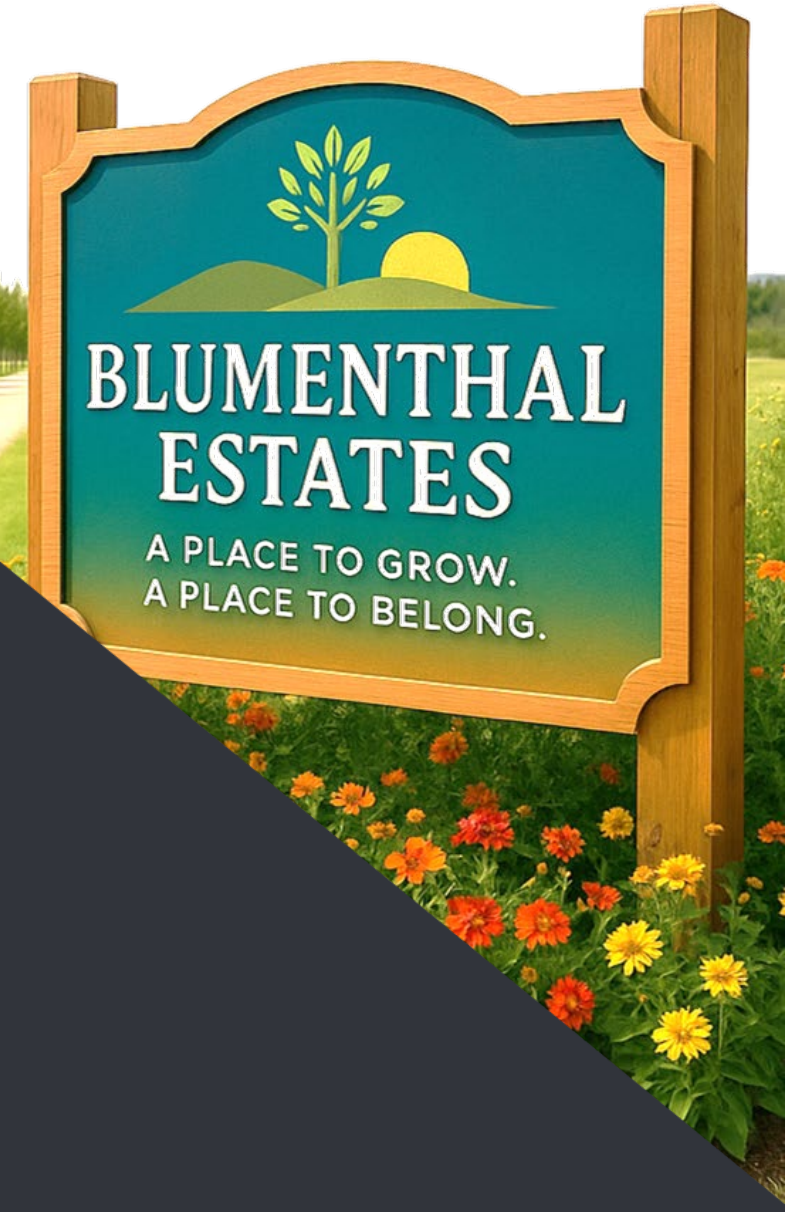
BLUMENTHAL ESTATES

TWO HILLS COUNTY

AREA STRUCTURE PLAN



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1. INTRODUCTION

1.1. Location and Plan Area

The Blumenthal Area Structure Plan (ASP) plan area is located northeast of the Town of Two Hills, in the County of Two Hills (Figure 1). The County of Two Hills is located along Highway 45, approximately 135 northeast of the City of Edmonton, Alberta.

The County of Two Hills has a population of approximately 3,412 (2021 Census of Population—Statistics Canada) and an area of over 2,600 square kilometres. It is mainly an agricultural community with multiple opportunities for economic diversification, economic growth and conservation.

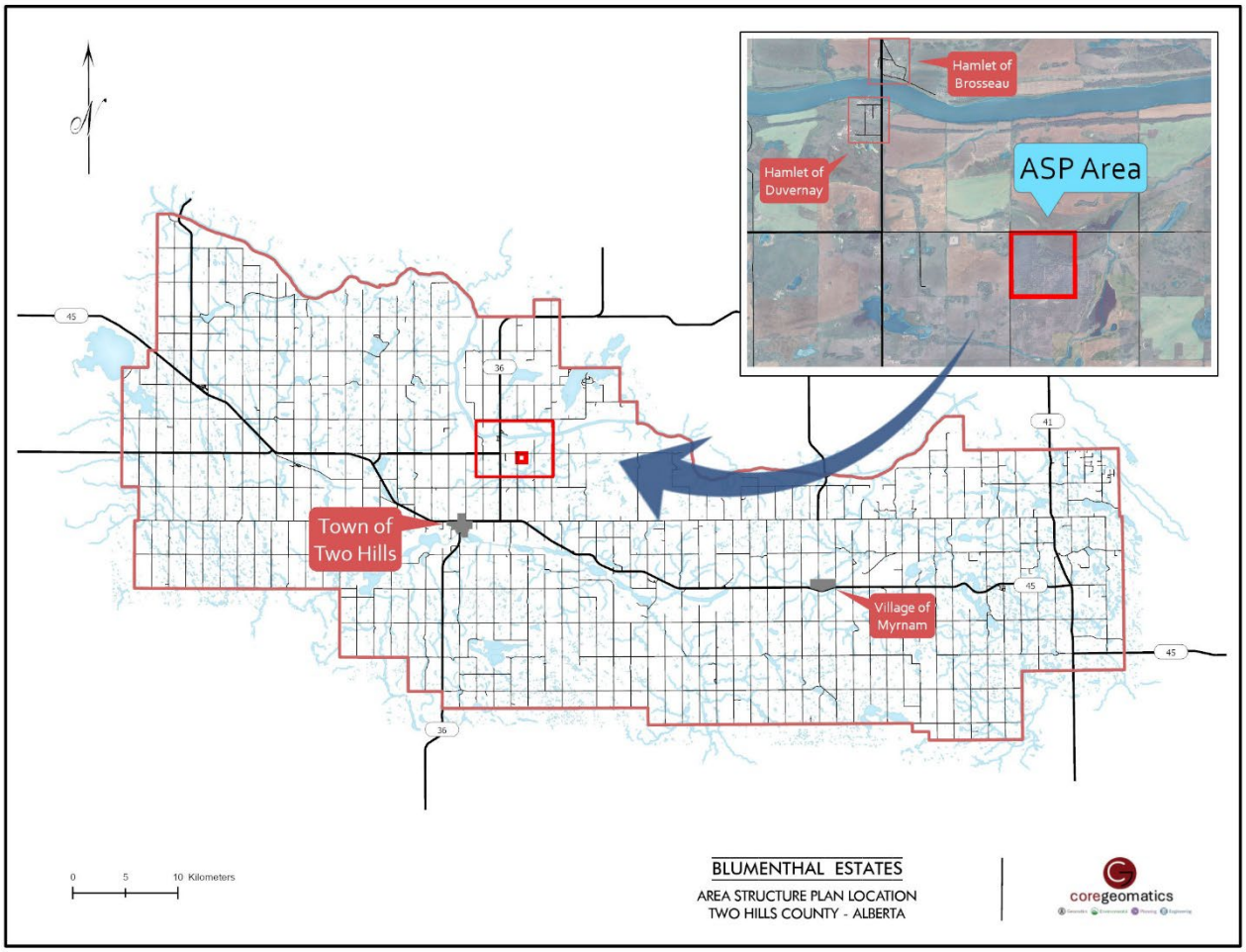


Figure 1. Blumenthal Estates Location

The ASP includes the lands shown in Figure 2, mainly accessed through connection to Highway No. 36 and Township Road 554. The lands are currently forested lands (Tree Farm) and surrounded by cultivated farmland and forested lands, combined with various wetlands in the adjacent quarter sections. The entire plan area occupies approximately 64.74 hectares (ha) or 160 acres (ac) at the intersection of Township Road 554 and Range Road 121, more specifically described as NW ¼ 24-55-12 W4M.

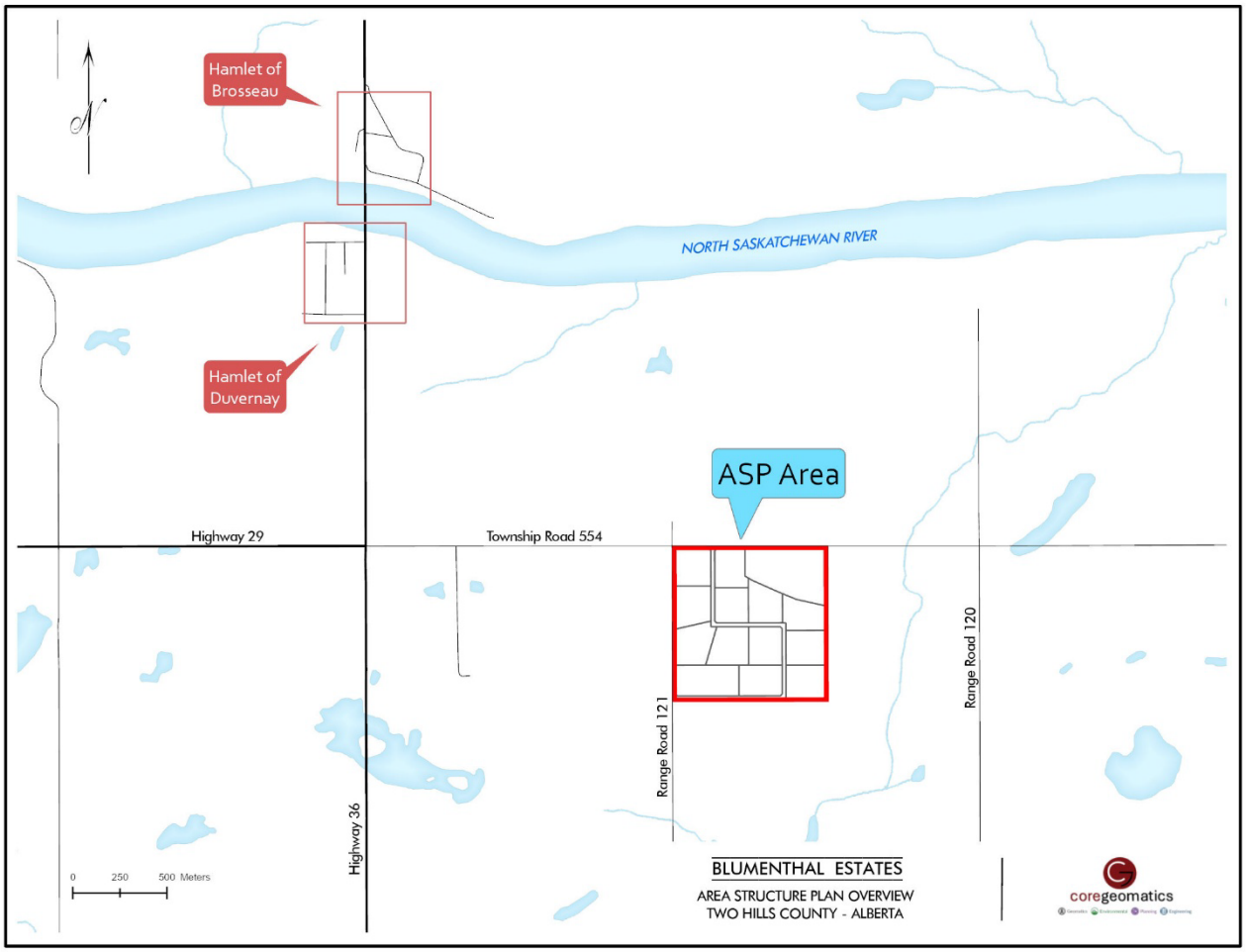


Figure 2. Blumenthal Estates – Location

1.2. Purpose

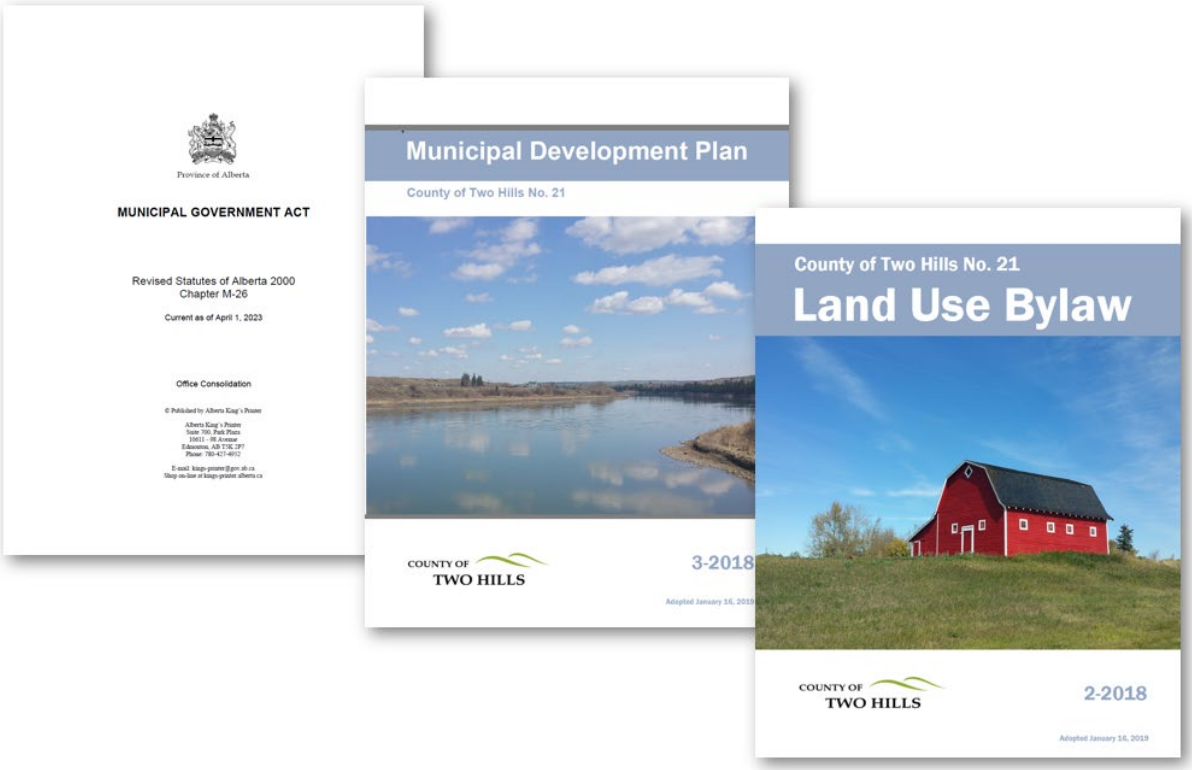
The purpose of the ASP is to further focus and refine the existing planning policies, objectives, and requirements of the municipal statutory plans on a more detailed and local level. Applicable legislation includes the County of Two Hills Municipal Development Plan Bylaw No. 3-2018 (MDP), the Land Use Bylaw No. 2-2018 (LUB) and *The Municipal Government Act*. To achieve this, the ASP establishes a land use planning framework to guide the future residential development and the provision of services and amenities in the development.

The ASP has been prepared in response to the landowner's aspirations to develop the lands as a country residential estate. It illustrates an appropriate development configuration that respects and complements the county's rural character and is in line with the future growth and direction of the community. See Appendix A for the Tentative Plan of Proposed Subdivision.

1.3. Legislative Compliance

This ASP has been prepared in accordance with and in consideration of the following Bylaws and Statutes of the County of Two Hills and the Province of Alberta:

- Alberta's Municipal Government Act
- County of Two Hills Municipal Development Plan
- County of Two Hills Land Use Bylaw



1.4. Municipal Government Act and Land Use Policies

Section 633 of Alberta's Municipal Government Act sets out the requirements for the adoption of municipal development plans and area structure plans. An area structure plan must address the following:

- *the sequence of development proposed for the area;*
- *the land uses proposed for the area, either generally or with respect to certain parts of the area;*
- *the density of population proposed for the area, either generally or with respect to certain parts of the area; and*
- *the general location of major transportation routes and public utilities.*

1.5. The Two Hills County Municipal Development Plan

The Two Hills County MDP, Bylaw No. 3-2018, was adopted in January 16, 2019. The MDP outlines the County's development direction by promoting environmentally sound and sustainable agriculture and economic growth compatible with the rural environment of the County. The MDP encourages controlled residential development that avoids the fragmentation of high-quality agricultural land and minimizes environmental and community impacts.

The MDP encourages future residential growth in proximity to existing Community Areas or hamlets, and easily serviced areas that align with the growth direction of the County. Residential development, single lot country residential and multi-lot country residential must avoid environmentally sensitive areas, flood plains, hazardous locations or environmentally significant areas. The County has several areas that are designated Environmentally Significant Areas of provincial or national significance: Lac Brosseau, Vermillion Lakes, Watt Lake, Bens Lake and the North Saskatchewan River – Elk Point.

The following guiding principles of the MDP are implemented through specific policies of the MDP in order to guide future development and achieve the development vision of the County.

- **Supporting the Agricultural Community.**
- **Embrace Cultural Diversity & Heritage.**
- **Ensure Environmental Preservation.**
- **Ensure the protection and ecological stability of wetlands through sustainable development practices.**
- **Promote Economic Development.**
- **Provide Recreational and Tourism Opportunities.**
- **Foster Intermunicipal Co-operation.**

The following development policies and criteria of the MDP are deemed relevant to all proposed development within the County and to the plan area of this ASP:

1.5.1. Section 6 - Residential Development

The MDP defines multi-lot country residential development as "*more than two residential lots within a quarter section*." Country residential development has been limited in the County, with

most of it taking place in the Sandy Lake and Lac Sante areas. The MDP encourages country residential development "*in such a manner as to limit the removal of higher capability agricultural land and not cause unacceptable adverse effects on the agricultural economy and community, or the natural environment*."

A. Residential Development General Policies:

- *Multi-lot country residential development will be allowed within the Agricultural Use Area.*
- *Where a subdivision for country residential purposes is proposed, the developer shall be required to enter into a development agreement with the County of Two Hills No. 21 wherein the developer agrees to be responsible for all the costs associated with the subdivision.*
- *Sufficient documentation indicating that a Provincially authorized residential septic field system can be properly installed shall be a condition of a subdivision approval for a country residential lot with an area less than 4.04 ha (10.0 ac).*
- *Country residential subdivisions should be located in proximity to gas, electrical, and telephone lines, which have existing spare capacity to sustain the additional usage. Subdivisions shall have direct access to existing graded, gravelled, or paved roads.*
- *Country residential subdivision or development **shall not** be permitted:*
  a. *Within an area likely to be subjected to high levels of noise from industry, transportation facilities, or other sources of noise;*
  b. *In close proximity to a resource extraction operation;*
  c. *Within a 1 in 100 year flood plain;*
  d. *Within the minimum distance separation between a single dwelling and a confined feeding operation as determined through the use of schedule 1 of the standards and administration regulation adopted pursuant to the Agricultural Operation Practices Act; or*
  e. *Adjacent to riverbanks unless the banks are certified as stable by an engineer prior to development.*
- *Country residential development will be prohibited in those areas which are too close to sour gas facilities, in accordance with Provincial legislation and regulations.*
- *Country residential lots shall not be less than 0.4 ha (1 ac.), and normally no more than 4.04 ha (10 ac.) in size.*
- *Country residential development will be cognizant of the need to preserve critical wildlife habitat, resource extraction, recreation, and historical and archaeological features.*
- *Subdivision and/or development for residential purposes in the Agricultural Use Area shall not be allowed where direct physical access to graded and graveled or paved roads in good condition does not exist, or where construction of a roadway and access to the most current County standards to the site is not undertaken by the landowner/developer.*

1.5.2. Multi-Lot Country Residential Subdivisions

- *Multi-lot country residential subdivisions shall be controlled by the Council of the County of Two Hills No. 21 through the process of Land Use Bylaw amendment.*
- *The County shall require that an Area Structure Plan be prepared by the applicant and approved by Council prior to the approval of any amendment to the Land Use Bylaw to allow a multi-lot country residential subdivision where the land being proposed for development is 8.1 ha (20 ac.) or greater in size or the development would contain more than five (5) lots.*
- *Multi-lot country residential developments will be discouraged from locating on good quality agricultural land, and shall be encouraged to locate on poorer quality agricultural land.*
- *Multi-lot country residential development proposals shall be in accordance with applicable LUB regulations.*
- *The Council of the County of Two Hills No. 21's consideration of Land Use Bylaw amendments for multi-lot country residential use development will include the following criteria:*

a. *The site should possess landscape features such as trees, ravines, hilly terrain or other topographical features that are not unstable, erosion prone, or otherwise hazardous, but which would provide an attractive residential environment. Where a site is fully or partially treed, all possible means will be undertaken to retain the maximum amount of tree cover.*
b. *Environmentally sensitive lands, including but not limited to riparian areas, should be incorporated into the overall development concept but left undisturbed wherever possible. Wildlife corridors or connections between habitat areas should be maintained wherever possible.*
c. *The density of development shall be directly related to the development capability of the land resources, such as potable water supply, topography, vegetation, soil and drainage. In this regard, development proposals shall include a detailed analysis of any environmental constraints on the site, the means whereby the development will harmonize with the natural environment, and the means whereby any negative impact on the natural environment will be mitigated.*
d. *Development will be directed to lands that the County deems to be of lesser environmental significance.*
e. *The development shall be located and designed so as not to negatively impact the residential and/or natural amenity enjoyed by existing residential lot owners.*
f. *Access to individual lots will be provided by internal roads or service roads developed to standards acceptable to the County of Two Hills No. 21, and not directly onto highways or County roads.*
g. *Each proposed multi-lot subdivision shall have two access intersections from the proposed internal subdivision road to the County range or township road, as the case may be.*

- *Multi-lot country residential developments should be clustered or grouped to reduce potential land use conflicts and minimize service costs.*
- *The County shall require the proponent of a multi-lot country residential development to enter into an agreement pursuant to the subdivision or the land development process.*
- *No proposal for a multi-lot residential subdivision shall be allowed within the minimum separation distance between residential uses and a CFO as outlined in the Agricultural Operations Practices Act.*

1.5.3. Municipal Reserve

- *The County of Two Hills No. 21 shall generally take the full amount (10%) of Municipal Reserves owing as a result of subdivision, in accordance with Section 666 of the Act.*

1.5.4. Environmental Reserve

- *Development will not occur on lands which are unsuitable for development because of environmental hazard such as flood susceptibility or steep slopes. During the subdivision process, such lands shall normally be placed within Environmental Reserves or protected via Environmental Reserve Easements, depending on whether the lands would form part of an overall park for a particular area and at the discretion of the Subdivision Authority.*

1.6. Two Hills County Land Use Bylaw

This ASP has been prepared in conformance with the applicable requirements of the Two Hills County LUB Bylaw No. 2-2018, adopted on January 16, 2019. The LUB divides the municipality into land use districts and regulates use and development in those districts by setting local standards for the use of the land or specific developments.

The plan area is currently designated as Agricultural (A) District (See Figure 3. below). The purpose of the Agricultural (A) District is to *"permit activities associated with primary economic production, and to preserve valuable agricultural land from inappropriate development. This District comprises almost all of the land in the municipality,".*

Particular attention was given to the Country Residential (CR) District, its purpose, permitted and discretionary uses and regulations as the most suitable land use district to facilitate the development of Blumenthal Estates.

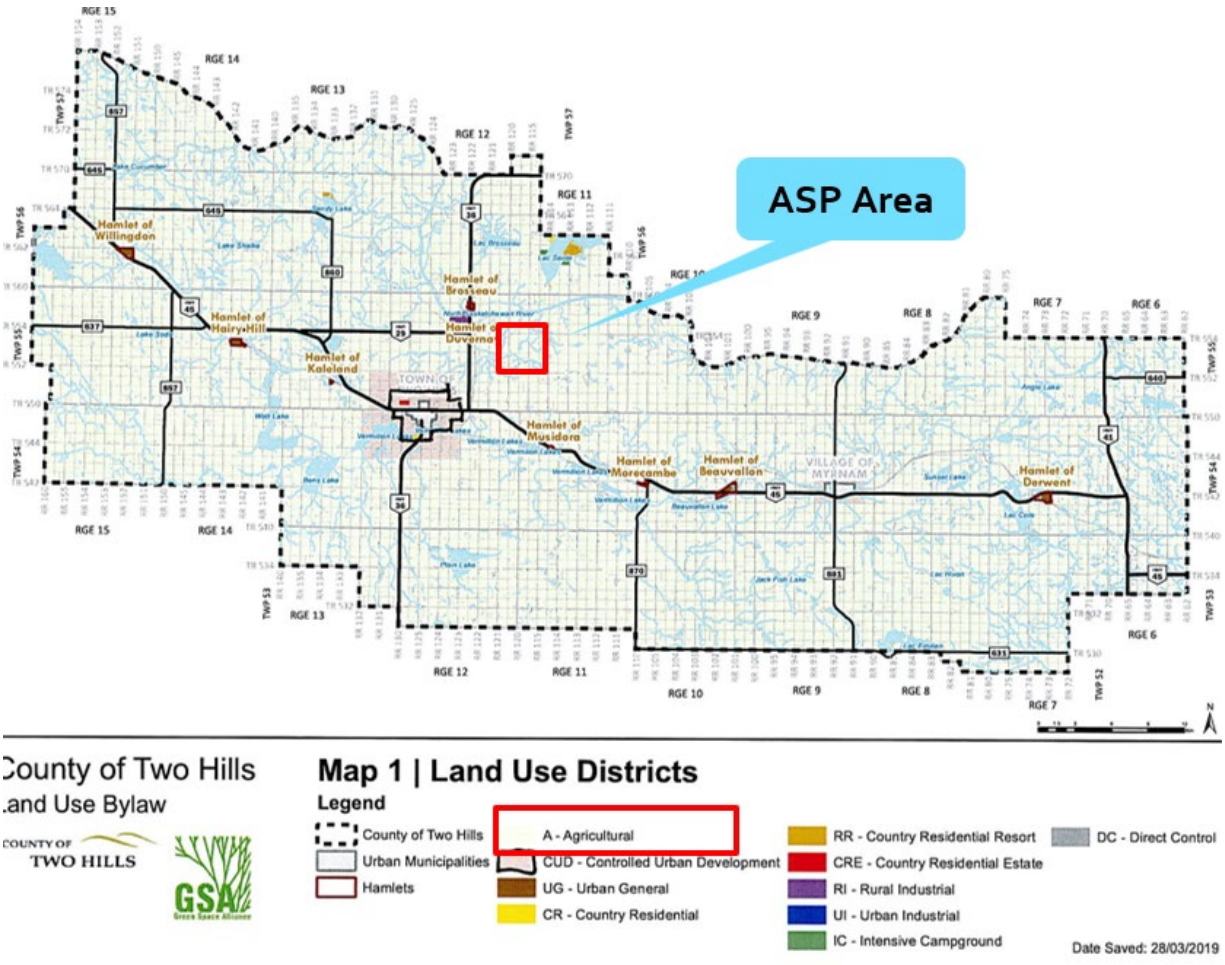


Figure 3. County of Two Hills – Map 1 | Land Use Districts

1.7. Interpretation

All map symbols, locations, and boundaries contained in the Blumenthal Estates ASP shall be interpreted as approximate unless otherwise specified in the plan or coincide with clearly recognizable physical features or fixed (i.e. legal) boundaries.

2. CONTEXT

2.1. ASP Area Land Use

The ASP area currently consists of forested land or tree farm, with gently sloped to flat lands. The entire plan area occupies approximately 64.74 hectares (ha) or 160 acres (ac) at the intersection of Township Road 554 and Range Road 121, more specifically described as NW ¼ 24-55-12 W4M.

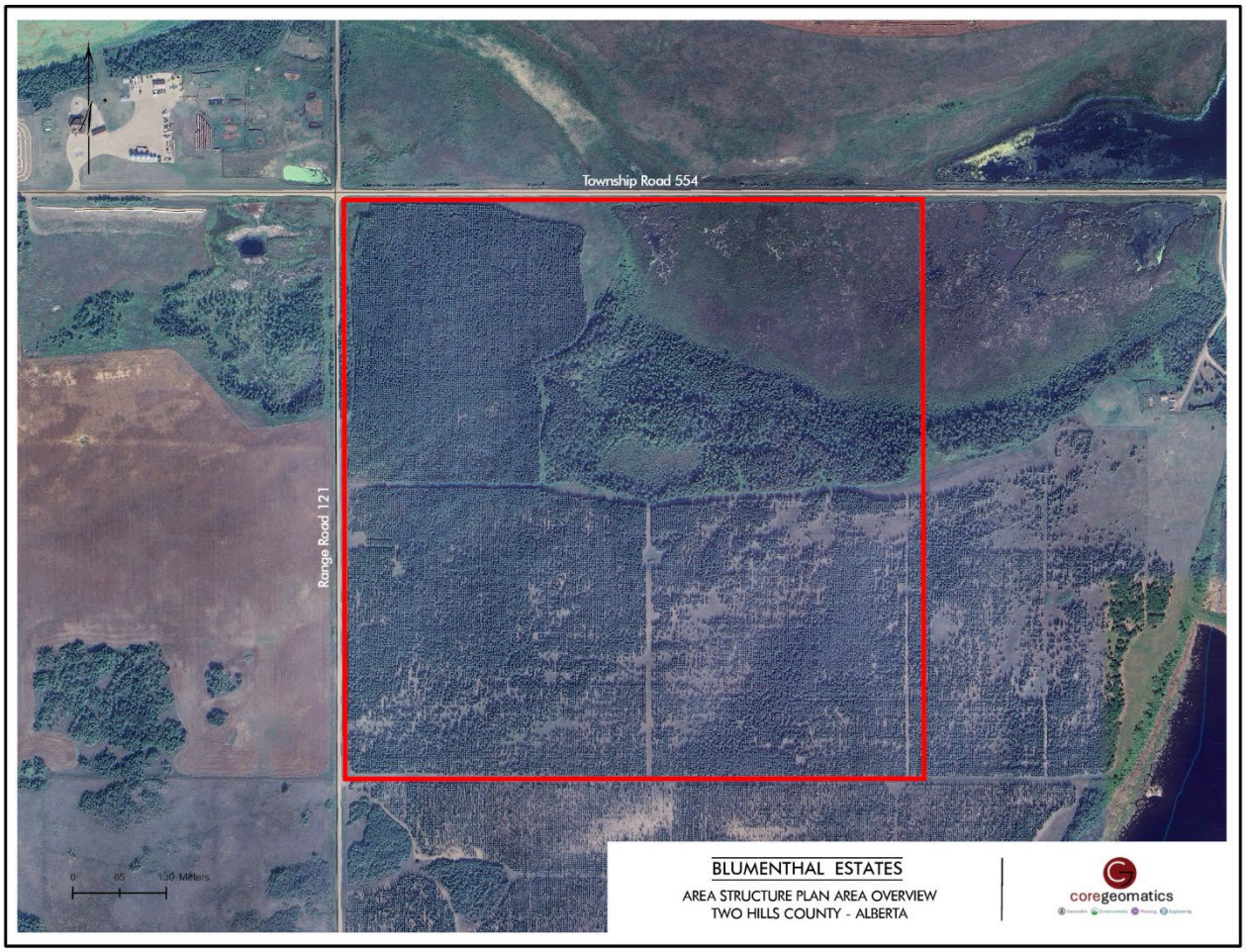


Figure 4. Blumenthal Estates - NW ¼ 24-55-12 W4M

The area is primarily surrounded by cultivated farmland to the north and west, forested lands to the south and forested lands with various wetlands to the east and southeast. The area appears to have transitioned from cultivated farmland to a tree farm between 2006 and 2015. (See Phase I Environmental Site Assessment - Summary of reviewed Imagery).

Figure 5. Blumenthal Estates - March, 2025

There are no buildings or structures within the property. However, there are three existing residential sites in the vicinity.

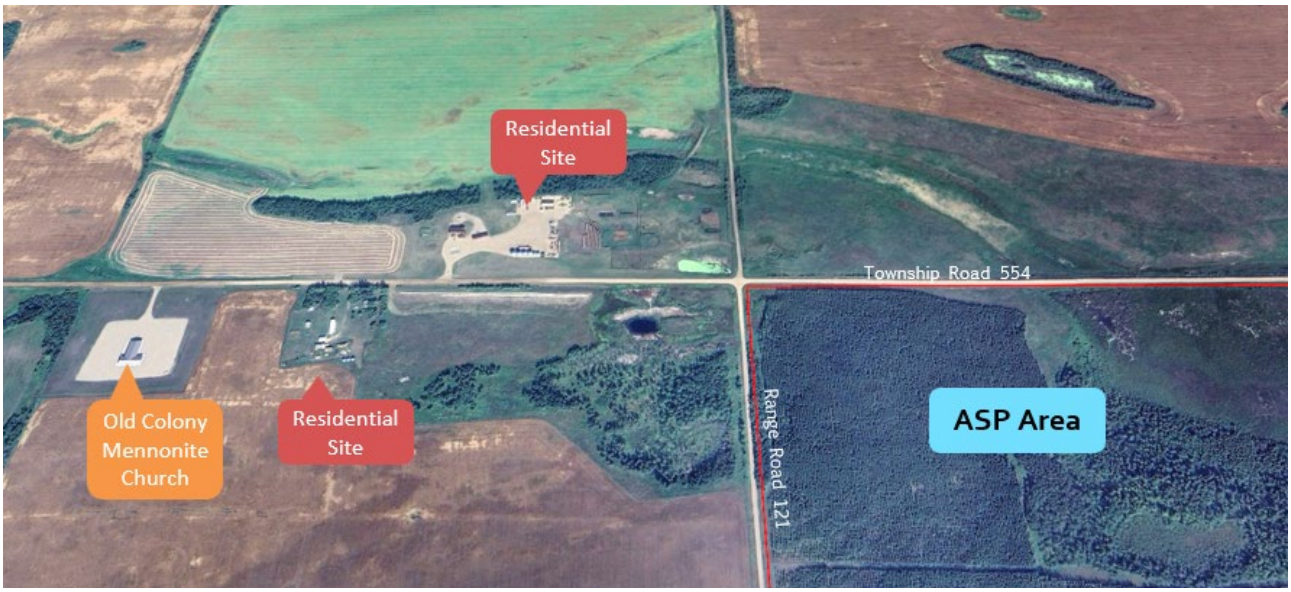


Figure 6. Existing Residential Sites – West of ASP Area

Figure 7. Existing Residential Sites – East of ASP Area

2.2. Topography

For the most part, the plan area currently consists of forested lands with a few access areas or trails throughout the property. The northeast corner of the property presents a large wetland area, which is meant to be preserved and incorporated into the development plan as an environmental reserve. As per the MDP, "*development will not occur on lands which are unsuitable for development because of environmental hazards such as flood susceptibility or steep slopes*."

The plan area is relatively flat and consists of rolling terrain, with the lowest elevation on the property being around 573 metres above sea level. The plan area has an overall slope direction from south and west down toward the northeast, with its higher elevations in the southeast, west and northwest. There are no dugouts or lagoons located within the quarter section. Marsh and swamp-type wetlands dominate the northeast of the property, draining into an unnamed watercourse that flows into the North Saskatchewan River, which is approximately 2.7 kilometres northeast of the property (See Phase I Environmental Site Assessment).

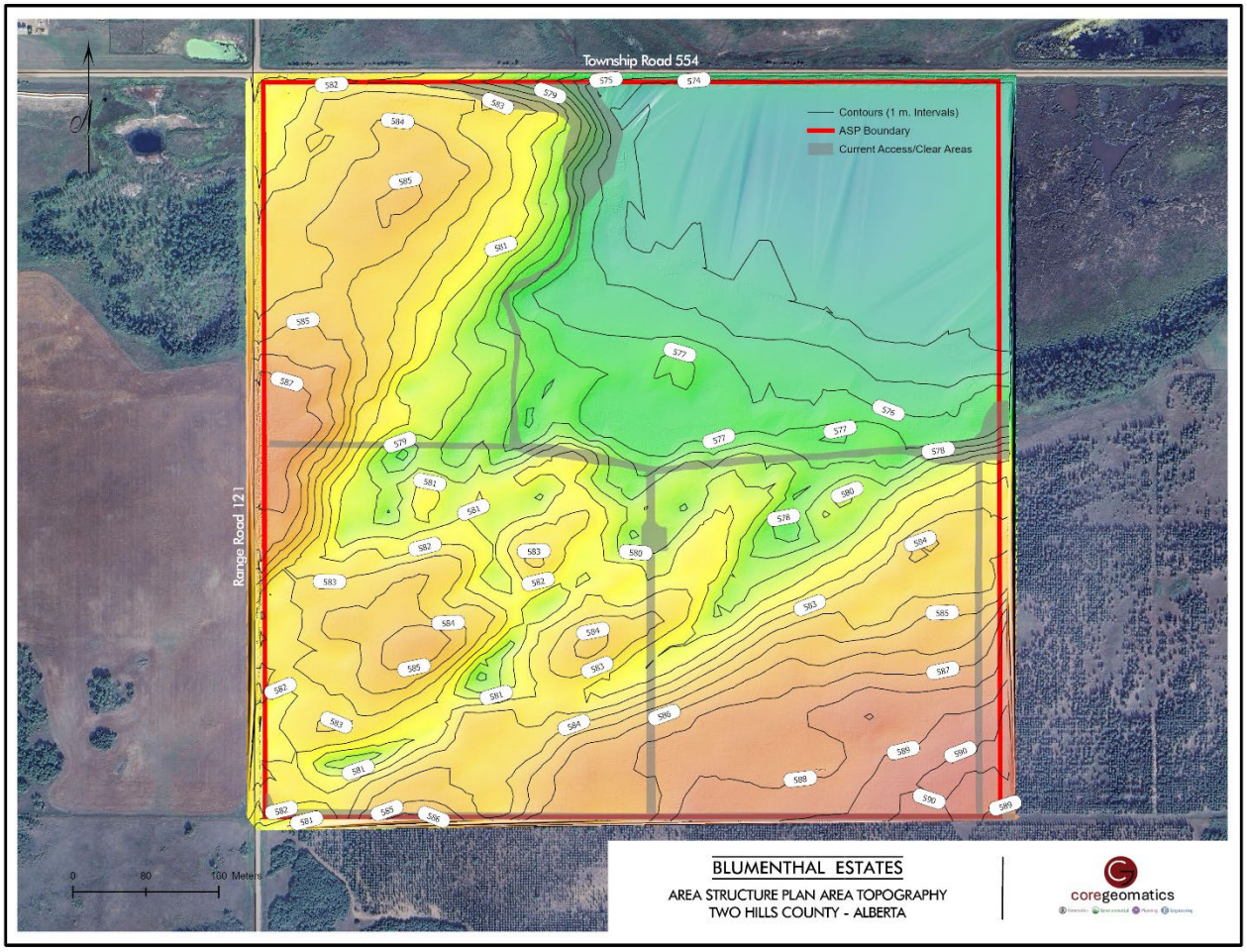


Figure 8. Site Topography

See Appendix B for Site Survey Plan and detailed topographical information.

2.3. Development Constraints

The land contains a few development constraints, both natural and man-made, as described below:

- About 75% of the plan area is comprised of now forested lands or planted hybrid poplars in different stages of development. As described in the Phase I Environmental Site Assessment, evidence shows that the use of the lands transitioned from agricultural production to a tree farm sometime between 1996 and 2006. As much as possible, these trees are to be preserved in order to contribute to the already existing natural beauty of the area and to serve as natural tree canopy for the development and natural buffers between future yardsites and roads.
- The land has a large, low-lying wet area or wetland with evidence of intermittent water levels in the northeast portion of the property. This area has been designated within the

subdivision plan as environmental reserve in conformity with the County's environmental reserve allocation policies highlighted in Section 1.4.4 of this ASP.

- A dumping site was previously located near the southwest corner of the property, which has now been reclaimed. While no evidence can be found of the old dumping site in the area, the site is suspected as a potential source of contamination since the details of reclamation in the early 1990s are unknown. Therefore, the proposed development has been designed to allow for a 300 metres buffer between the site and any future residences as required by Section 17 of the Subdivision and Development Regulation under the *Municipal Government Act.* Furthermore, a Phase II Environmental Site Assessment will be required if a residence is proposed within 300 metres of the old dumping site, or if water wells are proposed within 450 metres.

2.4. Historic Resource Review

No known historical resources have been identified within the land or represented in the Alberta Listing of Historic Resources.

2.5. Phase I Environmental Site Assessment

CORE Environmental, a division of CORE Geomatics Group Inc. was retained to conduct a Phase I Environmental Site Assessment (Appendix C). The goal of the Phase I Environmental Site Assessment is to identify potential sources of contamination on the subject property through a comprehensive review of historical records, aerial photographs, past land ownership, and adjacent land use. The assessment includes an on-site inspection to observe any visible signs of environmental concern, such as hazardous materials, storage tanks, or disturbed vegetation, as well as an evaluation of surface hydrology. Based on the findings, the report provides recommendations for any necessary further investigation or action.

The Phase 1 Environmental Site Assessment identified that the property has primarily been utilized for agricultural purposes, and no evidence suggests that historical uses on the property pose a risk of potential contamination.

However, an old dump site/nuisance ground associated with a historical residence immediately southwest of the property was reclaimed in the early 1990s (Parcel A, Plan No. 5873 NY). With no record of a reclamation certificate for this site or information regarding the materials that may have been disposed of at the site, it is unclear if the dump site/nuisance ground could be a source of contamination.

Therefore, within the context of the Phase I Environmental Site Assessment, it is recommended that a Phase II Environmental Site Assessment be completed if a residence is proposed within 300 metres of the old dump site, or if water wells are proposed within 450 metres. Further investigation may be required to assess potential contamination from the old dump site.

2.6. Geotechnical Site Investigation

J.R. Paine & Associates Ltd. was retained to conduct a Geotechnical Investigation (Appendix D). The goal of the Geotechnical Investigation is to provide recommendations to aid in the design and construction of the subject development.

The investigation included drilling of a total of 8 test holes to a depth of approximately 7.3 m below the existing ground surface. Soil samples were collected at 750 mm intervals for laboratory testing. Standard Penetration Tests (SPT) were completed with split spoon sampling and were done at regular 1.5 m intervals on all test holes. Following the drilling operation, slotted piezometric standpipes were installed in all test holes to facilitate water table measurements. The test holes were backfilled with cuttings, and bentonite was placed near the surface to help prevent surface water infiltration.

The findings and recommendations of the report may be summarized as follows (See report for detailed recommendations):

- The site terrain does not appear to pose any slope stability hazard and/or other limitations that would hinder the proposed development. High groundwater areas may require raising site grades, and soft native soils may need reinforcement or excavation.
- The soils encountered throughout the site and properly placed engineered fill, as may be required, are considered satisfactory for supporting single-family dwellings. These should utilize standard concrete footing foundation and slab-on-grade with an allowable bearing capacity of 75 kPa required in Section 9.15 of the National Building Code – Alberta Edition. All footing excavations should be inspected by qualified geotechnical personnel to confirm the footing bearing capacity.
- Native soils are generally suitable for road construction with proper subgrade preparation and engineered fills, though frost heave risk should be mitigated through ditching and grade raising. A 200 mm crushed gravel surface over properly compacted subgrade is recommended, and regular maintenance will be needed for gravel roads.
- On-site sanitary sewer infrastructure, such as septic mounds, may be acceptable in the area; however, further investigation is required to ensure adequate separation from the water table.
- Holding tanks in areas with a high water table should be constructed with some form of anchor to prevent uplift by their buoyant force.
- In high water table areas, house grades and footings must be kept high; upgraded drainage systems, such as washed rock bases and sump pumps, may be required.
- Soil testing indicated negligible sulphate concentrations, so standard C.S.A. Type GU cement is acceptable for most applications, except underground concrete, which should use Type HS cement. All exterior concrete must be air-entrained and designed for freeze-thaw durability.

The Geotechnical Investigation concludes that the site is generally suitable for the proposed single-family residential development, subject to its development recommendations.

3. DEVELOPMENT CONCEPT

3.1. Vision

The Blumenthal Estates development is envisioned as more than just homes in a random location. Blumenthal Estates is about cultivating a community grounded in nature, nurtured by neighbours, and designed for lasting growth.

Blumenthal, meaning "flower valley" in German, draws inspiration from both its name and its setting. The development is located in a picturesque stretch of Alberta countryside near the banks of the North Saskatchewan River.

Just as the name evokes a sense of natural beauty and peacefulness, so too does the land itself: gently rolling terrain, open skies, and vibrant ecosystems that reflect the harmony of the future community.

3.2. Development Concept

The Blumenthal Estates Area aims to accommodate a country residential development in proximity to the community of Two Hills. The development consists of single-family residential units and reserve lands dedicated to the preservation of the natural environment.

The development plan is to be completed in one phase, and it's to accommodate a maximum of 12 residential parcels (lots) ranging in size between 3.32 ha (8.20 ac) and 3.95 ha (9.76 ac). The plan includes a Municipal Reserve (MR) of 5.49 ha (13.6 ac) and an Environmental Reserve (ER) of 10.17 ha (25.1 ac). See Appendix A for the Tentative Plan of Proposed Subdivision.

The lands are proposed to be developed within the Two Hills County Country Residential (CR) District and shall conform to the applicable minimum zone standards. The purpose of the CR District is to “permit and regulate the development of country residential uses in specific areas within the municipality.”

All of the lots will have two direct access points to a municipal-developed road through the internal road network. Each lot will have on-site parking, including sufficient parking for visitors.

3.3. Land Use

Blumenthal Estates will provide for low-density country residential development in the form of single detached dwellings as permitted within the CR District. The CR District provides for

developments with a minimum parcel/lot size of 0.40 ha (0.99 ac) and a maximum area as required or determined by the Development Authority. The CR District allows for large country residential lot sizes and limited commercial uses in the form of home occupations, including bed and breakfast establishments.

Blumenthal Estates is anticipated to be home to approximately 42 people at a rate of 3.5 persons per unit and a density of 0.19 units per ha.

	Number of Units/Lots	Min Lot Width (m)	Hectares	Acres	Percent (Area)
GROSS DEVELOPABLE AREA			**64.74**	**160.00**	**100%**
RESIDENTIAL AREA					
Block 1 Lots	6	30.00	23.06	56.98	51%
Block 2 Lots	6	30.00	21.74	53.72	49%
TOTAL AREA			**44.80**	**110.70**	**100%**
OPEN SPACE					
Environmental Reserve	1		10.17	25.13	65%
Municipal Reserve	1		5.49	13.57	35%
TOTAL AREA			**15.66**	**38.70**	**100%**
TRANSPORTATION					
Roads			3.51	8.67	81%
Road Widenings			0.832	2.06	19%
TOTAL AREA			**3.51**	**10.73**	**100%**

Figure 9. Blumenthal Estates Land Use Statistics

Figure 10. Blumenthal Estates Development Plan

3.4. Municipal and Environmental Reserve Allocation

The Blumenthal Estates Area provides for municipal and environmental reserve allocation in the form of land dedication of two parcels: a Municipal Reserve (MR) of 5.49 ha (13.6 ac) in the southwest area of the development and an Environmental Reserve (ER) of 10.17 ha (25.1 ac) in the northeast.

The MR parcel is strategically located near one of the primary entrances to the Blumenthal Estates development, providing accessible open space that supports both passive and active recreational uses. The location of the MR ensures high visibility and convenience for local residents, offering opportunities for potential gatherings, informal play, walking trails, and other low-impact recreational activities. The reserve land serves as a buffer between future residences and the old dump site to the southwest of the development.

The ER parcel, situated in the northeastern portion of the plan area, has been designated in accordance with Section 664 of the *Municipal Government Act* to protect lands that are

unsuitable for development due to environmental constraints, including steep slopes and potential flood susceptibility. The dedication of the ER serves to conserve natural features, maintain environmental integrity, and mitigate risk associated with development in hazard-prone areas. This reserve also supports long-term ecological functions and provides potential for integrated trail connectivity and low-impact public access, where appropriate.

3.5. Infrastructure and Servicing Concept

3.5.1. Transportation

Access to the plan area is provided by a dedicated internal subdivision road that connects directly to Range Road 121 to the east and Township Road 554 to the north. These local rural roads provide primary vehicular access to the development and form part of the broader municipal road network. The internal road layout is designed to ensure safe and efficient movement of vehicles, emergency services, and future residents of Blumenthal Estates.

The development benefits from its proximity to Provincial Highway No. 36, which is located approximately 1.6 kilometres east of the plan area via Township Road 554. This regional transportation corridor provides important north–south connectivity for residents, facilitating access to nearby towns, services, and employment areas. The short distance to Highway No. 36 minimizes the potential negative effects of the development to existing residential property owners.

The proposed road network and access points have been planned to provide access to individual lots by an internal road, which is to be developed to standards acceptable to the County of Two Hills, and not directly onto highways or County roads. The proposed road network provides two access intersections from the proposed internal subdivision road to the County range or township road. Furthermore, the design also allows for potential future expansion or integration with adjacent lands, consistent with long-range planning objectives.

3.5.2. Water Supply

Water servicing for the Blumenthal Estates development is proposed to be provided by individual on-site cistern systems, to be installed and maintained by each property owner. This decentralized approach is well-suited to the rural, low-density nature of the subdivision and aligns with typical servicing practices for country residential developments within the region.

The use of cisterns offers several key advantages. It allows for a reliable and controlled water supply for each lot, independent of local groundwater conditions or aquifer capacity, thereby minimizing potential impacts on groundwater resources. This approach

also avoids the need for communal water infrastructure or licensing of water sources, reducing long-term municipal servicing obligations and costs.

On-site cistern systems are efficient, cost-effective, and straightforward to install, which makes them an attractive option for property owners. Water delivery services are readily available in the area, and cisterns can be sized to accommodate typical household demands while allowing flexibility for future needs.

3.5.3. Sanitary Servicing

At present, there is no municipal or regional sanitary sewer infrastructure located within or adjacent to the Blumenthal Estates plan area. In the absence of an existing network to connect to, individual on-site holding tanks will be utilized to provide sanitary servicing for each residential lot.

Holding tanks are a practical and commonly accepted solution for country residential developments in unserviced rural areas. Each property owner will be responsible for the installation and regular maintenance of their system, including pump-out and hauling by a licensed wastewater service provider.

The use of holding tanks minimizes the risk of groundwater contamination, especially for development in such proximity to the tributaries of the North Saskatchewan River. Holding tanks avoid challenges and costs associated with constructing or extending piped sanitary infrastructure in a low-density setting. The system is also scalable and flexible, allowing each lot to operate independently without reliance on shared systems or long-term municipal servicing commitments.

3.5.4. Drainage and Stormwater Management

Stormwater management for the Blumenthal Estates area is guided by the existing natural topography, as shown in Figure 11, below. The site currently drains primarily from the southwest toward the northeast, following the natural topography.

The proposed drainage strategy maintains and builds on these natural overland flow directions through the use of grassed swales, shallow roadside ditches, and potential lot grading. Stormwater will ultimately flow off-site at current outflow locations.

The ER parcel in the northeast provides a suitable location to receive and filter surface runoff, contributing to the protection of downstream lands and watercourses. No regional stormwater infrastructure is proposed, and the development will not rely on storm ponds or engineered outfalls, reflecting the low-density, rural nature of the subdivision.

Stormwater runoff will be managed in accordance with provincial and municipal standards, ensuring post-development flows do not exceed pre-development conditions.

The stormwater system has been designed to be low-maintenance and cost-effective, supporting both environmental protection and long-term viability for residents and the municipality.

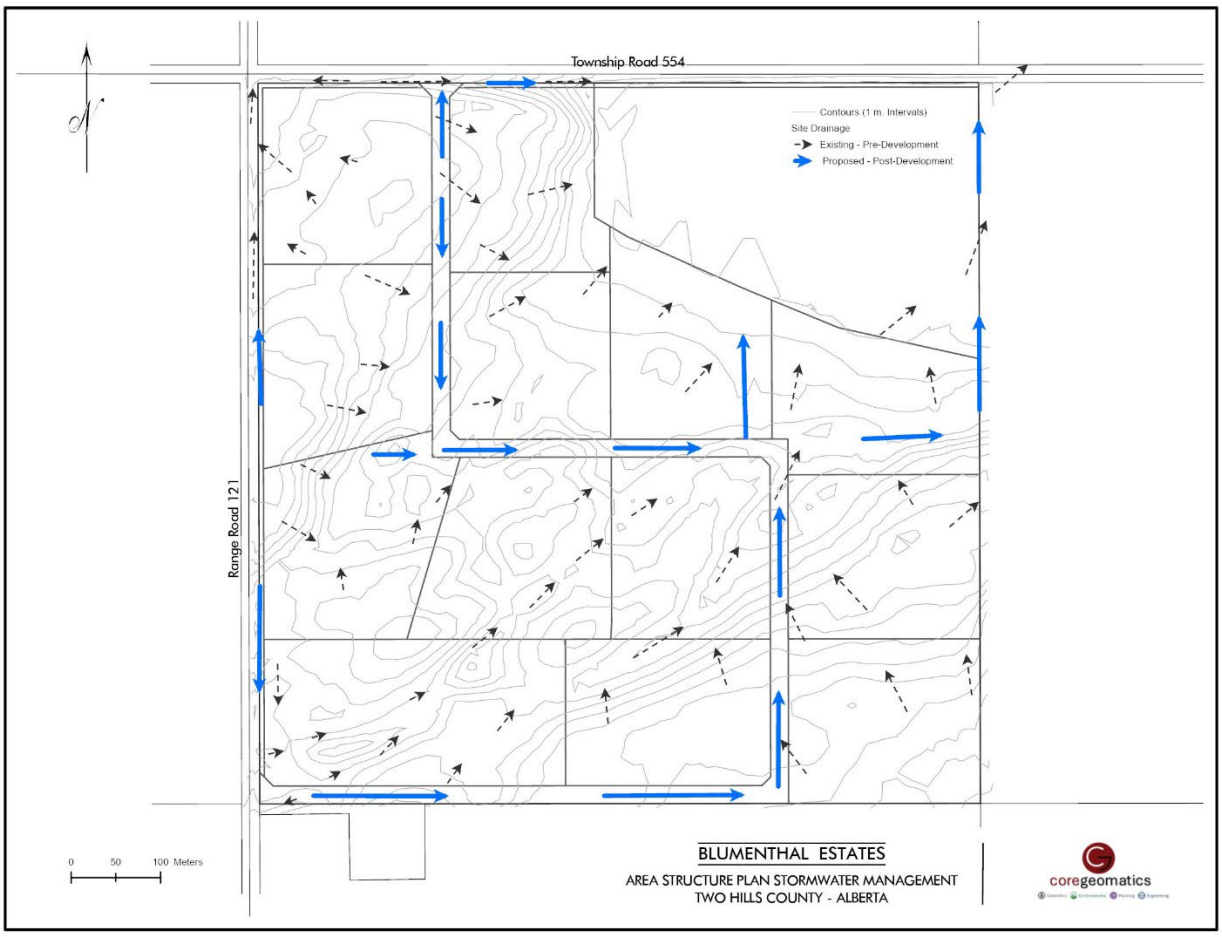


Figure 11. Blumenthal Estates Stormwater Management

3.5.5. Soft Services

Shallow utilities, including electric power, natural gas, and telecommunications, will be extended to service the proposed residential lots in Blumenthal Estates. Given the rural context of the development, these services will be provided by the appropriate service provider through overhead or shallow-buried infrastructure, depending on site conditions and provider standards.

Electricity and natural gas infrastructure is currently available in the surrounding rural road network, and extensions can be accommodated with minimal off-site upgrades. Utility servicing will be coordinated at the subdivision or development permit stage, and all shallow utility installations will be located within dedicated easements or utility rights-of-way.

3.5.6. Education, Emergency and Public Safety

The development falls under the jurisdiction of the St. Paul Education Regional Division No. 1, which operates several schools in the region. Nearby educational institutions include Two Hills School (K–12) and Myrnam School (K–12). Additionally, the Two Hills Mennonite School serves the local Mennonite community. These schools provide accessible education options for future residents of Blumenthal Estates, with school bus services typically available for rural students.

Emergency services and public safety are provided through a combination of municipal and provincial resources. Fire protection services are managed by local fire departments, including the Two Hills Fire Department, which responds to emergencies in the area. Emergency Medical Services (EMS) are coordinated by Alberta Health Services (AHS). Law enforcement is provided by the Royal Canadian Mounted Police (RCMP).

3.6. Development Phasing

Development of Blumenthal Estates is planned to proceed as a single-phase subdivision, reflecting the modest scale and straightforward servicing requirements of the project. This approach ensures that all infrastructure, including roadways, shallow utilities, water and sanitary servicing, and stormwater management elements, will be constructed and commissioned concurrently.

4. PLAN IMPLEMENTATION

4.1. Plan Approval

The ASP may be adopted in accordance with Section 633 of the Municipal Government Act, the Municipal Development Plan and any additional requirements of the County of Two Hills.

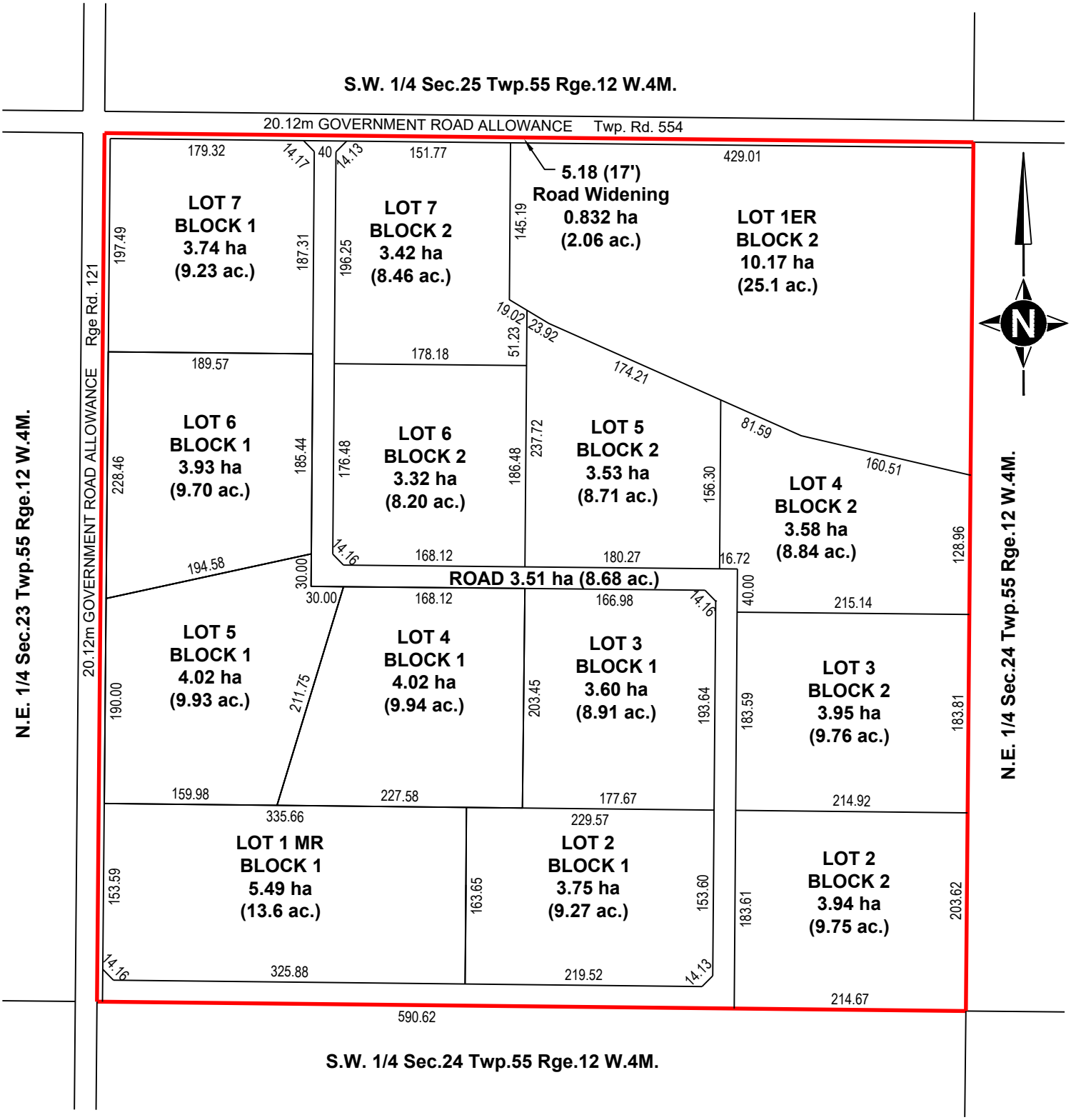
4.2. Land Use Bylaw Amendments

The ASP has been prepared in conformance with the applicable requirements of the County of Two Hills LUB. A bylaw amendment to accommodate the development as country residential development within the Country Residential (CR) District is required. The purpose, permitted uses, discretionary uses and regulations of the CR are best suited to accommodate the development of Blumenthal Estates.

4.3. Subdivision Process

As part of implementing the ASP, the land described as the NW ¼ 24-55-12 W4M will be subdivided and registered with Land Titles as outlined within this ASP.

APPENDIX A – SUBDIVISION PLAN



TENTATIVE PLAN SHOWING PROPOSED SUBDIVISION OF ALL OF N.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M. COUNTY OF TWO HILLS No. 21 ALBERTA

Legend

Proposed Boundary:

coregeomatics
p | 403-648-2772
f | 403-648-2767
www.coregeomatics.com

Scale 1:5000

File: 24-0703-00 | Dwg: 24-0703 Tent 2025-06-02 | Date: June 2nd, 2025

TENTATIVE PLAN SHOWING PROPOSED SUBDIVISION OF ALL OF N.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M. COUNTY OF TWO HILLS No. 21 ALBERTA

Legend

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Scale 1:5000

File: 24-0703-00 | Dwg: 24-0703 Tent 2025-06-02 | Date: June 2nd, 2025

APPENDIX B – SITE TOPOGRAPHICAL SURVEY

20.12m GOVERNMENT ROAD ALLOWANCE Twp. Rd. 554

NE 23

NE 24

90°36'20"
20.12

90°36'20"
805.30

805.30
270°36'20"

WET AREA

N.W. 1/4 SEC.24 TWP.55 RGE.12 W.4M.

20.12m GOVERNMENT ROAD ALLOWANCE

N.E. 1/4 Sec.23 Twp.55 Rge.12 W.4M.

0°30'20"
804.74

804.74
180°30'20"

MATCH LINE

N.E. 1/4 Sec.24 Twp.55 Rge.12 W.4M.

180°30'13"
804.88

0°30'21"
804.81

NOTES

Distances shown are in metres, in ground-level.
Elevations are Truncated by 500 (586.40 = 86.40)
Elevations shown are in metres and are referred to:
ASCM 210542 (663.694 m).
Minor contour interval is 0.1m.
Major contour interval is 0.5m.
The survey drawing is referenced to a Grid coordinate system:
UTM Zone 12 NAD 83 CSRS. Distances shown are ground-level distances.
To convert to a Ground coordinate system, divide the drawing by the Combined Scale Factor (CSF): 0.999535.

Date(s) of Survey: April 15th, 2025 - April 28th, 2025.

CORE Geomatics Group Inc has not verified locations of any buried utilities shown on this plan and is not liable for incorrect positions or any unidentified, unregistered, or untraceable buried facilities or features.

LEGEND

- Property Line
- Road Centerline
- Treeline
- Iron Post Found
- Ditch
- Ditch Crest
- Edge of Gravel Road
- Edge of Water
- Calculated Position: ×

ABBREVIATIONS

BOC	Back of Curb
FOC	Face of Curb
LOG	Lip of Gutter
DEC	Deciduous
CON	Coniferous
DL	Dripline
Ø	Diameter (in metres)
O/H	Overhead
BOL	Bollard
HT	Height
PP	Power Pole

Site Survey Plan

N.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M.
553041 Range Road 121
County of Two Hills No. 21
Alberta

WILHELM WIEBE
AND
KATHARINA WIEBE

Scale 1:1250

0m 10 20 30 40 50 60m

The intended plot size of this plan is 864mm (34 inches) in width by 559mm (22 inches) in height (D Size) when plotted at a scale of 1:250

Connie Petersen, ALS
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ALBERTA LAND SURVEYORS' ASSOCIATION
PERMIT NUMBER
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No.	Revision	Date	PC	DR	CH
0	Original Issue	30/04/2025	JA	ZS	CP

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N.E. 1/4 Sec.23 Twp.55 Rge.12 W.4M.

20.12m GOV

0°30'20"
804.74

180°30'20"
804.74

N.W. 1/4 SEC.24 TWP.55 RGE.12 W.4M.

MATCH LINE

N.E. 1/4 Sec.24 Twp.55 Rge.12 W.4M.

180°30'13"
804.88

0°30'21"
804.61

270°36'40"
20.12

805.30
90°36'40"

270°36'40"
804.63

E 1/4 24

S.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M.

PARCEL 'A'
PLAN 5873 NY

NOTES

Distances shown are in metres, in ground-level.
Elevations are Truncated by 500 (586.40 = 86.40)
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Site Survey Plan

N.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M.
553041 Range Road 121
County of Two Hills No. 21
Alberta

WILHELM WIEBE
AND
KATHARINA WIEBE

Scale 1:1250

0m 10 20 30 40 50 60m

The intended plot size of this plan is 864mm (34 inches) in width by 559mm (22 inches) in height (D Size) when plotted at a scale of 1:250

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0	Original Issue	30/04/2025	JA	ZS	CP

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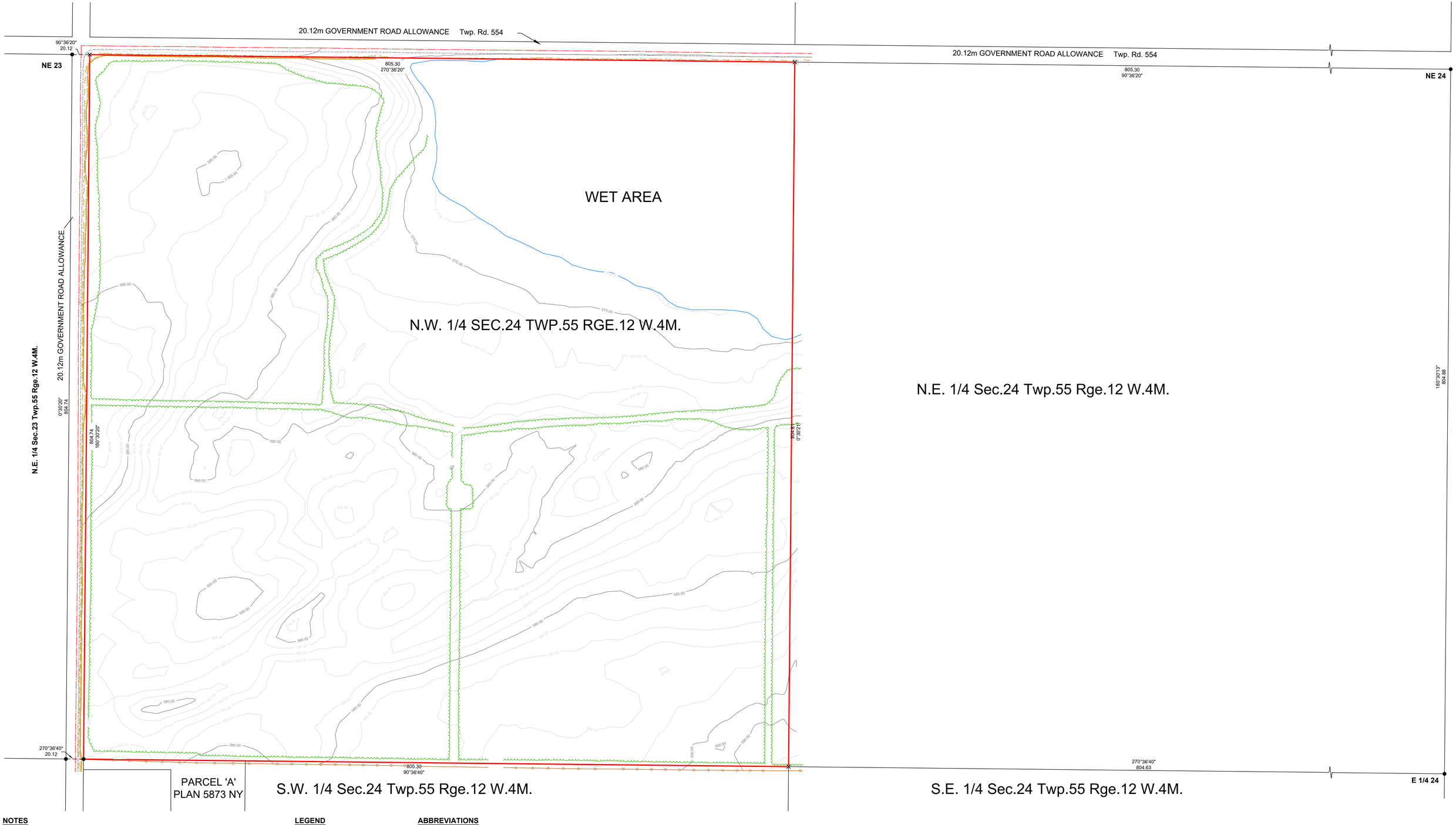

NOTES

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Elevations are Truncated by 500 (586.40 = 86.40)
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The survey drawing is referenced to a Grid coordinate system:
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To convert to a Ground coordinate system, divide the drawing by the Combined Scale Factor (CSF): 0.999535.

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LEGEND

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ABBREVIATIONS

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Site Survey Plan

N.W. 1/4 Sec.24 Twp.55 Rge.12 W.4M.
553041 Range Road 121
County of Two Hills No. 21
Alberta

WILHELM WIEBE
AND
KATHARINA WIEBE

Scale 1:2,000

0m 20 40 60 80 100m

The intended plot size of this plan is 864mm (34 inches) in width by 559mm (22 inches) in height (D Size) when plotted at a scale of 1:250

ALBERTA LAND SURVEYORS' ASSOCIATION
PERMIT NUMBER
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Revision 0

No.	Revision	Date	PC	DR	CH
0	Original Issue	30/04/2025	JA	ZS	CP

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APPENDIX C – PHASE I ENVIRONMENTAL SITE ASSESSMENT

coreenvironmental
a division of CORE Geomatics

2025

PHASE I ENVIRONMENTAL SITE ASSESSMENT

NW-24-55-12 W4M

Submitted to:

Bill Wiebe

Completed By:

CORE Environmental, a division of CORE Geomatics Group Inc.

April 30, 2025

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EXECUTIVE SUMMARY

The Phase 1 ESA identified that the property located at NW 24-55-12 W4M has primarily been utilized for agricultural purposes, and no evidence suggests that historical uses on the property pose a risk of potential contamination.

However, an old dump site/nuisance ground associated with a historical residence immediately south of LSD 12 was reclaimed in the early 1990s. With no record of a reclamation certificate for this site or information regarding the materials that may have been disposed of at the site, it is unclear if the dump site/nuisance ground could be a source of contamination. Therefore, it is not possible to rule out the potential risk of contamination along the southern boundary of the subject property.

RECOMMENDATIONS

Within the context of this Phase I Environmental Site Assessment—and based on historical records, interviews, and site observations—further investigation of the Subject Property may be required to assess potential contamination sources along the southern boundary of the property (north of LSD 12).

A Phase II ESA will be required **if a residence is proposed within 300 metres** of the nuisance ground/dump site, **or if water wells are proposed within 450 metres**. The scope of the Phase II ESA should include at least three boreholes drilled to a depth of 5 metres below ground surface. Contaminants of potential concern include salinity, metals, hydrocarbons, PAHs, and VOCs.

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INTRODUCTION

1.1 PROJECT OVERVIEW

The NW-24-55-12 W4M (herein referred to as 'the project') is located within Two Hills County, approximately 8.4 kilometers northeast of Two Hills, Alberta. CORE Environmental, a division of CORE Geomatics Group Inc. (CORE), was retained by Bill Wiebe to conduct a Phase 1 Environmental Site Assessment (ESA) for a proposed County Residential subdivision development, within NW-24-55-12 W4M.

The property is referred to in this report as the "Property", "Subject Property", or "site".

1.2 SCOPE

The scope of the project meets the terms of reference for a standard Phase 1 Environmental Site Assessment, Alberta's Environmental Site Assessment Standard (Alberta Environment and Park (AEP) 2016), and is consistent with Canadian Standards Association (CSA Z768-01).

A Phase 1 ESA includes an examination of practically reviewable documents, interviews, site inspection, and a report. The report includes findings compiled during the review and recommendations regarding the need for further study and the recommended scope. Phase 1 ESAs do not include sampling or laboratory analyses. This assessment was not designed to audit the processes on or around the site, and if they comply with regulatory requirements. Alberta's current regulatory requirements are limited in scope. There is a possibility that a site, which is currently in compliance with regulatory requirements, may still have had or cause environmental site contamination.

1.3 QUALIFICATIONS

The site visit, historical searches, and report preparation were completed by Hillard MacDonald, a Senior Environmental Consultant who has 14+ years' experience in the preparation of Phase I, Phase II, and Phase III ESAs. A final review of the report was completed by Mark Cross, a Senior Environmental Consultant with 10 years' experience in the preparation of ESA reports.

2 SITE ASSESSMENT PROCESS

2.1 OBJECTIVES AND SCOPE OF WORK

The primary objectives of this Phase 1 ESA were to identify Areas of Potential Environmental Concern (APEC) and/or Contaminants of Potential Concern (CoPC), determine whether any concerns identified during the assessment require an invasive investigation of the site (Phase II) and, if required, the nature of such work.

The scope of work for this report is as follows:

- Review historical information related to potential contamination on the site, directly or indirectly.
- Review of historical air photos.
- Review of adjacent land use for potential sources of contamination.
- Reviews of past land ownership and historical land use.
- Site visit to the property to inspect for potential sources of contamination, including sources of hazardous chemicals and petrochemicals, storage tanks or drums, waste handling, damaged vegetation, and other visual indications of potential contamination.
- Review of surface hydrology; and,
- Recommendations for further action as deemed necessary.

Authorization to proceed with this assessment was provided by Mr. Bill Wiebe on March 15, 2025.

2.2 METHODOLOGY

This Phase 1 ESA was conducted in four main stages:

Records Review

The records review consisted of collecting data on past activities on the site and adjacent properties that could be interpreted as contributing to existing contamination. The purpose of the records review is to allow an understanding of the site history, enhance knowledge of the range of possible contaminants affecting the site, and identify contamination related to actual contamination on site. The records review included a historical air photo review, and review of provincial and federal databases which register and report on certain site activities, environmental enforcement actions, and other environmental issues which may impact the site.

Interviews

Interviews were conducted to support or refute information that was gathered during the records review. An interview with Bill Wiebe, Property Owner, was completed on April 15, 2025, via phone and email.

Site inspection

A checklist approach was used for the site inspection. The checklist was designed to focus and identify Areas of Potential Environmental Concern (APEC) and/or Contaminants of Potential Concern (CoPC) and includes the following:

- A property description that includes legal description, inspectors' names, address, current and past use of property, and age of buildings (if present).
- General site observations to identify obvious site problems from a visual inspection of the site. Areas of concern and focus include possible locations or sources of hazardous chemicals as well as petrochemicals.
- Waste disposal practices.

Analyses of Information and Recommendations

The information obtained regarding the Subject Property was analyzed to determine any obvious locations or areas of concern regarding possible or reported contamination.

3 PROPERTY DESCRIPTION

3.1 LOCATION

The Subject Property is located within Two Hills County located approximately 8.4 kilometers northeast of Two Hills, Alberta. The legal location of the land parcel is NW-24-55-12 W4M (Figure 1).

3.2 SITE OCCUPANCY AND DEVELOPMENT DETAILS

Current Land Use – Forested Lands (Tree Farm).

Current Owner – Wilhelm and Katharina Wiebe of Two Hills, Alberta

Property Size – approximately 64.74 hectares (ha) / 160 acres (ac)

3.3 PHYSICAL DESCRIPTION

The area surrounding the project area, consists of cultivated and forested lands which are interspersed by various class wetlands, and is located within Alberta's White Zone. This zone consists of both privately-owned and public lands, which are typically managed for a variety of purposes, including agriculture, recreation, soil and water conservation, and fish and wildlife habitat protection (AEP, 2017). These lands consist of cultivated and forested lands, county residential properties, lakes, and wetlands. Primary industries within the area include agriculture and oil and gas extraction.

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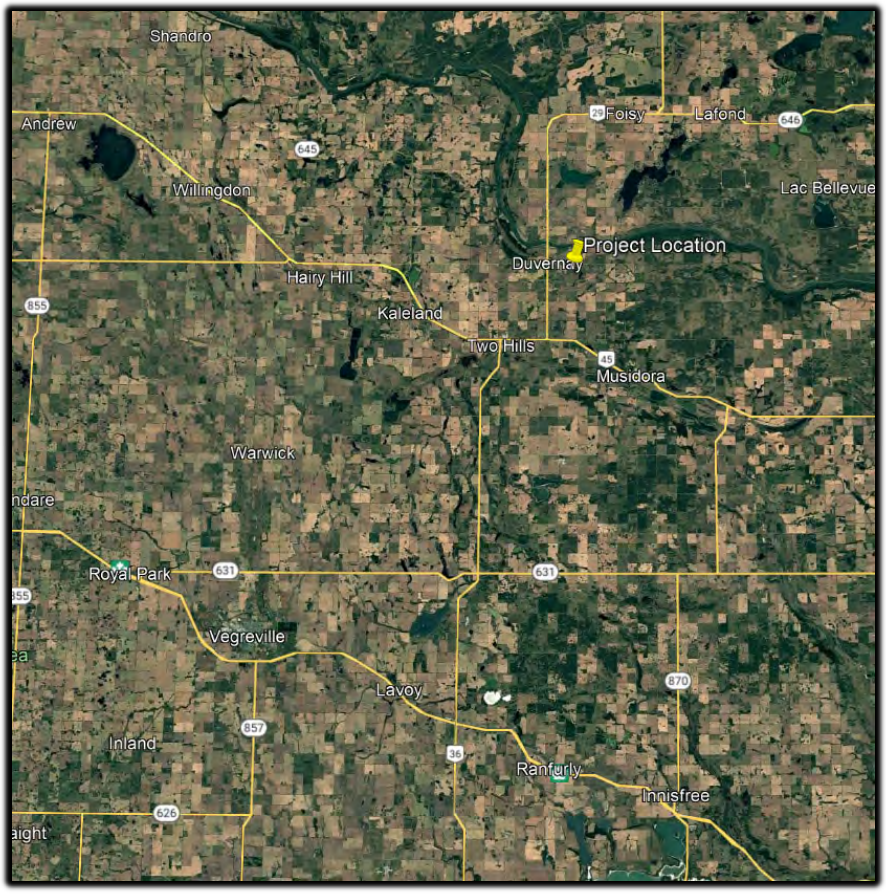

Figure 1. Project Location.

3.4 Topography and Drainage

The lands of the project and the surrounding area consist of gently sloped to flat lands, with numerous wetlands scattered across the landscape in depressional areas and along local drainages. There are no dugouts or lagoons located within the quarter section. Marsh and swamp type wetlands dominate the northeast of the property (LSD 13 & 14), which drains to an unnamed watercourse (WBID 41653) which runs through the northernmost portion of the property. This watercourse joins another unnamed watercourse (WBID 41890) approximately 400m east of the property before flowing into the North Saskatchewan River approximately 2.7km northeast of the property. Based on area topography, geology, and local drainage patterns, groundwater is suspected to flow generally north-northeast towards the North Saskatchewan River.

3.5 Regional Geology and Groundwater

A search of groundwater wells was conducted in the Alberta Water Well Information Database (http://groundwater.alberta.ca/waterwells/d/). The search indicated that there is one (1) groundwater well present on the site, which had a static water level of 22.1 feet (~6.77 m). In addition to the one well located on site, there are an additional eight (8) water well records located within a 1500m of the center of the property. Based on all well records within 1500m, reported static water levels in the area vary

from 14 to 71.6 feet or 4.27 to 21.82 meters respectively, with pump test rates ranging from 0 to 6 imperial gallons per minute (igpm) and averaging 2.96 igpm. (Appendix A.)

Based on the surficial topography of the area, surface water flows move, in general, towards the wetlands and North Saskatchewan River, north–northeast from the property.

The surficial geology near the project is primarily post-glacial in origin, consisting of Pleistocene era sediments resulting from the collapse and slumping of englacial and supraglacial debris in response to the melting of buried stagnant ice near the glacial margin. Characterized by low to high-relief hummocky topography, these sediments are mainly till but locally includes stratified glaciolacustrine or glaciofluvial sediments. (AGS 2013)

Based on the Alberta Soil Information Viewer (AGRASID) (GoA, 2024b) the soils of the property consist of two soil polygons. (Table 1.) These soils vary from orthic dark gray chernozems for 80% of the property, aside from the northeast (wetland) corner of the property, which has Solonetzic black chernozems. Of interest here are the potential Solonetzic soils, which by definition typically have a subsurface horizon, higher in clay content than the upper horizon, and have more than 15% exchangeable sodium. These natural saline soils may have reclamation implications and may be less suitable for agriculture.

Table 1. AGRASID Soils information for the Quarter Section

Polygon ID	Map Unit Name	Landform	LSRA Rating		Location
15962	RDW8/H1l	H1l - hummocky - low relief	RDW8/H1l	Orthic Dark Gray Chernozem on moderately coarse textured (SL) sediments deposited by wind or water (RDW). The polygon includes poorly drained soils and soils with Rego profiles (8). Hummocky, low relief landform with a limiting slope of 6% (H1l).	80% of property
15949	NRM15/H1m	H1m - hummocky - medium relief	3MT (8) - 4T(1) - 5W(1)	Solonetzic Black Chernozem on medium textured (L, CL) till (NRM). The polygon includes soils that are coarser	Northeast corner of Property (wetland area)

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Polygon ID	Map Unit Name	Landform	LSRA Rating		Location
				textured than the dominant or co-dominant soils and Solonetzic soils (15). Hummocky, medium relief landform with a limiting slope of 9% (H1m).	

4 HISTORICAL REVIEW

4.1 PREVIOUS REPORTS AND INVESTIGATIONS

An Environmental Site Repository (ESAR) search was completed independently of the ERIS database searches. The search indicated that there has been a Water Act/EPEA Authorization which was issued to Jan DeBoer on January 7, 2002, which does not expire. No Documents were available for public download regarding this authorization. It is unlikely for this authorization to indicate a concern.

Aside from this ESAR search, CORE is not aware of any other reports or investigations related to the subject property.

4.2 HISTORICAL AIR PHOTO REVIEW

Historical satellite imagery obtained from Alberta Air photo Services and Abadata was reviewed for the years 1950 through 2022. The imagery reviewed is included as Figures 2 to 12. A summary of the reviewed photos is included in *Figure 11.* 2020 Abadata image

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Figure 12. 2022 Abadata image

Table *2.* Summary of reviewed Imagery

Figure 2: 1950 Alberta Air Photo image.

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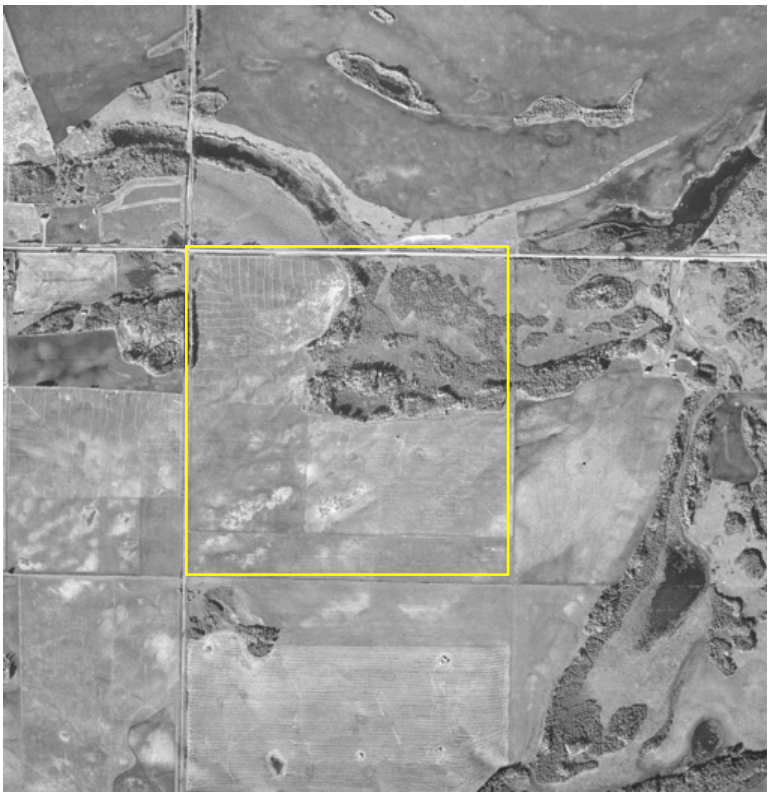

Figure 3. 1965 Alberta Air Photo image

Figure 4. 1975 Alberta Air Photo image

Figure 5. 1983 Alberta Air Photo image

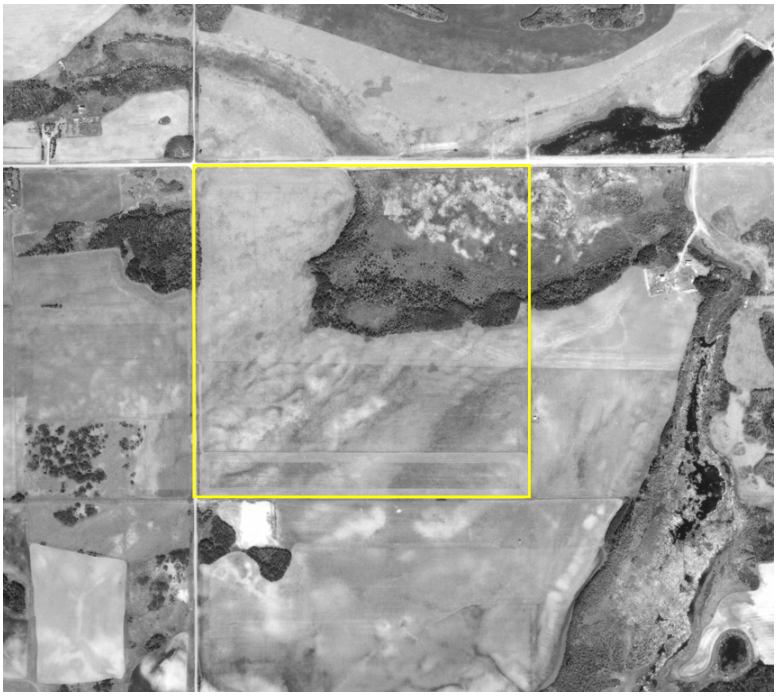

Figure 6. 1991 Alberta Air Photo image

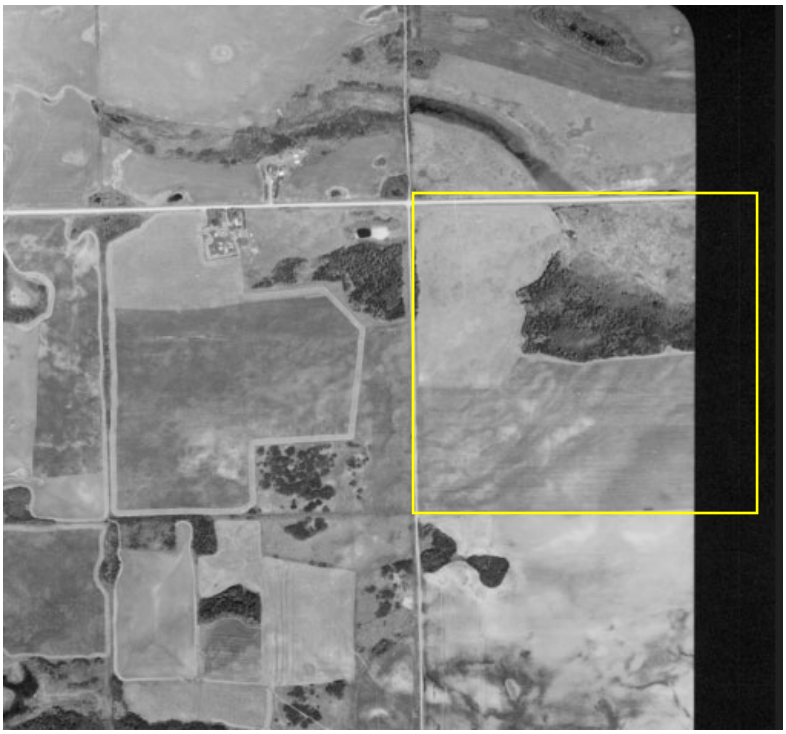

Figure 7. 1997 Alberta Air Photo image. *

Note: Partial coverage only. Not reordered due to limited available photo coverage with this air photo project.

Figure 8. 2022 Alberta Air Photo image

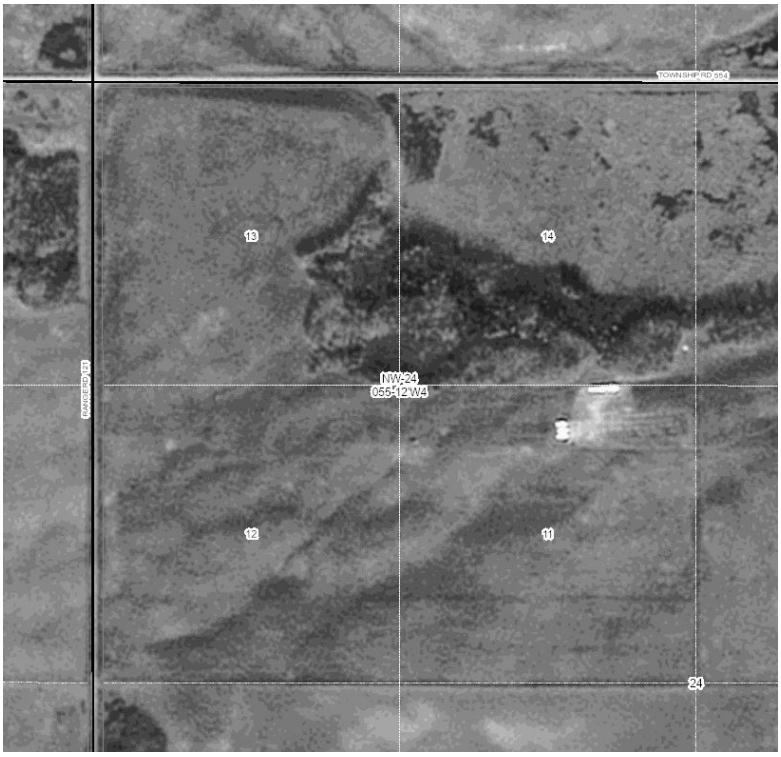

Figure 9. 2006 Abadata image

Figure 10. 2015 Abadata image

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Figure 11. 2020 Abadata image

Figure 12. 2022 Abadata image

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Table 2. Summary of reviewed Imagery

1950– Alberta Air Photo	• Quarter section appears to be cultivated lands with forest and wetlands located in the northeast portion.
1965– Alberta Air Photo	• Quarter section appears to be cultivated lands with forest and wetlands located in the northeast portion.
1975 – Alberta Air Photo	• No change aside from some sort of soil/residential? disturbance near the SW corner of the property in the adjacent quarter section
1983 – Alberta Air Photo	• No real change aside from some sort of soil/residential? disturbance near the SW corner of the property in the adjacent quarter section.
1991– Alberta Air Photo	• Disturbance near the SW corner of the property in the adjacent quarter section is more pronounced.
1997– Alberta Air Photo	• Disturbance near the SW corner of the property in the adjacent quarter section has disappeared from imagery.
2006– Abadata	• The site no longer looks to be in agricultural production, possibly planted within a poor quality satellite image
2015 – Abadata	• Site has quite obviously been planted, no other changes
2020 – Abadata	• Imagery shows the site as planted with natural aspen ingress along drainages
2022– Alberta Air Photo	• Image quality is sufficient to see land use has changed to potentially a tree farm, no other change noted.
2022– Abadata	• No change site is still a tree farm.

5 CORRESPONDENCE AND INTERVIEWS

5.1 SUMMARY OF INTERVIEWS

CORE interviewed the following person regarding past site activities:

- Bill Wiebe

A summary of the interview is included below.

PHASE I Environmental Site Assessment Interview

Date: April 15, 2025, **Project:** NW-24-55-12 W4M ESA

Interviewer: Hillard MacDonald **Interviewee:** Bill Wiebe

- **Who is the current owner/leaseholder of the property?**

  Crissel Enterprises Ltd.

- **How long have they owned the property?**

  The property was transferred from my name to Crissel Enterprises Ltd about a month ago.

- **What has the property been used for in the past?**

The property was planted with poplar under a government program about 30 Years ago.

- **Are there any environmental concerns that you are aware of in relation to the property?**

  No, nothing that I am aware of.

- **Do you know what the history of ownership is for the property?**

  No, I do not know the detailed history of ownership.

- **Has the property been used as a dumping ground, landfill or ever stored wastes of any kind?**

  The neighbors to the south had a small landfill/dump on their property.

- **Have there ever been any above ground storage tanks on the property? Oilfield Tanks? If Tanks were present, did they have any secondary containment?**

  No, the property has never had any oil wells or been used for oilfield storage.

- **Do you know of any environmental spills/releases for adjacent properties that may have impacted the subject property?**

  No, I am not aware of any spills or releases on any of the adjacent properties.

- **Are you aware of any sources of contamination coming from the surrounding properties?**

  No, I am not aware of any sources of contamination coming from the surrounding properties.

- **Has there ever been any buildings including oil and gas shacks located on site?**
  No there have never been any buildings located on the property.

5.1.1 Summary and Conclusion of Interviews

Based on information obtained from an interview with Bill Wiebe, there are no environmental concerns regarding the Subject Property.

5.2 REGULATORY SEARCHES

5.2.1 Environmental Risk Information Services (ERIS) Databases

Various Federal, Provincial, and Municipal regulatory databases were searched, utilizing the Environmental Risk Information Services (ERIS) database search service which searched over 60 databases for records within 300m of the Subject Property, which may indicate potential environmental concerns. The ERIS report is included as Appendix B, the results of which are summarized in Table 2.

Table 3.ERIS Database Search Summary.

Database	Database Description	Business Type	Number of Occurrences	Business Name	Distance from Subject Property (m)	Potential Risk
AUTH	Locations associated with Water Act and Environmental Protection and Enhancement Act (EPEA) documents issued by Alberta Environment and Parks (AEP). Includes approvals, licences, registrations, authorizations, permits, and certificates. This list is made available by the Alberta Environment and Parks (AEP). Government Publication Date: Sep 2024	Government Database	1	Jan DeBoer	On Subject Property	Low
PITS	This database contains approvals for processes pertaining to the use of gravel pits, sand pits, and clay pits. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only. Government Publication Date: 1993-2012	Government Database	1	County of Two Hills No. 21 AB	262.1m South-Southwest	Low
WWIS	List of wells in the Alberta Water Well Information Database made available by Alberta Environment and Parks, containing approximately 500,000 records with nearly 5,000 drilling reports added annually. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location; some locations will be accurate to the quarter section only. The Province of Alberta advises that the data may not be fully checked, and disclaims all	Government Database	1	Well ID: 270091	On subject property	Low

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Database	Database Description	Business Type	Number of Occurrences	Business Name	Distance from Subject Property (m)	Potential Risk
	responsibility for its accuracy. This data was previously collected from the Groundwater Information Center of the Natural Resource Service. Government Publication Date: 1880-Jul 31, 2024					

Based on the ERIS search results, there are no records of concern, overall risk has been rated as low based on the ERIS report.

5.2.2 Environmental Site Assessment Repository (ESAR)

The online Environmental Site Assessment Repository (ESAR), which is compiled and maintained by Alberta Environment and Protected Areas (EPA), was searched by CORE independently. The search indicated that there has been a Water Act/EPEA Authorization which was issued Jan DeBoer on January 7, 2002, which does not expire. No Documents were available for public download regarding this authorization. It is unlikely for this authorization to indicate a concern. (Appendix C – ESAR search results.

5.2.3 Alberta Energy Regulator Searches

An Alberta Energy Regulator (AER) search was also conducted through the Abacus Datagraphics (Abadata) service to determine the presence of any upstream oil and gas wells on the property or within a 1 km radius of the property. Abadata was also searched for any environmental spills or complaints on the property or surrounding areas.

The results indicated that there are no well sites located on the property, and the closest wellsite is PEOC DUV 6-24-55-12 (operated by Sequoia Resources Corp., formerly held by BP Canada Energy Company), which is currently listed as suspended and is located approximately 310m south of the property. There are generally no spills or complaints listed within 1km of the property, however a Sequoia Resources Corp. well located approximately 1100m west of the property has a record of property damage in 1992, and another Sequoia Resources Corp well site approximately 980m northwest of the site had an incident in 2015 where a pipeline was struck, however no releases are reported. (Appendix D)

5.2.4 Alberta Water Well Information Database

A search of groundwater wells was conducted in the Alberta Water Well Information Database (http://groundwater.alberta.ca/waterwells/d/). The search indicated that there is one (1) groundwater wells present on the site, and an additional eight (8) water well records located within a 1500m of the center of the property.

A summary of the hydrological information from the water well reports was previously reported in Section 3.5 and water well reports can be found in Appendix A.

5.3 Site Appearance

A site visit to the Property was conducted on April 11, 2025, by Tianna Preusche, an Intermediate Environmental Professional with CORE, accompanied by a junior environmental professional, Erin Murchison to assess for environmental concerns. Tianna conducted the site visit under direction of Hillard MacDonald and provided site photos for interpretation.

It was observed during the site visit that Property is comprised of now forested lands having been converted from traditional agricultural use to a hybrid poplar plantation. The only non-natural feature noted by the site visit is an old water truck tank which appears to be/have been used for watering of livestock.

Site photographs are included in **Error! Reference source not found.**

5.4 Adjacent Land Use

North – North of the project area are wetlands, cultivated and forested lands before reaching the North Saskatchewan River.

East- East of the project area are cultivated lands, small patches of residual forest and scattered wetlands.

South – South of the project area are forested (plantation) lands and wetlands.

West – West of the project area are cultivated lands, small patches of residual forest and scattered wetlands.

6 Environmental Issues

Information regarding significant environmental issues is summarized below.

6.1 Air Emissions and Quality

Site is predominantly a tree plantation with no concern regarding air quality or emissions.

6.2 Asbestos Containing Materials

The site is predominantly a tree plantation with no concerns since there have never been buildings on the property

6.3 Chemical Use and Storage

No concerns, there are no chemicals used or stored on site.

6.4 Drains and Sumps

No concerns as there are no records or indication of pits or sumps on the property.

6.5 Fill

There is no evidence of fill as the property has not been developed or built upon.

6.6 Freon and Halon

Not applicable

6.7 Hazardous Material use and Storage

There is no evidence of past oil and gas wells within the quarter section, nor is there any information to indicate hazardous materials may have been used or stored on site.

6.8 Hazardous Wastes

There is no evidence to indicate wastes were generated of stored on site; however, the historical dumping grounds near the southwest corner of the property may have disposed of hazardous waste

6.9 Heating and Cooling Systems

N/A there are no buildings or history of buildings with such systems

6.10 Landfills and Refuse Pits

There was an old dumping site located near the southwest corner of the property which has been reclaimed. This area is suspected as a potential source of contamination since the details of reclamation in the early 1990s are unknown.

6.11 Lead

Dumping grounds pose a potential risk of heavy metals, including lead.

6.12 Mechanical Equipment

Only agricultural equipment would have been used on site in the past.

6.13 Mercury

No evidence of mercury-containing equipment which could lead to contamination is noted.

6.14 Methane

Methane is a component of natural gas deposits and a natural byproduct of the decomposition of organic materials in anaerobic conditions. With the northeast area of the property being comprised of swamp/marsh type wetlands, in which vegetation decomposes slowly there is a slight chance that some methane may be present. However, the methane which can be present in wetlands is typically at low concentrations within wetland soils and does not pose a risk to the property.

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6.15 Oil and Gas Facilities

Based on ERIS and AER database searches there no oil and gas sites within the quarter section.

6.16 Pesticide and Herbicide Use

With the site having been used for agricultural production in the past herbicide and fertilizer use is likely to have occurred within the quarter section. However, agricultural herbicide/pesticide use typically carries a low risk, and is not a concern on the property.

6.17 Pits and Lagoons

There have been no pits or lagoons located within the quarter section.

6.18 Polychlorinated Biphenyl's (PCBS)

No transformers were observed in the vicinity of the site. PCBs can generally be associated with older transmission line facilities such as transformers and substations, however, based on the age of developments in the area, it is unlikely that equipment containing PCBs is present. Therefore, PCBs are not a concern.

6.19 Radioactive Materials and Equipment

No evidence of radioactive equipment or material being used or stored on site are noted.

6.20 Radon Gas

N/A There are no buildings or history of habitable buildings on site.

6.21 Solid wastes and Sewage Disposal

There are no solid wastes or sewage generated, stored or disposed of on site. However, sewage disposal likely occurred within the area of the old homestead/dumping ground located on the adjacent quarter section, near the southwest corner of the property. However, any such disposal is not likely to carry any more risk than other abandon homesteads throughout Alberta, therefore risk is rated as low.

6.22 Stains

No staining was observed during the site visit.

6.23 Underground Storage Tanks (UST)

There are no records of underground storage tanks being present on the Property.

6.24 Above Ground Storage Tanks (AST)

There are no records of underground storage tanks being present on the Property.

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6.25 Unidentified Substances

No unidentified substances were observed being present on site.

6.26 Urea Formaldehyde Foam Insulation (UFFI)

No buildings on site where UFFI may have been used as insulation in the past.

UFFI has been prohibited from use or importation into Canada under the Hazardous Products Act since December 1980. The prohibition includes all urea formaldehyde-based thermal insulation, foamed in place, used to insulate buildings. This includes melamine urea and other urea formaldehyde resins.

6.27 Utilities, Roads, Parking Lots and Right of Ways

The property is bordered by Range Road 121 to the west and Township Road 545 to the north. Although potential salt and hydrocarbon contamination may be associated with road salt and leaking fluids, grease etc. from vehicles traveling these roads, such contamination should be considered as minor.

6.28 Vegetation

Despite the site visit being conducted outside of the growing season, air photo review has not shown any evidence of stressed vegetation, which could indicate underlying contamination.

6.29 Ditches, wetlands, and watercourses

There is a large swamp/marsh type wetland located along Township road 545, at the northeast corner of the property as well as a county ditch which runs along both Township Road 545 and Range Road 121. There is also an unnamed watercourse which is mapped to flow through this wetland complex.

6.30 Water wells

A search of groundwater wells was conducted in the Alberta Water Well Information Database (http://groundwater.alberta.ca/waterwells/d/). The search indicated that there is one (1) groundwater wells present on the site, and an additional eight (8) water well records located within a 1500m of the center of the property. (Appendix A)

7 Conclusions and Recommendations

The Phase 1 ESA identified that the property located at NW 24-55-12 W4M has primarily been utilized for agricultural purposes, and no evidence suggests that historical uses on the property pose a risk of potential contamination.

However, an old dump site/nuisance ground associated with a historical residence immediately south of LSD 12 was reclaimed in the early 1990s. With no record of a reclamation certificate for this site or information regarding the materials that may have been disposed of at the site, it is unclear if the dump site/nuisance ground could be a source of contamination. Therefore, it is not possible to rule out the potential risk of contamination along the southern boundary of the subject property.

RECOMMENDATIONS

Within the context of this Phase I Environmental Site Assessment—and based on historical records, interviews, and site observations—further investigation of the Subject Property may be required to assess potential contamination sources along the southern boundary of the property (north of LSD 12).

A Phase II ESA will be required **if a residence is proposed within 300 metres** of the nuisance ground/dump site, **or if water wells are proposed within 450 metres**. The scope of the Phase II ESA should include at least three boreholes drilled to a depth of 5 metres below ground surface. Contaminants of potential concern include salinity, metals, hydrocarbons, PAHs, and VOCs.

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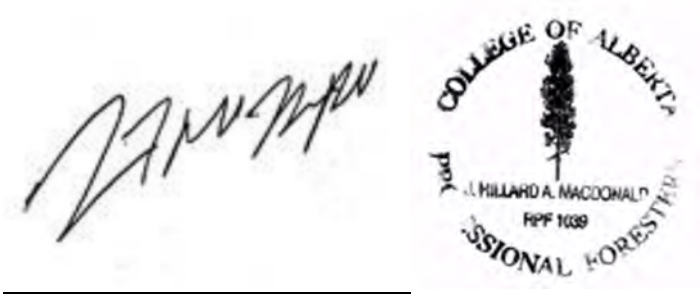
8 SIGNOFF

We trust this report meets your requirements. If you should have any questions, please contact the undersigned at your convenience.



Hillard MacDonald, RPF
Senior Environmental Consultant

Mark Cross, RPF
Lead – Environmental / Regulatory Division

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APPENDIX A – WATER WELL DRILLING RECORDS

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Reconnaissance Report

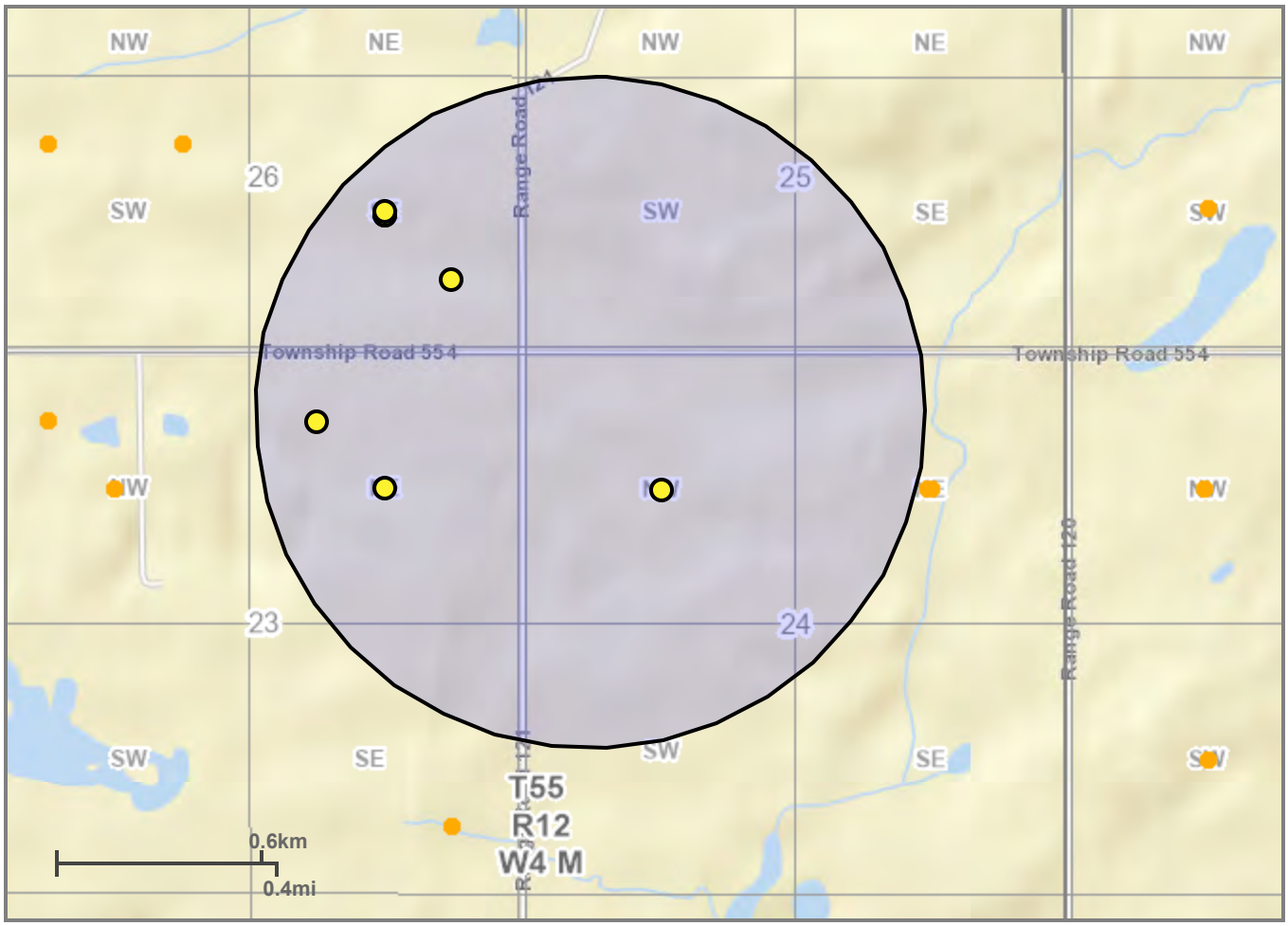
View in Metric

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)
159619	SE	26	55	12	4	UNKNOWN DRILLER		65.00	Chemistry	Domestic				MAILLOUX, NORMAN	43.00		0.00
159619	SE	26	55	12	4	UNKNOWN DRILLER		65.00	Chemistry	Domestic				MAILLOUX, NORMAN	14.00	0.00	0.00
238076	NW	24	55	12	4	LAKELAND DRILLING LTD.	1994-04-21	140.00	New Well	Stock		4	16	PARADISE RANCH	22.10	6.00	5.00
255021	15	23	55	12	4	UNKNOWN DRILLER	1935-09-03	71.00	Well Inventory	Domestic				DMYTROWSKY, JOHN	56.00		0.00
270091	1	26	55	12	4	KAEHN VICTOR A	1981-07-11	72.00	New Well	Domestic	1	4		MAILLOUX, N C	50.00	3.50	30.00
1421872	SE	26	55	12	4	LAKELAND DRILLING LTD.	2016-09-13	300.00	New Well-Decommissioned	Stock		10		GUENTHER, AARON			
1421873	SE	26	55	12	4	LAKELAND DRILLING LTD.	2016-09-15	200.00	New Well	Domestic & Stock		7	21	GUENTHER, AARON	49.60	1.31	
1422454	NE	23	55	12	4	LAKELAND DRILLING LTD.	2021-06-27	180.00	New Well	Domestic		8	21	OLD COLONY MENNONITE CHURCH	71.60	4.00	



Alberta Water Well Information Database Map

Projection
Web Mercator (Auxillary Sphere)

Datum
WGS 84

Date
4/15/2025, 9:47:21 AM

Legend
- Groundwater Drilling Report
- Baseline Water Well Report

https://groundwater.alberta.ca/WaterWells/d/

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 238076
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1994/05/06

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
PARADISE RANCH	P.O. BOX 719 TWO HILLS				T0B 4K0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NW	24	55	12	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 53.769486 Longitude -111.657045
How Location Obtained: Not Verified

Elevation ft
How Elevation Obtained: Not Obtained

Drilling Information

Method of Drilling: Rotary

Proposed Well Use: Stock

Type of Work: New Well

Formation Log

Measurement in Imperial

Depth from ground level (ft)	Water Bearing	Lithology Description
23.00		Sand
52.00		Clay
56.00		Sandstone
140.00		Shale

Yield Test Summary

Measurement in Imperial

Recommended Pump Rate 6.00 igpm

Test Date	Water Removal Rate (igpm)	Static Water Level (ft)
1994/04/21	6.00	22.10

Well Completion

Measurement in Imperial

Total Depth Drilled	Finished Well Depth	Start Date	End Date
140.00 ft		1994/04/21	1994/04/21

Borehole

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

Surface Casing (if applicable)
Plastic
Size OD : 5.00 in
Wall Thickness : 0.265 in
Bottom at : 52.00 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 Bentonite Chips/Tablets
Placed from 0.00 ft to 49.00 ft
Amount

Other Seals

Type	At (ft)

Screen Type Stainless Steel
Size OD : 5.00 in

From (ft)	To (ft)	Slot Size (in)
52.00	57.00	0.015

Attachment Telescoped
Top Fittings Neoprene (Figure K)
Bottom Fittings Washdown

Pack
Type Artificial
Grain Size 1630
Amount 3.00 Bags

Contractor Certification

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

Certification No
1

Company Name
LAKELAND 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 238076
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 1994/05/06

GOWN ID

Well Identification and Location

Measurement in Imperial

Owner Name	Address	Town	Province	Country	Postal Code
PARADISE RANCH	P.O. BOX 719 TWO HILLS				T0B 4K0

Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description
	NW	24	55	12	4				

Measured from Boundary of
ft from
ft from

GPS Coordinates in Decimal Degrees (NAD 83)
Latitude 53.769486 Longitude -111.657045
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 6.00 igpm
Recommended Pump Intake Depth (From TOC) 48.00 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
Additional Comments on Well

Yield Test

Taken From Ground Level
Measurement in Imperial

Test Date	Start Time	Static Water Level
1994/04/21	7:12 AM	22.10 ft

Method of Water Removal

Type Pump
Removal Rate 6.00 igpm
Depth Withdrawn From 48.00 ft

If water removal period was < 2 hours, explain why

Depth to water level

Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)
22.15	0:00	
31.17	1:00	41.67
37.66	2:00	37.14
42.32	3:00	33.96
45.37	4:00	31.66
	5:00	30.02
	6:00	28.74
	7:00	27.85
	8:00	27.00
	9:00	26.34
	10:00	25.92
	12:00	24.97
	14:00	24.28
	16:00	23.75
	20:00	22.87
	25:00	22.15

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
LAKELAND DRILLING LTD.

Copy of Well report provided to owner

Date approval holder signed

APPENDIX B – ERIS SEARCH RESULTS

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DATABASE REPORT

Project Property:	*25-0216 - Phase 1 ESA - NW-24-55-12 W4M* *NW-24-55-12 W4M* *Brosseau AB*
Project No:	*25-0216*
Report Type:	*AB Standard Report Plus - Quote*
Order No:	*25032600473*
Requested by:	*CORE Geomatics Group Inc*
Date Completed:	*March 31, 2025*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Executive Summary

Property Information:

Project Property:	*25-0216 - Phase 1 ESA - NW-24-55-12 W4M* *NW-24-55-12 W4M Brosseau AB*
Project No:	*25-0216*

Order Information:

Order No:	*25032600473*
Date Requested:	*March 26, 2025*
Requested by:	*CORE Geomatics Group Inc*
Report Type:	*AB Standard Report Plus - Quote*

Historical/Products:

ERIS Xplorer	*ERIS Xplorer*

Executive Summary: Report Summary

Database	Name	Searched	Project Property	Boundary to 0.30km	Total
AERW	Well Licenses	Y	0	0	0
AGR	Agriculture and Fisheries - Certificates of Approval	Y	0	0	0
AOGW	Alberta Oil and Gas Wells	Y	0	0	0
AUTH	Authorizations	Y	1	0	1
AUWR	Automobile Wrecking & Supplies	Y	0	0	0
CAWD	Waste Management Facilities - Certificates of Approval	Y	0	0	0
CBL	Commercial Activity Risk - City of Calgary Business Licenses	Y	0	0	0
CDRY	Dry Cleaning Facilities	Y	0	0	0
CFO	Confined Feeding Operations	Y	0	0	0
CHEM	Chemical Processing Operations - Certificates of Approval	Y	0	0	0
CHM	Chemical Register	Y	0	0	0
CMPS	Compost Facilities	Y	0	0	0
CNG	Compressed Natural Gas Stations	Y	0	0	0
CONV	Compliance and Convictions	Y	0	0	0
CTNK	Fuel Sales and Storage	Y	0	0	0
DRWD	Approved Oilfield Waste Management Facilities	Y	0	0	0
EAS	Enforcement Action Summary	Y	0	0	0
EBL	Commercial Activity Risk - City of Edmonton Business Licenses	Y	0	0	0
ECMP	Environmental Compliance Prosecutions	Y	0	0	0
EEM	Environmental Effects Monitoring	Y	0	0	0
EHS	ERIS Historical Searches	Y	0	0	0
EIIS	Environmental Issues Inventory System	Y	0	0	0
EPST	Alberta Environment & Parks Storage Tanks	Y	0	0	0
EPWN	Environment Protection & Enhancement Act and Water Act Public Notices	Y	0	0	0
ESAR	Environmental Site Assessment Repository	Y	0	0	0
ETNK	Edmonton Vehicle Fueling Stations	Y	0	0	0
FAC	Facility List	Y	0	0	0
FCON	Federal Convictions	Y	0	0	0
FCS	Contaminated Sites on Federal Land	Y	0	0	0
FIS	AER Incidents & Spills	Y	0	0	0
FOOD	Food Processing Operations - Certificates of Approval	Y	0	0	0
FRST	Federal Identification Registry for Storage Tank Systems (FIRSTS)	Y	0	0	0
FST	Fuel Storage Tanks	Y	0	0	0
GEN	Waste Generators Summary	Y	0	0	0
GHG	Greenhouse Gas Emissions from Large Facilities	Y	0	0	0

Database	Name	Searched	Project Property	Boundary to 0.30km	Total
GPP	Gas Processing Plants	Y	0	0	0
HELP	Alberta Environment's H.E.L.P. (Help End Landfill Pollution) Program Database	Y	0	0	0
HORW	Horizontal Wells	Y	0	0	0
IAFT	Indian & Northern Affairs Fuel Tanks	Y	0	0	0
LDS	Identification and Verification of Active and Inactive Land Disposal Sites	Y	0	0	0
LDSI	Land Disposal Sites on Indian Reserves	Y	0	0	0
LNDF	Landfill Registrations	Y	0	0	0
LUM	Lumber Related Operations - Certificates of Approval	Y	0	0	0
MINE	Canadian Mine Locations	Y	0	0	0
MMB	Metals, Minerals and Building Materials Operations - Certificates of Approval	Y	0	0	0
MNR	Mineral Occurrences	Y	0	0	0
NATE	National Analysis of Trends in Emergencies System (NATES)	Y	0	0	0
NCST	PTMAA Non-Compliant Storage Tanks	Y	0	0	0
NDFT	National Defense & Canadian Forces Fuel Tanks	Y	0	0	0
NDSP	National Defense & Canadian Forces Spills	Y	0	0	0
NDWD	National Defence & Canadian Forces Waste Disposal Sites	Y	0	0	0
NEBI	National Energy Board Pipeline Incidents	Y	0	0	0
NEBP	National Energy Board Wells	Y	0	0	0
NEES	National Environmental Emergencies System (NEES)	Y	0	0	0
NPCB	National PCB Inventory	Y	0	0	0
NPR2	National Pollutant Release Inventory	Y	0	0	0
NPRI	National Pollutant Release Inventory - Historic	Y	0	0	0
OAM	Operating and Abandoned Mines	Y	0	0	0
OGF	Oil and Gas Facilities - ST102 & ST50	Y	0	0	0
OGWW	Oil and Gas Wells	Y	0	0	0
ORD	Enforcement Orders	Y	0	0	0
ORP	Alberta Orphan Wells	Y	0	0	0
PAP	Canadian Pulp and Paper	Y	0	0	0
PCFT	Parks Canada Fuel Storage Tanks	Y	0	0	0
PCG	Petrochemical, Coal and Gas Operations - Certificates of Approval	Y	0	0	0
PES	Pesticide Register	Y	0	0	0
PFCH	NPRI Reporters - PFAS Substances	Y	0	0	0
PFHA	Potential PFAS Handlers from NPRI	Y	0	0	0
PITS	Conglomerate and Waste Management Facilities	Y	0	1	1
PSP	Alberta Private Sewage Disposal Permits	Y	0	0	0
PTAP	PTMAA Approved (Open) Permits	Y	0	0	0
REC	Hazardous Waste Receivers Summary	Y	0	0	0
RECY	Alberta Recyclers	Y	0	0	0
RST	Retail Fuel Storage Tanks	Y	0	0	0

Database	Name	Searched	Project Property	Boundary to 0.30km	Total
SCT	Scott's Manufacturing Directory	Y	0	0	0
SPEC	Special Operation Classifications - Certificates of Approval	Y	0	0	0
WDS	Inventory of Waste Disposal Sites	Y	0	0	0
WSTE	Wastewater Operations	Y	0	0	0
WWIS	Alberta Water Well Information Database	Y	1	0	1
	Total:		2	1	3

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number
1	AUTH	Jan DeBoer	4;12;55;24;NW AB	WSW/0.0	1.06	13
2	WWIS		AB ***Well ID:*** 238076	WSW/0.0	1.06	13

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
3	PITS		County of Two Hills No. 21 AB	SSW/262.1	9.37	18
4	WWIS		AB ***Well ID:*** 270091	WNW/300.5	0.42	18

Executive Summary: Summary By Data Source

AUTH - Authorizations

A search of the AUTH database, dated Sep 2024 has found that there are 1 AUTH site(s) within approximately 0.30 kilometers of the project property.

Site	Address	Distance (m)	Map Key
Jan DeBoer	4;12;55;24;NW AB	0.0	1

PITS - Conglomerate and Waste Management Facilities

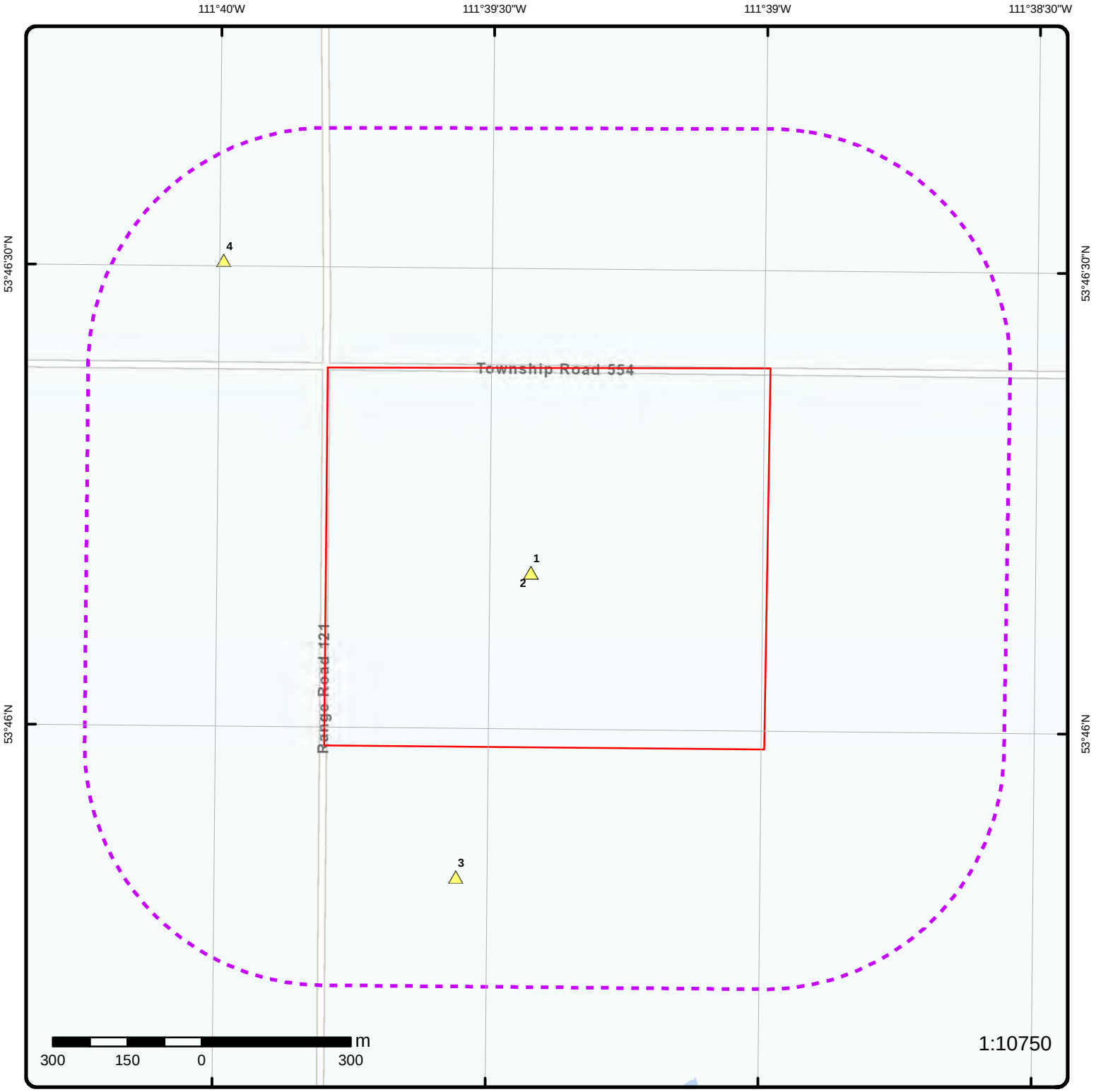
A search of the PITS database, dated 1993-2012 has found that there are 1 PITS site(s) within approximately 0.30 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	County of Two Hills No. 21 AB	262.1	3

WWIS - Alberta Water Well Information Database

A search of the WWIS database, dated 1880-Jul 31, 2024 has found that there are 2 WWIS site(s) within approximately 0.30 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	AB ***Well ID:*** 238076	0.0	2
	AB ***Well ID:*** 270091	300.5	4



Map: 0.3 Kilometer Radius

Order Number: 25032600473

Address: NW-24-55-12 W4M, Brosseau, AB

- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major Arterial; Minor Arterial
- Local Road
- Service Road; Traffic Circle; Ramp
- Rail
- Beach
- Airport
- Industrial Area
- Military Base
- Aircraft Roads
- Native Reservation
- Hospital
- Shopping & Sports Area
- University/College
- Cemetery; Golf Course
- Parkt (National)
- Park (City/County)

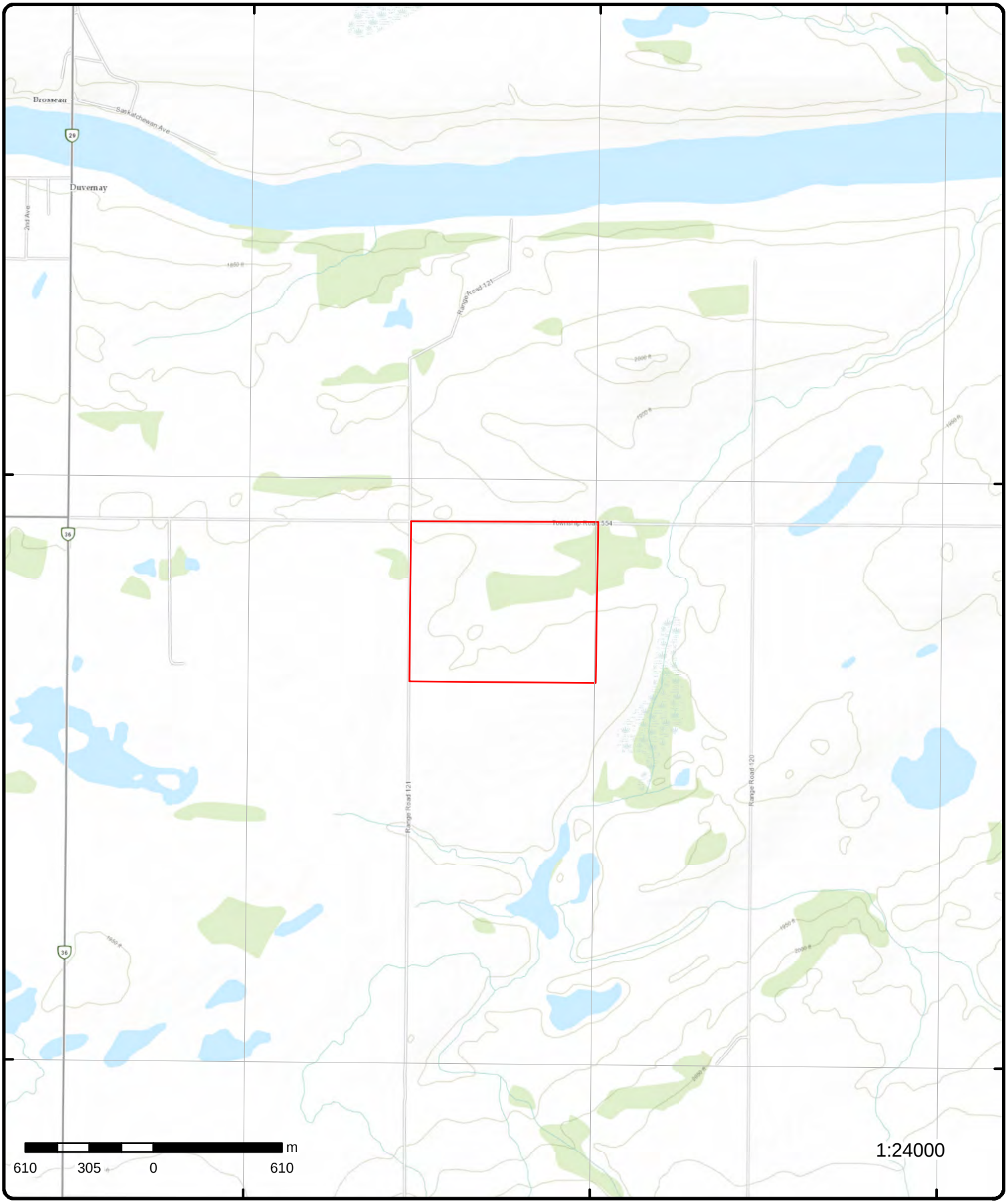
Aerial

Year: 2022

Order Number: 25032600473

Address: NW-24-55-12 W4M, Brosseau, AB

Source: ESRI World Imagery



Topographic Map

Address: NW-24-55-12 W4M, AB

Source: ESRI World Topographic Map

Order Number: 25032600473

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	WSW/0.0	579.0 / 1.06	Jan DeBoer 4;12;55;24;NW AB	AUTH

Legal Land Location: NW 24-055-12-W4
Document Title: Document 00176468-00-00 TWO HILLS/REGISTRATION/DEBOER JAN - F00176468 is held by Jan DeBoer, under the provisions of the Water Act. This Registration is currently issued as of Jun. 07, 2002 and does not expire.
Document Url:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
2	1 of 1	WSW/0.0	579.0 / 1.06	AB	WWIS

Well ID:	238076	**Elevation Source:**	Not Obtained
Driller ID:	24039	**Method of Drilling:**	
Licence No:		**GPS Obtained:**	Not Verified
GIC Well ID:	238076	**Boundary From:**	
GOA Well Tag No:		**Distance North:**	
Elevation (ft):		**Distance South:**	
Depth (ft):		**Distance East:**	
Date Completed:		**Distance West:**	
Proposed Use:		**Additional Desc:**	
Lot:		**Validated?:**	TRUE
Block:		**Submitted?:**	TRUE
Plan:		**Location Locked?:**	TRUE
Type of Work:		**Longitude:**	-111.65704500
Flowing Well:		**Latitude:**	53.76948600
Date Started:		**LSD:**	NW
Water Req Per Day:		**Section:**	24
Gas Present:		**Township:**	55
Oil Present:		**Range:**	12
Flow Rate:		**Meridian:**	4
Drilling Company:		**DLS Coordinates:**	NW-24-55-12-4
Owner Mailing Address:			
Driller Mailing Address:			

Well Reports

Well Report ID:	238076	**Annular Seal Mat:**	Bentonite Chips/Tablets
Well Owner ID:	10498404	**Annular Seal from:**	0.00
Driller ID:	2533726	**Annular Seal to:**	49.00
Drill Company ID:	24039	**Annular Seal Amt:**	
Drill Instance ID:	8335364	**Annular Seal Units:**	
Drill Comp Well ID:		**Drilling Method:**	Rotary
Existing Well ID:		**Drilling Start Dt:**	1994/04/21
Date Received:	1994/05/06	**Drilling End Dt:**	1994/04/21
Type of Work:	New Well	**Pack Type:**	Artificial
Plug Date:		**Pack Grain Size:**	1630
Plug Material Type:		**Pack Amount:**	3.00
Plug Mat Amount:		**Pack Units:**	Bags
Plugged Units:		**Loc Verify Method:**	Not Verified
Well Use:	Stock	**Dist Casing Ground:**	
Other Well Use:		**Artesian Flow?:**	FALSE
Total Depth Drill:	140.00	**Artesian Flow Rate:**	

Finish Well Depth:		***Gas Depth:***	
Casing Material:	Plastic	***Encounter Gas?:***	FALSE
Casing OD:	5.00	***Flow Ctrl Install?:***	FALSE
Casing Thickness:	0.27	***Recommended Rate:***	6.00
Casing Bottom:	52.00	***Recom Intake Depth:***	48.00
Liner Material:		***Pump Installed?:***	FALSE
Liner OD:	0.00	***Pump Install Depth:***	
Liner Thickness:	0.00	***Pump Model:***	
Liner Top:	0.00	***Pump Horsepower:***	
Liner Bottom:	0.00	***Well Disinfected?:***	FALSE
Perforation by:		***Other Log:***	
Screen Material:	Stainless Steel	***Divert Water Src:***	
Screen Size OD:	5.00	***Divert Water Amt:***	
Screen Attachment:	Telescoped	***Diversion Dt/Time:***	
Screen Top Fitting:	Neoprene (Figure K)	***Is Submitted?:***	TRUE
Screen Bot Fitting:	Washdown	***Is Validated?:***	TRUE

Encounter Saline Water?:	FALSE
Saline Water Depth:	
Potability Sample Taken?:	FALSE
Potable Sample Sent to AENV?:	FALSE
Approval Holder Sign Date:	
Drilling Report Given to Owner:	FALSE
Model Output Rating:	
Remedial Action:	
Flow Control Description:	
Pump Type Installed:	
Created by:	
Submitted by:	
Additional Comments:	

Well Owners

Well Owner ID:	10498404
Owner Name:	PARADISE RANCH
PO Box:	719
Address:	TWO HILLS
City:	
Postal Code:	T0B 4K0
Province:	
Country:	

Drillers

Driller ID:	2533726
Last Name:	DRILLER
Middle Initial:	NA
First Name:	UNKNOWN
Journeyman No:	1
Is Active?:	TRUE

Drilling Companies

Starting Well ID:	1420000
Ending Well ID:	1424999
Last Well ID Used:	1422656
Company Name:	LAKELAND DRILLING LTD.
Street Address:	BOX 1388
City:	ST PAUL
Province:	AB
Country:	CA
Postal Code:	T0A 3A0
E-Mail:	gwinfo@gov.ab.ca
Is Active?:	TRUE

Geophysical Logs

Geophysical Log ID: 5340520
Log Type: Electric
Log Taken?: FALSE
Sent to AENV?: FALSE

Geophysical Logs

Geophysical Log ID: 5743595
Log Type: Gamma
Log Taken?: FALSE
Sent to AENV?: FALSE

Boreholes

Borehole ID: 442332
Diameter: 0.000000
From: 0.000000
To: 140.000000

Screen Type

Screen ID: 1097482
From: 52.000000
To: 57.000000
Slot Size: 0.015000

Lithologies

Depth: 52.000000
Water Bearing: FALSE
Colour:
Description:
Material: Clay

Lithologies

Depth: 23.000000
Water Bearing: FALSE
Colour:
Description:
Material: Sand

Lithologies

Depth: 56.000000
Water Bearing: FALSE
Colour:
Description:
Material: Sandstone

Lithologies

Depth: 140.000000
Water Bearing: FALSE
Colour:
Description:

Material: Shale

Pump Tests

Pump Test ID: 10233140
Test Date: 1994/04/21
Start Time: 1900/01/18 07:12:00
Taken from Top of Casing: FALSE
Static Water Level: 22.10
End Water Level: 45.00
Water Removal Type: Pump
Water Removal Rate: 6.00
Removal Depth from: 48.00
Reason for Short Test:

Pump Test Items

Pump Test Item ID: 7697560
Minutes: 2.00
Pumping Depth: 37.663200
Recovery Depth: 37.138600

Pump Test Items

Pump Test Item ID: 7697561
Minutes: 3.00
Pumping Depth: 42.322000
Recovery Depth: 33.956200

Pump Test Items

Pump Test Item ID: 7697566
Minutes: 8.00
Pumping Depth:
Recovery Depth: 27.001100

Pump Test Items

Pump Test Item ID: 7697564
Minutes: 6.00
Pumping Depth:
Recovery Depth: 28.739900

Pump Test Items

Pump Test Item ID: 7697562
Minutes: 4.00
Pumping Depth: 45.373100
Recovery Depth: 31.659800

Pump Test Items

Pump Test Item ID: 7697565
Minutes: 7.00
Pumping Depth:
Recovery Depth: 27.854100

Pump Test Items

Pump Test Item ID: 7697568
Minutes: 10.00
Pumping Depth:
Recovery Depth: 25.918400

Pump Test Items

Pump Test Item ID: 7697570
Minutes: 14.00
Pumping Depth:
Recovery Depth: 24.278000

Pump Test Items

Pump Test Item ID: 7697572
Minutes: 20.00
Pumping Depth:
Recovery Depth: 22.867200

Pump Test Items

Pump Test Item ID: 7697558
Minutes: 0.00
Pumping Depth: 22.145300
Recovery Depth:

Pump Test Items

Pump Test Item ID: 7697569
Minutes: 12.00
Pumping Depth:
Recovery Depth: 24.966900

Pump Test Items

Pump Test Item ID: 7697563
Minutes: 5.00
Pumping Depth:
Recovery Depth: 30.019400

Pump Test Items

Pump Test Item ID: 7697567
Minutes: 9.00
Pumping Depth:
Recovery Depth: 26.344900

Pump Test Items

Pump Test Item ID: 7697559
Minutes: 1.00
Pumping Depth: 31.167600
Recovery Depth: 41.666100

Pump Test Items

Pump Test Item ID: 7697571
Minutes: 16.00
Pumping Depth:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Recovery Depth: 23.753000

Pump Test Items

Pump Test Item ID: 7697573
Minutes: 25.00
Pumping Depth:
Recovery Depth: 22.145400

---

3 | **1 of 1** | **SSW/262.1** | **587.3 / 9.37** | **County of Two Hills No. 21 AB** | **PITS**

Certificate NO:
Status: Decommissioning
Status Date: 23-Feb-95
Effective Date:
Expiry Date:
Facility Name: WERENKA FAMILY FARMS LTD. PIT
Description:
Operator:
Mailing Address:

Approval Type:
DLS: 5-24-55-12-4
Lot:
Block:
Plan:

---

4 | **1 of 1** | **WNW/300.5** | **578.4 / 0.42** | **AB** | **WWIS**

Well ID: 270091
Driller ID: 24038
Licence No:
GIC Well ID: 270091
GOA Well Tag No:
Elevation (ft): 1876.00000000
Depth (ft):
Date Completed:
Proposed Use:
Lot:
Block:
Plan:
Type of Work:
Flowing Well:
Date Started:
Water Req Per Day:
Gas Present:
Oil Present:
Flow Rate:
Drilling Company:
Owner Mailing Address:
Driller Mailing Address:

Elevation Source: Estimated
Method of Drilling:
GPS Obtained: Map
Boundary From:
Distance North:
Distance South:
Distance East:
Distance West:
Additional Desc:
Validated?: TRUE
Submitted?: TRUE
Location Locked?: TRUE
Longitude: -111.66651800
Latitude: 53.77509900
LSD: 1
Section: 26
Township: 55
Range: 12
Meridian: 4
DLS Coordinates: 1-26-55-12-4

Chemical Analysis

Chem Analysis ID: 2059037
Well Report ID: 270091
Sample No: 9885
Sample Date: 1981/10/20
Analysis Date: 1981/11/17
Laboratory: AE
Water Level: 50.000000
Aquifer:
Remarks:

Analysis Items

Element Name: Calcium
Element Symbol: CA
Decimal Places: 4
Value: 4.999980

Analysis Items

Element Name: Magnesium
Element Symbol: MG
Decimal Places: 4
Value: 4.003072

Analysis Items

Element Name: Bicarbonate
Element Symbol: HCO3
Decimal Places: 4
Value: 808.081882

Analysis Items

Element Name: total Kjeldahl nitrogen
Element Symbol: TKN
Decimal Places: 4
Value: 0.000000

Analysis Items

Element Name: Total Dissolved Solids
Element Symbol: TDS
Decimal Places: 0
Value: 962.000000

Analysis Items

Element Name: Total Hardness
Element Symbol: TH
Decimal Places: 4
Value: 26.000000

Analysis Items

Element Name: Ion Balance
Element Symbol: IONBAL
Decimal Places: 4
Value: 0.910000

Analysis Items

Element Name: Total Alkalinity
Element Symbol: TA
Decimal Places: 4
Value: 678.000000

Analysis Items

Element Name: Iron
Element Symbol: FE

Decimal Places: 4
Value: 0.020000

Analysis Items

Element Name: Hydroxide
Element Symbol: OH
Decimal Places: 4
Value: 0.000000

Analysis Items

Element Name: Fluoride
Element Symbol: F
Decimal Places: 4
Value: 0.380000

Analysis Items

Element Name: Potassium
Element Symbol: K
Decimal Places: 4
Value: 2.352000

Analysis Items

Element Name: Sulphate
Element Symbol: SO4
Decimal Places: 4
Value: 69.100460

Analysis Items

Element Name: Carbonate
Element Symbol: CO3
Decimal Places: 4
Value: 9.000000

Analysis Items

Element Name: Nitrate plus Nitrite
Element Symbol: NO2_NO3_N
Decimal Places: 4
Value: -0.050400

Analysis Items

Element Name: Chloride
Element Symbol: CL
Decimal Places: 4
Value: 110.156500

Analysis Items

Element Name: Total Phosphorus
Element Symbol: TP
Decimal Places: 4
Value: 0.000000

Analysis Items

Element Name:	pH
Element Symbol:	PH
Decimal Places:	2
Value:	8.500000

Analysis Items

Element Name:	Sodium
Element Symbol:	NA
Decimal Places:	4
Value:	365.999000

Analysis Items

Element Name:	Silica
Element Symbol:	SIO2
Decimal Places:	4
Value:	8.200000

Analysis Items

Element Name:	Electrical Conductivity
Element Symbol:	EC
Decimal Places:	0
Value:	1750.000000

Well Reports

Well Report ID:	270091	***Annular Seal Mat:***	Puddled Clay
Well Owner ID:	10563679	***Annular Seal from:***	0.00
Driller ID:	2533726	***Annular Seal to:***	10.00
Drill Company ID:	24038	***Annular Seal Amt:***	
Drill Instance ID:	8337908	***Annular Seal Units:***	
Drill Comp Well ID:		***Drilling Method:***	Bored
Existing Well ID:		***Drilling Start Dt:***	1981/07/10
Date Received:	1981/09/11	***Drilling End Dt:***	1981/07/11
Type of Work:	New Well	***Pack Type:***	Gravel
Plug Date:		***Pack Grain Size:***	
Plug Material Type:		***Pack Amount:***	0.00
Plug Mat Amount:		***Pack Units:***	
Plugged Units:		***Loc Verify Method:***	Map
Well Use:	Domestic	***Dist Casing Ground:***	
Other Well Use:		***Artesian Flow?:***	FALSE
Total Depth Drill:	72.00	***Artesian Flow Rate:***	
Finish Well Depth:		***Gas Depth:***	
Casing Material:	Galvanized Steel	***Encounter Gas?:***	FALSE
Casing OD:	30.00	***Flow Ctrl Install?:***	FALSE
Casing Thickness:	0.07	***Recommended Rate:***	0.00
Casing Bottom:	72.00	***Recom Intake Depth:***	0.00
Liner Material:		***Pump Installed?:***	FALSE
Liner OD:	0.00	***Pump Install Depth:***	
Liner Thickness:	0.00	***Pump Model:***	
Liner Top:	0.00	***Pump Horsepower:***	
Liner Bottom:	0.00	***Well Disinfected?:***	FALSE
Perforation by:		***Other Log:***	
Screen Material:		***Divert Water Src:***	
Screen Size OD:	0.00	***Divert Water Amt:***	
Screen Attachment:		***Diversion Dt/Time:***	
Screen Top Fitting:		***Is Submitted?:***	TRUE
Screen Bot Fitting:		***Is Validated?:***	TRUE

Encounter Saline Water?: FALSE
Saline Water Depth:
Potability Sample Taken?: FALSE
Potable Sample Sent to AENV?: FALSE
Approval Holder Sign Date:
Drilling Report Given to Owner: FALSE
Model Output Rating:
Remedial Action:
Flow Control Description:
Pump Type Installed:
Created by:
Submitted by:
Additional Comments:

Well Owners

Well Owner ID: 10563679
Owner Name: MAILLOUX, N C
PO Box: 12
Address: RR1, TWO HILLS
City:
Postal Code: T0B 4K0
Province:
Country:

Drillers

Driller ID: 2533726
Last Name: DRILLER
Middle Initial: NA
First Name: UNKNOWN
Journeyman No: 1
Is Active?: TRUE

Drilling Companies

Starting Well ID:
Ending Well ID:
Last Well ID Used:
Company Name: KAEHN VICTOR A
Street Address:
City:
Province:
Country:
Postal Code:
E-Mail:
Is Active?: FALSE

Geophysical Logs

Geophysical Log ID: 5743598
Log Type: Gamma
Log Taken?: FALSE
Sent to AENV?: FALSE

Geophysical Logs

Geophysical Log ID: 5340523
Log Type: Electric
Log Taken?: FALSE
Sent to AENV?: FALSE

Boreholes

Borehole ID:	442335
Diameter:	0.000000
From:	0.000000
To:	72.000000

Lithologies

Depth:	72.000000
Water Bearing:	FALSE
Colour:	
Description:	
Material:	Sandstone

Lithologies

Depth:	31.000000
Water Bearing:	FALSE
Colour:	Brown
Description:	
Material:	Till

Lithologies

Depth:	60.000000
Water Bearing:	FALSE
Colour:	Blue
Description:	
Material:	Till

Lithologies

Depth:	69.000000
Water Bearing:	TRUE
Colour:	
Description:	Water Bearing
Material:	Sand

Pump Tests

Pump Test ID:	10272014
Test Date:	1981/07/11
Start Time:	1900/01/12
Taken from Top of Casing:	FALSE
Static Water Level:	50.00
End Water Level:	
Water Removal Type:	
Water Removal Rate:	3.50
Removal Depth from:	0.00
Reason for Short Test:	

Unplottable Summary

Total: 0 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal

Unplottable Report

No unplottable records were found that may be relevant for the search criteria.

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Well Licenses: Provincial AERW

Locations of Well Licenses made available by the Alberta Energy Regulator (AER) as ST37. Includes Active, Suspended, Abandoned, Drilled and Cased Oil, Gas, Crude Bitumen well licenses, as well as Observation, Injection, Disposal, and Undefined well licences.

Government Publication Date: Dec 2024

Agriculture and Fisheries - Certificates of Approval: Provincial AGR

This database contains approvals for processes pertaining to drying of alfalfa/forage/peat, feedlots, fish farms and feed/seed mills. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Alberta Oil and Gas Wells: Provincial AOGW

The Alberta Energy Utilities Board - now the Alberta Energy Regulator (AER) - maintained a database of oil and gas wells drilled in the province of Alberta. The database contains information on well name, licensee name, license number, location, status, total well depth and date of final drilling. Please note that this database will not be updated, information on wells drilled after September 2003 can be found in the Oil and Gas Wells (OGW) database under the 'Private Source Database' section.

Government Publication Date: 1883-Sept 2003*

Authorizations: Provincial AUTH

Locations associated with Water Act and Environmental Protection and Enhancement Act (EPEA) documents issued by Alberta Environment and Parks (AEP). Includes approvals, licences, registrations, authorizations, permits, and certificates. This list is made available by the Alberta Environment and Parks (AEP).

Government Publication Date: Sep 2024

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Apr 30, 2024

Waste Management Facilities - Certificates of Approval: Provincial CAWD

This database contains approvals for processes pertaining to waste management facilities (hazardous waste manifesting, waste disposal/incineration/open burning/processing/storage/treatment). Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993 - May 2024

Commercial Activity Risk - City of Calgary Business Licenses: Provincial CBL

List of locations with Business Licences for the follow commercial activities: apartment building with 4 or more stories, auto-body shop, fabric cleaning, manufacturing, motor vehicle dealerships and service/repair, and salvage yard/auto wrecking. Data made available by the City of Calgary.

Government Publication Date: Oct 31, 2024

Dry Cleaning Facilities: Federal CDRY

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2022

Confined Feeding Operations: Provincial CFO

In 1991, the Natural Resources Conservation Board (NRCB) was created to review applications for approval of major natural resource development projects in Alberta. In January 2002, the NRCB was given the responsibility to regulate the Confined Feeding Operation industry. The Agricultural Operation Practices Act defines a confined feeding operation to be: "an activity on land that is fenced or enclosed or within buildings where livestock are confined for the purpose of growing, sustaining, finishing or breeding by means other than grazing, but does not include seasonal feeding and bedding sites." Under the AOPA regulations, all new or expanding confined feeding operations (CFOs) or manure storage facilities are required to make an application for Approval, Registration or Authorization to the NRCB before construction or expansion commences. Geographic coordinates were provided in DLS (Dominion Land Survey) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the Quarter section only.

Government Publication Date: 2002-Sep 2024

Chemical Processing Operations - Certificates of Approval: Provincial CHEM

This database contains approvals for processes pertaining to the manufacturing and use of chemical products and pesticides. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Chemical Register: Private CHM

This database includes a listing of locations of facilities within the Province or Territory that either manufacture and/or distributes chemicals.

Government Publication Date: 1999-Apr 30, 2024

Compost Facilities: Provincial CMPS

A list of compost facility registrations made available by Alberta Environment and Parks (AEP). Composting facilities operating under a registration are required to follow the requirements in the Code of Practice for Compost Facilities, which outlines the minimum requirements for the design, construction, operation, and reclamation of compost facilities that accept up to 20,000 tonnes of feedstock per year.

Government Publication Date: Dec 31, 2019

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 -Feb 2025

Compliance and Convictions: Provincial CONV

This listing of enforcement actions under the Alberta Environment and Protected Areas' current legislation is maintained by the Government of Alberta. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Unfortunately, from state of the data, the location that the address pertains to cannot be confirmed.

Government Publication Date: 1993-Dec 2022

Fuel Sales and Storage: Provincial CTNK

List of locations with Business Licences for fuel sales and storage. Data made available by the City of Calgary.

Government Publication Date: Oct 31, 2024

Approved Oilfield Waste Management Facilities: Provincial DRWD

A list of approved first and third party oilfield waste management facilities. First-party receivers can only accept upstream oilfield waste generated by one oil and gas company, but can come from various sites. Third-party receivers can accept upstream oilfield waste from various sites and various generators. This data is made available by the Alberta Energy Regulator (AER).

Government Publication Date: Aug 2024

Enforcement Action Summary: Provincial EAS

This database maintained by the Alberta Energy Regulator (AER) - formerly the Energy Resources Conservation Board (ERCB) - summarizes high risk enforcement action 1, high risk enforcement action 2 (persistent noncompliance), high risk enforcement action 3 (failure to comply or demonstrated disregard), low risk enforcement action - global REFER and legislative/regulatory enforcement action. Fields will include licensee/company name, non-compliance event, date of enforcement, location, etc.

Government Publication Date: 2007-Feb 2025

Commercial Activity Risk - City of Edmonton Business Licenses: Provincial EBL

List of locations with Business Licenses for the follow commercial activities: cannabis processing or cultivation, construction vehicle and equipment sales/rentals, livestock operation, general industrial, and vehicle repair. Data is made available by the City of Edmonton.

Government Publication Date: Jul 31, 2024

Environmental Compliance Prosecutions: Provincial ECMP

A list of concluded prosecutions made under environmental legislation. Listing made available by the Government of Alberta. This is not a complete and comprehensive list of environmental compliance outcomes: in Alberta, enforcement tools include warning letters, violation tickets, administrative penalties and orders, in addition to prosecutions.

Government Publication Date: Sep 30, 2024

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Aug 31, 2024

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Alberta Environment & Parks Storage Tanks: Provincial EPST

List of storage tanks under the purview of Alberta Environment and Parks.

Government Publication Date: Jul 31, 2016

Environment Protection & Enhancement Act and Water Act Public Notices: Provincial EPWN

A list of Public Notices of Applications, Decisions, and Revisions pertaining to applications made to Alberta Environment and Parks under the Water Act (WA) and Alberta Environment Protection and Enhancement Act (EPEA). Dominion Land Survey (DLS) locations provided by the source are subject to accuracy limitations inherent to the DLS system.

Government Publication Date: Sep 30, 2022

Environmental Site Assessment Repository: Provincial ESAR

Environmental site assessments determine the quality of soil and groundwater of a site, particularly at retail gas stations and other commercial and industrial sites. A site assessment does not necessarily mean a site is, or ever was, contaminated. Alberta's Environmental Site Assessment Repository (ESAR) is an online, searchable database that provides scientific and technical information about assessed and/or reclaimed sites throughout Alberta. Search Alberta's ESAR using meridian, range, township, and section values at http://www.esar.alberta.ca/esarmain.aspx to gain access to reclamation certificates and/or associated files (applications, reports).

Government Publication Date: 1960-Nov 2024

Edmonton Vehicle Fueling Stations: Provincial ETNK

A list of sites that have a City of Edmonton business license for Vehicle Fueling Stations. Listing is made available by the City of Edmonton.

Government Publication Date: Jul 31, 2024

Facility List: Provincial FAC

This database contains a complete list of new, active and suspended facilities in Alberta including batteries, gas plants, meter stations, and other facilities. Information provided includes: facility id, facility name, operator name, sub type description, location, facility l license no, and operational status; now includes EDCT (Energy Development Category Type) type and description. Made available by the Alberta Energy Regulator (AER) - formerly the Energy Resources Conservation Board (ERCB).

Government Publication Date: Up to Dec 31, 2024

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government. Includes fire training sites and sites at which Per- and Polyfluoroalkyl Substances (PFAS) are a concern.

Government Publication Date: Jun 2000-Nov 2024

AER Incidents & Spills: Provincial FIS

Received from the Alberta Energy Regulator (AER) - formerly the ERCB (Energy Resources Conservation Board) and EUB (Energy Utilities Board) - this database, which used to be called EISL (Environmental Information System Listing), contains reported environmental incidents beginning in 1975. Descriptions include noise infractions, air quality emissions, oil spills and failures for pipelines, wells, plants, and batteries. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1975 - Dec 2024

Food Processing Operations - Certificates of Approval: Provincial FOOD

This database contains approvals for processes pertaining to the manufacturing of food products. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Federal Identification Registry for Storage Tank Systems (FIRSTS): Federal FRST

A list of federally regulated Storage tanks from the Federal Identification Registry for Storage Tank Systems (FIRSTS). FIRSTS is Environment and Climate Change Canada's database of storage tank systems subject to the Storage Tank for Petroleum Products and Allied Petroleum Products Regulations. The main objective of the Regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and aboriginal lands. Storage tank systems that do not have a valid identification number displayed in a readily visible location on or near the storage tank system may be refused product delivery.

Government Publication Date: Oct 31, 2021

Fuel Storage Tanks: Provincial FST

List of tank sites in unaccredited areas of the province. This includes active tank sites, sites with tanks temporarily out of service, and sites where tanks have been removed from the ground. The information in this database was collected according to Alberta Regulation AR 291/95 Storage Tank System Management and AR 52/98 Fire Code, which was formerly the Alberta Fire Code Regulation, 1992 (AR 204/92). The Petroleum Tank Management Association of Alberta (PTMAA) regulated storage tanks in unaccredited areas of Alberta from 1994 until June 2020, at which point the Safety Codes Council assumed responsibility for services related to storage tank management.

Government Publication Date: 1985-Sep 2024

Waste Generators Summary: Provincial GEN

List of hazardous waste generators registered with Alberta Environment and Protected Areas (previously Alberta Environment and Parks). Under Alberta's Waste Control Regulation, Alta. Reg. 192/96, a generator is a person who consigns hazardous waste for storage, transport, treatment or disposal. As of 2007, the Government of Alberta no longer provides detailed information on each waste generator, such as approval number, class, and class description. Address information includes head office as well as operational locations, thus locations may or may not coincide with the physical location of the waste-generating activity.

Government Publication Date: 1993-Oct 2023

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Apr 2024

Gas Processing Plants: Provincial GPP

The Alberta Energy Regulator (AER) - formerly the ERCB (Energy Resources Conservation Board) - has an inventory of all Gas Processing Plants in Alberta, with information such as location, names of plant, facility type, operator name, facility license, design capacities, etc.

Government Publication Date: Oct 2016-Dec 31, 2024

Alberta Environment's H.E.L.P. (Help End Landfill Pollution) Program Database: Provincial HELP

The H.E.L.P. Data Tracking and Management Control System was created to provide tracking and management capabilities of industrial landfills in Alberta for the Department of Environment. Detailed information including company name, location, type of landfill, priority, score, status, use and much more is included in this database.

Government Publication Date: June 1988*

Horizontal Wells: Provincial HORW

A horizontal well is created by drilling the lower part of the wellbore parallel to the zone of interest. These wells must be drilled directionally at an angle exceeding 80 degrees. Horizontal drilling can help increase resource recovery while minimizing surface impacts. While horizontal drilling has been used for decades, technological improvements have made it possible to combine horizontal drilling with hydraulic fracturing to help coax oil and natural gas out of tight rock. Today, more than half of western Canada's wells are being drilled horizontally. Horizontal well list includes: well location, licence number, well name, licensee name, final drilling date, total depth, and true vertical depth. List is made available by the Alberta Energy Regulator (AER) - formerly the Energy Resources Conservation Board (ERCB).

Government Publication Date: Mar 2015-Aug 31, 2024

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Identification and Verification of Active and Inactive Land Disposal Sites: Provincial LDS

In late 1981, Environment Canada and Alberta Environment initiated a project to identify and verify land disposal sites in the province of Alberta. A point scoring system was used to classify the sites into potential priority 1, priority 2 or priority 3 groups on the basis of the type of waste received at the sites and the site environment. Sites that, according to available information, may pose a hazard to public health and safety or the environment are classified as potential priority 1 sites.

Government Publication Date: Oct 1982*

Land Disposal Sites on Indian Reserves: Provincial LDSI

In late 1981, Environment Canada and Alberta Environment initiated a project to identify and verify land disposal sites in the province of Alberta. This database specifically identifies land disposal sites on Indian Reserves. Information on each site is limited to: location, band, size and general comments.

Government Publication Date: Oct 1982*

Landfill Registrations: Provincial LNDF

A list of landfill registrations made available by Alberta Environment and Parks (AEP). Landfills operating under a registration are required to follow the requirements in the Code of Practice for Landfills, which outlines the minimum requirements for the construction, operation and reclamation of landfills that accept 10,000 tonnes or less per year of non-hazardous and inert waste.

Government Publication Date: Mar 31, 2020

Lumber Related Operations - Certificates of Approval: Provincial LUM

This database contains approvals for processes pertaining to the manufacturing of wood products, pulp and paper including the associated water treatment processes. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Metals, Minerals and Building Materials Operations - Certificates of Approval: Provincial MMB

This database contains approvals for processes pertaining to the manufacturing of building materials, metals, and mineral products. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Mineral Occurrences: Provincial MNR

The AMDO (Alberta Mineral Deposits and Occurrences) application was created by the Minerals and Coal Geoscience Section of the Alberta Geological Survey as a database for mineral deposits in Alberta in the early 1990s. This is a one time inventory and will not be updated.

Government Publication Date: 1993-2003*

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

PTMAA Non-Compliant Storage Tanks: Provincial NCST

The Alberta Fire Code requires that storage tanks be registered. Tanks may not be registered because they do not meet minimum equipment standards or the owners have not made the annual registration application or paid the necessary registration fees. Some tank owners have installed tanks without a permit. This source contains information on facilities which have tanks that have ceased to be registered or have never been registered. It is maintained and updated by the Petroleum Tank Management Association of Alberta (PTMAA).

Government Publication Date: Sep 2016-May 31, 2020

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Nov 2023

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the Canada Energy Regulator (CER) - previously the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Dec 31, 2024

National Energy Board Wells: Federal NEBP

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory: Federal NPR2

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of pollutant releases (to air, water and land), disposals, and transfers for recycling. The inventory, managed by Environment and Climate Change Canada, tracks over 300 substances. Under the authority of the Canadian Environmental Protection Act (CEPA), owners or operators of facilities that meet published reporting requirements are required to report to the NPRI.

Government Publication Date: Feb 2024

National Pollutant Release Inventory - Historic: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances. This data holds historic records; current records are found in NPR2.

Government Publication Date: 1993-May 2017

Operating and Abandoned Mines: Provincial OAM

This data is based on the 2001 edition (revised in 2003), published by the Alberta Energy and Utilities Board (EUB) now the Alberta Energy Regulator (AER). It was a one time inventory of Operating and Abandoned Coal Mines in Alberta. In 1905, Alberta began to catalogue coal mines by assigning a unique number to each operation. This database will provide information on location, mine #, mine name, mine company, life span, amount of coal produced, depth, thickness and other important information concerning the mine.

Government Publication Date: 2001, 2003*

Oil and Gas Facilities - ST102 & ST50: Provincial OGF

This list of batteries, gas plants, meter stations, and other facilities in the province of Alberta, made available as Reports ST102 (Parts A and B) and ST50 (A and B), is provided by the Alberta Energy Regulator (AER).

Government Publication Date: Dec 31, 2024

Oil and Gas Wells: Private OGWW

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-May 31, 2024

Enforcement Orders: Provincial ORD

List of enforcement orders issued by Alberta Environment and Parks (AEP). AEP encourages compliance with environmental legislation. When individuals, companies, or municipalities fail to comply with legislation, the department has several options to ensure compliance. This listing, made available by the Alberta Government, includes Compliance Orders, Enforcement Orders, Environmental Protection Orders, Orders to Vacate, and Water Management Orders.

Government Publication Date: Dec 31, 2024

Alberta Orphan Wells: Provincial ORP

The Orphan Well Association (OWA) maintains lists of properties designated as orphan by the Alberta Energy Regulator (AER). Includes the location, well ID, licensee name and license number of orphan wells, sites, and facilities that have been identified for the purpose of abandonment, suspension, decommission, and reclamation. Legacy wells under long term care and custody are excluded. Please note that the OWA Orphan List also includes properties with production information from the AER. The OWA makes no representation, warranties, or guarantees, expressed or implied, for the fitness of the data with respect to its use.

Government Publication Date: Jan 2007-Feb 29, 2024

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Petrochemical, Coal and Gas Operations - Certificates of Approval: Provincial PCG

This database contains approvals for processes pertaining to petroleum, coal, and oil and gas processing. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Pesticide Register: Provincial PES

This is a list of Registered Pesticide Vendors in Alberta (retail and wholesale). The pesticide vendor list is comprised of vendors who have both audited AWSA pesticide storage facilities as part of their operation, and those vendors that do not have an audited AWSA pesticide storage facilities. Non-audited retail and wholesale vendors may be selling products that are not covered by the AWSA program, or may be utilizing external AWSA pesticide warehouses. Registration numbers and expiry dates are identified for each operation. If a registration number is not present, the operation's vendor registration is in the process of renewal.

Government Publication Date: 1998-Aug 2015

NPRI Reporters - PFAS Substances: Federal PFCH

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per - and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This listing of PFAS substance reporters includes those NPRI facilities that reported substances that are found in either: a) the Comprehensive Global Database of PFASs compiled by the Organisation for Economic Co-operation and Development (OECD), b) the US Environmental Protection Agency (US EPA) Master List of PFAS Substances, c) the US EPA list of PFAS chemicals without explicit structures, or d) the US EPA list of PFAS structures (encompassing the largest set of structures having sufficient levels of fluorination to potentially impart PFAS-type properties).

Government Publication Date: Feb 2024

Potential PFAS Handlers from NPRI: Federal PFHA

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per - and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This list of potential PFAS handlers includes those NPRI facilities that reported business activity (NAICS code) included in the US Environmental Protection Agency (US EPA) list of Potential PFAS-Handling Industry Sectors, further described as operating in industry sectors where literature reviews indicate that PFAS may be handled and/or released. Inclusion of a facility in this listing does not indicate that PFAS are being manufactured, processed, used, or released by the facility - these are facilities that potentially handle PFAS based on their industrial profile.

Government Publication Date: Feb 2024

Conglomerate and Waste Management Facilities: Provincial PITS

This database contains approvals for processes pertaining to the use of gravel pits, sand pits, and clay pits. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Alberta Private Sewage Disposal Permits: Provincial PSP

These permits are private sewage disposal permits that have been issued to owners and contractors. They would include various types of installations including holding tanks, septic tanks, packaged treatment plants, sand filters, fields, mounds, lagoons and open discharges. In 2003 Alberta Municipal Affairs started collecting information and issuing permits using an electronic permitting system. These records include all private sewage disposal permits within the jurisdiction of Alberta Municipal Affairs.

Government Publication Date: 2003-2013

PTMAA Approved (Open) Permits: Provincial PTAP

The Petroleum Tank Management Association of Alberta maintains a list of open permits it has issued within its jurisdiction. Prior to installing, removing, or altering tanks, storage tanks owners must receive approval in the form of a permit from the Authority Having Jurisdiction (in this case, PTMAA).

Government Publication Date: Apr 2016-Apr 30, 2020

Hazardous Waste Receivers Summary: Provincial REC

A waste receiving location is any site or facility to which waste is transferred through a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents receivers of regulated wastes under Alberta's Waste Control Regulation, Alta. Reg. 192/96. As of 2007, Alberta Environment no longer provides detailed information on each waste receiver, such as approval number, class, and class description.

Government Publication Date: 1993-Aug 2018

Alberta Recyclers: Provincial RECY

List of Alberta Recyclers under the following recycling programs: electronics processors, paint processors, tire processors, and used oil processors. Listing made available by the Alberta Recycling Management Authority (ARMA).

Government Publication Date: Oct 2023

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Apr 30, 2024

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Special Operation Classifications - Certificates of Approval: Provincial SPEC

This database contains approvals for processes pertaining to classifications listed as special operations (i.e. locations owned/operated by municipalities, operations that involve the presence of pesticides). Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Inventory of Waste Disposal Sites: Private WDS

This one time inventory is a compilation of information collected from each region and pertains to active, regulated waste disposal sites within the province of Alberta. In the past, waste disposal sites were registered with both regional and health offices. That process was dissolved and regional landfills were developed. There is no central source of this information. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1998*

Wastewater Operations: Provincial WSTE

This database contains approvals for processes pertaining to wastewater treatment systems. Please note that, as per the source of this database, some of the geographic information may pertain to a head office or mailing address and not necessarily the site of operations to which the certificate applies. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location. Therefore, locations will be accurate to the quarter section only.

Government Publication Date: 1993-2012

Alberta Water Well Information Database: Provincial WWIS

List of wells in the Alberta Water Well Information Database made available by Alberta Environment and Parks, containing approximately 500,000 records with nearly 5,000 drilling reports added annually. Some geographic coordinates have been provided in ATS (Alberta Township Survey system) format but do not contain offsets that are necessary to pinpoint a specific location; some locations will be accurate to the quarter section only. The Province of Alberta advises that the data may not be fully checked, and disclaims all responsibility for its accuracy. This data was previously collected from the Groundwater Information Center of the Natural Resource Service.

Government Publication Date: 1880-Jul 31, 2024

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX C – ESAR SEARCH RESULTS

#300, 4503 Brisbois Drive. NW, Calgary, AB T2L 2G3
P: 403.648.2772 | F: 403.648.2767 | E: core@coregeomatics.com | www.coregeomatics.com

Skip To Navigation

Skip To Content

Alberta Environment and Protected Areas

Alberta.ca > Environment and Protected Areas > Land - Industrial > Programs / Services > Environmental Site Assessment Repository (ESAR)

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- Waste
- Water
- Newsroom
- About Us

Environmental Site Assessment Repository (ESAR)

- Search Form
- Map Search
- Download Complete ESA list (Updated Weekly)

ATS Search

► SHOW HELP

W [4] - [12] - [55] - [24] -[[NW]] -[[ ]] Search

Format: MER-RGE-TWP-SEC-[QTR]-[LSD]
[ ] denotes that the quarter section and legal subdivision are optional.

PBL Search

► SHOW HELP

Plan: [ ] Block: [ ] Lot: [ ] Search

Format: Plan - [Block] - [Lot]
[ ] denotes that the Block and/or Lot are optional.

Note:
An ESA document does not necessarily mean the site is, or ever was, contaminated. Please refer to the studies and reports to determine the condition of the site.
Place Name, **Street Address**, and **Coordinate Searches** are avaliable on the map page

-A marker identified as ESA is the location of a site where Environment and Protected Areas has received scientific and/or technical information

-A marker identified as REC is the location of a site where Environment and Protected Areas has received an application for a reclamation certificate.

Comments and questions can be directed to:
ESAR-Support@gov.ab.ca

Search Results

0 Result(s)

No results found for this ATS.

Document Results

Document Delivery

◉ Download ○ Email [ ]

Deliver Selected Documents

1.2.02.0 Alberta Environment and Protected Areas

- Government Expense Disclosures

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Alberta Energy Regulator | Alberta Environment and Protected Areas

- Using This Site
- Ministries |
- Contact Government |
- Government of Alberta Home |

Authorization Viewer **Traditional Agriculture Registration Viewer** **Public Notices Viewer** **Help**

Authorization Viewer - Search Results

For Water Act approvals, amendments and Code of Practice notifications issued by the Alberta Energy Regulator during or after 2018, please refer to the following link OneStop Application Query Tool (aer.ca).

The Search Used the Following Values:	
Legal Land Location:	NW 24-055-12-W4
Act / Document Type:	Water Act, EPEA
Show Inactive Authorizations:	Yes

The resulting Authorizations based on the search criteria will be displayed below. A will appear next to the Authorization when documentation is available for viewing or downloading. Please click Viewer Help if you encounter problems viewing the Authorization document.

1 Result(s)

	Document 00176468-00-00 TWO HILLS/REGISTRATION/DEBOER JAN - F00176468 is held by Jan DeBoer, under the provisions of the *Water Act*. This Registration is currently issued as of Jun. 07, 2002 and does not expire.

Clear & Return

Comments regarding the Authorization Viewer page may be directed to the Regulatory Programs Branch RAC.Environment@gov.ab.ca.

Alberta Environment and Protected Areas

Registration for Traditional Agriculture User
Under The *Water Act*

Land Location: NW 24-055-12-W4

File No.: 00176468

Registration No.: 00176468-00-00

Water Source	Amount Of Water (m^3/year)	Priority No
Unnamed Aquifer - Unclassified	693	1994-05-01-034
Unnamed Lake - Unclassified	693	1994-05-01-035

The information on this printout is derived from the Environment and Protected Areas official database.

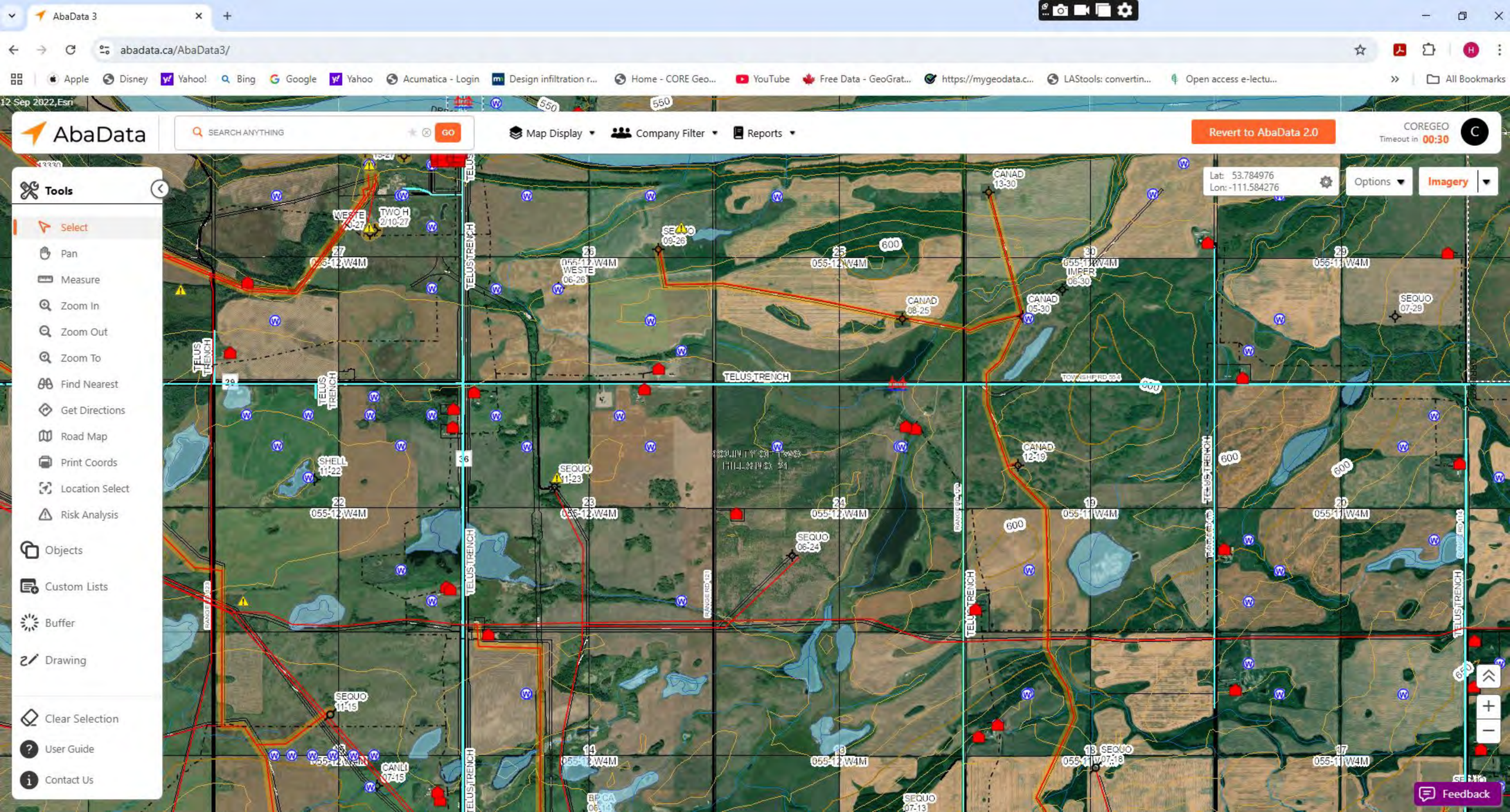
The original paper copy resides in the offices of Environment and Protected Areas. In the event of a discrepancy between this printout and the original paper registration, the original paper registration shall take precedence.

If the legal land location has been subdivided, please contact the closest regional office of Environment and Protected Areas for confirmation of the registration.

To contact a regional office of Environment and Protected Areas, please see the Viewer Help tab.

APPENDIX D – ABADATA SEARCH RESULTS

#300, 4503 Brisbois Drive. NW, Calgary, AB T2L 2G3
P: 403.648.2772 | F: 403.648.2767 | E: core@coregeomatics.com | www.coregeomatics.com


AbaData 3
abadata.ca/AbaData3/
Apple
Disney
Yahoo!
Bing
Google
Yahoo
Acumatica - Login
Design infiltration r...
Home - CORE Geo...
YouTube
Free Data - GeoGrat...
https://mygeodata.c...
LAStools: convertin...
Open access e-lectu...
All Bookmarks
12 Sep 2022,Esri
AbaData
SEARCH ANYTHING
GO
Map Display
Company Filter
Reports
Revert to AbaData 2.0
COREGEO
Timeout in 00:30
Tools
Select
Pan
Measure
Zoom In
Zoom Out
Zoom To
Find Nearest
Get Directions
Road Map
Print Coords
Location Select
Risk Analysis
Objects
Custom Lists
Buffer
Drawing
Clear Selection
User Guide
Contact Us
Lat: 53.784976
Lon: -111.584276
Options
Imagery
TELUS TRENCH
SEQUO
CANAD
SHELL
CANLI
Feedback

AbaData

Well Information

100 / 06-24-055-12 W4 / 2

SEQUOIA RESOURCES CORP. | 100 / 06-24-055-12 W4 / 2

Government Well Data Current To February 28, 2025

License #:	0042523	**License Date:**	May 16, 1972
Well Name:	PEOC DUV 6-24-55-12		
License Status:	Suspension	**License Status Date:**	December 14, 2007
Within:	06-24-055-12 W4M	**H2S (%):**	
Spud Date:	June 12, 1972	**Final Drill Date:**	June 16, 1972
Status:	ABZONE	**Abandoned Date:**	
Surface:		**Downhole:**	
Offsets:	N 498.7 E 498	Offsets:	N 498.7 E 498
Latitude:	53.763135	Latitude:	53.763135
Longitude:	-111.655599	Longitude:	-111.655599
Ground Elevation:	580.9 m | 1906 '	Total Depth:	666.00 m | 2185 '
Operator:		**Pool:**	

AbaData

Spill/Complaint Information

SPILL | 09-26-055-12 W4

MARCH 17, 2015 - INCIDENT #: 20150802

Incident Notified:	March 17, 2015	**Incident Complete:**	March 20, 2015
License #:	49931 -7 (Pipeline Licence)		
Licensee (at time of Incident):	SEQUOIA RESOURCES CORP.		
Current Licensee:	SEQUOIA RESOURCES CORP.		
Source:	Natural Gas Pipeline		
Pipeline Damage:	Hit	**Pressure Test Failure?**	NO
Pipeline OD:	114.3	**Pipeline WT:**	3.2
Pipeline Grade:	2901		
Cause:	External - Third party damage		
Failure Type:	Damage by Others (contact damage)		
Jurisdiction:			
Strike Area:	DUV	**Field Centre:**	Bonnyville
# of Injuries:	0	**# of Deaths:**	0
Spill Offsite?	NO	**Sensitive Area?**	NO
Public Affected:			
Wildlife Affected:			
Area Affected:			
Environment Affected:			
# Evacuated:	0	**Cleanup Date:**	
Substances Spilled:	0.0 (0.0 recovered) 0.0 (0.0 recovered) 0.0 (0.0 recovered) 0.0 (0.0 recovered)		

Total Spills: 1

Total Complaints: 0

Spill/Complaint Information

COMPLAINT | 11-23-055-12 W4

APRIL 7, 1992 - INCIDENT #: 19942114

Incident Notified:	April 7, 1992	**Incident Complete:**	April 7, 1992
License #:			
Licensee (at time of Incident):	BP Canada Energy Company		
Current Licensee:			
Source:	Unknown		
Source In Complaince?	NO		
Cause:	Conversion		
Strike Area:	DUV	**Field Centre:**	Bonnyville
Concerns:	Physical Impact - Property Damage		

Total Spills: 0

Total Complaints: 1

APPENDIX E – LAND TITLES & ADDITIONAL DOCUMENTATION

#300, 4503 Brisbois Drive. NW, Calgary, AB T2L 2G3
P: 403.648.2772 | F: 403.648.2767 | E: core@coregeomatics.com | www.coregeomatics.com

PLAN

SHOWING SURVEY OF PARCEL A

IN

SW 1/4 SEC. 24 – TP. 55 – R. 12 – W4

COUNTY OF TWO HILLS NO. 21

SCALE: 1" = 200' 1967 S. CHERWONICK, A.L.S.

IRON POSTS FOUND SHOWN - - - -●
IRON POSTS PLANTED SHOWN - - - -O
AREA TO BE REGISTERED OUTLINED IN RED,
CONTAINING 2.0 ACRES.

Reserves required by The Planning Act in respect of this plan have been deemed deferred without an agreement.

SUBDIVISION AND TRANSFER REGULATION
APPROVED
Acting Provincial Planning Director
67-D-620 OCT 23/67
File No. Date

Under the provision of Section 22 (5) of The Planning Act 1963, the above endorsement is effective for a period of twelve months from the date of the above approval.

SURVEY APPROVED subject to registration on or before
Jan. 22nd 1968
DIRECTOR OF SURVEYS
Edmonton 20. 11. 1967
Examined: WRH File #14023-16886/10277

Adam Werenka
OWNER

I, Matt Charchun, OF THE Town OF Two Hills IN THE PROVINCE OF ALBERTA, MAKE OATH AND SAY:-
THAT I WAS PERSONALLY PRESENT AND DID SEE Adam Werenka
, WHO IS PERSONALLY KNOWN TO ME TO BE THE PERSON NAMED HEREIN, DULY SIGN AND EXECUTE THE SAME FOR THE PURPOSE NAMED HEREIN;-
THAT THE SAME WAS EXECUTED AT THE Town OF Two Hills
IN THE PROVINCE OF ALBERTA AND THAT I, Matt Charchun ,
AM THE SUBSCRIBING WITNESS THERETO;-
THAT I KNOW THE SAID Adam Werenka ,
AND HE IS IN MY BELIEF OF THE FULL AGE OF TWENTY-ONE (21) YEARS.

SWORN BEFORE ME AT Two Hills
IN THE PROVINCE OF ALBERTA
THIS 13 DAY OF October A.D. 1967.

A COMMISSIONER FOR OATHS IN AND FOR THE PROVINCE OF ALBERTA.

Matt Charchun
WITNESS TO OWNER'S SIGNATURE

I, S. CHERWONICK, OF THE CITY OF EDMONTON, IN THE PROVINCE OF ALBERTA, ALBERTA LAND SURVEYOR, MAKE OATH AND SAY;-
THAT THE SURVEY REPRESENTED BY THIS PLAN HAS BEEN MADE BY ME IN ACCORDANCE WITH THE PROVISIONS OF THE ALBERTA SURVEYS ACT;-
THAT THIS SURVEY WAS PERFORMED ON THE DATES OF SEPT. 25 AND SEPT. 26 A.D. 1967, AND THAT THIS PLAN IS TRUE AND CORRECT, AND IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE LAND TITLES ACT.

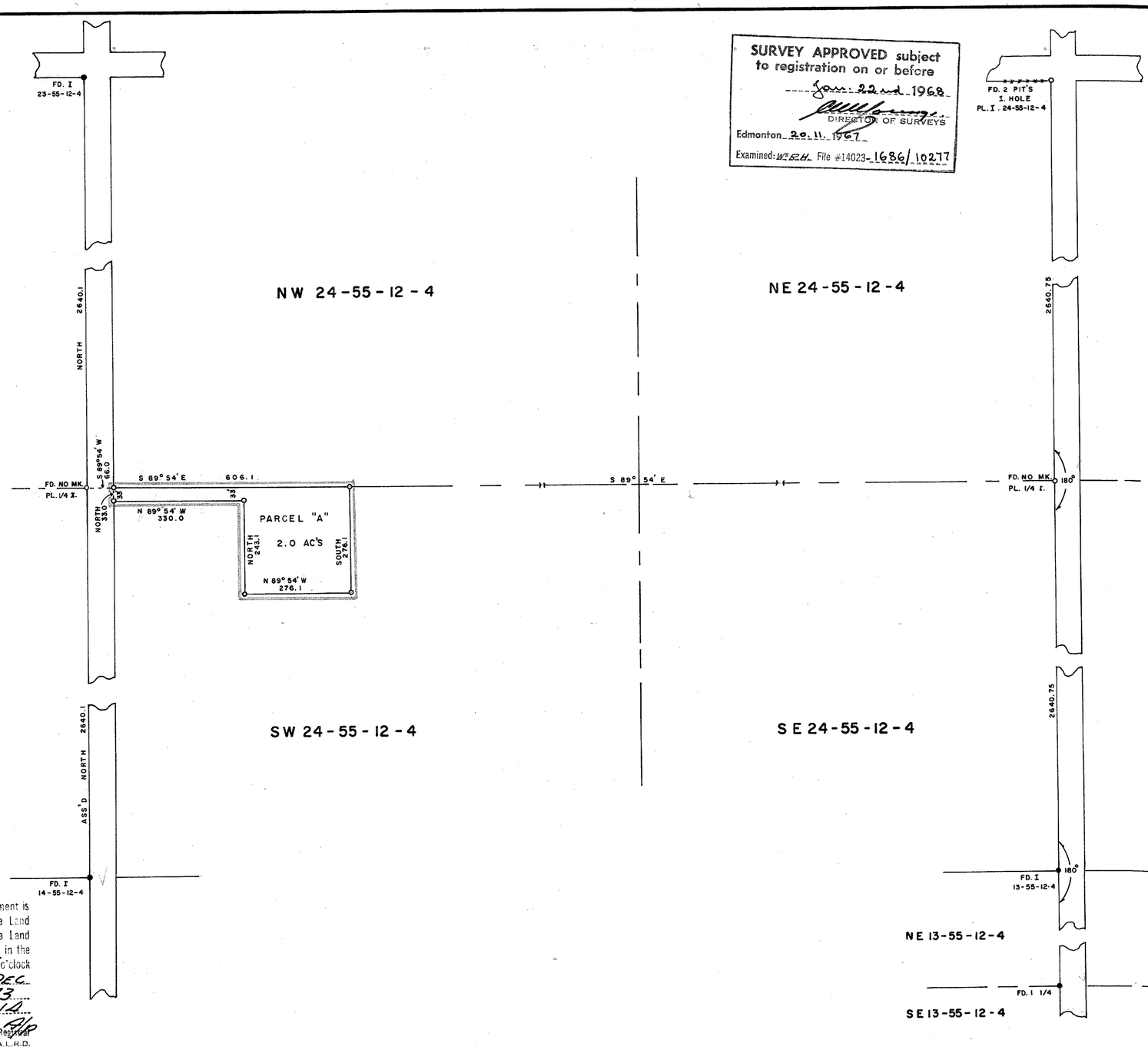
SWORN BEFORE ME AT THE CITY OF EDMONTON IN THE PROVINCE OF ALBERTA, THIS 2nd DAY OF Oct. A.D. 1967.

A COMMISSIONER FOR OATHS IN AND FOR THE PROVINCE OF ALBERTA.

ALBERTA LAND SURVEYOR

FILE: A-785

I certify that the within instrument is duly Entered and Registered in the Land Titles Office for the North Alberta Land Registration District at Edmonton, in the Province of Alberta at 10:55 o'clock A.M., on the 1 day of DEC. A.D. 1967, Number 5873 Book 104 Folio 214
Registrar
N.A.L.R.D.



812 1005

N.E. 1/4 Sec. 19.55.12.4 Area Required = 0.308 Ha.
N.W 1/4 Sec. 20.55.12.4 Area Required = 1.42 Ha.
N.E. 1/4 Sec. 20.55.12.4 Area Required = 0.879 Ha
N.W. 1/4 Sec. 21.55.12.4 Area Required = 0.419 Ha.
S.W. 1/4 Sec. 21.55.12.4 Area Required = 0.490 Ha.
S.E. 1/4 Sec. 21.55.12.4 Area Required = 0.895 Ha.
S.W. 1/4 Sec. 22.55.12.4 Area Required = 1.35 Ha.
S.E. 1/4 Sec. 22.55.12.4 Area Required = 1.55 Ha.
S.W 1/4 Sec. 23.55.12.4 Area Required = 1.37 Ha.
S.E. 1/4 Sec. 23.55.12.4 Area Required = 1.45 Ha.
S.W. 1/4 Sec. 24.55.12.4 Area Required = 1.45 Ha.
S.E. 1/4 Sec. 24.55.12.4 Area Required = 0.752 Ha.
N.E. 1/4 Sec. 13.55.12.4 Area Required = 0.722 Ha.
Road Plan 772 0752
15.24 M. AGTL R/W Plan 782 3134
15.24 M. NBOG R/W Plan 792 1493
18.29 M. AGTL R/W Plan 7321722
10.06 M. P.W.G.E. P/L R/W Plan 6292 MC.
Road Plan 3568 JY
C.P.R. R/W Plan 4391 HW
Road Plan 4905 TR
19
20
21
22
23
24
13
RGE. 12
RGE. 11
W.4 M.
W.4 M.
TP. 55
TP. 55

PLAN NUMBER 812 1005
IS HEREBY CERTIFIED AS DULY ENTERED AND FILED IN THE LAND TITLES OFFICE FOR THE NORTH ALBERTA LAND REGISTRATION DISTRICT.
A. D. REGISTRAR
5 MAY '81
812 101811

THE **ALBERTA GAS TRUNK LINE** COMPANY LIMITED

C.D. Richards
Vice-President

Manager - Pipeline Eng. (P. Eng.)

APPROVAL
DIRECTOR OF SURVEYS
SURVEY APPROVED
DIRECTOR OF SURVEYS
DATE APPROVED 1981-04-27
EXD M.V. FILE: 1567/79
APPROVAL VALID FOR TWELVE MONTHS.

REGISTRAR, ALBERTA
LAND REGISTRATION DISTRICT
NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

AFFIDAVIT
I, John Holmlund of the City of Edmonton in the Province of Alberta, Alberta Land Surveyor, make oath and say:
1. that the survey represented by this plan was made under my personal supervision.
2. that the survey was made in accordance with good surveying practices and in accordance with the provisions of The Surveys Act, and
3. that the survey was performed between the dates of Sept. 10th & Sept. 19th, 1979 and that this plan is true and correct and is prepared in accordance with the provisions of The Land Titles Act.

Alberta Land Surveyor

Sworn before me at the City of Edmonton in the Provivnce of Alberta this 20th day of Sept., 79.

A Commissioner for Oath in and for the Province of Alberta

LEGEND
Statutory Iron Posts found shown thus: ●
Statutory Iron Posts planted shown thus: ○
All dimensions are in metres and are from Post to Post, unless shown otherwise
Right-of-Way to be filed is bounded thus: ▬ and is 18 Metres in perpendicular width throughout unless shown otherwise.
Marker Post shown thus: Mp.
Statutory Iron Post planted along Right-of-Way boundary marked thus: AGTL
C.S. denotes counter sunk

THE **ALBERTA GAS TRUNK LINE** COMPANY LIMITED

Plan Showing Survey of

GAS PIPE LINE RIGHT-OF-WAY

in

Sec.'s 13, 19, 20, 21, 22, 23 & 24

Tp. 55 · Rge. 12 · W. 4 Mer.

IRISH LATERAL

JOHN HOLMLUND - A.L.S.
1979

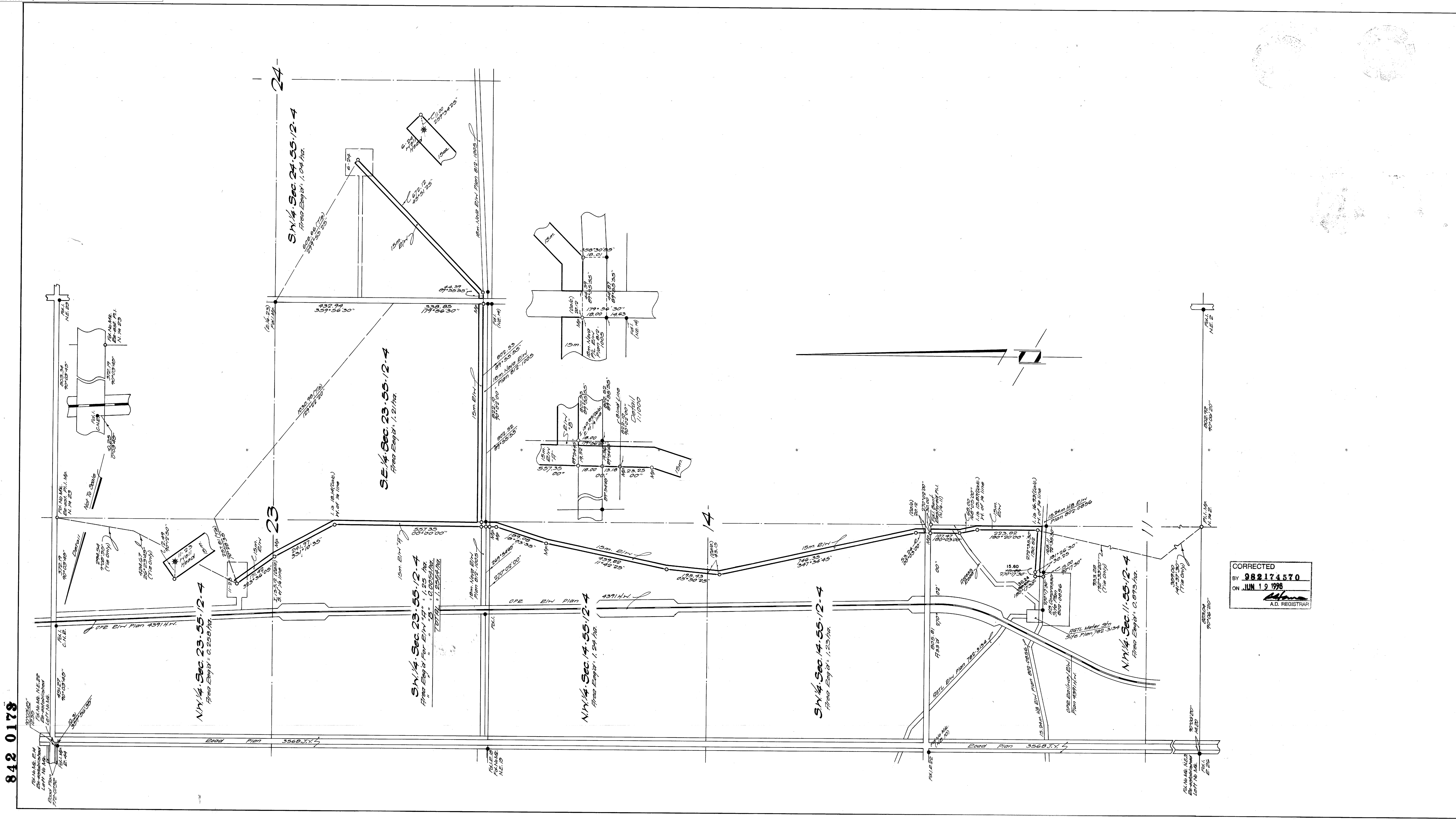
Plan 1 of 7 SCALE: 1:5000	HDS FOCUS SURVEYS LTD. 203, 7608-103rd Street, Edm. Phone 432-9284	Unit 0331 JOB No: F-522-79 (A)

(3)
24
32
63

B-64

812 1005

812 1005
1981 MAY



HUDSON'S BAY OIL AND GAS COMPANY LIMITED

PROJECT ENGINEER

VICE PRESIDENT

SECRETARY

PLAN No 842·0173
ENTERED AND FILED
ON JAN. 18 '84
INSTRUMENT No 842·012·229
A. D. REGISTRAR
N. A. L. R. D.

SURVEY APPROVED
DIRECTOR OF SURVEYS
DATE APPROVED 1984-01-11
RFA* FILE 101705
APPROVAL VALID FOR TWELVE MONTHS.

Statutory Iron Posts found shown thus: ●
Statutory Iron Posts planted shown thus: ○
All dimensions are in metres and are from Post to Post, unless shown otherwise.
Right-of-Way to be filed bounded thus ——
Marker Posts shown thus: Mp.
Statutory Iron Posts planted along Right-of-Way boundary marked thus: H.B.
C.S. denotes counter sunk.

I, Peter Lapainis of the City of Lloydminster in the Province of Alberta, Alberta Land Surveyor, make oath and say:

1. that the survey represented by this plan was made under my personal supervision
2. that the survey was made in accordance with good surveying practices and in accordance with the provisions of The Surveys Act, and
3. that the survey was performed between the dates of Oct. 16th and Oct. 20th, 1981 and that this plan is true and correct and is prepared in accordance with the provisions of The Land Titles Act.

Sworn before me at the City of Lloydminster in the Province of Alberta this 14th day of January, 1982.

ROBERT M. WEBER
COMMISSIONER FOR OATHS

Alberta Land Surveyor

A Commissioner for Oaths in and for the Province of Alberta June 3/83

HUDSON'S BAY OIL AND GAS COMPANY LIMITED

Plan Showing Survey of

GAS PIPE LINE RIGHT-OF-WAY

in

Sec's. 11, 14, 23 & 24 Tp. 55 Rge. 12 W.4 Mer.

PLAIN AREA - ALBERTA

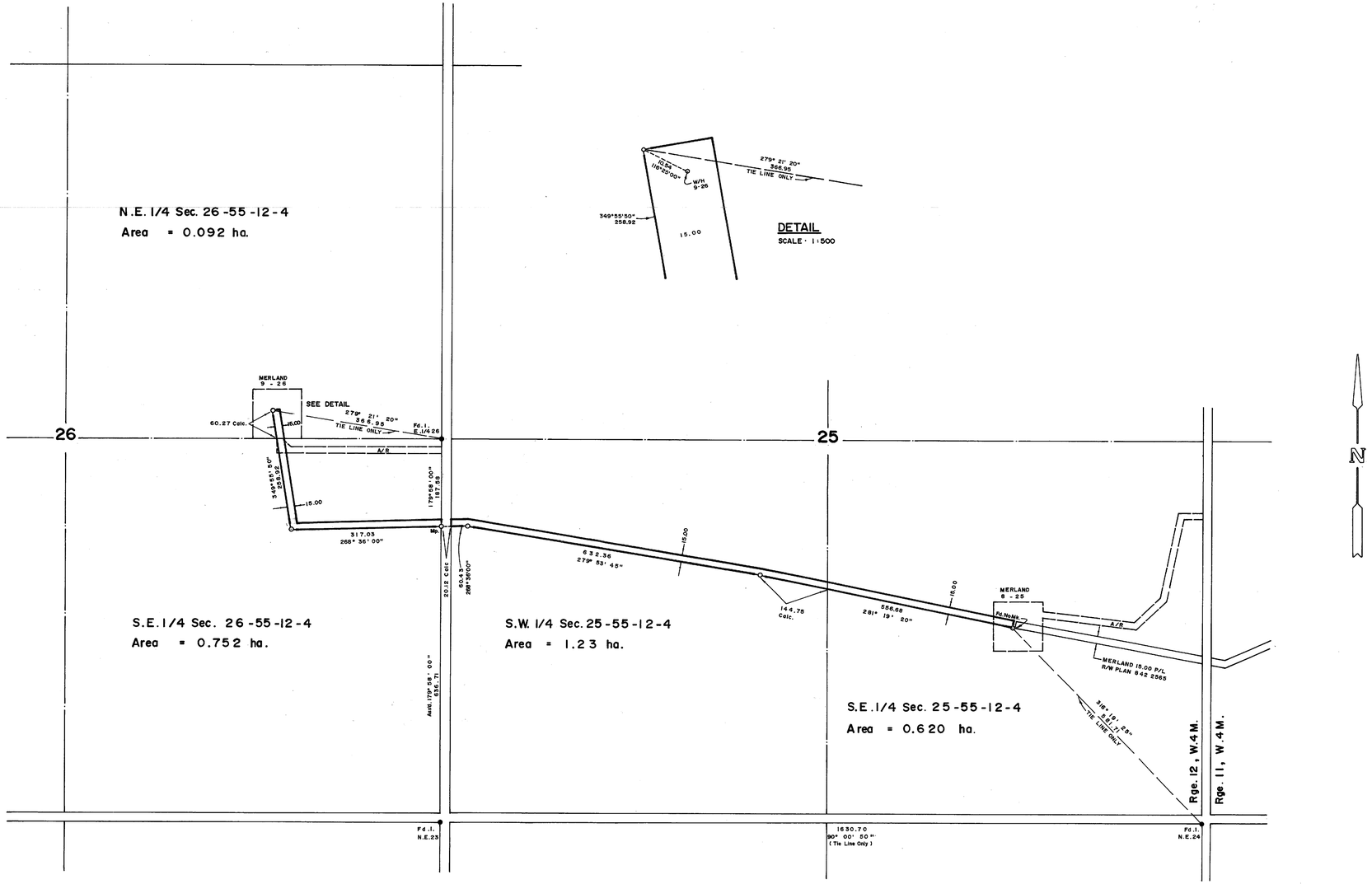
SCALE 1:5000

1981

PETER LAPAINIS A.L.S.	HDS FOCUS SURVEYS LTD. 303, 5103-65 St., Lloydminster Phone 875-7285	JOB No: F-837-811.-B-4

E-DVR-501-06

842 0173



NORTH CANADIAN OILS LIMITED

VICE PRESIDENT LAND

SENIOR VICE PRESIDENT EXPLORATION AND LAND

LAND TITLES OFFICE

PLAN No. 8920209
ENTERED AND REGISTERED
ON JAN 24 '89
INSTRUMENT No. 8920203O4
A.D. REGISTRAR
N.A.L.R.D.

LEGEND

1. AREA AFFECTED BY THE REGISTRATION OF THIS PLAN IS SHOWN OUTLINED THUS.....
2. STATUTORY IRON SURVEY POST FOUND SHOWN THUS.....●
3. STATUTORY IRON SURVEY POST PLANTED SHOWN THUS.....O
4. IRON POST PLANTED ON SURVEYED R/W BOUNDARY IS MARKED THUS.....NCOL
5. DISTANCE DERIVED BY CALCULATION IS SHOWN THUS.....Calc.
6. Mp. DENOTES MARKER POST.
7. MEASUREMENTS ARE LINEAR AND ARE SHOWN IN METRES AND DECIMALS THEREOF.
8. R/W IS 15.0 METRES IN PERPENDICULAR WIDTH, UNLESS SHOWN OTHERWISE.
9. ALL STATUTORY IRON SURVEY POSTS ARE COUNTERSUNK UNLESS SHOWN OTHERWISE AND ARE MARKED P014.
10. ALL DISTANCES ARE BETWEEN POSTS UNLESS SHOWN OTHERWISE

SURVEYOR'S AFFIDAVIT

I, ANDREW K. LEE, OF THE CITY OF CALGARY, ALBERTA LAND SURVEYOR, MAKE OATH AND SAY:

1. THAT THE SURVEY REPRESENTED BY THIS PLAN WAS MADE UNDER MY PERSONAL SUPERVISION,
2. THAT THE SURVEY WAS MADE IN ACCORDANCE WITH GOOD SURVEYING PRACTICES AND IN ACCORDANCE WITH THE PROVISIONS OF THE SURVEYS ACT, AND
3. THAT THE SURVEY WAS PERFORMED ON SEPTEMBER 13th, 1988, AND THAT THIS PLAN IS TRUE AND CORRECT AND IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE LAND TITLES ACT.

SWORN BEFORE ME AT THE CITY OF CALGARY, IN THE PROVINCE OF ALBERTA, THIS 17th DAY OF OCTOBER, 1988

Andrew K Lee
ALBERTA LAND SURVEYOR

ALBERTA LAND SURVEYORS ASSOCIATION PERMIT NUMBER P 014 AMAR SURVEYS LTD.

JOHN FONG - APRIL 10th, 1989
A COMMISSIONER FOR OATHS IN AND FOR THE PROVINCE OF ALBERTA

NORTH CANADIANS OILS LIMITED

PLAN SHOWING A SURVEY OF PIPE LINE RIGHT-OF-WAY IN S. 1/2 SEC. 25 & E. 1/2 SEC. 26 TWP. 55, RGE. 12, W.4M.

COUNTY OF TWO HILLS No. 21

ALBERTA - 1988

SCALE: 1:5000
200 100 0 100 200 300

AMAR SURVEYS LTD. 1731-10th AVENUE S.W. CALGARY, ALBERTA T3C 0K1	BY ANDREW K. LEE A.L.S.	DRAWN: B.M./J.F. CHECKED: M.W. SCALE: 1:5000 FILE No: 8809 NOR 02

892 0209

8809 NOR 02

ALBERTA GOVERNMENT SERVICES
LAND TITLES OFFICE

IMAGE OF DOCUMENT REGISTERED AS:

892256640

ORDER NUMBER: 51341772

DATED Oct 2 A.D. 1989

DUCKS UNLIMITED CANADA

RE

NW 24-55-12-W4

CAVEAT

DUCKS UNLIMITED CANADA
#302, 10335 - 172 Street
EDMONTON, Alberta
T5S 1K9

CANADA)I, Adele Colon
PROVINCE OF ALBERTA)of the City of Edmonton,
TO WIT:)in the Province of Alberta,
Secretary,
MAKE OATH AND SAY AS FOLLOWS:

1. I am agent for the above-named Caveator.

2. I believe that the said Caveator has a good and valid claim upon the said land and I say that this Caveat is not being filed for the purpose of delaying or embarassing any person interested in or proposing to deal therewith.

SWORN before me at the)
City of Edmonton in the)
Province of Alberta, this)
2 day of October ,)
A.D. 1989.)

Adele Colon

A COMMISSIONER FOR OATHS in and for the
Province of Alberta

R. GREGORY NORMAN
MY APPOINTMENT EXPIRES
MARCH 9, 1991

LAND TITLES REGISTRATION DISTRICT

892256640 REGISTERED 1989 10 05
CAVE - CAVEAT
DOC 1 CNF 1 DRR#: 8509?0 ADR/ENG
LINC/S: 0010694743

L SERVATION AGREEMENT

BETWEEN: Dale & Janet Dover of Box 357, Two Hills, AB T0B 4K0

(called throughout the "Grantor"), and

Ducks Unlimited Canada, a Corporation having its head office at 1190 Waverley Street, Winnepeg, Manitoba, (called throughout "DU").

AS the Grantor is the owner of the following land, in the Province of Alberta, (called throughout "the land"), legally described as;

NW ¼ of Section twenty four (24), Township fifty five (55), Range twelve (12), west of the fourth meridian

AND AS DU wishes to develop the land to maintain and improve it as a habitat for wildlife and waterfowl, (called throughout "the project");

AND AS the Grantor and DU agree that mutual benefits will result from the project, and in consideration of the sum of one dollar ($1.00) and other good and valuable consideration now paid by DU to the grantor (receipt of which is acknowledged), the parties agree as follows:

The Grantor grants to DU:

(1) The right to enter into and on and a right of way along and over the land for the purposes of this agreement.
(2) The right to construct the project consisting of a dam and/or other works, and the right to bring onto and maintain on the land a quantity of water, as shown on a plan (#375-0571-S) prepared by Ducks Unlimited Can. and dated 89-01-02, a copy of which is attached to this agreement as Schedule "A".
(3) The right to operate, manage and maintain the project ~~as outlined in the attached management plan~~.
(4) The right to register this agreement with the Land Titles Office.

This agreement shall be for a term of 30 years from the date hereof and shall be automatically renewed from year to year thereafter, provided that any renewal may be terminated by either party giving one calendar years written notice.

This agreement shall run with the land.

Dated the 9 day of June, 1989

Keith Pugh
Witness

Grantor

Witness

Grantor

DUCKS UNLIMITED CANADA

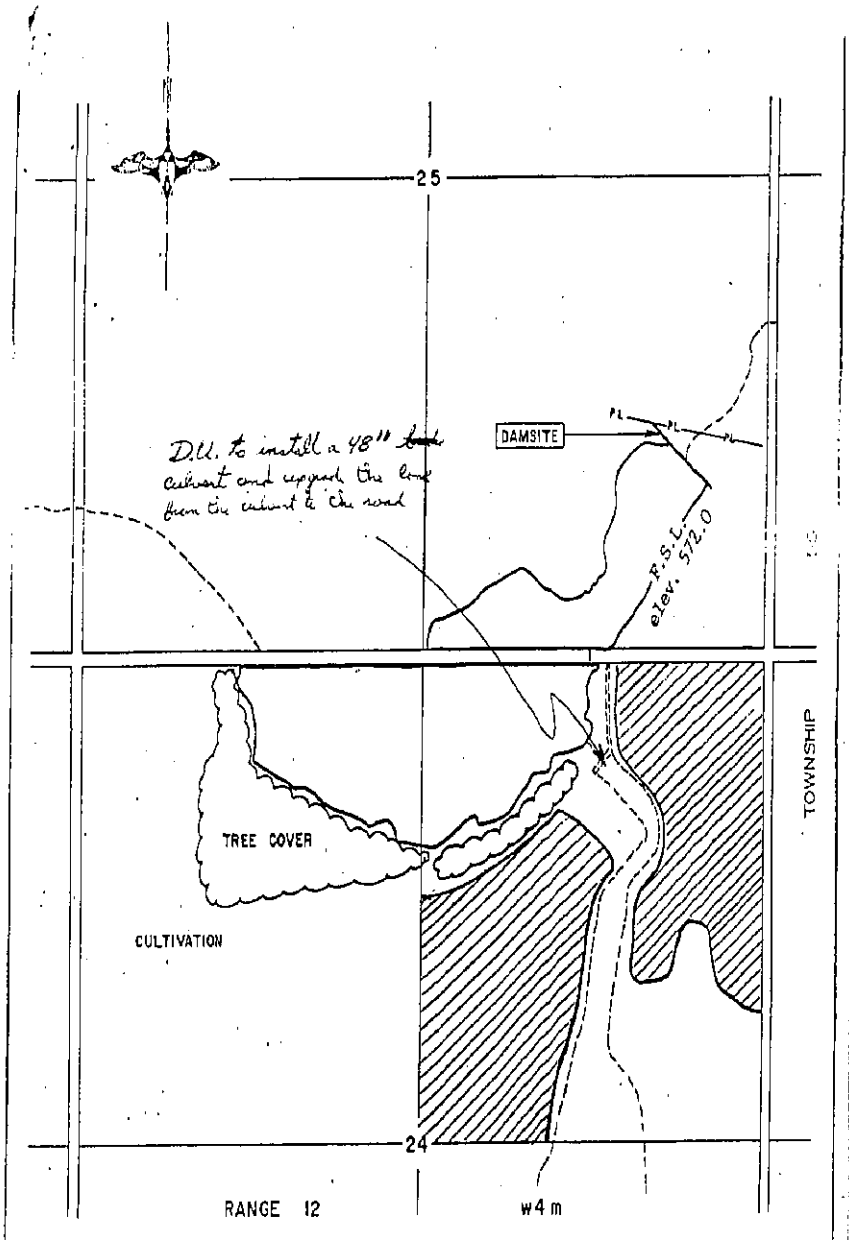
Witness

per , PROVINCIAL MANAGER
Title

A1680 11/21/89 10/27/89

Project Name: Duvernay

Project Number: 375-0571-S



SCHEDULE A

Ducks Unlimited Canada

Sketch Plan

Title: DUVERNAY

Sec. 25 Tp. 55 R. 12 W. 4 PM.	
Flooded Area 30.0 ha	Date 89 01 20
Shoreline 5.0 km	File No N/A
Scale N.T.S.	Dwg No 375-0571-S
Drawn By S A S	Page 1 of 1

Improved Upland

SCHEDULE A

THE NORTH WEST QUARTER OF SECTION TWENTY FOUR (24)
IN TOWNSHIP FIFTY FIVE (55)
RANGE TWELVE (12)
WEST OF THE FOURTH MERIDIAN

CONTAINING 64.7 ACRES (160 ACRES) MORE OR LESS

EXCEPTING THEREOUT ALL MINES AND MINERALS

C A V E A T

TO THE REGISTRAR OF THE NORTH ALBERTA LAND REGISTRATION DISTRICT

TAKE NOTICE that DUCKS UNLIMITED CANADA, a corporation having its Head Office in the City of Winnipeg, in the Province of Manitoba

claims an interest in the hereinafter described lands pursuant to an Easement in regard to a Conservation Agreement in writing dated the 9th day of June, A.D. 1989, made between Dale Doner and Janet Doner, being the registered owner of the said lands and the Caveator herein, a copy of which agreement is attached hereto, respecting the following lands:

in

(SEE SCHEDULE "A")

Being lands described in Certificate of Title Number 672051235 standing in the register in the name of Dale Doner and Janet Doner

and I forbid the registration of any person as transferee or owner of, or of any instrument affecting the said estate or interest, unless the instrument or Certificate of Title, as the case may be, is expressed to be subject to my claim.

I APPOINT DUCKS UNLIMITED CANADA, #302, 10335 -172 Street, at Edmonton, in the Province of Alberta, as the place at which notices and proceedings relating hereto may be served.

DATED this 2 day of October, A.D. 1989

DUCKS UNLIMITED CANADA by its agent
Mrs. Adele Colon

PER: _____
(Signature of Caveator or his Agent)

APPENDIX F – SITE PHOTOS

#300, 4503 Brisbois Drive. NW, Calgary, AB T2L 2G3
P: 403.648.2772 | F: 403.648.2767 | E: core@coregeomatics.com | www.coregeomatics.com

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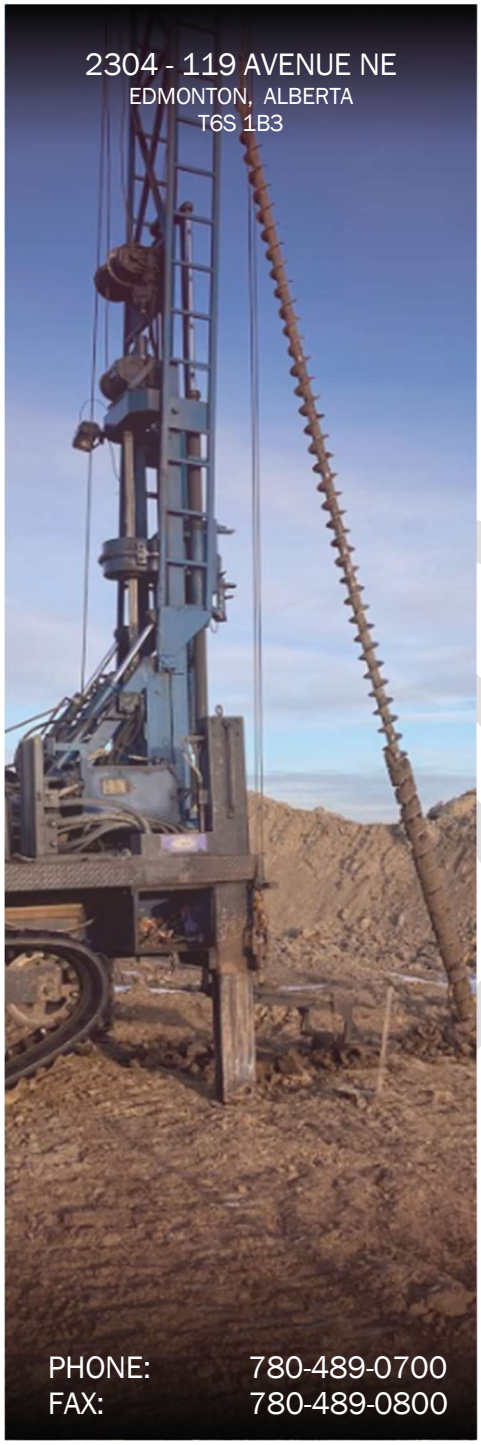
APPENDIX D – GEOTECHNICAL INVESTIGATION

J.R. Paine & Associates Ltd.
CONSULTING & TESTING ENGINEERS
• GEOTECHNICAL • ENVIRONMENTAL • MATERIALS •



GEOTECHNICAL INVESTIGATION

Proposed Country Residential Subdivision

NW 24 – 55 – 12 – W4M
Township Road 554 & Range Road 121
Two Hills County, Alberta

FILE: 5529 – 2

June 9, 2025

J.R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS
EDMONTON – GRANDE PRAIRIE – PEACE RIVER

REPORT NO: 5529 – 2

Proposed Country Residential Subdivision

NW 24 – 55 – 12 – W4M
Township Road 554 & Range Road 121
Two Hills County, Alberta

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GEOTECHNICAL INVESTIGATION

PROJECT: Proposed Country Residential Subdivision

LOCATION: NW 24 – 55 – 12 – W4M
Township Road 554 & Range Road 121
Two Hills County, Alberta

CLIENT: Core Geomatics
300, 4503 Brisebois Drive NW
Calgary, Alberta
T2L 2G3

ATTENTION: Mauricio Jimenez, RPP, MCIP

1.0 INTRODUCTION

This report presents the findings of a geotechnical investigation at the subject site for a proposed country residential subdivision in Two Hills County, Alberta. Based on information provided to our firm, the proposed development will consist of a country residential subdivision for single-family houses with no public water and sewer utility services. The objective of the geotechnical investigation is to provide recommendations to aid in the design and construction of the subject development. Any environmental, flood, and previous land use issues are beyond the scope of this report. Authorization to proceed and permission to enter the site was received from Core Geomatics.

2.0 SITE DESCRIPTION & RESEARCH

The subject site is approximately 160 acres in size, consists of NW 24 – 55 – 12 – W4M. The site is bordered by Township Road 554 to the north, neighbourhing farmland to the east and south, and Range Road 121 to the west.

2.1 Limited Historical Aerial Image Review

Historical images taken between 2012 and 2022, covering the subject site and surrounding areas, were found online via Google Earth. The images were compared and reviewed for any signs of disturbances within the site.

In 2012, the south and west portions of the site appeared to be cleared and farmed. A tree cover occupied the north central portion of the site, while a local depression with water accumulation occupied the northeast portion of the site.

In 2018, trees covered much of the site, with a few trails visible.

In 2022, more trails were noted.

Overall, no significant disturbances were noted.

2.2 Current Site Conditions

At the time of the investigation in May 2025, much of the site was a tree farm, with rows of trees at approximately 2.4 m spacing. Water accumulation was noted within the local depression in the northeast portion of the site. A trail was noted across the central portion of the site, and along the south boundary. A fence marked the south boundary and the west boundary along Range Road 121. More internal fences were also present.

The site terrain was considered rolling, and generally dip toward the local depression in the northeast portion of the site. Normal 2-wheel drive vehicles were able to travel on the trails only. Access to the site was gained via an entrance off Range Road 121.

Looking west, water accumulation within the local depression at the northeast portion of the site.

Looking east, a trail across the central portion of the site.

2.3 Geotechnical Report Review

No report of any previous geotechnical investigation that covered the subject site was found in our library or provided to our firm. Therefore, no relevant soil information could be included in the current investigation.

2.4 Coal Mine Atlas Review

No coal mining information within the subject site was found in the Alberta Coal Mine Atlas available in the Alberta Energy Regulator website. Coal mining related issues should not be a concern for this site and were not investigated further.

3.0 FIELD INVESTIGATION

The soil sampling program for the subject site was undertaken on May 5, 2025 utilizing a track-mounted drill rig owned and operated by SPT Drilling Ltd. A total of 8 testholes were drilled to a depth of approximately 7.3 m below existing ground surface. The testhole layout was chosen by our firm to be within accessible areas only. No tree clearing was provided by the land owner to improve accessibility. Therefore, the testhole coverage was considered limited. The testhole locations were staked and surveyed by our firm using a Trimble GPS unit, and were cleared all marked underground utilities. The approximate locations of all testholes can be found on the attached site plan in the Appendix.

All testholes were advanced with 150 mm diameter solid stem augers in 1.5 m increments. A continuous visual description, including the soil types, depths, moisture, transitions, and other pertinent observations, were recorded on site. Soil samples were collected at 750 mm interval for laboratory testing. Standard Penetration Tests (SPT) complete with split spoon sampling were done at regular 1.5 m intervals on all testholes.

Following the drilling operation, slotted piezometric standpipes were installed in all testholes to facilitate watertable measurements. The testholes were backfilled with cuttings, and bentonite was placed near the surface to help prevent surface water infiltration.

4.0 LABORATORY TESTING

Soil samples retrieved from augers were bagged and returned to the laboratory for further testing. All samples were tested for moisture content. Representative clay samples were also tested to determine the liquid and plastic Atterberg limits, as well as soluble soil sulphate concentrations. A near surface sample from each testhole was also tested for grain size distribution. The results of all laboratory testing and field observations are provided on the attached soil logs.

5.0 SOIL CONDITIONS

5.1 Site Geology

According to GIS maps published by Alberta Geological Survey, the local surficial geology of southwest portion of the site is classified as stagnant ice moraine deposit of Pleistocene epoch, while the northeast portion of the site is classified as colluvial deposits of Holocene epoch. The stagnant ice moraine deposit was described in the legend as sediments deposited from the collapse of glacial debris due to melting of buried ice near the glacial margin. Stagnant ice moraine deposits mainly consist of till, with stratified local lacustrine or fluvial sediments. In addition, the topography is commonly characterized as hummocky. The colluvial deposit was described in the legend as sediments deposited as a result of slope slumping along valley sides and floors. Colluvial deposits may contain bedrock, till, lacustrine, or eolian sediments, may also include a significant component of fluvial sediments in some places.

5.2 Testhole Soils

A detailed description of the soils encountered can be found on the soil logs attached in the Appendix. In general, the soil consisted of topsoil at the surface, followed by native sand or clay to testhole termination depths. The native sand encountered appeared similar to the fluvial sediments in previously described colluvial deposit, while the native clay encountered appeared similar to the stagnant ice moraine deposit described above.

Topsoil

Approximately 0.3 m to 1.1 m of topsoil was encountered at the surface in all testholes. It is emphasized that the topsoil depths were known only at the testhole locations, and may vary away from the testholes. More topsoil should be expected within local depressions.

Sand

Below the topsoil, native sand was encountered in Testholes 2025-1, 2025-2, 2025-3, 2025-4, 2025-5, and 2025-6 to various depths. In general, this sand material was considered medium grained, moist above watertable and wet below watertable, brown, and contained a trace of oxide and gravel. This sand was also considered loose to compact, with SPT "N" values between 2 and 15 blows per 300 mm of penetration recorded. Hydrometer test results showed the sand contained 5% to 20% fines.

Native Clay & Bedrock-Like Clay

Layers of native clay were encountered at various depths in Testholes 2025-4, 2025-6, and 2025-7. In general, the native clay material was considered silty, sandy, low to medium plastic, moist to very

moist, brown and grey, and contained a trace of oxide and white reside. SPT "N" values between 7 and 12 blows per 300 mm of penetration were recorded, indicating a variable consistency.

Below the topsoil and native clay, bedrock-like clay was encountered to testhole termination depths in Testholes 2025-7 and 2025-8. In general, the bedrock-like clay material was considered silty, medium to high plastic, damp, ground up, and grey. SPT "N" values between 22 and 32 blows per 300 mm of penetration were recorded, indicating a very stiff to hard consistency.

5.3 Testhole Conditions Upon Completion

At the completion of drilling, immediate groundwater seepage was observed in 4 testholes, while significant sloughing condition was observed in2 testholes, as summarized below.

Table 5.1: Groundwater Seepage And Sloughing Conditions At Completion

Testhole	Approximate Water Accumulation At Hole Bottom (m)	Approximate Slough Thickness At Hole Bottom (m)
2025 - 1	dry	none
2025 - 2	dry	none
2025 - 3	dry	none
2025 - 4	5.8	1.1
2025 - 5	5.4	2.5
2025 - 6	4.1	none
2025 - 7	5.1	none
2025 - 8	dry	none

6.0 GROUNDWATER CONDITIONS

Two sets of watertable readings were taken after the completion of drilling. For practical purposes, the highest recorded level at each testhole was utilized in the geotechnical evaluation. The watertable readings and corresponding elevations are summarized below.

Table 6.1: Watertable Measurements

Testhole	Watertable Level Below Ground Surface (m)		Ground Elevation (m)	Watertable Elevation (m)
	May 13, 2025 (8 days)	May 23, 2025 (18 days)		
2025 - 1	dry at 7.02	dry at 7.02	584.24	below 577.22
2025 - 2	dry at 7.07	dry at 7.07	586.64	below 579.57
2025 - 3	dry at 7.02	dry at 7.02	589.39	below 582.37
2025 - 4	1.47	1.53	576.79	575.32
2025 - 5	1.88	1.93	577.67	575.79
2025 - 6	3.16	3.18	579.08	575.92
2025 - 7	1.95	1.97	577.40	575.45
2025 - 8	dry at 6.49	dry at 6.49	578.78	below 572.29

It should be noted that watertable levels may fluctuate on a seasonal or yearly basis with the

highest readings obtained in the spring or after periods of heavy rainfall. The above spring readings should reflect near the average seasonal levels.

The recorded watertable levels were within 3.0 m below the ground surface in 3 testholes, which were considered high in some areas. Overall, the watertable elevations were relatively flat, between approximately 575.3 m and 575.9 m, in 4 testholes.

7.0 RECOMMENDATIONS

7.1 Site Grading

1. The site terrain was considered rolling. Slope stability issue was beyond the scope of this investigation, but the site terrain did not appear to pose any slope stability hazard. However, a detail ground contour map from a topographic survey of the site will be required to evaluate the existing grading.

   Grading design should avoid slopes higher than 2 m or steeper than 3H:1V, unless reviewed by our firm. If slopes are planned in the grading design, more recommendations can be provided upon review.

2. No watertable level constraint for residential development was found in the Two Hills County Land Use Bylaw 3-96. However, the following watertable constraints on development was found in the Draft Environmental Guidelines for the Review of Subdivisions in Alberta.

> iii. High Water Table Area and Constraints to Development
>
> A high water table area is defined as any area where the water table is within 1.8 metres (6 feet) of the ground surface during the frost free period up until the end of August; and within 2.4 metres (8 feet) of the ground surface during the remainder of the year. This definition recognizes that the water table will probably be elevated in the spring due to the infiltration of snowmelt and during the summer rainy season. High water table levels can:
>
> - adversely affect the functioning of a sewage disposal system, which could lead to shallow groundwater and/or surface water contamination;
> - render the area unsuitable for residential basement construction, interfere with the construction of roads, etc.
>
> The Suitable Development Area as defined in the Glossary is well drained and does not include a high water table area.

The watertable readings were taken in May when no frost was encountered, and were within 1.8 m below the existing ground surface in 1 testhole. If the existing ground contour from a topographical survey is available, our firm can identify the high watertable areas.

If Two Hills County allows, raising the grade can be an option to accommodate basement construction in high watertable areas.

Grading design should be kept as high as possible and cuts should be avoided. Historical flood water levels should also be considered in the grading design. Flood hazard issues are beyond the scope of this investigation.

3. Topsoil and all other deleterious materials were considered unsuitable to support footing foundations, slabs, and roadways. Any organic soil present within building footprints or road allowance should be removed, stockpiled or hauled away, and should not be reused as grading fill material. Organic soil should be reused for landscaping purposes only.

4. Where fill grading is planned, all the topsoil should be removed from all fill grading area, engineered fill may then be placed on the exposed native soil to design grade. Engineered fill should compose of suitable clean and frost-free material similar to the native soil present on site, placed in maximum 150 mm compacted thickness, and compacted to a minimum 98% of its Standard Proctor Density (SPD) near its optimum moisture content. Frequent testing and inspection by qualified soil technicians will be required to confirm proper compaction is achieved.

   Grading design with engineered fill should be reviewed by our firm to evaluate site conditions and borrow material sources prior to implementation. The following limitations to the engineered fill will apply.

   a. Engineered fill requires fill depth differentials across the building footprint of less than 1.5 m. This may be a limiting factor in uneven stripped ground. In some cases, removal of native material may allow for the minimum fill depth or the maximum fill differential conditions to be met.
   b. Side slopes at the edges of fill placement should be 4H:1V or shallower. Fill deeper than 4.0 m should be reviewed by our firm to address potential settlement prior to construction.

5. The native soils encountered near the surface appeared adequate to support construction traffic. Conventional clearing and stripping should be suitable for most parts of the sites. However, soft and firm soils may be present in low areas such as local depressions, which may not be able to support scraper traffic. Therefore, a hoe and trucks may be required to excavate in these local depressions.

   Engineered fill placement requires the support of strong underlying soil and may not be feasible over soft to firm, very moist to wet, underlying soils. The following options can be considered where soft native soil is exposed after stripping.

a. Where a minimum fill depth condition is met, construction of a clay pad approximately of 300 mm to 500 mm in thickness will be required to obtain an adequate working platform. This pad should be compacted to a minimum of 98% of SPD where possible. The normal engineered fill lift thickness and compaction criteria mentioned above should be applied to successive lifts. To employ this method, a minimum of 1.0 m of engineered fill must be placed on top of the clay pad. If this condition is not met, the fill would not be considered to have met engineered fill standards. However, this clay pad option is not recommended within commercial or multi-family lots.

b. Soft spots can be over-excavated to expose competent soil below to provide adequate engineered fill support. However, the risk of groundwater seepage may increase in high watertable areas.

6. The measured watertable levels were relatively high in at least parts of the site. In high watertable areas, cuts should be limited and raising the grade should be considered in the grading design.

The native clays encountered near the surface were low to medium plastic, and were considered moderately frost susceptible. The native sand encountered near the surface was considered slightly to moderately frost susceptible. Considering the watertable is high in parts of the site, frost heave concern cannot be ruled out.

7. The native clays encountered near the surface in Testholes 2025-6, 2025-7, and 2025-8 were low to medium plastic, and exhibited a low swelling and shrinkage potential. Nonetheless, it is important that changes in moisture content be avoided both during and after construction to limit the risk of soil swelling and shrinkage. Proper site grading is also imperative.

8. If local sources on site are being considered as engineered fill material, the native sand and clay encountered in the testholes are considered suitable engineered fill material. The moisture contents of the clays were within 5% below to 10% above the optimum level, as such some wetting or drying or mixing be required to meet the compaction specifications.

The native sand encountered above the watertable was moist, as such minor drying may be required to meet compaction specifications. Mixing sand with clay as a composite grading fill material is not recommended.

Any import source of material to be used as engineered fill material should be assessed by our firm to determine its suitability prior to delivery.

7.2 House Foundation & Slab-On-Grade

1. The inorganic native soils encountered throughout this site and properly placed engineered fill as specified in Item 7.1.4 are considered satisfactory for supporting single family dwellings utilizing standard concrete footing foundation and slab-on-grade from the strength and settlement viewpoints, with an allowable bearing capacity of 75 kPa required in Section 9.15 of the National Building Code – Alberta Edition. However, all footing excavations should be inspected by qualified geotechnical personnel to confirm the footing bearing capacity. If soft to firm native soil is present at footing grade, wider strip footings will be required. Topsoil and any organic soil are not considered suitable for footing or slab-on-grade support, and should be removed from all foundation excavation if present.
2. The native clays encountered near the surface were low to medium plastic and exhibited a low swelling and shrinkage potential. Nonetheless, recommendations on preventing moisture from entering or escaping from the soil below or near the foundation provided in Items 7 to 10 remain applicable to maintain a low swelling and shrinkage potential.
3. The recorded watertable levels were within 2.0 m below the existing grade in 3 testholes. Depending on the design grade, typical footing foundation excavation depth of 2.0 m may intercept the watertable in parts of the site. Considering sand is present at the watertable level, dewatering will be very difficult. Therefore, footing construction below the watertable is not recommended at this site. As previously noted, raising the design grade to allow footing construction at least 0.5 m above the watertable is recommended to avoid basement excavation intercepting the watertable.
4. The native clays encountered near the surface were low to medium plastic and were considered moderately susceptible to frost. The native sand encountered near the surface was considered slightly to moderately susceptible to frost. To help prevent frost heave, diligence with recommendations provided in Items 5 and 6 is emphasized. Insulation may also be considered to keep bearing soil from freezing. Our firm should be consulted if insulation will be used.
5. All houses will require at least 1.5 m of earthen cover to prevent potential frost heave problems, and to minimize movements associated with seasonal variations in moisture content. The amount of cover should be increased to 2.0 m for exterior isolated footings or for footings of non-continuously heated structures.
6. During winter construction, it is essential that all interior fill and load bearing materials remain frost free. Recommended winter construction practices, with respect to hoarding and heating of the forms and the fresh concrete, should be followed. In order to minimize the potential frost heave problems, the interior of the building must be heated as soon as the walls have

been poured. The period in which the excavation is left open due to freezing conditions should be as short as possible. If doubts remain as to the suitability of the foundation during construction, the builder should consult a qualified geotechnical engineer.

7. No loose, disturbed, or slough material should remain in the open excavation floor. Excavations should be performed by machinery operating remotely from the bearing surface. The footing excavation surface should be made smooth and level so that water cannot accumulate in low spots. The bottom of interior spread footing elevations should be designed and constructed to match the slab subgrade, so that groundwater will not accumulate around the interior spread footing. Cleaning by hand is advised if the equipment fails to produce a smooth surface.

8. Special care should be taken during construction and structure design life to prevent excessive changes in moisture content of the soil under the footings. Footing excavations should be protected from rain, snow and influx of groundwater.

   The time span between the start of excavation to installation of basement footings, walls, peripheral weeping tile and backfilling operations should be minimized in order to prevent any problems developing within the excavation due to ingressing of groundwater or surface waters or desiccation of the subsoil.

9. At a minimum, peripheral weeping tile lines are recommended along the footing to handle seasonal groundwater fluctuation. All lines should be placed at or slightly below bottom of the footing, level with no bumps or sags to ensure positive drainage, and connected to an approved system. Minimum 150 mm of clean tile rock drainage filter, wrapped in geotextile, are also recommended around the weeping tile line. The sump and outlet piping must be water tight, with no holes below the float level. Additional recommendations on upgraded foundation drainage measures for footings near the watertable can be found in Item 7.5.3.

10. Clay is the preferred backfill material around the basement walls. This serves to reduce water penetration into the backfill, and subsequently into the weeping tile system. The native clays encountered throughout the site would be suitable for this purpose.

    All backfill against foundation walls should be inorganic material and should be moderately compacted with care taken not to over compact the fill and generate excessive lateral pressure. The backfill should be placed in lifts not great than 150 mm after compaction. It is recommended that floor joists be placed prior to backfilling in order to minimize any detrimental effects on the foundation walls caused by soil compaction.

    Water dispersed on the property from the roof leaders should not be allowed to accumulate against the foundation walls. To ensure positive drainage, the soil surface of all

lots should be made sloping away from all buildings. This will require a positive lot grading of at least 5% away from the foundation walls for a minimum of 1.2 m. In cases where the lot drainage runs from the back of the lot to the front, runoff should be kept 1.2 m away from the buildings.

As a long-term maintenance measure, loosely compacted backfill around the foundation can settle with time and may require re-grading to ensure that all surface water is directly away from the foundation. Also to help prevent moisture changes to soil near the buildings, lawn should not be over watered and trees should not be planted near footing foundations and slabs.

11. Final lot grading is not known at this time. If general lot grading will produce areas of fill extending in depth below that of the footing elevation, it is strongly recommended that qualified geotechnical personnel inspect the house excavations. Generally, it is not recommended that footings be constructed on non-engineered fill. In such cases, the following alternatives are commonly recommended:
    a. Removal of the fill down to native soil and backfill with fillcrete or a compacted granular material. A normal footing foundation may then be founded on the cured fillcrete or compacted gravel. However, foundation drainage must be modified to drain the bottom of gravel and ensure positive flow within the weeping tile towards the sump in all locations.
    b. Utilize a pile foundation.
12. In the case of pile foundations, some installation problems may be encountered. Immediate groundwater seepage was observed in 4 testholes, while slough condition was observed in 2 testholes. Therefore, groundwater seepage and sloughing condition should be expected during the pile drilling operation and casing should be on site during pile installation to control groundwater seepage in any pile hole when necessary. At a minimum, pile concrete should be on-site during the pile drilling to allow for quick concrete placement. The factored soil skin friction resistance for pile design should be determined on a lot-by-lot basis.
13. All piles should be adequately reinforced. Concrete for all piles should be adequately vibrated.
14. To compensate the possible swelling of the subsoil beneath the pile caps and the effects of frost action, void form or other means to allow soil expansion are recommended beneath the grade beams pile caps, basement foundation walls, and structural slabs.
15. The native soils encountered in all testholes and properly placed engineered fill as specified in Item 7.1.4 are considered suitable for slab-on-grade support from the strength and settlement viewpoints.

16. A minimum 150 mm layer of washed rocks with maximum 25 mm grain size and less than 10% fines should be placed immediately below the slab-on-grade. This granular material should be uniformly compacted to a minimum 98% of the corresponding SPD at or slightly above the optimum moisture content to provide slab support.
17. A non-deteriorating vapour retarder should be placed beneath the concrete floor to prevent desiccation of the subgrade material.
18. As per Section 9.1.3.4 of the National Building Code – 2019 Alberta Edition Volume 2, rough-in for Radon extraction system is required for new residential houses. One method of Radon extraction system may include a clean granular material (washed rocks), having less than 10% passing through the 4 mm sieve, at least 100 mm thick below the slab. In addition, this Radon extraction system may also include an air tight vapor seal between the washed rock and bottom of slab. The granular slab base and vapor retarder recommended in Items 16 and 17 respectively may be incorporated into such Radon extraction system as well. Placing a non-woven geotextile separator between the soil subgrade and the washed rock layer is also recommended.

7.3 Roads

1. The native sand and clay encountered near the surface are considered generally satisfactory for the construction of roads and ditches. Due to the rolling nature of the site terrain, some cut and fill grading is expected. All embankment fill within the roads should be properly placed and compacted as engineered fill specified in Item 7.1.4 to support roads from the strength and settlement viewpoints. Topsoil and all other organic soil, if present, should be removed prior to construction of roads and other surface utilities.
2. The native clays encountered near the surface were low to medium plastic and was considered moderately frost susceptible. The native sand encountered near the surface was also considered moderately frost susceptible. The closer the watertable is to the surface, the higher is the frost heave potential. The measured watertable levels were within 3.0 m below the existing grade in 3 testholes. Therefore, raising the grade can help reduce frost heave concerns.
3. The native clays encountered near the surface were low to medium plastic and exhibited a low to moderate swelling and shrinkage potential, and should not be a concern.
4. It is understood the roads will have a rural profile. A minimum ditch depth of 1.0 m is recommended from the bottom of the ditch to the top of the subgrade. Deeper ditches and adequate drainage will help keeping the groundwater level low and reduce the frost heave potential. Ditch grading should be designed to eliminate water accumulation. The gravel base

should daylight to allow drainage. Landscaping should only cover up to the bottom of the gravel.

5. The standard side slope of 4H:1V should be applicable for the embankment and side ditches. The 4H:1V side slope is recommended for geotechnical stability purposes only, and other factors such as wild-life damage and erosion are not considered. It is recommended that all side slopes be landscaped as soon as possible to help prevent erosion.
6. The standard subgrade preparation of scarifying a minimum of 150 mm and re-compaction to 100% of the SPD at the optimum moisture content should be satisfactory for the properly compacted embankment. The subgrade should be proof rolled after final compaction. Any areas showing visible deflections should be inspected and repaired. If subgrade preparation fails to produce an adequate subgrade, the following options can be considered on site during construction.
    a. Soft subgrade can be removed and replaced with drier soil, and re-compacted to 100% SPD.
    b. Soft subgrade can be stabilized with cement. A minimum subgrade preparation of mixing 10 kg/m^2 of cement to 150 mm depth of subgrade, and recompacted to a minimum 100% of SPD at optimum moisture content should be expected.
    c. Soft subgrade can be removed and replaced with additional 300 mm to 450 mm thick gravel sub-base lined with geogrid and non-woven separator.
7. A minimum cross slope of 2.0% should be maintained for the subgrade to ensure positive drainage within the gravel. Care must be taken not to allow any excess moisture into the subgrade.
8. Care must be taken not to allow any excess moisture into the subgrade during construction. It is also important that subgrade soils not be allowed to dry excessively when exposed. Weather conditions should be considered during construction.
9. It is understood roads with grave surface are planned. No minimum pavement structure requirement was provided to our firm. A subgrade modulus of 30 MPa is estimated for a properly prepared subgrade. The following pavement structure is recommended.

Table 7.3.1: Recommended Non-Staged Roadway Structure

Road Classifications		Rural Local Residential
Material	Crushed Gravel	200 mm
Notes	Crushed Gravel = Alberta Transportation Designation 4 Class 20 aggregate All granular base material should be compacted to 100% of the Standard Proctor Density in maximum 150 mm lifts.	

No traffic loading data was provided to our firm at this time. Our firm should be advised

when updated traffic loading information becomes available and the pavement design should be modified accordingly.

10. As with all gravel surfaces, maintenance will be required on a regular basis to repair damages caused by wearing and tearing. The gravel surface structure will deteriorate if left unattended for an extended period of time.

7.4 Preliminary Private Sewage Disposal

1. It is understood the proposed subdivision will not have public water and sewer utility services and no underground utilities are planned. If any underground utility is planned, more recommendations on trenching and backfill placement can be supplied upon request.
2. Private sewage treatment systems are regulated by the Alberta Private Sewage Systems Standard of Practice – 2021 (Standard) and should conform to this document. The size and layout of the disposal field should be decided on a location specific basis. Further testing and engineering will be required.
3. A minimum vertical separation of 1.5 m above the watertable (restricting layer) to the point of primary treated effluent infiltration is required in the Standard. The measured watertable levels were within 2.0 m below the existing grade in 3 testholes, and may not provide adequate separation from typical septic field depth of 0.6 m below the ground surface. Therefore, raising the grade and construct a septic mound will be required to adequate separation from the watertable. It is emphasized that the actual watertable separation should be confirmed on a location specific basis. Further testing and engineering will be required.
4. For preliminary purposes, hydrometer analysis was conducted on a near surface soil sample in each testholes, and the clay and sand contents are summarized below.

Table 7.4.1: Soil Texture Classification Summary

Testhole	Depth (m)	Clay (%)	Silt (%)	Sand (%)	Texture Classification
2025 - 1	0.6	1.4	3.9	93.7	Sand
2025 - 2	0.6	1.5	3.7	94.8	Sand
2025 - 3	0.6	0.7	3.4	95.9	Sand
2025 - 4	1.5	1.8	3.7	92.8	Sand
2025 - 5	0.6	5.1	13.3	75.0	Sandy Loam
2025 - 6	1.5	3.8	11.8	83.0	Loamy Sand
2025 - 7	1.5	28.9	28.6	41.7	Clay Loam
2025 - 8	0.6	23.8	31.4	43.8	Loam
Texture classification refers to Figure 8.1.1.10 in the Alberta Sewage System Standard of Practice					

Based on the grain size distributions, the soils were classified using the Soil Texture

Classification Triangle provided in the Standard. Depending on the effluent quality and soil structure, the effluent loading rate and the range of hydraulic linear loading rate for each soil texture can be found in Table 8.1.1.10 from the Standard.

No unsuitable heavy clay was encountered near the surface in the testholes. The sandy loam, loam, sand, and silty clay loam encountered near the surface should be considered suitable for treatment field. However, as noted in clause 8.2.2.2 in the Standard, a pressure effluent distribution lateral pipe system will be required for treatment field constructed in sand.

5. Holding tanks employed in areas with high watertable within this site should be constructed with some form of anchor to prevent uplift by its own buoyant force.

7.5 Groundwater & Drainage Issues

1. The measured watertable levels were within 3.0 m below the existing grade in 3 testholes. Where the watertable is high, design house grade and basement excavations should be kept as high as possible to avoid groundwater issues. As previously mentioned, constructing a footing foundation below the watertable is not recommended.
2. Where house basements and footing foundations are near the watertable, upgraded foundation drainage to include a washed rock slab base, interior and exterior weeping tile, and dimpled membrane around the exterior foundation wall is recommended. A schematic drawing depicting the recommended drainage measures is attached.

   Frequent pump operations should also be expected. One or two sumps and pumps in the house basements can handle this flow.

   If footings are more than 1.0 m above the watertable, standard house drainage measure should be sufficient. The need for upgraded foundation drainage should be determined on a lot-by-lot basis.
3. Any water pumped out from temporary dewatering or long-term foundation drainage system should be discharged in approved area as far away as possible. The water should not be discharged near the excavation or the house to prevent recirculation back toward the excavation or the house.
4. It is emphasized that the dewatering measures in Items 2 and 3 may be feasible in summer time. However, if groundwater seepage becomes frozen in winter time, dewatering may not be feasible. Footings and slabs must not be constructed on ice.
5. It is understood no storm sewer is planned. Therefore, water collected in the sumps will be discharged overland. This overland discharge can be problematic for homeowners due to

excessive water on the lot or icing of the water in cold weather. Maintenance of the sump pump discharge outlet will be required. Winter discharges must not cause icing on roads, driveways, or sidewalks due to safety concerns.

6. In addition to proper lot grading recommended in Items 7.2.10, the following alternatives may also be considered in order to ensure no flow paths for water from the roof leaders occur adjacent to the foundation walls:
    a. A concrete splash pad, placed beneath the downspouts, a minimum of 1.2 m long and firmly anchored to the house foundation can be used.
    b. A permanent downspout extension could be used to carry water away from the foundation wall. This is the recommended option where high plastic clay is present at the footing elevation.

7.6 Cement

Tests on selected soil samples indicated a negligible concentration of water-soluble soil sulphate presence in the native deposits. The following alternatives are advised to address the sulphate content:

1. Underground Concrete Pipe:

   Concrete used for all underground must be constructed of C.S.A. Type HS, high sulphate resistant hydraulic cement.

2. Curbs and Sidewalks:

   All concrete for surface improvements such as sidewalks and curbs may be constructed using C.S.A. Type GU, cement.

3. Foundation Construction:

   Based on C.S.A. Standards A23.1-24, Type GU cement may be used for all concrete in contact with the soil. However, individual locations may show higher or lower concentrations of soluble soil sulphate, and thus additional soil testing on each individual excavation may prove valuable.

   All concrete subject to freeze thaw must be air entrained with 5% to 7% air. Concrete subject to freezing and/or de-icing chemicals should be designed for the applicable exposure classification as outlined in the CSA A23.1-24 standards.

8.0 CLOSURE

This report has been prepared for the exclusive and confidential use of Core Geomatics., Two Hills County, and their authorized agents. Use of this report is limited to the subject proposed residential

development only. The recommendations given are based on the subsurface soil conditions encountered during test boring, current construction techniques and generally accepted engineering practices. No other warranty, expressed or implied, is made. Due to geological randomness of many soil formations, no interpolation of soil conditions between or away from the testholes has been made or implied. Soil conditions are known only at the test boring location. Should other soils be encountered during construction or other information pertinent becomes available, the undersigned should be contacted as the recommendations may be altered or modified.

We trust this information is satisfactory. If you should have any questions, please contact our office.

Respectfully Submitted,

J.R. PAINE & ASSOCIATES LTD.

ID # 76087

John Tsoi, P. Eng.
j.tsoi@jrp.ca

Reviewed by: Rick Evans, P. Eng.
President

H:\DATA 2025\5529 CORE Geomatics\5529-2 Acreage NW24-55-12-W4M Two Hills\r3608cor.docx

9.0 APPENDIX

J.R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS

2012 Air Photo
NW 24 - 55 - 12 - W4M
Range Road 121 & Township Road 554
Two Hills County, Alberta

SCALE 1:5000	DATE: April 14, 2025
FILE #: 5529 - 2	Figure 1

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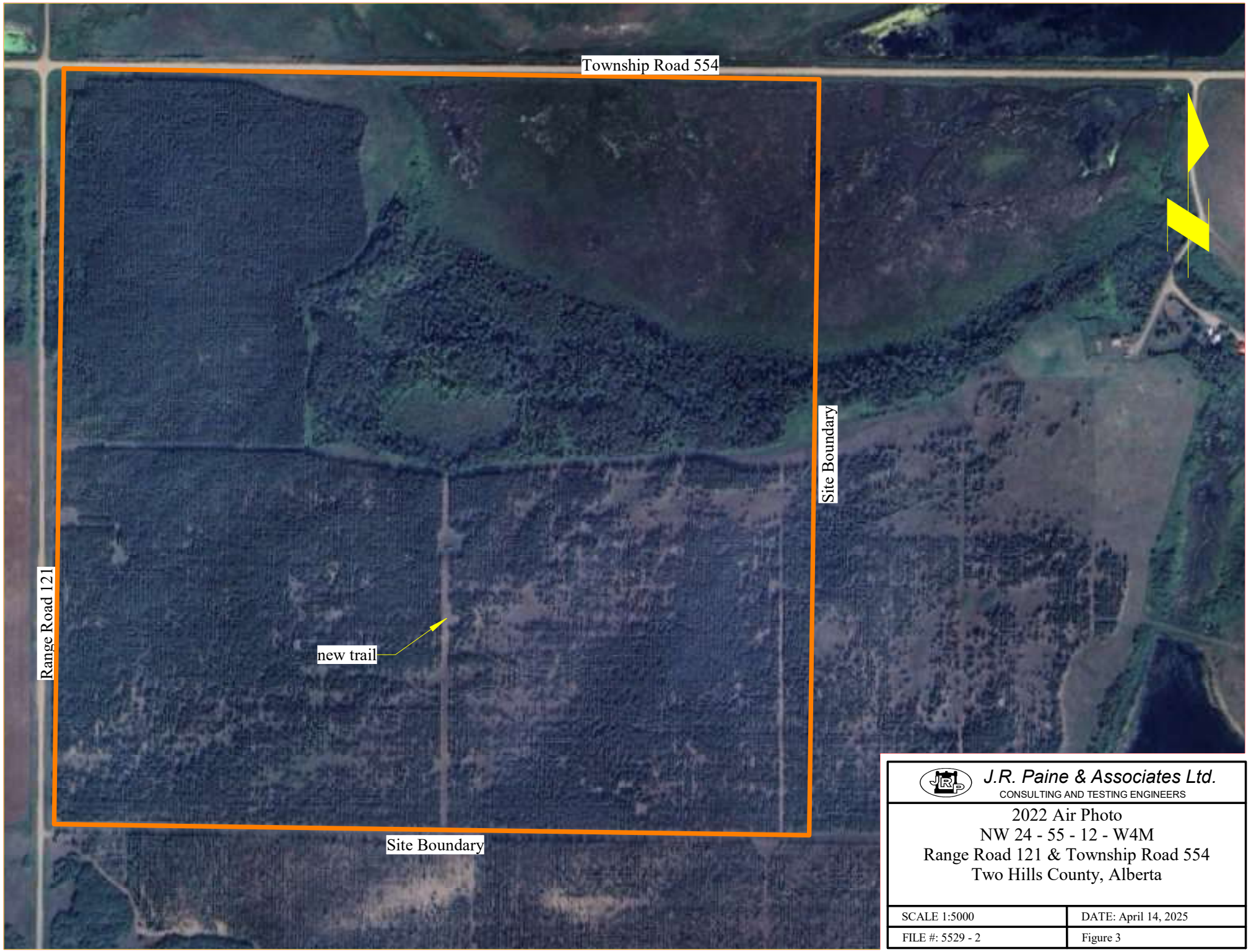
2018 Air Photo
NW 24 - 55 - 12 - W4M
Range Road 121 & Township Road 554
Two Hills County, Alberta

SCALE 1:5000	DATE: April 14, 2025
FILE #: 5529 - 2	Figure 2



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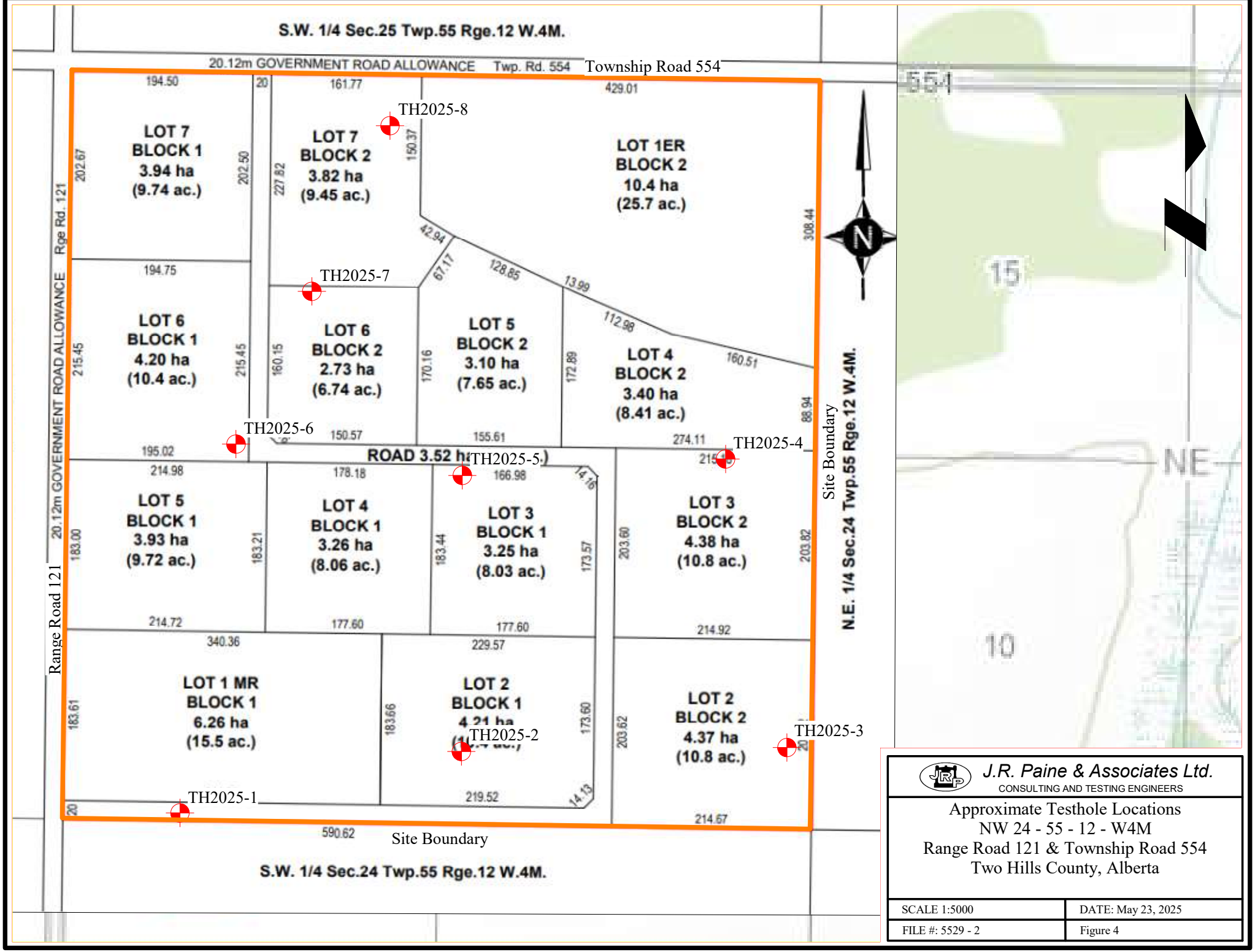
2022 Air Photo
NW 24 - 55 - 12 - W4M
Range Road 121 & Township Road 554
Two Hills County, Alberta

SCALE 1:5000	DATE: April 14, 2025
FILE #: 5529 - 2	Figure 3



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Approximate Testhole Locations
NW 24 - 55 - 12 - W4M
Range Road 121 & Township Road 554
Two Hills County, Alberta

SCALE 1:5000	DATE: May 23, 2025
FILE #: 5529 - 2	Figure 4

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 1**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 584.24 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	▲POCKETPEN. (kPa)▲ 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0		OR	**TOPSOIL** 300 mm				DRAFT		584
			SAND : medium grained, moist, loose, brown, trace oxide and gravel			4.8	**Hydrometer**: at 0.6m depth. Gravel: 1 % Sand: 93.7 % Silt: 3.9 % Clay: 1.4 %		
1					8	3.6, 5.2			583
			Below 1.2 m - some coal			8			
2						8.9			582
					9	4.1			
3						4.3			581
		SP				4.1			
4					11	4.7			580
						4.5			
5						4.4			579
					11	4.6			
6						5.2			578
						3.1			
7					15	4.2			577
			END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 7.02m.						
8			8 day waterlevel reading: Dry to 7.02 m bgs. (577.22)						576
			18 day waterlevel reading: Dry to 7.02 m bgs. (577.22)						
9									575
10									

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Fax: (780) 489-0800

LOGGED BY: J Tsoi	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 2**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 586.64 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0		OR	**TOPSOIL** 500 mm			4.6	DRAFT		586
1			**SAND** : medium grained, moist, loose, brown, trace oxide		8	3.2, 3.3	**Hydrometer**: at 0.6m depth. Gravel: % Sand: 94.8 % Silt: 3.7 % Clay: 1.5 %		585
2					8	3.4, 2.9, 3.4			584
3						3			583
4		SP			10	2.6, 2.9			582
5					11	2.6, 2.9, 2.5			581
6						3			580
7					11	2.1, 2.4			579
8			**END OF TESTHOLE @ 7.3 m.** No water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 7.07m.						578
9			8 day waterlevel reading: Dry to 7.07 m bgs. (579.57) 18 day waterlevel reading: Dry to 7.07 m bgs. (579.57)						577
10									

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REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 3**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 589.39 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	▲POCKETPEN. (kPa)▲ 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0		OR	**TOPSOIL** 300 mm				DRAFT		589
			SAND : medium grained, moist, loose, brown, trace oxide			4	**Hydrometer**: at 0.6m depth. Gravel: % Sand: 95.9 % Silt: 3.4 % Clay: 0.7 %		
1					8	3.2 3.8			588
			Below 1.5 m - trace coal			3.3			
2					7	3.4 3.8			587
3						8.8			586
4		SP			5	4 4.1			585
5					7	2.8 2.3 3.5			584
6						2.2			583
7					7	2 3			582
			END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 7.02m.						
8			8 day waterlevel reading: Dry to 7.02 m bgs. (582.37)						581
9			18 day waterlevel reading: Dry to 7.02 m bgs. (582.37)						
10									580

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REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 4**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 576.79 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	Water Level	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400	PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0			OR	**TOPSOIL**			12.5		DRAFT		576
				600 mm			6.2				
1	Well 1: 1.53			**SAND** : medium grained, very moist, loose, brown, trace oxide		9	7.7			Well 1: 575.26	
							15.3		**Hydrometer**: at 1.5m depth. Gravel: 1.7 % Sand: 92.8 % Silt: 3.7 % Clay: 1.8 %		575
2				Below 1.8 m - wet			20				
						13	17.3				
			SP								574
3							17.2				
							19.4				573
4				Below 4.0 m - grey		11	21.2				
							18.3				572
				4.9 m							
5				**CLAY** : silty, low plastic, very moist, firm, grey			17.3	9.8 24.9	P.L. = 9.8 L.L. = 24.9 M.C. = 17.3 **Soluble Sulphates:** Negligible		
						7	17.6				571
6			CL				18.4				
							19.8				570
7						9	17.2				
				END OF TESTHOLE @ 7.3 m. 5.8 m of water and 1.1 m of slough on completion of testhole. Well 1: Slotted standpipe installed to 6.25m.						569
8				8 day waterlevel reading: 1.47 m bgs. 18 day waterlevel reading: 1.53 m bgs.							
											568
9											
											567
10											

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REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5

JRP TWOHILLS1.GPJ JRPV3_1.GDT 25-6-9

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 5**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 577.67 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DRAFT

Depth (m)	Water Level	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400	PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0			OR	**TOPSOIL** 500 mm			8.5				577
				SAND : clayey, medium grained, moist, loose, brown, trace oxide and gravel			7.8		**Hydrometer**: at 0.6m depth. Gravel: 6.6 % Sand: 75 % Silt: 13.3 % Clay: 5.1 %		
1						9	9.4				
	Well 1: 1.93						6.4			Well 1: 575.74	576
2				Below 1.8 m - wet			14				
						7	16				575
3							24.9				
							24.1				574
4			SC			4	22.1				
							25.3				573
5							19				
						2	20.8				572
6							12.9				
							22.2				571
7				Below 7.0 m - very clayey		6	18.4				
				END OF TESTHOLE @ 7.3 m. 5.4 m of water and 2.5 m of slough on completion of testhole. Well 1: Slotted standpipe installed to 4.83m.							570
8											
				8 day waterlevel reading: 1.88 m bgs. 18 day waterlevel reading: 1.93 m bgs.							569
9											
											568
10											

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LOGGED BY: J Tsoi	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 6**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 579.08 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DRAFT

Depth (m)	Water Level	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400	PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0			OR	**TOPSOIL**			10.9, 9.5				579
				900 mm							
1			SM	**SAND** : silty, fine grained, dry, loose, brown		9	7.3, 4.1		**Hydrometer**: at 1.5m depth. Gravel: 1.4 % Sand: 83 % Silt: 11.8 % Clay: 3.8 %		578
2				2.4 m			2.7				577
3	Well 1: 3.18			**SAND** : medium to corase grained, moist, loose, brown, trace oxide		9	2.1, 5			Well 1: 575.90	576
				Below 3.4 m - wet							
4			SP			8	19.7, 17.6				575
5							20.1				574
6						10	17.9, 17.5				573
							29.4				
7			CI	6.7 m **CLAY** : silty, medium plastic, moist, stiff, grey		12	18.6, 16.6				572
8				**END OF TESTHOLE @ 7.3 m.** 4.1 m of water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 6.83m. 8 day waterlevel reading: 3.16 m bgs. 18 day waterlevel reading: 3.18 m bgs.							571
9											570
10											

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LOGGED BY: J Tsoi	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 7**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 577.4 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DRAFT

Depth (m)	Water Level	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0				**TOPSOIL**						577
			OR				18.6			
							17.1			
1				1.1 m		6	13.5			
				CLAY : silty, low to medium plastic, moist, stiff to very stiff, brown and grey, trace oxide and white residue						576
	Well 1: 1.97						16.4	**Hydrometer**: at 1.5m depth. Gravel: 0.8 % Sand: 41.7 % Silt: 28.6 % Clay: 28.9 %	Well 1: 575.43	
2							14.1			
						10	14.1			575
3							15.6 10.5 29.8	P.L. = 10.5 L.L. = 29.8 M.C. = 15.6 **Soluble Sulphates:** Negligible		
			CL-CI							574
							16.2			
4						7	17.9			
				Below 4.6 m - very moist, firm						573
				Below 4.9 m - grey			18.2			
5										
							18.8			
						7	22.4			572
				5.8 m						
6				**CLAY** : silty, medium to high plastic, damp, ground up, grey, bedrock-like			29.4			
			CI-CH							571
							28			
7						29	21.7			
				END OF TESTHOLE @ 7.3 m. 5.1 m of water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 7.2m.						570
8										
				8 day waterlevel reading: 1.95 m bgs. 18 day waterlevel reading: 1.97 m bgs.						569
9										
										568
10										

J.R. Paine & Associates Ltd.
CONSULTING & TESTING ENGINEERS
- GEOTECHNICAL - ENVIRONMENTAL - MATERIALS -
2304 - 119 Avenue NE
Edmonton, AB T6S 1B3
Phone: (780) 489-0700
Fax: (780) 489-0800

LOGGED BY: J Tsoi	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

PROJECT: Two Hills Acreage	PROJECT NO: 5529 - 2	BOREHOLE NO: **2025 - 8**
CLIENT: Core Geomatics	DRILL METHOD: Solid Stem Auger	ELEVATION: 578.78 m
OWNER: Core Geomatics	LOCATION: As per site plan	

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL SYMBOL	MODIFIED USCS	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN. (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER 1	Elevation (m)
0		OR	**TOPSOIL** 500 mm				DRAFT		
			CLAY : silty, medium plastic, damp, ground up, brown, bedrock-like			15.9; 7.5; 8.6; 8.5; 10.9 33.3	**Hydrometer**: at 0.6m depth. Gravel: 1 % Sand: 43.8 % Silt: 31.4 % Clay: 23.8 % Rock, SPT not reliable P.L. = 10.9 L.L. = 33.3 M.C. = 8.5 **Soluble Sulphates:** Negligible		578
1									
2			Below 2.1 m - moist, very stiff			18.2; 22.5			577
					29				
3						23.9			576
4		CI			32	26.3; 24.8			575
5						25.6			574
					22	25.2; 24.6			573
6			Below 6.1 m - grey			22.4			
7					31	21.7; 21.1			572
			END OF TESTHOLE @ 7.3 m. No water and no slough on completion of testhole. Well 1: Slotted standpipe installed to 6.49m.						571
8			8 day waterlevel reading: Dry to 6.49 m bgs. (572.29) 18 day waterlevel reading: Dry to 6.49 m bgs. (572.29)						570
9									
10									569

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LOGGED BY: J Tsoi	COMPLETION DEPTH: 7.32 m
REVIEWED BY: R Evans	COMPLETION DATE: 25-5-5
	Page 1 of 1

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CONSULTING AND TESTING ENGINEERS

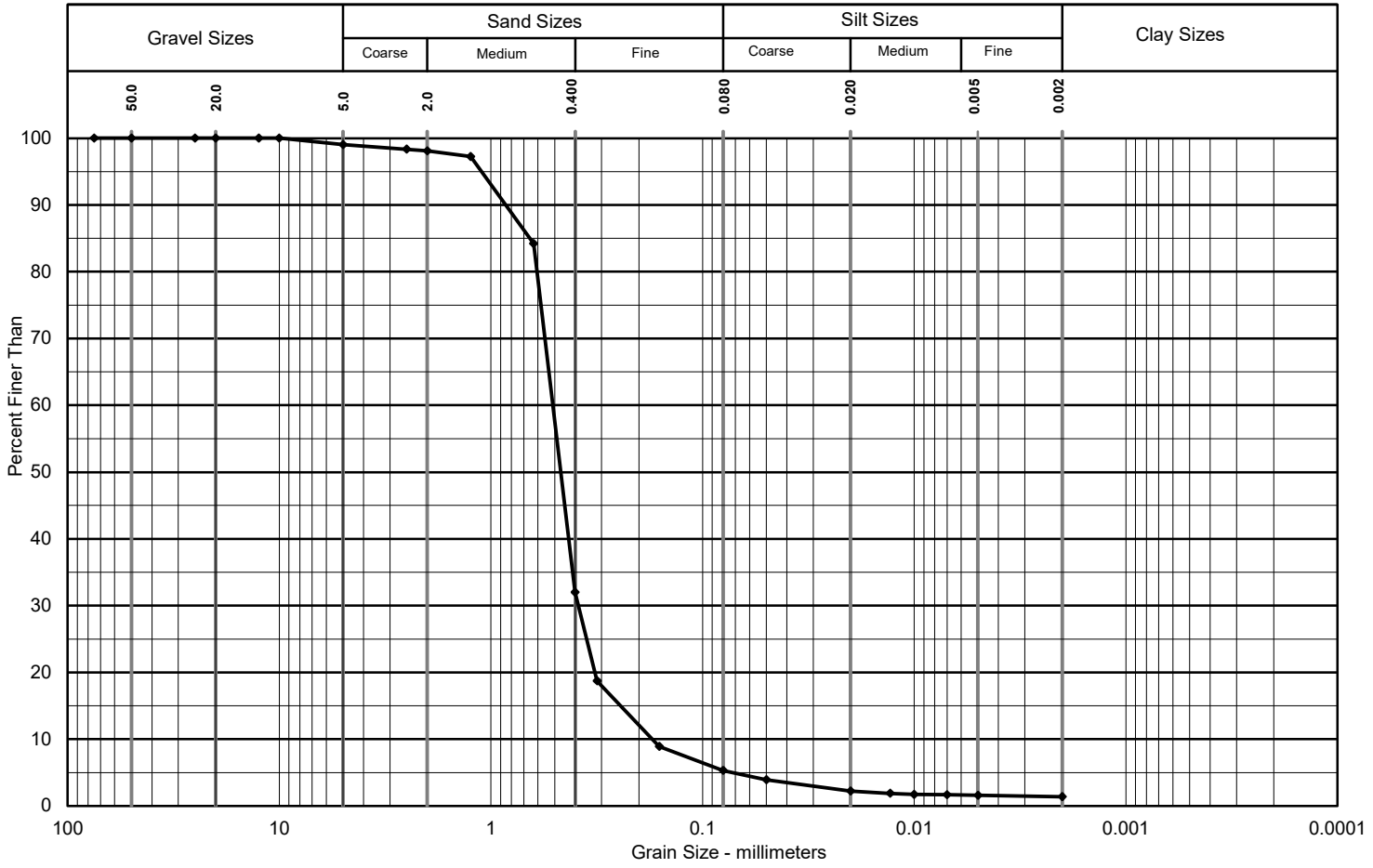
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-1
Depth: 2 feet
Location:

Job No: 5529-2
Date: 2025-05-27
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	1.0%
Sand	93.7%
Silt	3.9%
Clay	1.4%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	99.0
2.50	98.4
2.00	98.1
1.25	97.2
0.630	84.2
0.400	32.0
0.315	18.7
0.160	8.9
0.080	5.3

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	2.2
0.005	1.6
0.002	1.4

Remarks:

J.R. Paine & Associates Ltd.
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CONSULTING AND TESTING ENGINEERS

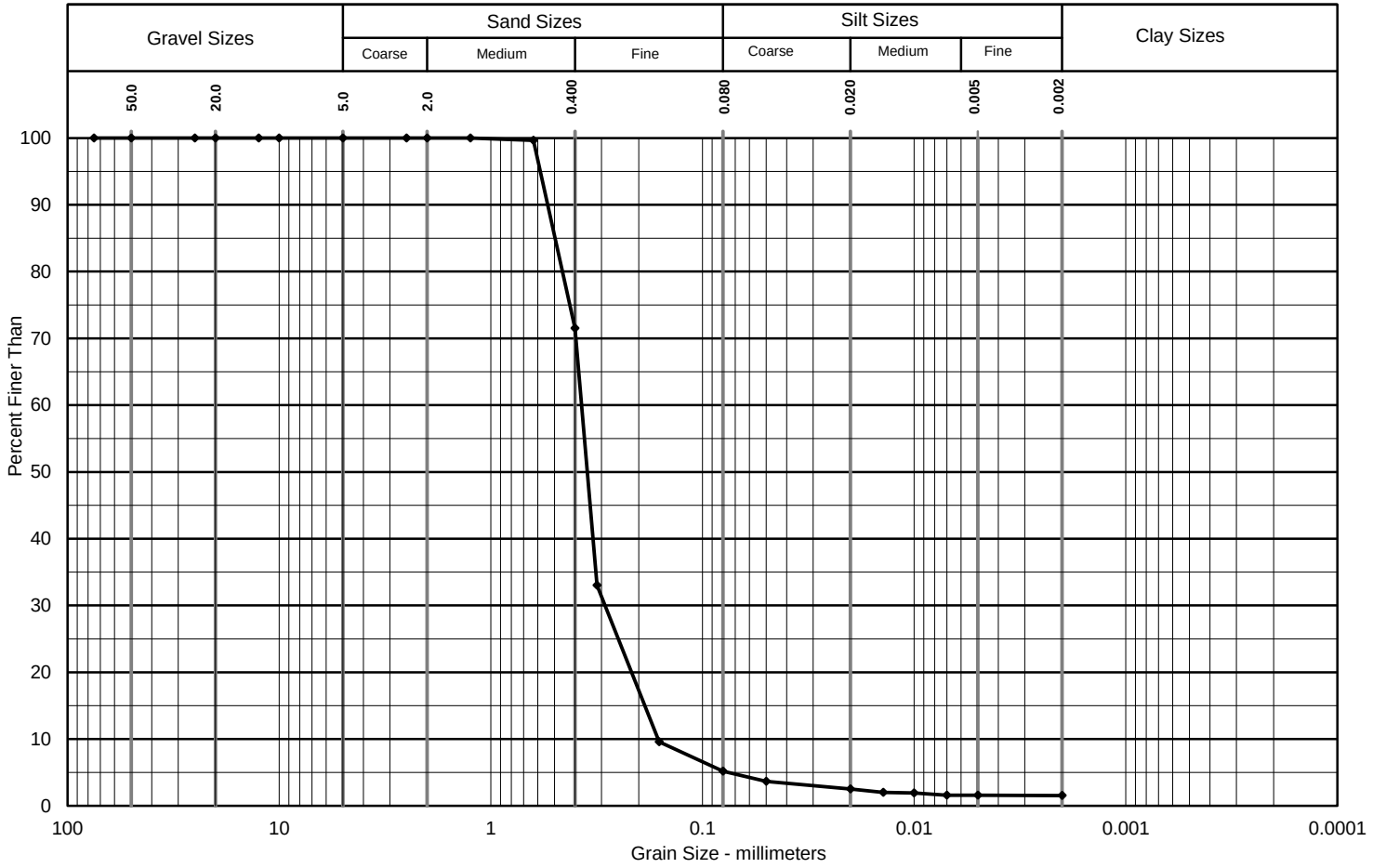
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-2
Depth: 2 feet
Location:

Job No: 5529-2
Date: 2025-05-26
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	0.0%
Sand	94.8%
Silt	3.7%
Clay	1.5%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	100.0
2.50	100.0
2.00	100.0
1.25	100.0
0.630	99.6
0.400	71.5
0.315	33
0.160	9.6
0.080	5.2

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	2.5
0.005	1.6
0.002	1.5

Remarks:

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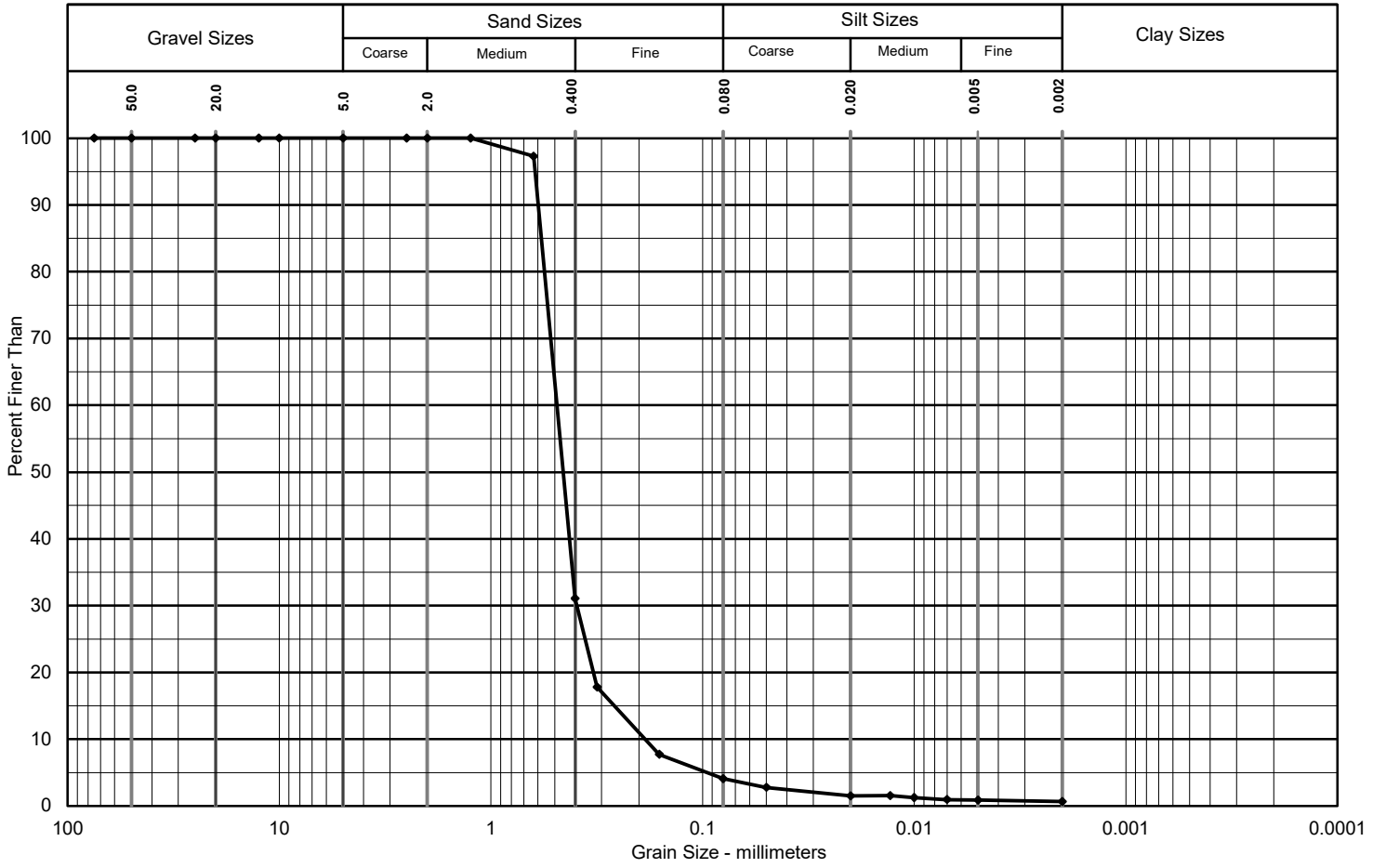
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-3
Depth: 2 feet
Location:

Job No: 5529-2
Date: 2025-05-27
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	0.0%
Sand	95.9%
Silt	3.4%
Clay	0.7%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	100.0
2.50	100.0
2.00	100.0
1.25	100.0
0.630	97.3
0.400	31.1
0.315	17.8
0.160	7.7
0.080	4.1

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	1.5
0.005	0.8
0.002	0.7

Remarks:

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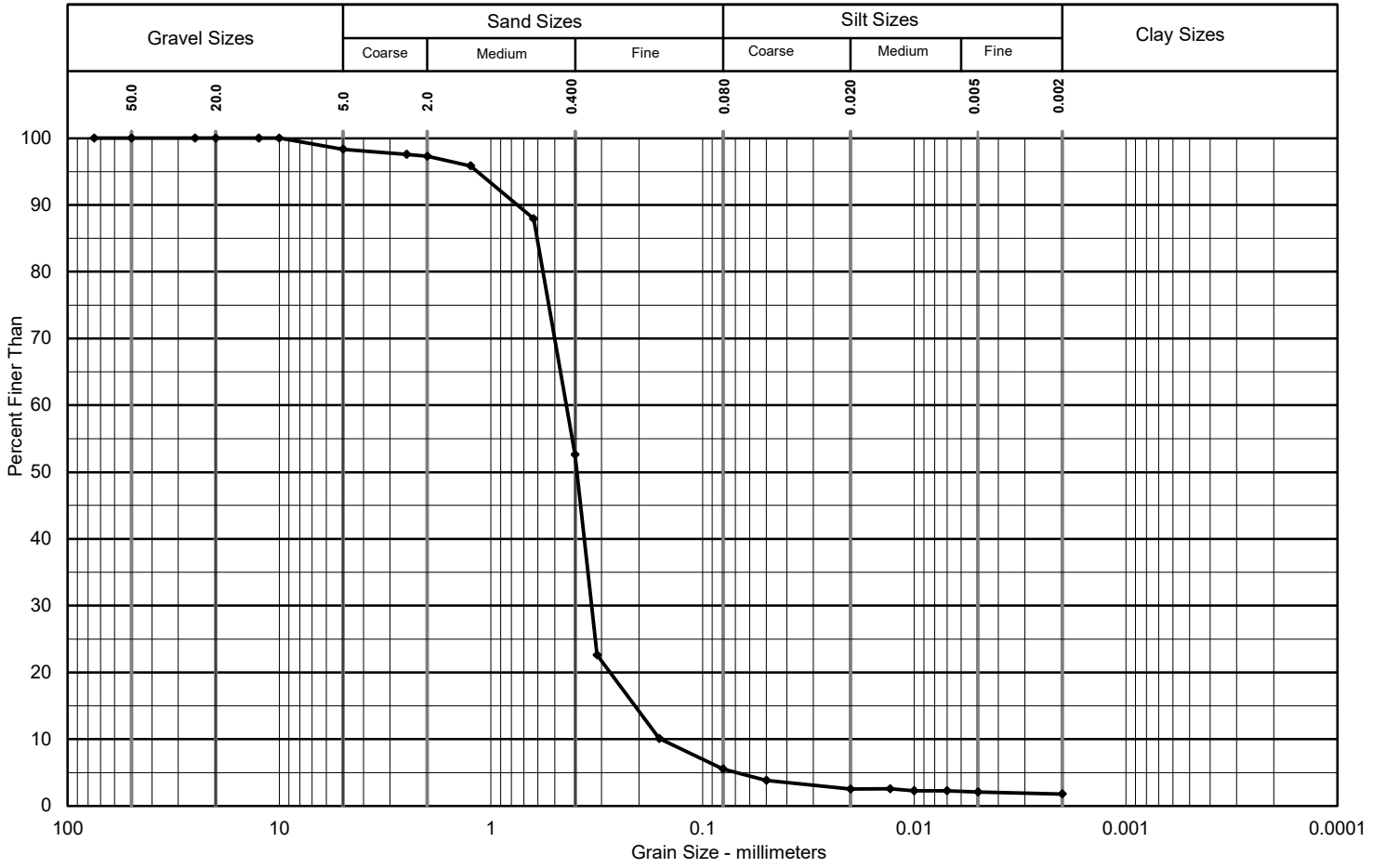
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-4
Depth: 5 feet
Location:

Job No: 5529-2
Date: 2025-05-26
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	1.7%
Sand	92.8%
Silt	3.7%
Clay	1.8%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	98.3
2.50	97.6
2.00	97.3
1.25	95.9
0.630	87.9
0.400	52.6
0.315	22.6
0.160	10.1
0.080	5.5

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	2.5
0.005	2.1
0.002	1.8

Remarks:

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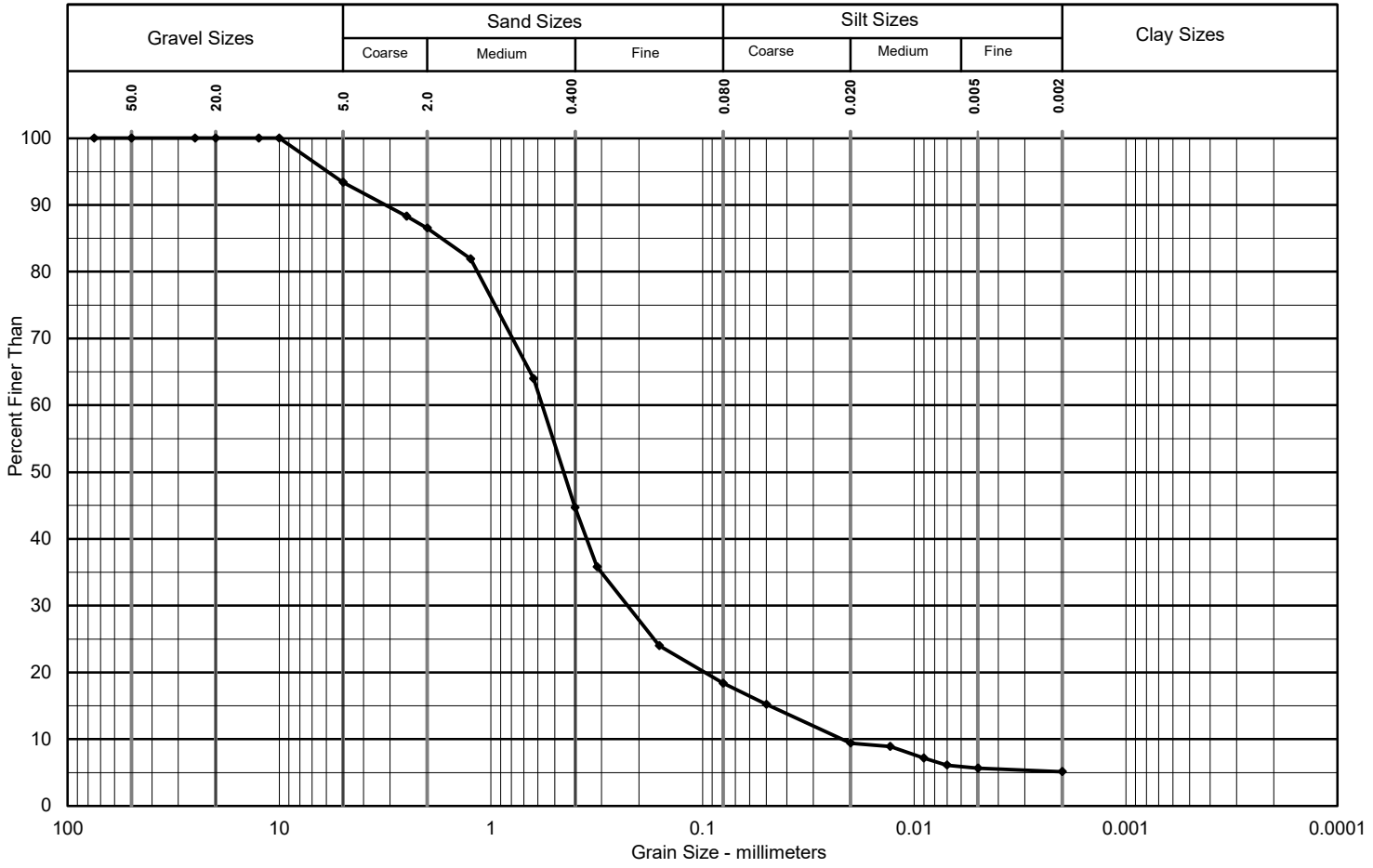
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-5
Depth: 2 feet
Location:

Job No: 5529-2
Date: 2025-05-06
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	6.6%
Sand	75.0%
Silt	13.3%
Clay	5.1%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	93.4
2.50	88.3
2.00	86.6
1.25	81.9
0.630	64.0
0.400	44.7
0.315	35.8
0.160	24
0.080	18.4

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	9.4
0.005	5.6
0.002	5.1

Remarks:

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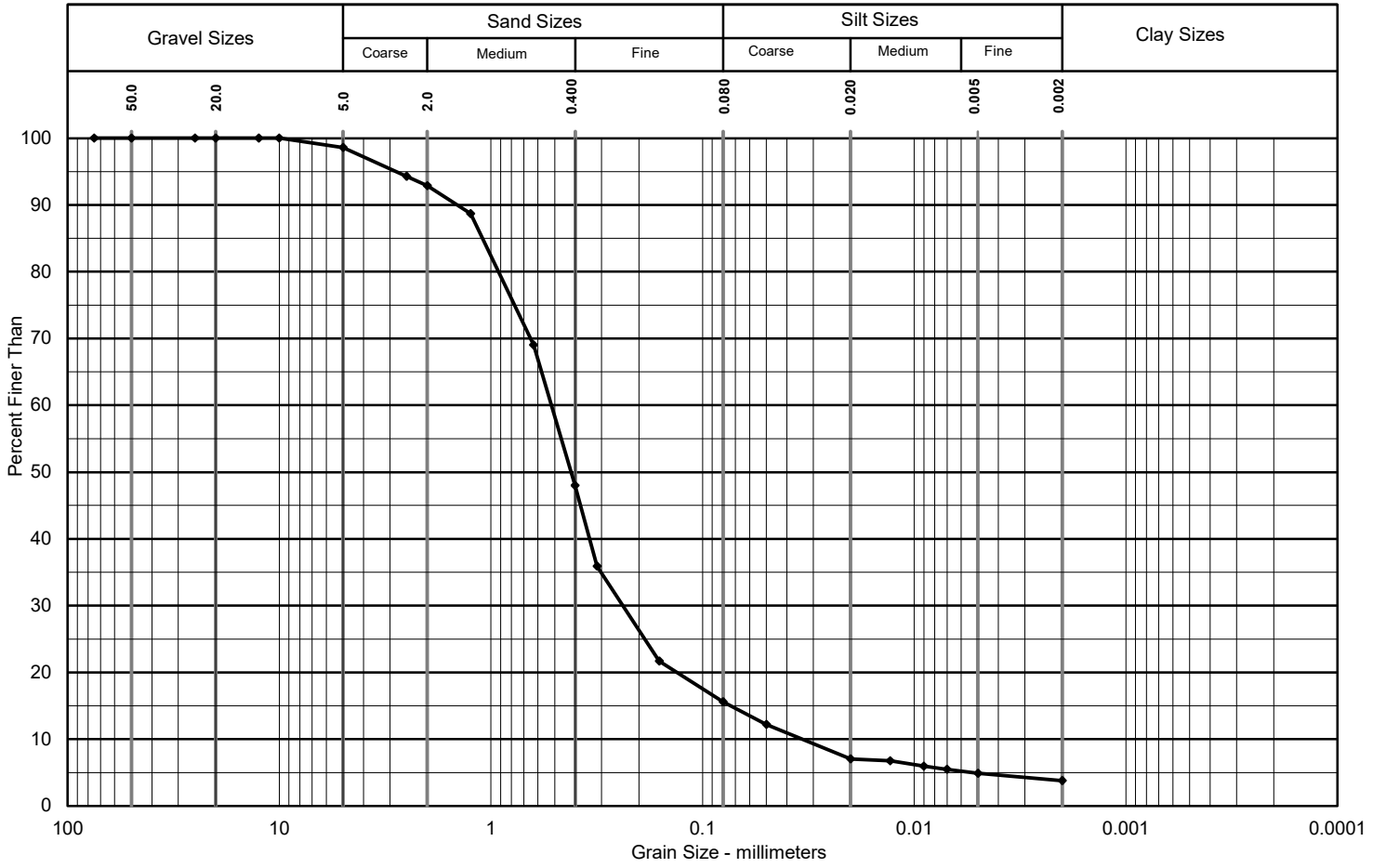
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-6
Depth: 5 feet
Location:

Job No: 5529-2
Date: 2025-05-28
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	1.4%
Sand	83.0%
Silt	11.8%
Clay	3.8%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	98.6
2.50	94.3
2.00	92.9
1.25	88.7
0.630	69.0
0.400	48.0
0.315	35.9
0.160	21.7
0.080	15.6

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	7.1
0.005	4.9
0.002	3.8

Remarks:

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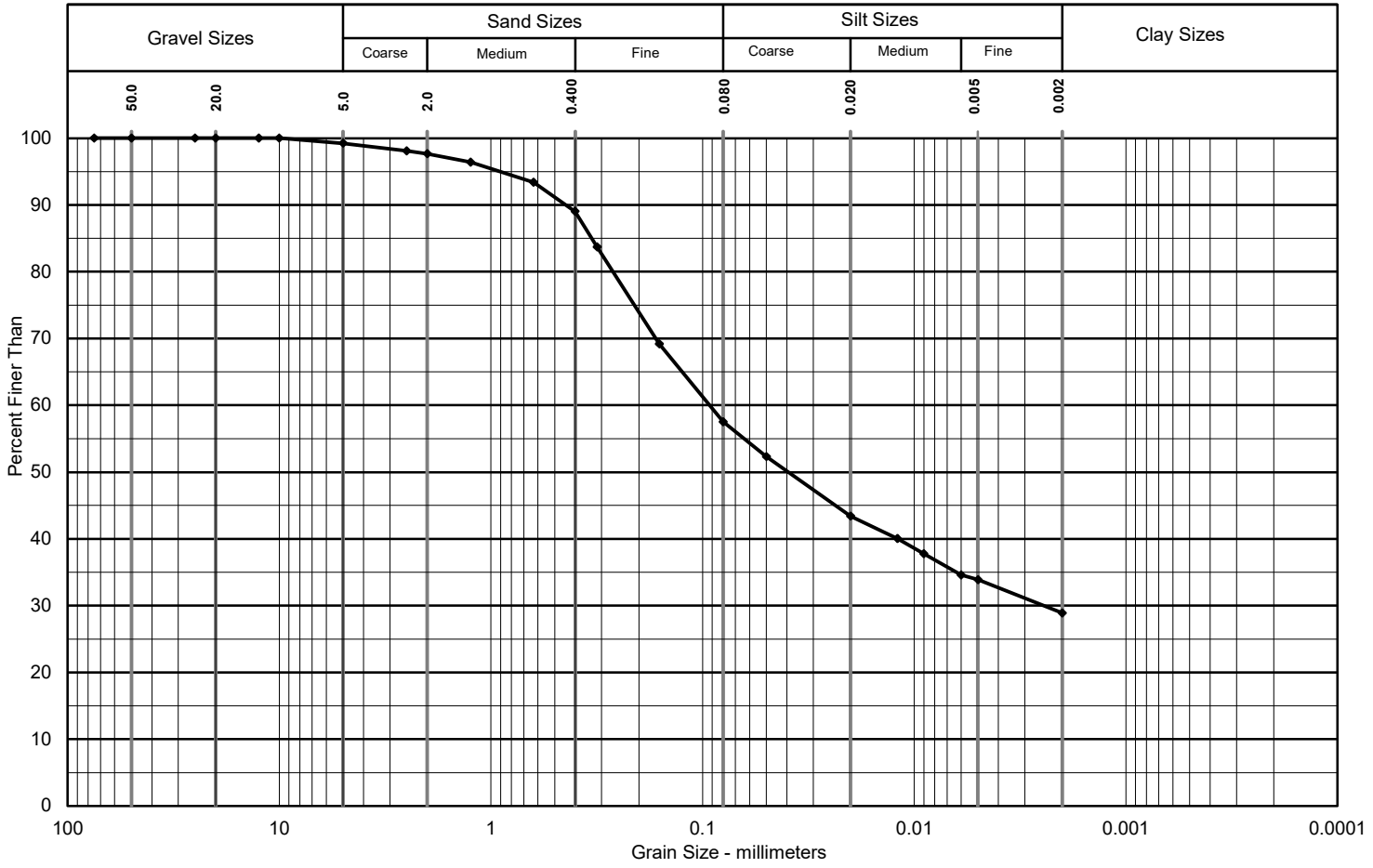
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-7
Depth: 5 feet
Location:

Job No: 5529-2
Date: 2025-05-28
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION



USCS Grain Size Proportions	
Gravel	0.8%
Sand	41.7%
Silt	28.6%
Clay	28.9%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	99.2
2.50	98.1
2.00	97.7
1.25	96.4
0.630	93.4
0.400	89.0
0.315	83.7
0.160	69.2
0.080	57.5

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	43.4
0.005	33.9
0.002	28.9

Remarks:

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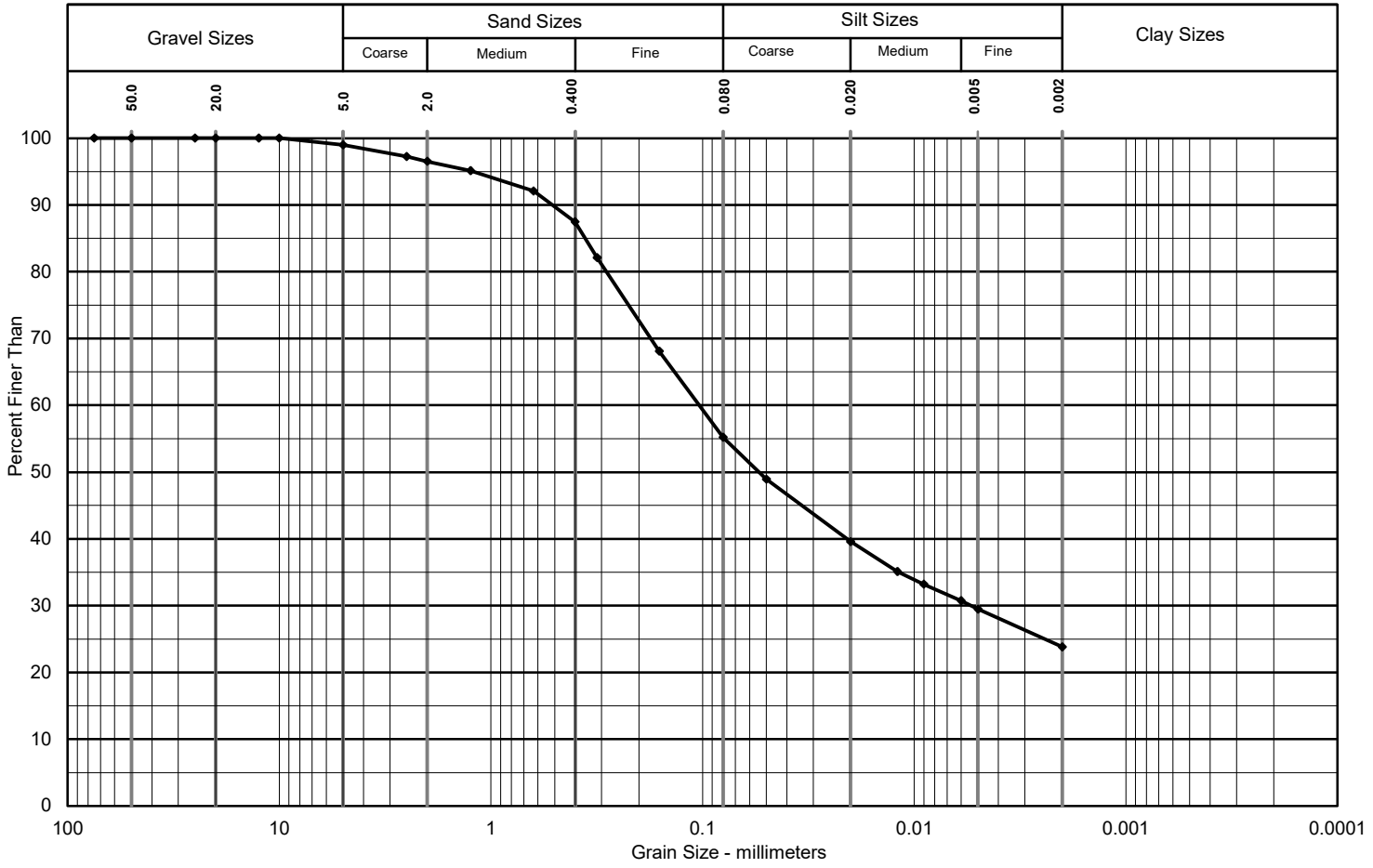
PARTICLE-SIZE ANALYSIS (AASHTO T88-22)

Sample: Testhole 2025-8
Depth: 2 feet
Location:

Job No: 5529-2
Date: 2025-05-06
Made By:
Ck'd By:

Client: CORE Geomatics
Project: Proposed Acreage Subdivision, NW24-55-12-W4M
County of Two Hills, Alberta

PARTICLE SIZE DISTRIBUTION

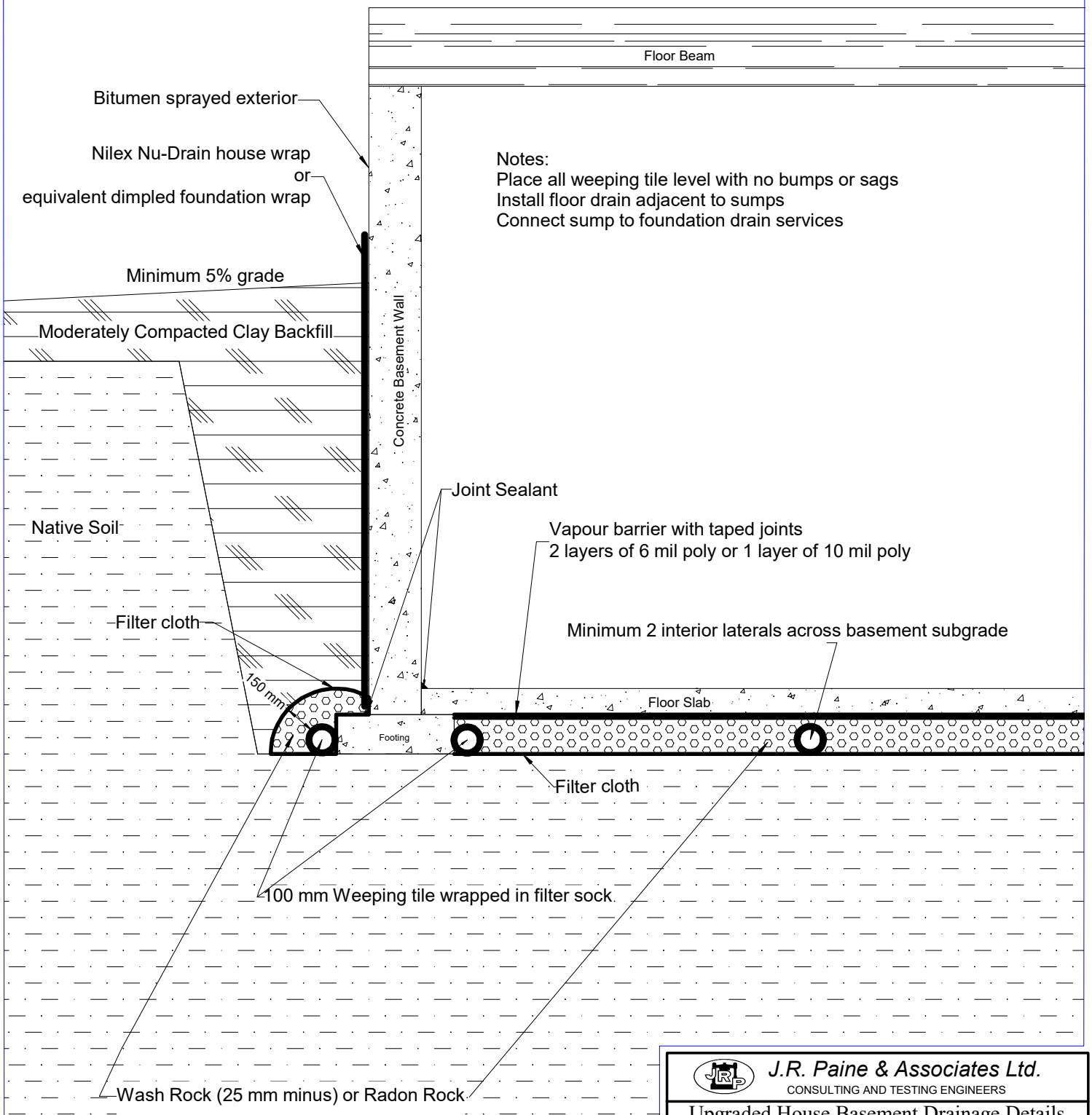


USCS Grain Size Proportions	
Gravel	1.0%
Sand	43.8%
Silt	31.4%
Clay	23.8%

Graine Size Analysis (Gravel & Sand)	
Sieve Size (mm)	Passing (%)
50.0	100.0
25.0	100.0
20.0	100.0
12.5	100.0
10.0	100.0
5.00	99.0
2.50	97.2
2.00	96.5
1.25	95.1
0.630	92.1
0.400	87.5
0.315	82.1
0.160	68.1
0.080	55.2

Hydrometer Analysis	
Grain Size (mm)	Passing (%)
0.020	39.6
0.005	29.5
0.002	23.8

Remarks:



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Upgraded House Basement Drainage Details
NW 24 - 55 - 12 - W4M
Range Road 121 & Township Road 554
Two Hills County, Alberta

NOT TO SCALE	DATE: June 5, 2025
FILE #: 5529 - 2	Figure 5