13:30 | 2.166 |
| Calgary_24h_100y | 13:35 | 2.146 |
| Calgary_24h_100y | 13:40 | 2.126 |
| Calgary_24h_100y | 13:45 | 2.107 |
| Calgary_24h_100y | 13:50 | 2.088 |
| Calgary_24h_100y | 13:55 | 2.069 |
| Calgary_24h_100y | 14:00 | 2.051 |
| Calgary_24h_100y | 14:05 | 2.034 |
| Calgary_24h_100y | 14:10 | 2.016 |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 14:15 | 1.999 |
| Calgary_24h_100y | 14:20 | 1.983 |
| Calgary_24h_100y | 14:25 | 1.966 |
| Calgary_24h_100y | 14:30 | 1.95  |
| Calgary_24h_100y | 14:35 | 1.935 |
| Calgary_24h_100y | 14:40 | 1.919 |
| Calgary_24h_100y | 14:45 | 1.904 |
| Calgary_24h_100y | 14:50 | 1.889 |
| Calgary_24h_100y | 14:55 | 1.875 |
| Calgary_24h_100y | 15:00 | 1.86  |
| Calgary_24h_100y | 15:05 | 1.846 |
| Calgary_24h_100y | 15:10 | 1.833 |
| Calgary_24h_100y | 15:15 | 1.819 |
| Calgary_24h_100y | 15:20 | 1.806 |
| Calgary_24h_100y | 15:25 | 1.793 |
| Calgary_24h_100y | 15:30 | 1.78  |
| Calgary_24h_100y | 15:35 | 1.767 |
| Calgary_24h_100y | 15:40 | 1.755 |
| Calgary_24h_100y | 15:45 | 1.743 |
| Calgary_24h_100y | 15:50 | 1.731 |
| Calgary_24h_100y | 15:55 | 1.719 |
| Calgary_24h_100y | 16:00 | 1.707 |
| Calgary_24h_100y | 16:05 | 1.696 |
| Calgary_24h_100y | 16:10 | 1.685 |
| Calgary_24h_100y | 16:15 | 1.673 |
| Calgary_24h_100y | 16:20 | 1.663 |
| Calgary_24h_100y | 16:25 | 1.652 |
| Calgary_24h_100y | 16:30 | 1.641 |
| Calgary_24h_100y | 16:35 | 1.631 |
| Calgary_24h_100y | 16:40 | 1.621 |
| Calgary_24h_100y | 16:45 | 1.611 |
| Calgary_24h_100y | 16:50 | 1.601 |
| Calgary_24h_100y | 16:55 | 1.591 |
| Calgary_24h_100y | 17:00 | 1.581 |
| Calgary_24h_100y | 17:05 | 1.572 |
| Calgary_24h_100y | 17:10 | 1.562 |
| Calgary_24h_100y | 17:15 | 1.553 |
| Calgary_24h_100y | 17:20 | 1.544 |
| Calgary_24h_100y | 17:25 | 1.535 |
| Calgary_24h_100y | 17:30 | 1.526 |
| Calgary_24h_100y | 17:35 | 1.517 |
| Calgary_24h_100y | 17:40 | 1.509 |
| Calgary_24h_100y | 17:45 | 1.5   |
| Calgary_24h_100y | 17:50 | 1.492 |
| Calgary_24h_100y | 17:55 | 1.484 |
| Calgary_24h_100y | 18:00 | 1.476 |
| Calgary_24h_100y | 18:05 | 1.467 |
| Calgary_24h_100y | 18:10 | 1.46  |
| Calgary_24h_100y | 18:15 | 1.452 |
| Calgary_24h_100y | 18:20 | 1.444 |
| Calgary_24h_100y | 18:25 | 1.436 |
| Calgary_24h_100y | 18:30 | 1.429 |
| Calgary_24h_100y | 18:35 | 1.421 |
| Calgary_24h_100y | 18:40 | 1.414 |
| Calgary_24h_100y | 18:45 | 1.407 |
| Calgary_24h_100y | 18:50 | 1.399 |
| Calgary_24h_100y | 18:55 | 1.392 |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 19:00 | 1.385 |
| Calgary_24h_100y | 19:05 | 1.378 |
| Calgary_24h_100y | 19:10 | 1.372 |
| Calgary_24h_100y | 19:15 | 1.365 |
| Calgary_24h_100y | 19:20 | 1.358 |
| Calgary_24h_100y | 19:25 | 1.352 |
| Calgary_24h_100y | 19:30 | 1.345 |
| Calgary_24h_100y | 19:35 | 1.339 |
| Calgary_24h_100y | 19:40 | 1.332 |
| Calgary_24h_100y | 19:45 | 1.326 |
| Calgary_24h_100y | 19:50 | 1.32  |
| Calgary_24h_100y | 19:55 | 1.313 |
| Calgary_24h_100y | 20:00 | 1.307 |
| Calgary_24h_100y | 20:05 | 1.301 |
| Calgary_24h_100y | 20:10 | 1.295 |
| Calgary_24h_100y | 20:15 | 1.289 |
| Calgary_24h_100y | 20:20 | 1.284 |
| Calgary_24h_100y | 20:25 | 1.278 |
| Calgary_24h_100y | 20:30 | 1.272 |
| Calgary_24h_100y | 20:35 | 1.266 |
| Calgary_24h_100y | 20:40 | 1.261 |
| Calgary_24h_100y | 20:45 | 1.255 |
| Calgary_24h_100y | 20:50 | 1.25  |
| Calgary_24h_100y | 20:55 | 1.244 |
| Calgary_24h_100y | 21:00 | 1.239 |
| Calgary_24h_100y | 21:05 | 1.234 |
| Calgary_24h_100y | 21:10 | 1.229 |
| Calgary_24h_100y | 21:15 | 1.223 |
| Calgary_24h_100y | 21:20 | 1.218 |
| Calgary_24h_100y | 21:25 | 1.213 |
| Calgary_24h_100y | 21:30 | 1.208 |
| Calgary_24h_100y | 21:35 | 1.203 |
| Calgary_24h_100y | 21:40 | 1.198 |
| Calgary_24h_100y | 21:45 | 1.193 |
| Calgary_24h_100y | 21:50 | 1.188 |
| Calgary_24h_100y | 21:55 | 1.184 |
| Calgary_24h_100y | 22:00 | 1.179 |
| Calgary_24h_100y | 22:05 | 1.174 |
| Calgary_24h_100y | 22:10 | 1.17  |
| Calgary_24h_100y | 22:15 | 1.165 |
| Calgary_24h_100y | 22:20 | 1.16  |
| Calgary_24h_100y | 22:25 | 1.156 |
| Calgary_24h_100y | 22:30 | 1.151 |
| Calgary_24h_100y | 22:35 | 1.147 |
| Calgary_24h_100y | 22:40 | 1.143 |
| Calgary_24h_100y | 22:45 | 1.138 |
| Calgary_24h_100y | 22:50 | 1.134 |
| Calgary_24h_100y | 22:55 | 1.13  |
| Calgary_24h_100y | 23:00 | 1.125 |
| Calgary_24h_100y | 23:05 | 1.121 |
| Calgary_24h_100y | 23:10 | 1.117 |
| Calgary_24h_100y | 23:15 | 1.113 |
| Calgary_24h_100y | 23:20 | 1.109 |
| Calgary_24h_100y | 23:25 | 1.105 |
| Calgary_24h_100y | 23:30 | 1.101 |
| Calgary_24h_100y | 23:35 | 1.097 |
| Calgary_24h_100y | 23:40 | 1.093 |

|                  |       |       |
|------------------|-------|-------|
| Calgary_24h_100y | 23:45 | 1.089 |
| Calgary_24h_100y | 23:50 | 1.085 |
| Calgary_24h_100y | 23:55 | 1.081 |
| Calgary_24h_100y | 24:00 | 1.077 |

[REPORT]

;;Reporting Options

INPUT YES

CONTROLS NO

SUBCATCHMENTS ALL

NODES ALL

LINKS ALL

[TAGS]

|          |          |            |
|----------|----------|------------|
| Subcatch | Facility | Impervious |
|----------|----------|------------|

|          |            |          |
|----------|------------|----------|
| Subcatch | Landscaped | Pervious |
|----------|------------|----------|

|          |      |      |
|----------|------|------|
| Subcatch | Pond | Pond |
|----------|------|------|

[MAP]

|            |            |              |            |              |
|------------|------------|--------------|------------|--------------|
| DIMENSIONS | -3524.1329 | 5713832.1381 | -3370.3111 | 5714042.8299 |
|------------|------------|--------------|------------|--------------|

|       |        |
|-------|--------|
| UNITS | Meters |
|-------|--------|

[COORDINATES]

|        |         |         |
|--------|---------|---------|
| ;;Node | X-Coord | Y-Coord |
|--------|---------|---------|

|         |       |       |
|---------|-------|-------|
| ;;----- | ----- | ----- |
|---------|-------|-------|

|      |           |             |
|------|-----------|-------------|
| OF-1 | -3460.078 | 5714023.253 |
|------|-----------|-------------|

|          |           |             |
|----------|-----------|-------------|
| Stg-Pond | -3468.065 | 5714003.341 |
|----------|-----------|-------------|

[VERTICES]

|        |         |         |
|--------|---------|---------|
| ;;Link | X-Coord | Y-Coord |
|--------|---------|---------|

|         |       |       |
|---------|-------|-------|
| ;;----- | ----- | ----- |
|---------|-------|-------|

[POLYGONS]

|                |         |         |
|----------------|---------|---------|
| ;;Subcatchment | X-Coord | Y-Coord |
|----------------|---------|---------|

|         |       |       |
|---------|-------|-------|
| ;;----- | ----- | ----- |
|---------|-------|-------|

|          |           |             |
|----------|-----------|-------------|
| Facility | -3386.247 | 5713975.738 |
|----------|-----------|-------------|

|          |          |            |
|----------|----------|------------|
| Facility | -3508.02 | 5713975.47 |
|----------|----------|------------|

|          |          |            |
|----------|----------|------------|
| Facility | -3508.02 | 5713975.47 |
|----------|----------|------------|

|          |           |             |
|----------|-----------|-------------|
| Facility | -3508.133 | 5713847.057 |
|----------|-----------|-------------|

|          |           |             |
|----------|-----------|-------------|
| Facility | -3508.133 | 5713847.057 |
|----------|-----------|-------------|

|          |          |             |
|----------|----------|-------------|
| Facility | -3386.36 | 5713847.105 |
|----------|----------|-------------|

|          |          |             |
|----------|----------|-------------|
| Facility | -3386.36 | 5713847.105 |
|----------|----------|-------------|

|          |           |             |
|----------|-----------|-------------|
| Facility | -3386.247 | 5713975.738 |
|----------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3377.461 | 5713842.088 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3517.141 | 5713841.715 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3516.984 | 5714015.446 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3377.303 | 5714015.819 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3377.461 | 5713842.088 |
|------------|-----------|-------------|

;Part2: Landscaped

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3448.014 | 5714013.975 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3508.014 | 5714013.975 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3508.014 | 5713993.975 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3448.014 | 5713993.975 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3448.014 | 5714013.975 |
|------------|-----------|-------------|

;Part3: Landscaped

|            |          |            |
|------------|----------|------------|
| Landscaped | -3508.02 | 5713975.47 |
|------------|----------|------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3508.133 | 5713847.057 |
|------------|-----------|-------------|

|            |           |             |
|------------|-----------|-------------|
| Landscaped | -3386.36  | 5713847.105 |
| Landscaped | -3386.247 | 5713975.738 |
| Landscaped | -3508.02  | 5713975.47  |
| Pond       | -3448.014 | 5714013.966 |
| Pond       | -3508.014 | 5714013.966 |
| Pond       | -3508.014 | 5713993.966 |
| Pond       | -3448.014 | 5713993.966 |
| Pond       | -3448.014 | 5714013.966 |

| ;;Storage Node | X-Coord | Y-Coord |
|----------------|---------|---------|
| ;;-----        | -----   | -----   |

[SYMBOLS]

|         |         |         |
|---------|---------|---------|
| ;;Gage  | X-Coord | Y-Coord |
| ;;----- | -----   | -----   |

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

\*\*\*\*\*

Element Count

\*\*\*\*\*

Number of rain gages ..... 1  
 Number of subcatchments ... 3  
 Number of nodes ..... 2  
 Number of links ..... 1  
 Number of pollutants ..... 0  
 Number of land uses ..... 0

\*\*\*\*\*

Raingage Summary

\*\*\*\*\*

| Name             | Data Source      | Data Type | Recording Interval |
|------------------|------------------|-----------|--------------------|
| -----            | -----            | -----     | -----              |
| Calgary_24h_100y | Calgary_24h_100y | INTENSITY | 5 min.             |

\*\*\*\*\*

Subcatchment Summary

\*\*\*\*\*

| Name       | Area  | Width  | %Imperv | %Slope | Rain Gage        |
|------------|-------|--------|---------|--------|------------------|
| -----      | ----- | -----  | -----   | -----  | -----            |
| Outlet     |       |        |         |        |                  |
| Facility   | 1.57  | 157.00 | 100.00  | 1.0000 | Calgary_24h_100y |
| Landscaped |       |        |         |        |                  |
| Landscaped | 0.74  | 185.00 | 0.00    | 1.0000 | Calgary_24h_100y |
| Pond       |       |        |         |        |                  |
| Pond       | 0.12  | 60.00  | 100.00  | 1.0000 | Calgary_24h_100y |
| Stg-Pond   |       |        |         |        |                  |

\*\*\*\*\*

Node Summary

\*\*\*\*\*

| Name     | Type    | Invert Elev. | Max. Depth | Ponded Area | External Inflow |
|----------|---------|--------------|------------|-------------|-----------------|
| -----    | -----   | -----        | -----      | -----       | -----           |
| OF-1     | OUTFALL | 1031.75      | 0.00       | 0.0         |                 |
| Stg-Pond | STORAGE | 1032.00      | 1.50       | 0.0         |                 |

\*\*\*\*\*

Link Summary

\*\*\*\*\*

| Name  | From Node | To Node | Type    | Length | % Slope Roughness |
|-------|-----------|---------|---------|--------|-------------------|
| ----- | -----     | -----   | -----   | -----  | -----             |
| OR-1  | Stg-Pond  | OF-1    | ORIFICE |        |                   |

\*\*\*\*\*  
Cross Section Summary  
\*\*\*\*\*

| Full    |       | Full  | Full | Hyd. | Max.  | No. of  |
|---------|-------|-------|------|------|-------|---------|
| Conduit | Shape | Depth | Area | Rad. | Width | Barrels |
| Flow    |       |       |      |      |       |         |
| -----   |       |       |      |      |       |         |
| -----   |       |       |      |      |       |         |

\*\*\*\*\*  
Analysis Options  
\*\*\*\*\*

Flow Units ..... CMS  
Process Models:  
  Rainfall/Runoff ..... YES  
  RDII ..... NO  
  Snowmelt ..... NO  
  Groundwater ..... NO  
  Flow Routing ..... YES  
  Ponding Allowed ..... NO  
  Water Quality ..... NO  
Infiltration Method ..... HORTON  
Flow Routing Method ..... DYNWAVE  
Surcharge Method ..... EXTRAN  
Starting Date ..... 06/12/2026 00:00:00  
Ending Date ..... 06/16/2026 00:00:00  
Antecedent Dry Days ..... 0.0  
Report Time Step ..... 00:01:00  
Wet Time Step ..... 00:05:00  
Dry Time Step ..... 00:05:00  
Routing Time Step ..... 5.00 sec  
Variable Time Step ..... YES  
Maximum Trials ..... 8  
Number of Threads ..... 1  
Head Tolerance ..... 0.001500 m

|                            | Volume    | Depth  |
|----------------------------|-----------|--------|
| Runoff Quantity Continuity | hectare-m | mm     |
| *****                      | -----     | -----  |
| Total Precipitation .....  | 0.218     | 89.667 |
| Evaporation Loss .....     | 0.000     | 0.000  |
| Infiltration Loss .....    | 0.102     | 42.066 |
| Surface Runoff .....       | 0.114     | 47.007 |
| Final Storage .....        | 0.003     | 1.113  |
| Continuity Error (%) ..... | -0.579    |        |

|                          | Volume    | Volume   |
|--------------------------|-----------|----------|
| Flow Routing Continuity  | hectare-m | 10^6 ltr |
| *****                    | -----     | -----    |
| Dry Weather Inflow ..... | 0.000     | 0.000    |
| Wet Weather Inflow ..... | 0.114     | 1.142    |

|                            |       |       |
|----------------------------|-------|-------|
| Groundwater Inflow .....   | 0.000 | 0.000 |
| RDII Inflow .....          | 0.000 | 0.000 |
| External Inflow .....      | 0.000 | 0.000 |
| External Outflow .....     | 0.114 | 1.142 |
| Flooding Loss .....        | 0.000 | 0.000 |
| Evaporation Loss .....     | 0.000 | 0.000 |
| Exfiltration Loss .....    | 0.000 | 0.000 |
| Initial Stored Volume .... | 0.000 | 0.000 |
| Final Stored Volume .....  | 0.000 | 0.000 |
| Continuity Error (%) ..... | 0.000 |       |

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Time-Step Critical Elements

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None

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Highest Flow Instability Indexes

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All links are stable.

\*\*\*\*\*

Most Frequent Nonconverging Nodes

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Convergence obtained at all time steps.

\*\*\*\*\*

Routing Time Step Summary

\*\*\*\*\*

|                             |   |          |
|-----------------------------|---|----------|
| Minimum Time Step           | : | 4.50 sec |
| Average Time Step           | : | 5.00 sec |
| Maximum Time Step           | : | 5.00 sec |
| % of Time in Steady State   | : | 0.00     |
| Average Iterations per Step | : | 2.00     |
| % of Steps Not Converging   | : | 0.00     |
| Time Step Frequencies       | : |          |
| 5.000 - 3.155 sec           | : | 100.00 % |
| 3.155 - 1.991 sec           | : | 0.00 %   |
| 1.991 - 1.256 sec           | : | 0.00 %   |
| 1.256 - 0.792 sec           | : | 0.00 %   |
| 0.792 - 0.500 sec           | : | 0.00 %   |

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Subcatchment Runoff Summary

\*\*\*\*\*

| Perv   | Total  | Total  | Total  | Total  | Total | Total | Imperv |
|--------|--------|--------|--------|--------|-------|-------|--------|
| Runoff | Runoff | Precip | Peak   | Runoff | Evap  | Infil | Runoff |
|        |        | Runoff | Runoff | Runoff |       |       |        |
|        |        |        |        | Coeff  |       |       |        |

| Subcatchment<br>mm | mm | 10^6 ltr | mm<br>CMS | mm | mm | mm | mm |
|--------------------|----|----------|-----------|----|----|----|----|
|--------------------|----|----------|-----------|----|----|----|----|

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|            |        |      |       |        |  |      |        |
|------------|--------|------|-------|--------|--|------|--------|
| Facility   |        |      | 89.67 | 0.00   |  | 0.00 | 88.60  |
| 0.00       | 88.60  | 1.39 | 0.58  | 0.988  |  |      |        |
| Landscaped |        |      | 89.67 | 187.98 |  | 0.00 | 138.14 |
| 140.05     | 140.05 | 1.04 | 0.38  | 0.504  |  |      |        |
| Pond       |        |      | 89.67 | 863.67 |  | 0.00 | 951.89 |
| 0.00       | 951.89 | 1.14 | 0.39  | 0.998  |  |      |        |

\*\*\*\*\*  
Node Depth Summary  
\*\*\*\*\*

| Node | Type | Average<br>Depth<br>Meters | Maximum<br>Depth<br>Meters | Maximum<br>HGL<br>Meters | Time of Max<br>Occurrence<br>days hr:min | Reported<br>Max Depth<br>Meters |
|------|------|----------------------------|----------------------------|--------------------------|------------------------------------------|---------------------------------|
|------|------|----------------------------|----------------------------|--------------------------|------------------------------------------|---------------------------------|

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|          |         |      |      |         |         |      |
|----------|---------|------|------|---------|---------|------|
| OF-1     | OUTFALL | 0.00 | 0.00 | 1031.75 | 0 00:00 | 0.00 |
| Stg-Pond | STORAGE | 0.10 | 1.20 | 1033.20 | 0 09:06 | 1.20 |

\*\*\*\*\*  
Node Inflow Summary  
\*\*\*\*\*

| Total<br>Inflow<br>Volume<br>Node<br>ltr | Flow<br>Balance<br>Error<br>Percent | Type | Maximum<br>Lateral<br>Inflow<br>CMS | Maximum<br>Total<br>Inflow<br>CMS | Time of Max<br>Occurrence<br>days hr:min | Lateral<br>Inflow<br>Volume<br>10^6 ltr |
|------------------------------------------|-------------------------------------|------|-------------------------------------|-----------------------------------|------------------------------------------|-----------------------------------------|
|------------------------------------------|-------------------------------------|------|-------------------------------------|-----------------------------------|------------------------------------------|-----------------------------------------|

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|          |        |         |       |       |         |      |
|----------|--------|---------|-------|-------|---------|------|
| OF-1     |        | OUTFALL | 0.000 | 0.032 | 0 09:06 | 0    |
| 1.14     | 0.000  |         |       |       |         |      |
| Stg-Pond |        | STORAGE | 0.394 | 0.394 | 0 07:25 | 1.14 |
| 1.14     | -0.000 |         |       |       |         |      |

\*\*\*\*\*  
Node Surcharge Summary  
\*\*\*\*\*

No nodes were surcharged.

\*\*\*\*\*  
Node Flooding Summary  
\*\*\*\*\*

No nodes were flooded.

\*\*\*\*\*  
Storage Volume Summary  
\*\*\*\*\*

| Max          |  | Maximum | Average             | Avg  | Evap | Exfil | Maximum             | Max  | Time of |
|--------------|--|---------|---------------------|------|------|-------|---------------------|------|---------|
| Occurrence   |  | Outflow | Volume              | Pcnt | Pcnt | Pcnt  | Volume              | Pcnt | days    |
| Storage Unit |  |         | 1000 m <sup>3</sup> | Full | Loss | Loss  | 1000 m <sup>3</sup> | Full |         |
| hr:min       |  | CMS     |                     |      |      |       |                     |      |         |
| Stg-Pond     |  |         | 0.054               | 5.0  | 0.0  | 0.0   | 0.742               | 69.4 | 0       |
| 09:06        |  | 0.032   |                     |      |      |       |                     |      |         |

\*\*\*\*\*  
Outfall Loading Summary  
\*\*\*\*\*

| Outfall Node | Flow<br>Freq<br>Pcnt | Avg<br>Flow<br>CMS | Max<br>Flow<br>CMS | Total<br>Volume<br>10 <sup>6</sup> ltr |
|--------------|----------------------|--------------------|--------------------|----------------------------------------|
| OF-1         | 31.98                | 0.010              | 0.032              | 1.142                                  |
| System       | 31.98                | 0.010              | 0.032              | 1.142                                  |

\*\*\*\*\*  
Link Flow Summary  
\*\*\*\*\*

| Link | Type    | Maximum<br> Flow <br>CMS | Time of Max<br>Occurrence<br>days hr:min | Maximum<br> Veloc <br>m/sec | Max/<br>Full<br>Flow | Max/<br>Full<br>Depth |
|------|---------|--------------------------|------------------------------------------|-----------------------------|----------------------|-----------------------|
| OR-1 | ORIFICE | 0.032                    | 0 09:06                                  |                             |                      | 1.00                  |

\*\*\*\*\*  
Flow Classification Summary  
\*\*\*\*\*

| Adjusted |         | Fraction of Time in Flow Class |      |     |     |      |      |      |     |
|----------|---------|--------------------------------|------|-----|-----|------|------|------|-----|
| /Actual  |         | Up                             | Down | Sub | Sup | Up   | Down | Norm |     |
| Inlet    | Conduit | Length                         | Dry  | Dry | Dry | Crit | Crit | Crit | Ltd |
|          |         |                                |      |     |     |      |      |      |     |

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\*\*\*\*\*  
Conduit Surcharge Summary  
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No conduits were surcharged.

Analysis begun on: Fri Jul 3 14:58:53 2026  
Analysis ended on: Fri Jul 3 14:58:53 2026  
Total elapsed time: < 1 sec

UFA PROPOSED BULK FUEL & CARDLOCK FACILITY CONCEPT PLAN

