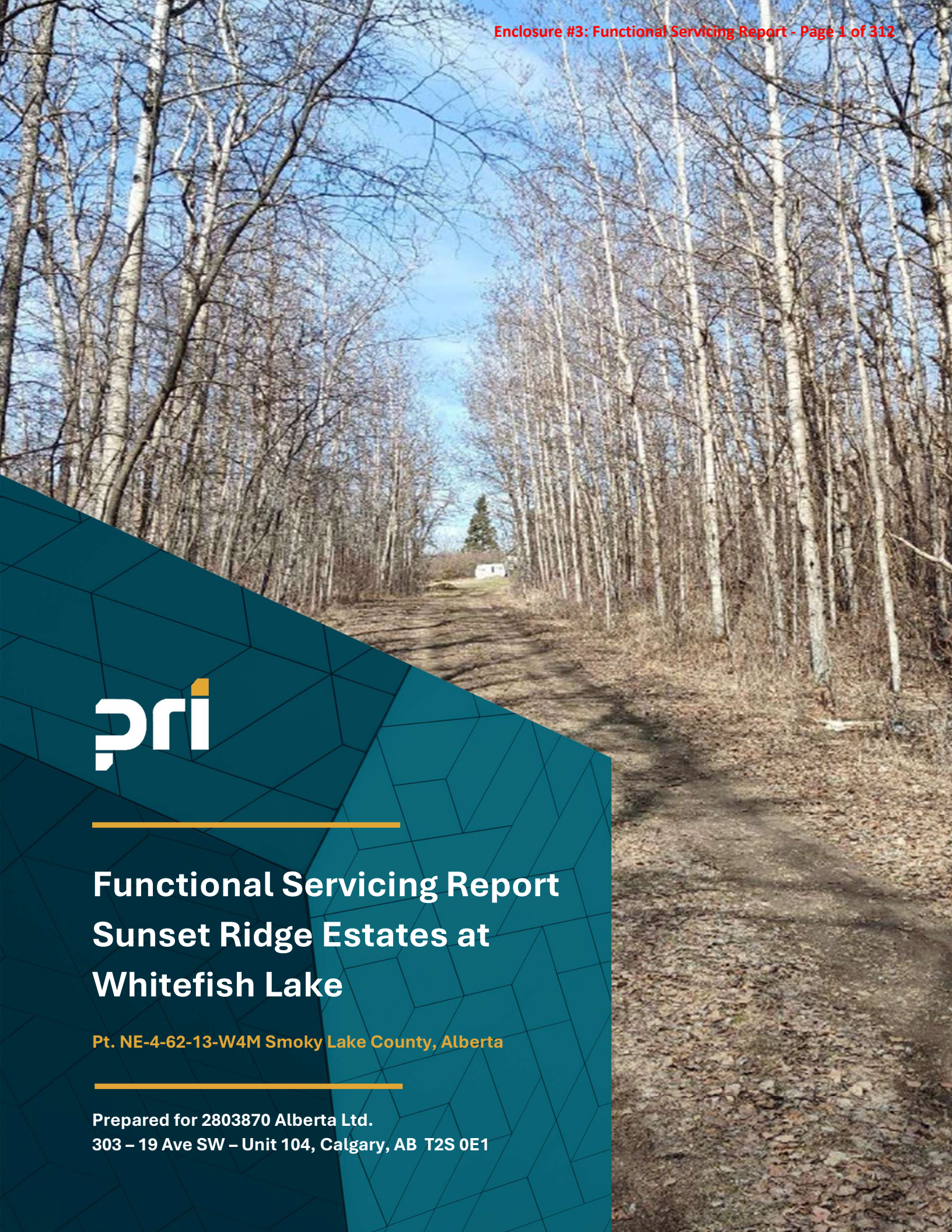

Functional Servicing Report Sunset Ridge Estates at Whitefish Lake

Pt. NE-4-62-13-W4M Smoky Lake County, Alberta

Prepared for 2803870 Alberta Ltd.
303 – 19 Ave SW – Unit 104, Calgary, AB T2S 0E1

Project Name	Sunset Ridge Estates at Whitefish Lake
Legal Description	Pt. NE-4-62-13-W4M, Smoky Lake County, Alberta
Proponent	2803870 Alberta Ltd. / Austin Zacharko
Subdivision Authority	Municipal Planning Services
Authority Having Jurisdiction	Smoky Lake County
Project Number	2500600
Drawing Set	260605-2500600-C1.0 to C6.0
Report Date	June 2026
Governing Standard	Smoky Lake Region REDS (July 2023)

Prepared for:

2803870 Alberta Ltd.

303 19 Ave SW, Unit 104 Calgary, AB T2S 0E1 Canada

June 2026

Presented To:

Austin Zacharko
2803870 Alberta Ltd.
[redacted]

Reviewed & approved by:

[redacted]

Paul Kundzins June 11, 2026
Senior Civil Engineer
Paul.Kundzins@priengineering.com

Version Control and Revision History

Version	Date	Prepared By	Reviewed By	Approved By	Notes/Revisions
A	2026-06-05	JZ	PK	PK	ISSUED FOR REVIEW
B	2026-06-11	JZ	PK	PK	ISSUED FOR APPROVAL

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1. Introduction

1.1 Purpose and Scope

This Functional Servicing Report (FSR) has been prepared in support of the proposed subdivision of Pt. NE-4-62-13-W4M, Smoky Lake County, Alberta, to be developed as Sunset Ridge Estates at Whitefish Lake. The FSR documents the engineering basis for the proposed servicing strategy and demonstrates conformance with the Smoky Lake Region Regional Engineering Design Standards (REDS, July 2023) and all applicable municipal requirements.

The report addresses roadway design, stormwater drainage, water supply, wastewater disposal, and franchise utilities. It also identifies approved deviations from REDS standards and summarizes key environmental constraints that affect the design. Detailed stormwater calculations are provided under separate cover as a standalone Stormwater Management Report (Appendix C).

1.2 Project Description

The proposed development consists of a 15-lot rural residential subdivision on the western shore of Whitefish Lake, Smoky Lake County, Alberta. The project is titled Sunset Ridge Estates at Whitefish Lake and is being developed by 2803870 Alberta Ltd. (Austin Zacharko, proponent). All 15 lots are proposed to be sold as vacant land for future residential development by individual lot owners.

The subdivision is accessed via a new internal gravel road connecting to Range Road 133 on the east boundary of the property. The road terminates in a cul-de-sac at the north end of the development. Lot sizes range from approximately 0.87 to 1.65 acres. Lakefront lots are subject to a 30-metre Environmental Reserve (ER) setback from the high-water mark of Whitefish Lake.

1.3 Location and Legal Description

The subject lands are legally described as Pt. NE-4-62-13-W4M, Smoky Lake County, Alberta. The property is situated on the western shoreline of Whitefish Lake, east of the existing Whitefish Resort community and south of Hillside Acres. The eastern boundary of the property fronts Range Road 133. The development area is approximately 28.6 acres (11.6 ha) in total, with the active development footprint (road ROW and lots) considerably smaller due to environmental reserves, wetland setbacks, and archaeological avoidance areas.

1.4 Proponent

Land Owner / Proponent	Austin Zacharko
Development Entity	2803870 Alberta Ltd.
Address	[redacted]
Subdivision Authority	Municipal Planning Services, 17511 107 Ave NW #206, Edmonton, AB T5S 1E5

1.5 Engineer of Record

The engineering design drawings (drawing set 260605-2500600-C1.0 to C6.0) were prepared by PRI Engineering with review by Paul Kundzins, P.Eng.

1.6 Governing Standards and References

This report and the associated design drawings have been prepared in accordance with the following standards and documents:

- Smoky Lake Region Regional Engineering Design Standards (REDS), July 2023 — Part C (Rural Development) governs this project
- Smoky Lake County Land Use Bylaw
- Smoky Lake County Council Resolution, April 16, 2026 — approved reduction of road width and ROW width for this subdivision (Council letter dated April 21, 2026)
- Transportation Association of Canada (TAC) — Geometric Design Guide for Canadian Roads
- Alberta Environment and Parks — Stormwater Management Guidelines for the Province of Alberta
- EPCOR Drainage — IDF Curves for the Edmonton Region (1984–2020), April 2025
- Canadian Standards Association and applicable provincial regulations

2. Site Context

2.1 Existing Conditions

The subject property is a treed parcel on the western shoreline of Whitefish Lake. The terrain is gently to moderately sloping, generally draining toward the lake in a westerly direction. The eastern portion of the property (adjacent to Range Road 133) is relatively flat and is where the proposed access road and eastern lots are situated.

A portion of the western area of the property contains an existing disturbed area associated with a current site housing structure. This disturbance is identified on drawing C2.0 (Previously Disturbed Area). The remainder of the property is predominantly forested with natural vegetation.

The property is currently accessed via a temporary or informal access from Range Road 133. The proposed development will formalize this access with a new engineered gravel road as shown on drawings C2.0 and C3.0.

2.2 Environmental Constraints

The following environmental constraints have been identified through supporting technical studies and are reflected in the subdivision layout and servicing design:

2.2.1 Environmental Reserve — Whitefish Lake

All waterfront lots are subject to a 30-metre Environmental Reserve (ER) setback measured from the high-water mark of Whitefish Lake. No development or vegetation clearing is permitted within the ER. Lakefront landowners may create a natural walking path within the ER to allow direct pedestrian access to the lake. The ER is shown on all layout drawings.

2.2.2 Wetland Reserves

Two wetland features have been identified within and adjacent to the development area, classified as follows:

- WL01 — S-S-II Classification (Temporary Shrubby Swamp)
- WL02 — M-G-II Classification (Temporary Graminoid Marsh)

A 10-metre setback has been applied to both wetland features, resulting in Environmental Reserve designations with 10m offsets as shown on drawing C2.0. No grading, clearing, or construction is proposed within these setback areas. Reference: Biophysical Assessment (Appendix G).

2.2.3 Archaeological Sites

Two precontact archaeological artifact scatter sites have been identified within the property boundary:

- GcOx-3 — Precontact Artifact Scatter (Appendix D, pg. 8)
- GcOx-4 — Precontact Artifact Scatter (Appendix D, pg. 15)

Archaeological site avoidance areas have been established around both sites and are shown on drawing C2.0. No construction activities are proposed within these avoidance areas. Reference: Historic Resource Assessment (Appendix D).

2.3 Adjacent Land Uses

- East: Range Road 133 (municipal road allowance); agricultural and rural residential lands
- South: Whitefish Resort (existing rural residential community)
- Southwest: Hillside Acres (existing rural residential community)
- West/Northwest: Whitefish Lake shoreline and environmental reserve
- North: Undeveloped rural land

2.4 Proposed Zoning

The subject lands are proposed to be rezoned to Multi-Lot Country Residential (R1) District under the Smoky Lake County Land Use Bylaw. All proposed development must comply with the applicable setback requirements, building height and lot coverage limits, and land use designations under this district.

2.5 Referenced Studies and Supporting Documents

The following technical studies and supporting documents have been prepared in support of this subdivision application and are referenced throughout this FSR. Copies are included as appendices to this report or provided under separate cover:

Appendix	Title
A	Geotechnical Investigation
B	Phase 1 Environmental Site Assessment
C	Stormwater Management Report
D	Historic Resource Assessment
E	Preliminary Engineering Drawings
F	Water Act Report
G	Biophysical Assessment
H	Community Engagement Report
I	Council Motion – Road Width and ROW Reduction (April 21, 2026)

3. Roadway Design

3.1 Road Classification

The proposed internal access road is classified as a Rural Residential Local Roadway in accordance with REDS Section C1.3.4 and Table C1-1. Local roadways are intended solely to provide access to individual properties and are designed for interrupted flow at a 30 km/h design speed. The road serves 15 residential lots and terminates in a cul-de-sac; its total length of approximately 387 m is within the REDS maximum length of 600 m for local roadways.

3.2 Road Width and Right-of-Way

The REDS default geometric standards for a Rural Residential Local Roadway specify a road width of 8.5 m (EOG to EOG) and a right-of-way width of 30.0 m (REDS Table C1-1). Following a formal request by the proponent, Smoky Lake County Council approved reductions to both standards at its April 16, 2026 meeting, as confirmed by the Director of County Services letter dated April 21, 2026 (Appendix I):

Parameter	REDS Default	Approved Value	Authority
Road Width (EOG to EOG)	8.5 m	7.5 m	Council Resolution, April 16, 2026
Right-of-Way Width	30.0 m	20.0 m	Council Resolution, April 16, 2026

The approved 20.0 m ROW accommodates the 7.5 m travel surface, roadside ditches, utility corridors, and necessary working widths within the constrained site geometry. The reduction is justified by the low traffic volume of the road (15 residential lots), the site topography, and the presence of environmental and archaeological constraints that limit available ROW width.

3.3 Geometric Design Standards

The road has been designed in accordance with the geometric standards for a Rural Residential Local Roadway as set out in REDS Table C1-1 and the TAC Geometric Design Guide for Canadian Roads. Key design parameters are summarized in Table 3-1 below.

Table 3-1 — Road Geometric Design Summary

Design Criteria	Value	Reference
Road Classification	Rural Residential Local	REDS Table C1-1
Road Width (EOG to EOG)	7.5 m (approved reduction)	Council Resolution, April 16, 2026
Right-of-Way Width	20.0 m (approved reduction)	Council Resolution, April 16, 2026
Travel Lanes	2 × 3.75 m	Council Resolution, April 16, 2026
Design Speed	30 km/h	Council Resolution, April 16, 2026
Maximum Gradient	8%	REDS Table C1-1
Road Length	~387 m (STA -0+005 to 0+387)	Drawing C2.0
Cul-de-Sac Radius (EOG)	R14.0 m	REDS Table C1-1; Drawing C2.0
Cul-de-Sac Radius (P/L)	R24.75 m	Drawing C2.0
Min. Stop Sight Distance	65 m (35 m @ 30km/h)	REDS Table C1-1 Council Resolution, April 16, 2026
Max. Superelevation	0.06 m/m	REDS Table C1-1
Pavement Surface	Compacted gravel	REDS C1.4.2

3.4 Road Structure

In accordance with REDS Section C1.4, all roadways within the subdivision shall be surfaced with compacted gravel. A geotechnical investigation (Appendix A) is required to establish the road structure design for a 20-year design life based on in situ conditions and projected traffic volumes. The road structure shall be designed and constructed in accordance with the geotechnical recommendations.

Subgrade preparation shall include scarification to a minimum depth of 300 mm, compaction to 97% SPMDD, and proof rolling witnessed by the Developer's Representative and the Municipality per REDS C1.6.3. Granular base and surface course materials shall be compacted to 100% SPMDD.

3.5 Access and Tie-In to Range Road 133

The proposed internal road connects to Range Road 133 at the east property boundary. The tie-in is shown on drawings C2.0 and C3.0. A typical driveway apron of 15.0 m length is provided at the access point, with a corner radius of R2.0 m at the property line. The access road approach is designed to facilitate safe turning movements for residential vehicles.

Any work within the Range Road 133 road allowance requires prior acceptance from Smoky Lake County per REDS Section A2.12. If the access intersects or is within 800 m of a Provincial Highway right-of-way, authorization from Alberta Transportation is also required per REDS Section C1.5.

3.6 Typical Cross Section

The typical cross section for the access road within the approved 20.0 m ROW is shown on drawing C5.0 and references Smoky Lake Region Standard Detail C1-100 (Rural Residential Local Roadway), included in drawing C5.0. The cross section includes:

- 7.5 m gravel travel surface (2 × 3.75 m lanes) with 3% crown
- 1m gravel shoulder each side from EOG
- Roadside ditches with minimum longitudinal slope of 0.6%
- 4:1 side slopes (maximum) within the 20.0 m ROW
- Culverts at driveway crossings per Standard Detail C1-100

The cul-de-sac design references Smoky Lake Region Standard Detail C1-110 with a minimum crown slope of 3% within the turning circle. Additional cross-sectional elements are as shown on drawing C5.0.

3.7 Construction Requirements

Road construction shall be in accordance with REDS Section C1.5 and the detailed design drawings. Key requirements include:

- Clearing and grubbing to remove all vegetation, stumps, and organic material within the construction limits; roots and stumps to be removed to a minimum depth of 0.6 m below rough grade

- Topsoil to be stripped to full depth and stockpiled for reuse on non-road areas
- Positive drainage to be maintained throughout all stages of construction
- Subgrade proof roll to be witnessed by the Developer's Representative and the Municipality; Municipality to be notified at least one week prior
- All construction materials to be from sources acceptable to the Municipality
- ESC measures to be in place throughout construction; ESC plan required prior to construction commencement per REDS A2.20

4. Stormwater Management

4.1 Overview

Stormwater management for the Sunset Ridge Estates subdivision is achieved through a conventional rural drainage system consisting of roadside ditches and a culvert crossing conveying runoff to the downstream receiving area. No piped storm sewer system, stormwater management pond, or detention facility is proposed. The drainage design philosophy is to maintain pre-development drainage patterns and flow rates to the maximum extent practicable, consistent with REDS Section C3.2.

Detailed hydrological and hydraulic calculations supporting the drainage design are provided in the Stormwater Management Report (Appendix C — separate report).

4.2 Design Criteria

The drainage system has been designed in accordance with REDS Section C3 (Rural Storm Drainage Systems). The applicable design criteria are:

- Minor system (roadside ditches): designed to convey the 1:5-year return period storm event without surcharging — REDS C3.3
- Major system (culvert and overland flow routes): designed to convey the 1:100-year return period storm event — REDS C3.3 and C3.16. The 1:10-year return period storm event is considered as a conservative approach given the small drainage area.
- Design flow method: Rational Method, Q = CIA/360, applicable for catchment areas less than 65 ha — REDS C3.4.1
- IDF curves: EPCOR Drainage, Edmonton Region (1984–2020) — REDS C3.6
- Runoff coefficient: C = 0.30 (Rural/Agricultural) for the 5- and 10-year events; adjusted upward by 25% for the 100-year event per REDS Table C3-1
- Minimum ditch grade: 0.6% — REDS C3.16.3
- Minimum culvert diameter for road crossings: 600 mm — REDS C3.14
- Minimum depth of cover over culvert: greater of half the culvert diameter or 500 mm — REDS C3.13

4.3 Catchment Delineation

Culvert catchment area has been delineated and shown on drawing C6.0 (Stormwater Management Plan):

- Catchment Area: 2.9 ha — drains the eastern lots and portions of the Range Road 133 frontage area

The catchment discharges to the culvert, with flow ultimately directed toward the downstream receiving area and Whitefish Lake watershed via proposed ditch. Overland flow directions are shown on drawing C6.0.

4.4 Drainage System

4.4.1 Roadside Ditches

Roadside ditches are provided on the west side of the access road within the 20.0 m ROW, connecting into the ditch proposed at the downstream end of the culvert, directing flow to Whitefish Lake watershed as shown on drawings C2.0, C3.0, and C4.0. The ditches are designed as trapezoidal sections to convey the 1:100-year flow without overtopping or causing flooding of the road surface or adjacent properties, per REDS C3.16. The 1:10-year return period storm event is considered as a conservative approach given the small drainage area. Design parameters include:

- Minimum longitudinal ditch grade: 0.6%
- Minimum ditch bottom width: 1.5 m at minimum 5.0% slope away from roadway
- Manning's roughness: n = 0.033 (gravel-lined channels) per REDS C3.12
- Ditch grades exceeding 2.0% to be protected with rock ditch checks, silt fences, or erosion control blankets per REDS C3.16.4
- Minimum finished floor elevation of lots adjacent to ditches: 0.3 m above the 1:100-year water elevation per REDS C3.16.2

4.4.2 Culvert

A single culvert crossing is proposed to convey roadside ditch flows beneath the access road. The culvert is shown on drawings C4.0 and C5.0 with the following design parameters:

- Size: 600 mm diameter — minimum required for road crossings per REDS C3.14
- Material: Corrugated steel pipe (CSP) — per REDS C3.20
- Length: 26.1 m
- Slope: 3.45%
- Minimum cover: 500 mm or half the culvert diameter, whichever is greater, measured from finished grade to top of culvert per REDS C3.13
- Riprap to be placed at both the inlet and outlet of the culvert to prevent erosion per REDS C3.19
- Marker posts to be installed at culvert ends, extending to 1 m above road grade per REDS C3.19

Hydraulic capacity analysis confirming the adequacy of the 600 mm culvert for the design discharge is provided in the Stormwater Management Report (Appendix C).

4.4.3 Outfall

Culvert outflow discharges toward the proposed downstream ditch and ultimately to the Whitefish Lake watershed. Appropriate outlet protection including riprap energy dissipation is to be provided at the culvert outlet. The outfall location and protection are shown on drawing C4.0. The outfall shall be designed with consideration of erosion protection and shall not cause adverse impacts to downstream properties or the Whitefish Lake Environmental Reserve.

4.5 Lot Grading

Individual lot grading shall comply with REDS Section C3.8. Lots 1-9 shall be graded to drain toward the roadway ditch system or to follow overland flow to the west of the site, and lots 10-15 will shall be graded to drain toward the proposed culvert. Key requirements applicable to this development:

- Positive drainage to be maintained from all structures toward the roadway ditch or culvert
- Minimum finished floor elevation: 0.3 m above the 1:100-year hydraulic grade line per REDS C3.8.13
- Roof drainage to be discharged to grade via splash pads, with discharge point a minimum of 1.2 m from the building — REDS C3.11
- Foundation drains to be pumped to surface and drain overland to the roadway ditch — REDS C3.10
- Areas around buildings to be graded away from foundations at minimum 5% for 1.2 m
- Lot grading plans to be submitted at the time of building permit application for each lot

4.6 Stormwater Management Report

A separate Stormwater Management Report has been prepared for this development and is included as Appendix C. That report provides the full hydrological analysis (Rational Method, IDF data, time of concentration, catchment parameters) and hydraulic capacity assessment of the ditch and culvert system for the design storm events. The drainage design shown on drawing C6.0 is supported by the calculations in Appendix C.

5. Water Supply

5.1 Servicing Approach

No communal water distribution system is proposed for the Sunset Ridge Estates subdivision. In accordance with the development notes on drawing C1.0, future landowners will be responsible for the installation of individual on-site potable water systems on their respective lots. Cistern-based or drilled or dug wells will provide water supply systems will be the anticipated approach for this rural lakeside development.

5.2 Responsibility

Future landowners will be solely responsible for the installation, operation, and maintenance of their on-site potable water supply systems. The Developer has no obligation to provide communal water infrastructure. All lots will be sold as vacant land, and water supply is a future development responsibility of each individual lot owner.

5.3 Regulatory Compliance

All on-site water supply systems installed within the subdivision must comply with applicable Alberta regulations and any requirements imposed by Smoky Lake County. Lot owners are responsible for obtaining all necessary permits and inspections for their individual water systems.

5.4 Water Act Considerations

A Water Act Report has been prepared in support of this development and is included as Appendix F. That report addresses any licensing requirements and approvals required under the Alberta Water Act for works related to the development, including any potential impacts to Whitefish Lake and its associated shoreline.

6. Wastewater

6.1 Servicing Approach

No communal sanitary collection or treatment system is proposed for this subdivision. In accordance with the development notes on drawing C1.0, individual on-site septic tank systems will be used for wastewater disposal on each lot. Only septic tanks are permitted for wastewater disposal; no alternative systems are proposed at this time.

6.2 Responsibility

Future landowners are solely responsible for the installation, operation, maintenance, and decommissioning of their individual on-site wastewater disposal systems. The Developer has no obligation to provide communal sanitary infrastructure.

6.3 Regulatory Compliance

All septic systems within the subdivision must comply with applicable provincial regulations (including the Alberta Private Sewage Systems Standard of Practice) and any requirements imposed by Smoky Lake County. Lot owners are responsible for obtaining all necessary development and building permits, as well as any inspections required by the relevant authority having jurisdiction.

7. Franchise Utilities

7.1 Natural Gas

Natural gas service will be provided to the property line of each lot via underground distribution infrastructure. As noted on drawing C1.0, the natural gas infrastructure within the development will be owned and maintained by Smoky Lake County. Installation shall be in accordance with REDS Section C5 and applicable requirements of the gas franchise utility provider. The existing underground natural gas pipeline along Range Road 133 is shown on drawings C2.0 and C3.0; tie-in and distribution details are to be confirmed with the gas utility prior to construction.

7.2 Electrical Power

Each lot will be serviced with an individual power pole and meter. All electrical infrastructure within the development will be owned and maintained by ATCO Electric. Electrical installation shall be coordinated with ATCO Electric and shall comply with REDS Section C5 and all applicable codes and standards.

7.3 Other Franchise Utilities

Other franchise utilities (telecommunications, cable, internet) are not anticipated to be installed as part of the initial development. Individual lot owners will be responsible for arranging service connections to their lots following completion of the subdivision, in coordination with the applicable service providers.

7.4 Installation Requirements

All franchise utilities shall be installed within the 20.0 m ROW and/or designated utility corridors in accordance with REDS Section C5. Utility placement shall be coordinated to avoid conflicts with roadway drainage infrastructure, culverts, and environmental reserves. All disturbed areas within the ROW are to be restored to existing or better condition following utility installation per REDS Section A2.12.

8. Environmental and Regulatory Considerations

8.1 Environmental Reserve — Whitefish Lake

A 30-metre Environmental Reserve has been established along the full length of the Whitefish Lake shoreline, measured from the high-water mark. This reserve is shown on all subdivision layout drawings. In accordance with the development notes on drawing C1.0 (and mirrored in the Outline Plan general notes), no development or vegetation clearing is permitted within the ER. Lakefront lot owners may create a natural walking path to allow direct pedestrian access to the lake.

The ER functions as a natural buffer protecting water quality, riparian habitat, and the aesthetic character of the Whitefish Lake shoreline. No grading, filling, or construction activities associated with the subdivision infrastructure encroach within the 30-metre ER setback.

8.2 Wetland Avoidance

Two wetland features (WL01 and WL02) have been identified within the subject property through the Biophysical Assessment (Appendix G). Environmental Reserve designations with 10-metre setback offsets have been applied to both wetlands and are reflected in the subdivision layout. No clearing, grading, or construction activities are proposed within these setback areas. The wetland boundaries and avoidance areas are shown on drawing C2.0 (Wetland and Archaeological Reserves).

8.3 Archaeological Site Avoidance

Two precontact archaeological artifact scatter sites (GcOx-3 and GcOx-4) have been identified within the property through the Historic Resource Assessment (Appendix D). Avoidance areas have been established around both sites and are incorporated into the subdivision layout. No construction activities are proposed within these avoidance areas. The site boundaries and avoidance extents are shown on drawing C2.0.

Proponents and contractors must be aware of the avoidance area requirements prior to any ground disturbance. If previously unidentified archaeological or historical resources are encountered during construction, work in the affected area must stop immediately and the Alberta Culture, Multiculturalism and Status of Women (or successor authority) must be notified.

8.4 Lake Access and Municipal Reserve

A Whitefish Lake public access path has been designated within the subdivision to provide all lot owners with access to Whitefish Lake. A Municipal Reserve parcel for public beach access has been included in the subdivision layout as shown on drawing C2.0. An off-lake recreational area is also provided for use by all lot owners. These amenities are shown on drawings C2.0.

8.5 Wildfire Risk and FireSmart

In accordance with the development notes on drawing C1.0, all property owners are encouraged to implement FireSmart practices, including the creation of defensible space around structures and safe vegetation management. Given the treed character of the site and its rural location, wildfire risk management is an important consideration for future lot development. A Wildfire Risk Assessment may be required at the time of individual lot development permit applications, at the discretion of the Municipality.

8.6 Erosion and Sediment Control

An Erosion and Sediment Control (ESC) Plan shall be prepared and submitted to Smoky Lake County for acceptance prior to commencement of any construction activities, in accordance with REDS Section A2.20. The ESC Plan shall address protection of Whitefish Lake and the designated wetland features from construction-related runoff and sediment. Key ESC measures will include:

- Silt fencing and sediment barriers along the perimeter of all disturbed areas
- Stabilized construction access at the Range Road 133 entry point
- Ditch checks and temporary erosion protection in steep ditch sections
- Preservation of natural vegetation buffers around the ER and wetland setback areas
- Regular inspection and maintenance of ESC measures throughout construction
- Post-construction restoration of all disturbed areas

9. Deviations from REDS Standards

9.1 Approved Deviations

The following deviations from the REDS geometric standards for Rural Residential Local Roadways have been approved by Smoky Lake County Council:

Parameter	REDS Default	Approved Value	Authority
Road Width (EOG to EOG)	8.5 m	7.5 m	Council Resolution, April 16, 2026
Right-of-Way Width	30.0 m	20.0 m	Council Resolution, April 16, 2026

These approvals are documented in the letter from Jordan Ruegg, Director of County Services, Smoky Lake County, dated April 21, 2026, confirming Council resolutions passed at the April 16, 2026 Council meeting (Appendix I).

9.2 Justification

The requested reductions are justified by the following site-specific factors:

- Traffic volume: The road serves only 15 rural residential lots. Traffic volumes are minimal and well within the operational capacity of a 7.5 m gravel road at 30 km/h design speed.
- Site constraints: The combination of the 30 m Whitefish Lake ER setback, wetland setback areas, and archaeological avoidance zones significantly constrains the usable land area within the development, making full REDS ROW widths difficult to achieve without impacting these protected features.
- Road function: The road functions as a low-volume private access road consistent with the rural residential character of the development. The reduced road width does not compromise safety, sight lines, or emergency vehicle access.
- Precedent: The Council approval confirms Smoky Lake County's acceptance of the reduced standard for this specific location and development.

9.3 No Other Deviations

No other deviations from REDS standards are proposed. All remaining aspects of the roadway design, drainage design, construction requirements, and servicing approach comply with the applicable REDS standards for Rural development (Part C).

10. Summary and Conclusions

10.1 Summary

This Functional Servicing Report has been prepared in support of the proposed Sunset Ridge Estates at Whitefish Lake subdivision (Pt. NE-4-62-13-W4M, Smoky Lake County, Alberta), consisting of 15 rural residential lots accessed by a new internal gravel road connecting to Range Road 133.

The proposed servicing strategy is appropriate for the rural character of the development and consistent with similar rural lakefront subdivisions in the Smoky Lake Region. The following table summarizes the key servicing components:

Service	Proposed Approach
Road	Rural residential local gravel road, 7.5 m width, 20.0 m ROW (Council-approved deviation); ~387 m length; cul-de-sac terminus
Stormwater	Roadside ditch and 600Ø CSP culvert system; overland drainage to Whitefish Lake watershed; detailed calculations in Appendix C (separate report)
Water Supply	Individual on-site cistern systems (future lot owner responsibility)
Wastewater	Individual on-site septic tanks (future lot owner responsibility)
Natural Gas	Underground ATCO distribution to each lot property line; owned by Smoky Lake County
Electrical	Individual power pole and meter per lot; ATCO Electric

10.2 REDS Compliance

The proposed design complies with the Smoky Lake Region REDS (July 2023), Part C — Rural Development, with the exception of the two geometric deviations (road width and ROW width) that have been formally approved by Smoky Lake County Council as documented in Appendix I.

Appendices

Appendix	Title
A	Geotechnical Investigation
B	Phase 1 Environmental Site Assessment
C	Stormwater Management Report
D	Historic Resource Assessment
E	Preliminary Engineering Drawings
F	Water Act Report
G	Biophysical Assessment
H	Community Engagement Report
I	Council Motion – Road Width and ROW Reduction (April 21, 2026)

Appendix A: Geotechnical Investigation

APPENDIX A:

Geotechnical Investigation

Date Report Completed	June 9, 2026
Consultant	PRI Engineering

PRI ENGINEERING

GEOTECHNICAL INVESTIGATION REPORT – FINAL

Whitefish Lake Development

Smoky Lake, Alberta

Prepared for 2803870 Alberta Ltd.

[redacted]

Calgary, AB T2S 0E1

920 – 28 Street NE, Unit #22 | Calgary, AB T2A 6K1 | 403.770.3069

June 8, 2026

Austin Zacharko
Homeowner
2803870 Alberta Ltd.

Emailed to: austin@massifenergy.ca

Subject: **Geotechnical Investigation Report - FINAL**
Proposed Access Road Development – Smoky Lake, Alberta
PRI Project No. 25-319

To Mr. Zacharko,

PRI Engineering Corp. (PRI) is pleased to submit the following geotechnical investigation report, describing subsurface conditions and recommendations for the access road construction for a proposed Whitefish Lake Development. It is understood that the development will consist of fifteen (15) individual lots, with an approximate project size of 26.6 acres (107,659 m^2), with the proposed access road located along Range Road 133 in Smoky Lake County, Alberta.

This report presents the results of the subsurface investigation for the Site, which was completed on May 6, 2026, and includes PRI's comments and recommendations as they relate to the proposed access road design and earthworks. Attached is a site layout plan noting auger hole locations, auger hole logs, and laboratory test results.

We trust that the information is straightforward and meets your preset requirements. Please contact us if you have any questions.

Yours truly,
PRI Engineering Corp.

[redacted]

Greg Kuepfer, P.Eng.
Sr. Geotechnical Engineering

920 – 28 Street NE, Unit #22 | Calgary, AB T2A 6K1 | 403.770.3069

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List of Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
ANSI	American National Standards Institute
AWWA	American Water Works Association
CCIL	Canadian Council of Independent Laboratories
CFEM	Canadian Foundation Engineering Manual
CPT	Cone Penetration Test
CSA	Canadian Standards Association
mBGS	Metres Below Ground Surface
mbeg	Metres Below Existing Grade
OBC	Ontario Building Code
OHS	Occupational Health and Safety
PRI	PRI Engineering Corp.
SPMDD	Standard Proctor Maximum Dry Density
SPT	Standard Penetration Test
USCS	Unified Soil Classification System

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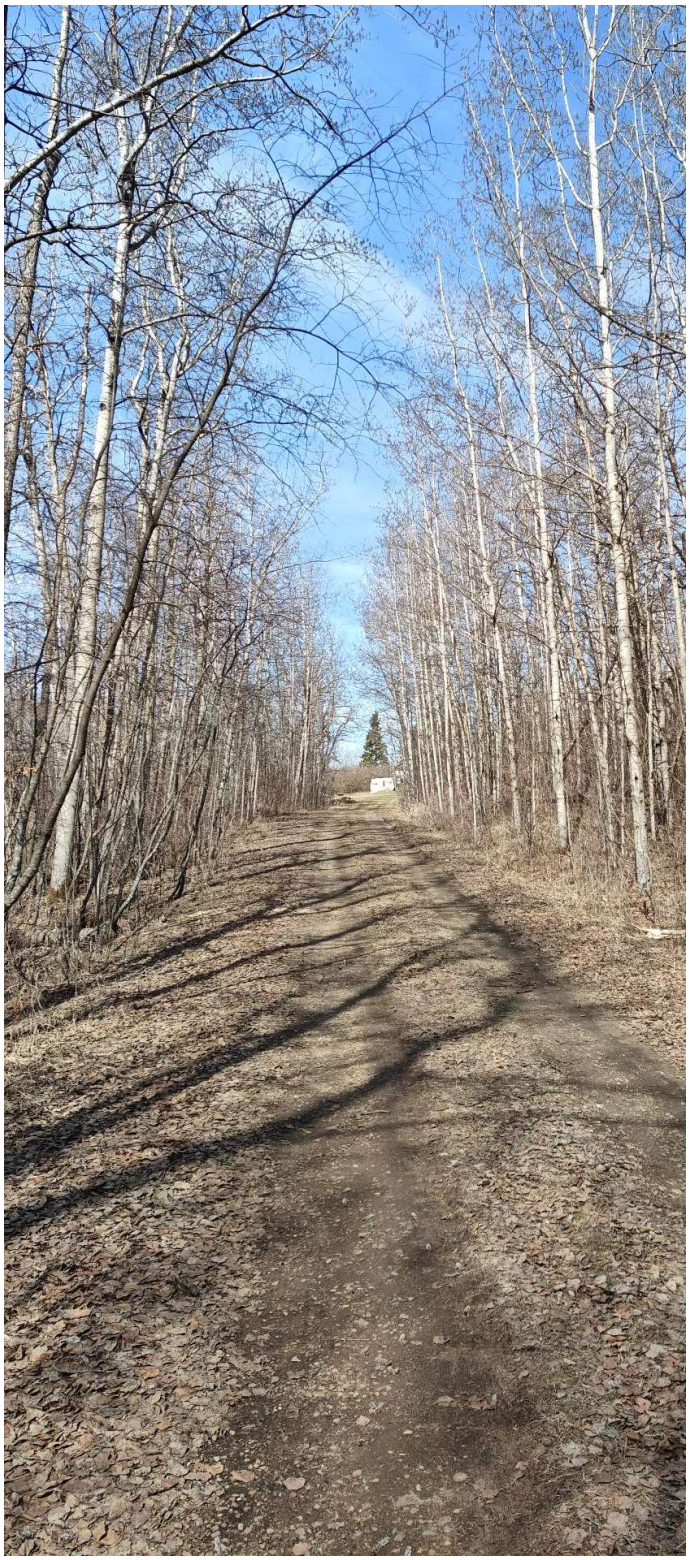
1 Introduction

As requested by 2803870 Alberta Ltd. (the Client), PRI Engineering Corp. (PRI) is pleased to submit the following Geotechnical Investigation Report for the proposed access road at an undeveloped property in Smoky Lake County, Alberta. The subject access road is located along Range Road 133, on the south and east side of Whitefish Lake (the Site).



Prior to completion of the geotechnical investigation, PRI reviewed the drawing package provided by the Client titled *Outline Plan: Sunset Ridge Estates at Whitefish Lake, Smoky Lake County, Alberta, Canada, REV03*, dated *04-01-2026*, prepared by *Massif Energy Ltd*. Based on these documents and discussions with the Client, it is understood that the site is currently undeveloped with heavy tree cover, with a partial access road extending west from Range Road 133 through a gated entrance. The Site contains areas of dried-out and fallen trees. A CSP drainage culvert is currently in place to facilitate water flow crossing under the access road.

The purpose of this investigation is to provide geotechnical recommendations and considerations related to the proposed access road design and earthworks. It is understood that further investigations and development of other elements at the Site, including but not limited to dwelling foundations, buried utilities on individual lots, and other environmental considerations, are to be completed at a later stage in the overall development of this Site.

A summary of the field program procedures and associated laboratory program is provided in **Section 2**. The subsurface profile and auger hole conditions are outlined in **Section 3**, with geotechnical recommendations and considerations related to the access road for the proposed development are summarized in **Section 4**.

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2 Geotechnical Investigation Procedures

Prior to initiating the field investigation, underground utility locates, including water, electrical, sewer, gas, telephone, cable, etc., were completed using Alberta One-call services. Augerhole locations were finalized in the field based on utility clearances and other obstructions (i.e., trees, overhead lines, etc.) observed at the time of the investigation.

2.1 Field Investigation Program

An augerhole program was carried out on May 6, 2026, where five (5) augerholes, designated at AH25-01 through AH25-05, were advanced in accessible areas to sampling termination depths of up to 1.5 metres below ground surface (mBGS), within overburden or practical refusal. The augerholes were advanced using a 40 millimetre (mm) outer diameter hand auger. Lightweight Dynamic Cone Penetration Tests (LDCPs) were conducted adjacent to the augerhole locations, to a target depth of 3.0 mBGS or practical refusal, using a Scala Penetrometer within the overburden, to assess relative density or consistency of the encountered soils. LDCPs measure the number of blows required to drive a 16 mm diameter steel bar into the soil in 150 mm increments using a 9-kilogram hammer falling 510 mm. LDCPs values in shallow soils can be utilized to evaluate and estimate California Bearing Ratio (CBR) values for pavement design, while deeper LDCPs values were utilized to evaluate subsurface conditions at greater depths. Subsurface conditions, including termination depth, groundwater seepage, and overall augerhole stability, were logged and sampled.

Recovered soil samples were inspected and logged in the field using visual and tactile methods, with soil samples being placed in moisture-proof containers for transportation to the laboratory for review and selected testing.

An Augerhole Location Plan is provided in **Figure 1.** Augerhole logs are provided as **Appendix A**. Augerhole location and sampling depth details are summarized in **Table 1**.

Table 1: Augerhole GPS Coordinates and Termination Depths

Augerhole ID	GPS Coordinates		Sampling Termination Depth (mBGS)*
	Latitude	Longitude	
AH26-01	54.340388	-111.880120	1.2
AH26-02	54.338796	-111.880072	1.5
AH26-03	54.338035	-111.880046	1.5
AH26-04	54.337748	-111.878962	0.8
AH26-05	54.337618	-111.878243	1.5

*mBGS = metres below ground surface

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2.2 Elevation Survey

Approximate augerhole latitude and longitude coordinates were obtained using a handheld GPS unit. A detailed topographic survey was beyond the current scope of this investigation. Augerhole coordinates are summarized in **Table 1** (above) and are included on augerhole logs attached in **Appendix A.**

2.3 Laboratory Testing Program

Soil samples obtained from the field investigation program were recovered and retained in moisture-proof containers for further review, selected testing, and storage. Selected samples submitted to Canadian Certified Independent Laboratories (CCIL) at our in-house laboratory for geotechnical tests are summarized in **Table 2**.

Table 2: Laboratory Test Quantities and Reference Standards

LABORATORY TEST	REFERENCE STANDARD	NUMBER OF TESTS
Natural Moisture Content	ASTM D2216-98	14
Particle Size Distribution Analysis	ASTM D422	2
Atterberg Limits	ASTM D4318	1

Results from the Natural Moisture Content Analysis and Particle Size Distribution Analysis are summarized on the augerhole logs with Particle Size Distribution Curves and Atterberg Limits test results provided as **Appendix B-1 and Appendix B-2**, respectively**.**

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3 Subsurface Conditions

The inferred subsurface profiles are based on the augerhole logs from the field investigation program. While we believe conditions are representative of actual site conditions, if findings during construction deviate from those encountered at the completed augerholes, we should be consulted to revise our recommendations based on actual conditions at the time of construction.

The following are the specific subsurface conditions encountered at augerhole locations. Based on the completed augerhole logs (attached as **Appendix A**) and laboratory particle size analyses (attached as **Appendix B**).

3.1 Topsoil

A layer of topsoil material was encountered at grade at all augerhole locations. The topsoil ranged in thickness from approximately 300 mm to 400 mm. Assessment of organic matter was not part of the scope of work.

3.2 Clayey Silt

Layers of light brown to brown clayey silt material were encountered in four (4) augerholes, AH26-01 through AH26-04, below the surficial topsoil material, extending to augerhole termination depths of approximately 0.8 mBGS to 1.5 mBGS. The material contains trace amounts of gravel, sandy to some amount of sand, trace rootlets, trace organics and was described as drier than the plastic limit (DTPL) to wetter than the plastic limit (WTPL) at the time of the investigation, based on laboratory moisture contents of 11% to 21%. Pocket penetrometer readings performed on obtained cohesive soil samples ranged from approximately 0.5 kilogram per square centimetre (kg/cm^2) to 2.5 kg/cm^2, indicating shear strengths ranging from approximately 25 kPa to 125 kPa for the sampled soils. Based on pocket penetrometer readings and LDCPs' resistance values, the clayey silt material has a firm stiff to very stiff consistency, with firm stiff to stiff soils generally encountered at shallow depths. Based on LDCPs' resistance values, it is estimated that CBR values range from 1 to 5 from the existing grade to 0.5 mBGS, with CBR of 2 to 3 considered for preliminary access road design.

One (1) laboratory particle size distribution analysis was completed on a selected clayey silt sample. The test result is attached in **Appendix B** and is summarized in **Table 3** as follows, as per Unified Soils Classification System (USCS).

Table 3: Summary of Laboratory Particle Size Analysis – Clayey Silt

Augerhole ID	Sample No.	Depth (mBGS)	Gravel*	Sand**	Silt***	Clay****
AH26-03	AS3	0.8 - 0.9	0%	33%	43%	24%

*Material passing a 3-inch sieve opening and retained by the No. 4 sieve.
**Material passing No. 4 sieve and retained by No. 200 sieve.
***Material passing No. 200 sieve and greater than 0.002 mm (based on hydrometer results).
****Material smaller than 0.002 mm (based on hydrometer results).

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3.3 Silt and Sand

A layer of brown clayey silt and sand material was encountered in one (1) augerhole, AH26-05, below the surficial topsoil material, extending to a depth of approximately 1.5 mBGS (augerhole termination depth). The material contains trace amounts of gravel, trace rootlets and was described as about plastic limit (APL) to WTPL at the time of the investigation, based on laboratory moisture contents of 15% to 17%. Pocket penetrometer readings performed on obtained cohesive soil samples ranged from approximately 2.0 kg/cm^2 to 2.5 kg/cm^2, indicating shear strengths ranging from approximately 100 kPa to 125 kPa for the sampled soils. Based on pocket penetrometer readings and LDCPs' resistance values, the clayey silt and sand material has a firm, stiff to stiff consistency. Based on LDCPs' resistance values, it is estimated that CBR values range from 3 to 7 from the existing grade to 0.5 mBGS, with CBR of 3 considered for preliminary access road design.

One (1) laboratory particle size distribution analysis was completed on selected silt and sand samples. The test result is attached in **Appendix B** and is summarized in **Table 4** as follows, as per USCS.

Table 4: Summary of Laboratory Particle Size Analysis – Silt and Sand

Augerhole ID	Sample No.	Depth (mBGS)	Gravel*	Sand**	Silt***	Clay****
AH26-05	AS2	0.5 - 0.8	1%	45%	33%	21%

*Material passing a 3-inch sieve opening and retained by the No. 4 sieve.
**Material passing No. 4 sieve and retained by No. 200 sieve.
***Material passing No. 200 sieve and greater than 0.002 mm (based on hydrometer results).
****Material smaller than 0.002 mm (based on hydrometer results).

One (1) selected sample was submitted for Atterberg limit testing. The test result is attached in **Appendix B,** and a summary of the results is displayed in **Table 5**.

Table 5: Summary of Atterberg Limit Tests – Silt and Sand

Augerhole ID	Sample No.	Depth (mBGS)	Liquid Limit	Plastic Limit	Plasticity Index	USCS Classification
AH26-05	AS2	0.5 - 0.8	37%	12%	25	CL

3.4 Bedrock and Other Obstructions

Bedrock was not encountered at any augerhole locations during the investigation. Although no cobbles and boulders were encountered at the augerhole locations, there is a possibility of encountering buried obstructions in this overburden material, and this should be considered for access road design and construction.

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Verification of bedrock depth below the investigation depths and its overall quality, involving coring and laboratory analysis, was beyond the scope of this investigation.

3.5 Groundwater and Augerhole Stability Observations

Groundwater was not encountered at any of the augerhole locations at the time of the investigation. It should be noted that groundwater levels may fluctuate seasonally, in response to major precipitation events, and based on fluctuations of the adjacent lake water levels.

All auger holes remained open and dry upon completion of augering except one (1), AH26-04, which caved at 0.7 mBGS, upon completion.

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4 Geotechnical Recommendations

The following recommendations are intended for the design and construction of the proposed access road. Recommendations are based on the augerhole information described in **Section 3**. While we believe the findings are representative, conditions may vary beyond the investigated locations. If significant differences in the subsurface conditions described above are subsequently encountered, particularly during construction or as more information becomes available, PRI should be contacted immediately to revise our findings and recommendations, as necessary.

Recommendations are intended for Designers and are not intended as instructions to Contractors, who should perform their own investigations to confirm any conditions that may affect construction schedules, costs and selected methodologies. Recommendations in this report must not be used by third parties without the express written consent of PRI.

4.1 General

Access road development and construction should be in accordance with the specifications and considerations as outlined in the *Regional Engineering Design Standards* (REDS), dated July 2023, as amended, and other applicable local and provincial standards. If deficiencies or contradictions exist between these standards and the recommendations outlined below, it is recommended that the more conservative and higher standard or specification should be considered.

4.1.1 Site Preparation

Prior to grading and earthworks operations, any organic and otherwise deleterious material should be stripped from beneath the proposed access road. In accordance with REDS, subgrade preparation typically includes scarification to a minimum depth of 300 mm, windrow material to the side, compaction of exposed surface to 97% Standard Proctor Maximum Dry Density (SPMDD), replacement of windrowed material to line/grade and compacted to 100% SPMDD. Alternatively, the subgrade should be proof-rolled using a sheepfoot roller with a minimum static weight of 8 tons, passed a minimum of six times, or an approved equivalent. Proof-rolling should be completed in the presence of the Geotechnical Engineer or qualified personnel working under the direct supervision of the Geotechnical Engineer. Loose or soft subsoils, which have not been adequately densified during proof-rolling, if any, should be removed and replaced with approved fill that is texturally consistent with the existing subgrade and shall be placed and compacted as per **Section 4.1.4** (below). If excessive rutting, loose areas or unexpected quantities of organic materials are identified during the proof rolling, a geotextile separator (e.g., US 205NW or approved equivalent) may be an option to limit the depth of any sub-excavation. Approval for the specific use of geotextiles shall be obtained from the Geotechnical Engineer.

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4.1.2 Excavations

Excavations should be constructed in accordance with the most recent version of the Alberta Occupational Health and Safety Act (OHSA). The existing firm stiff to stiff clayey silt to silt and sand material above the groundwater table can be classified as "likely to crack and crumble" soil type as per Section 442(2) in accordance with OHS. Thus, the walls of the excavation must be sloped within 1.5 m of the bottom of the excavation at an angle of not less than 45 degrees measured from vertical. Excavations in the soil could be achieved using standard excavation equipment such as a backhoe or an excavator. Based on anticipated excavation depths, excavation below the groundwater table is not anticipated. Open-cut excavations may be possible; however, the temporary excavations should be sloped, benched, or braced to maintain stability.

Excavations should be protected from exposure to precipitation and associated ground surface runoff and should be inspected regularly for signs of instability. If localized instability is noted during excavation or if wet conditions are encountered, side slopes should be flattened or supported, as required by regulations, to maintain safe working conditions. All excavations should comply with applicable local, state and federal safety regulations, including the current OHSA Excavation and Trench Safety Standards.

4.1.3 Groundwater Control

No groundwater was encountered at any augerhole location; significant groundwater seepage is not expected, and seepage should be controllable with sumps and filtered pumps within the excavations. A permit is not expected to be required as per the requirements of the Water Act (Government of Alberta, 2000). However, water levels should be verified at the time of construction, and PRI should be contacted to review all final designs, anticipated date of construction, dewatering methods, and permitting requirements once the final construction and design details are available.

4.1.4 Materials Reuse, Backfill and Compaction

Materials containing deleterious material (e.g., topsoil, rootlets, etc.) are not considered suitable for reuse as backfill or for supporting foundations, nor should they be used for any of the pavement base or sub-base materials.

If consideration is given to the reuse of excavated soils at the time of construction, it is recommended that all materials designated for reuse be inspected by the Geotechnical Engineer prior to and/or during construction, to confirm that no deleterious material is present. Cobbles and boulders content within reused material should be less than 5% by mass. If cobble and boulder content exceeds this limit, the material should be screened to remove all material greater than 60 mm, or an approved equivalent must be used.

Prior to placing any fill, all subgrade surfaces must be approved by the Geotechnical Engineer as noted in **Section 4.1.1** (above). Materials used for fill should be placed in maximum 200 mm loose lifts and compacted to 100% of the SPMDD below foundations and structural components, 98% of the SPMDD beneath roads, and 95% of the SPMDD in general fill areas. Compaction operations

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should be completed using a self-propelled vibratory compactor or jumping-jack plate tamper where access is limited. Backfill loose lift thicknesses may need to be reduced to achieve the above-noted compaction values based on compaction equipment utilized (i.e., small tampers or jumping-jack).

4.1.5 Frost Considerations

Based on Section 13.4.2 of the CFEM 5th Edition, the frost penetration depth for the site can be calculated based on the modified Berggren Equation shown in **Equation 1** below:

$$X = \lambda \sqrt{\frac{2\, k_f\, I_s}{L_s}} \qquad [1]$$

Where,

- X = depth of frost penetration (m)
- λ = a dimensionless coefficient based on dry density and water content as per Figure 13.8 of the CFEM 5th Edition
- I_s = surface freezing index (°C-days)
- k_f = thermal conductivity of the frozen soil as per Figures 13.6 (coarse-grained) and 13.7 (fine-grained) of the CFEM 5th Ed.
- L_s = volumetric latent heat of the soil = 334 kJ/kg

According to **Equation 1**, the frost penetration depth is directly proportional to the square root of the thermal conductivity of the frozen soil and surface freezing index, and inversely proportional to the square root of the volumetric latent heat of soil. The thermal conductivity of frozen soil is a function of the type of soil (coarse-grained or fine-grained), moisture content and dry density. The volumetric latent heat of soils depends on the dry density, moisture content of soil, and latent heat of fusion of water to ice, which is a constant taken as 334 kJ / kg.

The surface freezing index was then calculated based on the following **Equation 2**:

$$I_s = n\, I_d \qquad [2]$$

Where,

- n = empirical surface interface factor as per Table 13.2 of CFEM 5th Edition
- I_d = design freezing index (°C-days)

The following assumptions have been made to estimate the frost penetration depth:

- Mean annual air temperature (MAAT) of 2.2°C from the 1991-2020 Climate Normals data (Government of Canada) for Lac La Biche, AB;
- Mean and maximum frost days of 205 days and 215 days, respectively, for Goodfish Lake, AB, for the period 1984 to 2013 (Climate Atlas website);

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- Mean and maximum freezing index (I_m) of 1607 °C-days and 2098 °C-days for Goodfish Lake, AB, for the period 1984 to 2013 (Climate Atlas website);
- Surface interface factor (n) of 0.9, as per Table 13.2 of the CFEM 5th Edition for gravel surface (most probable range);
- Assumed dry density of approximately 1,700 kg/m^3; and
- Water content of approximately 17.0 %, based on average laboratory results.

Based on the above-noted assumptions, the design freezing index values for the different historic time periods and the calculated frost penetration depths are given below in **Table 6**:

Table 6: Design Freezing Index and Calculated Preliminary Frost Depths

Historic Time Period	Design Freezing Index (°C-Days)	Frost Penetration Depth (m)
Mean (1984-2013)	1,607	2.0
Max (1984-2013)	2,098	2.6

According to the above freezing indices, the preliminary frost penetration depths for the site range from 2.0 m to 2.6 m below final exterior grades. It should be noted that these frost penetration depths are based on a shallow subsurface investigation and sampling program for this scope of work and should be considered preliminary. Consideration should be made for additional analysis for a site-specific frost penetration depth, for detailed design, as needed. High-density Styrofoam insulation, or an approved equivalent, should be considered to provide equivalent frost protection where enough soil cover does not exist for foundation elements or adequate resistance to frost heave is not anticipated.

4.2 Seismic Site Class

Table 4.1.8.4-B of the Alberta Building Code (The National Building Code – 2023 Alberta Edition, 2023) summarizes site classifications with respect to seismic site response based on the average properties of the top 30 m of soil. Based on the encountered augerhole conditions and average LDCPs values compared to SPT 'N' values, a seismic Site Class "D" (stiff soil) may be considered for site designs. MASW testing or Refraction-Microtremor Survey is required to justify higher classifications and is beyond the scope of the current program.

4.3 Access Road Design

Provided that preparation of the site is completed in accordance with geotechnical recommendations, the following granular road structure is proposed for the rural residential local access road in accordance with REDS and the County of Smoky Lake No. 13 Development Guidelines & Minimum Servicing Standards.

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The granular road structure should consist of a granular base course material with a minimum thickness of 150 mm, underlined by a granular subbase course material with a minimum thickness of 200 mm. The base course and subbase course material shall meet Alberta Transportation Designations 2 and 6, respectively, compacted to a minimum of 98% SPMDD. Total granular thickness shall be confirmed by the Engineer based on subgrade conditions at the time of construction. Consideration to place a geotextile separator (e.g., US 205NW or approved equivalent) upon the subgrade is recommended to increase the overall longevity of the pavement structure and reduce overall maintenance requirements, if desired.

The thickness of the granular base material could be increased at the discretion of the Engineer, or additional granular subbase material could be added, to accommodate site conditions at the time of the construction.

The existing overburden material on site is not suitable for the proposed surface or base construction and should be disposed of appropriately or placed beneath an approved granular material as outlined above. If possible, it is recommended that within the area of the roadway, excavation be performed to remove any encountered organics and loose soils, and the grade be restored using properly compacted engineered fill. If the buried organics or loose soils are left in place, it is recommended that a long-term maintenance and inspection schedule for the pavements be considered for the construction schedule, in order to repair or remediate any pavement undulations or cracks developing throughout the course of the life of the pavements.

The road structure is not sufficiently thick to protect the subgrade from frost heave. The potential for developing ice lenses in the subgrade, which can cause frost heave, can be lessened by providing good surface and subsurface drainage and using a thick road structure. Good drainage is key to the longevity of a pavement structure, and considerations outlined in REDS should be considered. Regular maintenance inspections should be done, and ruts and potholes should be regraded regularly. Ditch slopes should be typical 4V:1H and back slopes of 3V:1H, with a minimum ditch longitudinal slope of 0.6% and a minimum depth of 0.75 m below the pavement structure. The surface of the road should be sloped at 3% or greater to promote runoff to designated surface drainage features.

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5 Construction Supervision and Limitations

The data, conclusions and recommendations which are presented in this geotechnical report, and the quality thereof, are based on a scope of work authorized by the Client. While we believe the augerhole information to be representative of Site conditions in the investigated areas, subsurface conditions between and beyond sampled locations may vary. If significant differences in any of the subsurface conditions described in this report are found, PRI should be contacted immediately to revise our findings and recommendations, if necessary.

Our comments on construction considerations are provided, but are not intended as instructions to Contractors, nor shall they be interpreted as specifications for construction. Contractor's bidding shall make their own interpretations of factual information to determine how subsurface conditions may affect their methods, costs and schedules.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. PRI accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this meets your current requirements. Please do not hesitate to contact the undersigned if you have any questions.

Yours truly,

PRI Engineering Corp.

Deep Patel, M.Eng., E.I.T
Project Lead

Reviewed by:

Greg Kuepfer, P.Eng.
Sr. Geotechnical Engineering

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PRI ENGINEERING

Figures

N

OFF LAKE RECREATIONAL AREA
ENVIRONMENTAL RESERVE; 30m SETBACK FROM LAKE FOR ALL LAKEFRONT LOTS
MUNICIPAL RESERVE (PUBLIC BEACH ACCESS)
ENVIRONMENTAL RESERVE
ENVIRONMENTAL RESERVE W/10m OFFSET (WETLANDS)
WHITEFISH LAKE PUBLIC ACCESS PATH
POWER & METERING POLE (TYP.)
DETAIL 'A'
8.50m (TYP.)
AH26-01
AH26-02
AH26-03
AH26-04
AH26-05
LOT #1
LOT #2
LOT #3
LOT #4
LOT #5
LOT #6
LOT #7
LOT #8
LOT #9
LOT #10
LOT #11
LOT #12
LOT #13
LOT #14
LOT #15
50.00m
5.00m
119.89m
33.24m
147.27m
R25.00m
49.88m
122.79m
33.24m
R14.00m
143.02m
145.95m
33.24m
165.35m
36.74m
167.09m
37.78m
155.02m
31.03m
10.00m
20.00m
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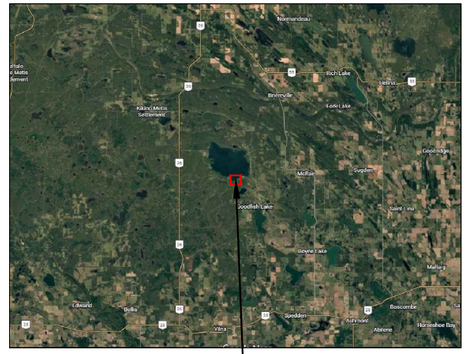
138.78m
31.21m
137.34m
36.69m
68.45m
213.22m
79.55m

KEY MAP



APPROXIMATE SITE LOCATION

APPROXIMATE AUGERHOLE ID AND LOCATION

ID	LATITUDE	LONGITUDE
AH26-01	54.340388	-111.880120
AH26-02	54.338796	-111.880072
AH26-03	54.338035	-111.880046
AH26-04	54.337748	-111.878962
AH26-05	54.337618	-111.878243

0 40 80 Meters

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UNIT 104, 303 19 AVE SW,
CALGARY, AB, T2S 0E1

NOTES:
1. KEY MAP FROM GOOGLE MAPS AND SUBDIVISION OUTLINE FOR SUNSET RIDGE ESTATES AT WHITEFISH LAKE, DRAWING NO. C-PLAN-01, REV. 3, DATED 17-12-2025. PROVIDED BY CLIENT USED FOR REFERENCE PURPOSES ONLY.
2. APPROXIMATE AUGERHOLE LOCATION OBTAINED FROM HANDHELD GPS UNIT.
3. CONTRACTOR TO VERIFY LOCATIONS OF ANY UNDERGROUND UTILITIES PRIOR TO ANY GROUND DISTURBANCE.

LEGEND

AH26-## APPROXIMATE AUGERHOLE ID AND LOCATION

APPROXIMATE SITE BOUNDARY

REV NO.	ISSUANCE	DATE
0	ISSUED FOR REPORT	06MAY26

PROJECT NAME:
WHITEFISH LAKE DEVELOPMENT
SMOKY LAKE, AB

DRAWING NAME:
AUGERHOLE LOCATION PLAN

PROJ. NO.:	DWG. BY:	CHKD. BY:	APPR. BY:
25-319	DRK	DP	GK

DRAWING NUMBER: FIGURE 1

PRI ENGINEERING

Appendix A

Borehole Explanation Form, Borehole Logs

BOREHOLE LOG EXPLANATION FORM

This explanatory section provides the background to assist in the use of the borehole logs. Each of the headings used on the borehole log, is briefly explained.

DEPTH

This column gives the depth of interpreted geologic contacts in metres below ground surface.

STRATIGRAPHIC DESCRIPTION

This column gives a description of the soil based on a tactile examination of the samples and/or laboratory test results. Each stratum is described according to the following classification and terminology.

Soil Classification*		Terminology	Proportion
Silt & Clay	< 0.075 mm	"trace" (e.g. trace sand)	<10%
Sand	0.075 to 4.75 mm	"some" (e.g. some sand)	10% - 20%
Gravel	4.75 to 75 mm	adjective (e.g. sandy)	20% - 35%
Cobbles	75 to 300 mm	"and" (e.g. and sand)	35% - 50%
Boulders	>300 mm	noun (e.g. sand)	>50%

* Extension of USCS Classification system unless otherwise noted.

The use of the geologic term "till" implies that both disseminated coarser grained (sand, gravel, cobbles or boulders) particles and finer grained (silt and clay) particles may occur within the described matrix.

The moisture conditions of cohesionless and cohesive soils are defined as follows.

COHESIONLESS SOILS	COHESIVE SOILS		
Dry	DTPL	-	Drier Than Plastic Limit
Moist	APL	-	About Plastic Limit
Wet	WTPL	-	Wetter Than Plastic Limit
Saturated	MWTPL	-	Much Wetter Than Plastic Limit

BORING NUMBER AH26-01

PRI ENGINEERING

CLIENT 2803870 Alberta Ltd.
PROJECT NAME Whitefish Lake Development
PROJECT NUMBER 25-319
PROJECT LOCATION Smoky Lake, Alberta
DATE STARTED 5/6/26 **COMPLETED** 5/6/26
GROUND ELEVATION Not Determined
DRILLING CONTRACTOR N/A
GROUND WATER LEVELS:
DRILLING METHOD 40 mm O.D. Hand Auger and 9 kg Scala Penetrometer
LOGGED BY DP **CHECKED BY** GK
AT END OF DRILLING ---
NOTES Lat: 54.340388, Long: -111.880120
AFTER DRILLING ---

DEPTH (m)	ELEVATION (mASL)	GRAPHIC LOG	MATERIAL DESCRIPTION	MONITOR WELL DETAILS	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	LDCP RESISTANCE VALUES (BLOWS/150 mm)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	SPT N VALUE / PL MC LL / FINES CONTENT (%)	REMARKS AND TESTS
0.0			TOPSOIL:		AS 1		1 1		29		Augerhole was open and dry upon completion of drilling.
0.3			CLAYEY SILT: Dark brown with black mottled CLAYEY SILT, sandy to some sand, trace gravel, organic odour, WTPL, firm stiff to stiff		AS 2		1 2	25	21		
0.5							3 4 5				
1.0							5 7				
1.2			Augerhole terminated at 1.2 m below ground surface in CLAYEY SILT. LDCP terminated at 1.95 m below ground surface.				15 19				
1.5							19 30				

BORING NUMBER AH26-02

PRI ENGINEERING

CLIENT 2803870 Alberta Ltd.
PROJECT NAME Whitefish Lake Development
PROJECT NUMBER 25-319
PROJECT LOCATION Smoky Lake, Alberta
DATE STARTED 5/6/26 **COMPLETED** 5/6/26
GROUND ELEVATION Not Determined
DRILLING CONTRACTOR N/A
GROUND WATER LEVELS:
DRILLING METHOD 40 mm O.D. Hand Auger and 9 kg Scala Penetrometer
LOGGED BY DP **CHECKED BY** GK
AT END OF DRILLING ---
NOTES Lat: 54.338796, Long: -111.880072
AFTER DRILLING ---

DEPTH (m)	ELEVATION (mASL)	GRAPHIC LOG	MATERIAL DESCRIPTION	MONITOR WELL DETAILS	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	LDCP RESISTANCE VALUES (BLOWS/150 mm)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	SPT N VALUE / PL MC LL / FINES CONTENT (%)	REMARKS AND TESTS
			TOPSOIL:		AS 1		1 4 4		19		Augerhole was open and dry upon completion of drilling.
0.4			CLAYEY SILT: Brown CLAYEY SILT, sandy to some sand, trace gravel, trace organics, APL to WTPL, firm stiff to stiff		AS 2		4 5	75	17		
0.5			- Light brown, trace rootlets		AS 3		4 4 5		17		
1.0							9 14				
1.5			Augerhole terminated at 1.5 m below ground surface in CLAYEY SILT. LDCP terminated at 2.7 m below ground surface.				15 16 16 27				
2.0							35 35 35				
2.5							36				

GENERAL BH - PRI WITH MW (METRIC) 25-319-BH-LOGS.GPJ GINT STD CANADA LAB.GDT 5/22/26

BORING NUMBER AH26-03

PAGE 1 OF 1

PRI ENGINEERING

CLIENT 2803870 Alberta Ltd.
PROJECT NAME Whitefish Lake Development
PROJECT NUMBER 25-319
PROJECT LOCATION Smoky Lake, Alberta
DATE STARTED 5/6/26 **COMPLETED** 5/6/26
GROUND ELEVATION Not Determined
DRILLING CONTRACTOR N/A
GROUND WATER LEVELS:
DRILLING METHOD 40 mm O.D. Hand Auger and 9 kg Scala Penetrometer
LOGGED BY DP **CHECKED BY** GK
AT END OF DRILLING ---
NOTES Lat: 54.338035, Long: -111.880046
AFTER DRILLING ---

DEPTH (m)	ELEVATION (mASL)	GRAPHIC LOG	MATERIAL DESCRIPTION	MONITOR WELL DETAILS	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	LDCP RESISTANCE VALUES (BLOWS/150 mm)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	SPT N VALUE / PL MC LL / FINES CONTENT (%)	REMARKS AND TESTS
0.0			TOPSOIL:		AS 1		3	100	14		Augerhole was open and dry upon completion of drilling.
0.4							3				
0.5			CLAYEY SILT: Light brown CLAYEY SILT, sandy to some sand, trace gravel, DTPL to WTPL, firm stiff to stiff		AS 2		3	125	16		
							4				
							5				
			- Orangey brown mottling, sand pockets		AS 3		7	100	19		GSA AS3: Gravel: 0% Sand: 33% Silt: 43% Clay: 24%
1.0							5				
							6				
							7				
1.5							8				
			Augerhole terminated at 1.5 m below ground surface in CLAYEY SILT. LDCP terminated at 3.1 m below ground surface.				9				
							11				
							11				
2.0							11				
							13				
							15				
2.5							15				
							14				
							18				
3.0							18				

GENERAL BH - PRI WITH MW (METRIC) 25-319-BH-LOGS.GPJ GINT STD CANADA LAB.GDT 5/22/26

BORING NUMBER AH26-04

PAGE 1 OF 1

PRI ENGINEERING

CLIENT 2803870 Alberta Ltd.
PROJECT NAME Whitefish Lake Development
PROJECT NUMBER 25-319
PROJECT LOCATION Smoky Lake, Alberta
DATE STARTED 5/6/26 **COMPLETED** 5/6/26
GROUND ELEVATION Not Determined
DRILLING CONTRACTOR N/A
GROUND WATER LEVELS:
DRILLING METHOD 40 mm O.D. Hand Auger and 9 kg Scala Penetrometer
LOGGED BY DP **CHECKED BY** GK
AT END OF DRILLING ---
NOTES Lat: 54.337748, Long: -111.878962
AFTER DRILLING ---

DEPTH (m)	ELEVATION (mASL)	GRAPHIC LOG	MATERIAL DESCRIPTION	MONITOR WELL DETAILS	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	LDCP RESISTANCE VALUES (BLOWS/150 mm)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	SPT N VALUE / PL MC LL / FINES CONTENT (%)	REMARKS AND TESTS
			TOPSOIL:		AS 1		3	100	14		Augerhole was dry upon completion of drilling.
0.3							3				
			CLAYEY SILT: Brown to dark brown CLAYEY SILT, sandy to some sand, trace gravel, trace rootlets, APL to WTPL, firm stiff to very stiff		AS 2		3	100			
					AS 3		6	25	19		Augerhole caved at 0.7 m below ground surface upon completion of drilling.
0.5							17				
					AS 4		21		11		
0.8			Augerhole terminated at 0.8 m below ground surface in CLAYEY SILT. LDCP terminated at 3.1 m below ground surface.				35				
1.0							27				
							19				
							16				
1.5							19				
							23				
							19				
2.0							20				
							15				
							15				
2.5							15				
							25				
							21				
							18				
3.0											

GENERAL BH - PRI WITH MW (METRIC) 25-319-BH-LOGS.GPJ GINT STD CANADA LAB.GDT 5/22/26

BORING NUMBER AH26-05

PRI ENGINEERING

CLIENT 2803870 Alberta Ltd.
PROJECT NAME Whitefish Lake Development
PROJECT NUMBER 25-319
PROJECT LOCATION Smoky Lake, Alberta
DATE STARTED 5/6/26 **COMPLETED** 5/6/26
GROUND ELEVATION Not Determined
DRILLING CONTRACTOR N/A
GROUND WATER LEVELS:
DRILLING METHOD 40 mm O.D. Hand Auger and 9 kg Scala Penetrometer
LOGGED BY DP **CHECKED BY** GK
AT END OF DRILLING ---
NOTES Lat: 54.337618, Long: -111.878243
AFTER DRILLING ---

DEPTH (m)	ELEVATION (mASL)	GRAPHIC LOG	MATERIAL DESCRIPTION	MONITOR WELL DETAILS	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	LDCP RESISTANCE VALUES (BLOWS/150 mm)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	SPT N VALUE / PL MC LL / FINES CONTENT (%)	REMARKS AND TESTS
0.0			TOPSOIL:		AS 1		4 6		10		Augerhole was open and dry upon completion of drilling.
0.3			SILT AND SAND: Brown clayey SILT AND SAND, trace gravel, trace rootlets, APL to WTPL, firm stiff to stiff				6				
0.5					AS 2		4 4	125	17		GSA AS2: Gravel: 1% Sand: 45% Silt: 33% Clay: 21%
1.0					AS 3		10 7	100	15		ALT AS2: LL: 37% PL: 12% PI: 25
1.5			Augerhole terminated at 1.5 m below ground surface in SILT AND SAND. LDCP terminated at 3.1 m below ground surface.				10 11 8 8 8 9 9 12 16 16 20 23 18				
2.0											
2.5											
3.0											

SPT N VALUE 20 40 60 80
PL MC LL 20 40 60 80
FINES CONTENT (%) 20 40 60 80

GENERAL BH - PRI WITH MW (METRIC) 25-319-BH-LOGS.GPJ GINT STD CANADA LAB.GDT 5/22/26

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Appendix B

Geotechnical Laboratory Results

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Appendix B-1

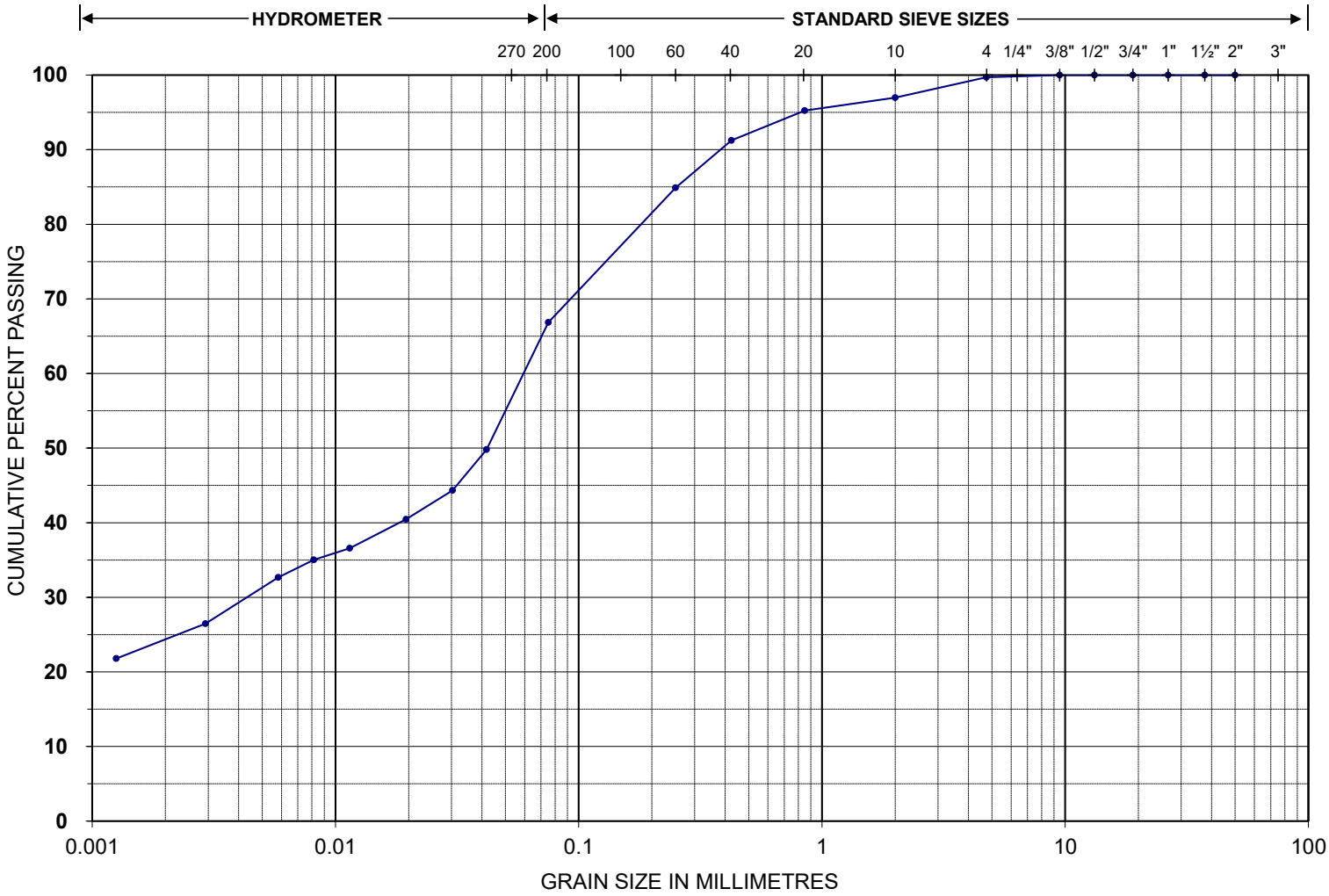
Particle Size Distribution Results

PRI ENGINEERING
2161 Whittington Drive, Unit A, Cavan-Monaghan, ON K9J 0G5
(705) 702-3921
info@priengineering.com
www.priengineering.com

PARTICLE SIZE DISTRIBUTION
LS - 702

Project Name: Whitefish Lake Studies **Project No.:** 25-319 **Sample Date:** 6-May-26

Borehole/Test Pit ID.: AH26-03 **Sample No./Depth:** AS3 / 0.8 - 0.9 m **LAB ID:** 26HYD-309



Silt or Clay	Sand	Gravel

Sieve Size (mm)	% Passing
37.5	100.0
26.5	100.0
19.0	100.0
13.2	100.0
9.5	100.0
4.750	99.7
2.000	97.0
0.850	95.2
0.425	91.3
0.250	84.9
0.075	66.8

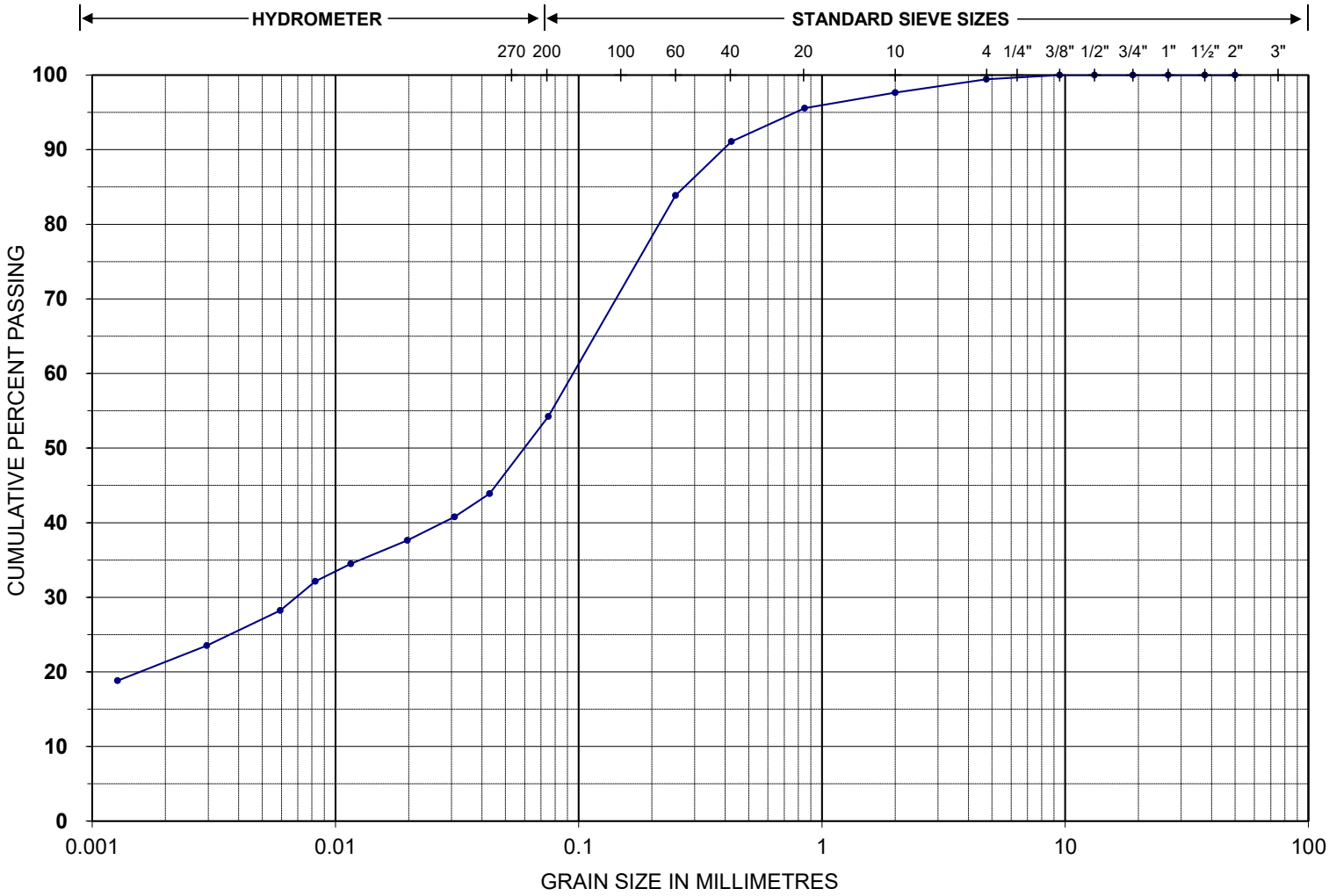
Hydrometer (mm)	% Passing
0.042	49.8
0.030	44.3
0.020	40.5
0.011	36.6
0.008	35.0
0.006	32.7
0.003	26.5
0.001	21.8

PRI ENGINEERING
2161 Whittington Drive, Unit A, Cavan-Monaghan, ON K9J 0G5
(705) 702-3921
info@priengineering.com
www.priengineering.com

PARTICLE SIZE DISTRIBUTION
LS - 702

Project Name: Whitefish Lake Studies **Project No.:** 25-319 **Sample Date:** 6-May-26

Borehole/Test Pit ID.: AH26-05 **Sample No./Depth:** AS2 / 0.5 - 0.8 m **LAB ID:** 26HYD-310



Silt or Clay	Sand	Gravel

Sieve Size (mm)	% Passing
37.5	100.0
26.5	100.0
19.0	100.0
13.2	100.0
9.5	100.0
4.750	99.5
2.000	97.7
0.850	95.6
0.425	91.1
0.250	83.9
0.075	54.2

Hydrometer (mm)	% Passing
0.043	43.9
0.031	40.8
0.020	37.6
0.012	34.5
0.008	32.1
0.006	28.2
0.003	23.5
0.001	18.8

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Appendix B-2

Atterberg Limit Results

PRI ENGINEERING
2161 Whittington Drive, Unit A, Cavan-Monaghan, ON K9J 0G5
(705) 702-3921
info@priengineering.com
www.priengineering.com

ATTERBERG LIMITS
ASTM D4318

Project Name: Whitefish Lake Studies **Project No.:** 25-319 **Sample Date:** 6-May-26

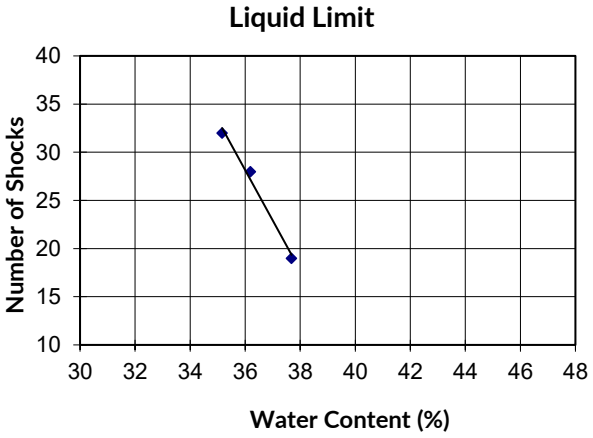
Borehole/Test Pit ID.: AH26-05 **Sample No./Depth:** AS2 / 0.5 - 0.8 m **LAB ID:** 26ALT-175

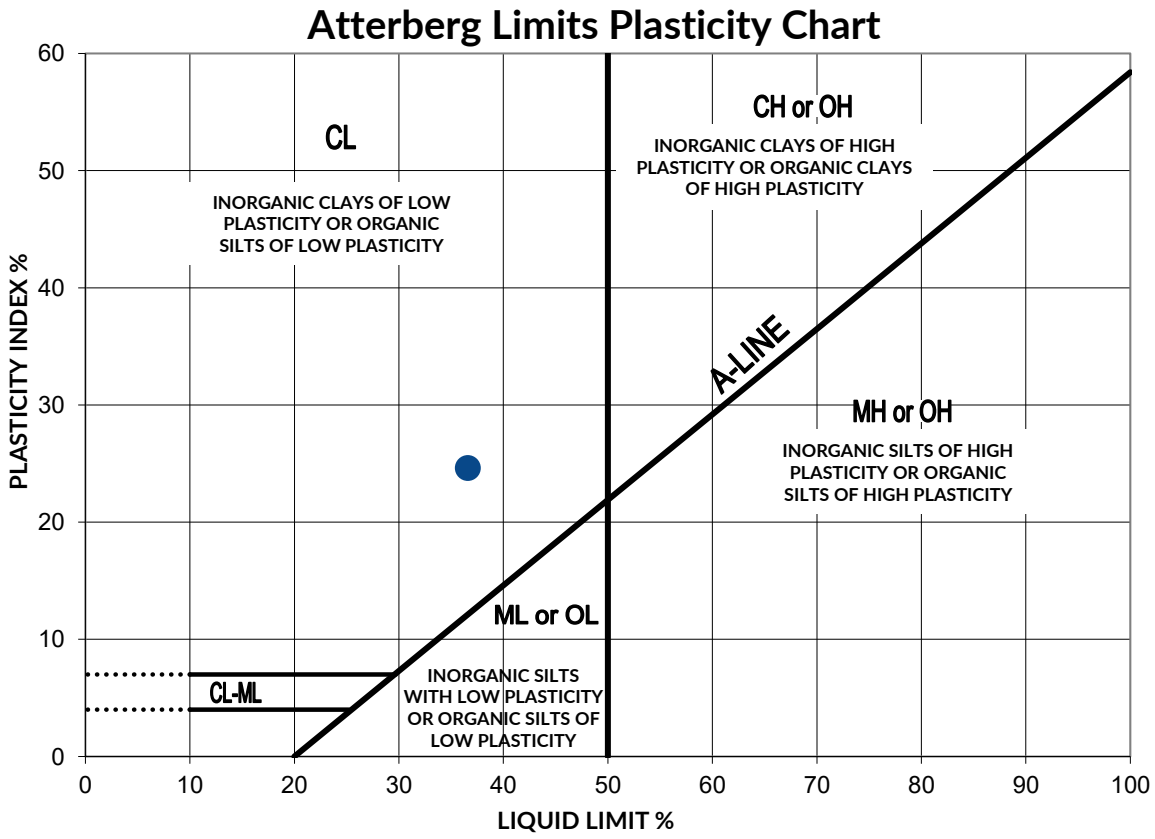
SAMPLE RESULTS

Liquid Limit, (W_L)	37
Plastic Limit, (W_P)	12
Plasticity Index ($I_P=W_L-W_P$)	25
Natural Water Content, W	16
Liquidity Index ($I_L=W-W_P/W_L-W_P$)	0

CONTROL RESULTS

Liquid Limit, (W_L)	34
Plastic Limit, (W_P)	18
Plasticity Index ($I_P=W_L-W_P$)	16





Approver: VG
Issue Date: 2022-05-30
Issue/Revision Number: Issue 1, Revision 1

Appendix B: Phase 1 Environmental Site Assessment

APPENDIX B:

Phase 1 ESA

Date Report Completed	July 9, 2025
Consultant	Bolson Engineering & Environmental Services

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT

Prepared For:
Massif Energy

Property Description:
NE ¼ Sec. 4 62-13-W4M, Smoky Lake County, AB

Project Number:
110-2560.PHI

Prepared By:

#73158

JULY 9, 2025

PERMIT TO PRACTICE
Bolson Engineering and Environmental Services
Signature
Date JULY 9, 2025
PERMIT NUMBER: P11382
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Rev.	Date	Description
0	*July 9th, 2025*	Issued for Client Use
A	*July 9th, 2025*	Issued for Internal Review

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

Table of Contents

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

1. EXECUTIVE SUMMARY

Bolson Engineering and Environmental Services (Bolson) was retained by Massif Energy to complete a Phase I Environmental Site Assessment (ESA) of the property located at NE ¼ Sec. 4 62-13-W4M in Smoky Lake County, AB. The total area of the subject site is approximately 26.75 Acres in size and the site is currently developed with some single family residential homes and miscellaneous structures.

Information from historical land titles, air photo reviews, on-site inspections, inspections of neighboring properties and hydrogeological conditions were supplemented with searches for Environmental Protection Orders, Water Well Searches, and an ASCA Search to complete this Phase I Environmental Site Assessment.

Upon review of the available information and a site review, it was deemed that the property does not pose any significant environmental liability at this time. Bolson had access to the entire property and there were no indications that further environmental investigation is required.

The opinions outlined in this report are solely those of Bolson Engineering and Environmental Services and do not necessarily reflect the viewpoint of the Client (Massif Energy). This report is written for the benefit and use of the Client and his/her financial institution(s). All information is valid to the date of the report and limited by the information that was shared by the 3rd parties involved. While every effort is made to confirm that the data collected is factual, complete, and accurate; Bolson Engineering and Environmental Services make no guarantees or warranties whatsoever with respect to such data.

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2. INTRODUCTION

Massif Energy has engaged Bolson Engineering and Environmental Services to perform a Phase I Environmental Site Assessment of the property located at NE ¼ Sec. 4 62-13-W4M in Smoky Lake County, AB, hereby known as "the subject property" in this report. A site reconnaissance took place on July 2nd, 2025, and the findings of this assessment and reconnaissance are enclosed.

2.1 Purpose and Scope of Services

The purpose of this Phase I ESA is to reduce environmental risk/liability by identifying sources or potential sources of contamination within the subject site. The scope of work of this ESA was in general accordance with CSA Standard Z768-01: Phase I Environmental Site Assessments. The methodologies described in this standard outline a recognized practice for conducting an ESA of a subject property in order to identify and document potential and recognized environmental conditions.

2.2 Assumptions, Exceptions and Limitations

While this report provides a summary of both potential and recognized environmental conditions as described above, the assessment is limited by the availability of information in relation to the site at the time this report was compiled. The conclusions and recommendations derived in this report are based in part on information provided by third parties with specific knowledge of the property.

However, the possibility exists that information relevant to the environmental condition of the site was not available or was not provided during the creation of this report. Also, it may be possible that unreported environmentally harmful activities, such as undocumented disposal of waste, may have taken place and would not be identified in this report, as no pertinent documentation for such activities would exist. In the event of either of these scenarios, Bolson Engineering and Environmental must be informed if any new information is made available so it can be determined if modifications to the conclusions and recommendations provided in this document are required.

In the interests of completing this report in a timely fashion suitable to the client, certain limitations exist and are generally the result of inaccessible areas, visual impairments due to weather and/or timing of 3rd party requests for information. Where such limitations were encountered, they are discussed in greater detail within the relevant sections throughout the report.

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2.3 Deviations and Limitations from the CSA Standard

Items that were not included in Bolson's scope of work or were limited included the following:

- Data obtained from government and private databases was limited to information reported through registration or supplied by the owner.

- A survey of hazardous building materials was not conducted as part of the Site Visit.

- Interviews with neighbouring and adjoining properties were not conducted during the Site Visit.

- A designated substance survey (polychlorinated biphenyls (PBCs), asbestos-containing materials (ACMs), lead, ozone depleting substances (ODS), mercury and urea foam formaldehyde insulation (UFFIs) was not conducted as part of the Site Visit.

- Depending on the record, the locations of water wells in the AEP database are accurate to within the Legal Subdivision (LSD) or quarter section listed. The water wells are limited to those for which a drilling report has been received and registered with AEP. Requirements to submit water well records were voluntary prior to 1970. A water well record indicates that a water well might currently exist at the referenced location. AEP records are not routinely edited to discard obsolete information (i.e. well abandonment) or to record ownership changes. Formal confirmation of a water well existence usually requires field verification. The Groundwater Centre (TGWC) provides field verified locations of water wells where available. A field verified survey of water wells was not part of the scope of work, and as such with the exception of any locations field verified by TGWC, the water well information has not been confirmed.

- Limitations in aerial photography interpretation were largely a function of the scale of the individual photographs. Where possible, aerial photographs with scales of 1:20,000 or smaller were utilized to determine historical land use at the Site. Aerial photographs with scales outside of this range were utilized to document general changes in land use.

2.4 User Reliance

This report has been created for the sole use of Massif Energy and its financial institution(s). Unless given written permission by Bolson Engineering and Environmental Services, reliance and use of the information provided in this report by others is strictly prohibited.

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES

3. SITE DESCRIPTION

The subject property is zoned Agriculture District and is located near Whitefish Lake within Smoky Lake County. The site is currently partially developed with some single family residential homes and miscellaneous structures while a majority of the property is treed natural land.

The topography of the property and surrounding area slopes in a generally northwesterly direction. Whitefish Lake is located adjacent to the property and the current natural drainage is towards the lake in general.

The geology of the overall area consists primarily of sand and clay till deposits overlying the bedrock of the Wapiti Formation (Edmonton Geological Society, 1993). The soil itself falls into the Dark Gray Chemozemics and Dark Gray Luvisols which are black-colored soil containing a high percentage of humus, phosphorus and ammonia. This soil is typical of the Prairie and Mountain Regions. See Appendix B: *Soil Classification of Canada* for further information.

The near surface geology of the Smoky Lake area is characterized by glacial deposits which include, but are not limited to, tills and lacustrine deposits that vary in thickness across the area. Intermixed with these glacial deposits are sands, silts, and gravels that may be of fluvial origin. Below the surficial deposits within the Smoky Lake area is the Horseshoe Canyon Formation. The Horseshoe Canyon Formation is the lower part of the Edmonton Group. The Horseshoe Canyon consists of sandstone, siltstone and shale with interbedded coal seams.

With regards to the hydrogeological information of the area the subject property seems to have a downward direction of groundwater flow towards the northwest as per information found in the Hydrogeological Map of Alberta.

The average temperature for the area was found to be 14.7°C for the May-September period. The average total precipitation for this period is 351 mm and the average annual total precipitation is 496mm (Citystats.ca, 2024).

A search was conducted using the Alberta Conservation Information Management System (Alberta Tourism, Parks and Recreation, 2025) to identify any sensitive or protected environmental areas. No sensitive or protected environmental areas were noted within the vicinity of the subject property. See Appendix C: *ACIMS Search Data* for further information.

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4. SITE ASSESSMENT

Information from historical land titles, air photo reviews, on-site inspections, and inspections of neighboring properties was supplemented with searches for Environmental Protection Orders, Water Well Searches, ASCA Search and an ESAR Search to complete this Phase I Environmental Site Assessment.

4.1 Site Visit Findings

A site visit was completed on July 3rd, to inspect the subject property. Select photographs of the site visit can be found in Appendix A: *Maps/Sketches/Figures*. The findings of the site reconnaissance are outlined below:

- Above Ground Storage Tanks (AST's)
  No above ground storage tanks were noted on the subject property.

- Underground Storage Tanks (UST's)
  During the site visit no underground storage tanks were noted on the subject property. This was confirmed through research of the ASCA database.

- On-site Buildings and Structures
  There are some existing residential homes and miscellaneous structures existing on the site.

- Discolored Soils/Stressed Vegetation
  During the site visit no discolored soils or stressed vegetation were noted, except for a small area where some burning had recently taken place.

- Stained Surfaces
  No stained surfaces on the subject property that would pose a potential environmental concern were noted.

- Drums and Other Containers
  No unsealed drums or containers were present on the property.

- Dumping or Fill
  No recent dumping or fill material was observed on the property.

- Odors
  No strong, pungent or noxious odors were noted during the site visit to the subject properties. These observations are general in nature and do not reflect a formal odor assessment.

- Pits, Ponds or Lagoons
  No pits, ponds or lagoons were noted on the subject property.

- Pesticides
  During the site visit, storage or use of pesticides was not observed at the site.

  PCB's
  Polychlorinated Biphenyls (PCB's) were commonly used lubricants and coolants for electrical equipment, including transformers, from the 1930's until the 1970's. The use of PCB's was banned from use in electrical equipment installed after September 1, 1977, and in transformers installed after July 1, 1980. It is not necessary to remove any functioning PCB containing equipment from the site. If any electrical equipment is removed from the site, the manufacturing date should be determined prior to disposal. Any equipment determined to have been manufactured before 1977 should be assessed for the potential of containing PCB's. Equipment containing PCB's must be disposed of at a licensed facility.

  There was no evidence of PCB's at the subject property.

- Petroleum Products
  No petroleum products were noted on the property other than typical vehicles on the nearby roadways.

- Potable Water Supply
  There are no municipal water services available to the subject site. The site is currently serviced through a well system.

- Sewage Disposal System
  There are no municipal sewer services available to the subject site. The site is currently serviced with a septic holding system.

- Solid Waste
  All solid waste generated at the property is placed into bins and hauled away as required.

- Waste Air Emissions
  There are no potential sources of waste air emissions other than typical vehicle exhaust release.

- Wastewater
  Drainage on the subject property is overland generally towards Whitefish Lake.

- Wells
  Eight water wells were noted near the property and are discussed in greater detail in Section 5.5: Water Well Search.

- Radon Gas
  Radon Gas is a by-product of the natural decay of radium. A significant amount of naturally occurring radon gas can come from specific types of geological formations. There is no evidence of Radon Gas on the site.

- Urea Formaldehyde Insulation
  Urea Formaldehyde Foam Insulation (UFFI) was commonly used during the 1970's in both residential and commercial buildings as a means to fill wall cavities for energy conservation. This practice was banned in Canada in 1980 due to the potential for formaldehyde emissions.

  As some of the structures at the site appear to have been constructed prior to 1980, it is possible that there may be UFFI's within the buildings. It is recommended that prior to any planned demolition a formal assessment for UFFI's be conducted and the appropriate disposal measures be taken if required.

- Chlorofluorocarbons
  Chlorofluorocarbons (CFC's) are one of the more widely used and common ozone depleting substances. Typical examples of CFC's include coolants in refrigerators, freezers, air conditioners, and propellers in aerosol sprays.

  There is no evidence of CFC releases present on the subject property.

- Asbestos Containing Materials
  Asbestos Containing Materials (ACM's) were commonly used in construction for insulation, sound/fire proofing and in various other construction materials. The use of (ACM's) generally ceased voluntarily in the mid 1970's due to health concerns associated with it, but was not banned through legislation until the mid-1980's.

  As some of the structures at the site appear to have been constructed prior to 1980, it is possible that there may be ACM's within the buildings. It is recommended that prior to any planned demolition a formal assessment for ACM's be conducted and the appropriate disposal measures be taken if required.

- Lead Based Materials
  Lead in buildings is generally found in buildings in lead based paint or lead solders the plumbing. During the mid-1970's the government reduced the allowable amount of lead to 0.5% by weight for interior paint and the use of lead solders was generally phased out in the mid-1980's.

  As some of the structures at the site appear to have been constructed prior to 1980, it is possible that there may be Lead Based Material's within the buildings. It is recommended that prior to any planned demolition a formal assessment for ACM's be conducted and the appropriate disposal measures be taken if required.

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4.2 Property

The subject site is located at NE ¼ Sec. 4 62-13-W4M in Smoky Lake County, AB. The total area of the subject site is approximately 26.75 Acres in size. The site is accessed directly from Range Road 133 to the east. The site has a gravel driveway access, cleared area for the existing structures, and the remainder is treed and natural land.

4.3 On-Site Buildings and Structures

The existing buildings at the site consist of a detached residence, outbuildings, and storage structures. The buildings all appear to be well constructed and maintained and did not exhibit any evidence of potential environmental contamination.

4.4 Past Uses of the Site

It appears the site has always been used as a residential development and/or undeveloped land.

4.5 Adjacent Properties

The following properties and land uses were observed adjacent to the subject property:

North – Whitefish Lake/Undeveloped Land
South – Whitefish Resort/Undeveloped Land
East – Range Road 133
West – Whitefish Lake/Whitefish Resort

All of the neighbouring properties appeared to be well maintained or natural (lake/undeveloped) with no evidence of potential environmental contamination.

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES

5. RECORDS REVIEW

The following records were researched, and the findings noted below:

5.1 Development History and Land Title Search of the Property

A search of historical land titles to 1985 was conducted for the subject property.

Based on the results of the land title historical review, it appears that the property is currently owned by Rodney Allen Rosychuk (since 2022). Prior to then, Rose B Rosychuk (2014) and William and Rose Rosychuk (1985) have owned the subject site. No liens or other encumbrances indicating potential environmental concern are registered on Title. See Appendix I: *Land Title Survey* for a copy of the recent land title documents.

5.2 Air Photo Review

An air photograph analysis was completed for the subject property with air photos from 1974 – 2025 being observed. Select aerial photographs are included in Appendix A: *Maps/Sketches/Figures* for reference.

Based on the air photo review, the site has remained relatively unchanged over all these years. The access and structures at the site are visible in all the air photos and no major new developments can be observed within the vicinity of the subject site. No potential environmental concerns were noted during the air photo review.

5.3 Environmental Protection Orders

A Historical Environmental Enforcement search was conducted and found no records of any prior compliance issues with regards to Alberta Environment and Parks' current and past legislation for the current property owner. See Appendix E: *Environmental Protection Orders* for further information.

A request was made to the Alberta Environment and Water's Freedom of Information and Protection of Privacy (FOIPP) Office both under the FOIPP Act and for information routinely available under the Environmental Protection and Enhancement (EPEA) Legislation for any information related to any contamination within the subject property. A search of Alberta Environment and Sustainable Resource Development record holdings did not find any information pertinent to this request, although we were directed to follow up with the Environmental Site Assessment Repository which is discussed in greater detail in Section 5.6: ESAR Search.

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5.4 ASCA Search

A search of the Alberta Safety Codes Association Tank Database was conducted to determine if there are any above or below ground tanks located at the subject site. No records were found. See Appendix G: *ASCA Search* for the results of the tank database search.

5.5 Water Well Search

A review of the Water Well Drilling Report from the Government of Alberta listed eight wells located in the vicinity of the subject property. The wells were all drilled for domestic, industrial, or investigative purposes. Nothing of note was identified in the well logs. See Appendix D: *Well Survey* for further information on the summary of the well logs.

5.6 ESAR Search

A search was completed of Alberta Environment's Environmental Site Assessment Repository (ESAR) for scientific and technical information pertaining to the Property and/or assessed sites within the vicinity of the subject property. The following information was found:

- Reclamation Certificate for a former Bow Valley Industries Ltd. well site located at NE ¼ Sec. 4 62-13-W4M

Nothing was found regarding the subject property. The reclamation certificate was issued in 1979 was nothing identified in the certificate that would warrant any potential environmental concern to the subject property.

Please refer to http://www.esar.alberta.ca/esarmain.aspx for a copy of all technical information and data that is available for these properties. See Appendix H: *ESAR Search* for a summary of some of the results of the search.

5.7 Abadata Search

AbaData (from Abacus Datagraphics Ltd.) is an oil and gas mapping software tool that provides datasets from AER and AENV which includes well sites, pipelines, facility information, spill data and other data which is routinely updated. The AbaData search identified a Canadian Natural Resources Ltd. well site located southwest of the subject property. The well site was listed as abandoned since 2010 and there were no records of any spills or leaks with regards to the well site. The well site was located several hundred metres away from the subject site and therefore does not pose any potential environmental concern. The results of the AbaData Search are included in Appendix F: *AbaData Search*.

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5.8 Fire Insurance Map

Fire Insurance maps were prepared by underwriters and can provide details on building uses and construction, minor property features, and USTs. A search of the Smoky Lake County Underwriters Survey did not identify any information for the subject site.

5.9 Previous Phase I ESA

No previous environmental site assessments were made available as part of this review.

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6. FINDINGS AND RECOMMENDATIONS

Based on the results of our assessment, the following conclusions and recommendations would appear to be warranted:

1. We observed no evidence of surface staining or contamination of the site area that would warrant further assessment and/or testing of the sub base soils at this property.

2. The site has not had any activities or development on it that would be considered posing any environmental concern.

3. Due to the age of the original structures at the site, it is recommended that prior to any planned demolition a formal assessment for ACM's and Lead Based Material's be conducted.

4. Due to the proximity to Whitefish Lake, any new development at the site must satisfy Water Act and Environmental Regulations for the area.

5. Based on the information made available at the time of this Phase I Environmental Site Assessment there is no evidence of environmental contamination in connection with the subject property and no further environmental investigation is required.

Overall, there is no evidence of current environmental contamination in connection with the subject property based on the available information and the site review. Therefore, it is the opinion of Bolson Engineering and Environmental Services that no further environmental investigation is required for this parcel at this time.

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7. STANDARD LIMITATIONS

This Phase I Environmental Site Assessment report has been prepared exclusively for Massif Energy and its agents. The purpose of this report is to provide the Client with an assessment of the potential for the presence of contamination of the portion of the property located at NE ¼ Sec. 4 62-13-W4M in Smoky Lake County, AB. This report is neither an endorsement nor a condemnation of the Site.

The findings and conclusions documented in this report have been prepared in a manner consistent with that level of care and skill normally exercised by qualified professionals currently practicing in the area of environmental assessment. No other warranty, expressed or implied, is made.

The findings presented in this report are based upon the conditions of the Site during the site review by Bolson Engineering personnel. As we conducted no subsurface explorations or testing on this site, a potential remains for the presence of unknown, unidentified, or unforeseen surface or subsurface contamination. Further evidence of such potential site contamination would require appropriate exploration and testing.

If new information is developed in future work (which may include excavations, boreholes, or other studies), Bolson should be contacted to re-evaluate the conclusions of this report, and to provide amendments as required.

No warranty, expressed or implied, is given concerning contamination at this site. Any use which a third party makes of this report, or reliance on or decisions to be based on it, are the responsibility of such third parties. Bolson will accept no damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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8. SITE ASSESSOR QUALIFICATIONS

Company Background:

- Founded in 2007
- Provides Municipal, Industrial and Commercial Engineering and Environmental Services for the North/Central Alberta Region
- Completed several ESA's in Edmonton and North Central Alberta Region
- $5,000,000 Commercial General Liability Insurance
- $2,000,000 Certificate of Professional Liability Errors & Omissions
- Phase I ESA's as per CSA Standard Z768-01
- Phase II ESA's as per CSA Standard Z769-00

Principal Engineers:

Trent Thompson, P. Eng.
Education:
Bachelor of Science from Department of Civil and Environmental Engineering; School of Mining and Petroleum Engineering, University of Alberta, 2002

Relevant Continuing Education:
Environmental Assessment and Remediation presented by Dr. Nasrat Hijazi (EPIC-Education)
Understanding Environmental Regulations presented by Dr. Stephen Lamming and Ms. Teresa Meadows (EPIC-Education)

Contact Information:
E-mail: tthompson@bolson.ca
Phone: 780-668-8571

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES

9. REFERENCES

Agriculture and Agri-Food Canada – Soil Order Map of Canada, Accessed July 3rd, 2025. www.agr.gc.ca, 2020

Alberta Geological Map, Accessed July 3rd, 2025. http://www.ags.gov.ab.ca/publications/MAP/PDF/MAP_143.PDF

Alberta Geological Survey – Geology of the Yellowhead Corridor, Accessed July 3rd, 2025. http://www.ags.gov.ab.ca/publications/MAP/PDF/MAP_234.PDF

Alberta TPR – ACIMS Data Search, Accessed July 3rd, 2025. http://tpr.alberta.ca/parks/heritageinfocentre/datarequests/default.aspx

Citystats.ca – Smoky Lake County - Detail City Profile – Temperature and Precipitation Information Accessed July 3rd, 2025. http://www.citystats.ca

Google Maps – Smoky Lake County, Accessed July 3rd, 2025. http://maps.google.com/

Spin II Database. Alberta Registries, Accessed July 3rd, 2025. https://alta.registries.gov.ab.ca/spinii/logon.aspx

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APPENDIX A – *MAPS/SKETCHES/FIGURES*

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES	**Client:** Massif Energy		**Project No.** 110-2560
	Date: 2025-07-03	**Title:** Phase I Environmental Site Assessment NE ¼ Sec. 4 62-13-W4M Smoky Lake County, AB (Location Map)	**Figure:** 1

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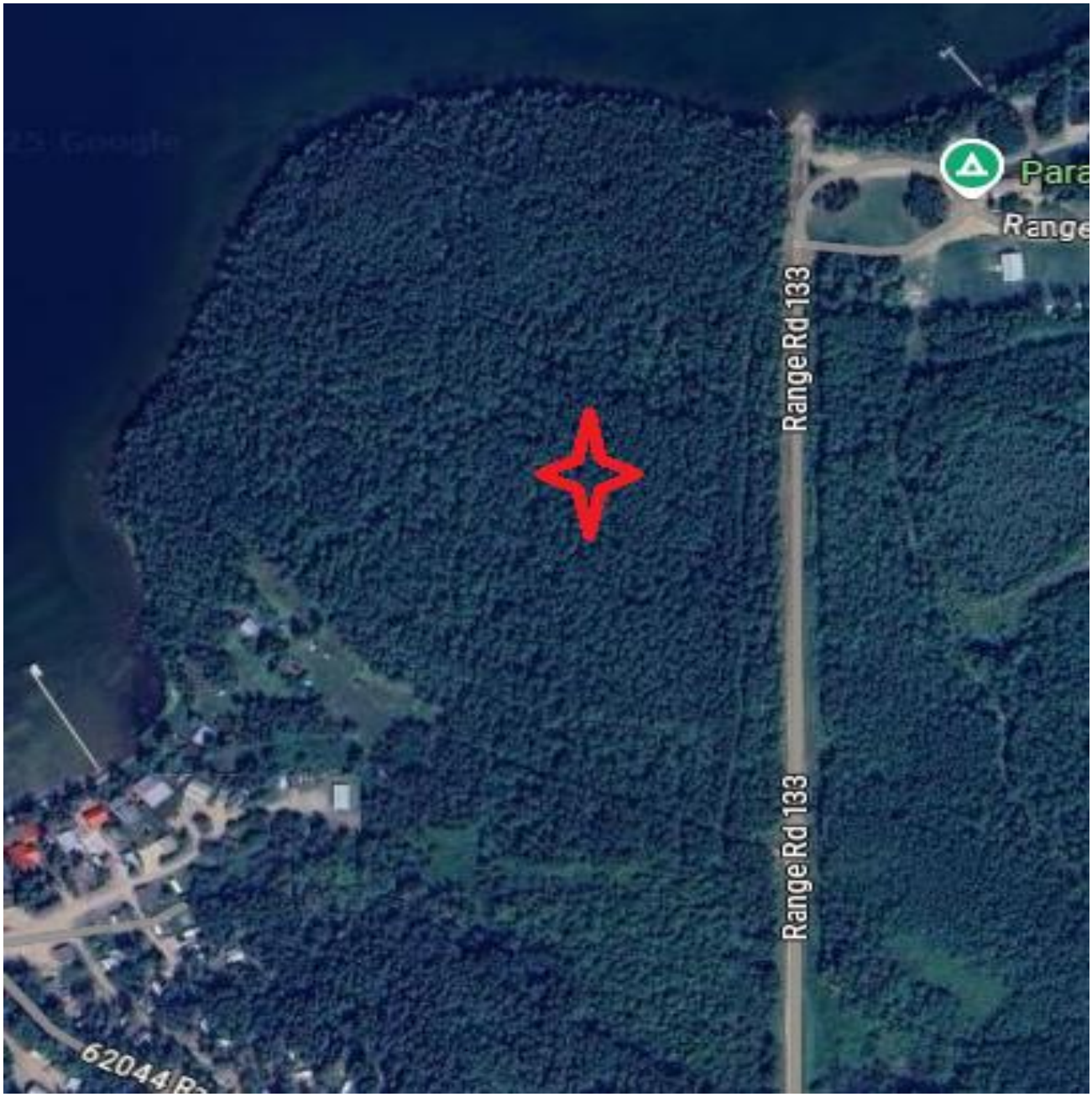

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES	**Client:** Massif Energy		**Project No.** 110-2560
	Date: 2025-07-03	**Title:** Phase I Environmental Site Assessment NE ¼ Sec. 4 62-13-W4M Smoky Lake County, AB (2025 Aerial Photograph)	**Figure:** 2

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ENGINEERING AND ENVIRONMENTAL SERVICES

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES	**Client:** Massif Energy	**Project No.** 110-2560
Date: 2025-07-03	**Title:** Phase I Environmental Site Assessment NE ¼ Sec. 4 62-13-W4M Smoky Lake County, AB (2019 Aerial Photograph)	**Figure:** 3

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES	**Client:** Massif Energy	**Project No.** 110-2560
Date: 2025-07-03	**Title:** Phase I Environmental Site Assessment NE ¼ Sec. 4 62-13-W4M Smoky Lake County, AB (2012 Aerial Photograph)	**Figure:** 4

FIGURE 5

FIGURE 6

FIGURE 7

FIGURE 8

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FIGURE 9

FIGURE 10

FIGURE 11

FIGURE 12

FIGURE 13

FIGURE 14

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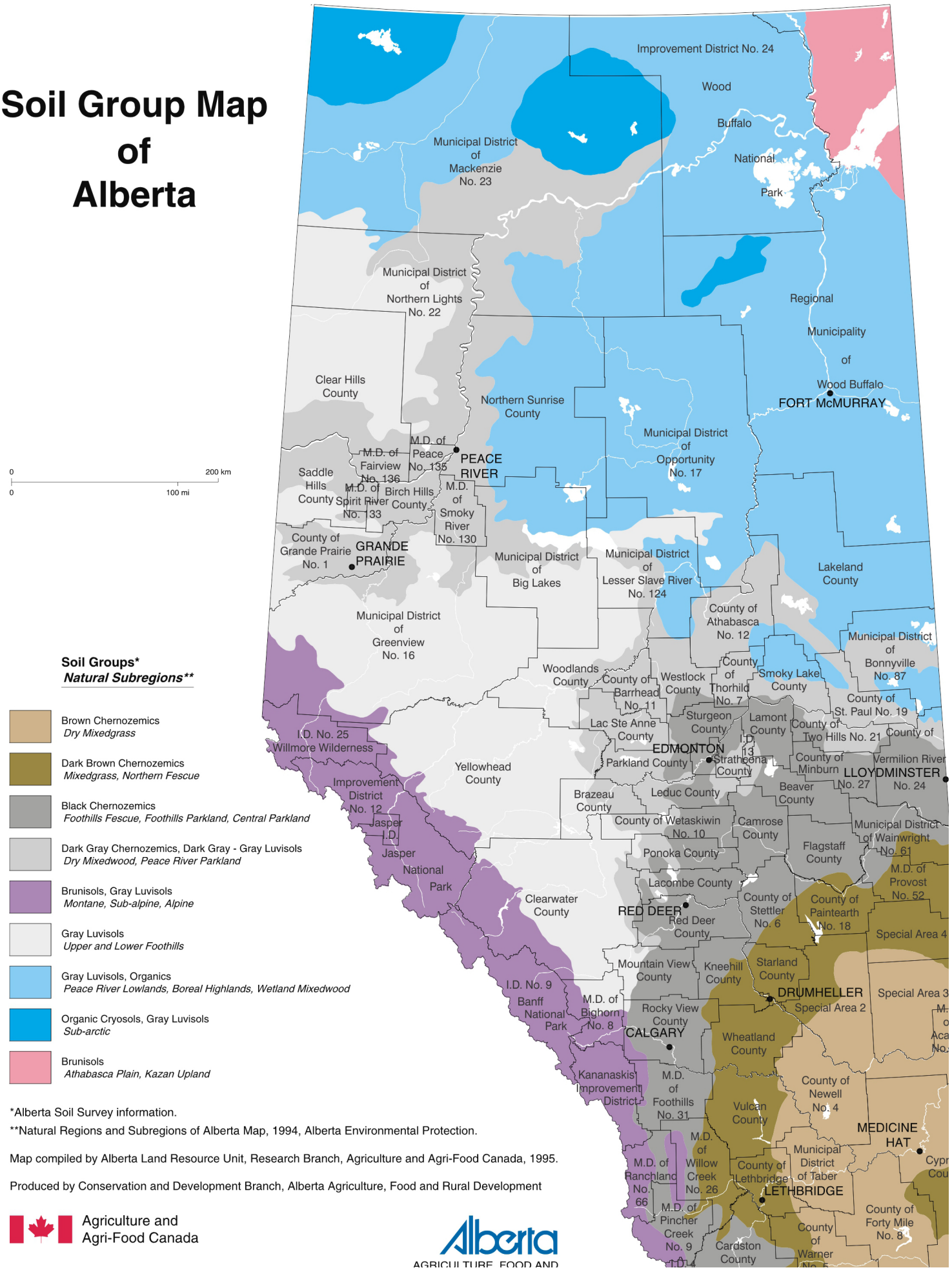
APPENDIX B: *SOIL CLASSIFICATION OF CANADA*

Soil Group Map of Alberta



Soil Groups*
Natural Subregions**

- Brown Chernozemics — *Dry Mixedgrass*
- Dark Brown Chernozemics — *Mixedgrass, Northern Fescue*
- Black Chernozemics — *Foothills Fescue, Foothills Parkland, Central Parkland*
- Dark Gray Chernozemics, Dark Gray - Gray Luvisols — *Dry Mixedwood, Peace River Parkland*
- Brunisols, Gray Luvisols — *Montane, Sub-alpine, Alpine*
- Gray Luvisols — *Upper and Lower Foothills*
- Gray Luvisols, Organics — *Peace River Lowlands, Boreal Highlands, Wetland Mixedwood*
- Organic Cryosols, Gray Luvisols — *Sub-arctic*
- Brunisols — *Athabasca Plain, Kazan Upland*

*Alberta Soil Survey information.

**Natural Regions and Subregions of Alberta Map, 1994, Alberta Environmental Protection.

Map compiled by Alberta Land Resource Unit, Research Branch, Agriculture and Agri-Food Canada, 1995.

Produced by Conservation and Development Branch, Alberta Agriculture, Food and Rural Development

Agriculture and Agri-Food Canada

Alberta
AGRICULTURE, FOOD AND

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX C: *ACIMS SEARCH DATA*

Date: 2/7/2025
Requestor: Consultant
Reason for Request: Site Assessment
SEC: 04 **TWP:** 062 **RGE:** 13 **MER:** 4

Alberta Parks

Non-sensitive EOs (updated: June 2022)

M_RR_TTT_SS	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D

No Non-sensitive EOs Found: Next Steps - See FAQ (https://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-acims/faqs.aspx#2 - Process)

Sensitive EOs (updated: June 2022)

M-RR-TTT	EO_ID	ECODE	S_RANK	SNAME	SCOMNAME	LAST_OBS_D

No Sensitive EOs Found: Next Steps - See FAQ (https://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-acims/faqs.aspx#2 - Process)

Updated: Mar 20, 2025

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APPENDIX D: *WATER WELL SURVEY*

Reconnaissance Report

View in Metric

Export to Excel

Groundwater Wells

Please click the water Well ID to generate the Water Well Drilling Report.

GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
167605	NE	4	62	13	4	UNKNOWN DRILLER		170.00	Chemistry	Domestic				ROSYCHUK, ROSE			0.00
210897	15	4	62	13	4	UNKNOWN DRILLER		15.00	Chemistry	Domestic	2			WITSCHEN, EDWARD	10.00		0.00
210903	NE	4	62	13	4	UNKNOWN DRILLER		25.00	Chemistry	Domestic				HOFFMAN, JOE			0.00
210906	10	4	62	13	4	UNKNOWN DRILLER	1970-11-02	1,755.00	Structure Test Hole	Industrial				SYRACUSE OILS LTD			0.00
274421	NE	4	62	13	4	MCALLISTER HOLDINGS LTD.	1979-11-01	180.00	New Well-Decommissioned	Investigation		8		CICON ENGINEERING #WHITEFISH			0.00
274427	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-05	260.00	New Well-Decommissioned	Investigation		6		CICON ENGINEERING #WHITEFISH			0.00
274429	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-05	120.00	New Well-Decommissioned	Investigation		4		CICON ENGINEERING #WHITEFISH			0.00
274432	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-06	140.00	New Well-Decommissioned	Investigation		5		CICON ENGINEERING #WHITEFISH			0.00

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 167605
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1992/07/31

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ROSYCHUK, ROSE	[redacted]				[redacted]

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained
Map

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Unknown

Proposed Well Use
Domestic

Type of Work
Chemistry

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
170.00 ft			

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	170.00

Surface Casing (if applicable)

Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner

Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal

Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type

Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack

Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 167605
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1992/07/31

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
ROSYCHUK, ROSE	[redacted]				[redacted]

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Depth ft
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal

Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 210903
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1987/09/14

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
HOFFMAN, JOE	[redacted]				[redacted]

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Drilling Information

Method of Drilling
Unknown

Proposed Well Use
Domestic

Type of Work
Chemistry

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
25.00 ft			

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	25.00

Surface Casing (if applicable)
Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type
Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack
Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 210903
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1987/09/14

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
HOFFMAN, JOE	[redacted]				[redacted]

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Type
Depth ft
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Remedial Action Taken
Well Disinfected Upon Completion
Geophysical Log Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
SEE VG CHEMISTRY SAMPLE #9947

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 210897
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1964/06/04

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
WITSCHEN, EDWARD	[redacted]				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	15	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.338705 Longitude -111.887023
How Location Obtained
Map

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Hand Dug

Proposed Well Use
Domestic

Type of Work
Chemistry

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 0.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1971/10/01		10.00

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
15.00 ft			

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	15.00

Surface Casing (if applicable)

Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner

Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal

Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type

Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack

Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 210897
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1964/06/04

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
WITSCHEN, EDWARD	[redacted]				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	15	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.338705 Longitude -111.887023
How Location Obtained: Map

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate 0.00 igpm
Recommended Pump Intake Depth (From TOC) 0.00 ft
Pump Installed
Type
Depth ft
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD Yes

Additional Comments on Well

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date 1971/10/01
Start Time 12:00 AM
Static Water Level 10.00 ft

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)

Method of Water Removal

Type
Removal Rate igpm
Depth Withdrawn From 0.00 ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 210906
GoA Well Tag No.
Drilling Company Well ID
Date Report Received

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SYRACUSE OILS LTD					

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	10	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.335089 Longitude -111.887022
How Location Obtained
Field

Elevation 1972.00 ft
How Elevation Obtained
Survey-Transit

Drilling Information

Method of Drilling
Drilled

Proposed Well Use
Industrial

Type of Work
Structure Test Hole

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
1755.00 ft			1970/11/02

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	1755.00

Surface Casing (if applicable)

Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner

Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal

Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type

Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack

Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
UNKNOWN DRILLER

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GIC Well ID 210906
GoA Well Tag No.
Drilling Company Well ID
Date Report Received
GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
SYRACUSE OILS LTD					

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	10	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.335089 Longitude -111.887022
How Location Obtained: Field

Elevation 1972.00 ft
How Elevation Obtained: Survey-Transit

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level: in
Is Artesian Flow:
Rate: igpm
Is Flow Control Installed:
Describe:

Recommended Pump Rate: igpm
Recommended Pump Intake Depth (From TOC): ft
Pump Installed:
Depth: ft
Type:
Make:
H.P.:
Model (Output Rating):

Did you Encounter Saline Water (>4000 ppm TDS):
Depth: ft
Gas:
Depth: ft
Remedial Action Taken:
Well Disinfected Upon Completion:
Geophysical Log Taken: Electric
Submitted to ESRD: Electric

Sample Collected for Potability:
Submitted to ESRD:

Additional Comments on Well:

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type:
Removal Rate: igpm
Depth Withdrawn From: ft

If water removal period was < 2 hours, explain why:

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well: UNKNOWN NA DRILLER
Certification No: 1
Company Name: UNKNOWN DRILLER
Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274421
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained
Not Verified

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Investigation

Type of Work
New Well-Decommissioned
View Decommissioning Report

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
2.00		Topsoil
28.00		Brown Clay
36.00		Dry Sand
56.00		Brown Till
114.00		Gray Till
120.00		Dirty Sand
140.00		Gray Till
180.00		Gray Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
180.00 ft		1979/11/01	1979/11/01

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	180.00

Surface Casing (if applicable)
Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type
Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack
Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274421
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Depth ft
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
ORIGINAL LOC = NE-4-52-13-4.

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER HOLDINGS LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274427
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Investigation

Type of Work
New Well-Decommissioned
View Decommissioning Report

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
2.00		Topsoil
30.00		Brown Clay
60.00		Gray Till
62.00		Sand
168.00		Gray Till
260.00		Gray Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
260.00 ft		1979/11/01	1979/11/05

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	260.00

Surface Casing (if applicable)
Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type
Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack
Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner

Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GIC Well ID 274427
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Depth ft
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
ORIGINAL LOC = NE-4-52-13-4.

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274429
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained
Not Verified

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Investigation

Type of Work
New Well-Decommissioned
View Decommissioning Report

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
2.00		Topsoil
30.00		Brown Till
80.00		Gray Till
120.00		Gray Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
120.00 ft		1979/11/05	1979/11/05

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	120.00

Surface Casing (if applicable)
Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type
Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack
Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274429
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Depth ft
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD
Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
ORIGINAL LOC = NE-4-52-13-4.

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274432
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained
Not Verified

Elevation ft
How Elevation Obtained
Not Obtained

Drilling Information

Method of Drilling
Rotary

Proposed Well Use
Investigation

Type of Work
New Well-Decommissioned
View Decommissioning Report

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
2.00		Topsoil
41.00		Gray Till
44.00		Sand
91.00		Gray Till
140.00		Gray Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
140.00 ft		1979/11/06	1979/11/06

Borehole

Diameter (in)	From (ft)	To (ft)
0.00	0.00	140.00

Surface Casing (if applicable)
Size OD : 0.00 in
Wall Thickness : 0.000 in
Bottom at : 0.00 ft

Well Casing/Liner
Size OD : 0.00 in
Wall Thickness : 0.000 in
Top at : 0.00 ft
Bottom at : 0.00 ft

Perforations

From (ft)	To (ft)	Diameter or Slot Width(in)	Slot Length (in)	Hole or Slot Interval(in)

Perforated by

Annular Seal
Placed from 0.00 ft to 0.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type
Size OD : 0.00 in

From (ft)	To (ft)	Slot Size (in)

Attachment
Top Fittings
Bottom Fittings

Pack
Type
Grain Size
Amount

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner
Date approval holder signed

Water Well Drilling Report

View in Metric | Export to Excel

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

GOWN ID

GIC Well ID 274432
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1980/08/13

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
CICON ENGINEERING #WHITEFISH	EDMONTON				

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NE	4	62	13	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 54.336897 Longitude -111.883929
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Additional Information

Measurement in Imperial

Distance From Top of Casing to Ground Level in
Is Artesian Flow
Rate igpm
Is Flow Control Installed
Describe

Recommended Pump Rate igpm
Recommended Pump Intake Depth (From TOC) ft
Pump Installed
Depth ft
Type
Make
H.P.
Model (Output Rating)

Did you Encounter Saline Water (>4000 ppm TDS)
Depth ft
Gas
Depth ft
Well Disinfected Upon Completion
Geophysical Log Taken
Remedial Action Taken
Submitted to ESRD

Sample Collected for Potability
Submitted to ESRD

Additional Comments on Well
ORIGINAL LOC = NE-4-52-13-4.

Yield Test

Taken From Ground Level | Measurement in Imperial

Test Date	Start Time	Static Water Level
		ft

Method of Water Removal
Type
Removal Rate igpm
Depth Withdrawn From ft

If water removal period was < 2 hours, explain why

Water Diverted for Drilling

Water Source	Amount Taken	Diversion Date & Time
	ig	

Contractor Certification

Name of Journeyman responsible for drilling/construction of well
UNKNOWN NA DRILLER

Certification No
1

Company Name
MCALLISTER DRILLING LTD.

Copy of Well report provided to owner
Date approval holder signed

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX E: *ENVIRONMENTAL PROTECTION ORDERS*

Alberta.ca

Home

Historical environmental enforcement search

Find historical enforcement records taken against a company or individual related to Alberta Environment and Protected Areas legislation.

On this page:

Search historical compliance enforcement records taken against a company or individual related to Alberta Environment and Protected Areas current and past legislation.

Alberta Energy Regulator (AER) enforcement actions are not included in this database. To access AER enforcement records, visit the AER website at:

- Compliance Dashboard

Suggestions for searching

The Accountable Party field in the lookup tool is not case specific.

To improve search results on Accountable Party(s), note the following tips:

- When searching for corporations ending in Limited, Ltd, Incorporated and/or Inc, type only the first portion of the corporate name to capture possible variations. (Example: ABC Company)
- If you are unsure of the exact title of a company, type partial spellings to improve search results. (Example: ABC Company type only ABC)
- When searching for an individual, type the last name first and use only partial spellings (Example: for John Smith type Smith, J or just Smith to capture any/all variations).
- Use the name when a Municipality is the accountable party:
  (Example: City of Lethbridge type Lethbridge, City or Municipal District of Opportunity type Opportunity No. 17, Municipal District)

The enforcement search tool summarizes data collected at different points in time and does not necessarily represent the most current information available. This information is provided without warranty of any kind, and the department disclaims any liability for losses or damages resulting from the use of or reliance on this information.

Search Results

We found 0 matches using the following search criteria:
Accountable Party: [redacted]
Action: All
Date range: From 1/1/1950 To 7/2/2025

Search completed on 7/2/2025

Legend: Act codes and names

Act code	Act name
ACA	Agricultural Chemicals Act
AEPEA, AEPEA(R)	Environmental Protection and Enhancement
BCA	Beverage Container Act
CAA	Clean Air Act
CC	Criminal Code of Canada
CCEMA	Climate Change and Emissions Management Act
CEPA	Canadian Environmental Protection Act
CWA	Clean Water Act

DEA	Department of the Environment Act
DGTHA	Dangerous Goods Transportation and Handling Act
EMCRA	Emissions Management and Climate Resilience Act
FA, FEDFISH, FFA	Fisheries Act (Canada)
FRSTA	Forests Act
HCA	Hazardous Chemicals Act
LA	Litter Act
MBCA	Migratory Birds Convention Act, 1994
OH&S	Occupational Health and Safety Act
PCPA	Pest Control Products Act
PLA	Public Lands Act
TDGA	Transportation of Dangerous Goods Act
TDGCA	Transport of Dangerous Goods Control Act
WA	Water Act
WRA	Water Resources Act

Contact

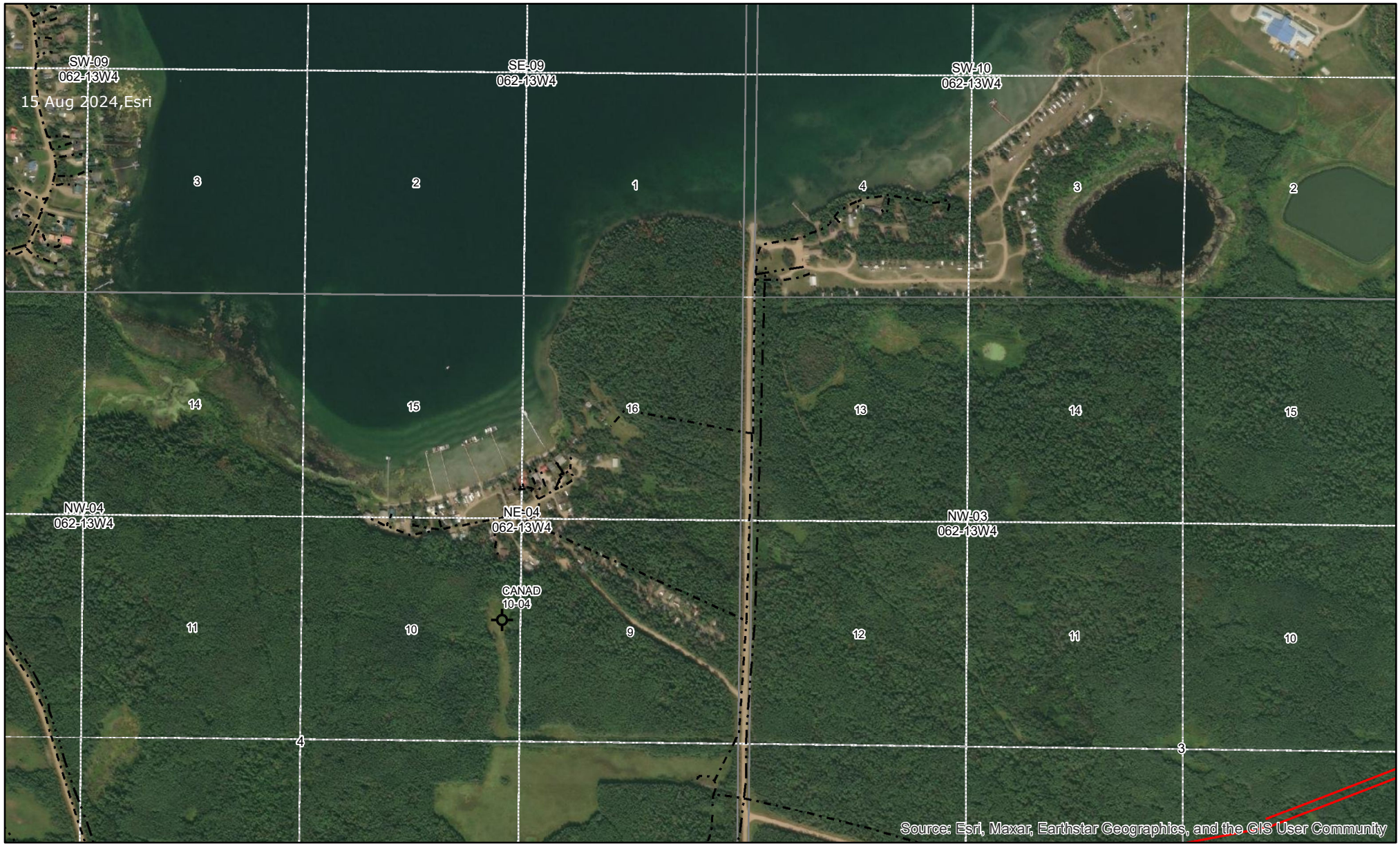
If you have questions about the enforcement actions records search, or require assistance with a search, contact the Environmental Investigations Section at:

Email: EPA.RAD-EnvironmentalInvestigations@gov.ab.ca

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX F: *ABADATA SEARCH*

110-2560



Wednesday, July 2, 2025

1:9,370

0 365 730 1,460 ft

AbaData

AbaData

Well Information

100 / 10-04-062-13 W4 / 2

CANADIAN NATURAL RESOURCES LIMITED | 100 / 10-04-062-13 W4 / 2

Government Well Data Current To May 30, 2025

License #:	0037629	**License Date:**	January 20, 1970
Well Name:	CNRL CRAIGND 10-4-62-13		
License Status:	Abandoned	**License Status Date:**	December 3, 2010
Within:	10-04-062-13 W4M	**H2S (%):**	
Spud Date:	February 8, 1970	**Final Drill Date:**	February 11, 1970
Status:	ABD	**Abandoned Date:**	December 3, 2010
Surface:		**Downhole:**	
Offsets:	S 583.7 W 426.7	Offsets:	S 583.7 W 426.7
Latitude:	54.335251	Latitude:	54.335251
Longitude:	-111.884280	Longitude:	-111.884280
Ground Elevation:	601.1 m | 1972 '	Total Depth:	534.90 m | 1755 '
Operator:		**Pool:**	

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX G: *ASCA SEARCH*

Safety Codes Council
Alberta Safety Codes Authority

July 3, 2025

Trent Thompson
Bolson Engineering
21707 80 Ave NW
Edmonton, AB T5T 4S2

Email: tthompson@bolson.ca

Re: ASCA Storage Tank Search – File# 110-2560 Order ID#: 18298

Dear Trent,

As per your search request submitted on July 3 , 2025, Alberta Safety Codes Authority (ASCA) has searched for the storage tank database for existing and former installations of storage tank systems, as defined by the Fire Code, including those known to be inside structures at the following address:

NE 4 62 13 W4

The search of the storage tank database determined **no records** were available for all requested locations.

The Freedom of Information and Protection of Privacy Act governs the information provided. Please note that the database is not complete. The main limitation of the database is that it only includes, information reported through registration and permitting, or a survey of abandoned sites completed in 1992 and should not be considered a comprehensive inventory of all past or present storage tank sites. ASCA's storage tank systems database is solely maintained based on information provided by owners. and or operators of storage tank systems; therefore, the database may not reflect information related to all existing or former storage tank systems in Alberta. Further information on storage tank systems or investigations involving a spill/release or contamination may be filed with the local fire service or Alberta Environment.

Regards,

Fredwatson Desroches
Program Advisor, Client Support Services
Safety Codes Service Delivery & Accreditation
Safety Codes Council | safetycodes.ab.ca
(587) 415-4082| toll-free 1-888-413-0099

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX H: *ESAR SEARCH*

Date Searched August 16/79
Date Recorded August 16/79

Bow Valley Exploration

Box 6610, Postal Station "D"
300, 630 Sixth Avenue S.W.
Calgary, Alberta, Canada T2P 2V8

Telephone 403/231-1211
Telex 038-24692
Cable Bow Valley

Our Ref. 213629
Your Ref.

July 27, 1979

Surface Reclamation Council
1100, 9820 - 106th Street
Edmonton, Alberta T5K 2J6

Dear Sir:

Re: BVX ET AL CRAIGEND 7-7-62-13 W4M
Craigend Area, Alberta

Further to our recent discussions with Carrie Corbiell of the Department of Energy and Natural Resources, we are enclosing a copy of a survey plan for the captioned well which was drilled dry and abandoned.

The wellsite and access roadway as shown outlined in red on the survey plan are ready for inspection, and if satisfactory, we would appreciate receiving a Reclamation Certificate prior to the November 17 rental date.

Yours very truly,

BOW VALLEY EXPLORATION

[redacted]

J.L. Lambert (Mrs.)
Land Secretary

/jll
Encl.

Phoned Co
+ certificate issued
for SE 7
M.O.

Copy Sent To Sharon Guenette
Date August 16/79

Division of Bow Valley Industries Ltd.

Plan Showing Survey Of

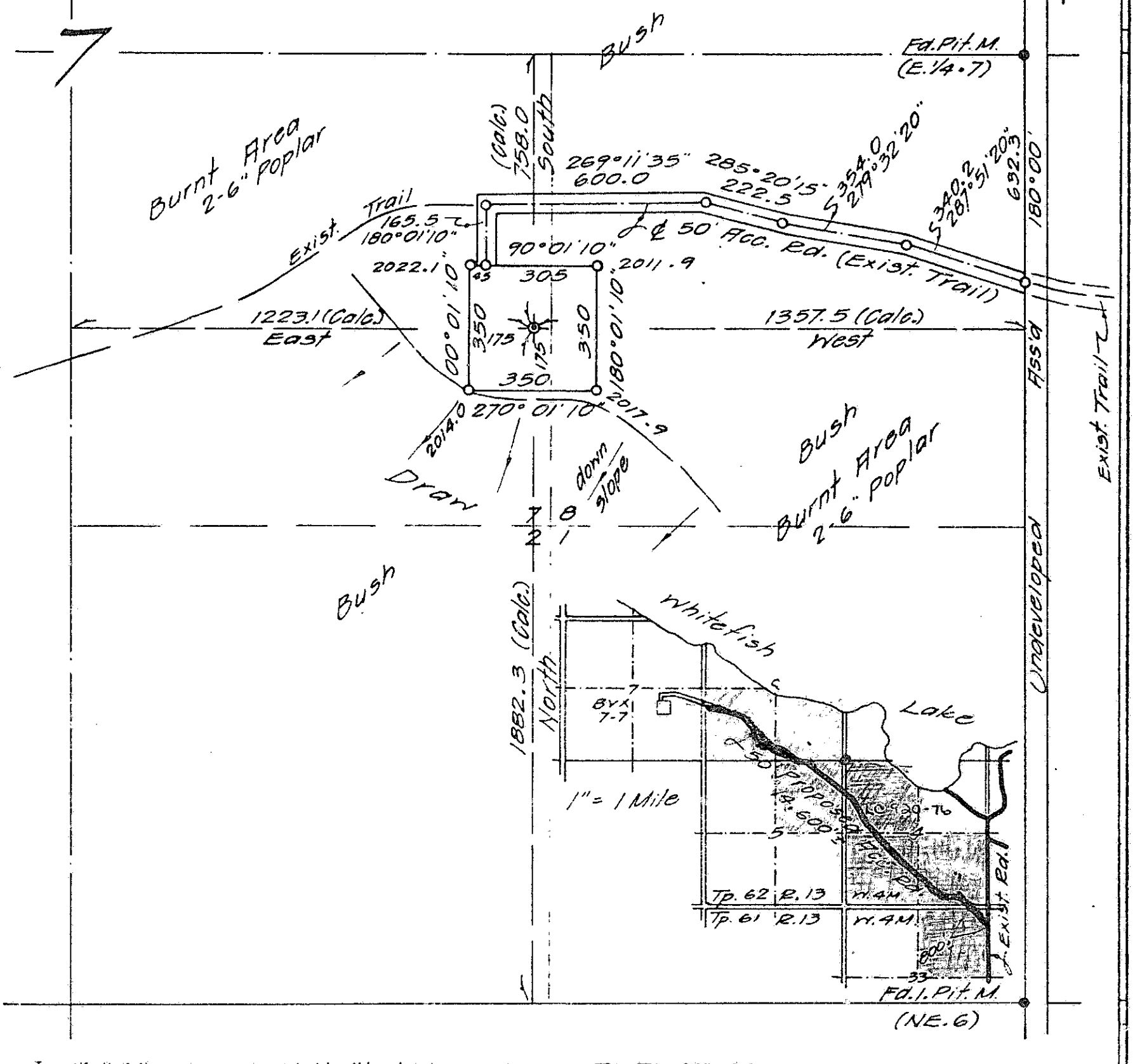
3VX et al Craigend 7-7-62-13

Well Site and Access Road (Proposed)

IN

L.S. 7 Sec. 7 Tp. 62 Rge. 13 W.4 M.

SCALE: 400' = 1"



I certify that the survey represented by this plan is correct and true to the best of my knowledge and was completed on the 16th day of November, 1976.

[redacted] A.L.S.

[redacted] Witness

ALL WEST SURVEYS — EDMONTON / CALGARY

OPERATOR:

Bow Valley Industries Ltd.

[redacted]

[redacted]

ELEVATION: 2021 Ground

CO-ORDINATES:

1882.3 ft. N. of S. Bdy.
1357.5 ft. W. of E. Bdy. } Sec. 7

AREAS:

	ACRES
Well Site =	2.81
Access Road =	1.93
Total =	4.74

Survey marks found shown thus: ●
Survey marks placed shown thus: O
Portions referred to outlined in red.
Distances are in feet and decimals.

DATUM: Al-Con SM # 3742
Elev.: 1985.35

JOB NO E-650-76

NE¼ - 33 - 61 - 13 - 4 continued

SE¼ of LSD # 16:
Miscellaneous Permit # 9011 -
Henry Pruden,
[redacted]
Alta.

Alberta
ENVIRONMENT

MEMORANDUM

FROM S. Tracy, Secretary
Land Conservation and
Reclamation Council

TO Edmonton Searches

OUR FILE REFERENCE

YOUR FILE REFERENCE

DATE August 16/79

TELEPHONE 427-6894

SUBJECT NE¼ - 33 - 61 - 13 - 4

Kindly advise this office of the name of the surface owner of the above land.

[redacted]

for M. O'Hara
Records Officer

The above land is non-patented and administered by the Department of Energy and Natural Resources.

Application for Grazing Lease/Ranch # 790198 -
Roy Russell Skupenia,
[redacted]

Application for Grazing Lease/Ranch # 790177 -
Walter Whitford

Part of LSD # 16;
Application for Grazing Lease/Ranch # 780694 -
Henry Pruden,
[redacted] Alta.

... 2.

FLU 203/78

Alberta

ENERGY AND
NATURAL RESOURCES
Land Conservation
and Reclamation Council

RECOMMENDATION FOR ISSUANCE OF RECLAMATION CERTIFICATE

DISPOSITION LO App 920-76 DATE Aug 30, 1979

COMPANY NAME Bow Valley Industries Ltd

LEGAL DESCRIPTION NE 33-61-13-W4
NE 5, W½ 4-62-13-W4

This is to certify that the land surface utilized in relation to the subject disposition has been reclaimed in accordance with the conditions as specified in the Letter of Authority dated Dec 10 1976. It is therefore my recommendation that a Reclamation Certificate can be issued at this time.

Allan Lowe
Reclamation Council Member

ATTACHED
SEP 17 1979

Copy Sent To Ross Pituka
Date Sept. 24/79

NE ¼ - 5 OCCUPANT - GRAZING LEASE
MORRIS P. LUTZ [redacted]
UNABLE TO LOCATE MOVED FROM CITY TO VILNA.
NEW RESIDENCE UNOCCUPIED.

NW ¼ - 4 APPLICATION FOR GRAZING PERMIT
ROY RUSSELL SHUPENIA.
[redacted]
NO CONTACT - NO ANSWER AT CITY RESIDENCE

SE ¼ - 4 DIRECTOR - VETERAN'S LAND ACT
473 FEDERAL PUBLIC BLDG
EDMONTON, ALTA.
NO CONTACT

MRS. ANNIE PRUDELL - AGREEMENT FOR SALE
[redacted] ~~SCOTTISH KARE~~ ALTA ~~ALTA.~~
~~- NO COMMENT~~ - [redacted]
SATISFIED.

NE ¼ - 33 HENRY PRUDEN [redacted]
[redacted] NO ANSWER.

NE ¼ - 33 WALTER WHITFORD
[redacted]
Unable to locate nor reach by phone.

N ½ 33-61-13-4
S½ & NW¼-4-62-13-4
NE¼ 5-62-13-4

LAND CONSERVATION AND RECLAMATION COUNCIL
INSPECTION REPORT

_____ _____ LS. _____ SEC. _____ TP. _____ RGE. _____ W. _____ MER.

1. OWNER'S NAME E & NR (ALLAN LOOSE) ADDRESS [redacted]

   IF NOT CONTACTED, INDICATE WHY _____

   OWNER'S COMMENTS SATISFACTORY.

2. ~~OCCUPANT'S~~ OWNER NAME COUNTY #13 ADDRESS SMOKY LAKE, ALTA

   IF NOT CONTACTED, INDICATE WHY _____

   ~~OCCUPANT'S~~ OWNER COMMENTS SATISFACTORY.

3. RELEASE OBTAINED FROM OWNER/OCCUPANT TO RETAIN N/A

4. COMPANY REPRESENTATIVE CONTACTED: _____ YES _____ NO ✓

   COMMENTS _____

5. ORDER ISSUED YES _____ NO ✓ DATE _____ TIME _____

   WORK REQUIRED _____

6. TOPOGRAPHY OF ADJACENT AREA AND CURRENT USAGE ROLLING, BUSH PASTURE

7. INSPECTORS COMMENTS Access road outlined on survey sketch is an existing trail. County has built new roads in the area to service new residence and for the construction of a camp ground near the lake.

8. CONDITION OF LEASE ON FINAL INPSECTION DATE SEPT 25/79 TIME 1:40 P.M

   BRUSH TOTAL DEBRIS NIL ROCKS COMMON TO AREA SUMP NIL

   PITS NIL SOIL GREY WOODED CULTIVATION N/A CONTOUR ROLLING

   SEEDING YES FENCES NIL POWER LINES NIL OTHER _____

   COMMENTS New construction takes in portions of the access road outlined by the company.

Lorne K. Pitruka
MEMBER

OVER.

John Jurzyniec
MEMBER

NE ¼ -5 OCCUPANT - GRAZING LEASE
MORRIS P. LUTZ
[redacted]
UNABLE TO LOCATE MOVED FROM CITY TO VILNA
NEW RESIDENCE UNOCCUPIED.

NW ¼ -4 APPLICATION FOR GRAZING PERMIT
ROY RUSSELL SHUPENIA.
[redacted] ALTA.
NO CONTACT - NO ANSWER AT CITY RESIDENCE

SE ¼ -4 DIRECTOR - VETERAN'S LAND ACT
473 · FEDERAL PUBLIC BLDG
EDMONTON, ALTA.
NO CONTACT

MRS. ANNIE PRUDEN - AGREEMENT FOR SALE
[redacted] ALTA
~~GOOD 1ST CARE~~ ~~ALTA~~
~~- NO COMMENT~~ = [redacted]
SATISFIED.

NE ¼ - 33 HENRY PRUDEN [redacted]
[redacted] NO ANSWER.

NE ¼ -33 WALTER WHITFORD
[redacted]
Unable to locate nor reach by phone.

Alberta

ENVIRONMENT

Environmental Coordination Services
Land Conservation and
Reclamation Council

403/427-6212
Telex 037-2006, TWX 610-831-2636
11th Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta, Canada
T5K 2J6

County No. 13

Reclamation Certificate No. 18590

Pursuant to Section 51 subsection (1) of The Land Surface Conservation and Reclamation Act this is to certify that the surface of the land held by Bow Valley Exploration

within NE¼ Sec. 33 Tp. 61 Rge. 13 W. 4th Mer.
S½ & NW¼ Sec. 4, NE¼ Sec. 5, S½ Sec. 8 in
Tp. 62 Rge. 13 W. 4th Mer.

in connection with or incidental to an access road, as shown outlined in yellow on the plan attached hereto, was found to be in a satisfactory condition.

Dated at Vilna, Alberta

this 25 day of Sept., 1979

Land Conservation and
Reclamation Council

[redacted]

Member

[redacted]

Member

Bow Valley Exploration
Box 6610
Postal Station "D"
CALGARY, Alberta

Copy sent by REGISTERED MAIL to:

SEE ATTACHED SCHEDULE

Date:

October 9, 1979

[redacted]

S. Tracy
Secretary

SCHEDULE TO RECLAMATION CERTIFICATE NO. 18590

Department of Energy &
Natural Resources
11th Floor, Petroleum Plaza
South Tower
9915 - 108 Street
EDMONTON, Alberta

County of Smoky Lake No. 13
SMOKY LAKE, Alberta

Department of Municipal
Affairs, Room 505
9925 - 107 Street
EDMONTON, Alberta

Morris P. Lutz
[redacted]

Roy Russell Shupenia
[redacted]

The Director
The Veteran's Land Act
473 Federal Public Bldg.
EDMONTON, Alberta

Mrs. Annie Pruden
[redacted]

Plan Showing Survey Of

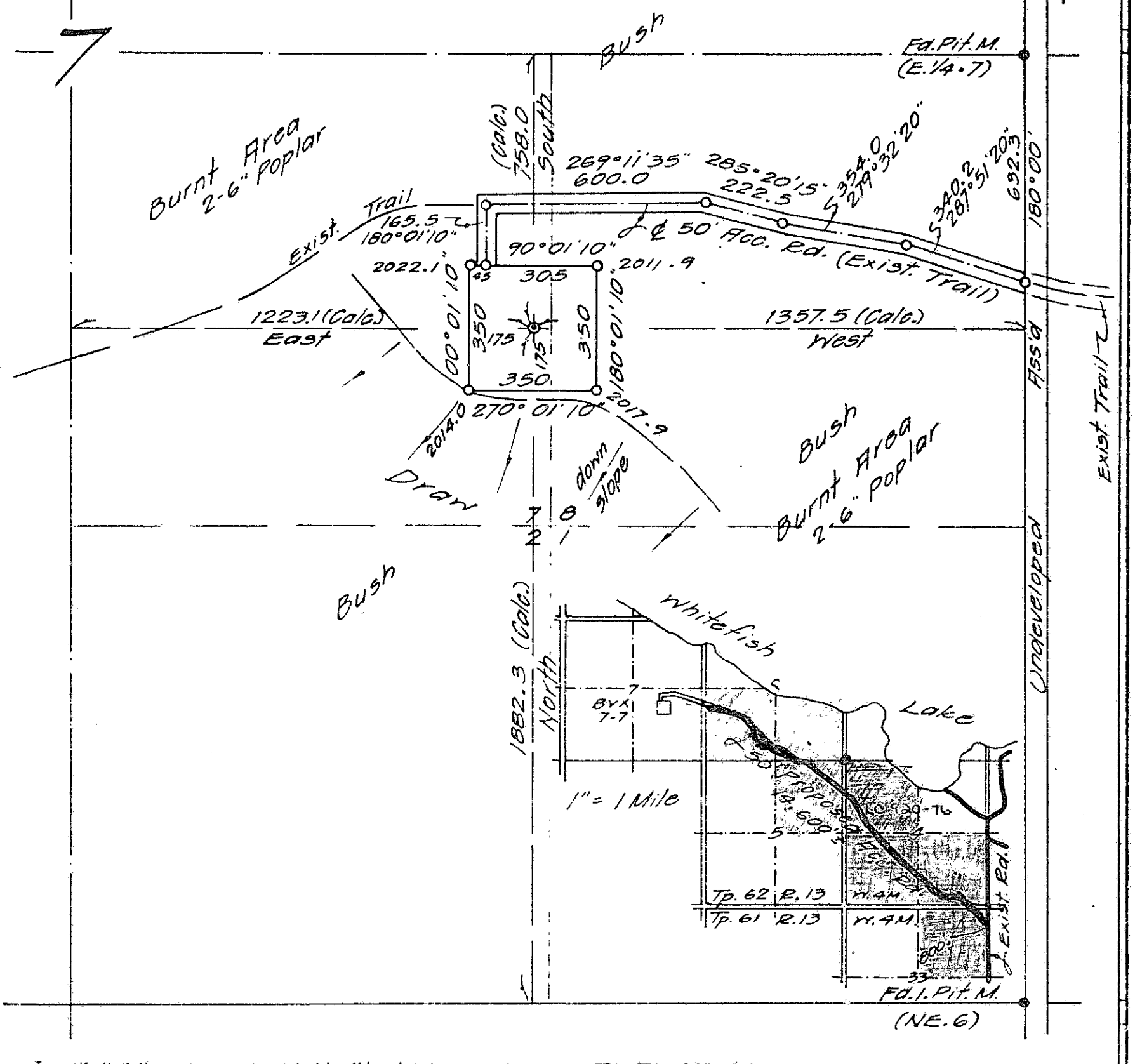
3VX et al Craigend 7-7-62-13

Well Site and Access Road (Proposed)

IN

L.S. 7 Sec. 7 Tp. 62 Rge. 13 W.4 M.

SCALE: 400' = 1"



I certify that the survey represented by this plan is correct and true to the best of my knowledge and was completed on the 16th day of November, 1976.

[redacted]

A.L.S.

[redacted]

Witness

ALL WEST SURVEYS

EDMONTON
CALGARY

OPERATOR:

Bow Valley Industries Ltd.

[redacted]

[redacted]

ELEVATION: 2021 Ground

CO-ORDINATES:

1882.3 ft. N. of S. Bdy.
1357.5 ft. W. of E. Bdy. } Sec. 7

AREAS:

	ACRES
Well Site =	2.81
Access Road =	1.93
Total =	4.74

Survey marks found shown thus: ●
Survey marks placed shown thus: O
Portions referred to outlined in red.
Distances are in feet and decimals.

DATUM: All-Can SM # 3742
Elev.: 1985.35

JOB NO E-650-76

BOLSON
ENGINEERING AND ENVIRONMENTAL SERVICES

APPENDIX I: *LAND TITLE SURVEY*

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0023 217 763	4;13;62;4;NE	222 133 088 +1

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 13 TOWNSHIP 62
SECTION 4
ALL THAT PORTION OF THE NORTH EAST QUARTER
DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTH EAST CORNER
OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE
EAST BOUNDARY THEREOF ELEVEN HUNDRED AND FIFTY (1150) FEET
THENCE WESTERLY AND AT RIGHT ANGLES TO THE SAID EAST
BOUNDARY SEVEN HUNDRED (700) FEET THENCE NORTHERLY AND
PARALLEL TO THE SAID EAST BOUNDARY TWO HUNDRED AND TWENTY
FIVE (225) FEET THENCE WESTERLY AND AT RIGHT ANGLES TO THE
SAID EAST BOUNDARY TO INTERSECTION WITH THE EAST SHORE OF
WHITEFISH LAKE AS SHOWN ON A PLAN OF SURVEY OF THE SAID
TOWNSHIP SIGNED AT OTTAWA ON THE 26TH DAY OF JUNE A.D. 1926.
THENCE NORTHERLY ALONG THE SINUOSITIES OF THE SAID LAKE TO
THE NORTH BOUNDARY OF THE SAID QUARTER SECTION, THENCE
EASTERLY ALONG THE SAID NORTH BOUNDARY TO THE POINT OF
COMMENCEMENT.
CONTAINING 10.80 HECTARES (26.75 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: SMOKY LAKE COUNTY

REFERENCE NUMBER: 142 017 682

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
222 133 088	11/06/2022	TRANSMISSION OF LAND		

OWNERS

RODNEY ALLEN ROSYCHUK
[redacted]

(CONTINUED)

AND
BRYAN ROSYCHUK
[redacted]

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
5378PC	25/05/1967	CAVEAT RE : EASEMENT CAVEATOR - CANADIAN UTILITIES LIMITED.
1083VG	12/11/1974	CAVEAT CAVEATOR - WILLIAM ROYSCHUK
752 054 100	15/05/1975	UTILITY RIGHT OF WAY GRANTEE - THE COUNTY OF SMOKY LAKE NO. 13.

TOTAL INSTRUMENTS: 003

PENDING REGISTRATION QUEUE

DRR NUMBER	RECEIVED DATE (D/M/Y)	SUBMITTER	LAND ID
G005Z3U	30/05/2025	KYLE C. MCKINNEY PROFESSIONAL CORPORATION [redacted] CUSTOMER FILE NUMBER: 7-02827	
001		TRANSFER OF LAND	0023 217 763
002		MORTGAGE AMOUNT: [redacted]	0023 217 763
G0060KX	04/06/2025	GAFFNEY & MCGREER [redacted] CUSTOMER FILE NUMBER: 25.7083	
001		DISCHARGE	0023 217 763

TOTAL PENDING REGISTRATIONS: 002

DISCLAIMER: THE DOCUMENT INFORMATION REFLECTED IN THE PENDING REGISTRATION QUEUE HAS NOT BEEN VERIFIED BY LAND TITLES AND MAY BE SUBJECT TO CHANGE UPON REVIEW AND REGISTRATION.

(CONTINUED)

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 2 DAY OF JULY, 2025 AT 07:50 P.M.

ORDER NUMBER: 54181060

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JUNE 11,2022

S

LINC	SHORT LEGAL	TITLE NUMBER
0023 217 763	4;13;62;4;NE	142 017 682

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 13 TOWNSHIP 62
SECTION 4
ALL THAT PORTION OF THE NORTH EAST QUARTER
DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTH EAST CORNER
OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE
EAST BOUNDARY THEREOF ELEVEN HUNDRED AND FIFTY (1150) FEET
THENCE WESTERLY AND AT RIGHT ANGLES TO THE SAID EAST
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PARALLEL TO THE SAID EAST BOUNDARY TWO HUNDRED AND TWENTY
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SAID EAST BOUNDARY TO INTERSECTION WITH THE EAST SHORE OF
WHITEFISH LAKE AS SHOWN ON A PLAN OF SURVEY OF THE SAID
TOWNSHIP SIGNED AT OTTAWA ON THE 26TH DAY OF JUNE A.D. 1926.
THENCE NORTHERLY ALONG THE SINUOSITIES OF THE SAID LAKE TO
THE NORTH BOUNDARY OF THE SAID QUARTER SECTION, THENCE
EASTERLY ALONG THE SAID NORTH BOUNDARY TO THE POINT OF
COMMENCEMENT.
CONTAINING 10.80 HECTARES (26.75 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: SMOKY LAKE COUNTY

REFERENCE NUMBER: 142 017 681

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
142 017 682	15/01/2014	TRANSFER OF LAND	$530,000	ESTATE

OWNERS

ROSE B ROSYCHUK

[redacted]

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
5378PC	25/05/1967	CAVEAT RE : EASEMENT CAVEATOR - CANADIAN UTILITIES LIMITED.
1083VG	12/11/1974	CAVEAT CAVEATOR - WILLIAM ROYSCHUK
752 054 100	15/05/1975	UTILITY RIGHT OF WAY GRANTEE - THE COUNTY OF SMOKY LAKE NO. 13.
222 133 088	11/06/2022	TRANSMISSION OF LAND OWNERS - RODNEY ALLEN ROSYCHUK [redacted] OWNERS - BRYAN ROSYCHUK EXECUTORS FOR ROSE B ROSYCHUK [redacted] NEW TITLE ISSUED

TOTAL INSTRUMENTS: 004

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 2 DAY OF JULY, 2025 AT 07:50 P.M.

ORDER NUMBER: 54181060

CUSTOMER FILE NUMBER:

REGISTRAR OF LAND TITLES

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JANUARY 15,2014

S

LINC	SHORT LEGAL	TITLE NUMBER
0023 217 763	4;13;62;4;NE	142 017 681

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 13 TOWNSHIP 62
SECTION 4
ALL THAT PORTION OF THE NORTH EAST QUARTER
DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTH EAST CORNER
OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE
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CONTAINING 10.80 HECTARES (26.75 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: SMOKY LAKE COUNTY

REFERENCE NUMBER: 852 037 574

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
142 017 681	15/01/2014	TRANSMISSION OF LAND		

OWNERS

ROSE B ROSYCHUK
[redacted]

(CONTINUED)

[redacted]

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
5378PC	25/05/1967	CAVEAT RE : EASEMENT CAVEATOR - CANADIAN UTILITIES LIMITED.
1083VG	12/11/1974	CAVEAT CAVEATOR - WILLIAM ROYSCHUK
752 054 100	15/05/1975	UTILITY RIGHT OF WAY GRANTEE - THE COUNTY OF SMOKY LAKE NO. 13.
142 017 682	15/01/2014	TRANSFER OF LAND OWNERS - ROSE B ROSYCHUK [redacted] NEW TITLE ISSUED

TOTAL INSTRUMENTS: 004

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 2 DAY OF JULY, 2025 AT 07:50 P.M.

ORDER NUMBER: 54181060

CUSTOMER FILE NUMBER:

REGISTRAR OF LAND TITLES

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JANUARY 15,2014

S

LINC	SHORT LEGAL	TITLE NUMBER
0023 217 763	4;13;62;4;NE	852 037 574

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 13 TOWNSHIP 62
SECTION 4
ALL THAT PORTION OF THE NORTH EAST QUARTER
DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTH EAST CORNER
OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE
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CONTAINING 10.80 HECTARES (26.75 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: SMOKY LAKE COUNTY

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
852 037 574	26/02/1985			$70,000

OWNERS

[redacted]

ROSE ROSYCHUK

[redacted]

(CONTINUED)

ALBERTA T5B 2M5

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
5378PC	25/05/1967	CAVEAT RE : EASEMENT CAVEATOR - CANADIAN UTILITIES LIMITED.
1083VG	12/11/1974	CAVEAT CAVEATOR - WILLIAM ROYSCHUK
752 054 100	15/05/1975	UTILITY RIGHT OF WAY GRANTEE - THE COUNTY OF SMOKY LAKE NO. 13.
762 135 232	30/07/1976	CAVEAT CAVEATOR - ANDREW MOCHULSKI
042 389 337	10/09/2004	DISCHARGE OF CAVEAT 762135232
142 017 681	15/01/2014	TRANSMISSION OF LAND OWNERS - ROSE B ROSYCHUK EXECUTRIX FOR WILLIAM ROSYCHUK [redacted] NEW TITLE ISSUED

TOTAL INSTRUMENTS: 006

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 2 DAY OF JULY, 2025 AT 07:50 P.M.

ORDER NUMBER: 54181060

CUSTOMER FILE NUMBER:

REGISTRAR OF LAND TITLES

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 INCLUDING THIS UNMODIFIED PRODUCT IN ANY REPORT, OPINION, APPRAISAL OR OTHER ADVICE PREPARED BY THE ORIGINAL PURCHASER AS PART OF THE ORIGINAL PURCHASER APPLYING PROFESSIONAL, CONSULTING OR TECHNICAL EXPERTISE FOR THE BENEFIT OF CLIENT(S).

Appendix C: Stormwater Management Report

STORMWATER MANAGEMENT AND HYDRAULIC ASSESSMENT REPORT

Sunset Ridge Estates at Whitefish Lake

Smoky Lake County, Alberta

Project Name	Sunset Ridge Estates at Whitefish Lake
Legal Description	Pt. NE-4-62-13-W4M, Smoky Lake County, Alberta
Proponent	2803870 Alberta Ltd.
Authority	Smoky Lake County
Project Number	2500600
Report Date	June 2026
Governing Standard	Smoky Lake Region REDS (July 2023)

Prepared for:

2803870 Alberta Ltd.

[redacted]

Prepared by:

PRI Engineering Corp.

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Version Control and Revision History

Version	Date	Prepared By	Reviewed By	Approved By	Notes / Revisions
A	2026-06-09	M. Pirestani	K. Qavami	P. Kundzins	Issued for Review
B	2026-06-11	M. Pirestani	K. Qavami	P. Kundzins	Issued for Approval

Confidentiality Statement

This report has been prepared by PRI Engineering Corp. exclusively for 2803870 Alberta Ltd. in support of the proposed Sunset Ridge Estates at Whitefish Lake (Project No. 2500600) in Smoky Lake County, Alberta. This document contains commercial, technical, and professional information developed specifically for the intended project and client. The contents of this report are considered confidential and are provided solely for the use of the Client, their agents, and applicable regulatory authorities for the purposes described herein. No part of this report may be reproduced, distributed, or disclosed, in whole or in part, to any third party without the prior written consent of PRI Engineering Corp., except as required for regulatory review or approval processes.

Limitations of Report

This report has been prepared by PRI Engineering Corp. for the exclusive use of 2803870 Alberta Ltd., their representatives, and applicable regulatory authorities in support of the proposed Sunset Ridge Estates at Whitefish Lake (Project No. 2500600). The report is intended solely for the purpose described herein and should not be used or relied upon for any other project or purpose without the express written consent of PRI Engineering Corp.

The analyses, findings, and recommendations presented in this report are based on available data, assumptions, and conditions at the time of preparation. PRI Engineering Corp. does not accept responsibility for the accuracy, completeness, or reliability of information provided by others and has not independently verified such information unless specifically noted. Changes in site conditions, design parameters, or available data may affect the conclusions presented in this report.

Site Investigation Waiver Statement

No intrusive field investigation activities were undertaken as part of this assignment. The analyses presented in this report are based on available background information, design drawings, and assumed site conditions representative of the project area. Where applicable, information regarding underground utilities and site constraints has been obtained from available records and/or provided by others. PRI Engineering Corp. has not independently verified the accuracy or completeness of this information and assumes no responsibility for errors or omissions associated with third-party data.

Executive Summary

2803870 Alberta Ltd. engaged PRI Engineering Corp. to complete a Stormwater Management and Hydraulic Assessment for the proposed Sunset Ridge Estates at Whitefish Lake (Project No. 2500600), located in Smoky Lake County, Alberta. The project consists of a 15-lot rural residential subdivision with lot sizes ranging from approximately 0.34 ha to 0.73 ha, accessed by an internal roadway connecting to Range Road 133.

The objective of this assessment is to characterize the site hydrology, estimate runoff under existing conditions, and evaluate the hydraulic capacity of the proposed ditch and culvert drainage system to safely convey stormwater without adversely impacting downstream lands or the receiving environment.

Given the rural nature of the development and the absence of municipal storm sewer infrastructure, the stormwater management strategy relies on natural drainage patterns, overland flow routing, roadside ditches, and a culvert crossing. The design approach emphasizes maintaining existing drainage conditions and minimizing increases in runoff.

The analysis was carried out in accordance with the Smoky Lake Region Engineering Design Standards (REDS) and standard engineering practices. The scope of work included:

- Assessment of existing site conditions (topography, land use, and drainage patterns);
- Determination of hydrologic parameters (including time of concentration, rainfall intensity, and runoff coefficient);
- Estimation of peak runoff using the Rational Method;
- Evaluation of climate change impacts through increased rainfall intensity scenarios;
- Hydraulic analysis of the proposed culvert and trapezoidal ditch system; and
- Verification of system capacity under design conditions.

The hydrologic analysis was based on a contributing drainage area of approximately 2.9 hectares, representing the portion of the site draining to the proposed conveyance system. Peak runoff was estimated using the Rational Method with a runoff coefficient of 0.30, a time of concentration of approximately 20 minutes, and rainfall intensities derived from EPCOR IDF data. The resulting peak discharge for the design event is approximately 0.146 m^3/s. Applying a 15% climate change adjustment yields an adjusted peak discharge of approximately 0.167 m^3/s.

The hydraulic assessment demonstrates that the proposed drainage infrastructure provides adequate capacity to convey the design flows. A 600 mm diameter culvert, consistent with REDS requirements, is sufficient to convey the design discharge under partial flow conditions (supercritical). The proposed trapezoidal ditch conveys flow under subcritical conditions with stable velocities and adequate freeboard, minimizing the risk of erosion and overtopping.

Overall, the results indicate that the stormwater management system is appropriate for the site conditions and rural development context. The design maintains natural drainage patterns, supports infiltration, and ensures that runoff is conveyed safely to the downstream receiving area within the Whitefish Lake watershed. The proposed stormwater management approach meets applicable REDS criteria and demonstrates that the development can proceed without causing adverse impacts to downstream properties or the surrounding environment.

Summary of Key Hydrologic and Hydraulic Parameters

Table I — Summary of Stormwater Management Parameters – Sunset Ridge Estates at Whitefish Lake

Parameter	Description	Value
Project Name	Sunset Ridge Estates at Whitefish Lake	File No. 2500600
Location	Smoky Lake County, Alberta	—
Development Type	Rural residential subdivision	15 lots
Contributing Drainage Area	Area draining to ditch/culvert system	2.9 ha
Land Use	Agricultural / Rural Residential	—
Time of Concentration (Tc)	Including inlet time	~20 minutes
Design Storm Event	Basis for runoff estimation	1:10-year
Rainfall Intensity (I)	EPCOR IDF (10-year)	60.23 mm/hr
Climate-Adjusted Intensity	+15% increase	69.26 mm/hr
Runoff Coefficient (C)	Rural/Agricultural	0.30
Base Case Peak Flow (Q)	Rational Method result	0.146 m³/s
Climate-Adjusted Peak Flow	With 15% increase	0.167 m³/s
Culvert Diameter	Minimum per REDS	600 mm
Culvert Design Flow	Hydraulic assessment basis	0.20 m³/s
Culvert Flow Condition	Hydraulic regime	Partial flow / Supercritical
Culvert Velocity	Under design flow	2.98 m/s
Channel Type	Drainage ditch geometry	Trapezoidal
Channel Bottom Width	Design parameter	1.5 m
Channel Side Slopes	H:V	1.5:1
Channel Flow Depth	Under design flow	0.13 m
Channel Velocity	Mean flow velocity	0.92 m/s
Channel Freeboard	Safety allowance	0.30 m

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1. Introduction

The proposed development, known as the Sunset Ridge Estates at Whitefish Lake, is located within Smoky Lake County, Alberta. The project involves the subdivision of the existing parcel into 15 country residential lots, with individual lot sizes ranging from approximately 0.34 ha to 0.73 ha. The development is intended to support low-density rural residential use, consistent with the surrounding land use context, and will be accessed via a proposed internal municipal roadway connecting to Range Road 133. Municipal servicing, including storm sewer infrastructure, is not currently available at the site. As a result, stormwater management will rely primarily on natural drainage patterns, overland flow routes, culvert, and roadside ditch. The site's existing conditions, including topography, vegetation, and drainage characteristics, play a critical role in defining the overall stormwater management approach and ensuring that runoff is safely conveyed without adversely affecting downstream lands or receiving systems.

2. Design Criteria

2.1 Basis of Design and Methodology

The purpose of this stormwater analysis is to evaluate the hydrologic conditions of the proposed Sunset Ridge Estates at Whitefish Lake and to establish baseline runoff characteristics for comparison with post-development conditions and future stormwater management planning. The analysis was conducted in accordance with the Smoky Lake Region Engineering Design Standards (REDS), Section B3 – Storm Drainage Systems, which define the governing criteria for drainage design within the region. Although the development is rural in nature and does not include a municipal storm sewer system, the hydrologic principles outlined in REDS were applied to ensure consistency with municipal expectations at the subdivision approval stage. The methodology follows standard engineering practices, including use of the Rational Method, selection of appropriate design storms, and application of EPCOR IDF rainfall data. Existing site conditions, including land use, topography, and drainage patterns, were considered in determining key parameters such as time of concentration and runoff coefficients.

This analysis supports the subdivision application process by ensuring that the proposed development will not adversely impact downstream drainage systems and will comply with regional stormwater management requirements. While climate change adjustments are not explicitly required by REDS, they have been incorporated in accordance with provincial and municipal guidance to provide a more forward-looking assessment, consistent with accepted engineering practices in Alberta.

2.2 Design Storm Selection

Design storm selection for the proposed development is based on the requirements outlined in the Smoky Lake Region REDS, which establish criteria for drainage system design. For the minor system, including roadside ditches and local drainage pathways, REDS requires a 1:5-year return period storm (Q5). For consistency with hydrologic analysis and to maintain alignment with municipal standards, all runoff calculations presented in this study are based on the 1:10-year (Q10) event for the minor system, which provides a conservative design basis.

2.3 Rainfall Data (IDF Curves)

Rainfall intensities used in the analysis were obtained from the EPCOR IDF curves for the Edmonton Region (1984–2020), in accordance with REDS requirements. The IDF curves relate rainfall intensity to storm duration and return period and are used together with the time of concentration Tc to select appropriate design values. Once Tc is determined, representing the time for runoff to travel across the site, the corresponding duration is selected from the IDF Table 1 and the rainfall intensity is obtained for the required return period.

Table 1 — IDF Curve-Intensity, Edmonton 11 Rain Gauges Upper Bound, IDF Period 1984–2020 (EPCOR, April 2025)

Time		Return Frequency						
Minutes	Hours	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr
5	0.083	67.77	91.63	109.91	134.89	154.95	178.71	204.47
10	0.167	49.93	69.74	85.11	105.76	121.96	141.46	164.04
15	0.250	40.23	57.08	70.24	87.87	101.65	118.37	138.35
20	0.333	34.04	48.72	60.23	75.66	87.75	102.50	120.42
25	0.417	29.71	42.74	52.97	66.73	77.57	90.83	107.10
30	0.500	26.47	38.23	47.45	59.89	69.76	81.84	96.77
35	0.583	23.96	34.68	43.08	54.46	63.55	74.69	88.50
40	0.667	21.95	31.82	39.54	50.04	58.48	68.84	81.70
45	0.750	20.29	29.45	36.60	46.35	54.26	63.95	76.01
50	0.833	18.90	27.45	34.12	43.24	50.68	59.81	71.16
55	0.917	17.71	25.74	31.99	40.56	47.60	56.23	66.97
60	1	16.69	24.26	30.14	38.23	44.92	53.12	63.32
120	2	10.26	14.90	18.42	23.40	27.76	33.10	39.65
180	3	7.66	11.10	13.66	17.35	20.70	24.81	29.77
240	4	6.22	8.98	11.01	13.98	16.76	20.15	24.20
360	6	4.62	6.64	8.10	10.28	12.39	14.97	18.00
720	12	2.78	3.95	4.77	6.03	7.35	8.96	10.78
1440	24	1.66	2.34	2.79	3.52	4.34	5.34	6.43

2.4 Time of Concentration

The time of concentration (Tc) was estimated using the Hathaway formula, which is suitable for natural watersheds and accounts for flow length, slope, and surface roughness. The Hathaway equation is:

$$t_c = \frac{(rL)^{0.467}}{1.65\, S^{0.234}}$$

Where L is the total stream length (km), S is the average slope (m/m), and r is the roughness coefficient representing surface conditions. Based on site characteristics, a flow length of 0.220 km, an average slope of 0.067, and a roughness coefficient of 0.10 (smooth, bare packed soil) were adopted, yielding a travel time of approximately 11.4 minutes (0.19 hours). Including the REDS inlet time allowance (Table 2), the total time of concentration is approximately 20 minutes.

Table 2 — Inlet Time

Catchment Area	Imperviousness (%)		
	30	50	>70
8 ha or less	8 mins	8 mins	5 mins
Between 8 ha and 40 ha	9.2 mins	9.2 mins	6 mins
40 ha or greater	10.4 mins	10.4 mins	7.25 mins

2.5 Rainfall Intensity Selection

Based on the total time of concentration of approximately 20 minutes and the 1:10-year return period, the corresponding rainfall intensity was selected from the EPCOR IDF curves. A conservative design Tc of 20 minutes was adopted, consistent with standard design practice (Table 3).

Table 3 — Rainfall Intensity Selection

Parameter	Value
Duration	20 minutes (based on Tc)
Return period	10-year
Rainfall Intensity	60.23 mm/hr

2.6 Runoff Coefficient

The runoff coefficient (C) represents the fraction of rainfall that becomes surface runoff and is a key parameter in the Rational Method. The site is characterized by predominantly agricultural and rural land use. Based on the EPCOR stormwater design guidelines, the recommended coefficient for Agricultural/Rural Residential areas is approximately 0.30, reflecting relatively high infiltration capacity and lower imperviousness compared to urban development (Table 4).

Table 4 — Runoff Coefficients Based on the EPCOR Stormwater Design Guidelines

Zoning or Classification Designation Per Bylaw # 20001[1]	Zoning Category/Description Per Bylaw # 20001	Runoff[2] Coefficient " C "
RVSA, NA	River Valley	0.2
PS, PSN	Open Spaces/Civic Services	0.3[3]
AG, FD, RR	Agricultural/Rural Residential	0.3
UF	Urban Facilities	0.6
RS, RSF	Residential (Low Density)	0.65 or 0.7[4]
RSM, RM, RL	Residential (High Density)	0.7 or 0.75[4]
CN, MUN	Neighbourhood Commercial/Mixed Use	0.8 to 0.9[5]
CB, CG, MU	Commercial/Mixed Use	0.85 to 0.95[5]
BE, IH, IM	Industrial	0.85 to 0.95[5]

[1] For zonings not shown in this table, the runoff coefficient "C" and the percentage of imperviousness area shall be estimated by the designer and runoff coefficient determined in consultation with EPCOR.
[2] Minimum design values to be used without specific area analysis. To be used only for calculation of peak runoff rates by the rational method.
[3] Runoff coefficient is valid for Open Spaces with minimal hard surfacing. Open Spaces that will have plaza areas or significant allocations for hard-surfaced sports fields must have a runoff coefficient assigned based on a percentage of impervious area estimated by the designer.
[4] Lower value may be used when the catchment area considers the lot only. Higher value must be used when the calculation includes the road ROW frontage and backage.
[5] Lower value may be used for developments incorporating landscaped areas (boulevards, islands, etc.) into the parking lot design.

2.7 Climate Change Consideration

Although the Smoky Lake Region REDS does not explicitly require incorporation of climate change in stormwater design, its potential impact was considered in this analysis in accordance with provincial and national engineering guidance. To account for possible increases in rainfall intensity, the EPCOR IDF intensities were conservatively increased by 15%, consistent with Alberta guidelines and accepted engineering practice:

$$I_{cc} = 1.15 \times 60.23 = 69.26 \text{ mm/hr}$$

3. Runoff Calculation

The runoff calculation was undertaken to quantify the hydrologic response of the site under natural conditions prior to any proposed development. This analysis establishes a baseline for comparison with post-development conditions and is essential for determining allowable discharge rates in accordance with Smoky Lake Region requirements.

3.1 Site Characteristics

The runoff analysis focused on the portion of the site that contributes drainage to the ditch and culvert system. Runoff from the northern portion flows outside the project boundary and the western portion naturally drains toward Whitefish Lake. Accordingly, a reduced contributing drainage area of approximately 2.9 hectares (Figure 1) was used for the runoff calculation. This area is characterized by predominantly agricultural and rural land use with a moderate slope of approximately 5%, draining generally from the northeast toward the southwest. These conditions indicate relatively permeable soils with limited impervious surfaces and a moderate runoff response.

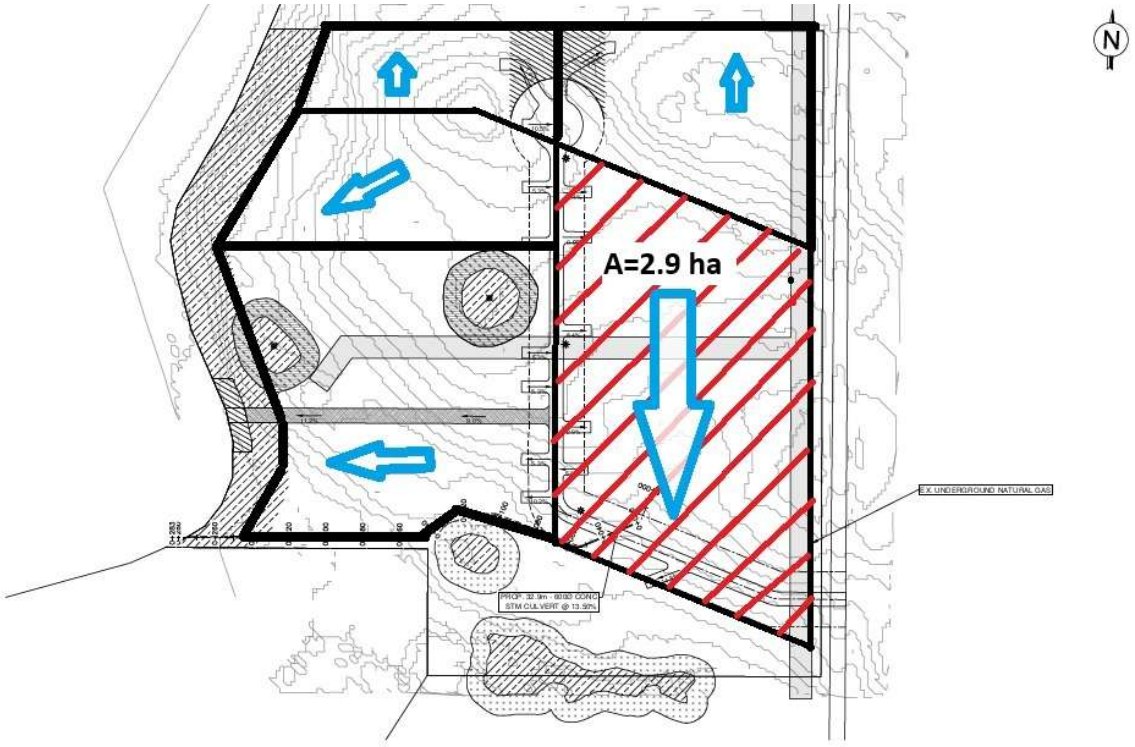

Figure 1 — Contributing Drainage Area for Runoff Analysis

3.2 Methodology

Runoff was estimated using the Rational Method, which is recommended under REDS for catchment areas less than 65 hectares:

$$Q = \frac{CIA}{360}$$

Where Q = peak flow (m³/s), C = runoff coefficient, I = rainfall intensity (mm/hr), and A = drainage area (ha).

3.3 Base Case (REDS Compliance)

The base case runoff was calculated using the Rational Method with the design parameters described above, representing the 1:10-year storm event. The calculation summary is presented in Table 5.

Table 5 — Runoff Calculation (Base Case)

Parameter	Description	Value
Tc	Time of Concentration	20 min
I	Rainfall Intensity (10-year, 20-min)	60.23 mm/hr
C	Runoff Coefficient (Rural/Agricultural)	0.30
A	Drainage Area	2.9 ha
Q	Peak Runoff	0.146 m³/s

3.4 Climate Change Scenarios

Two supplementary scenarios were evaluated to provide a forward-looking estimate of peak runoff: (1) a 15% increase in rainfall intensity and (2) application of the 1:10-year storm as a conservative alternative. These scenarios support a robust comparison against the base case to ensure the drainage system design remains resilient under future climate conditions (Table 6).

Table 6 — Runoff Calculation (Climate Change Scenario)

Scenario	Rainfall Intensity (mm/hr)	Runoff Coefficient (C)	Area (ha)	Peak Flow Q (m³/s)
Base Case (Q10)	60.23	0.30	2.9	0.146
+15% Climate Increase	69.26	0.30	2.9	0.167

3.5 Summary of Results

Based on a contributing drainage area of 2.9 hectares, a Tc of 20 minutes, and EPCOR IDF rainfall intensities, the Rational Method yields a base case peak flow of approximately 0.146 m³/s. Applying a 15% climate change adjustment increases this to 0.167 m³/s. These results confirm that drainage is governed by natural overland flow and ditch conveyance, and provide the basis for designing appropriate stormwater management infrastructure.

4. Hydraulic Capacity Assessment of Ditch and Culvert System

4.1 Introduction

The hydraulic assessment evaluates the ability of the proposed conveyance infrastructure to safely accommodate calculated runoff flows. The analysis focuses on determining whether the ditch and culvert can effectively convey peak flows without overtopping, erosion, or adverse impacts on upstream or downstream conditions, and verifies that the system meets applicable REDS criteria.

4.2 Assessment Criteria

Hydraulic capacity was assessed in accordance with REDS criteria and standard engineering practices using Manning's equation for open channels and standard culvert design methods. The assessment ensures flows remain within channel capacity without overtopping, erosion, or adverse upstream impacts, while maintaining adequate freeboard. The following land development considerations were also evaluated:

- **Land Development:**

Each lot has an area of approximately 0.7–0.9 ha with an estimated building footprint of about 0.04 ha (approximately 5%). Roof drainage will be directed to on-site infiltration systems (e.g., underground gravel pits) to minimize any increase in runoff and promote infiltration.

- **Slope:**

The overall drainage direction will remain unchanged. Site grading may reduce steeper slopes to more moderate gradients, potentially resulting in a slight reduction in runoff velocity and peak flow.

- **Access Road:**

The proposed access road will be unpaved and is not expected to significantly increase runoff given its relatively permeable surface characteristics.

4.3 Culvert Design

A culvert is required to convey runoff beneath the proposed access roadway and safely discharge flows toward the downstream receiving area (Whitefish Lake). In accordance with REDS requirements, a minimum culvert diameter of 600 mm was adopted to satisfy roadway crossing standards and ensure adequate hydraulic capacity. The culvert design is based on a design discharge of 0.20 m^3/s and a longitudinal slope of 0.0345%, representing site grading conditions.

Hydraulic analysis indicates that the culvert operates under partially full (open channel) flow conditions, with a calculated flow depth of approximately 0.18 m, which is significantly lower than the full pipe diameter. This confirms that the culvert has substantial available capacity and is not operating under pressurized (full flow) conditions. The corresponding flow area of 0.07 m^2 and wetted perimeter of 0.69 m define the hydraulic section, supporting efficient flow conveyance. The calculated flow velocity of approximately 2.98 m/s indicates that water moves efficiently through the culvert without causing excessive upstream backwater effects.

The calculated Froude number of 1.48 classifies the flow as supercritical, meaning the flow is rapid and primarily controlled by upstream conditions. While supercritical flow can lead to higher energy levels, the relatively shallow flow depth and short culvert length limit potential adverse effects. Nonetheless, appropriate inlet and outlet protection (e.g., riprap aprons) may be considered to dissipate energy and prevent localized erosion at discharge points (Table 7).

Overall, the analysis demonstrates that the 600 mm culvert provides more than adequate hydraulic capacity, operating well within acceptable limits under the design flow conditions. The combination of partial flow depth, high conveyance efficiency, and stable hydraulic parameters confirms that the culvert will safely pass the design runoff without risk of overtopping, surcharging, or upstream flooding.

Table 7 — Culvert Hydraulic Calculation Summary

Parameter	Description	Value
Culvert Diameter	Minimum size (REDS requirement)	600 mm
Discharge (Q)	Design flow rate	0.20 m³/s
Slope (S)	Channel slope	0.0345%
Flow Depth (d)	Depth of flow in culvert	0.18 m
Velocity (V)	Flow velocity	2.98 m/s
Flow Area (A)	Cross-sectional flow area	0.07 m²
Wetted Perimeter	Flow contact length	0.69 m
Froude Number		1.48
Flow Condition	Hydraulic regime	Supercritical flow

4.4 Channel Design

The proposed drainage channel is designed as a trapezoidal ditch to safely convey runoff while maintaining hydraulic stability and minimizing erosion potential. This type of channel is well suited for rural drainage systems due to its structural simplicity, ease of construction, and ability to accommodate variable flow conditions. The channel may consist of compacted granular material lining for slopes up to approximately 4%, which provides adequate resistance to erosion under moderate flow velocities. For steeper sections exceeding 5%, additional protection such as 10–25 kg riprap is recommended to ensure channel stability and prevent bed and side slope erosion. A minimum longitudinal slope of 2% was adopted to maintain positive drainage and avoid ponding or sediment deposition within the channel.

The hydraulic design is based on a design discharge of 0.20 m³/s and incorporates a channel geometry consisting of a bottom width of 1.50 m, side slopes of 1.5H:1V, and a Manning's roughness coefficient of 0.033, representative of a natural or granular-lined channel. Hydraulic calculations indicate a flow depth of approximately 0.13 m and a flow velocity of 0.92 m/s, which falls within acceptable limits for erosion control in mild to moderately resistant soils. The calculated flow area of 0.22 m², top width of 1.88 m, and wetted perimeter of 1.96 m confirm that the selected geometry provides sufficient capacity for the design flow. The resulting Froude number of 0.88 indicates subcritical flow conditions, meaning the flow is stable, controlled by downstream conditions, and not susceptible to rapid changes in depth or velocity.

To ensure operational safety, a freeboard of 0.30 m was incorporated above the design water level, resulting in a total channel depth of 0.50 m. This additional capacity provides a margin of safety for flow variability, potential sediment accumulation, and extreme storm events. Overall, the hydraulic analysis confirms that the proposed trapezoidal ditch geometry offers adequate conveyance capacity, stable flow conditions, and sufficient freeboard, making it suitable for reliably managing runoff under the design conditions (Table 8).

The calculated flow velocity of 0.92 m/s was compared with typical permissible velocities for channel materials to assess erosion risk. This velocity falls within the acceptable range for compacted granular or lightly vegetated channels, indicating a low potential for erosion under design conditions. For sections with steeper slopes or where higher velocities may occur, additional protection using 10–25 kg riprap is recommended to ensure long-term channel stability. Overall, the channel design is considered hydraulically stable with adequate resistance to erosion.

Table 8 — Ditch-Channel Hydraulic Calculation Summary

Parameter	Description	Value
Channel Type	Geometry	Trapezoidal
Discharge (Q)	Design flow	0.20 m³/s
Channel Slope (S)	Longitudinal slope	0.02 m/m (2%)
Manning's n	Roughness coefficient	0.033
Bottom Width (B)	Channel base width	1.50 m
Side Slopes (z)	Horizontal to vertical ratio	1.5:1
Flow Depth (d)	Water depth	0.13 m
Velocity (V)	Flow velocity	0.92 m/s
Flow Area (A)	Cross-sectional area	0.22 m²
Top Width (T)	Surface width	1.88 m
Wetted Perimeter	Contact length	1.96 m
Freeboard	Safety allowance	0.30 m
Total Depth (H)	Channel depth	0.50 m
Froude Number		0.88
Flow Condition	Hydraulic regime	Subcritical flow

5. Conclusions

The runoff analysis and hydraulic assessment demonstrate that the proposed drainage system is capable of safely conveying the design flows under the selected conditions. Based on a contributing drainage area of approximately 2.9 hectares, the calculated peak runoff is approximately 0.146 m³/s, with a climate-adjusted value of 0.167 m³/s reflecting a 15% increase in rainfall intensity. These results indicate a moderate runoff response consistent with the site's agricultural land use, relatively permeable soils, and natural drainage patterns.

The hydraulic assessment confirms that both the proposed ditch and culvert systems have adequate capacity to convey the design flows without overtopping or causing adverse impacts. The 600 mm diameter culvert operates under partial flow / supercritical conditions at the design discharge and provides sufficient hydraulic capacity. The proposed trapezoidal channel geometry provides stable subcritical flow conditions, acceptable velocities, and adequate freeboard to prevent overtopping.

Overall, the drainage system is appropriately designed to maintain existing drainage patterns and ensure safe, controlled runoff conveyance toward the downstream receiving area. The proposed stormwater management approach meets applicable Smoky Lake Region Engineering Design

Standards (REDS) criteria and reflects standard engineering practices suitable for rural developments.

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Appendix D: Historic Resource Assessment

APPENDIX D:

Historic Resource Assessment

Date Report Completed	Feb 4, 2026
Consultant	Lifeways of Canada

Alberta

HRA Number: 4835-25-0072-002
February 04, 2026

Historical Resources Act Approval with Conditions

Proponent: Massif Energy Ltd.
2 Cavan Road, Sherwood Park, AB T8H 2K7
Contact: Austin Zacharko

Agent: Lifeways of Canada Limited
Contact: Brian Vivian

Project Name: **Sunset Ridge Estates at Whitefish Lake**

Project Components: Country Residential Subdivision

Application Purpose: Requesting HRA Approval / Requirements

Historical Resources Act approval is granted for the activities described in this application and its attached plan(s)/sketch(es) subject to the following conditions.

[redacted]
David Link
Assistant Deputy Minister
Heritage Division
Alberta Arts, Culture and Status of Women

SCHEDULE OF CONDITIONS

ARCHAEOLOGICAL RESOURCES

Historical Resources Act approval is granted in relation to archaeological resources, subject to the conditions outlined below.

1. The following *Historical Resources Act* conditions are based on the results of Historic Resources Impact Assessment studies carried out by Lifeways of Canada Limited under Archaeological Research Permit no. 25-153.
2. Avoidance or additional studies are required at the following sites: GcOx-3 and GcOx-4. A map and shapefile are attached to facilitate avoidance of the site areas.
3. Development activities may proceed in all other area of the footprint.
4. Site-specific conditions and approvals are as follows:

SITE	HRV	SITE DESCRIPTION	CONDITIONS/APPROVAL
GcOx-3	4	scatter >10	This archaeological site requires avoidance or additional studies. If avoidance is not feasible, then the Stage 1

SCHEDULE OF CONDITIONS (continued)

			investigation requirements are as follows: (a) systematic shovel testing at 5 m intervals across the site area, and in each cardinal direction from positive shovel tests on the edge of the site boundary, to inform the placement of excavation blocks. (b) excavation of a Stage 1 sample of 15 square metres, divided into no more than three excavation blocks. (c) excavation depth must proceed to at least 40 cm below ground surface, or the depth at which it can be confidently demonstrated that all buried cultural deposits within the excavation block have been exposed, recorded and collected. (d) a single site datum must be established for the duration of the excavation. The horizontal and vertical elevation of the site datum must be recorded, while the southwestern corner of every excavation block opened on the site must be recorded horizontally and vertically in relation to the site datum. This information must be provided in a table that appears in all Interim and Final Reports that are submitted for this project, and the location of the site datum must be illustrated on all site planview maps. (e) if suitable organic samples in intact buried contexts are identified, collection and processing of at least one radiocarbon dating sample must be undertaken. The results of the dating must be reported in the Stage 1 investigation final report. (f) should the excavation in the Stage 1 block provide results that are significantly less than what was anticipated, consultation must be undertaken with the Alberta Arts, Culture and Status of Women staff archaeologist to determine whether there is sufficient reason to continue excavation in that block. Depending on the results of the Stage 1 investigation, Stage 2 investigation may be required.
GcOx-4	4	campsite	This archaeological site requires avoidance or additional studies. If avoidance is not feasible, then the Stage 1 investigation requirements are as follows: (a) systematic shovel testing at 5 m intervals across the site area to inform the placement of excavation blocks. (b) excavation of a Stage 1 sample of 20 square metres, divided into no more than three excavation blocks. (c) excavation depth must proceed to at least 40 cm below ground surface, or the depth at which it can be confidently demonstrated that all buried cultural deposits within the excavation block have been exposed,

SCHEDULE OF CONDITIONS (continued)

recorded and collected.

(d) a single site datum must be established for the duration of the excavation. The horizontal and vertical elevation of the site datum must be recorded, while the southwestern corner of every excavation block opened on the site must be recorded horizontally and vertically in relation to the site datum. This information must be provided in a table that appears in all Interim and Final Reports that are submitted for this project, and the location of the site datum must be illustrated on all site planview maps.

(e) if suitable organic samples in intact buried contexts are identified, collection and processing of at least one radiocarbon dating sample must be undertaken. The results of the dating must be reported in the Stage 1 investigation final report.

(f) should the excavation in the Stage 1 block provide results that are significantly less than what was anticipated, consultation must be undertaken with the Alberta Arts, Culture and Status of Women staff archaeologist to determine whether there is sufficient reason to continue excavation in that block.

Depending on the results of the Stage 1 investigation, Stage 2 investigation may be required.

PALAEONTOLOGICAL RESOURCES

There are no *Historical Resources Act* requirements associated with palaeontological resources; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

INDIGENOUS TRADITIONAL USE SITES

There are no *Historical Resources Act* requirements associated with Indigenous traditional use sites of a historic resource nature; however, the proponent must comply with Standard Requirements under the Historical Resources Act: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

HISTORIC STRUCTURES

There are no *Historical Resources Act* requirements associated with historic structures; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

SCHEDULE OF CONDITIONS (continued)

PROVINCIALLY DESIGNATED HISTORIC RESOURCES

There are no *Historical Resources Act* requirements associated with Provincially Designated Historic Resources; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

ADDITIONAL COMMENTS

1. To obtain contact information for consultants qualified to undertake the assessment work specified above, please consult the list of Alberta Historic Resource Consultants.

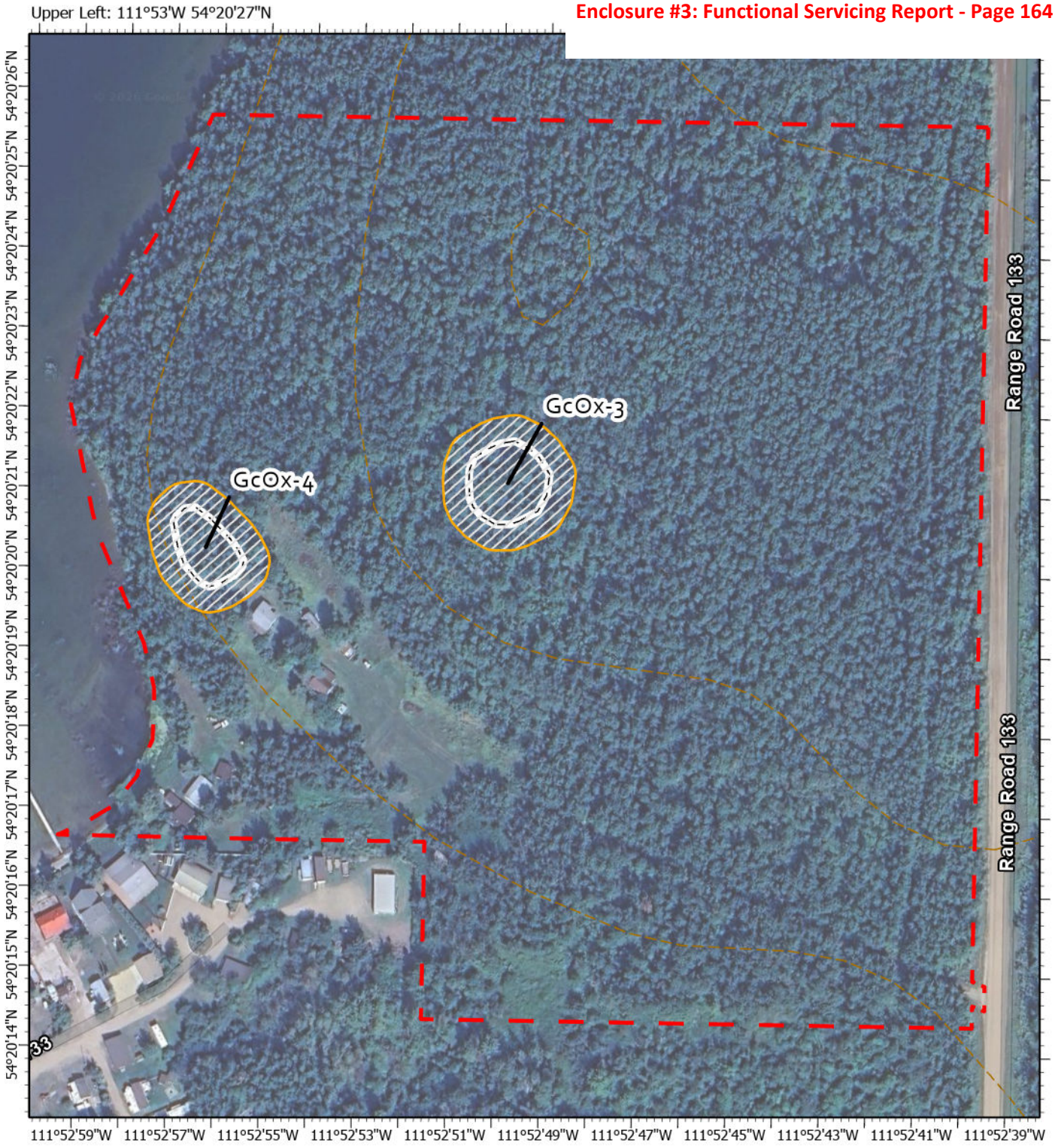
2. In addition to any specific conditions detailed above, the proponent must abide by all Standard Conditions under the *Historical Resources Act*.

Proposed Development Location:

MER	RGE	TWP	SEC	LSD List
4	13	62	4	16

Documents Attached:

Document Name	Document Type
Map of archaeological site areas requiring further work or avoidance avoided	Review
Project development footprint	Illustrative Material
Shapefile of archaeological site areas requiring further work or avoidance avoided	GIS Data File



N

0 25 50

Meters

HRA #4835-25-0072-002

Archaeological Site Avoidance Areas

Sunset Ridge Estates Footprint

Archaeological Site Boundary

This map is intended for information purposes only. The producers of this map make no claims or guarantees as to the accuracy of the data. Not intended for navigational purposes. Produced by the Historic Resources Management Branch (HRMB), 28 Jan 2026. This document contains sensitive information about Historic Resources and is to be used in planning the proposed project only. It is not to be shared for any other purpose.

Alberta

STANDARD REQUIREMENTS UNDER THE *HISTORICAL RESOURCES ACT*: REPORTING THE DISCOVERY OF HISTORIC RESOURCES

If development proponents and/or their agents become aware of historic resources during the course of development activities, they are required, under Section 31 of the *Historical Resources Act*, to report these discoveries to the Heritage Division of Alberta Arts, Culture and Status of Women. This requirement applies to all activities in the Province of Alberta.

1.0 REPORTING THE DISCOVERY OF ARCHAEOLOGICAL RESOURCES

The discovery of archaeological resources is to be reported to Darryl Bereziuk, Director, Archaeological Survey, at 780-431-2316 (toll-free by first dialing 310-0000) or darryl.bereziuk@gov.ab.ca.

2.0 REPORTING THE DISCOVERY OF PALAEONTOLOGICAL RESOURCES

The discovery of palaeontological resources is to be reported to Dan Spivak, Head, Resource Management, Royal Tyrrell Museum of Palaeontology, at 403-820-6210 (toll-free by first dialing 310-0000) or dan.spivak@gov.ab.ca.

3.0 REPORTING THE DISCOVERY OF HISTORIC PERIOD SITES

The discovery of historic structures to be reported to Michael Doughtery, Manager, Historic Places Research and Designation Program, at 403-297-4076 (toll-free by first dialing 310-0000) or michael.dougherty@gov.ab.ca. Please note that some historic structure sites may also be considered Aboriginal traditional use sites.

4.0 REPORTING THE DISCOVERY OF ABORIGINAL TRADITIONAL USE SITES

The discovery of any Aboriginal traditional use site that is of a type listed below is to be reported to Valerie Knaga, Director, Aboriginal Heritage Section, at 780-431-2371 (toll-free by first dialing 310-0000) or valerie.k.knaga@gov.ab.ca.

Aboriginal Traditional Use sites considered by Alberta Arts, Culture and Status of Women to be historic resources under the *Historical Resources Act* include:

Historic cabin remains;
Historic cabins (unoccupied);
Cultural or historical community camp sites;

Ceremonial sites/Spiritual sites;
Gravesites;
Historic settlements/Homesteads;
Historic sites;
Oral history sites;
Ceremonial plant or mineral gathering sites;
Historical Trail Features; and,
Sweat/Thirst/Fasting Lodge sites

5.0 FURTHER SALVAGE, PRESERVATIVE OR PROTECTIVE MEASURES

If previously unrecorded historic resources are discovered, proponents may be ordered to undertake further salvage, preservative or protective measures or take any other actions that the Minister of Alberta Arts, Culture and Status of Women considers necessary.

HISTORICAL RESOURCES IMPACT ASSESSMENT FOR SUNSET RIDGE ESTATES AT WHITEFISH LAKE FINAL REPORT (PERMIT 25-153)

PREPARED FOR:

Massif Energy Ltd.
2 Cavan Road
Sherwood Park, AB, T8H 2K7

PREPARED BY:

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October 2025

ACKNOWLEDGEMENTS

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Artefact Analysis	Grace Kohut

EXECUTIVE SUMMARY

This Final Report summarizes the results of the Historical Resources Impact Assessment (HRIA) completed by Lifeways of Canada Limited (Lifeways) on behalf of Massif Energy Ltd. toward gaining Historic Resources approvals for their proposed residential Sunset Ridge Estates at Whitefish Lake Project (the Project). The Project is located along the southern shore of Whitefish Lake, Alberta. The HRIA was conducted under Permit 25-153 to meet Historical Resources Schedule of Requirements (HRA # 4835-25-0072-001) issued by Alberta Arts, Culture and the Status of Women on August 19, 2025 (Appendix A) (Figures 1 and 2).

Following review of Project plans and the proposed footprint, the Historic Resources Management Branch (HRMB) issued Historical Resources Act Requirements calling for an HRIA to address all areas of high archaeological potential within the Project area. The HRIA consisted of a pedestrian survey and shovel testing program in October 2025 to fulfill the above requirements A total of 45 shovel tests were excavated, nine of which were positive for cultural materials. This testing program resulted in the recording of two newly documented sites, GcOx-3 and GcOx-4.

GcOx-3 is a newly recorded Precontact artifact scatter (> 10 artefacts) located on the edge of a high bench overlooking Whitefish Lake; approximately 30 m above the lake. The ground surface here is generally flat with a gentle 1°–2° slope trending westward and a slightly steeper (~5°) slope to the south. GcOx-3 was identified from 11 pieces of lithic debitage and one core recovered from four positive shovel tests. All materials came from various depths between 7-20 cm below surface (cmbs). Some of the flakes were found particularly deeply buried (~20 cmbs) within this stratigraphic profile, suggesting that GcOx-3 may be associated with an Early Precontact occupation. Overall, the site area measures 32 x 30 m (NS/EW) covering an area of approximately 960 m^2.

In summary GcOx-3 is represented by a significant lithic assemblage indicative of multiple reduction events, likely associated with basecamp activities, and is considered to be of **High Local Significance (Appendices C and D)**. **If the GcOx-3 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. It is recommended that Stage 1 mitigative studies should include additional systematic shovel test on a 5 m interval and 15 m^2 of block excavation. Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

GcOx-4 is a newly recorded Precontact artifact scatter (> 10 artefacts) located on a well-defined but narrow ridgelike bench overlooking Whitefish Lake to the west. This site was identified from 19 pieces of lithic debitage and one calcined bone fragment recovered from five positive shovel tests excavated within the site area. The lithic assemblage represents all stages of reduction from at least three different material types including chert, quartz, and quartzite. The elevated position and proximity to the lake suggests that GcOx-4 is in a strategic location for short-term tool production or maintenance activities, likely associated with resource

procurement or habitation along the lakeshore. Overall, the GcOx-4 site area measures to be 31 x 20 m (NS/EW) covering an area of approximately 620 m^2.

In summary GcOx-4 is a significant assemblage of stone and bone artifacts associated with resource procurement or basecamp activities and is considered to be of **High Local Significance** (see Appendices C and D). The artifact diversity and density indicate potential for additional buried cultural materials to be present here. **If the GcOx-4 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. Additional field studies should include a systematic shovel test program at 5 m intervals and 20 m^2 of mitigative block excavations aimed at recovering a more complete artifact assemblage and temporally diagnostic artifacts**. **Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

Archaeological sites **GcOx-3** and **GcOx-4** are the first of this sort to be found on the margins of Whitefish Lake and hold the potential to contribute significantly to our understanding of Precontact adaptations along the lakeshore and how this location was integrated into the documented subsistence strategies and interactions spheres established throughout the Lakeland Region of east-central Alberta and beyond (McCullough 1982). For this reason, both sites are recommended for further study if the site areas cannot be avoided by the proposed Sunset Ridge Estates Development.

With the acceptance of this report under the Alberta Historical Resources Act, Massif Energy Ltd. has met all of the Historical Resources Requirements outlined under the response issued under file HRA # 4835-25-0072-001. Historic Resource Approval is recommended for all lands within the Project area beyond the limits of newly recorded sites GcOx-3 and GcOx-4.

All recommendations are subject to review by staff of the Historic Resource Management Branch of the Ministry of Alberta Arts, Culture and Status of Women

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1. INTRODUCTION

This Final Report summarizes the results of a Historical Resources Impact Assessment (HRIA) completed by Lifeways of Canada Limited (Lifeways) on behalf of Massif Energy Ltd. toward gaining Historic Resources approvals for their proposed Sunset Ridge Estates country residential subdivision at Whitefish Lake (the Project). The Project is located along the southern shore of Whitefish Lake, Alberta (Figures 1 and 2). This HRIA was undertaken under Permit 25-153 to meet Historical Resources Requirements (HRA # 4835-25-0072-001) issued by Alberta Arts, Culture and the Status of Women on August 19, 2025 (Appendix A).

The Historic Resources Management Branch (HRMB) issued Historical Resources Act Requirements for this Project following review of Project plans and proposed footprint calling for an HRIA to address all areas of high archaeological potential within the Project area (Appendix A).

To meet these Historic Resource Requirements, Lifeways completed the HRIA in October 2025. The archaeological field studies involved a combination of shovel tests and surface observations. This final report provides a descriptive summary of the historic resource investigations along with a detailed descriptions of two newly recorded archaeological sites, **GcOx-3** and **GcOx-4**. These results are used to inform on the Historical Resources Act recommendations for the proposed Project.

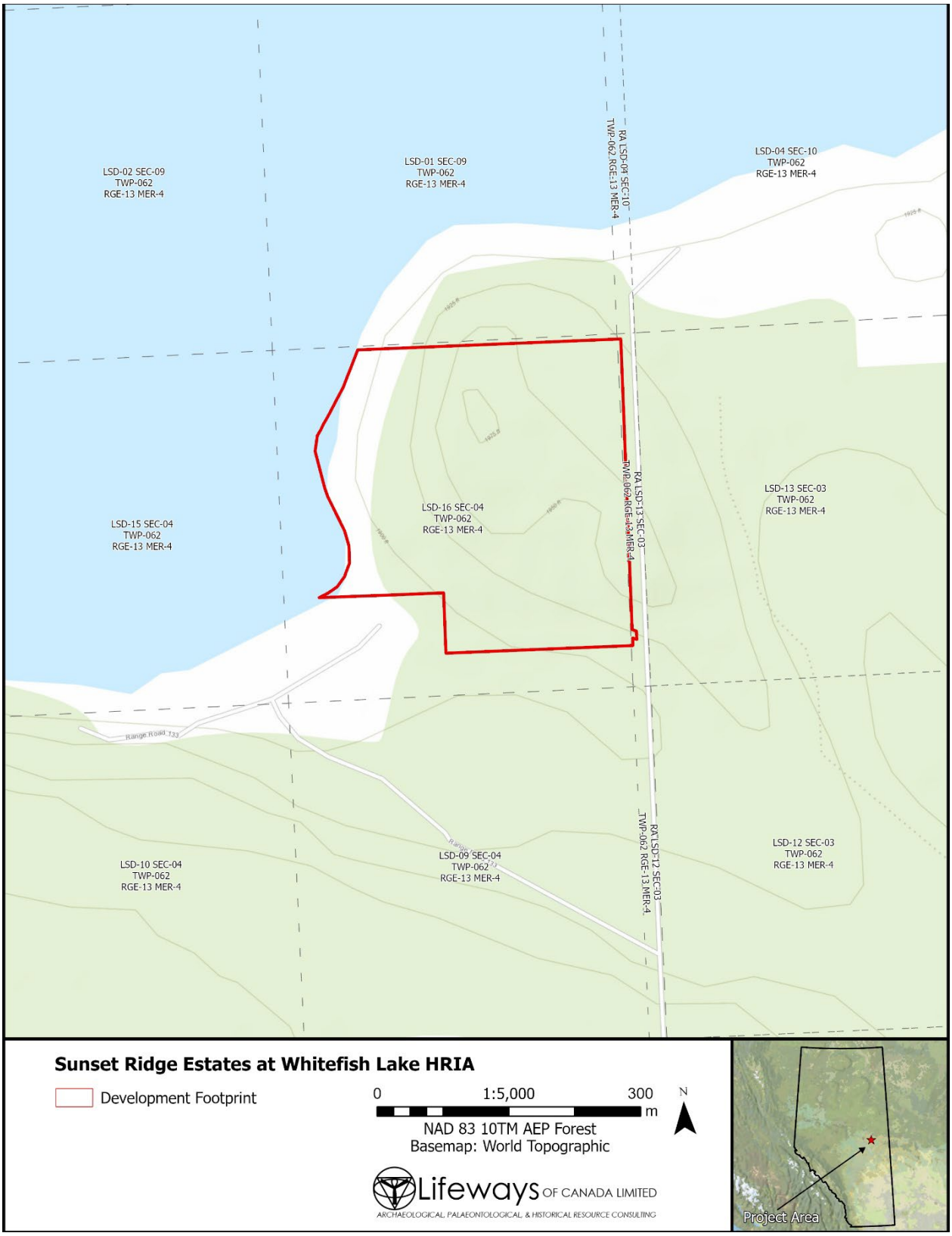

Figure 1. 1:5,000 NTS Map of Project Area

Figure 2. Orthophoto of Project Area Location.

2. PROJECT LOCATION AND BACKGROUND

2.1 Environmental Setting

The Project is located along the southern shore of Whitefish Lake, approximately 25 km north of the community of Vilna, Alberta (Figures 1 and 2). These lands are adjacent to Paradise Cove Resort, bounded by this community to the southwest, the lakeshore to the west, and Range Road 133 on the east. The Project lands are largely undisturbed and remain heavily vegetated with a thick deciduous forest cover (Plates 1 and 2).

Whitefish Lake is located in the Boreal Forest Natural Region, and within the Central Mixedwoods Subregion (Natural Regions Committee 2006). This subregion is characterized by primarily aspen and white spruce in uplands with jack pine forests in course sediments and low-lying areas, with black spruce fens and bogs in poorly drained areas.

2.2 Cultural Setting

Figure 3 presents the Cultural Historical sequence cited for east central Alberta. While this framework is commonly accepted in archaeological research, it is biased toward the occurrence of projectile points and equally biased toward a reliance on research in southern Alberta, where more well stratified and datable sites have been found. Archaeological investigations in the oilsands has also informed some on the sequence, but in large the complexity of cultural history within the parklands in the region of Whitefish Lake is not well understood. This is in part due to the fact fewer sites have been excavated and wider conclusions are hindered by the lack of deeply stratified sites and paucity of datable finds.

2.3 Previous Historical Resources Studies

The lands immediately northeast of the current Project area, where the Paradise Cove Resort Development is located, were assessed under ASA Permit 94-072 (Kowal 1994). No sites were identified in that area, although in comparison to the current Project area, the Paradise Cove development area is lower and lacks defined, high landforms typically favourable for finding archaeological sites.

Previous archaeological investigations in close proximity to the Project area have been limited to date. Within the GcOx Borden Block, only one site had been recorded prior to the current HRIA (no site records nor location could be found for GcOx-1) (Table 1, Figure 4). **GcOx-2** is a Precontact artifact scatter consisting of three quartzite flakes. This site was recorded on a ridge overlooking marsh and nearby Whitefish Creek to its west (McCullough 1985). Similar to the sites found during the current HRIA, GcOx-2 was shallowly buried at around 15 cmbs. No other sites are recorded within 10 km of the Project area.

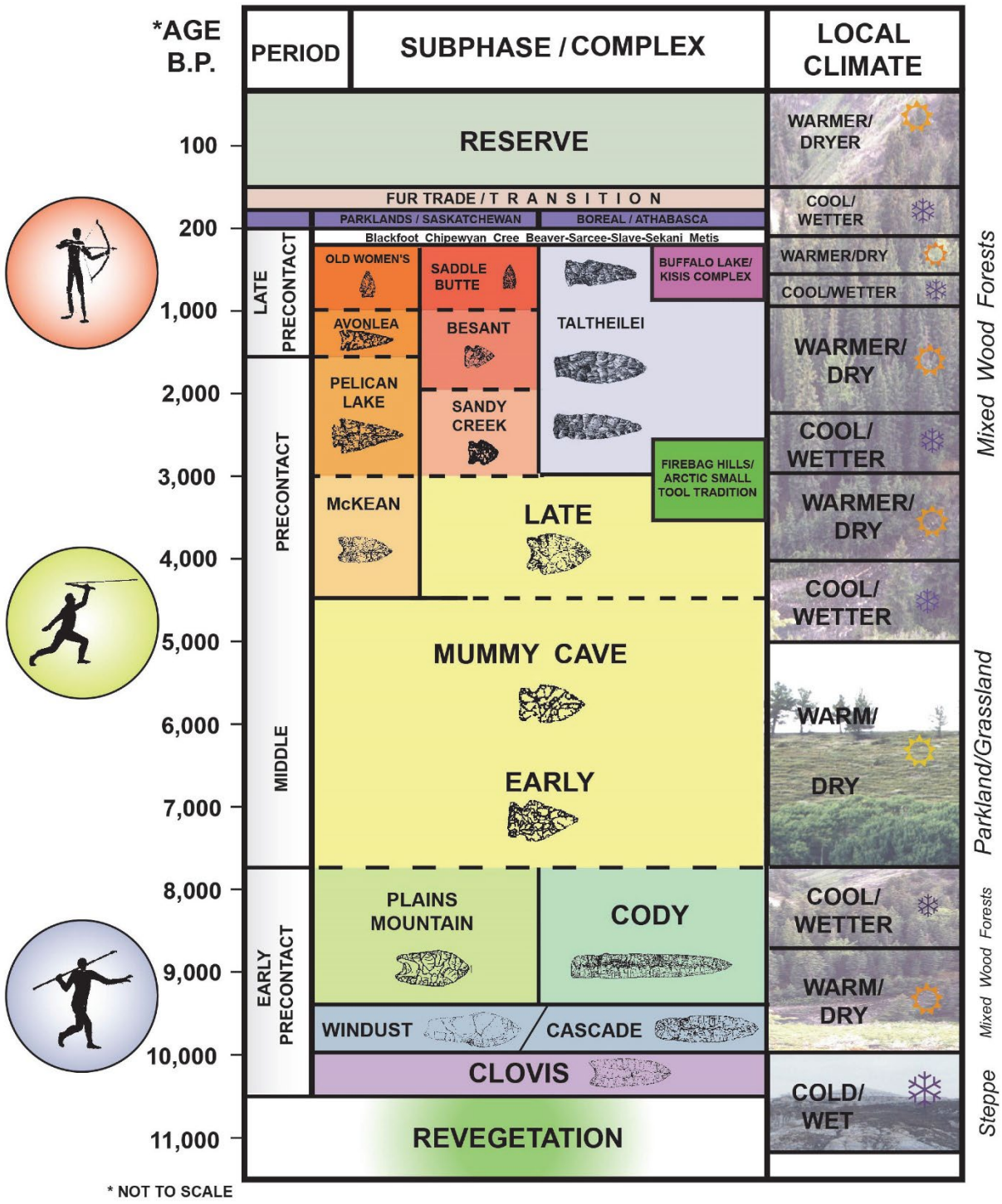

Figure 3. Cultural History for the Project Area

Within a 20 km radius of the Project area, five sites have been recorded in Borden Blocks GbOw and GcOw (Table 1, Figure 4). These include small Precontact artifact scatters (< 10 artefacts)

and small Precontact campsites. In the general Project region, archeological sites frequently occur along lakeshores such as those recorded along Lac la Biche which has been subject to more investigation than has Whitefish Lake (e.g., Balcom 1986; Meyer and Blakey 2022; de Mille et al. 2023). To date, more than 270 sites have been recorded along the margins of Lac La Biche.

Site	HRV	ASA Permit No./ Publication	Description	Distance to Project Area	Direction to Project Area
GcOx-2	0	85-096	Precontact scatter with <10 artifacts	8.2	N
GbOw-1	4	U of A 1965	Precontact campsite	15.5	SE
GbOw-2	0	81-034	Precontact scatter with <10 artifacts	15	SE
GbOw-3	0	81-034	Precontact scatter with <10 artifacts	17.4	SE
GcOw-1	4	17-205; 19-184	Precontact campsite	16.4	NE
GcOw-2	0	17-205; 19-184	Precontact campsite	17	NE

Table 1. Nearby Previously Recorded Archaeological Sites

McCullough (1982) emphasises the importance of lakes in this region to adaptation and livelihood throughout occupation by Indigenous peoples. Perhaps most significantly, lakes provide a reliable staple food source of fish that can be accessed year-round and can support large groups of people, supplemented by ungulates (e.g., moose, wood bison, deer), other mammals caught by trapping, and plant food sources (e.g., berries). Fish could be accessed year-round; in winter, ice fishing techniques were known ethnographically practiced by the Denesuline (Chipewyan) (Clarke 1970; McCullough 1982). McCullough (1982) suggests site locations were likely influenced by seasonal fish biological patterns. For example, camps for large group cooperatively fishing near spawning grounds around the mouths of rivers or creeks.

In addition to providing food, lakes were key to boreal forest livelihood (McCullough et al. 1981; McCullough 1982). Lakes may be important locations for collecting lithic materials eroding or exposed along the shoreline where cobblestones were accessible, easy to collect and quarry. Lakes and rivers also provide essential means of transportation in the boreal forest, more efficient that pedestrian travel. Larger-sized waterbodies also have localized, moderating effects on the weather, where absorption of heat provides microclimates with less severed temperature extremes.

Notably, it has been demonstrated that lakes have been long utilized by Indigenous people in this region. The Duckett Site (GdOo-16) exemplifies this long history through the presence of Early Holocene projectile points (Clovis, Plainview/Frederick, and Alberta/Scottsbluff) along with Mid and Late Holocene point types (e.g., Oxbow, McKean, Taltheilei, and small corner and side notched) and ceramics (McCullough et al. 1981; Fedirchuk and McCullough 1986) (Figure 3). Located on the shores of Ethel Lake, ~100 km east of Whitefish Lake, the Duckett Site location was used, with some of these occupations represented by intensive floors.

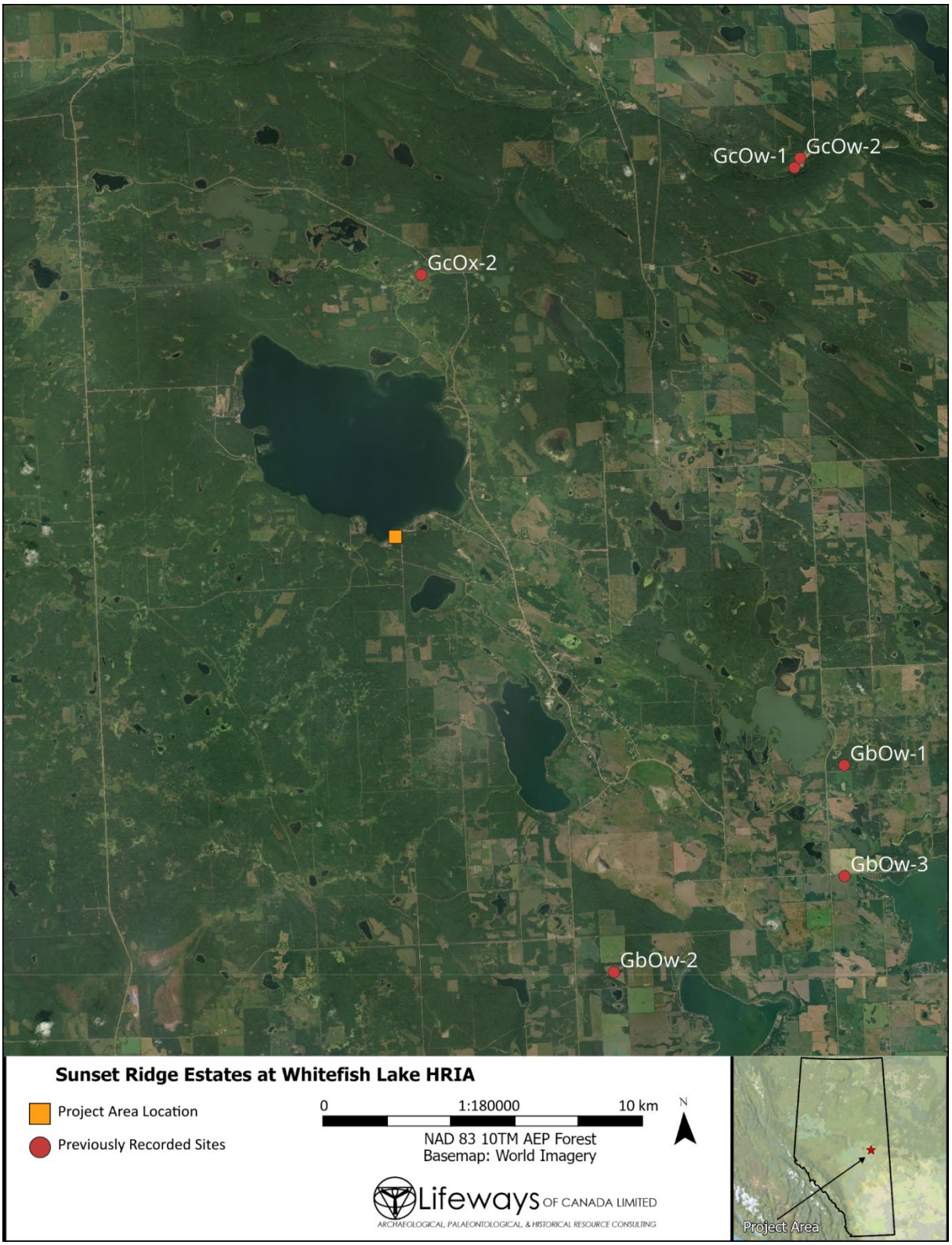

Figure 4. Map of Whitefish Lake Region showing known Site Locations

3. SURVEY METHODS AND RESULTS

Following the issuance of an HRIA permit by the HRMB, the Historical Resources Impact Assessment of the Project area was undertaken in early October 2025. Investigations consisted of a pedestrian survey of the entire study area and the excavation of 45 shovel tests within the defined project area polygon (Figure 6).

Prior to the initiation of the HRIA, four Target Areas (TAs) were identified within the Project area, and were the focus of subsurface testing during field studies (Figure 6). These target areas (TA01, TA02, TA03, and TA04) were selected as being of high archaeological potential based on the suitability and likelihood for these well-defined landforms to house historic resources, especially those with level terrain. Subsurface tests consisted of judgmental shovel tests measuring horizontally approximately 40 x 40 cm, excavated to sterile substrate with all sediment screened through ¼-inch mesh. The shovel tests completed approximated survey transects across each target area with tests spaced at 20-30 m intervals. Where positive shovel tests were identified, this interval was reduced to a 5-10 m distance with tests excavated in all directions on the landform extending out from the one positive test.

TA01, the furthest north of the Target Areas, consists of a sharply defined ridgeline and was subject to 13 shovel tests; none of which were positive for cultural materials (Plate 1). Twenty-two shovel tests were excavated at TA02, a lower ridge and wider bench running along the west side of the higher landform identified as TA01. Four of the shovel tests completed in TA02 were positive for cultural materials and **GcOx-3** was newly recorded. TA03 represents a lower bench on the south side of the Project area. Field reconnaissance found this landform to be truncated to the east and west so only three shovel tests were excavated on this landform (Plate 2). Finally, just above the lakeshore TA04 is a sharply defined bench extending northwest from the house and yard area. A total of seven shovel tests were excavated to assess this landform, five of which were positive and resulted in the recording of **GcOx-4**.

Below we provide detailed summaries of these two newly recorded sites and provide management recommendations for these within the context of this Project.

3.1 GcOx-3 (LSD 16-4-62-14-W4M)

Location/Description

GcOx-3 is a newly recorded Precontact Artifact scatter (> 10 artefacts) located on the edge of a high bench overlooking Whitefish Lake; approximately 30 m above the lake. The site area surface is generally flat with a gentle 1°–2° slope trending westward and a slightly steeper (~5°) slope to the south. The southern to southwestern edge of the landform is well defined, descending roughly 40 m to lower benches overlooking the lake. To the east, the landform edge is less well defined and gradually transitions into low-lying terrain. Vegetation consists of an

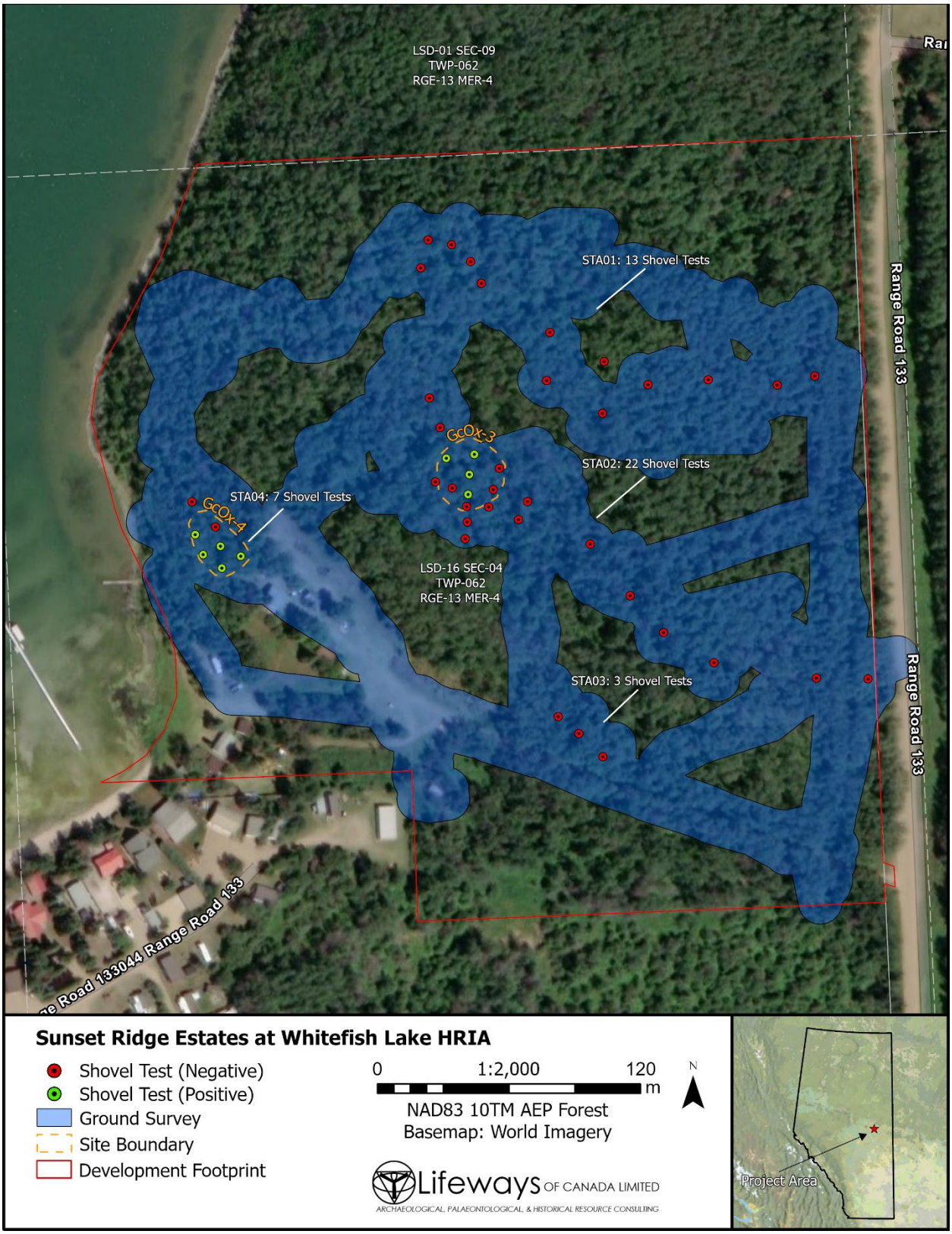

Figure 5. Orthophoto Showing Ground Survey Tracks and Location of Shovel Tests

Plate 1. View of Target Area TA01 Looking West

Plate 2. View of Target Area TA03 Looking West

overstory of aspen, birch, and poplar, with a subcanopy of trembling aspen (Plate 3). Ground cover includes prickly rose and leaf litter.

Archaeological Studies and Site Archaeological Characteristics

GcOx-3 was recorded when several quartzite flakes were found in Shovel Test GS4 (STGS4) (Figures 6 and 7, Plates 3 and 4). Three additional shovel tests excavated in the near vicinity (STBV5, STBV6, STBV10) also produced positive results, indicating the site to be spatially widespread and characterized by a larger lithic assemblage with a moderate diversity in material types and flake morphologies, indicative of multiple reduction events. In total one quartzite core and eleven pieces of lithic debitage were recovered (Tables 2 and 3). All materials came from various depths between 7-20 cmbs. Some of the flakes were found particularly deeply buried (~20 cmbs) within this stratigraphic profile, suggesting GcOx-3 may be associated with an Early Precontact occupation (Figure 3). No cultural features were identified. Overall, the GcOx-3 site area measures 32 x 30 m (NS/EW) covering an area of approximately 960 m^2 (Figure 5).

Provenience	Depth (cmbs)	Debitage Count	Stone Tools Count
STBV10	8-20	4	
STBV5	0-20	3	
STBV6	8	1	
STGS4P	0-15	3	1
	Total	**11**	**1**

Table 2. GcOx-3 Artefact Summary by Provenience

Flake Type	Materials		Total
	quartzite	siltstone	
primary decortication	2		2
secondary decortication	1		1
secondary	2	1	3
flake fragment	2		2
shatter	3		3
Total	**10**	**1**	**11**

Table 3. GcOx-3 Debitage Type Summary

The lithic material types from GcOx-3 are primarily quartzite (10 flakes and one core), with an additional single siltstone flake, suggesting some diversity in the assemblage (Table 3). Most of the debitage recovered were classified as primary and early secondary flakes or shatter, indicative of the earliest stages of lithic reduction and tool production (Table 3).

Plate 3. GcOx-3 Site Area Looking South

Plate 4. Stratigraphic Profile of Shovel Test STGS4P

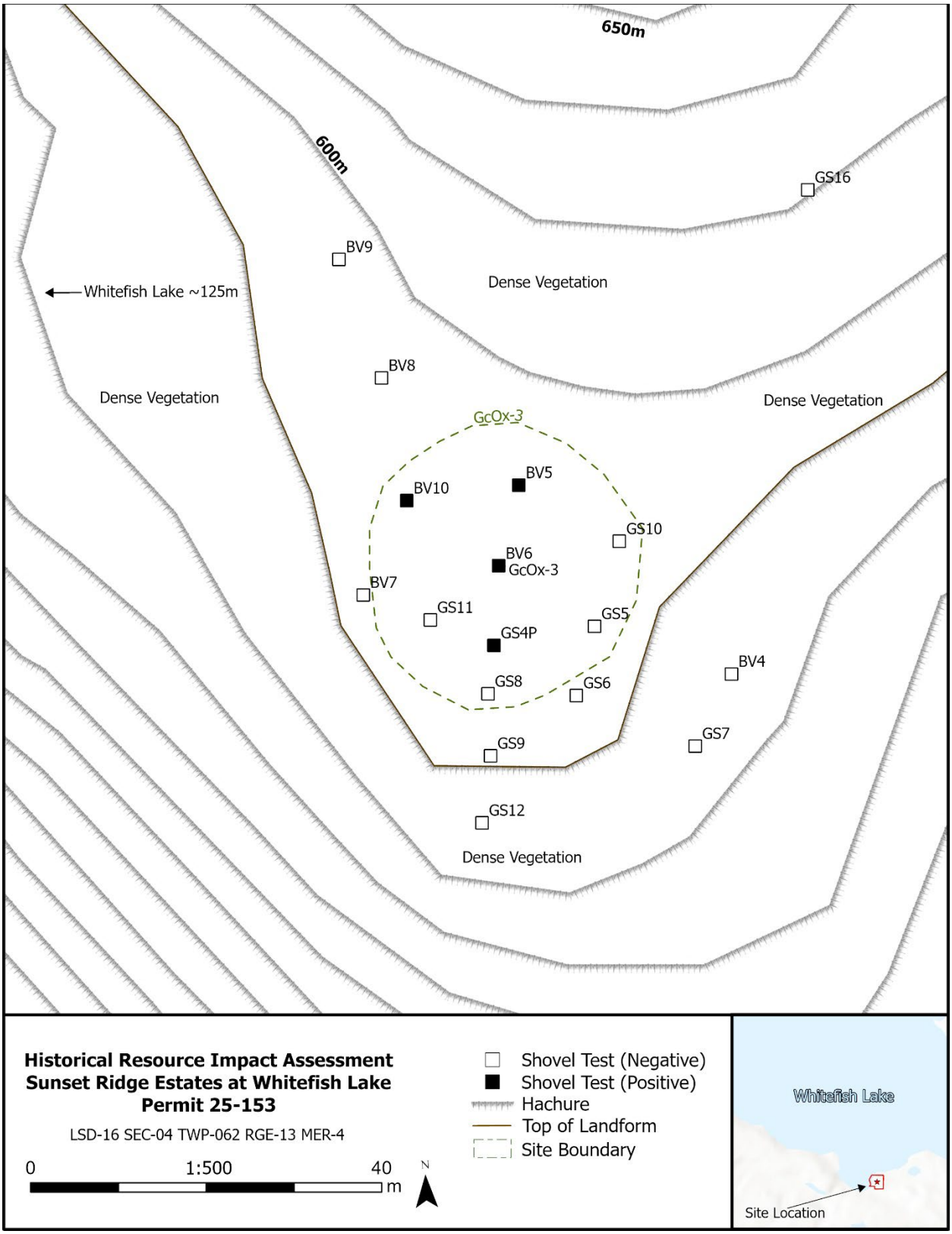

Figure 6. Sketch Map of GcOx-3

Tool Descriptions

GcOx-3:12 – Core

A grey quartzite 'tortoise back' cobble core was recovered from STGS4P from a depth of about 15 cmbs (Plate 5). This core is characterized by an asymmetric pear-shaped outline and a steep biconvex profile, with the ventral surface exhibiting extensive unidirectional flake scaring across its entirety. Conversely the dorsal side displays a smooth unmodified surface entirely covered with cortex. No other modifications are apparent.

Plate 5. Core, GcOx-3:12.

Significance and Recommendation

In summary, GcOx-3 represents by a significant lithic assemblage indicative of multiple reduction events likely associated with basecamp activities in a largely undisturbed area. As a result, it is considered to be of **High Local Significance (Appendices C and D)**. **If the GcOx-3 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. It is recommended that Stage 1 mitigative studies should include additional systematic shovel test on a 5 m interval and 15 m^2 of block excavation** aimed at recovering a more complete artifact assemblage and temporally diagnostic artifacts. **Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

3.2 GcOx-4 (LSD 16-4-62-14-W4M)

Location and Description

GcOx-4 is a Precontact artifact scatter (> 10 artefacts) newly recorded on a narrow, ridgelike bench overlooking Whitefish Lake to the west. The landform consists of a terrace edge trending northeast to southwest with a well-defined, western margin descending 45°–50° toward Whitefish Lake (Plate 6). The southern portion of the landform is relatively flat, while the northern margin gradually declines at approximately 20°. To the east the landform transitions into a poorly defined edge sloping about 10° into a low-lying area. The land surface is well drained, with generally thin and poorly developed soils, consisting of light grey silts classified as a gray luvisol overlying till deposits (Plate 7). Vegetation is consistent with surrounding areas, consisting of an overstory of aspen, birch, and poplar with an understory of trembling aspen. Groundcover includes prickly rose and leaf litter.

Plate 6. Looking West to Whitefish Lake from GcOx-4 Site Area

Archaeological Studies and Site Archaeological Characteristics

GcOx-4 was initially identified when a quartzite flake was recovered in STGS20 (Figures 4 and 6). Four additional adjacent shovel tests (STBV21, STBV22, STBV23 and STBGS22) also yielded positive results indicating an extensive lithic debitage scatter extending across the treed and heavily vegetated bench running north from the open yard where a house sits. In total 19 pieces of debitage and one small, calcined bone fragment were recovered from the five positive

shovel tests (Tables 4 and 5). The debitage present represents all stages of reduction from at least three different material types including chert, quartz, and quartzite (Table 5).

Plate 7. Stratigraphic Profile of GS20P

Provenience	Depth (cmbs)	Debitage Count	Fauna Count
STBC23	8-20	8	
STBV21	15	1	
STBV22	8-20	8	1
STGS20P	10-15	1	
STGS22P	15-20	1	
	Total	**19**	**1**

Table 4. GcOx-4 Artefact Summary by Provenience

Flake Type	Materials			Total
	quartzite	quartz	chert	
primary decortication	2		1	3
secondary decortication	2		1	3
secondary	2			2
flake fragment	4	2		6
shatter	3	2		5
Total	**13**	**4**	**2**	**19**

Table 5. GcOx-4 Debitage Type Summary

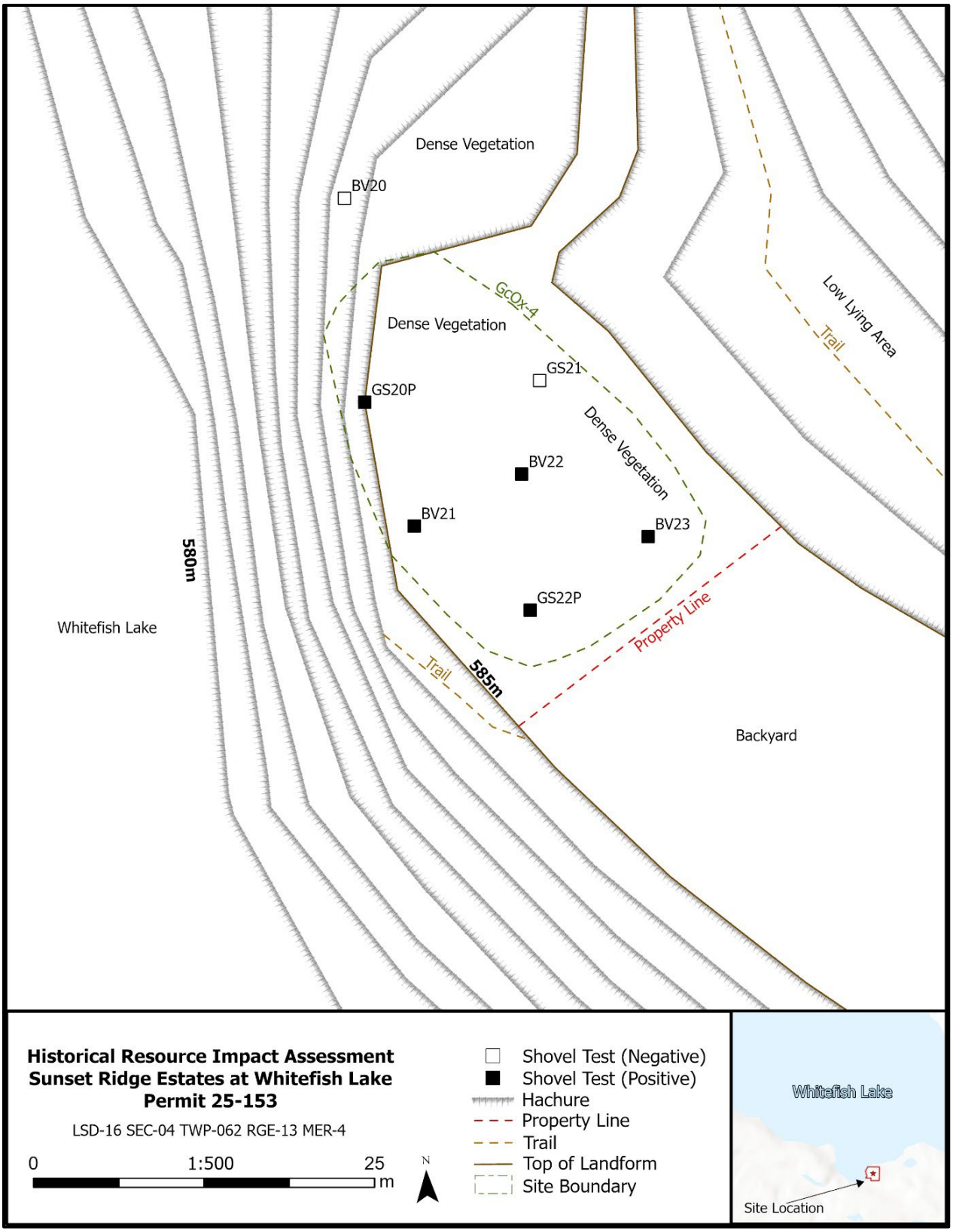

Figure 7. Sketch Map of GcOx-4

A single small (0.3 g) bone was recovered from STBV22. It was burned to the point of partial calcination (grey and white colouration). This fragment could not be identified taxonomically but is assigned as medium-large mammal. Similarly, the skeletal element could not be identified. Its presence, alongside the above-mentioned lithic artefacts, suggests animals were used in the activities at this site. It is possible that additional faunal remains have succumbed to acidic soils.

GcOx-4's elevated position and proximity to the lake suggest this to be a strategic location for short-term tool production or maintenance activities. These were likely associated with resource procurement or habitation along the lakeshore. No cultural features were identified. Overall, the GcOx-4 site area measures to be 31 x 20 m (NS/EW) covering an area of approximately 620 m^2.

Significance and Recommendation

In summary GcOx-4 represents a significant assemblage of stone and bone artifacts associated with resource procurement or basecamp activities, in an areas which appears to be largely undisturbed. As such, it is considered to be of **High Local Significance** (Appendix C). The artifact diversity and density indicate potential for additional buried cultural material to be present here. **If the GcOx-4 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. Additional field studies should include a systematic shovel test program at 5 m intervals and 20 m^2 of mitigative block excavations aimed at recovering a more complete artifact assemblage and temporally diagnostic artifacts**. **Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

4. SUMMARY AND RECOMMENDATIONS

This Final Report has summarized the results of a Historical Resources Impact Assessment completed by Lifeways on behalf f Massif Energy Ltd. toward gaining Historic Resources approvals for their proposed residential Sunset Ridge Estates at Whitefish Lake Project (the Project). The Project is located along the southern shore of Whitefish Lake, Alberta. The HRIA was conducted under Permit 25-153 to meet Historical Resources Schedule of Requirements (HRA # 4835-25-0072-001) issued by Alberta Arts, Culture and the Status of Women on August 19, 2025 (Appendix A) (Figures 1 and 2).

The archaeological field studies were completed in October 2025 and consisted of a pedestrian survey and shovel testing program within the Project area. A total of 45 shovel tests were excavated, nine of which were positive for cultural materials. This testing program resulted in the recording of two previously unrecorded sites, GcOx-3 and GcOx-4.

GcOx-3 is a newly recorded Precontact artifact scatter (> 10 artefacts) located on the edge of a high bench overlooking Whitefish Lake; approximately 30 m above the lake. The ground surface here is generally flat with a gentle 1°–2° slope trending westward and a slightly steeper (~5°) slope to the south. GcOx-3 was identified from 11 pieces of lithic debitage and one core recovered from four positive shovel tests. All materials came from various depths between 7-20 cm below surface (cmbs). Some of the flakes were found particularly deeply buried (~20 cmbs) within this stratigraphic profile, suggesting that GcOx-3 may be associated with an Early Precontact occupation. Overall, the site area measures 32 x 30 m (NS/EW) covering an area of approximately 960 m^2.

In summary GcOx-3 is represented by a significant lithic assemblage indicative of multiple reduction events, likely associated with basecamp activities, and is considered to be of **High Local Significance (Appendices C and D)**. **If the GcOx-3 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. It is recommended that Stage 1 mitigative studies should include additional systematic shovel test on a 5 m interval and 15 m^2 of block excavation. Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

GcOx-4 is a newly recorded Precontact artifact scatter (> 10 artefacts) located on a well-defined but narrow ridgelike bench overlooking Whitefish Lake to the west. This site was identified from 19 pieces of lithic debitage and one calcined bone fragment recovered from five positive shovel tests excavated within the site area. The lithic assemblage represents all stages of reduction from at least three different material types including chert, quartz, and quartzite. The elevated position and proximity to the lake suggests that GcOx-4 is in a strategic location for short-term tool production or maintenance activities, likely associated with resource procurement or habitation along the lakeshore. Overall, the GcOx-4 site area measures to be 31 x 20 m (NS/EW) covering an area of approximately 620 m^2.

In summary GcOx-4 is a significant assemblage of stone and bone artifacts associated with resource procurement or basecamp activities and is considered to be of **High Local Significance** (see Appendices C and D). The artifact diversity and density indicate potential for additional buried cultural materials to be present here. **If the GcOx-4 site area cannot be avoided by proposed developments, it is recommended that additional field studies be undertaken to mitigate any impacts to the site area. Additional field studies should include a systematic shovel test program at 5 m intervals and 20 m^2 of mitigative block excavations aimed at recovering a more complete artifact assemblage and temporally diagnostic artifacts**. **Pending initial Stage 1 results, additional Stage 2 mitigations may be required.**

Archaeological sites **GcOx-3** and **GcOx-4** are the first of this sort to be found on the margins of Whitefish Lake and hold the potential to contribute significantly to our understanding of Precontact adaptations along the lakeshore and how this location was integrated into the documented subsistence strategies and interactions spheres established throughout the Lakeland Region of east-central Alberta and beyond (McCullough 1982). For this reason, both sites are recommended for further study if the site areas cannot be avoided by the proposed Sunset Ridge Estates Development.

With the acceptance of this report under the Alberta Historical Resources Act, Massif Energy Ltd. has met all of the Historical Resources Requirements outlined under the response issued under file HRA # 4835-25-0072-001. Historic Resource Approval is recommended for all lands within the Project area beyond the limits of newly recorded sites GcOx-3 and GcOx-4.

All recommendations are subject to review by staff of the Historic Resource Management Branch of the Ministry of Alberta Arts, Culture and Status of Women

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Natural Regions Committee
2006 *Natural Regions and Subregions of Alberta*. Government of Alberta.

APPENDIX A: SCHEDULE OF REQUIREMENTS ISSUED BY THE HISTORICAL RESOURCES MANAGEMENT BRANCH

Alberta

HRA Number: 4835-25-0072-001
August 19, 2025

Historical Resources Act Requirements

Proponent: Massif Energy Ltd.
2 Cavan Road, Sherwood Park, AB T8H 2K7
Contact: Austin Zacharko

Agent: Massif Energy Ltd.
Contact: Austin Zacharko

Project Name: **Sunset Ridge Estates at Whitefish Lake**

Project Components: Country Residential Subdivision
Area Structure Plan / Outline Plan
Land Use Amendment
Redesignation / Rezoning
Access Road
Electrical / Utility

Application Purpose: Requesting HRA Approval / Requirements

Pursuant to Section 37(2) of the *Historical Resources Act*, a Historic Resources Impact Assessment is required for all or portions of those activities described in this application and its attached plan(s)/sketch(es). The Historic Resources Impact Assessment is to be conducted in accordance with the instructions outlined in the following schedule.

[redacted]
David Link
Assistant Deputy Minister
Heritage Division
Alberta Arts, Culture and Status of Women

SCHEDULE OF REQUIREMENTS

ARCHAEOLOGICAL RESOURCES

Pursuant to Section 37(2) of the *Historical Resources Act*, a Historic Resources Impact Assessment for archaeological resources is to be conducted on behalf of the proponent by an archaeologist qualified to hold an archaeological research permit within the Province of Alberta. A permit must be issued by Alberta Arts, Culture and Status of Women prior to the initiation of any archaeological field investigations. Please allow ten working days for the permit application to be processed.

1. The Historic Resources Impact Assessment must address all areas of high archaeological potential within the project area.

SCHEDULE OF REQUIREMENTS (continued)

2. The Historic Resources Impact Assessment is to be carried out prior to the initiation of any land surface disturbance activities under snow-free, unfrozen ground conditions. Should the project require field studies under winter conditions, directions in the Archaeological Survey Information Bulletin: Winter Conditions must be followed.

3. Results of the Historic Resources Impact Assessment must be reported to Alberta Arts, Culture and Status of Women and subsequent *Historical Resources Act* approval must be granted before development proceeds.

PALAEONTOLOGICAL RESOURCES

There are no *Historical Resources Act* requirements associated with palaeontological resources; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

INDIGENOUS TRADITIONAL USE SITES

There are no *Historical Resources Act* requirements associated with Indigenous traditional use sites of a historic resource nature; however, the proponent must comply with Standard Requirements under the Historical Resources Act: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

HISTORIC STRUCTURES

There are no *Historical Resources Act* requirements associated with historic structures; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

PROVINCIALLY DESIGNATED HISTORIC RESOURCES

There are no *Historical Resources Act* requirements associated with Provincially Designated Historic Resources; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

ADDITIONAL COMMENTS

1. To obtain contact information for consultants qualified to undertake the assessment work specified above, please consult the list of Alberta Historic Resource Consultants.

2. In addition to any specific conditions detailed above, the proponent must abide by all Standard Conditions under the *Historical Resources Act*.

Proposed Development Location:

MER	RGE	TWP	SEC	LSD List
4	13	62	4	16

SCHEDULE OF REQUIREMENTS (continued)

Documents Attached:

Document Name	Document Type
Subdivision Outline Plan	Illustrative Material

APPENDIX B: STRATIGRAPHIC AND SEDIMENT LOGS FOR SUBSURFACE TESTS

B.1 Target Area 01: Shovel Test: BV17

Total Depth: 18 cmbs	
Location: 10TM E 702859.14 N 6023382.85	
Sediment:	
0-4 cmbs	dark litter mat
4-8 cmbs	dark organic silt (Ah)
8-15 cmbs	light grey silt (Bh)
15-18 cm	clay (C)
Cultural Material Summary: No cultural material observed or collected	

Plate B.1. Stratigraphic Profile of BV17 in TA01.

B.2 Target Area 02: Shovel Test: GS4P (GcOx-3)

Total Depth: 30 cmbs	
Location: 10TM E 702701.18 N 6023328.95	
Sediment:	
0-4 cmbs	dark litter mat
4-10 cmbs	dark organic silt (Ah)
10-22 cmbs	light grey silt (Bh)
22-30 cm	clay (C)
Cultural Material Summary: 3 lithic flakes (GcOx-3:9, 10, 11) and core (GcOx-3:12)	

Plate B.2. Stratigraphic Profile of GS4P in TA02.

B.3 Target Area 03: Shovel Test: BV19

Total Depth: 20 cmbs	
Location: 10TM E 702742.22 N 6023227.85	
Sediment:	
0-4 cmbs	dark litter mat
4-11 cmbs	dark organic silt (Ah)
11-17 cmbs	light grey silt (Bh)
17-20 cm	clay (C)
Cultural Material Summary: No cultural material observed or collected	

Plate B.3. Stratigraphic Profile of BV01 in TA03.

B.4 Target Area 04: Shovel Test: GS20P (GcOx-4)

Total Depth: 25 cmbs	
Location: 10TM E 702576.8 N 6023310.66	
Sediment:	
0-6 cmbs	dark litter mat
6-12 cmbs	dark organic silt (Ah)
12-22 cmbs	light grey silt (Bh)
22-25 cm	clay (C)
Cultural Material Summary: 1 lithic flake (GcOx-4:1)	

Plate B.4. Stratigraphic Profile of GS20P in TA04.

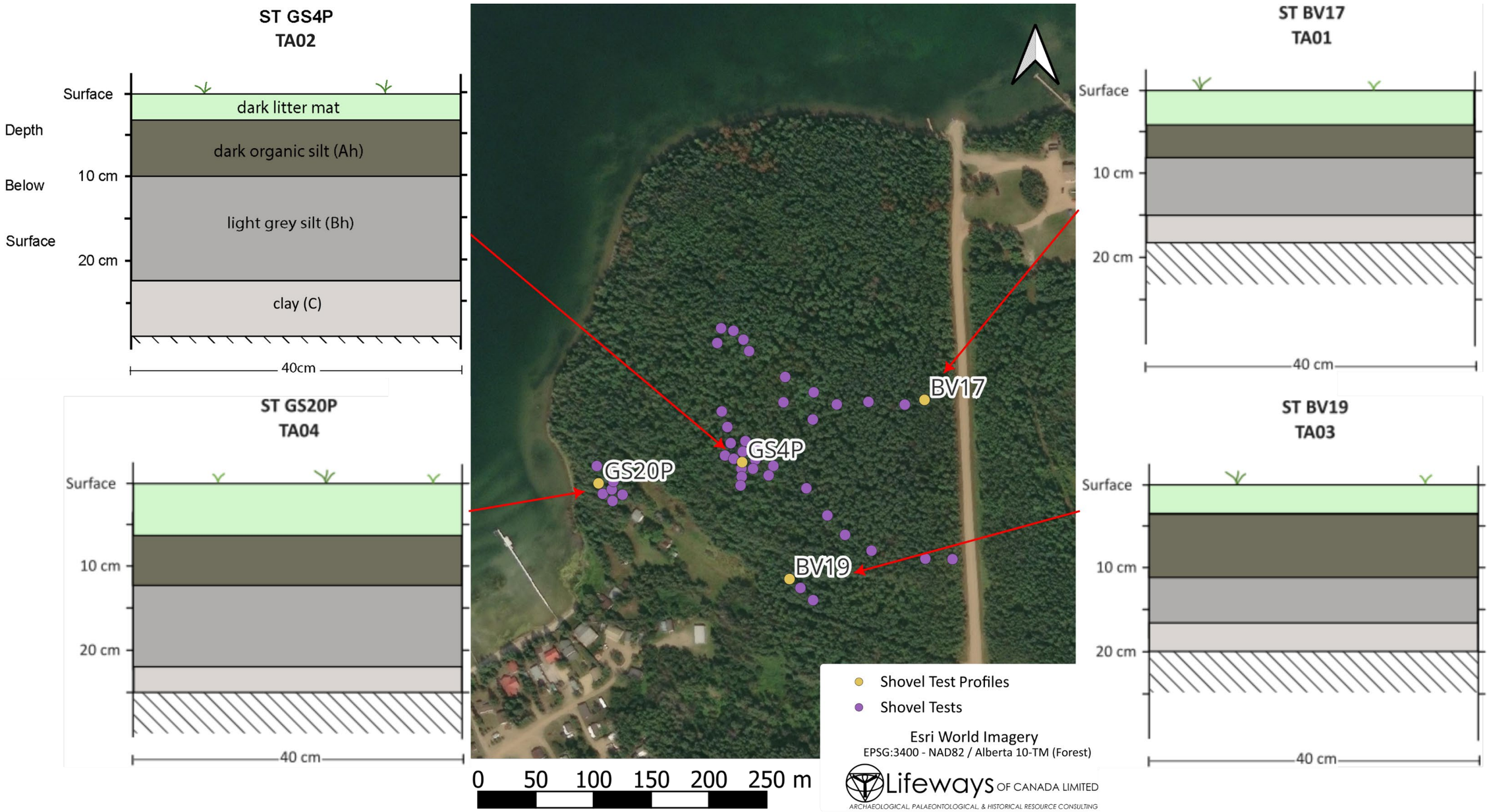


Figure B.1. Summary of Locations and Stratigraphy of Shovel Tests Excavated Under Permit 23-099

APPENDIX C: ASSESSMENT OF SITE SIGNIFICANCE

C.1 Assigning Significance

Precontact and Historic archaeological sites vary widely in size, content, complexity, condition, and age, and therefore in significance. Assignment of site significance is based on an archaeologist's assessment of the potential of a site to enhance the collective understanding of the archaeological or historical resources of a region. The information of interest includes: the cultures that were once present, their occupancy patterns, and resource harvesting patterns. An important part of the assessment of site significance revolves around potential for data collection. A site on which additional investigation is recommended prior to disturbance must have preserved information that is recoverable in an efficient and effective manner that will significantly aid our understanding of the past.
Sites vary greatly in their ability to inform on these subjects. Isolated finds with one or two expediently made, used, and discarded artifacts lying on the surface provide very little information in contrast to an isolated find of a projectile point. A projectile point generally informs us on culture, as point styles change through time and space and can usually be associated with specific archaeological cultures. In addition, a projectile point may inform us about the kinds of toolstone preferred for point manufacture and on trade patterns when non-local varieties of stones are used. That being said, isolated finds even of projectile points have little *in situ* value. That is, these small sites have only very limited amounts of recoverable information associated with them. They are of local significance. They are the most common kind of site, but unless exposed by disturbances or erosion they are the least likely to be discovered.

Large complex campsites or Historic townsites are at the other end of the spectrum. They contain large numbers of artifacts, features, and patterns of association representing complex activity areas, tasks, and social groups. Often these sites contain more than one vertically separated occupation (termed a stratified site) and represent repeated use of a favoured locale over many generations. These sites contain a great deal of information and are of high regional value. If very rare and an outstanding example of their kind they may be of Provincial significance.
Lying between the extremes of an isolated find and a campsite of high regional significance are the majority of discoverable archaeological sites. The following describes the categories of site significance utilized to evaluate the Precontact and Historic archaeological sites in this study.

C.2 Sites of Local Significance

Examples of sites of local significance are isolated finds or small artifact scatters and small camps in disturbed or eroded contexts, including small scatters of Historic materials. Most lack cultural or temporal diagnostic artifacts or dateable organics (charcoal/bone). Sites of local significance are recorded and mapped, and artifacts collected. Rarely are they recommended for avoidance or further study by a consulting archaeologist and Alberta Culture and Tourism rarely requires avoidance or further mitigative studies of sites of local significance.

C.3 Sites of High Local Significance

Examples of sites of high local significance include small artifact scatters (small camps) with temporal/cultural diagnostic artifacts, isolated hearth features with datable charcoal/bone, small but high-density workshops, or isolated Historic cabins. Non-local toolstone may be present at Precontact sites. These sites generally represent one-time occupations by individual, task, or small family groups at that locale. Mapping and archaeological excavation of these sites/features may recover information that will assist in understanding the archaeology within that locality and its role in the larger region. Sites of high local significance may be recommended for avoidance or further archaeological study by a consulting archaeologist. Alberta Culture and Tourism may require further mitigative studies of these sites if they cannot be avoided in a proposed development.

C.4 Sites of Regional Significance

Sites that fall into this category include moderate to large campsites, workshop/quarries, rock art sites, or larger Historic sites such as large logging camps. In campsites, time/culturally diagnostic artifacts, non-local tool stone, features, and datable charcoal or bone are present. These camps represent repeated occupations of a locale by a group (multiple family). A number of stratified occupations may be present. Mapping and archaeological excavation of regionally significant sites will recover information which not only greatly assists in understanding the archaeology of that locality but also of the region. Test excavations are sometimes required to verify that a site is of regional significance. These sites are almost always recommended for avoidance or further archaeological study by a professional archaeologist and Alberta Culture and Tourism generally requires further mitigative studies at sites of regional significance if to be disturbed by development.

C.5 Sites of High Regional Significance

The difference between sites of regional and high regional significance reflects differences in size, complexity, number of occupations, activities, density, and diversity of contents, age, and preservation. For example, a moderately-sized Precontact campsite with two occupations may be of regional significance, whereas a larger campsite with stratified remains of four occupations may be of high regional significance. A logging camp may be of regional significance, but a well-preserved Historic townsite may be of high regional significance.

C.6 Sites of Provincial Significance

Sites of Provincial significance are sites which, because of their outstanding values (size, complexity, rarity, condition, etc.) in comparison to other sites of the same class in the Province of Alberta, would qualify for designation under the Alberta *Historical Resources Act*. Sites of Provincial significance are the least common, and overall rather rare.

APPENDIX D: ALBERTA ARCHAEOLOGICAL SITE FORM

Alberta

ARCHAEOLOGICAL SITE INVENTORY FORM

Borden No. GcOx-3

Permit No. 25-153

Revist Date:

FINAL 2025 OCT 10

Site Name:

Field No: GS4P

Related Heritage Survey Key No.(s):

Location

1. Elevation (m): 597 2. NTS 1:50,000 Map No.: 73L05

3. Legal Description: LSD 16 Section 4 Township 62 Range 13 W of 4 M

4. Point Coordinates: 10-TM (Forest) (EPSG: 3400) Easting 702702.000 Northing 6023337.000

5. Landowner: ☐ Government of Canada ☐ Government of Alberta ☐ Municipal Government ☒ Freehold

Landowner Name/Address: Austin Zacharko, [redacted]

6. Dimensions: Length (m) 32 Width (m) 30 Long Axis Orientation N-S Depth Below Surface (m) 0.15

7. Access (tips for access, nearest named place, highway/road numbers, cardinal directions, landmarks, distances)

From Smoky Lake, Alberta, travel east along Highway 28 and turn north onto Highway 36. Continue north for approximately 13.7 km, then turn east onto Township Road 620 and proceed for roughly 9.7 km. Turn north onto Range Road 133 and continue for about 1.3 km before turning west into a private driveway. Park approximately 150 m down the driveway. From this point, enter the forest and proceed north up a steep slope for approximately 50 m to reach the pointed terrace where the site is located atop the landform.

8. Site Environment/Setting (describe water source, landform, aspect, slope, sediment, stratigraphy, vegetation)

Water Source: ☒ Permanent ☐ Seasonal

Water Source Type: ☒ Lake ☐ River ☐ Stream ☐ Pond ☐ Wetland ☐ Spring other, specify:

Distance to Water (m): 125 Direction to Water: West Name: Whitefish Lake

Landform: Pointed Terrace Slope (degrees): 2 Aspect: South

Sediment: ☐ Boulders ☐ Cobbles ☒ Gravel ☐ Sand ☒ Silt ☒ Clay ☐ Loam ☐ Bedrock

Stratigraphy, vegetation, other comments

Profile: 0–15 cm duff; 1 cm of dark brown organic soil; 15–28 cm light grey compact silt with abundant small subangular gravels; at approximately 30 cm, a mix of reddish-brown clay and compact silt. A positive shovel test was identified at ~15 cm depth.The landform consists of a pointed terrace or V-shaped bench overlooking Whitefish Lake, situated approximately 30 m above the lake to the east. The surface is generally flat with a gentle 1–2° slope trending westward and a slightly steeper (~5°) slope to the south. The southern to southwestern edge of the landform is well defined, descending roughly 40 m to lower benches overlooking the lake. To the east, the landform edge is less defined and gradually transitions into low-lying terrain. Vegetation consists of an overstory of aspen, birch, and poplar, with a subcanopy of trembling aspen. Ground cover includes prickly rose and leaf litter.

Borden No. GcOx-3

Permit No. 25-153

Site Typology

9. Site Class
- [x] prehistoric
- [ ] Indigenous historic
- [ ] historic
- [ ] contemporary

10. Site Context
- [ ] surface
- [x] subsurface
- [ ] stratified
- [ ] underwater
- [ ] undetermined

11. Component
- [x] single
- [ ] multi
- [ ] undetermined

1 # components

12. Site Type
- [ ] isolated find
- [ ] scatter ≤10
- [x] scatter >10
- [ ] campsite
- [ ] stone feature
- [ ] killsite
- [ ] workshop
- [ ] quarry
- [ ] rock art
- [ ] burial
- [ ] settlement
- [ ] homestead
- [ ] farm
- [ ] ranch
- [ ] dwelling
- [ ] trading post
- [ ] police post
- [ ] mine
- [ ] trail
- [ ] mission
- [ ] school
- [ ] urban
- [ ] ceremonial/religious
- [ ] industrial
- [ ] transportation
- [ ] historic feature
- [ ] forestry
- [ ] military
- [ ] collection

13. Culture
- [x] Prehistoric, undetermined
- [ ] Early Prehistoric
- [ ] Middle Prehistoric
- [ ] Late Prehistoric
- [ ] Fur Trade/Contact/Protohistoric
- [ ] Historic

Cultural Affiliation (complexes, phases, traditions, projectile point types, ethnographic & ethnic groups)

Culture Remarks (describe the basis for your inferences concerning the age and/or cultural affiliation of the site)

Current Observations

14. Site description (spatial extent, patterning, features, density and variety of remains, diagnostics and exotic material, interpretation of the site including origins, functions, and context, summary of pertinent historic ownership for historic sites)

The site consists of a subsurface scatter of over ten lithic artifacts, which include a single core. Artifacts were recovered primarily from shovel testing at approximately 15cm depth within compact silt. The assemblage exhibits moderate diversity in material type and flake morphology, indicating multiple reduction events. No cultural features were identified. The site is situated on a pointed terrace overlooking Whitefish Lake to the west. Its elevated position and proximity to the lake suggest a strategic location for short-term tool production or maintenance activities, likely associated with resource procurement or habitation along the lakeshore.

15. Features (frequencies)
- ___ stone circle
- ___ cairn
- ___ stone arc
- ___ stone line
- ___ drive lane
- ___ medicine wheel
- ___ effigy
- ___ pictograph
- ___ petroglyph
- ___ hearth
- ___ pit
- ___ mound
- ___ depression
- ___ cabin
- ___ house
- ___ structure
- ___ foundation
- ___ cellar
- ___ dump
- ___ fence
- ___ trail
- ___ well
- ___ privy
- ___ outhouse
- ___ burial

other, specify ___

Borden No. GcOx-3
Permit No. 25-153

Current Observations, continued

16. Materials Observed: ☒ yes ☐ no Materials Collected: ☒ yes ☐ no

Materials observed/collected (frequencies)

observed	collected		observed	collected		observed	collected	
		projectile points			charcoal			wood
		lithic tools			faunal remains			shell
1	1	lithic cores			metal points			metal
11	11	lithic debitage			floral remains			glass
		bone tools			tephra			beads
		pottery			macrofossils			ceramics (historic)
		fire cracked rock			soil samples			other, specify

Total # materials observed: 12

Total # materials collected: 12

17. Collection Remarks (formed tools, raw materials, identifiable faunal, etc. collected)

11 quartzite flakes, and 1 quartzite core collected. Early and late stage reduction sequence, predominately late stage.

18. Collection Repository: ☒ Royal Alberta Museum ☐ private collection

19. Photo/Images: ☒ yes ☐ no Repository: ☒ Royal Alberta Museum other, specify

20. Calendar Date (A.D.):

21. Radiocarbon Dates (conventional C14 date(s) and standard deviation (+/-), lab number and material dated)

22. Estimated Portion Intact: ☒ 80-100% ☐ 50-80% ☐ <50% ☐ 0% ☐ undetermined

23. Disturbance Factors:

Type of Existing Disturbance

							other, specify
☐ agriculture	☐ road/highway	☐ coal mine	☐ transmission line	☐ industrial area	☐ cutline		
☐ pipeline	☐ gravel/sand pit	☐ oil sands	☐ recreation area	☐ vandalism	☐ OHV trail		
☐ wellsite	☐ residential area	☐ forestry	☐ reservoir	☐ erosion	☐ flooding		

Will proposed development impact site? ☐ yes ☒ no ☐ unknown ☐ N/A

Type of Anticipated / Potential Disturbance

							other, specify
☐ agriculture	☐ road/highway	☐ coal mine	☐ transmission line	☐ industrial area	☐ cutline		
☐ pipeline	☐ gravel/sand pit	☐ oil sands	☐ reservoir	☐ vandalism	☐ OHV trail		
☐ wellsite	☐ residential area	☐ forestry	☐ recreation area	☐ erosion	☐ flooding		

Disturbance Factor Details (both existing and anticipated)

Site is to be recommended for avoidance/further study. No disturbance anticipated.

Borden No. GcOx-3
Permit No. 25-153

Investigation

24. Investigation Methods	Location: # on landform (includes area within site)			# within site boundary			# of positives		
	screened	not screened	**total**	screened	not screened	**total**	screened	not screened	**total**
☐ exposure inspection									
☒ shovel tests	17		**17**	8		**8**	4		**4**
☐ backhoe tests									
☐ deep evaluative test									
☐ auger tests									
☐ test unit									
☐ monitoring									
☐ surface inspection									
☐ excavation unit	# excavated square meters:			screen mesh size (mm): 6.25					
☐ detailed mapping	map description:								
other, specify:									

25. Permit Holder/Researcher: Grant Smith

26. Researcher Affiliation: Lifeways of Canada Limited

27. Observed by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/24

28. Collected by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/24

29. Tested by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/24

30. Excavated by: Date (YYYYMMDD): 2025/09/24

31. Form completed by: Smith, G. Date (YYYYMMDD): 2025/10/06

32. Report Title/Project Name: Sunset Ridge Estates at Whitefish Lake

Site Significance and Recommendations

33. Site Significance/Recommendations Remarks

The site is considered to have moderate archaeological significance based on the recovery of more than ten lithic artifacts, including a core and flakes of varying material types. The artifact density indicate potential for additional buried cultural material. It is recommended that further investigation be undertaken to better define the site's extent, integrity, and cultural context. Additional subsurface testing is advised prior to any ground-disturbing activities to ensure adequate assessment and mitigation of archaeological resources.

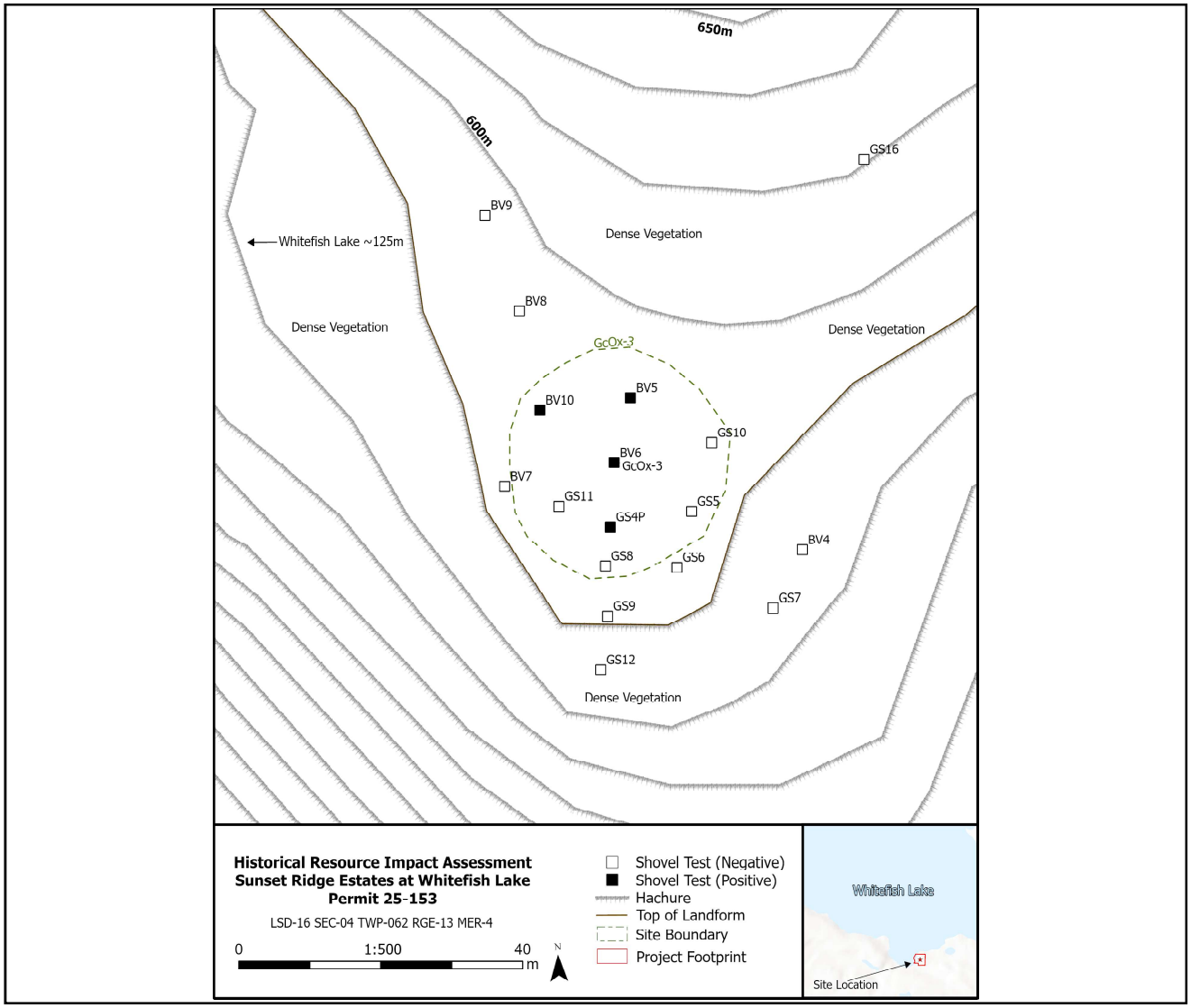
34. Additional Remarks

Photo facing south over first positive shovel test (GS4P) on landform.

Borden No. GcOx-3

35. Site Map

Permit No. 25-153



NTS 1:50,000 Map Inset Map No.: 73L05

Optional (map legend, site or artifact photo, other)

Alberta

ARCHAEOLOGICAL SITE INVENTORY FORM

Borden No. GcOx-4

Permit No. 25-153

Revist Date:

FINAL 2025 OCT 10

Site Name:

Field No: GS20P

Related Heritage Survey Key No.(s):

Location

1. Elevation (m): 586 2. NTS 1:50,000 Map No.: 73L05

3. Legal Description: LSD 16 Section 4 Township 62 Range 13 W of 4 M

4. Point Coordinates: 10-TM (Forest) (EPSG: 3400) Easting 702586.000 Northing 6023306.000

5. Landowner: ☐ Government of Canada ☐ Government of Alberta ☐ Municipal Government ☒ Freehold

Landowner Name/Address: Austin Zacharko, [redacted]

6. Dimensions: Length (m) 31 Width (m) 20 Long Axis Orientation NW-SE Depth Below Surface (m) 0.15

7. Access (tips for access, nearest named place, highway/road numbers, cardinal directions, landmarks, distances)

From Smoky Lake, Alberta, travel east along Highway 28 and turn north onto Highway 36. Continue north for approximately 13.7 km, then turn east onto Township Road 620 and proceed for roughly 9.7 km. Turn north onto Range Road 133 and continue for about 1.3 km before turning west into a private driveway. Park approximately 150 m down the driveway. From this point, proceed north past the main home for roughly 150m until the backyard transitions into the dense forest. At this transition point the site can be accessed on the terrace overlooking Whitefish Lake.

8. Site Environment/Setting (describe water source, landform, aspect, slope, sediment, stratigraphy, vegetation)

Water Source: ☒ Permanent ☐ Seasonal

Water Source Type: ☒ Lake ☐ River ☐ Stream ☐ Pond ☐ Wetland ☐ Spring other, specify:

Distance to Water (m): 15 Direction to Water: West Name: Whitefish Lake

Landform: Terrace Slope (degrees): 2 Aspect: West

Sediment: ☐ Boulders ☐ Cobbles ☐ Gravel ☐ Sand ☒ Silt ☒ Clay ☐ Loam ☐ Bedrock

Stratigraphy, vegetation, other comments

Profile: 0–9 cm duff; 10–11 cm dark brown organic soil; 11–22 cm light grey silt; 22–25 cm clayey silt composed of mixed reddish-brown clay and light grey silt. Shovel testing was conducted along the terrace edge at 10–20 m intervals, beginning at the edge of a disturbed area to the south.The landform consists of a terrace edge trending northeast to southwest with a well-defined western margin descending 45–50° toward Whitefish Lake. The southern portion of the landform is relatively flat, while the northern margin gradually declines at approximately 20°. To the east, the landform transitions into a poorly defined edge sloping about 10° into a low-lying area. Vegetation is consistent with surrounding areas, consisting of an overstory of aspen, birch, and poplar, with an understory of trembling aspen. Ground cover includes prickly rose and leaf litter.

Borden No. GcOx-4

Permit No. 25-153

Site Typology

9. Site Class
- [x] prehistoric
- [ ] Indigenous historic
- [ ] historic
- [ ] contemporary

10. Site Context
- [ ] surface
- [x] subsurface
- [ ] stratified
- [ ] underwater
- [ ] undetermined

11. Component
- [x] single
- [ ] multi
- [ ] undetermined

1 # components

12. Site Type
- [ ] isolated find
- [ ] scatter ≤10
- [ ] scatter >10
- [x] campsite
- [ ] stone feature
- [ ] killsite
- [ ] workshop
- [ ] quarry
- [ ] rock art
- [ ] burial
- [ ] settlement
- [ ] homestead
- [ ] farm
- [ ] ranch
- [ ] dwelling
- [ ] trading post
- [ ] police post
- [ ] mine
- [ ] trail
- [ ] mission
- [ ] school
- [ ] urban
- [ ] ceremonial/religious
- [ ] industrial
- [ ] transportation
- [ ] historic feature
- [ ] forestry
- [ ] military
- [ ] collection

13. Culture
- [x] Prehistoric, undetermined
- [ ] Early Prehistoric
- [ ] Middle Prehistoric
- [ ] Late Prehistoric
- [ ] Fur Trade/Contact/Protohistoric
- [ ] Historic

Cultural Affiliation (complexes, phases, traditions, projectile point types, ethnographic & ethnic groups)

Culture Remarks (describe the basis for your inferences concerning the age and/or cultural affiliation of the site)

Current Observations

14. Site description (spatial extent, patterning, features, density and variety of remains, diagnostics and exotic material, interpretation of the site including origins, functions, and context, summary of pertinent historic ownership for historic sites)

The site consists of a subsurface scatter of over ten lithic artifacts a varying material types, in addition to a single calcine bone fragment. Artifacts were recovered primarily from shovel testing at approximately 15cm depth within compact silt. No cultural features were identified. The site is situated on a terrace edge or bench, immediately overlooking Whitefish Lake to the west and south. Its elevated position and proximity to the lake suggest a strategic location for short-term tool production or maintenance activities, likely associated with resource procurement or habitation along the lakeshore.

15. Features (frequencies)
- ___ stone circle
- ___ cairn
- ___ stone arc
- ___ stone line
- ___ drive lane
- ___ medicine wheel
- ___ effigy
- ___ pictograph
- ___ petroglyph
- ___ hearth
- ___ pit
- ___ mound
- ___ depression
- ___ cabin
- ___ house
- ___ structure
- ___ foundation
- ___ cellar
- ___ dump
- ___ fence
- ___ trail
- ___ well
- ___ privy
- ___ outhouse
- ___ burial

other, specify ___

Borden No. GcOx-4
Permit No. 25-153

Current Observations, continued

16. Materials Observed: ☒ yes ☐ no Materials Collected: ☒ yes ☐ no

Materials observed/collected (frequencies)

observed	collected		observed	collected		observed	collected	
		projectile points			charcoal			wood
		lithic tools	1	1	faunal remains			shell
		lithic cores			metal points			metal
20	20	lithic debitage			floral remains			glass
		bone tools			tephra			beads
		pottery			macrofossils			ceramics (historic)
		fire cracked rock			soil samples			other, specify

Total # materials observed: 21

Total # materials collected: 21

17. Collection Remarks (formed tools, raw materials, identifiable faunal, etc. collected)

12 quartzite flakes, 2 chert flakes, 5 quartz flakes,1 petrified wood flake, and 1 calcine bone fragment. All flakes were in the late stages of lithic reduction. No single bone fragment is unidentifiable.

18. Collection Repository: ☒ Royal Alberta Museum ☐ private collection

19. Photo/Images: ☒ yes ☐ no Repository: ☒ Royal Alberta Museum other, specify

20. Calendar Date (A.D.):

21. Radiocarbon Dates (conventional C14 date(s) and standard deviation (+/-), lab number and material dated)

22. Estimated Portion Intact: ☒ 80-100% ☐ 50-80% ☐ <50% ☐ 0% ☐ undetermined

23. Disturbance Factors:

Type of Existing Disturbance

☐ agriculture ☐ road/highway ☐ coal mine ☐ transmission line ☐ industrial area ☐ cutline
☐ pipeline ☐ gravel/sand pit ☐ oil sands ☐ recreation area ☐ vandalism ☐ OHV trail
☐ wellsite ☐ residential area ☐ forestry ☐ reservoir ☐ erosion ☐ flooding

other, specify

Will proposed development impact site? ☐ yes ☒ no ☐ unknown ☐ N/A

Type of Anticipated / Potential Disturbance

☐ agriculture ☐ road/highway ☐ coal mine ☐ transmission line ☐ industrial area ☐ cutline
☐ pipeline ☐ gravel/sand pit ☐ oil sands ☐ reservoir ☐ vandalism ☐ OHV trail
☐ wellsite ☐ residential area ☐ forestry ☐ recreation area ☐ erosion ☐ flooding

other, specify

Disturbance Factor Details (both existing and anticipated)

Site is to be recommended for avoidance/further study. No disturbance anticipated.

Borden No. GcOx-4
Permit No. 25-153

Investigation

24. Investigation Methods	Location: # on landform (includes area within site)			Location: # within site boundary			# of positives		
	screened	not screened	**total**	screened	not screened	**total**	screened	not screened	**total**
☐ exposure inspection									
☒ shovel tests	7		**7**	6		**6**	5		**5**
☐ backhoe tests									
☐ deep evaluative test									
☐ auger tests									
☐ test unit									
☐ monitoring									
☐ surface inspection									
☐ excavation unit	# excavated square meters:			screen mesh size (mm): 6.25					
☐ detailed mapping	map description:								
other, specify:									

25. Permit Holder/Researcher: Grant Smith
26. Researcher Affiliation: Lifeways of Canada Limited
27. Observed by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/25
28. Collected by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/25
29. Tested by: Smith, G. and Vivian, B. Date (YYYYMMDD): 2025/09/25
30. Excavated by: Date (YYYYMMDD): 2025/09/25
31. Form completed by: Smith, G. Date (YYYYMMDD): 2025/10/06
32. Report Title/Project Name: Sunset Ridge Estates at Whitefish Lake

Site Significance and Recommendations

33. Site Significance/Recommendations Remarks

The site is considered to have moderate archaeological significance based on the recovery of more than ten lithic artifacts of varying material types. The artifact diversity and density indicate potential for additional buried cultural material. It is recommended that further investigation be undertaken to better define the site's extent, integrity, and cultural context. Additional subsurface testing is advised prior to any ground-disturbing activities to ensure adequate assessment and mitigation of archaeological resources.

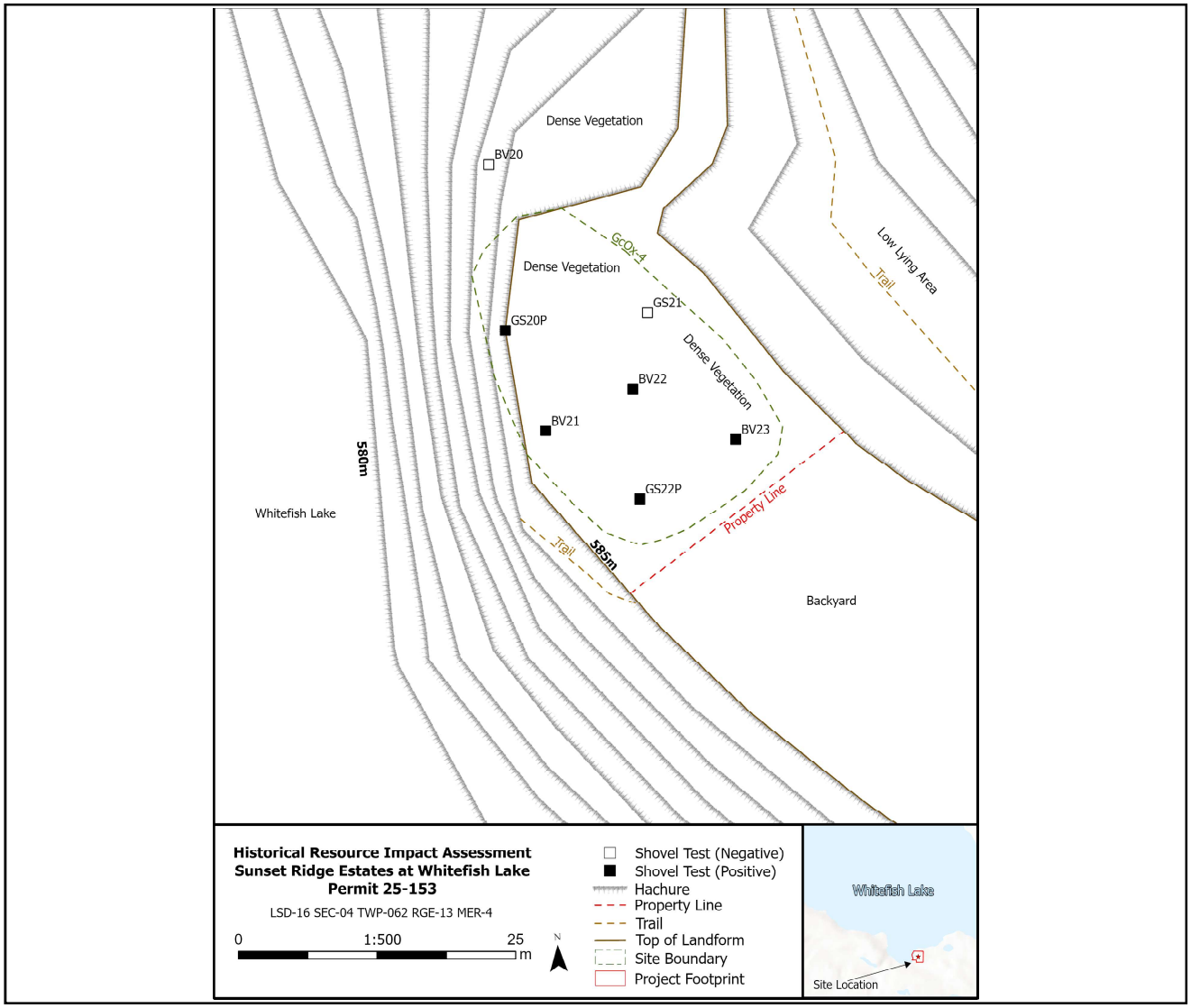
34. Additional Remarks

Photo facing west over first positive shovel test (GS20P) on landform.

Borden No. GcOx-4

35. Site Map

Permit No. 25-153



NTS 1:50,000 Map Inset

Map No.: 73L05

Optional (map legend, site or artifact photo, other)

APPENDIX F: SPATIAL DATA

Shape_Leng	Shape_Area	Permit	Bndy_Type	Subtype
3526.444	60336.13	25-153	Ground Survey	2
1397.622	107375.5	25-153	Development Footprint	1

Permit	SI_Name	Type	Subtype	Result	Num_Arts	Borden_No	sq_m	Depth	Screen	Screen_mm
25-153	BV11	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV12	Shovel Test	1	Negative	0		0	0.15	Screened	6.25
25-153	BV13	Shovel Test	1	Negative	0		0	0.18	Screened	6.25
25-153	BV14	Shovel Test	1	Negative	0		0	0.12	Screened	6.25
25-153	BV15	Shovel Test	1	Negative	0		0	0.18	Screened	6.25
25-153	BV16	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV17	Shovel Test	1	Negative	0		0	0.18	Screened	6.25
25-153	BV18	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV19	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV20	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV21	Shovel Test	1	Positive	1	GcOx-4	0	0.24	Screened	6.25
25-153	BV22	Shovel Test	1	Positive	9	GcOx-4	0	0.25	Screened	6.25
25-153	BV23	Shovel Test	1	Positive	9	GcOx-4	0	0.2	Screened	6.25
25-153	BV1	Shovel Test	1	Negative	0		0	0.35	Screened	6.25
25-153	BV2	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	BV3	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV4	Shovel Test	1	Negative	0		0	0.23	Screened	6.25
25-153	BV5	Shovel Test	1	Positive	3	GcOx-3	0	0.2	Screened	6.25
25-153	BV6	Shovel Test	1	Positive	1	GcOx-3	0	0.2	Screened	6.25
25-153	BV7	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV8	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV9	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	BV10	Shovel Test	1	Positive	4	GcOx-3	0	0.3	Screened	6.25
25-153	GS13	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	GS14	Shovel Test	1	Negative	0		0	0.22	Screened	6.25
25-153	GS15	Shovel Test	1	Negative	0		0	0.22	Screened	6.25
25-153	GS16	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	GS17	Shovel Test	1	Negative	0		0	0.23	Screened	6.25
25-153	GS18	Shovel Test	1	Negative	0		0	0.22	Screened	6.25
25-153	GS19	Shovel Test	1	Negative	0		0	0.28	Screened	6.25
25-153	GS20P	Shovel Test	1	Positive	1	GcOx-4	0	0.25	Screened	6.25
25-153	GS21	Shovel Test	1	Negative	0	GcOx-4	0	0.25	Screened	6.25
25-153	GS22P	Shovel Test	1	Positive	1	GcOx-4	0	0.22	Screened	6.25
25-153	GS1	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	GS2	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	GS3	Shovel Test	1	Negative	0		0	0.23	Screened	6.25
25-153	GS4P	Shovel Test	1	Positive	4	GcOx-3	0	0.3	Screened	6.25

Permit	SI_Name	Type	Subtype	Result	Num_Arts	Borden_No	sq_m	Depth	Screen	Screen_mm
25-153	GS5	Shovel Test	1	Negative	0	GcOx-3	0	0.22	Screened	6.25
25-153	GS6	Shovel Test	1	Negative	0		0	0.22	Screened	6.25
25-153	GS7	Shovel Test	1	Negative	0		0	0.25	Screened	6.25
25-153	GS8	Shovel Test	1	Negative	0	GcOx-3	0	0.22	Screened	6.25
25-153	GS9	Shovel Test	1	Negative	0		0	0.2	Screened	6.25
25-153	GS10	Shovel Test	1	Negative	0	GcOx-3	0	0.2	Screened	6.25
25-153	GS11	Shovel Test	1	Negative	0	GcOx-3	0	0.2	Screened	6.25
25-153	GS12	Shovel Test	1	Negative	0		0	0.23	Screened	6.25

APPENDIX G: ARTIFACT CATALOGUE

Borden Number	Catalogue Number	Count	Weight (g)	Length (mm)	Width (mm)	Thickness (mm)	Gross/Category Class	Description	Portion/Integrity	Raw Material	Colour	Cortex	Gross Taxon/ Family	Depth (cm BS)	10-TM Easting	10-TM Northing	SI_Name	Comments
GcOx-3	1	1	150.5	109.58			Lithic	primary decortication flake	incomplete	quartzite	grey, light	10%		0-20	702704.02	6023347.18	STBV5	
GcOx-3	2	1	1.2	19.4			Lithic	shatter	incomplete	quartzite	pink	0%		0-20	702704.02	6023347.18	STBV5	
GcOx-3	3	1	0.8	17.3			Lithic	shatter	incomplete	quartzite	orange	0%		0-20	702704.02	6023347.18	STBV5	
GcOx-3	4	1	4.4	31.05			Lithic	secondary flake	incomplete	quartzite	grey, light/ grey, dark	0%		8	702701.73	6023338.01	STBV6	dark grey part is more fine-grained; distal margin broken off
GcOx-3	5	1	13.1	40.64			Lithic	secondary decortication flake	incomplete	quartzite	pink/ white	25%		8-20	702691.25	6023345.43	STBV10	distal margin broken off
GcOx-3	6	1	4.8	27.96			Lithic	primary decortication flake	incomplete	quartzite	grey	50%		8-20	702691.25	6023345.43	STBV10	distal margin broken off
GcOx-3	7	1	3.2	22.45			Lithic	secondary flake	complete	quartzite	brown, light	0%		8-20	702691.25	6023345.43	STBV10	
GcOx-3	8	1	2.7	17.94			Lithic	secondary flake	incomplete	siltstone	red	0%		8-20	702691.25	6023345.43	STBV10	
GcOx-3	9	1	6.9	36.87			Lithic	flake fragment	incomplete	quartzite	white	0%		0-15	702701.18	6023328.95	STGS4P	
GcOx-3	10	1	11.8	44.02			Lithic	flake fragment	incomplete	quartzite	white	0%		0-15	702701.18	6023328.95	STGS4P	consists of distal margin portion
GcOx-3	11	1	0.7	18.82			Lithic	shatter	incomplete	quartzite	red	0%		0-15	702701.18	6023328.95	STGS4P	
GcOx-3	12	1	324.8	109.55	93.31	35.84	Lithic	core	complete	quartzite	grey/ orange			0-15	702701.18	6023328.95	STGS4P	seems heated - red/orange colouration at and around cortex (but not crazed); cortex covering ~80% of dorsal surface
GcOx-4	1	1	50.4	58.22			Lithic	primary decortication	incomplete	quartzite	red	0%		10-15	702576.80	6023310.66	STGS20P	distal portion broken off; 75% of dorsal surface is not cortex but weathered exterior
GcOx-4	2	1	0.3	14.28			Lithic	secondary decortication	incomplete	chert	grey, dark	10%		15-20	702588.93	6023295.41	STGS22P	small amount of exterior (cortex?) at platform
GcOx-4	3	1	8.0	36.66			Lithic	flake fragment	incomplete	quartzite	brown, light/ brown	0%		15	702580.43	6023301.58	STBV21	portion of distal margin
GcOx-4	4	1	9.7	28.55			Lithic	secondary decortication	incomplete	quartzite	red	0%		8-20	702588.30	6023305.39	STBV22	distal portion broken off;
GcOx-4	5	1	2.8	26.14			Lithic	flake fragment	incomplete	quartzite	red/ grey	0%		8-20	702588.30	6023305.39	STBV22	
GcOx-4	6	1	0.5	16.03			Lithic	flake fragment	incomplete	quartzite	red	0%		8-20	702588.30	6023305.39	STBV22	
GcOx-4	7	1	1.4	20.4			Lithic	flake fragment	incomplete	quartzite	pink, light	0%		8-20	702588.30	6023305.39	STBV22	distal edge of flake
GcOx-4	8	1	0.8	18.85			Lithic	secondary	complete	quartzite	pink, light	0%		8-20	702588.30	6023305.39	STBV22	
GcOx-4	9	1	0.3	12.53			Lithic	shatter	incomplete	quartzite	brown	50%		8-20	702588.30	6023305.39	STBV22	
GcOx-4	10	1	1.6	22.04			Lithic	primary decortication	incomplete	quartzite	orange	50%		8-20	702588.30	6023305.39	STBV22	fine-grained
GcOx-4	11	1	0.9	20.88			Lithic	flake fragment	incomplete	quartz	white	0%		8-20	702588.30	6023305.39	STBV22	lateral or distal edge flake fragment
GcOx-4	12	1	0.5	13.82			Lithic	shatter	incomplete	quartz	white	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	13	1	0.4	12.91			Lithic	shatter	incomplete	quartz	white	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	14	1	3.1	25.58			Lithic	flake fragment	incomplete	quartz	white with orange flecks	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	15	1	0.8	16.69			Lithic	shatter	incomplete	quartzite	tan	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	16	1	2.7	22.54			Lithic	shatter	incomplete	quartzite	white/ grey	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	17	1	2.2	15.29			Lithic	secondary decortication	incomplete	quartzite	brown	25%		8-20	702597.58	6023300.81	STBC23	distal portion broken off
GcOx-4	18	1	1.0	18.88			Lithic	secondary	complete	quartzite	orange, light	0%		8-20	702597.58	6023300.81	STBC23	
GcOx-4	19	1	2.0	25.12			Lithic	primary decortication	incomplete	chert	brown	100%		8-20	702597.58	6023300.81	STBC23	some of lateral margin broken off, possibly heated
GcOx-4	20	1	0.3				Fauna	bone frag	incomplete				mammal, medium/large	8-20	702588.30	6023305.39	STBV22	calcined

Appendix E: Preliminary Engineering Drawings

OTES

l to the property line of each lot. The natural
d maintained by Smoky Lake County.

dividual power pole and meter. All electrical
nt will be owned and maintained by ATCO

ble for the installation of an on-site potable
eptic tanks will be permitted for wastewater
with applicable regulations.

Responsibility

sponsible for all aspects of development on

other structures

and inspections
and provincial regulations

via internal gravel roads and individual
y locations may be adjusted based on

the Smoky Lake County Land Use Bylaw,

ts
s
ge limits

ADDITIONAL CONSIDERATIONS

- **Environmental Reserve Buffer**

  All waterfront lots are subject to a 30-meter Environmental Reserve (ER) setback from the high-water mark of Whitefish Lake. While no development or vegetation clearing is permitted within the ER, lakefront landowners may create a natural walking path to allow for direct pedestrian access to the lake.

- **Lake Access & Recreation Area**

  All lot owners will have access to Whitefish Lake via the public access path and municipal reserve area. An off-lake recreational area is located on the development and will be open for all lot owners to use.

- **Environmental Preservation**

  Landowners are encouraged to preserve mature trees and natural vegetation where possible. No clearing is permitted within environmental reserve areas.

- **Wildfire Protection**

  All property owners are encouraged to implement FireSmart practices, including the creation of defensible space around structures and safe vegetation management.

- **Construction Impact**

  Lot owners are responsible for ensuring that construction activity does not damage subdivision roads or shared infrastructure. Any such damage will be the responsibility of the property owner.

- **Additional Considerations**

- This Outline Plan is not an engineering document and is for planning purposes only. It may not be used for construction purposes. It is intended for illustrative and conceptual reference only and is subject to change. Final engineering design, surveying, and municipal approvals will determine actual lot boundaries,infrastructure details, and development conditions.

LIST OF SHEETS

CAD FILENAME 2500600-PR-BASE1
PLOT DATE 2026-06-11

REV	DATE	REVISIONS	NAME
1	2026-06-05	ISSUED FOR REVIEW	PK
2	2026-06-11	ISSUED FOR APPROVAL	PK

LAND OWNER
AUSTIN ZACHARAKO
2905970 ALBERTA LTD.
303 19 AVE SW #104 ,
CALGARY, AB T2S 0E1

SUBDIVISION AUTHORITY
MUNICIPAL PLANNING SERVICES
17311 107 AVE NW #206,
EDMONTON, AB T5S1E5
munplan.ab.ca

AUTHORITY HAVING JURISDICTION
SMOKY LAKE COUNTY
4612 MCDOUGALL DRIVE,
SMOKY LAKE, AB
TOA 3C0
smoky lakecounty .ab.ca

CONSULTANT
PRI ENGINEERING CORP.
2045 ENTERPRISE WAY #200,
KELOWNA, BC V1Y 9T5
priengineering.com

STAMP 2026-06-11

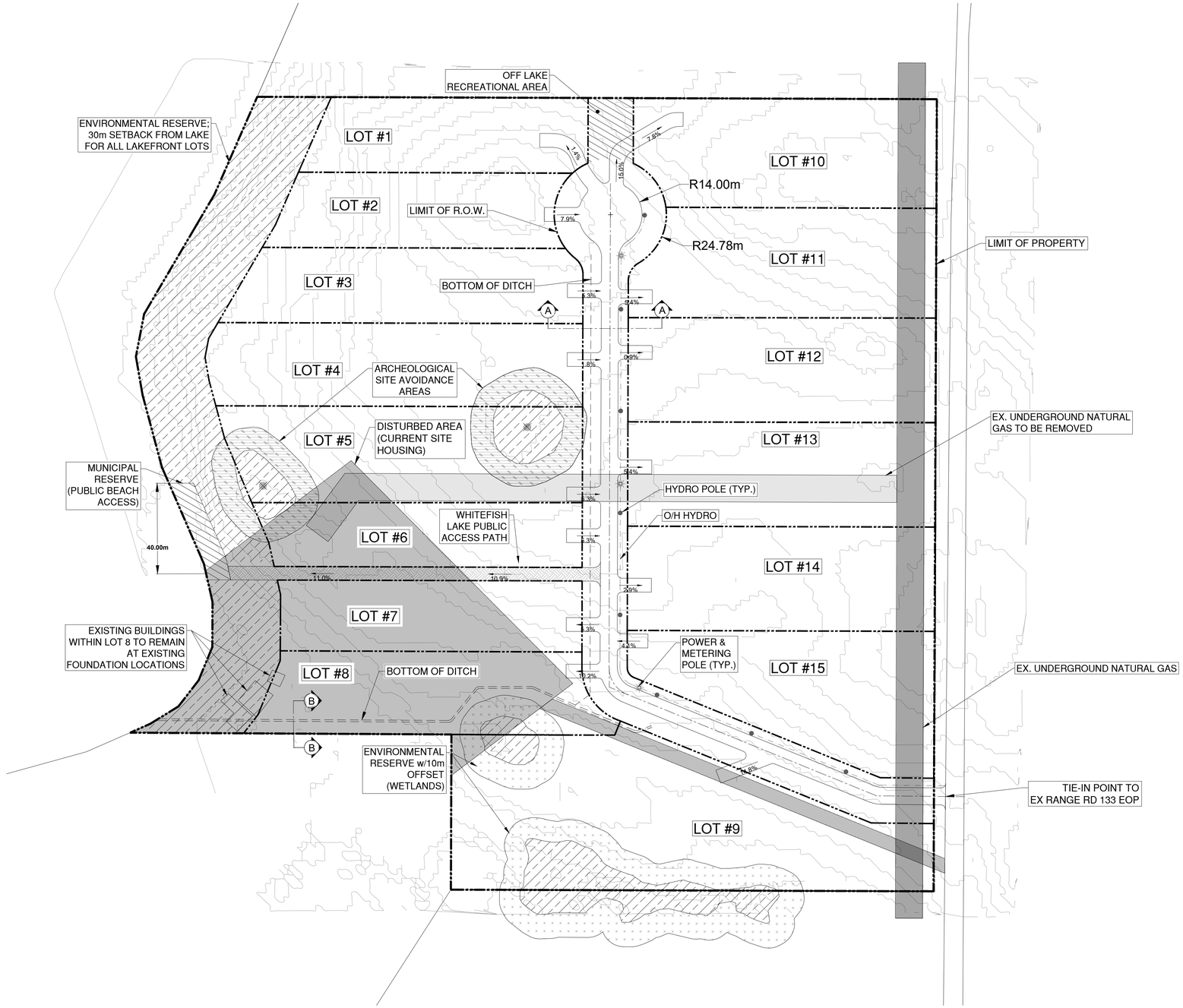
PAUL J. KUNDZINS
SENIOR DESIGNER
DATE 2026-06-11

DESIGNED JZ DATE 2026-06-11
QUALITY CONTROL PK DATE 2026-06-11
QUALITY ASSURANCE PK DATE 2026-06-11
DRAWN PK DATE 2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE
GENERAL NOTES

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
2500600	2500600	1	2500600-C1.0	

AILS



LOT DETAILS

LOT NO.	AREA (m^2)
1	3,986
2	4,067
3	4,990
4	6,042
5	6,567
6	3,981
7	4,170
8	5,300
9	11,747
10	6,253
11	6,253
12	6,253
13	6,253
14	6,250
15	6,250

SCALE 1:000

CAD FILENAME 2500600-PR-BASE1
PLOT DATE 2026-06-11

REV	DATE	REVISIONS	NAME
1	2026-06-05	ISSUED FOR REVIEW	PK
2	2026-06-11	ISSUED FOR APPROVAL	PK

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CALGARY, AB T2S 0E1

SUBDIVISION AUTHORITY
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17511 107 AVE NW #206,
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AUTHORITY HAVING JURISDICTION
SMOKY LAKE COUNTY
4612 MCDOUGALL DRIVE,
SMOKY LAKE, AB
T0A 3C0
smokylakecounty.ab.ca

CONSULTANT
PRI ENGINEERING CORP.
2045 ENTERPRISE WAY #200,
KELOWNA, BC V1Y 9T5
priengineering.com

PROFESSIONAL ENGINEERS AND GEOSCIENTISTS ASSOCIATION
PROVINCE OF ALBERTA
PAUL JOHN KUNDZINS
51251
PERMIT TO PRACTICE
2026
STAMP 2026-06-11

PAUL J. KUNDZINS
SENIOR DESIGNER
DATE 2026-06-11

DESIGNED	JZ	DATE	2026-06-11
QUALITY CONTROL	PK	DATE	2026-06-11
QUALITY ASSURANCE	PK	DATE	2026-06-11
DRAWN	PK	DATE	2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE
SITE PLAN

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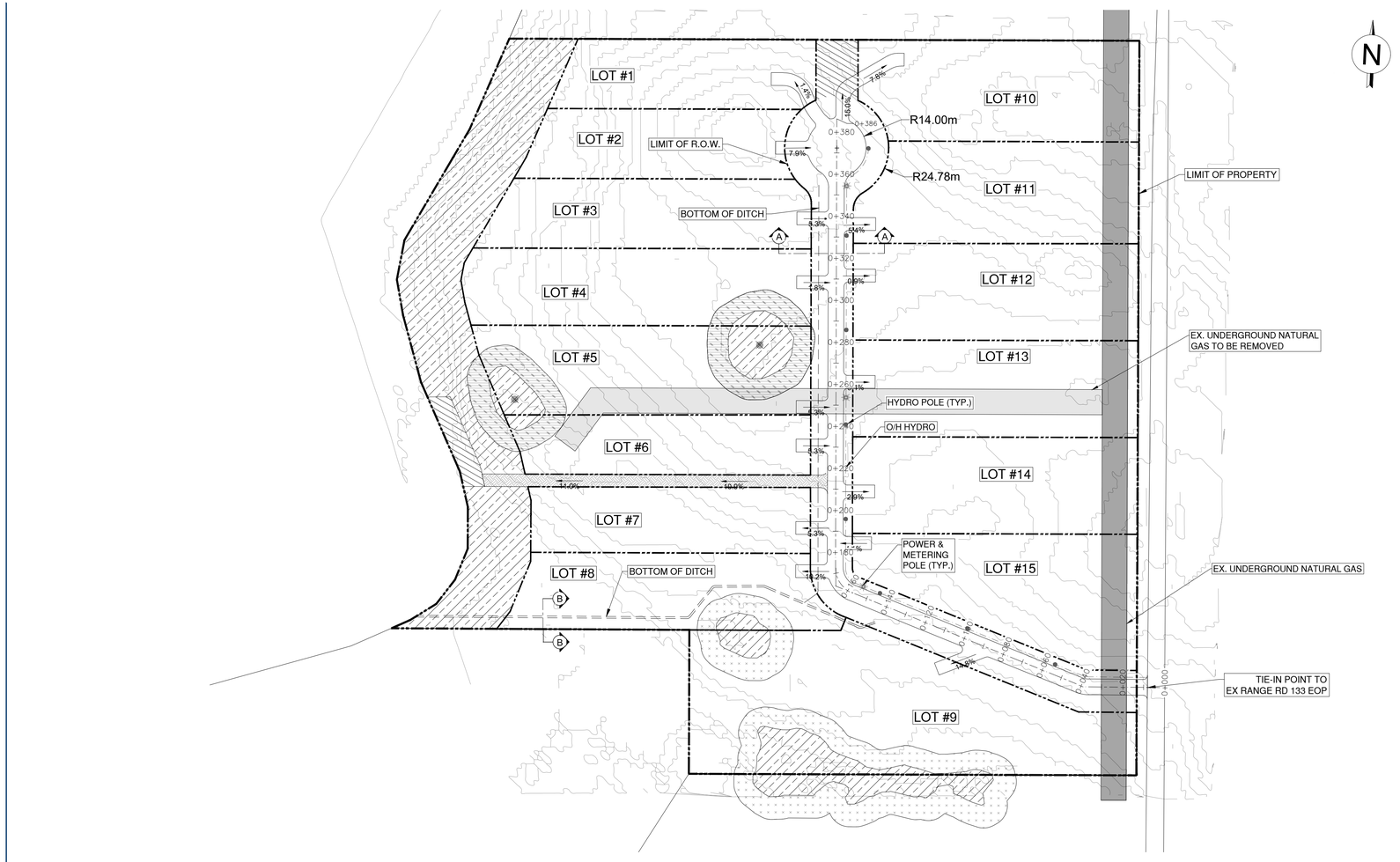

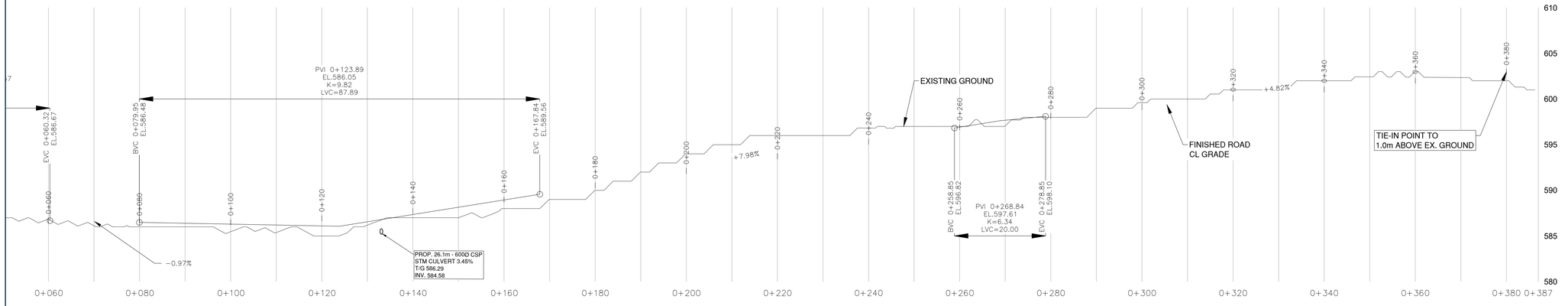

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CAD FILENAME 2500600-PR-BASE1
PLOT DATE 2026-06-11

REV	DATE	REVISIONS	NAME
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2	2026-06-11	ISSUED FOR APPROVAL	PK

LAND OWNER
AUSTIN ZACHARAKO
2805870 ALBERTA LTD.
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PERMIT TO PRACTICE
P-8541
STAMP 2026-06-11

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SENIOR DESIGNER
DATE 2026-06-11

DESIGNED	JZ	DATE	2026-06-11
QUALITY CONTROL	PK	DATE	2026-06-11
QUALITY ASSURANCE	PK	DATE	2026-06-11
DRAWN	PK	DATE	2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE

PLAN & PROFILE

STA -0+005 TO 0+387

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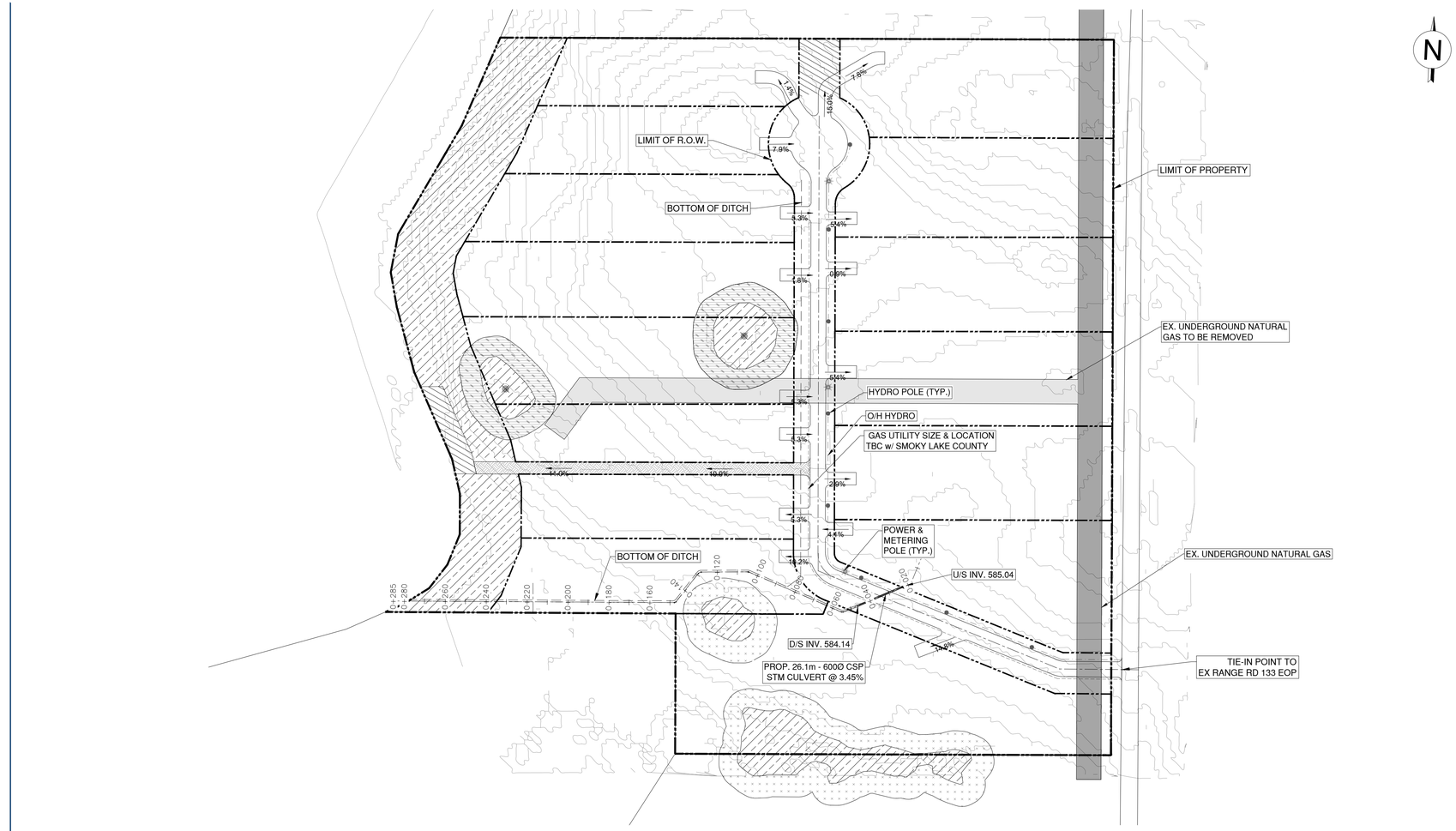

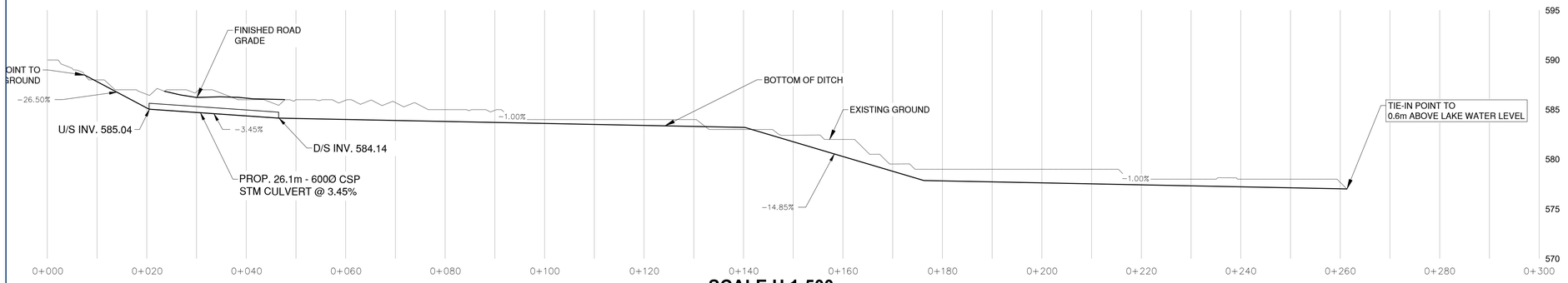

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2	2026-06-11	ISSUED FOR APPROVAL	PK

LAND OWNER: AUSTIN ZACHARAKO, 2503870 ALBERTA LTD., 303 19 AVE SW #104, CALGARY, AB T2S 0E1

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CONSULTANT: PRI ENGINEERING CORP., 2045 ENTERPRISE WAY #200, KELOWNA, BC V1Y 9T5, priengineering.com

STAMP: PROFESSIONAL ENGINEERS AND GEOSCIENTISTS ALBERTA, PAUL J. KUNDZINS, 2026-06-11

PAUL J. KUNDZINS
SENIOR DESIGNER
DATE 2026-06-11

DESIGNED	JZ	DATE	2026-06-11
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QUALITY ASSURANCE	PK	DATE	2026-06-11
DRAWN	PK	DATE	2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE

SITE SERVICING PLAN

STA -0+020 TO 0+300

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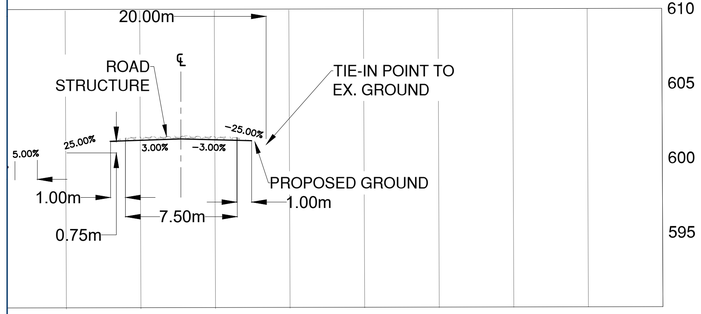


REFER TO DETAIL C1-100 FOR DITCH ON WEST SIDE OF ROW. EAST SIDE TO FOLLOW 1:4 SLOPING FOR 1m THEN MATCH TO EX. GRADE

CROSS SECTION A-A
SCALE H 1:200
V 1:200

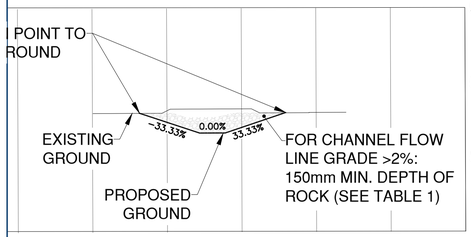
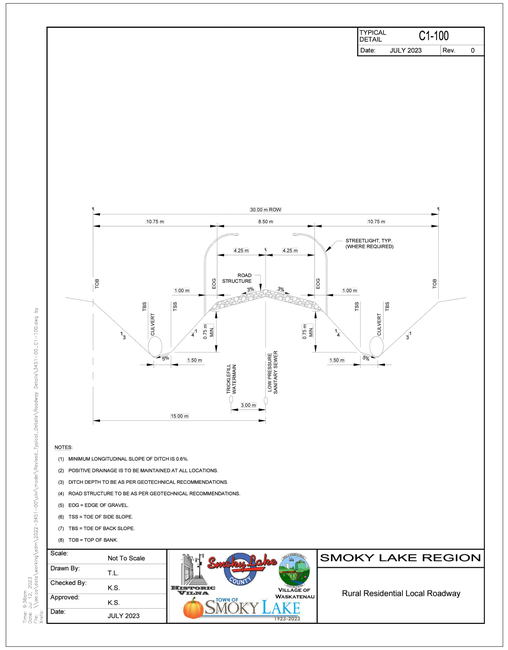
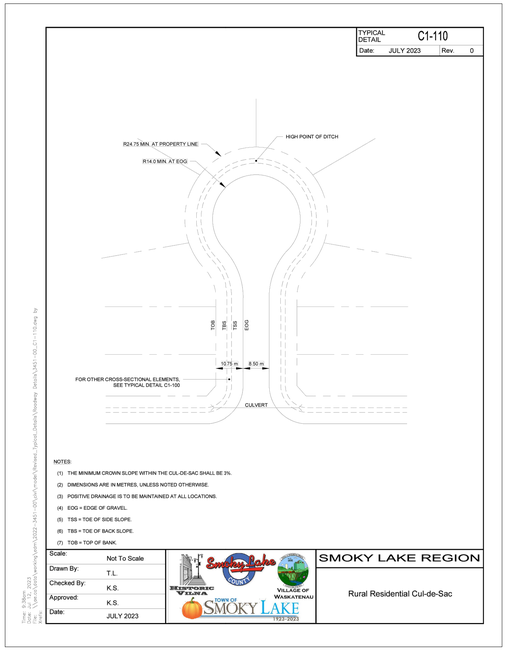


TABLE 1

D_{50} OF ROCK (mm)	MAXIMUM FLOW DEPTH OVER ROCK (mm)
75	50
150	100

CROSS SECTION B-B
SCALE H 1:200
V 1:200





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2	2026-06-11	ISSUED FOR APPROVAL	PK

CAD FILENAME: 2500600-PR-BASE1
PLOT DATE: 2026-06-11

LAND OWNER: AUSTIN ZACHARIAKO, 2850870 ALBERTA LTD., 303 19 AVE SW #104, CALGARY, AB T2S 0E1

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DATE 2026-06-11

DESIGNED	JZ	DATE	2026-06-11
QUALITY CONTROL	PK	DATE	2026-06-11
QUALITY ASSURANCE	PK	DATE	2026-06-11
DRAWN	PK	DATE	2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE

CROSS SECTIONS

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
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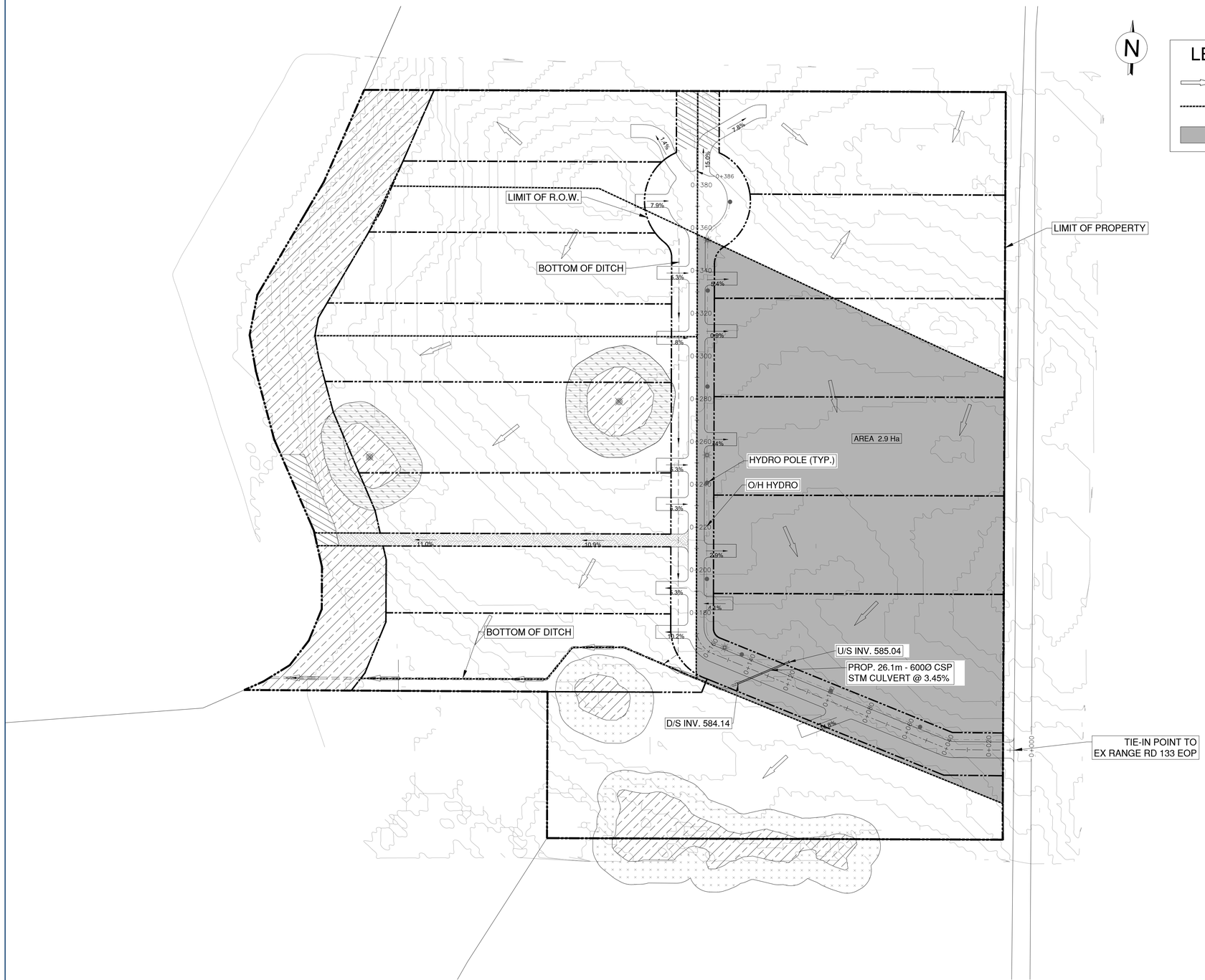

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PLOT DATE 2026-06-11

REV	DATE	REVISIONS	NAME
1	2026-06-05	ISSUED FOR REVIEW	PK
2	2026-06-11	ISSUED FOR APPROVAL	PK

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PAUL J. KUNDZINS
SENIOR DESIGNER
DATE 2026-06-11

DESIGNED	JZ	DATE	2026-06-11
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QUALITY ASSURANCE	PK	DATE	2026-06-11
DRAWN	PK	DATE	2026-06-11

SUNSET RIDGE ESTATES AT WHITEFISH LAKE
STORMWATER MANAGEMENT PLAN

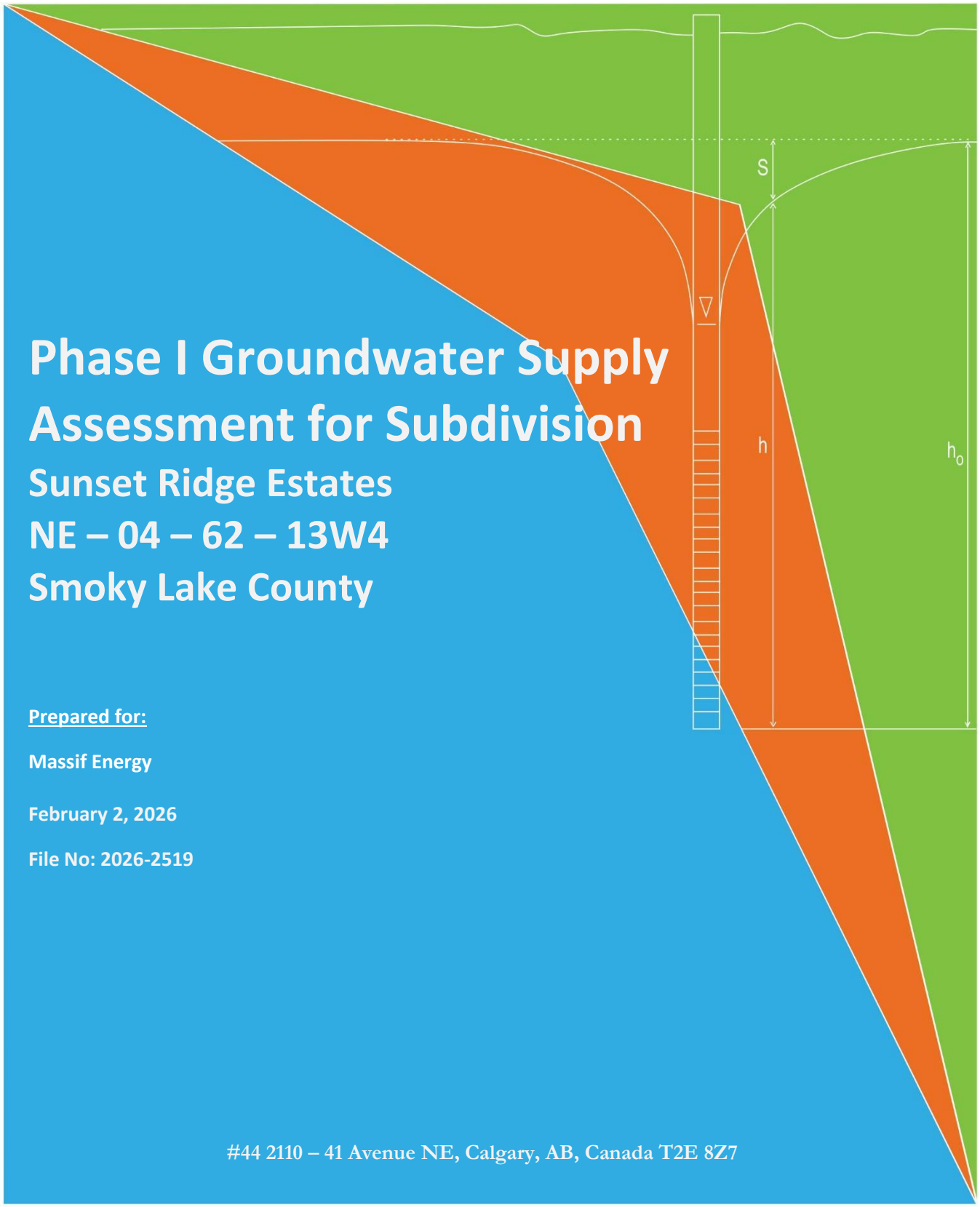
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
2500600	2500600	1	2500600-C6.0	

Appendix F: Water Act Report

APPENDIX F:

Water Act Report

Date Report Completed	Feb 2, 2026
Consultant	Groundwater Resources Information Technologies



Phase I Groundwater Supply Assessment for Subdivision

Sunset Ridge Estates

NE – 04 – 62 – 13W4

Smoky Lake County

Prepared for:

Massif Energy

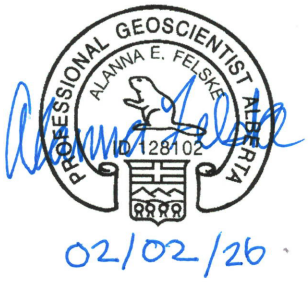
February 2, 2026

File No: 2026-2519

#44 2110 – 41 Avenue NE, Calgary, AB, Canada T2E 8Z7

Signatures

Reviewed by:



02/02/26

Alanna Felske, P.Geo
Hydrogeologist

Prepared by:

[redacted]

Jenna Hall
Hydrologist

APEGA Permit to Practice: 16866

Disclaimer

This report has been prepared by Groundwater Resources Information Technologies 3.0 (the consultant) for the exclusive use and benefit of the addressee (the client) and may not be relied upon by any other person or third party, for any other purpose without the prior written consent of the consultant. The consultant is not responsible for any damages that may be suffered as the result of any unauthorized use of, or reliance on, this report. Groundwater Resources Information Technologies 3.0 (GRIT3) has performed the work as described below and made the findings and conclusions set out in the report in a manner consistent with the level of care and skill normally exercised by members of the geological science profession practicing under similar conditions at the time the work was performed. This report presents a reasonable review of information available to GRIT Ltd. Within the established scope, work schedule and budgetary constraints. GRIT3 Ltd. accepts no responsibility for any deficiency, misstatement or inaccuracy in this report resulting from misinformation from any individuals or parties that provided information as part of this report. GRIT Ltd. appreciates the opportunity to present these finding on behalf of the Client. If you have any questions regarding the above report, please do not hesitate to contact the above signed.

Executive Summary

A Phase I Groundwater Supply Assessment was undertaken for a proposed 21-lot subdivision located within NE – 04 – 62 – 13W4 to better understand the distribution and quality of aquifer resources in the area as the relate to the development of the property and its water requirements. To meet the water requirements of the Site, either 21 individual wells are required to supply at domestic rates of 1,250 m^3/year (3.4 m^3/day) or one licensed supply well to produce at a rate of at least 17.3 m^3/day.

Bedrock in the area consists of fine-grained mudstone and siltstone sequences, with limited aquifer potential. Existing wells in the area are completed within coarse-grained surficial aquifers consisting of sand and gravel. Future wells on the subdivision can target the surficial aquifer found 20 – 60 metres below the Site, with depth varying due to topographic variation across the Site. Based on available pumping test data, the surficial sand aquifer produces yields sufficient to meet the minimum domestic rate of 3.4 m^3/day and the potential for a well to produce at community licensed rates.

A low volume of the groundwater supply is currently being utilized by existing domestic, licensed, or traditional groundwater users in the area. There are no existing water licenses near the subdivision site, with licensed water use in the area coming from surface water.

Accounting for the aquifers likely connection to Whitefish Lake, drawdown interference calculations do not show detrimental effects to nearby existing wells due to production from new wells producing at domestic rates or community supply rates.

Available groundwater chemistry reports were evaluated to determine baseline water quality. Aesthetic objective guidelines for iron and Total Dissolved Solids (TDS) appear elevated above drinking water guidelines. As available water chemistry reports were only available from over 45 years ago, it is recommended that any future supply wells be sampled and analyzed for routine potability parameters prior to long term human consumption.

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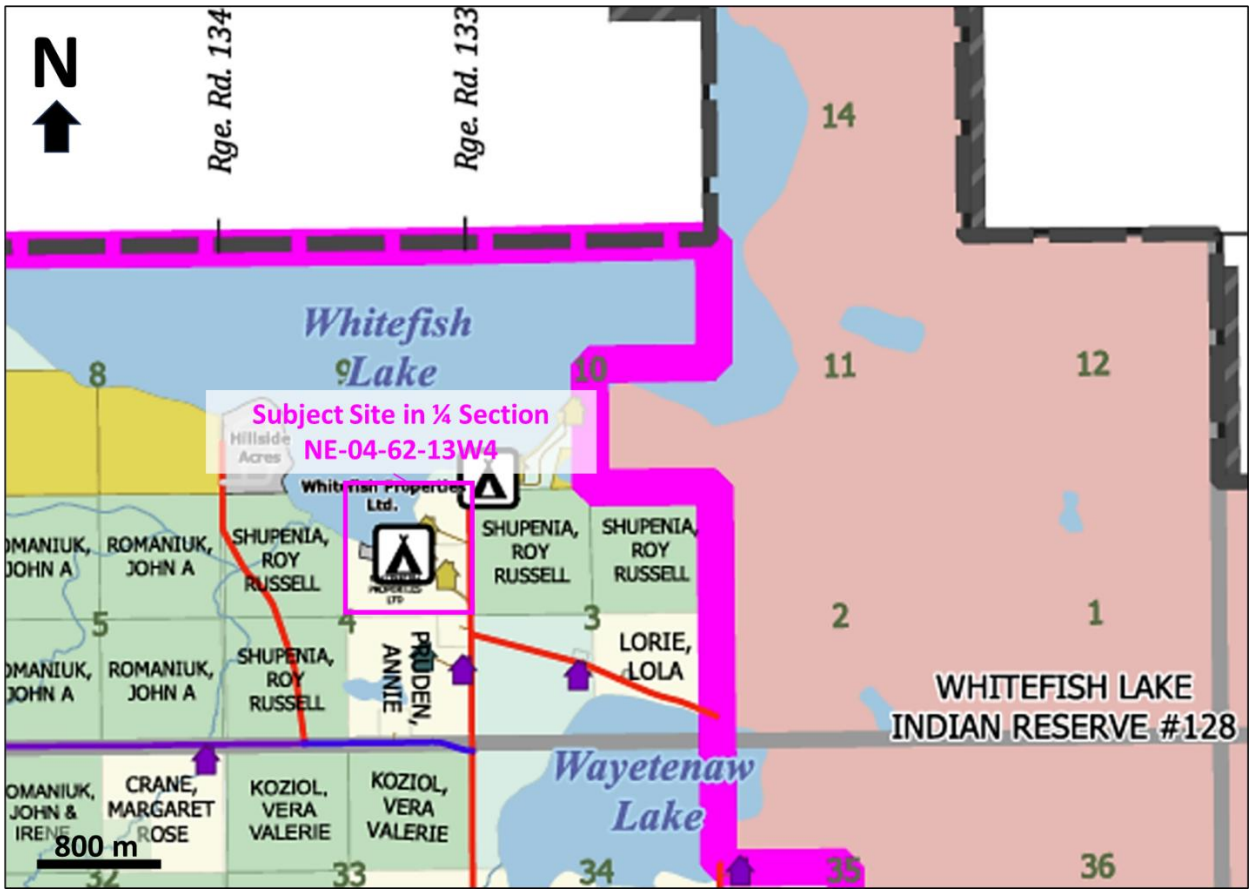
[1.0] Introduction

Groundwater Resources Information Technologies 3.0 Ltd. (GRIT3) was retained by Massif Energy to undertake a Phase I Groundwater Supply Assessment for a proposed 21-lot residential subdivision located within NE – 04 – 62 – 13W4, to better understand the distribution and quality of aquifer resources in the area as the relate to the development of the property and its water requirements.

The Site is located on the far south side of Whitefish Lake, within Smoky Lake County. The Site area consists primarily of dense residential subdivisions interspersed with forested, undeveloped land. A portion of the Smoky Lake Country landownership map with the location of the Site quarter section is shown in Figure 1.

Figure 1. Portion of Smoky County landownership map with subject site ¼ section location



An aerial photo of the Site relative to existing water supply well locations (orange circles) as listed on the Alberta Government water well database, is shown in Figure 2.

Figure 2. Air photo of the Site relative to existing well locations

Wells placed in the middle of quarter sections do not have accurate GPS coordinates so are placed in the middle of their respective quarter sections on the Alberta water well database. Of the 11 listed records, five are for chemistry records with no well or lithology information, four are for decommissioned test holes with no well information, and one is for a 535 metre deep structure test hole with no well or lithology information. There is limited well and lithology data available near the Site.

[2.0] Water Well Supply Needs

According to the *Water Act* each residential lot is entitled to water at a rate of 1,250 m^3/year (3.4 m^3/day).

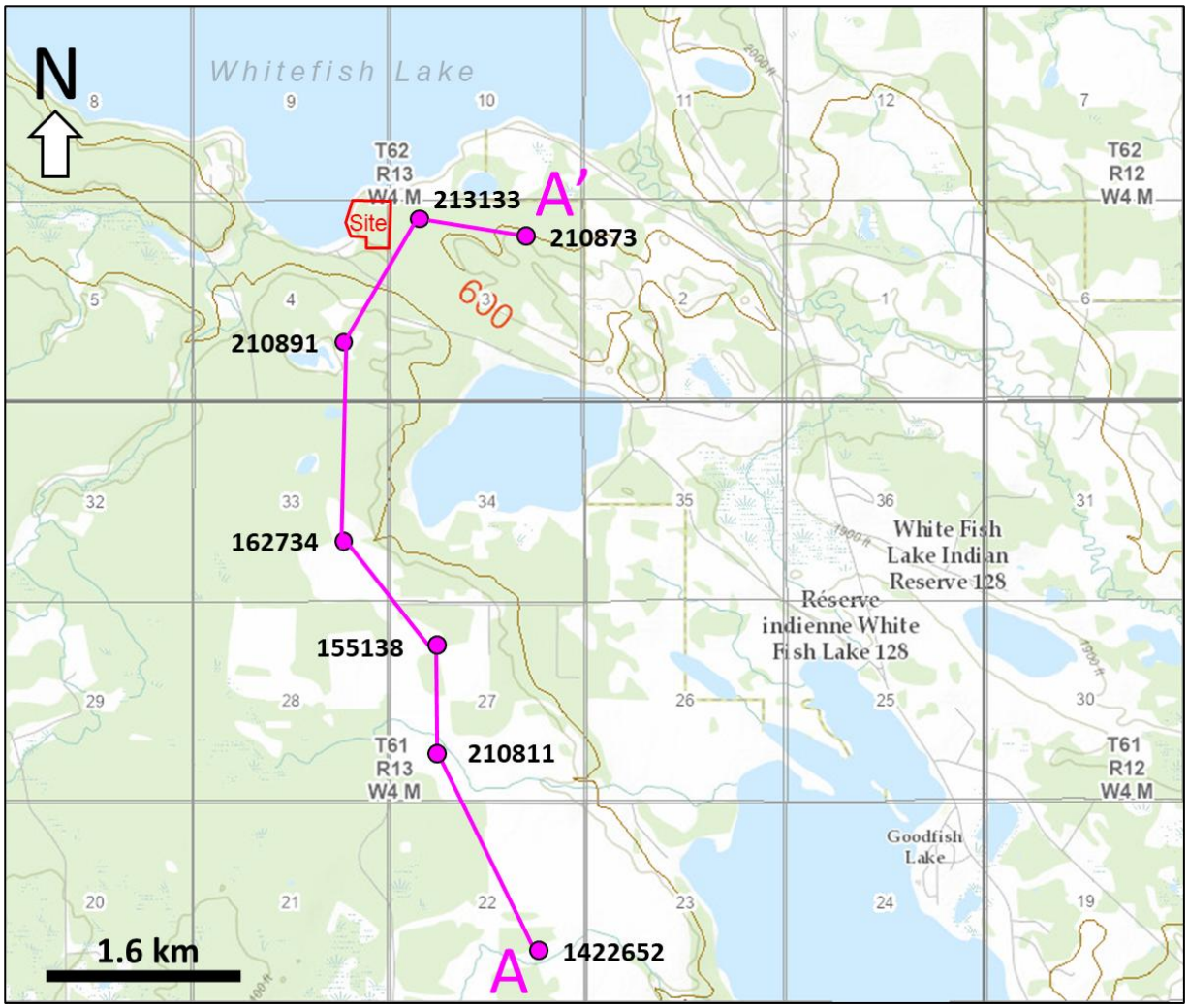
The subdivision would require 21 individual wells to produce at domestic rates (3.4 m^3/day) or a licensed community supply well that would supply the entire subdivision and produce at a minimum rate of 17.3 m^3/day. A community supply well would have to go through the licensing process governed by Alberta Environment and Protected Areas and would require an on-Site centralized water treatment system.

[3.0] Topography

The Site area is located at an elevation of 600 metres above sea level (masl) near the north of the Site and elevation dropping to 580 masl near the south and west of the Site. Whitefish Lake is located immediately west of the Site boundaries, with the lake at an elevation of approximately 578 masl.

A topographic map of the Site area with surface elevation contours is shown in Figure 3.

Figure 3. Topographic map of Site area with location of wells in cross section line A-A'



[4.0] Nature of Regional Aquifers

[4.1] Surficial Geology

The surficial strata in the area are mapped in *Surficial Geology Sand River Area, Alberta* (Fenton and Andriashek, 1983). Surficial deposits in the area have undergone reworking during deposition, with deposits under the Site consisting of thrust moraine which was subsequently fluted during the same glacial advance. The moraine deposits consist of unstratified, unsorted glacially deposited sand, silt, clay and minor pebbles, cobbles and boulders.

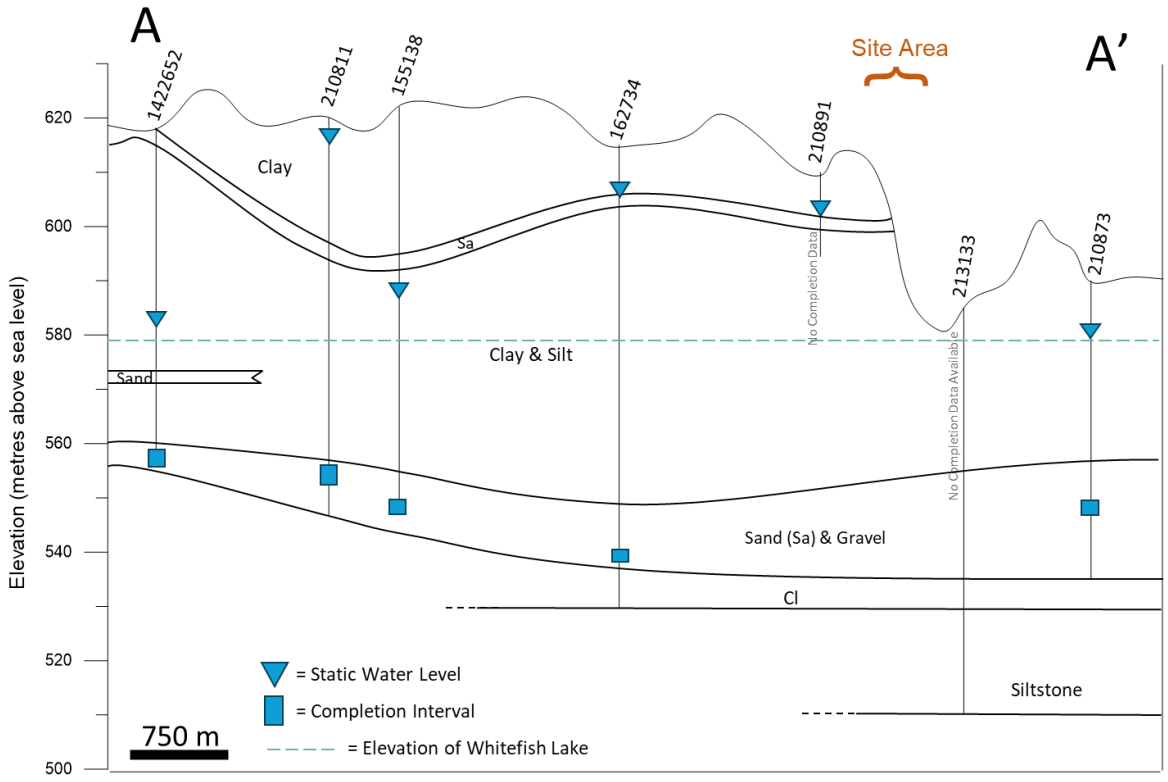
According to Water Well Drilling Reports for wells in the area, surficial sediments consist of 30 – 60 metres of mixed or layered clay, silt and sand deposits.

[4.2] Bedrock Geology

The underlying bedrock consists of the Upper Cretaceous aged Lea Park Formation. The Lea Park Formation is a marine deposit consisting of mudstones, siltstones and fine-grained sandstones, often containing calcite veins. The prominence of low permeability mudstone within the formation limits the potential of bedrock aquifers in the areas.

Using existing Water Well Drilling Reports in the area, a cross section (A – A') showing the relationship between topography, target aquifers and static water levels is presented in Figure 4.

Figure 4. Geologic cross section A – A'



Surficial deposits near the Site consist of layers of clay, silt, sand and gravel. Existing wells target the mixed sand and gravel deposits found from 540 – 560 metres above sea level (masl), around 20 – 60 metres below the Site (depending on topographic position). Wells completed within this aquifer show

varying static water levels, indicating there may be stratification within the aquifer. Some wells have water levels that correlate with the surface water elevation of Whitefish Lake, suggesting the wells are hydraulically connected to the lake.

Future supply wells on the Site will target the same surficial sand-gravel aquifer as existing wells. Available pumping test data from wells completed within surficial aquifers near the Site indicate a safe yield of 9.4 – 24.8 m^3/day (Section 6). Aquifer yields appear sufficient to meet the minimum domestic use requirement of 3.4 m^3/day for individual supply wells and have potential to produce at rates required for a licensed community well of at least 17.3 m^3/day.

[5.0] Area Groundwater Users

A search of the Government of Alberta water well database was done to determine the number of water wells and their associated use in the area within 1.6 km (1-mile) of the Site. The search shows a total of four well records, with one well used for stock watering, two for a combination of domestic and stock use, and the remaining well with an unknown purpose. There are also records for four decommissioned wells. Wells were completed between 1971 and 1986 to depths of 15.5 – 74.7 metres below ground. A summary of the available well details is included in Appendix I.

[5.1] Licensed Groundwater Users

A search of the Alberta Environmental Records Viewer was undertaken to determine if any groundwater licenses are present in the area. A search of licenses for the subject site and adjoining eight sections was undertaken. No licenses for groundwater use were found. All the licensed water use within the search area is from surface water sources.

[6.0] Area Aquifer Properties

Two wells in the area with available pumping test data were used to evaluate aquifer yields around the Site. The pumping tests were analyzed with the aid of AQTESOLV software developed by Hydrosoft Inc. to estimate aquifer transmissivity and safe yield rates (Q_{20}) (Appendix II). A summary of well yield and associated aquifer properties produced from the analysis is below.

Table 1. Summary of area aquifer properties

Well ID	Distance (m)/ Direction from Site	Depth to Aquifer Top (m)	Aquifer Thickness (m)	Aquifer Type	Transmissivity (m^2/day)	Safe Well Yield (Q_{20}) (m^3/day)
210916	5,900 N	10.1	5.2	Unconfined Sand	75.1	24.8
1422652*	6,000 S	57.9	4.3	Confined Sand	0.7	9.4
*Well does not have accurate GPS coordinates and is listed on the Alberta water well database in the middle of the respective quarter section						

The twenty-year safe yield of the supply wells (Q_{20}) was calculated using the modified Moell method as suggested in Alberta Environments *Guide to Groundwater Authorization* (February 2023) as follows:

$$Q_{20} = \frac{(0.7 \times Q \times H_a)}{s_{100min} + (s_{20yrs} - s_{100th})}$$

Where:

Q	-	Pump test flow rate (m^3/day)
H_a	-	Available Head (m) = (Top of Aquifer - (Static Water Level - Well Stickup) Or $\frac{2}{3} \times$ Saturated Aquifer Thickness (for unconfined aquifers)
$S_{100\ min}$	-	Observed drawdown at 100 minutes (m)
$(S_{20yrs} - S_{100\ th})$	-	Difference between theoretical drawdown at 20 years and 100 min (m)
0.7	-	Safety factor

Analysis of pumping test data from Well 210916, completed in an unconfined sand aquifer, produced a safe yield of 24.8 m^3/day. Pumping test data from Well 1422652, completed in a confined sand aquifer, produced a safe yield of 9.4 m^3/day.

Based on available pumping test data and bedrock geology mapping, the coarse-grained surficial aquifers underlying the Site produce yields sufficient to meet the minimum domestic rate of 3.4 m^3/day for individual supply wells and have potential to produce at rates required for a licensed community well. A conservative yield of 6 m^3/day is estimated for coarse-grained aquifers located 20 – 60 metres below the Site.

[7.0] Effect on Existing Groundwater Users

Using the Cooper-Jacob equation below, the expected drawdown through time can be calculated at various radial distances from the future development. Radial distances are measured from the centre of the Site.

[7.1] Individual Supply Wells

The pumping rate is equal to 21 new wells pumping continuously at domestic rates.

$$s = \frac{(0.183 \times Q)}{T} \times Log\left(\frac{2.25 \times T \times t}{r^2 \times S}\right)$$

Where:

s	-	Drawdown (m)
S	-	Storativity (5.0×10^{-3})
Q	-	Pump rate (3.4 m^3/day × 21 wells = 71.4 m^3/day)
T	-	Transmissivity (0.7 m^2/day) – (from Table 1)
t	-	Time (days)
r	-	Radial distance from pumping well (m)

Water level drawdown at various distances from the centre of the Site are tabulated as a function of time in Table 2.

Table 2. Cooper-Jacob distance drawdown calculations for individual supply wells

Distance (m)/ Time (days)	250	300	500	800	1250	1700	3000
1	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--
30	--	--	--	--	--	--	--
365	4.94	1.99	--	--	--	--	--
1826	17.99	15.04	6.75	--	--	--	--
3652	23.61	20.66	12.37	4.75	--	--	--
7305	29.23	26.28	17.99	10.37	3.14	--	--

The following assumptions were included in the above calculation: A conservative storativity value of 5.0 x 10^{-3} for a confined surficial aquifer, a continuous consumption rate of 71.4 m^3/day from 21 new domestic supply wells, aquifer transmissivity from Table 1 (0.7 m^2/day), **no recharge is occurring**, and all wells are screened over the same aquifer.

The closest well to the Site completed in a confined surficial aquifer with available pumping test data (Well ID 1422652) has an available drawdown of 23.3 metres. This value can be used as a proxy for the available head in the confined surficial sand aquifer. The above calculation shows a potential additional drawdown of up to 29.23 metres due to pumping from 21 new supply wells at domestic rates over 20 years, exceeding the aquifers available head/drawdown. When recharge from the aquifers connection to Whitefish Lake is considered the actual drawdown in the aquifer would be reduced, helping to maintain aquifer levels with time.

[7.2] Licensed Community Supply Well

The pumping rate is equal to a community supply well producing at 17.3 m^3/day.

$$s = \frac{(0.183 \times Q)}{T} \times Log\left(\frac{2.25 \times T \times t}{r^2 \times S}\right)$$

Where:

s	-	Drawdown (m)
S	-	Storativity (5.0 x 10^{-3})
Q	-	Pump rate (17.3 m^3/day)
T	-	Transmissivity (0.7 m^2/day) – (from Table 1)
t	-	Time (days)
r	-	Radial distance from pumping well (m)

Water level drawdown at various distances from the centre of the Site are tabulated as a function of time in Table 3.

Table 3. Cooper-Jacob distance drawdown calculations for individual supply wells

Distance (m)/ Time (days)	250	300	500	800	1250	1700	3000
1	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--
30	--	--	--	--	--	--	--
365	1.20	0.48	--	--	--	--	--
1826	4.36	3.64	1.64	--	--	--	--
3652	5.72	5.00	3.00	1.15	--	--	--
7305	7.08	6.37	4.36	2.51	0.76	--	--

The following assumptions were included in the above calculation: A conservative storativity value of 5.0 x 10^{-3} for a confined surficial aquifer, a continuous consumption rate of 17.3 m^3/day from a licensed community supply well, aquifer transmissivity from Table 1 (0.7 m^2/day), **no recharge is occurring**, and all wells are screened over the same aquifer.

The closest well to the Site completed in a confined surficial aquifer with available pumping test data (Well ID 1422652) has an available drawdown of 23.3 metres. This value can be used as a proxy for the available head in the confined surficial sand aquifer. The above calculation shows a potential additional drawdown of up to 7.08 metres due to pumping from a licensed community well over 20 years. This potential additional drawdown is 30% of the aquifers available drawdown. When recharge from the aquifers connection to Whitefish Lake is considered the actual drawdown in the aquifer would be reduced, helping to maintain aquifer levels with time.

[8.0] Area Aquifer Water Quality

A water chemistry report was available from an existing well in the area completed to a depth of 6.1 metres below ground (Well ID 210909). Future wells completed to a similar depth will likely have similar water chemistry. The water analysis report for the well is attached in Appendix III and a summary of the results, with a comparison to the *Guidelines for Canadian Drinking Water Quality* (2025) is as follows:

Table 4. Water chemistry summary

Parameter	Units	Well ID 210909	**CDWQ MAC/**AO
Well Depth	metres	6.1	
Date Sampled	mm/dd/yyyy	11/16/1979	
pH	pH	7.80	7.0 – 10.5
EC (@ 25˚C)	µS/cm	1,651	--
Calcium	mg/L	53	--
Magnesium	mg/L	107	--
Sodium	mg/L	146	200
Potassium	mg/L	5.52	--
Chloride	mg/L	46.1	250
Nitrate	mg/L	Not Reported	**10**
Nitrite	mg/L	0.249	**1**
Sulfate	mg/L	72.1	500
Manganese	mg/L	Not Reported	**0.12**/0.02
Bicarbonate	mg/L	949	--
Iron	mg/L	*0.87*	0.3
Total Dissolved Solids	mg/L	*959*	500
Fluoride	mg/L	0.46	**1.5**
T-Alkalinity	mg/L	779	--
AO – Aesthetic Objective **MAC – Maximum Allowable Concentration**			

The well water quality sample exceeded the aesthetic objective guidelines for iron and Total Dissolved Solids (TDS). Wells completed to similar depths may have similar water chemistry, and would be suitable for domestic use, with the potential for treatment to reduce TDS so the water is more palatable. As available water chemistry reports were only available from over 45 years ago, it is recommended that any future supply wells be sampled and analyzed for routine potability parameters prior to long term human consumption.

[9.0] References

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Appendix I: Water Well Reconnaissance Report

Reconnaissance Report

View in Imperial

Export to Excel

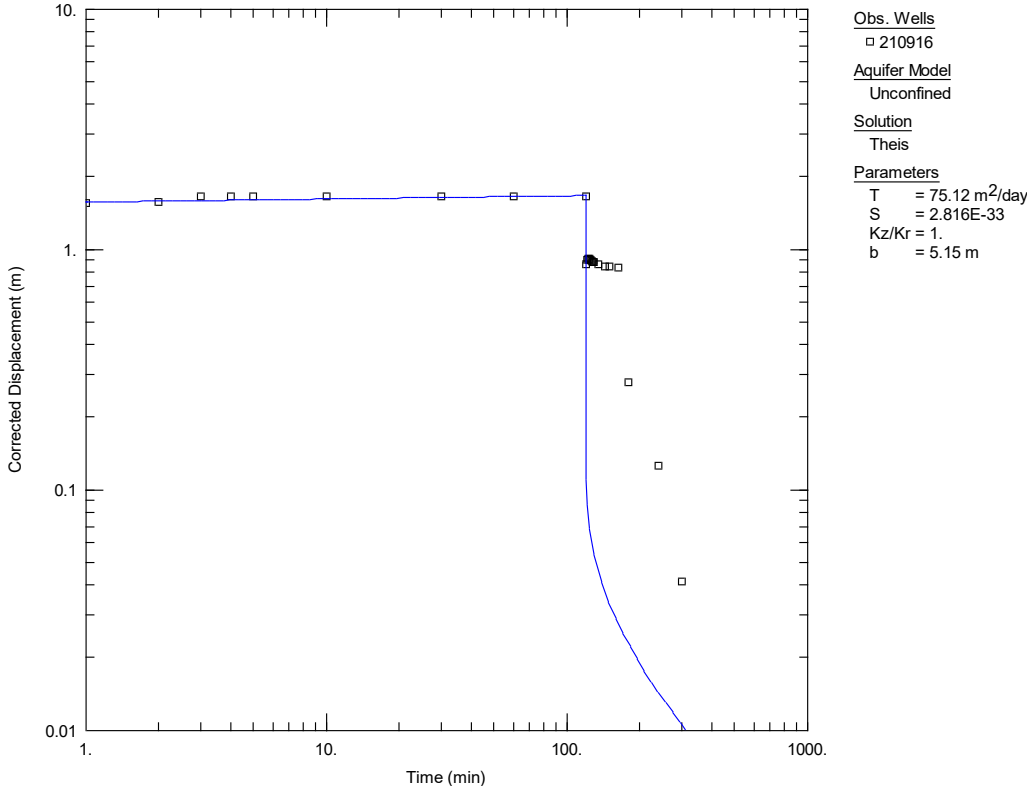
Groundwater Wells

Please click the water Well ID to generate the Water Well Drilling Report.

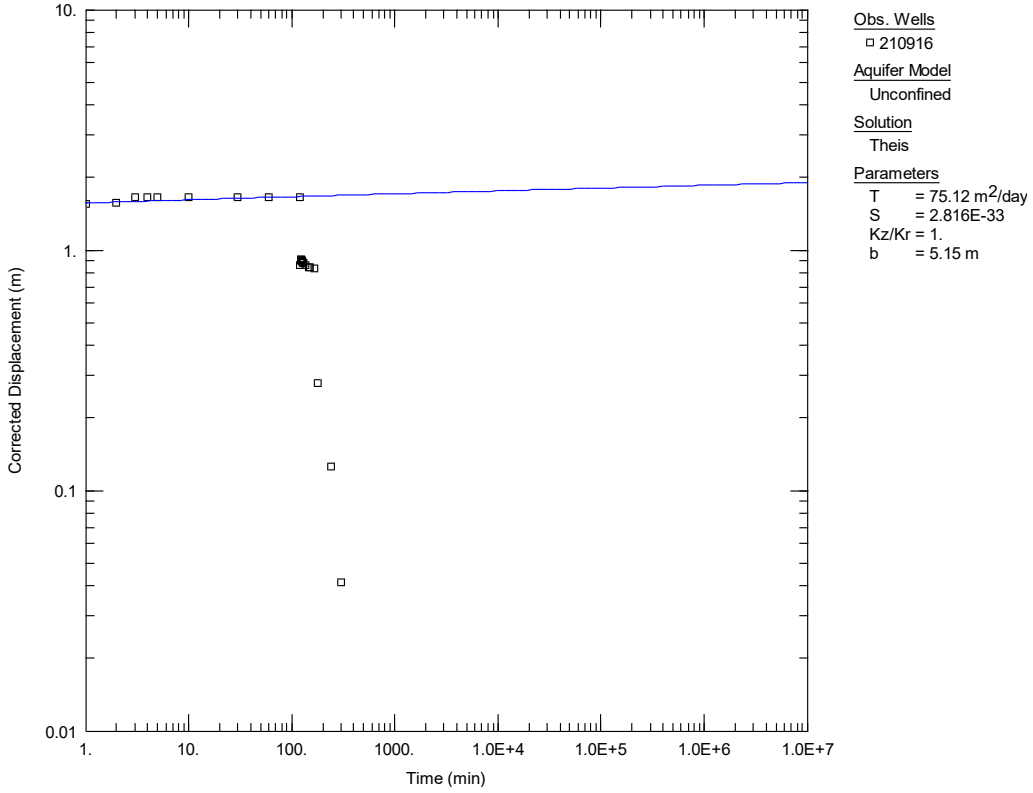
GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (m)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (m)	TEST RATE (L/min)	SC_DIA (cm)
157346	SW	10	62	13	4	UNKNOWN DRILLER		0.00	Chemistry	Domestic				GULEVICH, RON			0.00
160962	SW	9	62	13	4	UNKNOWN DRILLER		4.88	Chemistry	Domestic				SHUPENIA, JUDY			0.00
167605	NE	4	62	13	4	UNKNOWN DRILLER		51.82	Chemistry	Domestic				ROSYCHUK, ROSE			0.00
210871	SW	3	62	13	4	UNKNOWN DRILLER		3.05	Chemistry	Domestic	1			WHITFORD, VIOLET	1.22		0.00
210873	NE	3	62	13	4	PANKY'S CONSOLIDATED LTD.	1974-07-28	54.86	New Well	Domestic		4		TREMBLAY, G.	10.67	4.55	11.43
210891	SE	4	62	13	4	TOWN & COUNTRY WATER WELL BORING LTD.	1986-09-25	15.54	New Well	Stock		3		WURN, ALBERT	7.92	4.55	55.88
210895	SW	4	62	13	4	UNKNOWN DRILLER		6.10	Chemistry	Domestic				BABIUK, BRIAN			0.00
210897	15	4	62	13	4	UNKNOWN DRILLER		4.57	Chemistry	Domestic	2			WITSCHEN, EDWARD	3.05		0.00
210903	NE	4	62	13	4	UNKNOWN DRILLER		7.62	Chemistry	Domestic				HOFFMAN, JOE			0.00
210906	10	4	62	13	4	UNKNOWN DRILLER	1970-11-02	534.92	Structure Test Hole	Industrial				SYRACUSE OILS LTD			0.00
210909	SW	10	62	13	4	UNKNOWN DRILLER		6.10	Chemistry	Domestic	1			ANDERSON, ANN	3.05		0.00
213133	13	3	62	13	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1971-06-24	74.68	Unknown			9		ALTA ENV #0721E			0.00
274421	NE	4	62	13	4	MCALLISTER HOLDINGS LTD.	1979-11-01	54.86	New Well-Decommissioned	Investigation		8		CICON ENGINEERING #WHITEFISH			0.00
274427	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-05	79.25	New Well-Decommissioned	Investigation		6		CICON ENGINEERING #WHITEFISH			0.00
274429	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-05	36.58	New Well-Decommissioned	Investigation		4		CICON ENGINEERING #WHITEFISH			0.00
274432	NE	4	62	13	4	MCALLISTER DRILLING LTD.	1979-11-06	42.67	New Well-Decommissioned	Investigation		5		CICON ENGINEERING #WHITEFISH			0.00
2094987	SE	4	62	13	4	UNKNOWNDRILLINGCOMP11	1979-06-15	17.98	Well Inventory	Domestic & Stock		1		PRUDEN, MRS. ANNIE			

Appendix II: AQTESOLV Plots

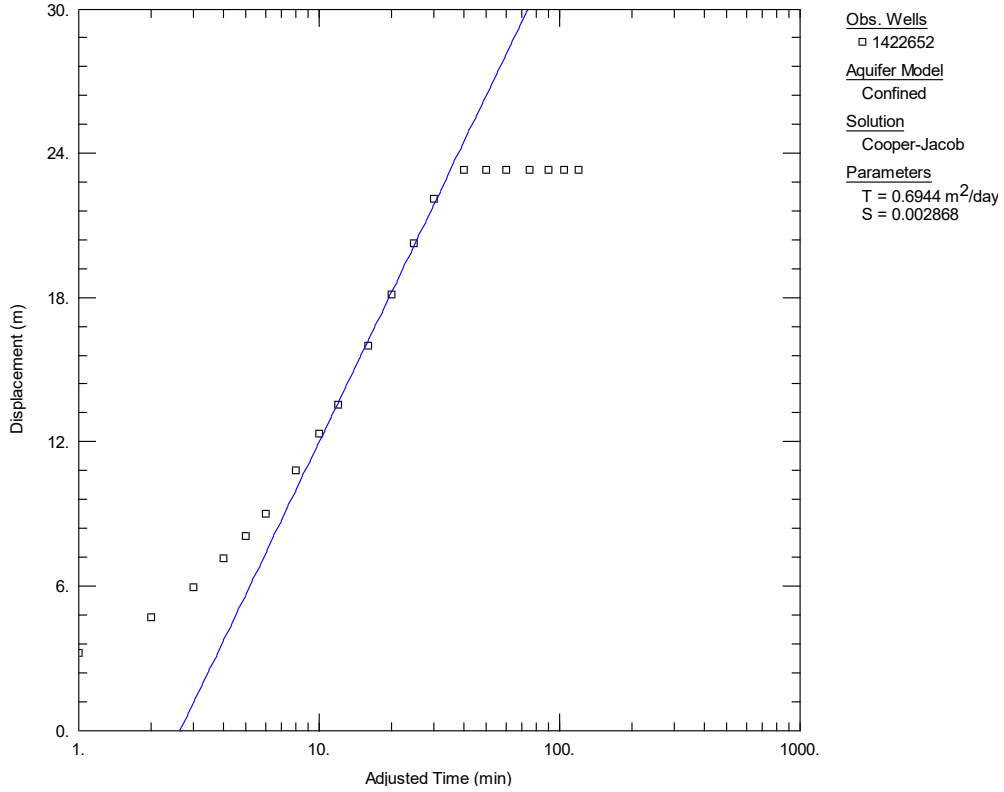
II.A. Solution fit to pumping test data for GIC Well ID 210916



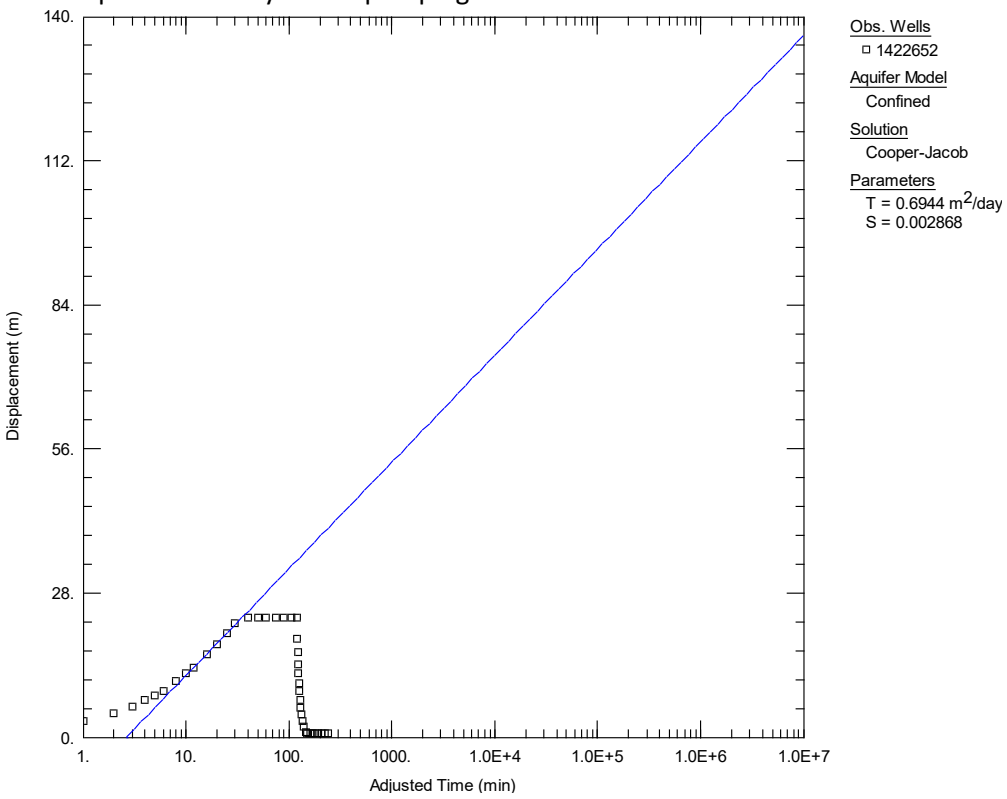
II.B. Solution extrapolated to 20 years of pumping



II.C. Solution fit to pumping test data for GIC Well ID 1422652



II.D. Solution extrapolated to 20 years of pumping



Appendix III: Water Chemistry Report

CHEMICAL ANALYSIS REPORT

WELL NAME	ANDERSON, ANN	**GIC WELL ID**	210909
LOCATION	LSD SW SEC 10 TWP 62 RG 13 M 4	**SAMPLE NO.**	12942-W
WELL DEPTH	20.00 ft	**WATER LEVEL**	10.00 ft
AQUIFER		**LABORATORY**	AE
SAMPLING DATE	1979-11-16		

FIELD	**MG/L**	**FIELD**	**MG/L**
BICARBONATE		CARBONATE	
CHLORIDE		CONDUCTIVITY	
DISSOLVED OXYGEN		EH	
IRON		MANGANESE	
PH		SULPHATE	
S2		TEMPERATURE(C)	0
TOTAL ALKALINITY		TOTAL HARDNESS	
LABORATORY		Analysis Date 1979-11-28	
COD		CONDUCTIVITY	1,651
DIC		FLUORIDE	0.4600
ION BALANCE	0.9200	PH	7.80
SAR		SIO2	10.4000
TOTAL ALKALINITY	779.0000	TC	
TDS	959	TN	
DOC			
AMMONIUM-N		BICARBONATE	949.0947
CALCIUM	52.9998	CARBONATE	
CHLORIDE	46.0648	MAGNESIUM	107.0883
NITRATE-N		NITRITE-N	0.2492
PHOSPHATE		POTASSIUM	5.5240
SODIUM	145.9994	SULPHATE	72.1067
NO2 + NO3	14.0406	TOTAL HARDNESS	571.0000
ALUMINUM		ARSENIC	
BARIUM		BERYLLIUM	
CADMIUM		CHROMIUM	
COBALT		COPPER	
IRON	0.8700	LEAD	
MANGANESE		MERCURY	
MOLYBDENUM		NICKEL	
SELENIUM		STRONTIUM	
VANADIUM		ZINC	
HYDROCARBONS		PESTICIDES	
PHENOLICS			

Remarks:

Temperature reported in Degree Centigrade. Conductivity reported in microsiemens/cm, pH in pH units. Alkalinity and Hardness expressed as Calcium Carbonate. FE, VA, PB, AL, AG expressed as extractable. FE in field measurements and all remaining metals expressed as total.
'-' indicates concentrations less than.

EH	- Oxidation-Reduction Potential	SAR	- Sodium Adsorption Ratio	DIC	- Dissolved Inorganic Carbon
COD	- Chemical Oxygen Demand	DOC	- Dissolved Organic Carbon	TN	- Total Particulate Nitrogen
TDS	- Total Dissolved Solids	TC	- Total Particulate Carbon		

Appendix G: Biophysical Assessment

APPENDIX G:

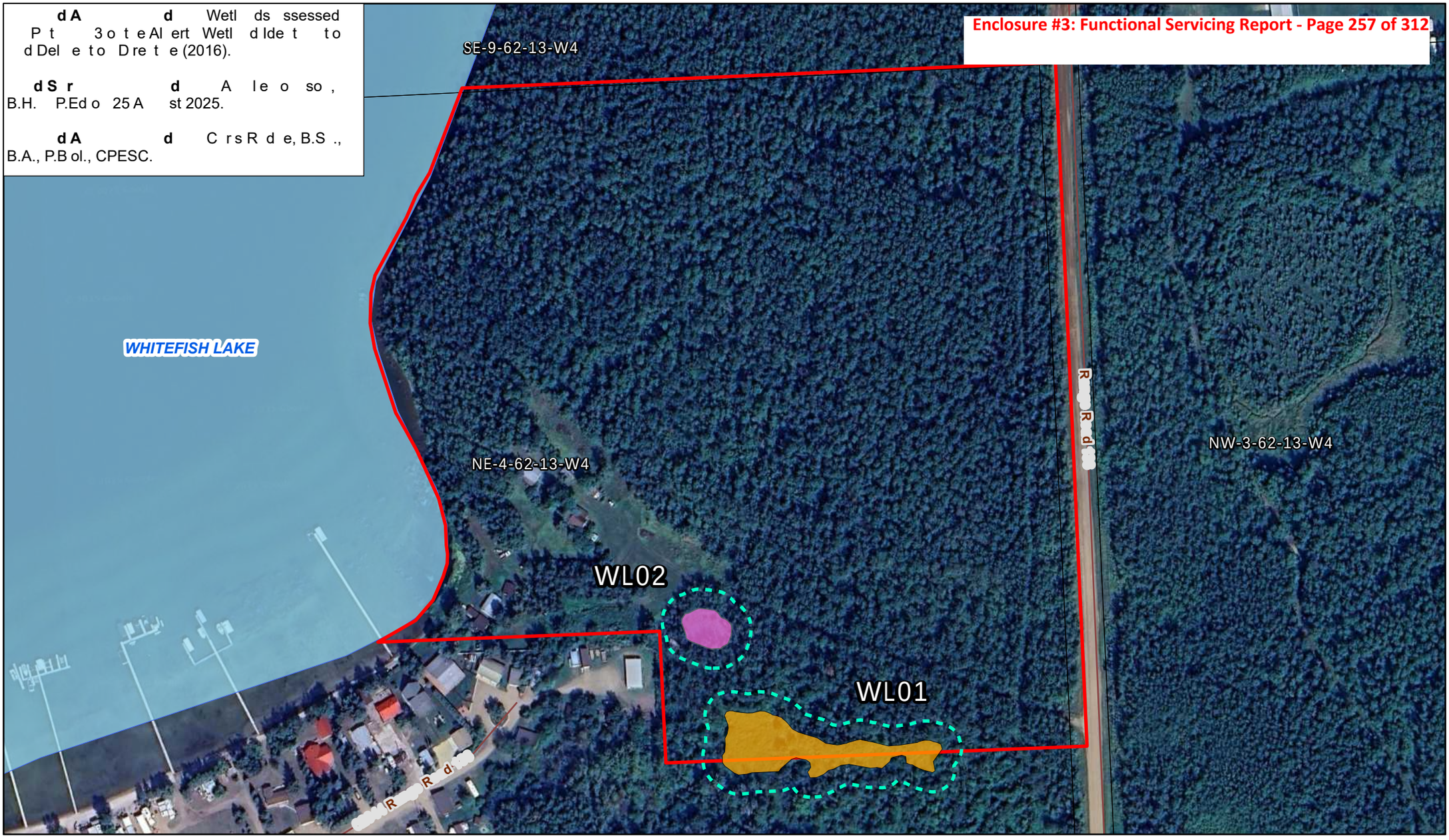
Biophysical Assessment

Date Report Completed	Sept 10, 2025
Consultant	Basin Environmental

d A **d** Wetl ds ssessed P t 3o t eAl ert Wetl d Ide t to d Del e to Dre t e (2016).

d S r **d** A le o so , B.H. P.Ed o 25 A st 2025.

d A **d** C rs R d e, B.S ., B.A., P.B ol., CPESC.



L d

- Project Area
- 10 m Wetland Buffer
- Road Network
- Waterbodies (GOA, FWMIS)

Wetland Classification

- WL02 - M-G-II
- WL01 - S-S-II

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d A **d** C rs R d e, B.S ., B.A., P.B ol., CPESC.

WHITEFISH LAKE

WL02

WL01

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- Project Area
- 10 m Wetland Buffer
- Drainage Direction
- 1m Contour (2009)
- 5m Contour (2009)
- Road Network
- Waterbodies (GOA, FWMIS)

Wetland Classification

- WL02 - M-G-II
- WL01 - S-S-II

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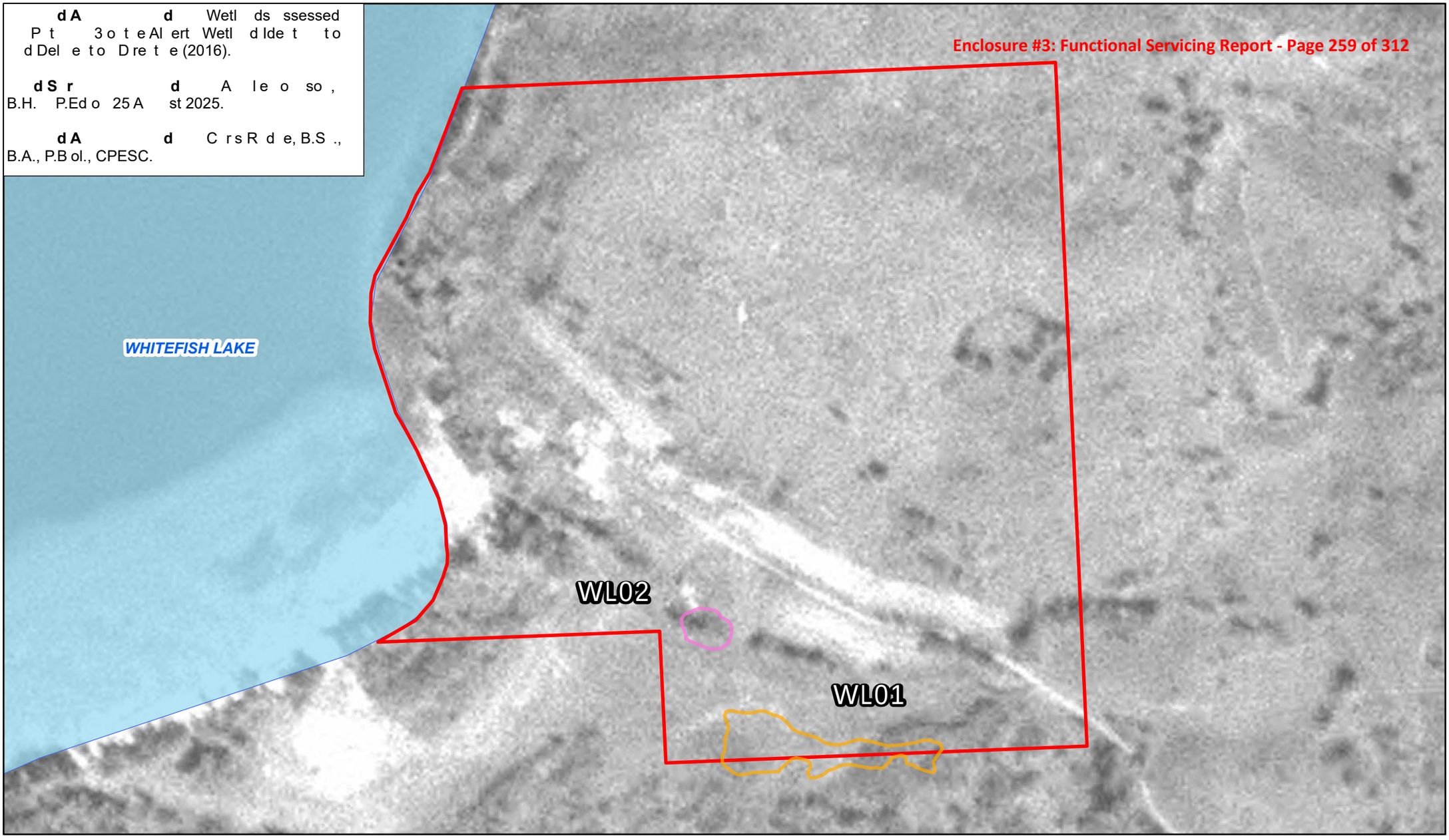

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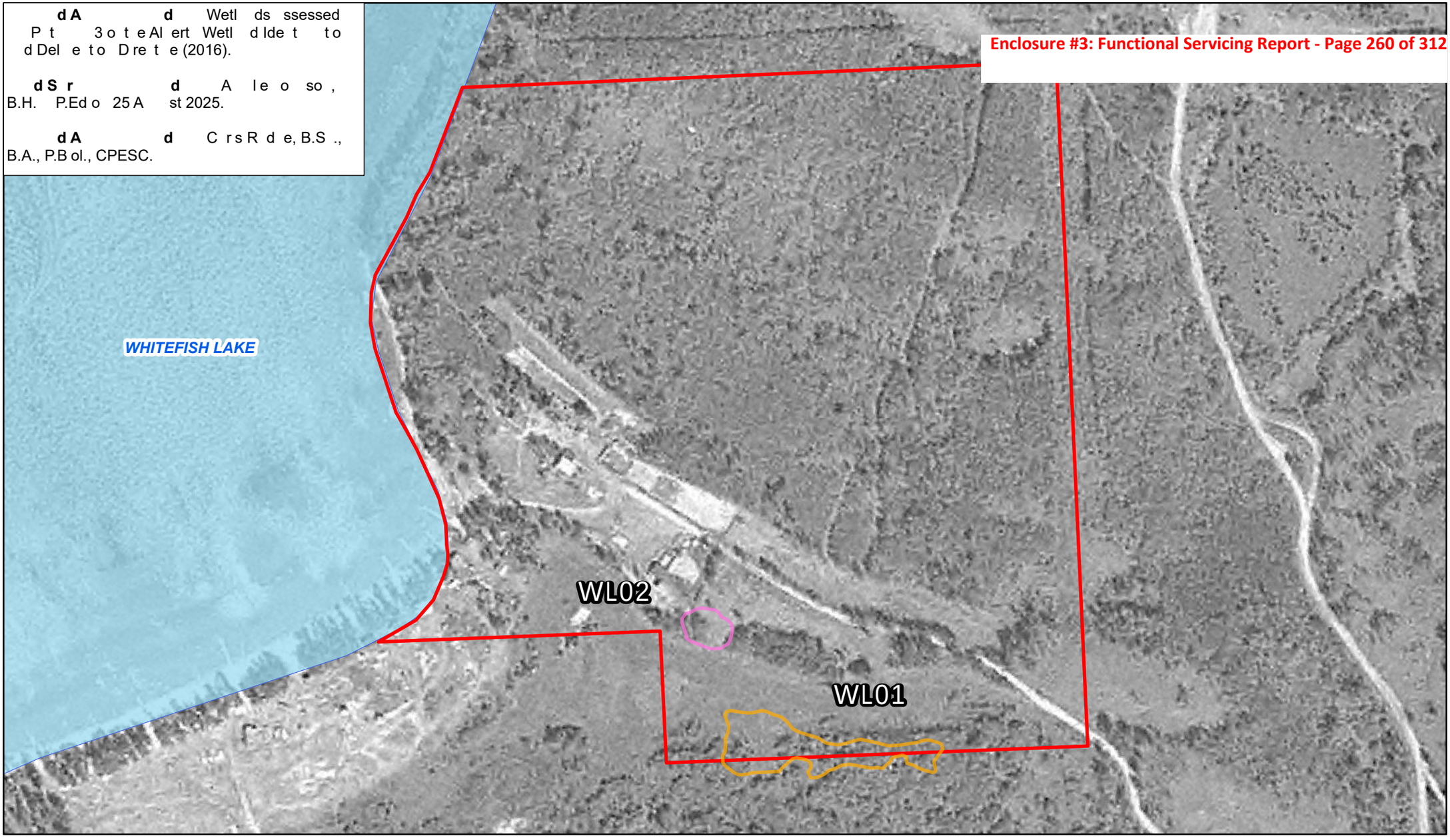

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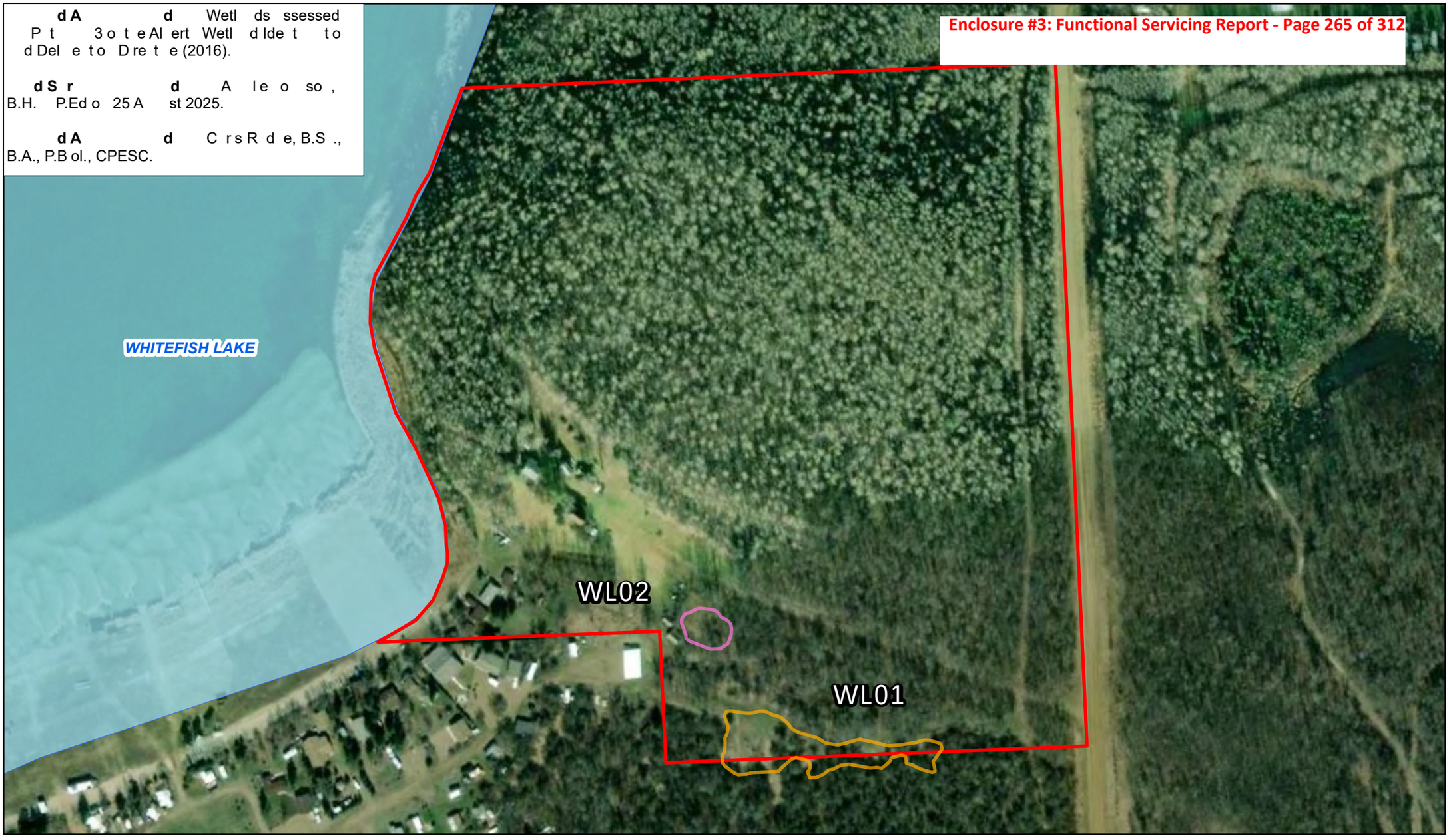

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Le l L d: NE-4-62-13-W4M

Appendix H: Community Engagement Report

APPENDIX H:

Community Engagement

Date Report Completed	March 2026
Consultant	Massif Energy

PUBLIC ENGAGEMENT SUMMARY

Sunset Ridge Estates at Whitefish Lake

Outline Plan – R03A | Pt. NE 4-62-13-W4M, Smoky Lake County, Alberta

Prepared by: Austin Zacharko, Director – Business Development, Massif Energy | March 2026

1. Purpose

This summary documents the public engagement programme completed for the proposed Sunset Ridge Estates at Whitefish Lake development (Outline Plan – R03A) in accordance with Step 3 – Public Engagement Programme as required by Smoky Lake County. The programme was designed to inform adjacent and affected landowners, the broader community, and Indigenous communities of the proposed rezoning and country residential subdivision, and to invite feedback prior to submission of the Outline Plan to Council.

2. Project Overview

Project Name	Sunset Ridge Estates at Whitefish Lake – Outline Plan R01A
Location	Pt. NE 4-62-13-W4M, Smoky Lake County, Alberta (southern shore of Whitefish Lake)
Parcel Size	26.75 acres
Proposed Use	Rezoning from Agricultural (AG) to Country Residential (R1)
Proponent	Massif Energy – Austin Zacharko, Director of Business Development
Subdivision Authority	Municipal Planning Services (2009) Ltd., on behalf of Smoky Lake County

3. Engagement Overview

The engagement programme was conducted between January and March 2026 and consisted of five primary components:

#	Component	Description
1	**Email Notices to Neighbouring Landowners**	Formal notices distributed to adjacent and nearby landowners via email with the assistance of the Development Manager at Smoky Lake County.
2	**Public Notice Boards**	Physical notice boards posted on the development property and at high-traffic roadway locations near the site.
3	**Door-to-Door Flyer Distribution**	Over 50 flyers hand-delivered to local landowners. Where residents were unavailable, flyers were left at the door.
4	**Community Open House**	Formal open house held March 23, 2026 at Métis Crossing, Smoky Lake. 9 attendees signed in; approximately 15 total attended.
5	**Indigenous Community Engagement**	Separate dedicated engagement with Whitefish Lake First Nation #128 and Kikino Métis Settlement. See attached Indigenous Engagement Summary for full details.

4. Detailed Engagement Activities

4.1 Email Notices to Neighbouring Landowners

Formal public engagement notices were distributed by Smoky Lake County's Development Manager to adjacent and nearby landowners via email. Notices included information on the proposed outline plan, the public comment period (March 7–28, 2026), and open house details.

4.2 Public Notice Boards

Notice boards were constructed and installed at multiple high-visibility locations. Posting locations included:

- On the development property itself (Pt. NE 4-62-13-W4M), visible from Range Road 133;
- At the intersection of 62064 Range Road 133, adjacent to the property access road;
- Near the Whitefish Resorts entrance Gate;
- At the entrance to Hillside Acres (62103 Range Road 133A), a neighbouring residential area.

Each notice board displayed full project details, bylaw amendment descriptions, the lot layout, open house date and location, and proponent contact information. Photographs of all posted notice boards are included in Appendix A.

4.3 Door-to-Door Flyer Distribution

Over 50 flyers were distributed directly to local landowners and residents during a door-to-door canvassing effort. Where residents were not home, flyers were left at their doorstep. This direct outreach ensured awareness reached landowners who may not have received the email notice. Photographs of door-drop flyers are included in Appendix A.

4.4 Community Open House

Date: March 23, 2026 @ 7:00 p.m.

Location: Métis Crossing, 17339 Victoria Trail, Smoky Lake, AB T0A 3C0 – Classroom.

A community open house was held on March 23, 2026. Approximately 15 community members attended; 10 signed the official sign-in sheet. Not all attendees chose to sign in. The proponent presented the proposed Sunset Ridge Estates outline plan and was available to answer questions throughout the evening.

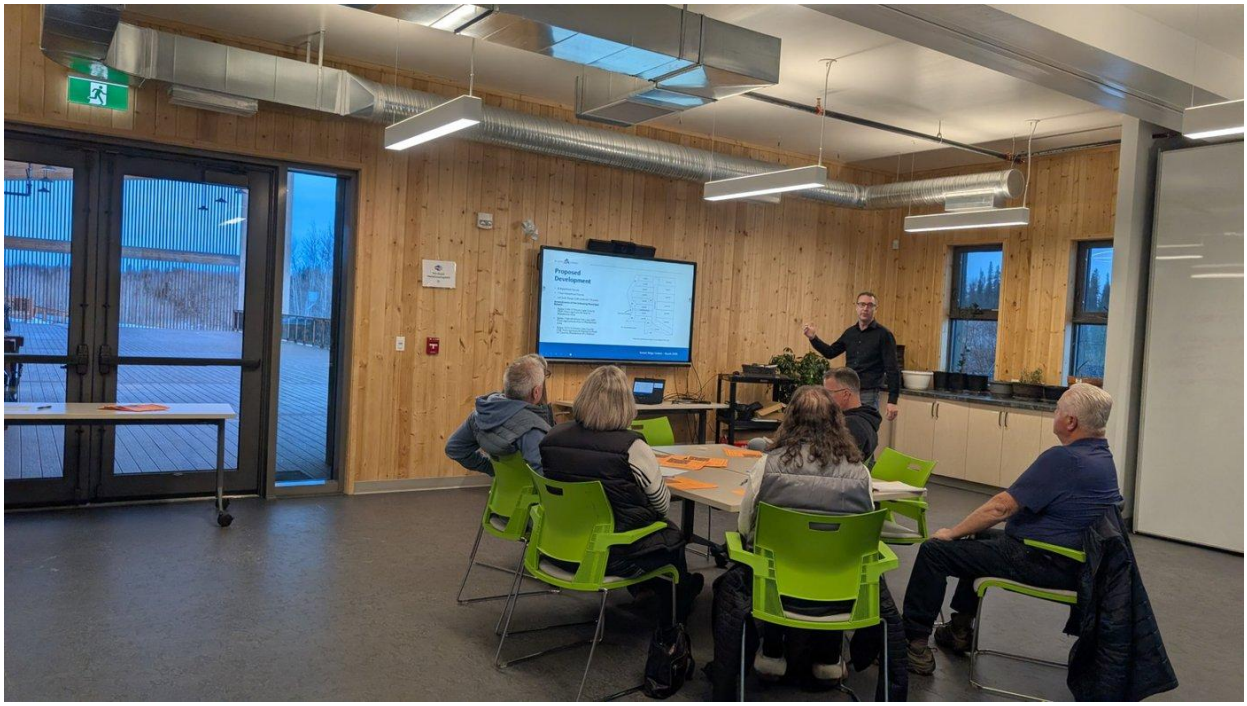


Photo: Jordan Reugg (Planning and Development Manager – Smoky Lake County) answering questions related to Smoky Lake county regarding the Sunset Ridge Estates Proposed Outline Plan at the Community Open House, Métis Crossing, March 23, 2026.

Sign-In Sheet – Attendees:

#	Name	Email	Community / Affiliation
1	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]
3	[redacted]	—	—
4	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]
10	*(additional attendees did not sign in)*		

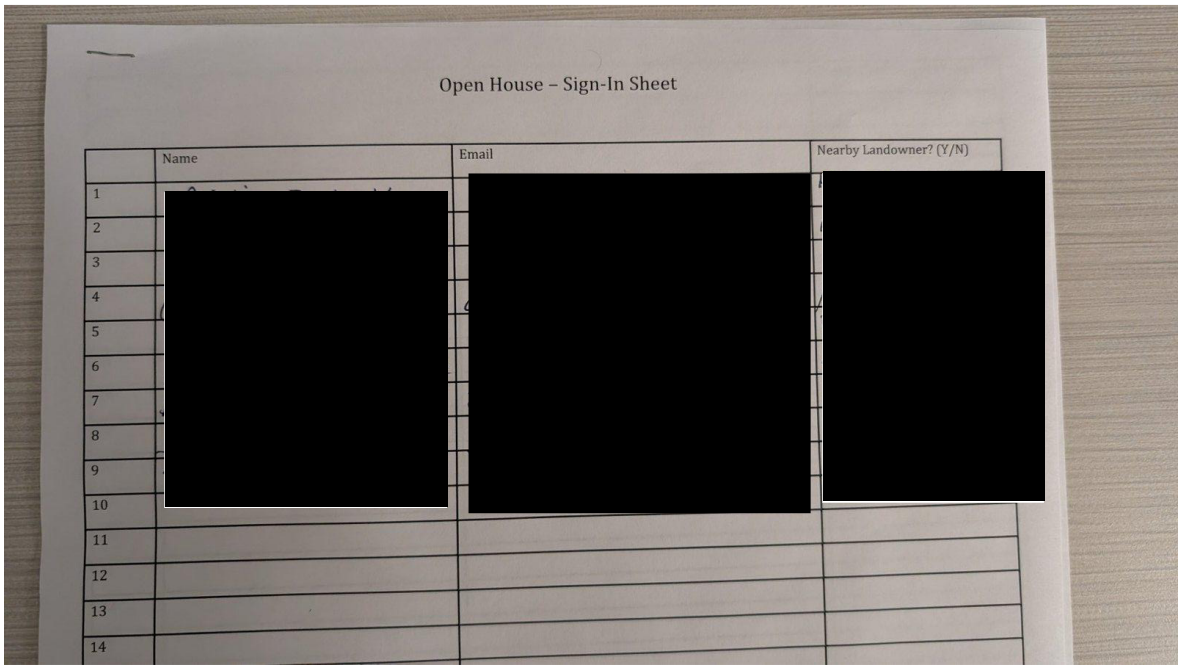


Photo: Open House Sign-In Sheet – March 23, 2026.

Topics raised and addressed at the open house:

- Wetlands – wetland investigations have been completed by qualified professional biologists.
- Archaeology – artifact studies have been completed by qualified archaeologists.
- Stormwater management – a stormwater management study is planned for completion in June 2026, by professional engineers; ensuring drainage does not negatively impact the lake or neighbouring properties.
- Road and infrastructure impacts – concerns regarding construction traffic on surrounding roads were raised. Smoky Lake County confirmed that they would coordinate with the internal teams to ensure it is properly managed.
- Boat launch – questions regarding the existing nearby public boat launch and its continued accessibility were raised and discussed. The fact that the current parking lot becomes full in the peak of summer months was noted. The proposed development is not in a meaningful place to provide additional parking, and due to its low density provides marginal increase in use. Massif Energy and the Smoky Lake County Development Manager discussed working collaboratively into the future to look into new parking options at the existing Boat Launch.

Item Taken Under Advisement – Municipal Utility Lot / Natural Buffer Zone

One suggestion raised at the open house was the creation of a municipal utility lot (MUL) or natural buffer zone between the southern edge of Sunset Ridge Estates and the northern edge of Whitefish Properties. The proponent indicated this would be taken under consideration.

Upon further review, the proponent has determined that a MUL or formal buffer zone is not practical or necessary for the following reasons:

1. Identical zoning on both sides – the existing zoning of Whitefish Properties and the proposed zoning for Sunset Ridge Estates are the same (Country Residential / R1). A buffer between two identically zoned properties is not a standard requirement.

2. Inaccessibility of a MUL – a municipal utility lot in this location would only be accessible through the adjacent Sunset Ridge Estates lot, making it functionally inaccessible to the municipality and therefore without practical public purpose.
3. Existing fence provides separation – the landowner at Whitefish Properties has already installed a large fence along the shared boundary, creating a meaningful physical separation between the two developments.
4. Inherent low density as a natural buffer – the low-density, large-lot design of Sunset Ridge Estates means there will inherently be more open space and tree retention on the property, providing a natural buffer without the need for a designated MUL.

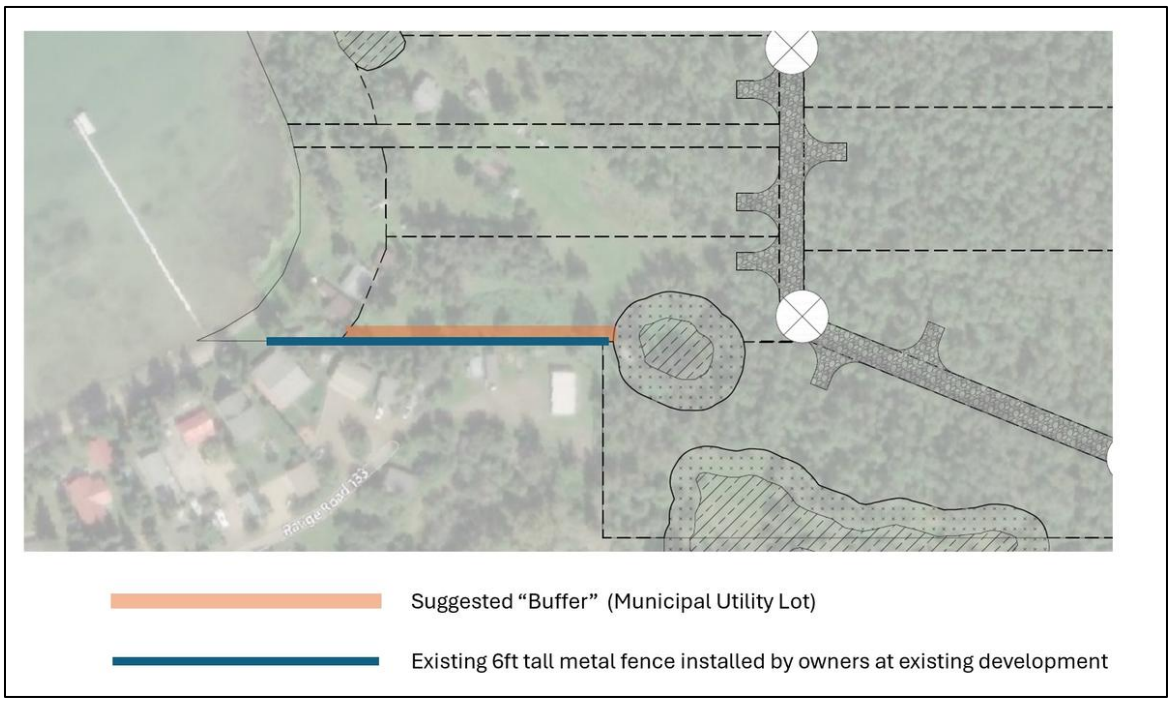


Figure: Aerial diagram illustrating the location of the suggested Municipal Utility Lot (orange) relative to the existing 6ft metal fence installed by Whitefish Properties owners (blue). The fence already provides a meaningful physical separation, rendering a formal MUL redundant.

4.5 Indigenous Community Engagement

Dedicated engagement was conducted with Whitefish Lake First Nation #128 and Kikino Métis Settlement throughout the development process, beginning in June 2025. This included formal written correspondence, telephone follow-up, and open house notification.

5. Feedback Received

Community members were invited to provide feedback by attending the open house or submitting written comments by email to austin@massifenergy.ca. The public feedback period ran March 7–28, 2026. Four written responses were received.

Date	Respondent	Position	Summary of Feedback
March 21, 2026	[redacted]	**Support**	Supports the low-density design as appropriate for the area; notes positive contribution to the local tax base.
March 22, 2026	[redacted]	**Support**	Consider the plan reasonable and environmentally responsible given the declared Environmental Reserves.
March 13/17, 2026	[redacted]	**Opposition**	Concerns: increased lake activity, noise, boating behaviour, wildlife, and safety. Proponent responded in detail March 17, 2026.
March 25/29, 2026	[redacted]	**Opposition**	Concerns: over-development, environmental damage, natural drainage impact on adjacent property. Proponent responded March 29, 2026.

Proponent Response: Both letters of opposition received direct written responses from the proponent addressing each concern raised. All four written submissions are included in the supporting materials.

6. Conclusion

The public engagement programme for Sunset Ridge Estates at Whitefish Lake was conducted in good faith and in compliance with Smoky Lake County's Step 3 – Public Engagement Programme requirements. Outreach was multi-channel and broad, providing multiple opportunities for community input through email notices, physical notice boards, door-to-door canvassing, open house attendance, and written submission.

All feedback received was considered and, where applicable, addressed by the proponent. Concerns raised at the open house were responded to in person. Written concerns were responded to in writing. The suggestion of a municipal utility lot has been reviewed and the rationale for its impracticality is documented in Section 4.4 above.

This summary, together with the attached supporting materials, is submitted as part of the Outline Plan package to Smoky Lake County Council and Municipal Planning Services (2009) Ltd.

Submitted by:

[redacted]

Austin Zacharko | Director – Business Development, Massif Energy
(780) 245-6646 | Austin@MassifEnergy.ca | www.massifenergy.ca

APPENDIX A

Public Notice Board & Door-to-Door Flyer Distribution – Photographs

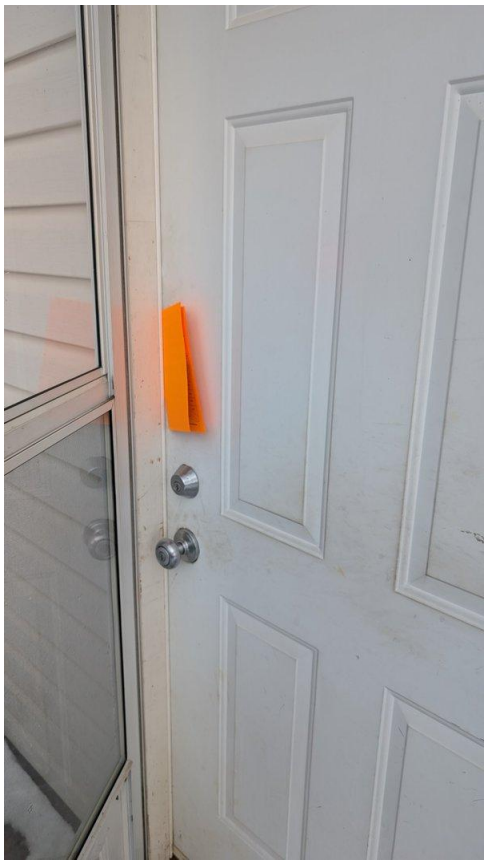
Notice Boards – Posted March 7, 2026

Notice board at intersection of Range Road 133 and Township Road 620.

Notice board near Whitefish Resort Entrance Gate

Notice board at Hillside Acres entrance – 62103 Range Road 133A

Door-to-Door Flyer Distribution – March 7, 2026



Flyers left at door of unattended residence. Over 50 Flyers were handed out in person at attended and unattended residences.

Additional Posting Location – Development Property Entrance

Notice Posted at the entrance to the property being Developed (62064 Rge RD 133)

Sunset Ridge Estates Proposed Outline Plan in Smoky Lake County

Amendments of the following Municipal Bylaws:

- Bylaw 1249-12 Smoky Lake County MDP: From Agricultural Area to Residential Area
- Bylaw 1189-09 White Fish Lake ASP: From Agricultural Area to Residential Area
- Bylaw 1272-14 Smoky Lake County LUB: From Agriculture District to Multi-lot Country Residential (R1) District.

Highlights of Proposed Outline Plan

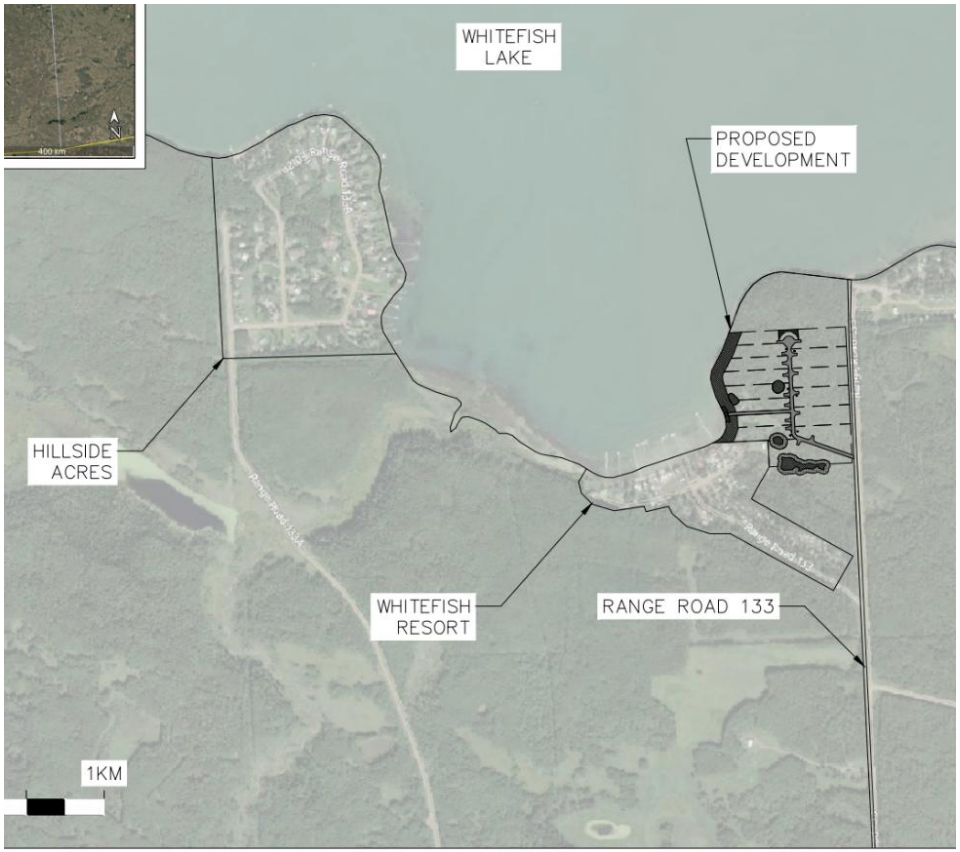
- 15 Lot Country Residential Subdivision Located on the Southern Shore of Whitefish Lake.
- 8 Waterfront Parcels, & 7 Non-Waterfront Parcels. Lot Sizes Range 0.84 acres to 1.79 acres.
- Legal Description: Pt. NE 4-62-13-W4M (Smoky Lake County)
- Lot Area: 26.75 acres

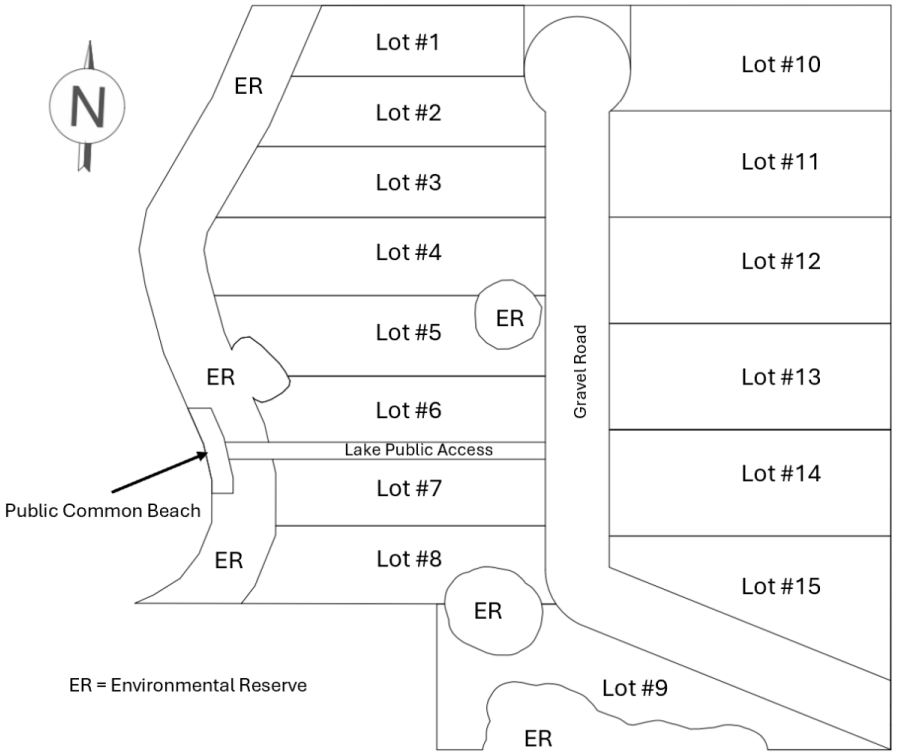
OPEN HOUSE Details

- March 23rd 2026 @ 7pm
- Location: Metis Crossing (17339 Victoria Trail, Smoky Lake, AB T0A 3C0) – Classroom.

Questions or Comments? Email: austin@massifenergy.ca

This notice is part of the public engagement process for the proposed Outline Plan, and the proposed Municipal Development Plan, Area Structure Plan, and Land Use Bylaw amendments. Community members may provide feedback via email or through attending the open house. Feedback will be taken for 21 days from March 7 – 28th 2026.





Proposed subdivision design is a conceptual draft plan

Outlook

Public Consultation - Sunset Ridge Estates Proposed Outline Plan in Smoky Lake County - White Fish Lake

From Jordan Ruegg <jruegg@smokylakecounty.ab.ca>
Date Fri 3/6/2026 10:44 AM
To Austin Zacharko <Austin@massifenergy.ca>

1 attachment (310 KB)
Public Engagement Notice - SRE - Jan 15 2026.pdf;

Good morning.

Please see the attached notice of an Open House, being held by Massif Energy, a locally-based development company, regarding its proposed project, Sunset Ridge Estates, near Whitefish Lake, Smoky Lake County.

As a potentially affected landowner, Massif would like to welcome you to participate in an Open House and share your thoughts on the proposed development.

Open House Details:

Date: March 23, 2026 @ 7:00 p.m.
Location: Metis Crossing (17339 Victoria Trail, Smoky Lake, AB T0A 3C0) – Classroom.

For more information on the proposed project, please contact Austin Zacharko at austin@massifenergy.ca.

Thank you,

Jordan Ruegg, B.A., MPlan
Director of County Services
p:780-656-1588 or toll free 1-888-656-3730
[redacted]
4612 - McDougall Drive, PO Box 310
Smoky Lake, Alberta, T0A 3C0

ᑲᓀᑳᑕᐘ ᓴᑲᐎᓐ (kaskapatau sakahigan) / Димних Озеро (Dymnykh Ozero) / Lac qui Fume / Smoky Lake
Located on Treaty 6 Territory and Homeland of the Métis Nation

MASSIF ENERGY

Sunset Ridge Estates

Whitefish Lake,
Smoky Lake County, AB

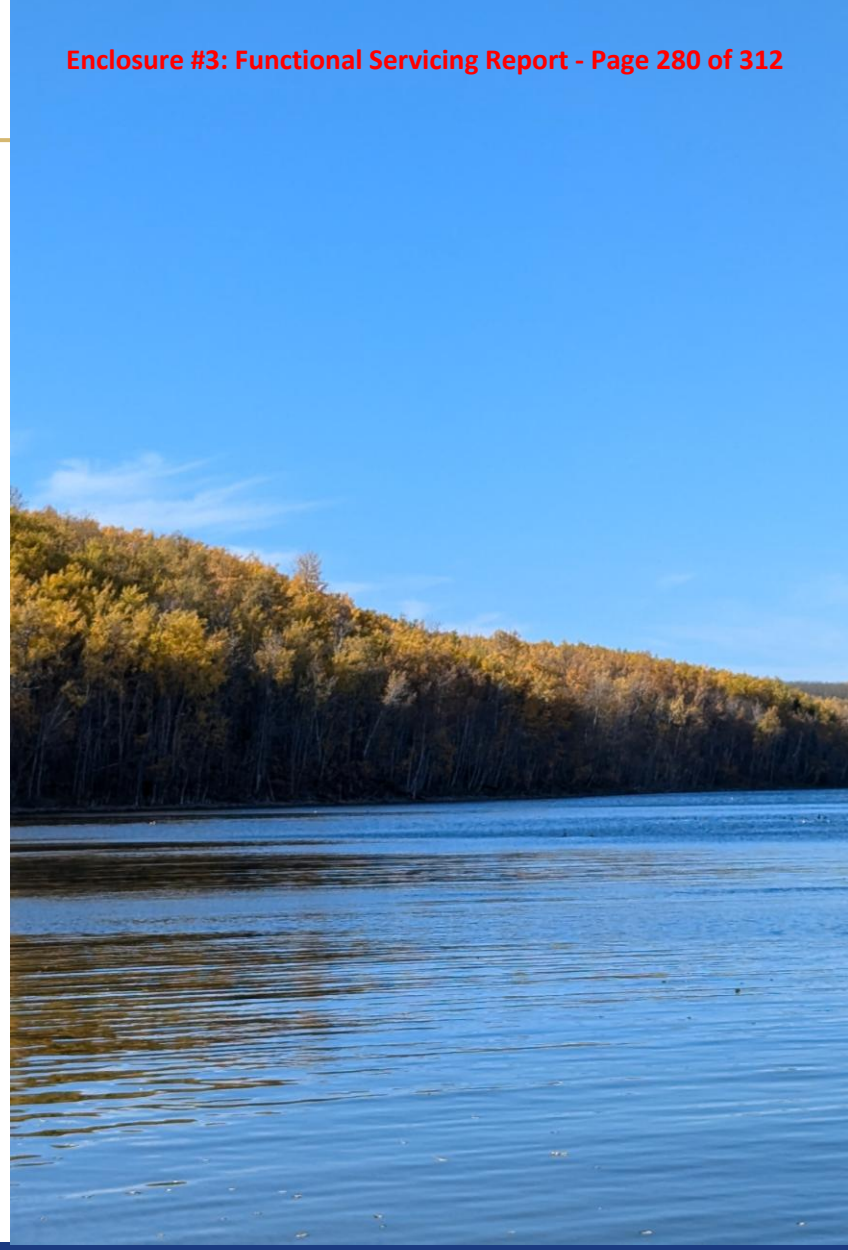
Community Open House
March 23, 2026

About Massif

Our mission is to develop projects in partnership with communities that are aligned with local values and structured to create lasting regional benefits.

Development Firm Experienced with

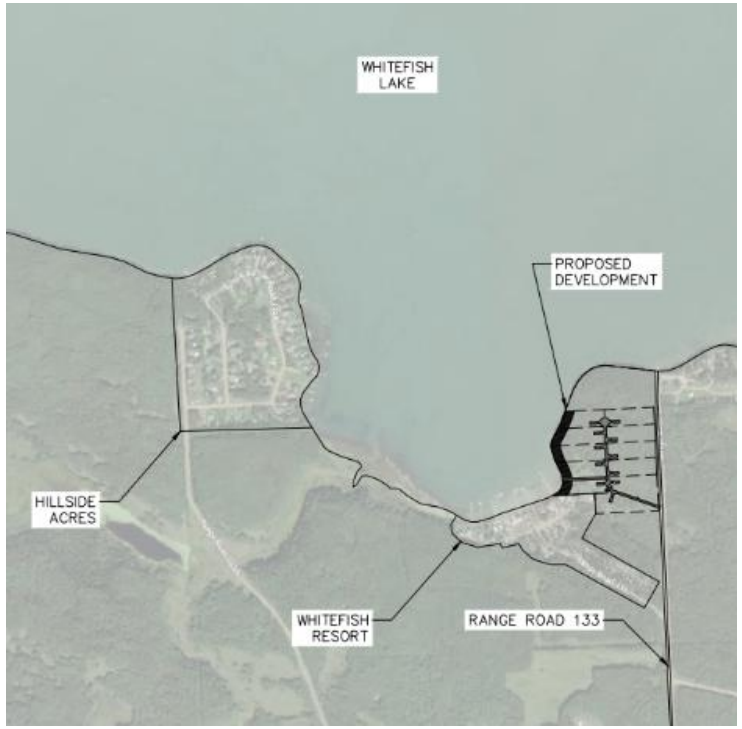
- Community Engagement
- Financing
- Consulting
- Energy, Infrastructure, Real Estate

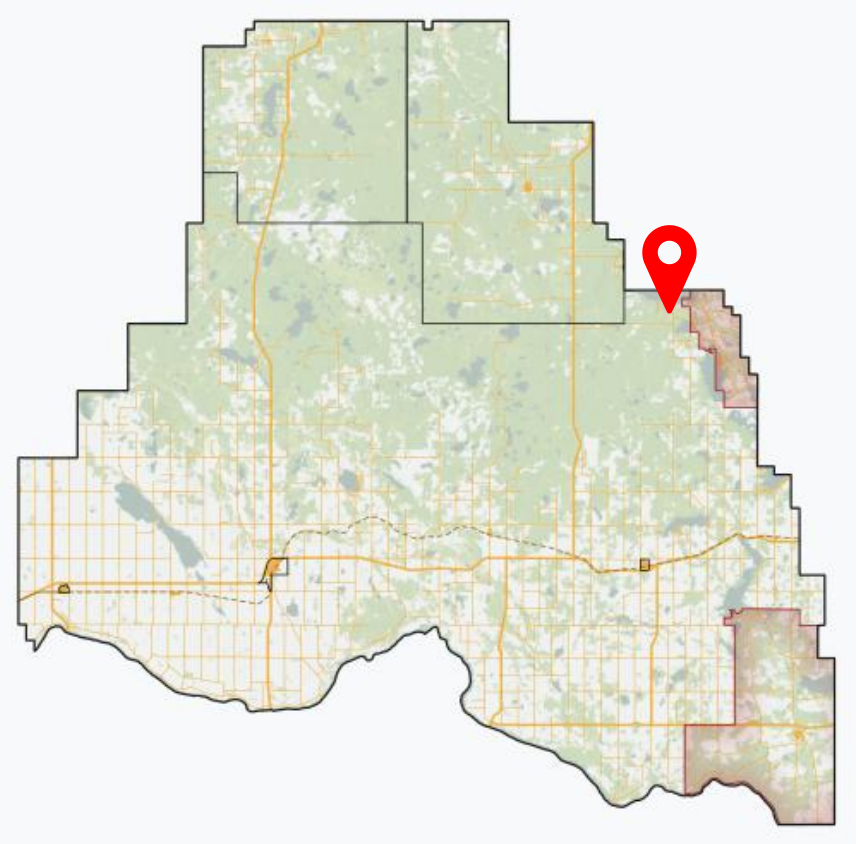


The Project

The Land

- Southern Shore of Whitefish Lake
- Legal Description: Pt. NE 4-62-13-W4M (Smoky Lake County)
- Lot Area: 26.75 acres
- Current Zoning: Agriculture





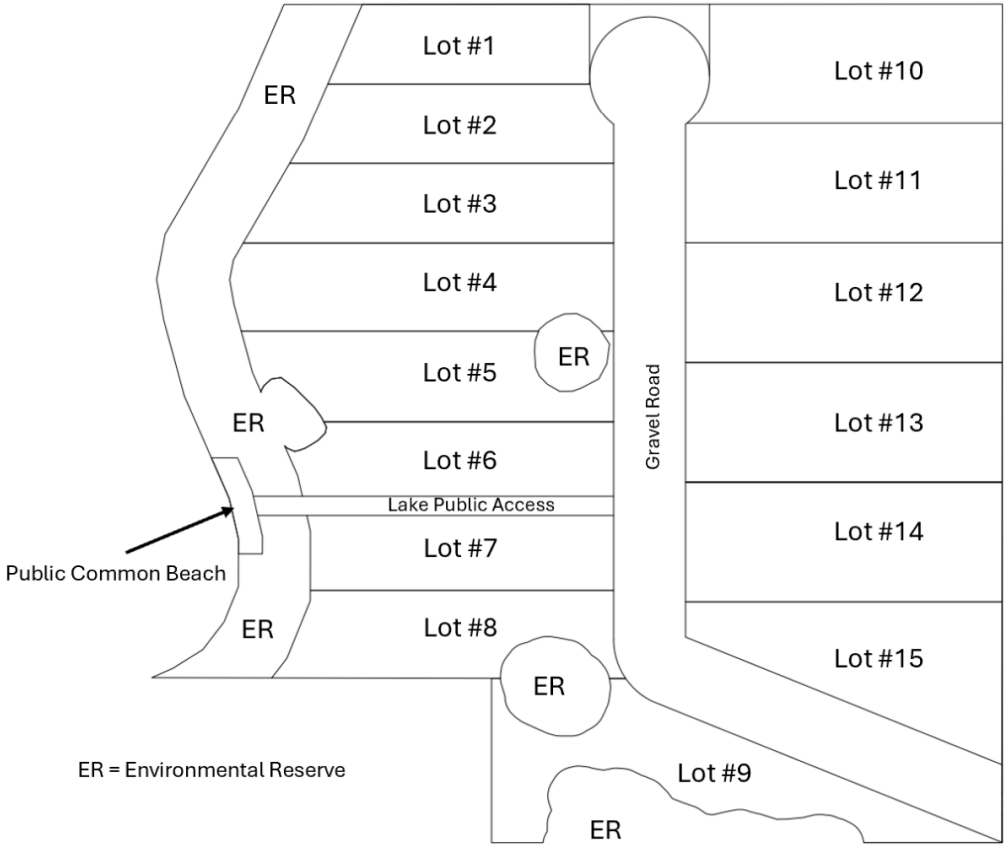
MASSIF ENERGY

Proposed Development

- 8 Waterfront Parcels
- 7 Non-Waterfront Parcels
- Lot Sizes Range 0.84 acres to1.79 acres.

Amendments of the following Municipal Bylaws:

- Bylaw 1249-12 Smoky Lake County MDP: From Agricultural Area to Residential Area
- Bylaw 1189-09 White Fish Lake ASP: From Agricultural Area to Residential Area
- Bylaw 1272-14 Smoky Lake County LUB: From Agriculture District to Multi-lot Country Residential (R1) District.



Proposed subdivision design is a conceptual draft plan

MASSIF ENERGY

Partners

PRI ENGINEERING

Lifeways OF CANADA LIMITED

Smoky Lake COUNTY

BASIN environmental & engineering

MUNICIPAL PLANNING SERVICES

VAULT

BOLSON ENGINEERING AND ENVIRONMENTAL SERVICES

Progress to Date

Historical Resource Clearance Application
Lifeways of Canada
(June 2025)

Phase 1 ESA
Bolson Engineering
(June 2025)

Biophysical Assessment
Basin Environment
(August 2025)

Water Act Report
Bolson Engineering
(January 2026)

Historic Resource Clearance Approval
Lifeways of Canada
(February 2026)

Community Open House
Massif Energy
(March 2026)

Engagement with Council
Smoky Lake County
(March 2026)

MASSIF ENERGY

Upcoming Plans

Incorporate Community Feedback into Outline Plan & Design

(April 2026)

Geotechnical Investigation

PRI Engineering

(May 2026)

Stormwater Management Plan

PRI Engineering

(June 2026)

Servicing & Engineering Plan

PRI Engineering

(June 2026)

Application for Rezoning to Smoky Lake County

(July / August 2026)

Initial Site Works (Road, Utilities, Etc.)

Vault Group

Fall 2026

MASSIF ENERGY

Summary of Work

Name of Study	Status
Historical Resource Clearance Application	**Complete** Submitted to MPS & Smoky Lake County
Phase 1 ESA	**Complete** Submitted to MPS & Smoky Lake County
Biophysical Assessment	**Complete** Submitted to MPS & Smoky Lake County
Water Act Report	**Complete** Submitted to MPS & Smoky Lake County
Community Engagement	**In Progress**

Name of Study	Status
Geotechnical Investigation	**Planned - 2026**
Storm Water Management Plan	**Planned - 2026**
Servicing & Engineering Plan	**Planned - 2026**
Application for Rezoning & Subdivision	**Planned - 2026**
Construction / Site Works	**Planned - 2026**

Outlook

Re: Sunset Ridge Estates Proposed Outline Plan in Smoky Lake County

From Austin Zacharko <Austin@massifenergy.ca>
Date Tue 3/17/2026 9:22 PM
To [redacted]

Dear [redacted]

Thank you for taking the time to share your thoughts and for your long history at Whitefish Lake. A family connection spanning over 60 years is meaningful, and I appreciate you contributing to the process even if you are unable to attend the open house.

I hear your concerns regarding increased activity at the lake over time, including noise, boating behaviour, wildlife impacts, and safety. As someone who has also spent over 25 years at Whitefish Lake, I understand the value of preserving what makes this area special.

I would like to clarify a few points specific to Sunset Ridge Estates:

- **Low-density design:** The proposed development currently consists of 15 lots across approximately 26 acres, with each lot averaging over one acre in size. This is significantly less dense than other developments around the lake.
    - Importantly, earlier concepts for this land considered a density more comparable to nearby developments such as Hillside Acres, Paradise Cove, and other resort-style areas. Through the planning process, we made a deliberate decision to reduce the density and move toward a larger-lot, low-impact design specifically to better align with the character of the area and address concerns like those you've raised.
- **Not a resort or campground:** This is not a high-traffic development. It is intended for private ownership, which typically results in more stable and respectful use.
- **Environmental considerations:** The design process includes environmental review, setbacks, and regulatory requirements to minimize impact on surrounding land and water. All applicable regulations and studies are being completed as part of the development process.
- **Broader lake activity:** Concerns such as noise, boating behavior, and security reflect broader patterns that have developed over time around the lake and are not unique to this project, particularly given its low density.

I understand and respect that not all local landowners and residents will support additional development in the area. Where possible, we are committed to incorporating reasonable feedback into the project as we continue working through the application process with Smoky Lake County. If you have specific suggestions on how this development could move forward in a way that addresses your concerns, we are open to further input.

Thank you again for your input and for being part of the conversation.

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

From: MKS PARADIS <merissa360@hotmail.ca>
Sent: Friday, March 13, 2026 8:59 AM

To: Austin Zacharko <Austin@massifenergy.ca>[redacted]
Subject: Sunset Ridge Estates Proposed Outline Plan in Smoky Lake County

To Whom it may concern;

I am writing this email in regards to :
Sunset Ridge Estates Proposed Outline Plan in Smoky Lake County
-Bylaw 1249-12
-Bylaw 1189-09
-Bylaw 1272-14

My name is [redacted] My sister [redacted] and I have a generational family cabin in the cove next to this proposed development. My address is as follows:
- [redacted]

We have been in the Whitefish lake cove since the cabin was built in 1965. (61yrs)
We have seen many new developments in the time we have been at Whitefish lake such as:

Paradise Cove
Hillside Acres
Kikino Beach/Campground Resort
Whitefish Lake Cove back area expansion for trailer lot rental.

In these past years we have witnessed an increase in:
Loss of wildlife
Extreme increase in water crafts being operated carelessly
Extreme increase in loud, lewd behaviour well in to the early morning hours (booming music and intoxicated voices travel fast over the water at 3 am)
And an obscene high-volume increase in theft. (Paradise Cove trailers broken into almost monthly)

We feel if this development is approved it will have detrimental environmental impact as well as increase noise pollution and bring forth more unexperienced boaters/campers causing negative impact to the Whitefish Lake Cove.
We come to our little piece of heaven to decompress and remove stress from the loud and busy hustle and bustle of the big city life.
With all the development already at the lake, on warmer weekends it is as if we are in the city still as it becomes even noisier with a surplus of boaters and loud late night/early morning parties attracting unwanted persons and behaviors.

Therefore, the above being said, we as a whole do NOT feel this development will make a positive impact for our Whitefish lake cove resort.
We are AGAINST any and all new development.

I am sending this email as our objection to this development as we are unable to attend the public engagement open house discussion on March 23@ 7:00 pm due to working and being out of the country.

Once again, we do NOT feel this will bring any positive impact to the already established cabin communities.

Thank you for your attention to this matter.

Sincerely,

[redacted]

Outlook

Re: RESPONCE TO THE PROPOSED SUNSET RIDGE ESTATES, WHITEFISH LAKE, AB

From Austin Zacharko <Austin@massifenergy.ca>
Date Sun 3/29/2026 9:56 PM
To [redacted]

Hi [redacted]

Thank you for taking the time to participate in our community engagement process. We appreciate all the feedback we receive.

I wanted to take the time to provide some supplementary information regarding the proposed development that specifically relates to some of the points you have brought up.

- Environmental Damage
  - All applicable provincial and local laws/bylaws are being followed during the development process. This includes but is not limited to Wetland investigations completed by Professional Biologists, Artifact Studies completed by qualified Archeologists, and Water resource studies completed by applicable professionals.
- Natural Drainage
  - A storm water management study is planned to be completed in June 2026. This study will ensure the drainage of the development does not negatively impact the lake or nearby landowners.
- Indigenous Engagement
  - We have engaged and requested feedback from both Whitefish Lake First Nation #128 and Kikino Metis Settlement during our design and development process.

If you have any other questions or concerns about the proposed development, feel free to reach out to me at any time. Have a great week.

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

From: [redacted]
Sent: Wednesday, March 25, 2026 11:50 AM
To: Austin Zacharko <Austin@massifenergy.ca>; jruegg@smokylakecounty.ab.ca <jruegg@smokylakecounty.ab.ca>
Subject: RESPONCE TO THE PROPOSED SUNSET RIDGE ESTATES, WHITEFISH LAKE, AB

To Whom It May Concern,

In regard to your proposed residential development on Whitefish Lake, I would like to voice my opposition to your plans. I am one of the owners of Whitefish Lake Properties Ltd., which is adjacent to your property you wish to develop. It is my opinion that there is already more than enough development on our end of the lake and in our bay. Any more would likely have a negative affect on the lake itself and create environmental damage to the general area.

Because much of the property you wish to develop is on a hill, I would presume that you would have to do much excavation, changing the natural drainage into the lake and surrounding areas. This could negatively affect not only the lake itself, but my adjacent property which is at lake level. There certainly

should be an environmental study done by the provincial government. Also, the indigenous communities surrounding the lake should be consulted.

In regard to your proposed beach area, this is an area of reeds and natural shoreline that should not be disrupted, as per provincial environmental laws.

Thank you for giving me the chance to voice my opinion.

[redacted]

Outlook

Sunset Ridge development plan

From [redacted]
Date Sun 3/22/2026 11:24 AM
To Austin Zacharko <Austin@massifenergy.ca>

To whom it may concern

Having viewed the proposal for this development we are in agreement with the plan, and find it to be reasonable and responsible to environmental concerns, it having studied and declared appropriate Environmental Reserves.

Signed

[redacted]

Get Outlook for Android

Outlook

Support for Sunset Ridge Estates

From [redacted]
Date Sat 3/21/2026 12:03 PM
To Austin Zacharko <Austin@massifenergy.ca>

To Whom It May Concern,

I am writing to express my support for the proposed Sunset Ridge Estates development at Whitefish Lake.

My Land Ownership Information is as follows:

- [redacted]
- [redacted]

I believe this project represents a reasonable and well-planned approach to development in the area. The proposed low-density design is appropriate for Whitefish Lake and aligns better with the character of the area than higher-density developments nearby.

Additionally, responsible development like this contributes positively to the local area by supporting the tax base and long-term sustainability of services. I am supportive of increasing the tax base in the area to help better support local services.

Overall, I support this project moving forward.

Sincerely,
[redacted]

INDIGENOUS ENGAGEMENT SUMMARY

Sunset Ridge Estates at Whitefish Lake

Outline Plan – R01A | Pt. NE 4-62-13-W4M, Smoky Lake County, Alberta

Prepared by: Austin Zacharko, Director – Business Development, Massif Energy | March 2026

1. Purpose

This summary has been prepared to document Indigenous community engagement undertaken in connection with the proposed rezoning and country residential subdivision known as *Sunset Ridge Estates at Whitefish Lake (Outline Plan – R01A)*. The engagement was conducted to satisfy **Step 3 – Public Engagement Programme** as required by Smoky Lake County, which requires notices to adjacent and affected landowners and communities as part of the Outline Plan submission to Council.

2. Project Overview

Project Name	Sunset Ridge Estates at Whitefish Lake – Outline Plan R01A
Location	Pt. NE 4-62-13-W4M, Smoky Lake County, Alberta (south-east of Whitefish Lake)
Parcel Size	26.75 acres
Proposed Use	Rezoning from Agricultural (AG) to Country Residential (R1)
Proponent	Massif Energy – Austin Zacharko, Director of Business Development
Municipal Authority	Smoky Lake County; Subdivision Authority: Municipal Planning Services (2009) Ltd.

3. Indigenous Communities Contacted

Two Indigenous communities with proximity to the project area were identified and contacted as part of the engagement process:

Community	Location / Relationship to Project	Contact Method
Whitefish Lake First Nation #128	Located adjacent to Whitefish Lake; nearest First Nation community to the project parcel	Formal introduction letter (June 23, 2025) with enclosed draft Outline Plan; followed up by telephone
Kikino Métis Settlement	Located near the project area within Smoky Lake County; proximity warranted early engagement	Formal introduction letter (June 23, 2025) with enclosed draft Outline Plan; followed up by telephone

4. Engagement Activities

4.1 Written Correspondence

On June 23, 2025, formal introduction letters were sent directly to both communities. Each letter:

- Introduced Austin Zacharko and Massif Energy as the project proponent;
- Described the proposed rezoning and subdivision of the 26.75-acre parcel into 11 country residential lots;
- Provided a copy of the draft Outline Plan – Sunset Ridge Estates at Whitefish Lake – R01A as an enclosure;
- Invited leadership to share feedback, concerns, or requests for further discussion;
- Offered to arrange an in-person or virtual meeting at the community's convenience;
- Copied Municipal Planning Services (2009) Ltd. (Subdivision Authority) and Smoky Lake County for transparency.

4.2 Telephone Follow-Up

Following the written correspondence, Austin Zacharko conducted telephone follow-up calls with representatives at both Whitefish Lake First Nation #128 and Kikino Métis Settlement. The purpose of these calls was to:

- Confirm receipt of the introduction letter and enclosed draft Outline Plan;
- Confirm receipt of any email correspondence related to the project;
- Verbally introduce the project and reiterate the invitation for feedback or a meeting;
- Provide an opportunity for community representatives to raise any immediate questions or concerns.

Telephone contact was successfully made with representatives at each community (admin staff). Both communities confirmed receipt of the correspondence materials.

5. Engagement Log

Date	Community	Activity	Method	Response Received
June 23, 2025	Whitefish Lake First Nation #128	Introduction letter + draft Outline Plan sent	Formal written letter & Call	No written response received
June 23, 2025	Kikino Métis Settlement	Introduction letter + draft Outline Plan sent	Formal written letter & Call	No written response received
Aug 6, 2025	Whitefish Lake First Nation #128	Follow Up from June	Formal written letter	No response Provided.
Aug 6, 2025	Kikino Métis Settlement	Follow Up from June	Formal written letter	No response Provided.
Nov 18, 2025	Whitefish Lake First Nation #128	Follow Up from June	Formal written letter & Call	Confirmed contact with representative from the community and verbally confirmed that documents had been received

Nov 18, 2025	Kikino Métis Settlement	Follow Up from June	Formal written letter & Call	Confirmed contact with representative from the community and verbally confirmed that documents had been received
March 2026	Whitefish Lake First Nation #128	Provided Notice of Community Open House	Email & Notice Boards at property and at Nearby Highways.	No response or attendance.
March 2026	Kikino Métis Settlement	Provided Notice of Community Open House	Email & Notice Boards at property and at Nearby Highways.	No response or attendance.

6. Community Responses and Feedback

Despite meaningful and documented outreach efforts, neither Whitefish Lake First Nation #128 nor Kikino Métis Settlement provided written formal feedback, concerns, or requests regarding the proposed Sunset Ridge Estates development.

The proponent acknowledges the importance of Indigenous community engagement and made genuine efforts to facilitate early, transparent, and respectful communication. Both communities were given adequate opportunity to:

- Review the draft Outline Plan materials.
- Raise any concerns or questions regarding the development.
- Request an in-person or virtual meetings with the proponent.

In the absence of formal feedback, the proponent interprets the lack of response as an absence of identified concerns at this time. The proponent remains open to ongoing engagement throughout the municipal review and approval process.

7. Conclusion

The Indigenous engagement undertaken for Sunset Ridge Estates at Whitefish Lake was apart of the broader community notification and engagement requirements of Smoky Lake County's Public Engagement Programme as outlined in Step 3 of the Outline Plan process. Outreach was conducted in good faith, with transparency and respect, and in a manner consistent with the duty to inform affected Indigenous communities of proposed nearby land use changes.

This summary, along with copies of the engagement letters sent to each community, is submitted as part of the Outline Plan package to Smoky Lake County Council & MPS.

Submitted by:

Austin Zacharko | Director – Business Development, Massif Energy
(780) 245-6646 | Austin@MassifEnergy.ca | www.massifenergy.ca

Austin Zacharko

From: Austin Zacharko
Sent: June 23, 2025 3:40 PM
To: [redacted]
Cc: Jane Dauphinee; Marina Guintchitskaia; Jordan Ruegg
Subject: Introduction on Proposed Rezoning and Country Residential Subdivision on South East Side of Whitefish Lake
Attachments: Introduction Letter - Kikino + Sunset Ridge Estates.pdf; Sunset Ridge Estates at Whitefish Lake-R01A.pdf

Hello,

Please see attached and reach out with any questions. Have a great day.

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

Austin Zacharko

From: Marina Guintchitskaia <m.guintchitskaia@munplan.ab.ca>
Sent: June 24, 2025 8:00 AM
To: Austin Zacharko
Cc: Jane Dauphinee; Jordan Ruegg
Subject: Re: Indigenous Engagement - Whitefish Lake FN #128 - Sunset Ridge Estates.

Hi Austin,

Thanks for keeping us in the loop!

Best,

MARINA GUINTCHITSKAIA
Planner

p: 780.486.1991
e: m.guintchitskaia@munplan.ab.ca
a: #206, 17511 – 107 Ave NW
Edmonton, AB T5S 1E5
www.munplan.ab.ca

From: Austin Zacharko <Austin@massifenergy.ca>
Sent: Monday, June 23, 2025 3:46 PM
To: Marina Guintchitskaia <m.guintchitskaia@munplan.ab.ca>
Cc: Jane Dauphinee <j.dauphinee@munplan.ab.ca>; Jordan Ruegg <jruegg@smokylakecounty.ab.ca>
Subject: Indigenous Engagement - Whitefish Lake FN #128 - Sunset Ridge Estates.

Hi Marina,

This email's purpose is to serve as a transparent record of engagement with the Whitefish Lake FN #128.

This afternoon I attempted to reach out to Whitefish Lake FN #128 without success. The following actions were taken:

1. Called the posted Phone number ([redacted]
    a. No Answer & Left a message
2. Was unable to find an email address online.
3. Completed a contact form on the community's website and submitted it with the following Content

I hope this letter finds you well. My name is Austin Zacharko, and I am reaching out to respectfully introduce myself and share information regarding a proposed rezoning and country residential subdivision project located within Smoky Lake County, on Pt. NE 4-62-13-W4M—just south-east of Whitefish Lake and near your community.

As a proud indigenous Albertan and Director of Business Development at Massif Energy, I believe in the importance of meaningful and early engagement with Indigenous communities. Given the proximity of Whitefish Lake First Nation #128 to the development area, I wanted to ensure your Nation is informed and invited into the feedback process from the beginning.

The project envisions the rezoning and subdivision of a 26.75-acre parcel into 11 country residential lots. The land is currently designated for agricultural use and is undergoing the necessary municipal approvals to support responsible rural residential development.

We are still in the early stages of planning and welcome the opportunity to engage with your leadership to share details, gather your feedback, and discuss any considerations or concerns. I would appreciate the opportunity to meet at your convenience and ensure that the project proceeds in a way that is inclusive, transparent, and respectful.

Please feel free to contact me directly to set up a meeting or direct me to the appropriate representative from your Nation.
Thank you for your time and consideration. I look forward to the opportunity to connect.

Best,
Austin Zacharko
Director – Business Development
Massif Energy
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

Our team will continue to attempt to reach out in the coming weeks and months including in person, phone, and email attempts.
Best,

Austin Zacharko
Director - Business Development

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C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

Austin Zacharko
Director – Business Development
Massif Energy
(780) 245-6646
Austin@MassifEnergy.ca
www.massifenergy.ca/

June 23, 2025

Whitefish Lake First Nation #128 Council
Email: [redacted]

Dear Whitefish Lake First Nation #128 Leadership,

Re: Introduction on Proposed Rezoning and Country Residential Subdivision on South-East Side of Whitefish Lake

I hope this letter finds you well. My name is Austin Zacharko, and I am reaching out to respectfully introduce myself and share information regarding a proposed rezoning and country residential subdivision project located within Smoky Lake County, on Pt. NE 4-62-13-W4M—just south-east of Whitefish Lake and near your community.

As a proud indigenous Albertan and Director of Business Development at Massif Energy, I believe in the importance of meaningful and early engagement with Indigenous communities. Given the proximity of Whitefish Lake First Nation #128 to the development area, I wanted to ensure your Nation is informed and invited into the feedback process from the beginning.

The project envisions the rezoning and subdivision of a 26.75-acre parcel into 11 country residential lots. The land is currently designated for agricultural use and is undergoing the necessary municipal approvals to support responsible rural residential development.

We are still in the early stages of planning and welcome the opportunity to engage with your leadership to share details, gather your feedback, and discuss any considerations or concerns. I would appreciate the opportunity to meet at your convenience and ensure that the project proceeds in a way that is inclusive, transparent, and respectful.

Enclosed with this letter is a draft version of our proposed outline plan titled *Sunset Ridge Estates at Whitefish Lake – R01A* for your review. We look forward to receiving your feedback on this high-level concept. For transparency and collaboration, I have also copied Municipal Planning Services (the Subdivision Authority) and Smoky Lake County on this correspondence.

Please feel free to contact me directly to set up a meeting or direct me to the appropriate representative from your Nation.

Thank you for your time and consideration. I look forward to the opportunity to connect.

Best,

Austin Zacharko
Director – Business Development
Massif Energy
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

CC: Municipal Planning Services (2009) Ltd.
Smoky Lake County

Encl: Draft Outline Plan – *Sunset Ridge Estates at Whitefish Lake – R01A*

Austin Zacharko
Director – Business Development
Massif Energy
(780) 245-6646
Austin@MassifEnergy.ca
www.massifenergy.ca/

June 23, 2025

Kikino Métis Settlement Council
[redacted]
Kikino, AB

Dear Kikino Métis Settlement Council,

Re: Introduction on Proposed Rezoning and Country Residential Subdivision on South East Side of Whitefish Lake

I hope this letter finds you well. My name is Austin Zacharko, and I am reaching out to respectfully introduce myself and share information regarding a proposed rezoning and country residential subdivision project located within Smoky Lake County, on Pt. NE 4-62-13-W4M—just south-west of Whitefish Lake and near the Kikino Métis Settlement.

As a proud Métis Albertan and Director of Business Development at Massif Energy, I believe in the importance of meaningful and early engagement with Indigenous communities. Given your community's proximity, I felt it was important to reach out directly.

The project envisions the rezoning and subdivision of a 26.75-acre parcel into 11 country residential lots. The land is currently designated for agricultural use and is undergoing the necessary municipal processes to enable responsible rural residential development. Our aim is to design a community that respects the natural environment.

We are still in the early planning stages and welcome the opportunity to connect with Kikino leadership to discuss the project, and gather your feedback, and explore any opportunities for further discussions. I'd be grateful for the chance to meet at your convenience and ensure that this development moves forward in a way that is inclusive and respectful.

Enclosed with this letter is a draft version of our proposed outline plan titled *Sunset Ridge Estates at Whitefish Lake – R01A* for your review. We look forward to receiving your feedback on this high-level concept. For transparency and collaboration, I have also copied Municipal Planning Services (the Subdivision Authority) and Smoky Lake County on this correspondence.

Please feel free to contact me directly to set up a meeting or to direct me to the appropriate member of your team.

Thank you for your time and consideration. I look forward to the opportunity to connect.

Best,

Austin Zacharko
Director – Business Development
Massif Energy
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

CC: Municipal Planning Services (2009) Ltd.
Smoky Lake County

Encl: Draft Outline Plan – *Sunset Ridge Estates at Whitefish Lake – R01A*

Austin Zacharko

From: Austin Zacharko
Sent: August 6, 2025 5:14 PM
To: [redacted]
[redacted]
Jane Dauphinee; Marina Guintchitskaia; Jordan Ruegg
Subject: RE: Introduction on Proposed Rezoning and Country Residential Subdivision on South East Side of Whitefish Lake

Hello,

I am following up on our plan to rezone and subdivide a parcel of land on the southeast shore of Whitefish Lake. We are continuing our process and would value your thoughts and feedback on the development.

Could we arrange a 30 minute call or meeting next week?

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

From: Austin Zacharko
Sent: June 23, 2025 3:40 PM
To: [redacted]
Cc: Jane Dauphinee <j.dauphinee@munplan.ab.ca>; Marina Guintchitskaia <m.guintchitskaia@munplan.ab.ca>; Jordan Ruegg <jruegg@smokylakecounty.ab.ca>
Subject: Introduction on Proposed Rezoning and Country Residential Subdivision on South East Side of Whitefish Lake

Hello,

Please see attached and reach out with any questions. Have a great day.

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca

W: www.massifenergy.ca/

Austin Zacharko

From: Austin Zacharko
Sent: November 18, 2025 10:43 AM
To: [redacted]
Cc: Marina Guintchitskaia; Jane Dauphinee; Jordan Ruegg
Subject: Community Engagement - Sunset Ridge Estates Property Development - Kikino MS

Hi Karen,

I spoke with Brittany Cardinal on the phone this morning at the Admin Office and she passed along your email address.

My name is Austin Zacharko, and I am reaching out to introduce myself and hopefully share information regarding a proposed rezoning and subdivision project located within Smoky Lake County, on Pt. NE 4-62-13-W4M—just south-east of Whitefish Lake and near your community. (A link to the parcel of land can be found here -> https://maps.app.goo.gl/Fdu15ceUx7SrCHCe8)

Given the proximity of Kikino Metis Settlement to the development area, I wanted to ensure your community is informed and invited into the feedback process.

The project envisions the rezoning and subdivision of a 26.75-acre parcel into 10-15 country residential lots. The land is currently designated for agricultural use and is undergoing the necessary studies to apply for approvals to support responsible rural residential development.

We are still in the early stages of planning and welcome the opportunity to engage with your leadership and/or community to share details, gather your feedback, and discuss any considerations or concerns. I would appreciate the opportunity to meet at your convenience and ensure that the project proceeds in a way that is respectful.

Please feel free to contact me directly to set up a meeting or direct me to the appropriate representative from your community.

Thank you for your time and consideration. I look forward to the opportunity to connect.

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

CONTACT

Name (required)

First Name

Austin

Last Name

Zacharko

Email (required)

Austin@MassifEnergy.ca

Subject (required)

Introduction on Proposed Rezoning and Country Residential Subdivision on South East Side

Message (required)

Hello,

I am following up on our plan to rezone and subdivide a parcel of land on the southeast shore of Whitefish Lake. We are continuing our process and would value your thoughts and feedback on the development.

Could we arrange a 30 minute call or meeting next week?

Best,

Austin Zacharko
Director - Business Development

MASSIF ENERGY
C: (780) 245-6646
E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

Submit

Info

[redacted]

Whitefish Lake First Nation #128

Box 271
Goodfish Lake, AB T0A 1R0

Austin Zacharko

From: Austin Zacharko
Sent: November 18, 2025 10:33 AM
To: [redacted]
Cc: Marina Guintchitskaia; Jane Dauphinee; Jordan Ruegg
Subject: Community Engagement - Sunset Ridge Estates Property Development - WFL FN 128

Hi Shauna,

I spoke with Reena on the phone this morning at the Band Office and she passed along your email address.

My name is Austin Zacharko, and I am reaching out to introduce myself and hopefully share information regarding a proposed rezoning and subdivision project located within Smoky Lake County, on Pt. NE 4-62-13-W4M—just south-east of Whitefish Lake and near your community. (A link to the parcel of land can be found here -> https://maps.app.goo.gl/Fdu15ceUx7SrCHCe8)

Given the proximity of Whitefish Lake First Nation #128 to the development area, I wanted to ensure your Nation is informed and invited into the feedback process from the beginning.

The project envisions the rezoning and subdivision of a 26.75-acre parcel into 10-15 country residential lots. The land is currently designated for agricultural use and is undergoing the necessary studies to apply for approvals to support responsible rural residential development.

We are still in the early stages of planning and welcome the opportunity to engage with your leadership and/or community to share details, gather your feedback, and discuss any considerations or concerns. I would appreciate the opportunity to meet at your convenience and ensure that the project proceeds in a way that is respectful.

Please feel free to contact me directly to set up a meeting or direct me to the appropriate representative from your community.

Thank you for your time and consideration. I look forward to the opportunity to connect.

Best,

Austin Zacharko
Director - Business Development

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E: Austin@MassifEnergy.ca
W: www.massifenergy.ca/

Appendix I: Council Motion – Road Width and ROW Reduction (April 21, 2026)

APPENDIX I:

Council ROW Motion

Date Report Completed	2026
Consultant	Smoky Lake County

Smoky Lake County

P.O. Box 310
4612 McDougall Drive
Smoky Lake, Alberta T0A 3C0

Phone: 780-656-3730
1-888-656-3730
Fax: 780-656-3768
www.smokylakecounty.ab.ca

April 21, 2026

MASSIF ENERGY
ATTN: AUSTIN ZACHARKO
DIRECTOR BUSINESS DEVELOPMENT
Austin@MassifEnergy.ca

Re: Request to Reduce Minium Width of Road & ROW for Proposed Subdivision of Pt. NE 4-62-13-W4M

Mr. Zacharko,

This letter serves as notice that at its April 16, 2026 meeting, Smoky Lake County Council passed the following resolutions in regards to your request to reduce the minimum road width and minimum right-of-way (ROW) width for the proposed subdivision of Pt. NE 4-62-13-W4M:

1. *"That Smoky Lake County Council approve the request to reduce the minimum road width for rural residential local roadway construction within the proposed Sunset Ridge Estates, respecting the lands legally described as Pt. NE-4-62-13-W4M, from 8.5 meters wide to 7.5 meters wide."*

2. *"That Smoky Lake County Council approve the request to reduce the minimum right-of-way (ROW) width for rural residential local roadway construction within the proposed Sunset Ridge Estates, respecting the lands legally described as Pt. NE-4-62-13-W4M, from 30.0 meters wide to 20.0 meters wide."*

Should you have any questions regarding either of these resolutions, please contact the undersigned at 780-656-3730 or jruegg@smokylakecounty.ab.ca.

Thank you.

Sincerely,

Jordan Ruegg
Director of County Services
4612 - McDougall Drive, PO Box 310
Smoky Lake, Alberta T0A 3C0
e: jruegg@smokylakecounty.ab.ca
p: (780) 656-3730 / c: (780) 650-5207
w: http://www.smokylakecounty.ab.ca/

ᑲᓴᑲᐸᑌ ᓴᒻᐃᒪᓂᐣ (kaskapatau sakahigan / Smoky Lake) on Treaty 6 Territory, and Homeland of the Metis Nation

cc. Shelly Barrett, Office Manager/Subdivision Clerk, Municipal Planning Services, s.barrett@munplan.ab.ca