



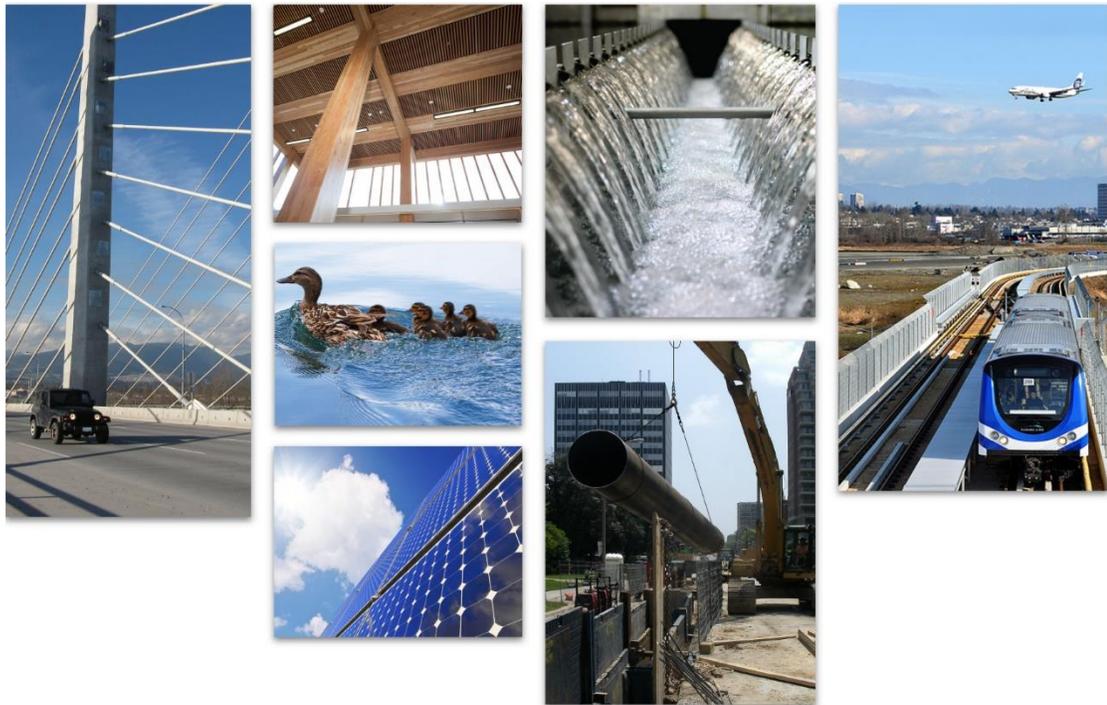
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Engineering

GLOBAL PERSPECTIVE.  
LOCAL FOCUS.

# REPORT

## Patience Lake Road Business Park Ltd.

### Comprehensive Development Review Report



DECEMBER 2024



Platinum  
member

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## EXECUTIVE SUMMARY

This Comprehensive Development Review (CDR) was prepared by Associated Engineering (Sask.) Ltd. for Patience Lake Road Business Development Ltd. to support the redesignation, rezoning, and phased subdivision of land in the E½ 10-10-36-4-W3M for an industrial park development. The property is located within the Saskatoon North Partnership for Growth Planning District and is currently designated for agricultural use.

### 1 Key Findings

- **Location and Accessibility:** The property is strategically located near major transportation routes, including the Saskatoon Freeway and Highway 394 (Patience Lake Road), providing excellent access to Saskatoon and surrounding areas.
- **Current Use and Physical Conditions:** The land has been previously used as a source of fill material for two major interchanges. These previous excavations combined with the central wetland and vegetated areas marginalize the viability of farming the land.
- **Environmental Considerations:** A natural area screening identified several wetlands and potential habitats for rare species. The development plan includes measures to mitigate environmental impacts, such as reconstructing the central wetland to function as a natural filter for stormwater and undertaking a habitat inventory before construction.
- **Geotechnical Assessment:** Preliminary geotechnical investigations confirm the site's suitability for development, with recommendations for conventional design and construction techniques.
- **Utility and Servicing Conditions:** The site will be serviced by existing utilities, including SaskPower, SaskEnergy, and SaskTel. A low-pressure water system will be provided by Lost River Water Utility, and wastewater will be managed through septic holding tanks.
- **Transportation and Access:** The development will include new paved internal roads and improvements to existing municipal and provincial roads to accommodate increased traffic. A Traffic Impact Assessment (TIA) supports the need for these improvements.
- **Policy and Regulatory Compliance:** The development aligns with the District Official Community Plan (DOCP) and other relevant policies, supporting the amendment of the land use designation from Agricultural to Rural Commercial/Industrial as a means of defining the highest and best use of land.

The detailed report supports the necessary amendments and provides a comprehensive plan for the successful development of the Patience Lake Road Business Park.

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## 2 INTRODUCTION

### 2.1 Purpose

This Comprehensive Development Review (CDR) report has been prepared by Associated Engineering (Sask.) Ltd. on behalf of Patience Lake Road Business Development Ltd (the Owner) to provide support for the redesignation, rezoning, and phased subdivision of approximately 87.5 ha (216.2 acres) located in the E ½ 10-36-4-W3M to support a proposed industrial park development.

The subject property lies within the Saskatoon North Partnership for Growth Planning District where land use is governed by the District Official Community Plan (DOCP). The DOCP Land Use Map designates the subject property for Agricultural development. The policies acknowledge and support the need for regular plan amendments to ensure the DOCP remains flexible and responsive to a changing environment and to ensure that lands within the plan area remain globally competitive. Section 31.3.2 of the DOCP requires that a proposed amendment should be supported by a Concept Plan or other detailed planning which would consider the impact of a change in land designation on the direction portrayed by the DOCP. A Comprehensive Development Review report is considered a suitable form of study to support an amendment to the Land Use Map as well as supporting rezoning and subdivision of the property.

The following rationale is provided to support an amendment to the current land designation as represented on the DOCP Land Use Map:

1. The subject property is transected by a 230 KV electrical transmission line operated by SaskPower extending east to west through the north half of the site within a 45-metre easement. This major transmission line creates a significant physical impediment to other forms of non-agricultural development but does not significantly hinder industrial uses.
2. The location of the Saskatoon Freeway route has been confirmed relative to this property and represents an opportunity to take advantage of this major infrastructure investment and the improved regional access and visibility it provides to support economic development.
3. Land use planning intends to identify and promote the highest and best use of land. The current use of this property is a mixture of farming and landfilling. The subject property has previously been used to excavate fill material to support the construction of two interchanges in Saskatoon. These excavations required the construction of an internal haul road effectively bisecting the cultivated lands within the northern portions of the plan area. The excavation, importation of fill and construction of an internal haul road have substantially reduced the area available for farming.

Existing vegetation and the central wetland area have limited cultivation to approximately 60% of the land area which reduces the financial viability of farming despite its Class 3 soil capability rating. The limited agricultural potential of the land combined with the situation of the property relative to the Saskatoon Freeway and future non-agricultural development associated with the Holmwood sector of Saskatoon makes this property suitable for the proposed development.

4. The subject property is adjacent to Highway 394 (known as Patience Lake Road) which is a secondary provincial highway. Patience Lake Road is a two-lane paved highway and although it is classified as a secondary highway, it can accommodate primary weights due to its proximity to Highway No. 16. Patience Lake Road offers direct and convenient access to Saskatoon as well as access to Highway No. 16 via a fully signalized and upgraded intersection at Zimmerman Road. Combined with the future development of the

Saskatoon Freeway, the subject property will abut two major provincial transportation corridors limiting the impact of development on municipal roadways.

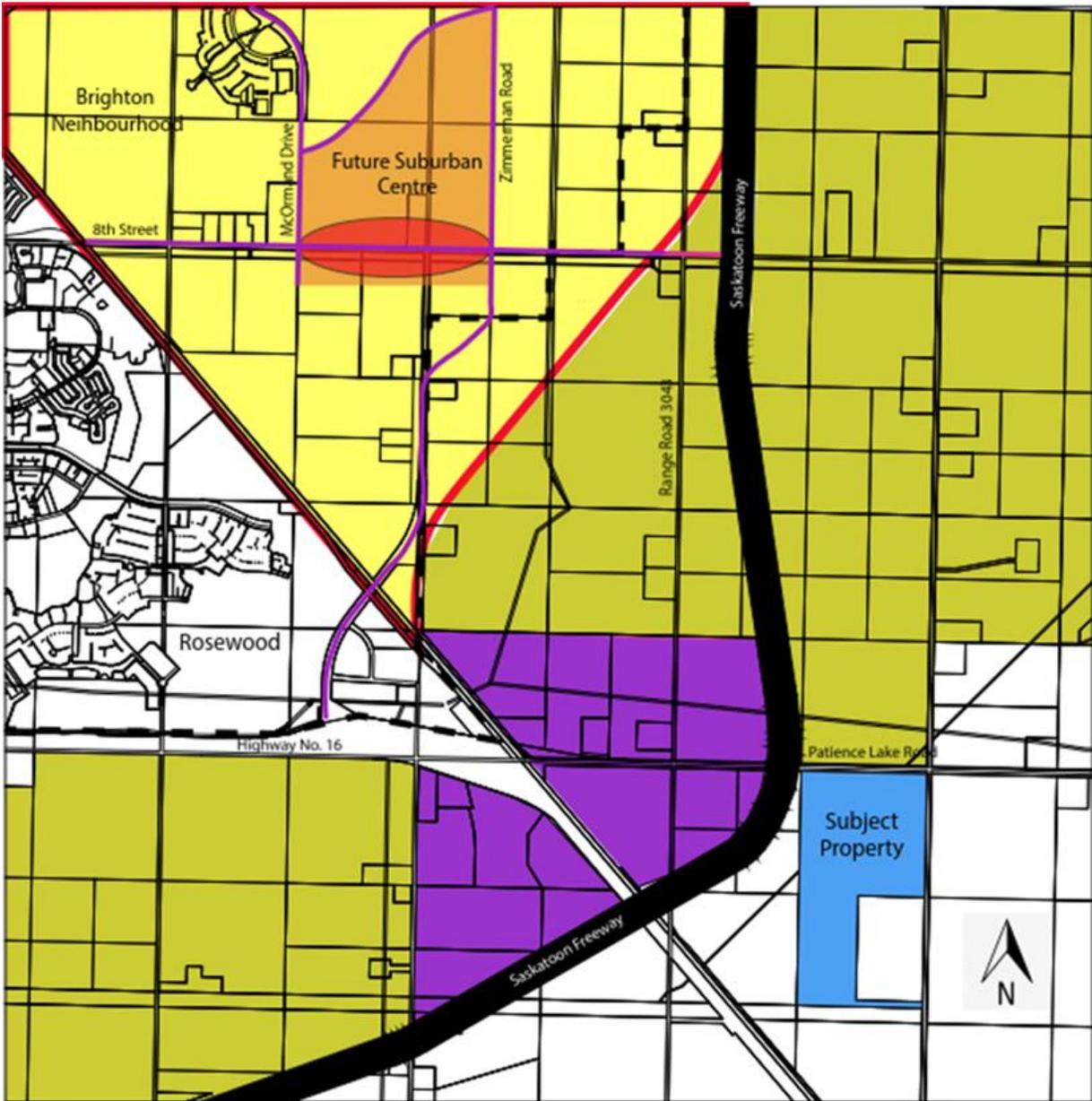
5. The subject property is situated approximately 1.8 kilometres east of the City of Saskatoon corporate limits. With an estimated population of nearly 300,000, Saskatoon is not only the hub of economic activity in the region but also offers access to a significant population to support employment-based development. Academic institutions including but not limited to the University of Saskatchewan and Sask Polytech within Saskatoon provide businesses with access to a wide range of qualified and trained professionals.

The introduction of rural industry in this area offers expanded local employment opportunities for local residents. The proximity of Saskatoon combined with the convenient access to the subject properties from the city is a strategic advantage for prospective rural businesses and their employees.

6. According to the Saskatoon Regional Economic Development Authority, Saskatoon and the surrounding region have positioned itself as an attractive and vibrant city that is the primary engine of the Saskatchewan economy. Resource-based industries continue to predominate the local economy producing goods primarily intended for export. Industrial location theory suggests that one of the primary determinants of siting businesses is to limit the cost of transporting raw materials and finished products to the plant and market. Development within the subject property will benefit from its proximity to Saskatoon and an improved transportation network while offering larger rurally serviced parcels not offered in Saskatoon which helps to diversify the regional economy.
7. The Holmwood Sector lies directly north of the subject property and is anticipated to host up to 70,000 people within approximately five neighbourhoods. Most employment areas in Saskatoon are situated west of the South Saskatchewan River. Saskatoon is striving to expand local employment opportunities for people residing east of the South Saskatchewan River of Saskatoon to reduce greenhouse gas emissions and promote a more sustainable form of community development. Employment nodes planned for this sector include a centrally located Suburban Centre along 8th Street featuring local-scale commercial businesses and a proposed Business Park along College Drive between McOrmand Drive and Zimmerman Road which will feature commercial and light industrial businesses. As urban growth occurs in the area, the development of this site offers expanded and diversified employment opportunities in this area that are complementary to the vision for urban development provided by the DOCP and Holmwood Sector Plan as illustrated in Figure 3-1.

This report provides an overview of how the proposed development relates to its physical surroundings and can positively integrate with existing and projected developments in the vicinity. This report is intended to support the redesignation of the land from an Agricultural to a Rural Commercial/Industrial designation. This report is also expected to support the subsequent rezoning and phased subdivision of the property. The phasing and timing for development will be determined by the owner based on the logical extension of infrastructure and market conditions. It is acknowledged that future subdivision applications will need to generally align with the description of development as defined by this report.

Figure 2-1 Regional Land Use



Future Land Use (Holmwood Sector and P4G Regional Plan)

- |   |                                       |   |  |
|---|---------------------------------------|---|--|
|  | Holmwood Sector Plan Boundary         |  | Future Urban Commercial/Industrial (P4G) |
|  | City of Saskatoon Corporate Limits    |  | Future Urban Residential (P4G)           |
|  | Future Urban Residential (Holmwood)   |  | Future Agriculture (P4G)                 |
|  | Future Suburban Commercial (Holmwood) |   |  |

### 3 PLAN CONTEXT

#### 3.1 Current Land Ownership

Table 2-1 describes the lands included in the plan area. Copies of current property titles are included in Appendix G.

**Table 3-1 Land Ownership**

Legal Description	Registered Owner	Area (ha)
NE 10-36-04-3 Ext 1 As shown on Plan 101261326. Parcel # 146963223	Patience Lake Road Business Park Ltd.	59.136
SE 10 36 04 3 Ext 15. Parcel # 203141753	Patience Lake Road Business Park Ltd.	28.358
TOTAL LAND AREA		87.494

#### 3.2 Plan Location

The subject property is located approximately 1.8 km east of Saskatoon within the Rural Municipality of Corman Park No. 344 (the RM). The property is situated along the south side of Highway 394 (Patience Lake Road) and west of Range Road 3042 (Freeborn Road).

#### 3.3 Physical Conditions

The average elevation within the subject property is 530 m above sea level (ASL). The land naturally slopes to the south with the height of land lying along Patience Lake Road at an elevation of 534 m ASL. The lowest elevation is located along the southern boundary at an elevation of 527 m ASL. The slope of the land is gradual, averaging 1.8% over the plan area.

The estimated current land cover is summarized in Table 2-2 Below.

**Table 2-2: Current Land Cover**

Land Cover	Area (ha)	Percentage of Total Area (%)
Internal Roadways	5.4	6.2
Stockpiles	1.8	2.1
Wetlands	12.9	14.7
Uncultivated Land/Vegetation	5.3	6.1
Cultivated land	53.9	61.5
Borrow pit	8.2	9.4

Land Cover	Area (ha)	Percentage of Total Area (%)
<b>TOTAL</b>	<b>87.5</b>	<b>100</b>

### 3.3.1 Soil Classification for Agriculture

According to the Canada Land Inventory Soil Capability Index for Agriculture, the soils within the subject property are Class 3S. Class 3 soils have moderately severe limitations that reduce the choice of crops or require special conservation practices. The ‘S’ subclass indicates soils sufficiently stony to hinder tillage, planting, and harvesting operations. Under good management, these soils are fair to moderately high in productivity for a wide range of common field crops.

### 3.3.2 Natural Area Screening

A desktop Natural Area Screening was completed for the plan area. The screening provides an inventory and analysis related to specific natural areas within the subject property. In addition to considering the overall environmental context of the lands, the key components of this study include an inventory of:

- Wetlands;
- Significant wildlife and plant species; and
- Heritage Resources.

Seven naturally occurring wetlands were identified and delineated in the study area and classified according to Stewart and Kantrud’s (1971) wetland classification system which identifies specific vegetation zones throughout the wetland and assigns a class based on the vegetation present. The class of each wetland was determined through the interpretation of imagery showing the number and type of vegetation communities present and the persistence of surface water in the deepest part of the wetland.

The project area includes Class II, Class III, and Class IV wetlands with temporary, seasonal, and semi-permanent hydroperiods, respectively. The City of Saskatoon Wetland Policy, recommends a further functional assessment using the Minnesota Routine Assessment Method for Class III, IV and V wetlands required where they are surrounded by natural areas (uncultivated), are part of a broader wetland complex or are known to be home to rare and endangered species or suitable habitat. The development plan for the site intends to fill all of the smaller isolated wetland areas directly bordering cultivated lands to support road construction and lot development.

The larger central wetland is considered a Class IV and is planned to transition to a constructed wetland designed to mimic the functions of the existing natural wetland while also receiving and acting as a natural filter for run-off from adjacent and upland properties, removing pollutants from stormwater including sediments, nutrients, and other contaminants. The reconstructed wetland will function as a conduit to capture, filter, and convey run-off from adjacent lands for retention in the existing storm retention pond in the southern half of the property. The wetland will be equipped with a culvert installed at an elevation to control the depth of the wetland and provide a consistent water elevation under typical climactic conditions.

The reconstruction of the wetland within an Environmental Reserve parcel will include the re-establishment of a 30-metre wide riparian area which has and continues to be impacted by cultivation and farming. The re-establishment of

the riparian zone will include the reintroduction of trees, shrubs, and plant species typical for prairie wetlands to support a healthy ecosystem within the wetland and assist in mitigating the impacts of development on the wetland.

The City of Saskatoon Wetland Policy considers constructed wetlands as a suitable basis for compensating for the loss of smaller isolated wetlands within the balance of the plan area. The constructed wetland will provide an equivalent ecological service while also mitigating the impacts of development on downstream water quality. The natural area screening report recommends a further functional wetland assessment to be completed for the central wetland during the active growing season between June 1st and September 30th in conjunction with the detailed civil design to collect more detailed information on existing vegetation, soil, hydrology, morphology, habitat features and other attributes, to inform the design of the constructed wetland.

The HabiSask online database identified historical records for three rare or endangered species existing within 1 km of the project area including the Northern Blue-eyed-grass, Loggerhead Shrike, and the Whooping Crane. Based on the generality of these records the natural area screening report recommends conducting a follow-up field survey before initiating construction to confirm local habitat during the regional nesting period (late April to late August) to prevent harm to migratory birds. Any timing restrictions and setbacks associated with construction are expected to be represented in the servicing agreement, associated with the subdivision application.

The subject property is located in an area of Corman Park where Clubroot has been identified. The lands have been traditionally cultivated to support the production of wheat and canola. Canola is considered an impacted field crop as defined by the Government of Saskatchewan. The property owner confirmed that there are no reported cases of Clubroot in the project area. Additionally, a sizable portion of the project area has been previously excavated to provide soil to support the construction of the Boychuck and McOrmand Drive interchanges within Saskatoon. There was no evidence of clubroot identified during this construction.

A desktop heritage screening was completed using the Developer's On-line Screening Tool confirming that lands within the plan area are not considered heritage sensitive and no further consultation or approvals are required.

A copy of the Natural Area Screening Report is attached as Appendix C.

### **3.3.3 Preliminary Geotechnical Report**

A preliminary geotechnical assessment was completed by P. Machibroda Engineering Ltd. to determine whether the land is generally suitable for development. This assessment considered factors such as soil type, density, and compaction and how they influence the overall stability of the area and its ability to support the proposed structures. This report also provides general recommendations for roadway and foundation design based on soil and groundwater conditions to ensure structural integrity and minimize the risk of settlement or differential settlement, safeguarding against potential damages.

The report consolidated two separate investigations of the subject property over ten years. The groundwater elevations differed in the 2024 field investigation relative to a previous investigation in 2014. Groundwater elevations within the site dropped significantly over the past ten years from a range of 1.3 to 2.4 m below ground surface in 2014 to a range of 2.9 to 6.8 m in 2024. This drop was attributed to a general drying trend over the past decade combined with a change in the local drainage patterns resulting from the excavation of the borrow pit in the southern section of the plan area.

The preliminary report confirms the suitability of the site for development and suggests that conventional design and construction techniques would apply. Based on the generality of this report and the potential variability of conditions within the property, the report recommends that site-specific geotechnical assessments be completed in conjunction with lot development.

A copy of the Preliminary Geotechnical Report is attached as Appendix D.

### **3.4 Built Conditions**

The primary physical features that influence the subdivision layout include the power transmission line, central wetland, borrow pit, stockpiled soil, equine facility, and a nearby acreage.

The borrow pit covers a significant area of the property but provides primary support for stormwater management and may offer a convenient and reliable source of water to support firefighting if the need arises. The pit has been incorporated into the subdivision concept but will need to be redesigned to function as a stormwater management facility, providing acceptable side slopes and including a mechanism to allow for its controlled discharge to the south as per the natural drainage route and predevelopment release rate.

The volume of stockpiled soil within the subject property is estimated to be approximately 135,000 cubic meters. These stockpiles may be suitable for grading and levelling activities assuming the soil is confirmed to be suitable for this purpose. Soil that is considered unsuitable for structural applications may be used for non-structural purposes including grading the side slopes of the borrow pit or for landscaping within the lots. This plan assumes that the piles will be employed in some capacity within the development.

The acreage situated in the northwest corner of NE 10-36-04-W3M represents a potentially incompatible use that needs to be accounted for in preparing a conceptual subdivision plan for the subject properties. The acreage is fully enclosed by a mature shelterbelt that offers some degree of visual and physical separation from adjacent industrial lands. The same condition exists with the equine facility along the eastern boundary of the subject properties. The DOCP does not apply a minimum setback requirement between light and business industrial development from non-industrial development, but it does require that a plan for development includes design considerations intended to mitigate any land use conflicts.

### **3.5 Legal Encumbrances and Utility Servicing Conditions**

#### **3.5.1 SaskPower**

SaskPower operates a 230 kV electrical transmission line that bisects the NE 10-36-04-W3M. The transmission line is situated in a 10 m right-of-way with an overlapping 45 m easement. No permanent buildings may be located within the 10 m right-of-way. Any temporary storage of products, machinery, or structures within the right-of-way would require approval from SaskPower. According to SaskPower crossing agreements are also required for any internal roadways.

Roadway crossings should be minimized as any elevation changes that would affect the clearance of these transmission lines relative to the finished grade of the roadway could result in the need to raise the lines at the sole cost of the developer. The existing internal haul road currently crosses this corridor and poses no conflict with heavy truck traffic during the previous excavations. SaskPower will be further consulted during the detailed design stage of the project to coordinate design elevations and to confirm crossings.

Providing service to these developments would require approximately 1.5 miles of three-phase 25kv overhead power line to the edge of the Patience Lake Business Park along Freeborn Road. From there, SaskPower recommends a backbone of overhead lines through the development with underground taps to serve the lots.

SaskPower also operates a single-phase distribution line extending through the plan area perpendicular from the residential acreage east to Range Road 3042. It is expected that this overhead service will be incorporated into a future underground power distribution network.

### **3.5.2 SaskEnergy**

SaskEnergy operates a rural distribution gas line within a 10 m easement extending along the north side of SE 10-36-04-W3M adjacent to the borrow pit. This gas line serves the equine facility on the east side of the quarter section. No buildings or foundations can be built over top of the easement without further approval from SaskEnergy. The easement can be reduced to a 3 m registered easement (at a cost to the requestor) to allow permanent building closer to the gas line. The land within the easement can be used for non-enclosed & non-electrified development (i.e. parking lot, landscaping, etc.). This line is expected to be situated outside of the developable footprint of the industrial lots. The depth of the gas line will need to be confirmed in conjunction with a detailed design to ensure adequate cover is maintained.

### **3.5.3 SaskTel**

The plan area contains telecommunications services owned and operated by SaskTel. SaskTel has confirmed there are non-registered easements for these lines dating back to 1973, 2014, and 2015. Based on these easements, no structures are to be placed within the 10 m wide easement containing the underground lines that run north to south within the plan area.

To facilitate the development and ensure the proper servicing of the lots, this plan anticipates that the telecommunication lines will be relocated to better coincide with the internal road and lot configuration at the expense of the applicant. Relocating the telecommunications line and eliminating this easement in favour of development is a logical decision given its location and impact on development relative to the anticipated cost of relocation. By moving the infrastructure to the proposed right-of-way whenever development occurs, several benefits can be realized. The distribution lines can be positioned to efficiently serve the properties in the area, including the new development. This relocation allows for a more streamlined approach to supplying the necessary infrastructure. SaskTel will be further consulted during the detailed design phase to confirm a telecommunications servicing plan.

### **3.5.4 BH Telecommunications**

BH Telecommunications operates a fibre-optic line situated within the south ditch of Patience Lake Road. This line has no direct influence on plans for the subject property but may offer high-speed internet services for businesses in the plan area.

### **3.5.5 Potash Corporation of Saskatchewan**

The Potash Corporation of Saskatchewan operates a raw water line along the north side of Patience Lake Road. This infrastructure has no direct influence on the plan area. The available capacity of this water line is unknown, but it does offer a potential raw water source for businesses within the subdivision.

### 3.5.6 Lost River Water Co. Ltd.

Lost River Water Co. Ltd. operates a water distribution line in the area that has sufficient allocated capacity to provide low-pressure water service to the subject property. A letter from the water supplier confirming the ability to service the property is attached in Appendix B.

Copies of the current utility plans provided by the various providers are included in Appendix B.

## 3.6 Transportation and Access

The Saskatchewan GeoSearch Online Database identifies Highway 394/Patience Lake Road as a Class 4 highway. The access management standards associated with this class of highway include:

- Permanent access is allowed at most public road allowances with a minimum spacing of 1.6 km.
- If topographic restrictions or other unusual conditions are present, new approaches may be permitted.
- Landowners are not expected to drive any great distance on the highway or across their land to arrive at access points. Therefore, machinery crossings may be permitted.
- Property approaches shall be spaced a minimum of 90 m.
- Type I accesses (high impact) which include rural industrial approaches (permanent or temporary) will be permitted at a desirable spacing of 400 m and a minimum spacing of 300 m.
- A maximum of two approaches per 400 m section may be allowed. The two approaches can be either Type I or Type II.

The property currently has a driveway access along Highway 394 approximately 380 m west of the intersection of Highway 394 and Range Road 3042. This meets the access management level for a temporary intersection; however, it does not meet the permanent intersection spacing of 1.6 km. Regardless of the permanency of this access point under the current classification, the planned construction of the Saskatoon Freeway has a greater impact on the provision of long-term access to the park.

Freeborn Road is a gravel-surfaced main farm access road constructed within a 30-m right-of-way.

## 3.7 Policy and Regulatory Framework

Development of land within the subject property is subject to the DOCP and the P4G District Zoning Bylaw. Any application to subdivide or develop land, including rezoning, is required to consider the policies and regulations within these documents. A policy and regulatory compliance table is attached as Appendix G.

### 3.7.1 District OCP

According to the DOCP, the subject property is in an area designated Agriculture. The DOCP acknowledges the importance of balancing the needs for growth and the continued sustainability of the agricultural and natural resource sectors of the economy. The Agricultural designation is intended to accommodate agriculture and pasture uses as well as associated agricultural residential uses. The DOCP policies discourage the fragmentation of agricultural lands for non-agricultural uses. The application of this policy must be considered within the context of a property. As noted previously, conditions within the subject property, plans for urban land development and enhancement of the regional transportation network in the areas surrounding the property suggest that the continuation of agriculture on the property is not the highest and best use of these lands.

This report is intended to support an amendment to the DOCP Land Use Map to redesignate the lands from Agriculture to a Rural Commercial/Industrial designation. In addition to supporting this amendment, the CDR is intended to also support subsequent rezoning and subdivision applications. Rural Commercial/Industrial areas are intended to accommodate general commercial and industrial uses, including lightly serviced industrial, storage, and commercial areas that require a large land base. Development within the subject property is anticipated to comprise a mix of business and light industrial uses to reduce the potential for industrial activities to negatively impact current and future development on the surrounding lands.

The following italicized excerpts from the DOCP are considered to be the primary influencing policies.

**Section 6.3.5: Impacts on Natural and Heritage Resources**

*Subdivisions and development must be designed and constructed to ensure that alterations to the landscape or other natural conditions avoid or mitigate on and offsite impacts on natural and heritage resources.*

**Influence on the Plan:**

- A heritage screening confirmed that the subject property is not considered heritage sensitive and that no further investigation is required to proceed with development.

**Section 6.3.6: Integration of Natural Features**

*Development should integrate and complement natural features and landscapes including the incorporation of natural vegetation and conserved wetlands.*

**Influence on the Plan:**

- The only significant natural feature within the subject property is the central wetland which is planned to be retained and converted into a naturalized stormwater management facility.

**Section 8.3.1: Source Water Protection**

*Development shall not restrict the use of groundwater or surface water or alter the flow of surface water in a way that detrimentally affects other property or the ecology of the drainage system.*

**Section 8.3.2: Runoff from Site Development**

*Untreated stormwater runoff from a multi-parcel development should be directed to a retention pond or similar feature to reduce sediment and pollutants inputs into surface water and wetlands.*

**Influence on the Plan:**

- A conceptual grading and stormwater management plan has been prepared for the site and shared with the Water Security Agency for review and endorsement.
- Businesses within the development are anticipated to employ septic holding tanks to collect and store wastewater. These tanks will be evacuated by one of several licenced haulers operating in the Saskatoon area. A letter from one of the potential businesses offering tank evacuation services confirming the ability to service the property is attached as Appendix C.

### **Section 10.3.1: Land Use Compatibility**

*Development shall be compatible with surrounding uses.*

#### **Influence on the Plan:**

- Based on a review of aerial imagery for the area, there are 16 residences within 1.6 m of the project area including a home situated on the balance of NE 10-36-4-W3M which shares a common boundary with the subject property.
- Portions of Applewood, Meadow Ridge and Hidden Ridge Estates are situated at the boundary of the 1.6 km radius.
- There is an existing equestrian facility situated on the balance of SE 10-36-4-W3M which shares a common boundary with the subject property.
- The East Floral Industrial Park is approximately 1.2 km southeast of the subject property.
- Development within the subject property will need to incorporate a vegetated buffer surrounding the development area combined with the application of a business industrial district for properties directly abutting a developable non-industrial property to assist in positively incorporating the development in the area.
- The TIA report recommends the construction of right turning lanes into the subject property from Highway 394 to ensure a suitable level of service is maintained along the roadway, assisting in reducing the impacts of development on neighbouring properties.

### **Section 14.3.1. Designation on Schedule B – District Land Use Map**

*Areas designated as Rural Commercial/Industrial on Schedule B – District Land Use Map shall be further designated as Rural Industrial areas or Rural Commercial areas through more detailed planning. Concept Plans and other detailed planning shall identify the type(s) of Rural Industrial land use(s) being proposed.*

#### **Influence on the Plan:**

- This report is intended to provide the detailed planning required to amend Schedule B to change the land use designation of the subject property from Agriculture to Rural Commercial/Industrial.

### **Section 14.3.3. Location Criteria**

*Rural Industrial developments must be located where:*

- a) The carrying capacity of the lands proposed for development and the surrounding area based on site conditions, environmental considerations, potential impacts, and other factors that may warrant consideration in the design of the proposal are addressed;*
- b) Impacts on regional drainage patterns and other regional ecological systems are minimized;*
- c) The suitability and availability of municipal and other services and infrastructure necessary to support the proposal are considered;*
- d) The design is compatible with that of the surrounding area;*
- e) Existing roads and infrastructure are sufficient to support the development while impacts to existing roadways and additional costs of maintenance are minimized;*
- f) Nodal development is planned where key intersections of provincial highways, municipal roadways, and the Saskatoon Freeway can support access;*
- g) Lands are not prone to natural hazards;*
- h) Lands do not have unique historical or archaeological features;*
- i) Lands do not have significant wildlife habitat;*
- j) Lands do not have high quality recreational resources;*

- k) Surface and groundwater resources will not be impacted; and*
- l) Any other costs to Corman Park associated with the development are minimized.*

**Influence on the Plan:**

- The socioeconomic factors that contribute to an assessment of ‘carrying capacity’ include infrastructure availability, community livelihood and protection of cultural and heritage resources. The environmental factors include ecological capacity and an assessment of the risks of development on soil, air and water resources and impact on natural habitat.
- This plan must consider all of these factors as a means of promoting development that does not exceed the ‘carrying capacity’ of the subject property.

**14.3.4 Industrial Parks**

*Industrial uses shall be restricted to industrial parks unless it can be clearly demonstrated that an industrial use has specific location requirements that limit its location to a specific alternate site.*

**Influence on the Plan:**

- This report represents an intention to subdivide the site in phases to create a multi-lot industrial park development.

**14.3.5 Industrial Development Adjacent to Urban Areas**

*Industrial development may not be located adjacent to the boundary of an urban municipality unless the proposal:*

- a) Is compatible with current and planned urban land uses within the adjacent urban municipality;*
- b) Will not place pressure on the adjacent urban municipality to develop, expand or upgrade services and infrastructure without an agreement for servicing and infrastructure costs between the urban municipality and Corman Park; and*
- c) Is referred to the adjacent urban municipality for review.*

**Influence on the Plan:**

- The subject property is not located along the boundary of Saskatoon.

**14.3.6 Buffered Uses in Industrial Parks**

*Industrial parks with a high potential for land use conflicts must include buffering from non-industrial uses of land, including locating uses with fewer impacts near roadways, and other criteria as set out in this Plan and the District Zoning Bylaw.*

**Influence on the Plan:**

- Development within the subject property plans to situate lower-intensity business industrial development along Highway 394 and along lands that share a common boundary with a developed non-industrial property to reduce potential land use conflicts. The District Zoning Bylaw provides for three tiers of industrial development differentiated from one another by the daily operational periods, the relative intensity of use and the propensity for onsite activities to generate off-site impacts. Business Industrial development provides for more refined development aligning with commercial forms of development regarding business hours and limits outdoor activity to reduce the potential conflict with less intensive uses.
- In addition to this, vegetation and constructed screening are planned to limit the visual impact and reduce the disturbance of adjacent and nearby development.

### **23.3.2 Coordination of Development and Infrastructure Planning**

*Subdivisions and developments must be designed and constructed to respect the planned extensions of infrastructure as detailed in Concept Plans and regional servicing plans.*

#### **Influence on the Plan:**

- There are no detailed Concept Plans or regional servicing plans that specifically consider the subject property. A rural level of service is planned for the site involving low-pressure water, private onsite septic holding tanks, surface drainage and rural profile roads.

### **23.3.3 Services Provided at Developer Expense**

*The proponent will be responsible for all costs associated with providing the infrastructure and services required for development. Servicing agreements may be required to address these costs.*

#### **Influence on the Plan:**

- It is expected that a servicing agreement will be required as a condition of approval of the subdivision to define the requirements for constructing new municipal services and improvements to Range Road 3042.

### **25.3.4 Rural On-Site Wastewater Disposal**

*Development in the District shall meet or exceed the on-site sewage treatment requirements established by the Saskatchewan Health Authority as contained in the Review Process for Onsite Wastewater Disposal Systems for Developments and Subdivisions.*

#### **Influence on the Plan:**

- Wastewater disposal is expected to be managed through the installation of private on-site septic holding tanks which are universally accepted in all areas. The report includes written confirmation from a septic hauler that there is a suitable facility available for the disposition of the waste.

### **25.3.5 Septic Utilities**

*As a condition of approval of a multi-parcel country residential, commercial, or industrial subdivision, Council may in accordance with a septic utility bylaw adopted pursuant to The Municipalities Act, require the developer to create and administer a private on-site septic utility to monitor the ongoing operation and maintenance of an on-site wastewater system.*

#### **Influence on the Plan:**

- The use of septic holding tanks within the proposed development is not anticipated to require the establishment of a septic utility as the collection and disposition of the wastewater does not interact with ground or groundwater resources nor do these tanks require any regular maintenance or monitoring.

### **26.3.2 Drainage Plans**

*Development must be designed and constructed to avoid or mitigate on and off-site impacts from alteration to drainage.*

#### **Influence on the Plan:**

- A conceptual drainage plan has been prepared according to provincial standards and the standards set out in the District Zoning Bylaw and appended to this report.

### **26.3.10 "No Net Impact" Standard**

*On-site stormwater management controls for site development will be encouraged to meet a "no net impact" standard, incorporating sufficient capacity to accommodate surface water runoff for a 1:100-year storm event with no incremental increase in offsite flows over what would have been generated from the property before the new development.*

#### **Influence on the Plan:**

- The conceptual drainage plan attached and forming part of this report has been prepared in full compliance with this principle.

### **27.3.3 Roadway Access**

*Development must meet all municipal and provincial regulations respecting access to and from provincial highways and municipal roads.*

#### **Influence on the Plan:**

- A traffic impact assessment was prepared to forecast future traffic resulting from the full build-out of the subdivision and includes recommendations for intersection improvements to maintain an acceptable level of service along Highway 394. This report was shared with the Ministry of Highways for review and endorsement.
- The RM of Corman Park standards requires a minimum 30-metre spacing between approaches and a minimum setback of 100 m between an approach and the intersection of two roadways.

### **27.3.4 Minimize New Roadway Construction**

*To make the most efficient use of existing roadway facilities, residential, commercial, and industrial subdivisions and developments will be encouraged to locate adjacent to existing roads that have been designed and constructed to accommodate them.*

#### **Influence on the Plan:**

- The subject property is situated adjacent to Highway 394 which is a secondary provincial highway.
- The plan intends to retain and improve the current property access from the highway in addition to constructing new access points along Range Road 3042 which is an all-weather gravel-surfaced municipal road.
- A TIA has been prepared to support the project which recommends the construction of right turn lanes along Highway 394 at the current property access as well at its intersection with Range Road 3042.
- As per the RM of Corman Park policies, Range Road 3042 will be required to upgrade to a paved standard as a condition of approval.

### **27.3.5 Access Requirements for Development**

*Residential, commercial, industrial, recreational, and regional infrastructure and institutional developments shall have year-round, legal, and all-weather physical access to a municipally maintained roadway.*

#### **Influence on the Plan:**

- See previous comments.

### **27.3.6 Safe Access and Egress**

*Developments must include safe access and egress from adjacent roadways without disruption of the roadway function. The type and number of access points provided onto municipal roadways may be limited through shared points of access along shared driveways or service roads where applicable.*

#### **Influence on the Plan:**

- See previous comments.

### **27.3.7 Access to Uses Provided at Developer's Expense**

*Where subdivision or development requires year-round, all-weather access, the expansion or upgrade of the roadway to such a standard will be provided at the developer's expense.*

#### **Influence on the Plan:**

- It is anticipated that a servicing agreement will be executed in conjunction with each phase of the subdivision and will define the extent and standards for improving Range Road 3042.

## **3.7.2 District Zoning Bylaw**

The District Zoning Bylaw is the primary means of implementing the policy direction provided in the DOCP. Development within the subject properties will be subject to the general and land use-specific regulations as represented in the zoning bylaw.



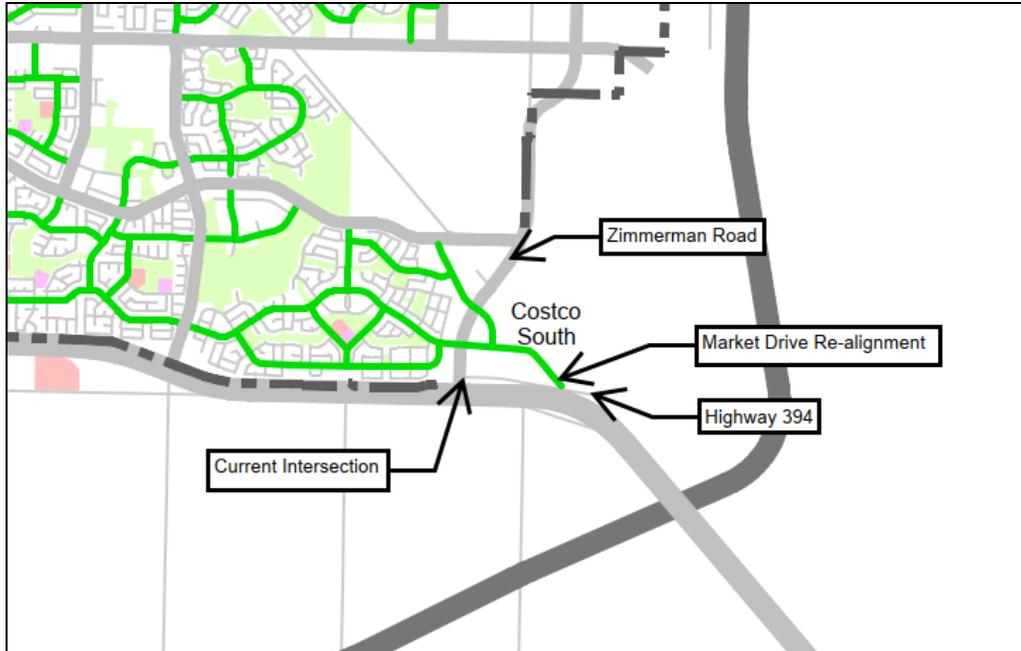
## 4 COMMUNITY CONSULTATION

Section 31 of the DOCP requires the public to be engaged promptly to gain their perspectives on the implications of the proposed development on the use and enjoyment of neighbouring properties and to identify ways in which the development can be planned and designed to be positively incorporated into the area. The Zoning Bylaw considers mail-outs, public advertisement, and open houses to be acceptable methods of informing and engaging neighbours, public rights holders, and stakeholders. At a minimum, all assessed landowners within 1.6 km of the subject property are to be notified of the proposal.

A written notice was prepared and distributed by the RM to all assessed landowners within 1.6 km of the subject property. This notice provided an overview of the proposed development and directed recipients to a shared online folder containing a copy of the CDR report. Recipients were offered an opportunity to submit written comments or discuss any perspectives or concerns directly with the proponent. A copy of all written correspondence received is attached in Appendix B. The comments received from this engagement highlighted the following concerns:

1. Highway 394/Zimmerman Road Intersection – A concern was raised regarding the impact of development-related traffic on the level of service at the current intersection of Highway 394 at Zimmerman Road.

**Application Response:** As part of our due diligence in preparing this plan, we reviewed the City of Saskatoon Transportation Master Plan and the Saskatoon Freeway Functional Planning Study to understand how development in the southeast corner of the city and the eventual construction of the Saskatoon Freeway will affect Highway 394 west of the project area.



Source: City of Saskatoon Transportation Master Plan (2021)

Both studies indicate an intention to eventually redirect Highway 394 to connect to Market Drive, which is served by an existing signalized intersection along Zimmerman Road. Although the configuration of Market Drive differs

between the two studies, it is clear that there is an intention to eventually abandon the current intersection due to its proximity to the Highway 16 intersection to the south.

The Traffic Impact Assessment assumes a five-year buildout but considers a 15-year study horizon, which is a more likely development horizon. The demand for the extension of Market Drive, as envisioned by the Saskatoon Transportation Master Plan, will be driven by planned industrial development as defined by the Rosewood Neighbourhood Plan. This likely aligns with or potentially exceeds the development timeframe of this project meaning that by the time this project reaches full development build-out, the intersection will have already been relocated to Market Drive.

The current intersection operated sufficiently during the construction of the Boychuck and McOrmand Drive interchanges when there was significant heavy truck traffic generated from the excavations occurring within the subject property to support construction. We do not believe that any improvements should be made to the existing intersection as a result of the proposed development.

2. Drainage – A concern was raised by a property owner directly south of the development regarding the potential impacts of development on their ability to continue to farm the ¼ section directly south.

**Application Response:** The concerned landowner currently farms the lands directly south of the project area. The lands to the south contain a well-defined drainage channel which has been historically passable with farm equipment allowing lands on both sides to be accessed from Freeborn Road. The landowner is concerned that development will potentially impact the current access.



A substantial borrow pit was excavated within the south half of the development site to facilitate the construction of the Boychuck Drive and McOrmand Road overpasses. The intention is to convert this into a stormwater retention pond to support the development of the site. Based on our engineering plans, a total storage volume of 140,500 m<sup>3</sup> of storage is required to meet the permanent and active storage requirements for the development. The current borrow pit is estimated to provide 400,000 m<sup>3</sup> of storage of which 72,500 m<sup>3</sup> of this would be permanently stored in the borrow pit and never released downstream. This leaves nearly 327,500 m<sup>3</sup> of active storage which is designed to be released from the pond downstream along the natural drainage path at a predevelopment flow rate of 0.3 m<sup>3</sup>/s as required by provincial and municipal regulations.

The borrow pit offers nearly five times the required active storage required. The increased storage capacity allows the pond to hold more water during storm events, reducing the frequency and duration of high-flow events downstream. This can help mitigate flooding and erosion in downstream areas, supporting the continuation of farming on your lands with less disruption than would occur under predevelopment conditions without the borrow pit. The larger storage volume also provides more surface area and time for water to evaporate. This can reduce the volume of water that needs to be discharged, especially in warmer climates or during dry periods. Converting the borrow pit to a storm retention pond with significantly more storage than required offers substantial benefits for downstream properties by reducing flood risks, improving water quality, and allowing for more evaporation of collected runoff.

3. Freeborn Road – A concern was raised by the operators of the neighbouring equestrian facility regarding the potential impact of additional traffic along this municipal road relative to its capacity and the likelihood of increased dust and noise generation.

**Application Response:** A Traffic Impact Assessment (TIA) was completed to support this application which provides an analysis of the traffic volumes generated by development and its potential assignment to municipal roads and the provincial highway. The TIA assumed that development-generated traffic will primarily travel to and from Saskatoon via Highway 394 considering, it is a paved roadway rather than pursuing a much longer route south to the highway intersection at Floral Road which is predominantly gravel surfaced.

Any approval of an application to subdivide the subject property would be accompanied by the condition to upgrade the adjacent municipal road to a paved standard from 100 m south of the access to connect with Highway 394. The improvement of this segment of Range Road 3042 will substantially reduce dust and noise generation to the equestrian facility and further promote traffic distribution to the north to Highway 394.

4. Security - A concern was raised that increased activity in the area will result in decreased security for the neighbouring equestrian facility.

**Application Response:** Increased activity associated with land development results in the opposite effect and can discourage unwanted behaviour for several reasons. Developed areas often have more people and activities, which naturally increases surveillance. The presence of more eyes on the road can deter criminal activities and antisocial behaviour because potential offenders are less likely to act when they believe they are being watched. The development brings better infrastructure into an area, including lighting, which can reduce the likelihood of unwanted behaviour. Well-lit areas are less attractive to those looking to engage in illicit activities under the cover of darkness. Finally, development often fosters a sense of community and ownership among businesses creating an investment in the area and increasing the likelihood of neighbours looking out for each other and reporting suspicious activities.

## 5 DEVELOPMENT CONCEPT

The development concept illustrated in Figure 6-1 depicts the general plan for the subdivision of the subject property to support rural serviced industrial development. Development within the Patience Lake Business Park will align with the uses defined within the D- Business and D-Light Industrial 1 Districts.

**Table 6-1 Land Use Statistics**

Land Use	Area (ha)	% GDA
Gross Development Area (GDA)	87.5	100
Municipal Utility	13.9	15.8
Net Developable Area	73.6	84.1
Roadways	9.7	10.3
D-Business District	11.7	13.4
D-Light Industrial District	52.2	60.5

**Table 6-2 Employment Forecast**

Land Use	Total Area (ha)	Employment Rate <sup>1</sup>	Projected Employment
Rural Commercial/Industrial	63.9	13 jobs/hectare	830.7 jobs

*Note 1: Employment rates were taken from the estimates published within the P4G North Concept Plan.*

The D-Light Industrial 1 District (DM1) is to accommodate a range of industrial uses and activities which typically include manufacturing, processing, assembly, repair and end-user production and distribution involving limited storage of raw inputs. Sites within this district can be as small as 0.8 ha (2 acres). The list of permitted and discretionary uses in this district is comprehensive offering support to a variety of businesses including warehousing, wholesale, and manufacturing uses.

The D-Business District (DB) accommodates a wide variety of businesses and associated uses which are compatible with each other and provides services primarily to on-site employees and local clientele. This zoning district may be used to buffer non-industrial and industrial land uses. The DB District shares the same site regulations as the DM1 District and there is a lot of commonality between the permitted and discretionary uses supported in this district relative to the DM1 District.

**Table 6-3 Conceptual Lot Areas Summary**

Land Use	Number of Lots	Minimum Area (ha)	Maximum Area (ha)	Average Area (ha)
D-Business District	9	0.93	3.16	1.3
D-Light Industrial District	32	0.8	16.49	1.63

Land Use	Number of Lots	Minimum Area (ha)	Maximum Area (ha)	Average Area (ha)
TOTALS	41	-	-	-

### 5.1 Land Use Integration

The current DOCP does not apply any minimum setbacks to industrial development relative to other less intensive land uses. The DOCP rather identifies the expectation that land use should be compatible with surrounding uses. Existing development adjacent or abutting the property is cultivated farmland except for an equestrian centre in the southeast portion of the area and a country residential acreage in the northwest corner of the plan area. There are five homes situated within 800 m of the project area and a total of 16 houses within 1.6 km of the project area.

As illustrated in Figure 3-1 of this report, lands along the north side of Highway 394 are designated for future urban residential development whereas lands to the west and southwest along the Saskatoon Freeway route are planned for urban commercial/industrial development. Lands to the south and southwest are designated for the continuation of agricultural production. At the time of publishing this report, there was no future land designation for lands east of the subject property.

Industrial development within the subject property will undoubtedly increase the level of overall activity in the area. This increase in activity may increase the noise generated, potentially produce dust, odour and light and will result in an increase in the volume of traffic on the roadways. This plan seeks to minimize these potential nuisances through a combination of approaches including taking advantage of the site’s location along a provincial highway, the configuration of the internal road design, site landscaping, property zoning and the application of the general and land use specific zoning regulations.

The subject property is situated along the provincial highway network, adjacent to the future Saskatoon Freeway route and a future urban commercial/Industrial growth area. This location provides convenient and direct access to roadways designed to accommodate higher volumes and the anticipated forms of traffic generated by industrial development with minimal impact on the municipal road network. The eventual construction of the Saskatoon Freeway to the immediate west of the subject property will increase the level of traffic and activity along its route. The proposed use of this property is compatible with the intensity of activity along these roadways and future urban commercial/Industrial growth and may act as a transitional area and a sound barrier between the Freeway and less intensive uses to the east.

The P4G Zoning Bylaw establishes lighting standards which ensure that any installed lighting within the park is designed to limit its illumination to areas within the park. The shared roadways in the area are or will be, as a result of this development, constructed to a paved standard which reduces road noise and dust generation. Traffic generated from development will utilize the portion of Highway 394 situated west of developed acreages reducing the likelihood of industrial traffic passing by these developed residential areas.

Environmental noise originating from industrial sources within the plan area falls into three types differentiated by duration including continuous, impulsive, and intermittent. Industrial noise levels vary depending on the sources, processes and equipment involved it is commonly estimated that light manufacturing activity generates between 70-85 dB, construction sites will generate 90-110 dB and Fabrication and heavy industrial activities generate noise up to 130 dB at the source. Sound dissipates exponentially from the source (Stokes Law of Sound, 1845). Acceptable

continuous noise levels in residential areas are below 60dB which is the equivalent of a regular vacuum cleaner. Based on continuous noise levels of up to 110 dB with no constructed sound attenuation, the noise levels at a distance of 800 m from the source would be only 45 dB.<sup>1</sup> Even at a noise level of 130 dB at the source, the noise dissipates and reaches an acceptable level of 52dB within 800 m. These estimates are for illustration purposes and do not consider the cumulative noise generated by the entire development, nor the dampening provided by buildings and shelterbelt plantings within the path of sound.

The neighbouring equestrian facility is surrounded by a mature shelterbelt which provides an immediate visual separation from development within the subject property. Development to the north of the equestrian facility will face south towards the facility providing a 100 m separation between the established equestrian riding area and industrial buildings once a 20 m front yard setback is applied. The orientation of these lots means that buildings constructed on these abutting sites will also act as a screen between any industrial activity in the rear yard and the equestrian facility.



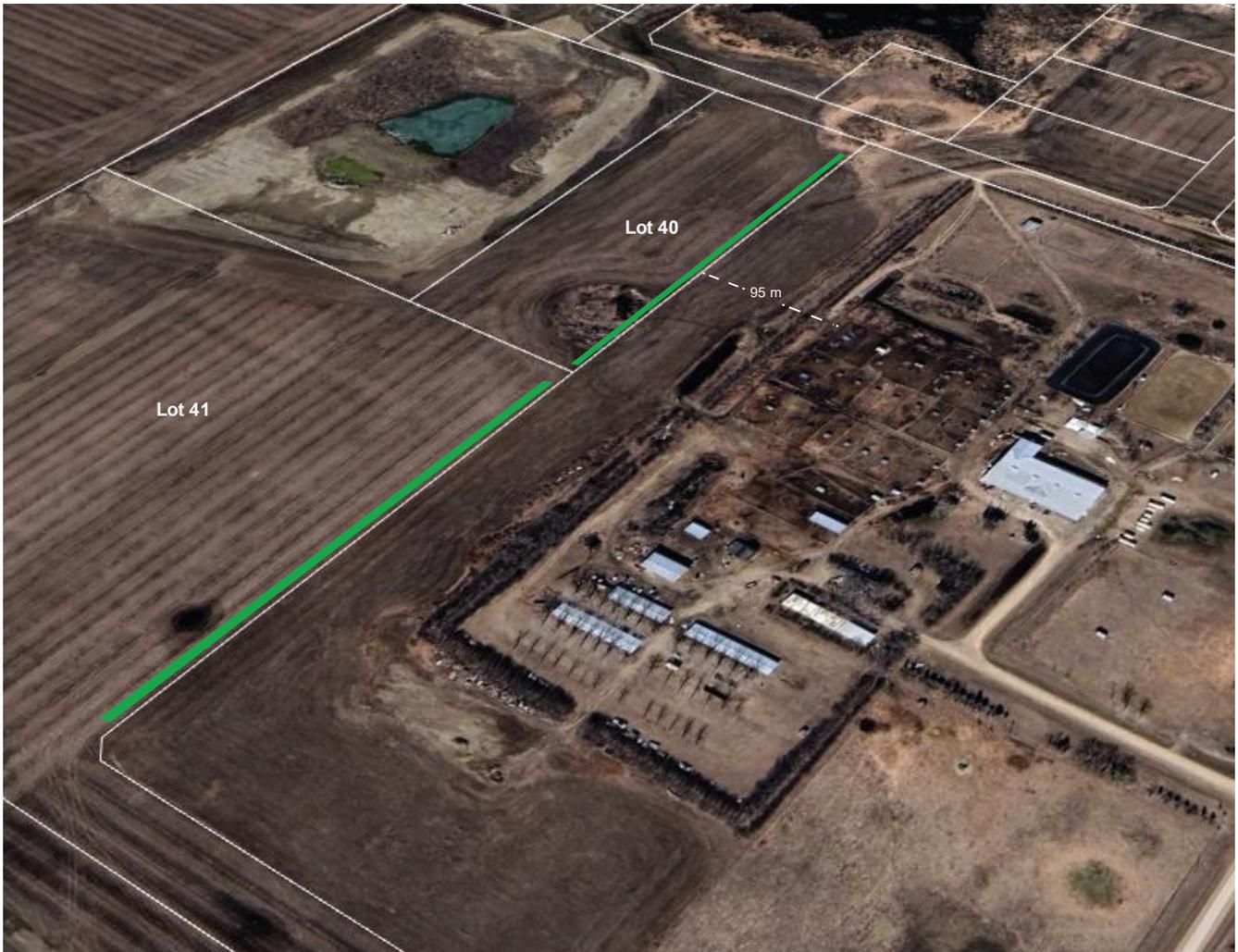
*View of Existing Shelterbelt Along North Property Boundary*

Existing development within the equestrian facility within the shelterbelt relative to the western property boundary is setback approximately 95 m from the common boundary of proposed Lots 40 and 41 within the subject property. The existing shelter belt creates a natural barrier between the two development areas.

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<sup>1</sup> <https://www.omnicalculator.com/physics/distance-attenuation#what-is-the-spl-sound-pressure-level>

The establishment of a shelter belt along the eastern boundary of the subject property offers additional insulation between the two properties while the undeveloped area between the two shelterbelt plantings offers a fire break.



*Common West Boundary With Equestrian Facility*

Conversion of Range Road 3042 and construction of all internal roads to a paved standard reduces traffic noise relative to gravel surfaces as the asphalt can absorb road noise. Asphalt surfacing also eliminates dust generated by vehicle traffic which may impact the use and enjoyment of the equestrian facility.

The plan situates Business Industrial development along the Highway 394 corridor and the boundary of the subject property (as shaded blue in the picture below) where it shares a common boundary with a developed residential property in the northwest corner of the quarter section.

Business Industrial uses generate less noise, pollution, and traffic relative to light and heavy industrial development and often provide for a higher standard of landscaping within the sites which reduces the visual impact and creates greater visual harmony with nearby development. Unlike heavy industrial developments which often operate continuously in shifts and rely on large areas of land to accommodate outdoor storage and processing of raw and

unfinished goods, the Business and Light Industrial District has a greater propensity to have typical business hours and business activities more focused on indoor activities which assists in reducing disturbances.

Establishing a requirement to introduce vegetation and/or constructed buffers along the perimeter of the abutting properties assists in absorbing noise, filtering any airborne pollutants and provides a visual barrier to reduce the impact on neighbouring lands, adding to the effectiveness of the existing shelterbelt planting surrounding the residence. The



*Land Zoning and Landscaping Along Acreage Boundary*

construction of the Saskatoon Freeway to the west is anticipated to alter the means of accessing this property from Highway 394 and will likely trigger the conversion of the site from residential to a similar commercial or industrial use to coincide with planned development in the plan area and future urban commercial/industrial growth to the west. The road and lot layout appropriately account for this possibility in the future.

## 5.2 Municipal Reserve

*The Planning and Development Act, 2007* requires the dedication of 5% of the land area proposed for industrial subdivision as a municipal reserve. Where land dedication is not desirable a cash-in-lieu payment can be provided equal to 5% of the value of the land of the land that remains when the land required to be provided as environmental reserve has been subtracted from the subdivision. It is expected the public land dedication requirement will be satisfied through a cash-in-lieu payment.

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



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**LEGEND**

	LIGHT INDUSTRIAL
	COMMERCIAL
	POND

<b>AE PROJECT No.</b>	20144469-03
<b>SCALE</b>	1:2000
<b>APPROVED</b>	B. DELAINEY
<b>DATE</b>	2024OCT11
<b>REV</b>	0
<b>DESCRIPTION</b>	ISSUED FOR CLIENT

**FIGURE 6-1 LAND USE CONCEPT**

PATIENCE LAKE ROADWAY  
 BUSINESS DEVELOPMENT

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CIVIL  
 PLAN  
 PHASING PLAN

## 6 SERVICING CONCEPT

### 6.1 Potable Water

The industrial park will connect to the Lost River Water Utility, providing users with a low-pressure rural water service. As a low-pressure system, lot owners must provide for onsite storage of potable water and employ a private pressure system to distribute water within the site. In rural low-pressure water scenarios, the maximum day demand is most often used to define the water needs as it identifies the maximum amount of water used in a day, which will need to be replenished in each user's cistern.

The conceptual design criteria and assumptions for the water distribution system proposed for the development are listed in Table 7-1.

**Table 7-1 Water System Design Assumptions**

Design Variable	Value
Net Development Area (ha)	63.93 ha
Projected Development Yield (lots)	41
Average Day Demand	0.039 L/s (0.51 IGPM)
Maximum Day Demand	0.078 L/s (1.02 IGPM)

According to water records for the North Corman Industrial Park, the average day demand for industrial properties is 0.039 L/s (0.51 IGPM), resulting in an estimated maximum day demand of 0.078 L/s (1.02 IGPM) per lot. Based on a projected development yield of 41 lots, the cumulative water using maximum day demand is estimated to be 3.19 L/s (42 IGPM).

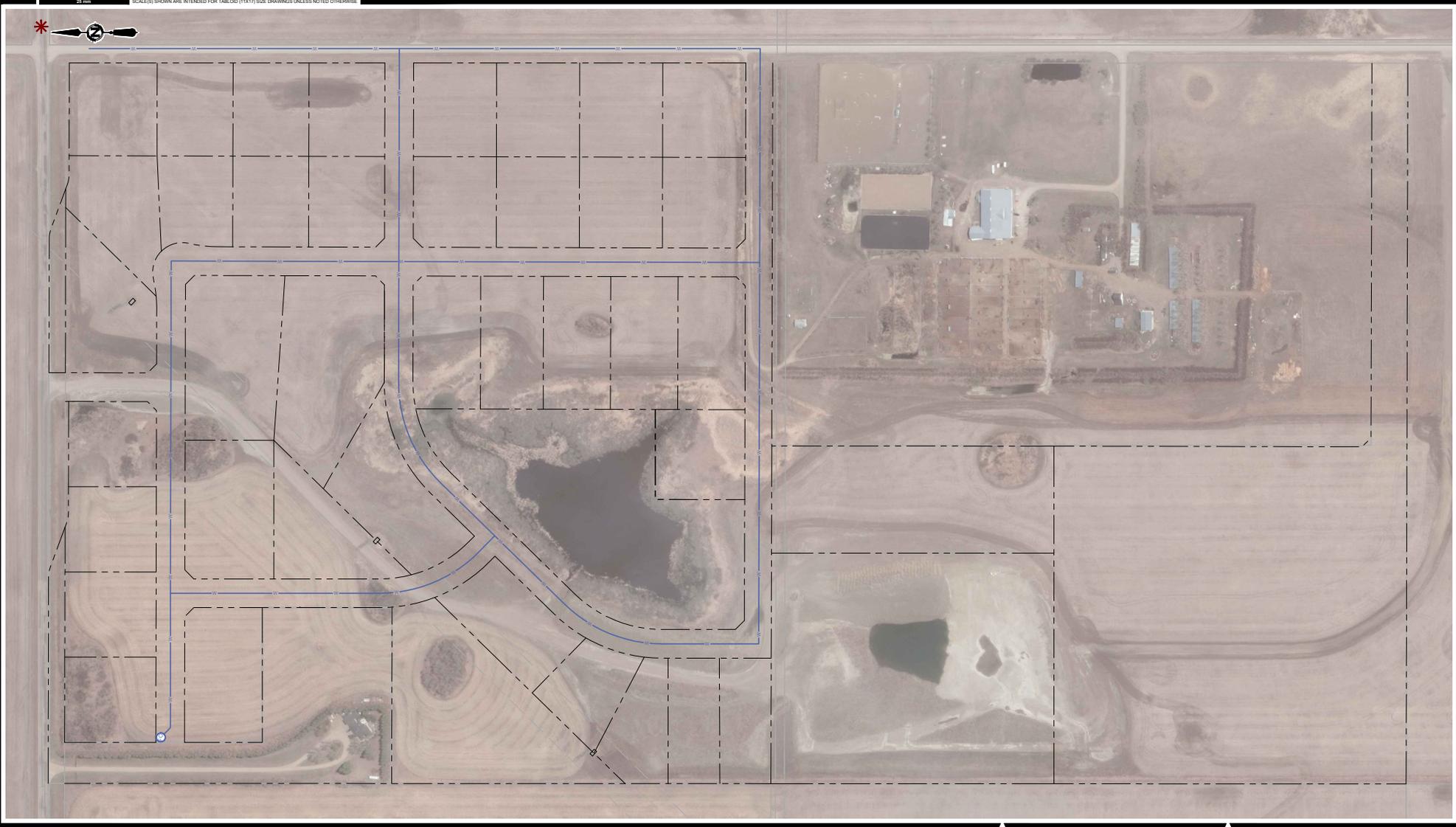
Lost River has confirmed the availability of water to serve short and long-term needs from either of the two waterlines in the vicinity. Subject to receiving subdivision approval, the proponent will execute a water servicing agreement with Lost River to design and construct a low-pressure waterline to the property and manage the operation and billing for the water service.

#### 6.1.1 Fire Protection

The RM of Corman Park has an agreement with the City of Saskatoon Fire Department to provide fire protective services to the area including the subject property. Saskatoon Fire Station #8 is the closest fire hall relative to the subject property. The fire hall is located along Slimmon Road in the Briarwood neighbourhood approximately 6.5 km west of the project area.

The low-pressure rural water line planned to service the subject property is not sufficient to directly support fire fighting within the subdivision. Based on communications with a representative from the Saskatoon Fire Department, they would typically respond to a fire on the site with a fire truck(s), water tanker and brush truck. In addition to hauling water to the site, the fire department employs a portable pond which is filled with water from the tanker, enabling the tanker truck to travel to the nearest hydrant to refill the truck and subsequently the portable pond. Depending on the scale of the fire, multiple tanker trucks may be part of this shuttle system.

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25 mm



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- LEGEND**
- PROPOSED WATERLINE
  - \* PROPOSED APPLEWOOD ESTATES WATERLINE CONNECTION
  - FO PROPOSED FLUSH OUT

**FIGURE 7-1 WATER DISTRIBUTION**  
PATIENCE LAKE  
ROADWAY BUSINESS DEVELOPMENT

## 6.2 Wastewater Management

It is common for rural industrial businesses to utilize septic holding tanks to collect wastewater. The individual lot/business owners will be responsible for sizing and installing the holding tank and coordinating the evacuation of these tanks based on their specific needs. The use of septic holding tanks is universally accepted and eliminates the need to complete a hydrogeotechnical assessment to support a future subdivision application. If a different method of onsite wastewater treatment system is being considered by a lot/business owner, it will be their responsibility to investigate and obtain all appropriate information, studies, and permits required to confirm their ability to proceed with an alternate method of disposal.

As required to support a subdivision utilizing private onsite wastewater disposal, a copy of a letter from a licensed septic hauler is attached in Appendix B confirming their ability to service the properties.

## 6.3 Grading and Drainage Management

The subject property has historically been farmed. The property slopes gently from north to south and comprises several catchment areas where ponding naturally occurs. Site drainage will be managed overland through road ditches, culverts, and dedicated swales, conveying runoff into an existing slough and a proposed stormwater pond.

An engineered drainage memo is appended to this report as Appendix E defining the conceptual basis for managing stormwater within the subject property in compliance with the zoning regulations and *The Water Security Act*. The plan considers and does not impede upstream run-off flowing through the site, replaces displaced natural storage within the plan area resulting from development, and accounts for an overall increase in run-off generated from property development based on a 1-100-year, 24-hour storm event. In addition to managing these storage requirements the design accounts for having to retain the pre-development rates of run-off and drainage routing from the site to minimize the impacts of development on downstream properties.

## 6.4 Transportation

The subject property has been planned to retain direct access to Highway 394 until the Saskatoon Freeway is constructed at which time this access will be permanently closed. Additional access to the site is provided from two planned intersections along Range Road 3042.

A Traffic Impact Assessment (TIA) was prepared to provide a high-level analysis of development traffic volumes including trip generation, type of traffic, and trip distribution and assignment. The TIA utilized the job and trip generation rates established in other concept plan areas within the District. Traffic to the site was assumed to be predominantly (80%) from Highway 394 with the balance of traffic (20%) accessing the site from the south along Range Road 3042.

Highway 394 currently has a temporary eastbound right-turn lane at the mid-block intersection, but no intersection treatment at Range Road 3042. The right lane at the mid-block intersection is warranted and recommended to be reconstructed to MoH standard. No other treatment is warranted at the mid-block intersection.

Highway 394 at Range Road 3042 also warrants an eastbound right-turn lane with additional traffic. Since this is a full-turn intersection, the MoH standard is to construct a downstream taper (SKS 9.14-A.2) like a flared intersection. A right-turn lane with a downstream taper would be appropriate at this intersection.



## 6.5 Other Services

Individual landowners will be responsible for contracting one of several waste disposal companies operating within the Saskatoon area to collect and dispose of domestic waste at a licensed landfill. The site falls under the jurisdiction of the Corman Park Police Service and fire protection is contracted to the City of Saskatoon Fire Department who were consulted to define their approach to fighting fires in this area as defined in Section 7.1.1.

## 6.6 Development Phasing

The following phasing strategy is conceptual and is subject to change. The size and timing for subdivision and servicing will be defined through the subdivision application process based on market conditions.

Phase 1 provides for the subdivision and development of 15 lots in the northeast corner of the property. The initial phase will utilize the existing approach along Highway 394 and require minimal new internal roadway construction. A partnering agreement will need to be executed with MHI to provide for the improvements to the existing temporary turning lane constructed at the existing property approach to meet ministry standards. A 400 m segment of Freeborn Road extending to the first intersection would need to be upgraded to a paved standard as per RM policies. Five of the first fifteen lots will have direct access to Freeborn Road. The configuration and the size of the lots enable driveways to meet the RM standards for spacing from an intersection and between driveways. The balance of the lots will be accessed from the internal road network. Development in this phase could be serviced from an existing potable water line extended from Applewood Estates to the east. Pond 1 will remain in its natural state for the initial phase, but a temporary swale will be constructed to connect the pond with Pond 2 which will be converted from its current function as a borrow pit to an appropriate standard for a stormwater management facility as anticipated by the conceptual drainage plan.

Phase 2 is planned to include five additional lots in the northwest corner of the property. This phase would require the construction of approximately 200 meters of new internal road and the extension of the water distribution line from its point of termination in Phase 1. No improvements to the stormwater ponds are anticipated during this phase.

Phase 3 includes an additional 11 lots and the construction of approximately 1000 m of the internal road network. Additional water distribution lines will be extended from a connection within the previous development phases. During Phase 3, Pond 1 will be upgraded to its intended design including the installation of equalization culverts through the internal road to connect the two ponds and maintain a permanent water elevation in Pond 1 as defined by the Natural Area Screening report.

The final phase adds eight additional lots to the development and will include the completion of the internal road network. By this stage, all essential services, including waterlines, stormwater ponds, ditches, and swales, will have been established to provide comprehensive service for all lots.

The development plan considers a fifth phase of development which is planned to be a single site. We anticipate that this property will retain its agricultural zoning until a specific use has been confirmed and a further amendment to the DOCP has been approved. Access to this property is anticipated to be provided through the construction of a private driveway along the south end of the property connecting directly to Freeborn Road. The use and property zoning for this lot will dictate the requirement and timing for additional improvements to Freeborn Road.

This phased approach ensures an orderly progression of the development, optimizing efficiency, and addressing key infrastructure needs at each stage, culminating in a well-planned and fully serviced property. Figure 7-3 illustrates the Phasing Plan as described above.



## CLOSURE

This report was prepared for the Patience Lake Road Business Park Ltd. to support a land use designation amendment and subsequent rezoning and subdivision applications.

The services provided by Associated Engineering (Sask.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,

Associated Engineering (Sask.) Ltd.

A red rectangular box containing a handwritten signature in black ink. The signature appears to be "Bill Delainey".

Bill Delainey, RPP MCIP  
Project Manager



# APPENDIX A – HERITAGE SCREENING REPORT



## PARKS, CULTURE AND SPORT

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### ABOUT PARKS, CULTURE AND SPORT

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*Inquiry was made on June 11, 2014 at 12:06 PM*

You are inquiring about the heritage sensitivity of the following land location:

**Quarter-section:**

NE

**Section:**

10

**Township:**

36

**Range:**

4

**Meridian:**

3

**This quarter-section is NOT heritage sensitive.**

It is not necessary to submit the project to the Heritage Conservation Branch for screening. These results can be printed for submission to other regulatory bodies (e.g. Saskatchewan Environment, Saskatchewan Industry and Resources). Please email [arms@gov.sk.ca](mailto:arms@gov.sk.ca) if you have any questions.

*Inquiry was made on June 11, 2014 at 12:06 PM*

[Home](#) / [About PCS](#) / [Heritage](#) / [Developers' Online Screening Tool](#) / [Land Locations Search](#)

---

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## PARKS, CULTURE AND SPORT

---

### ABOUT PARKS, CULTURE AND SPORT

---

*Inquiry was made on April 14, 2015 at 4:26 PM*

You are inquiring about the heritage sensitivity of the following land location:

**Quarter-section:**

SE

**Section:**

10

**Township:**

36

**Range:**

4

**Meridian:**

3

**This quarter-section is NOT heritage sensitive.**

It is not necessary to submit the project to the Heritage Conservation Branch for screening. These results can be printed for submission to other regulatory bodies (e.g. Saskatchewan Environment, Saskatchewan Industry and Resources). Please email [arms@gov.sk.ca](mailto:arms@gov.sk.ca) if you have any questions.

*Inquiry was made on April 14, 2015 at 4:26 PM*

[Home](#) / [About PCS](#) / [Heritage](#) / [Developers' Online Screening Tool](#) / [Land Locations Search](#)

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# APPENDIX B - CORRESPONDENCE

Site 515 Box 45 RR 5  
Saskatoon SK S7K 3J8

**Lost River Water Co. Ltd.**

R.M. of Corman Park No. 344

July 25, 2024

Lost River Water Utility has an agreement with the developer to supply water for Patience Lake Business Park Ltd. at E ½ 10-36-4-W3M in the RM of Corman Park.

Please contact me should you have any questions or concerns.

Kind regards,

Robert Risling  
Operations Manager  
Lost River Water Co. Ltd.  
(306) 222-6035  
rislingrobert@gmail.com

Bill Delainey

---

From: Robert Risling <rislingrobert@gmail.com>  
Sent: July 26, 2024 8:23 AM  
To: Bill Delainey  
Subject: Letter for Patience Lake Business Park  
Attachments: Patience Lake Business Park Subdivision Letter.doc

Bill-

Attached is the letter acknowledging my agreement to provide water to the proposed Patience Lake Business Park.

Please contact me if you have any questions.

Kind regards,

Robert Risling  
(306) 222-6035

**AGREEMENT FOR SUPPLY OF WATER TO COMMERCIAL DEVELOPMENT**

**THIS AGREEMENT MADE THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2024.**

**BETWEEN:**

**PATIENCE LAKE ROAD BUSINESS PARK LTD.**, a corporation  
incorporated under the laws of the Province of Saskatchewan,  
(the “**Commercial Developer**”)

**AND:**

**LOST RIVER WATER COMPANY LTD.**, a corporation incorporated  
under the laws of the Province of Saskatchewan,  
(the “**Utility**”)

**WHEREAS** the Commercial Developer is the legal and beneficial owner of the lands located at:  
NE Sec 10 TWP 36 Range 4, West of the 3<sup>rd</sup> and SE ½ Sec 10 TWP 36 Range 4, West of the 3<sup>rd</sup> in the  
RM of Corman Park, Province of Saskatchewan;

**AND WHEREAS** the Utility has agreed to supply water to the Commercial Developer.

**NOW THIS AGREEMENT WITNESSETH** that in consideration of the mutual covenants and  
conditions contained herein, the parties agree as follows:

**Deposit** - \$30,000.00 Deposit paid to the Utility to secure future consideration for a water  
agreement between the Utility and the Commercial Developer. The Deposit will be refunded if  
the proposed development does not receive approval from the RM of Corman Park

**Representations and Warranties of the Utility** – The Utility hereby represents and warrants  
that:

- (a) it is duly incorporated and organized and is validly subsisting under the laws of  
Saskatchewan and is qualified to do business in Saskatchewan;
- (b) it has the requisite corporate power and authority to execute, deliver and perform this  
Agreement; and

(c) this Agreement and any action contemplated hereunder does not cause the Utility to be in breach of any obligation or contract, nor will it result in the violation of any of its bylaws or its documents of incorporation.

2. **Further Assurances** – The parties hereto shall sign such further and other documents and do and perform and cause to be done and performed such further and other acts and things as may be necessary or desirable in order to give full effect to this Agreement.
3. **Time is of the Essence** – Time shall be of the essence of this Agreement.
4. **Laws** – This Agreement shall be governed by and interpreted in accordance with the laws applicable in the Province of Saskatchewan and each of the parties hereto irrevocably attorns to the jurisdiction of the Courts of Saskatchewan.
5. **Currency** – All dollar amounts referred to in this Agreement shall be in Canadian funds.

*[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK. SIGNATURE PAGE TO FOLLOW]*

**IN WITNESS WHEREOF** the parties have executed this Agreement effective the day and year first above written.

**LTD.**

(seal)

**PATIENCE LAKE ROAD BUSINESS PARK**

Per: \_\_\_\_\_

Name:

Title:

**LOST RIVER WATER COMPANY LTD.**

(seal)

Per: \_\_\_\_\_

Name:

Title:

## Bill Delainey

---

From: Trenton Spence <Trenton.Spence@wsask.ca>  
Sent: August 13, 2024 4:06 PM  
To: Bill Delainey  
Cc: Jason Forest; Joy Martija; Sheldon Ofukany  
Subject: RE: 2014-4469-04 - Patience Lake CDR  
Attachments: app\_patience\_lake\_rbd\_wsa\_drainage\_rev02\_20240603\_jf.pdf

Follow Up Flag: Follow up  
Flag Status: Flagged

Hi Bill,

There has been a recent change to the Water Security Agency Regulations 2(l)(i)(C), highlighted below:

(2) For the purposes of the Act and in these regulations, "drainage works" means any action taken or contrivance used or intended for the removal of any water from land, and includes:

but does not include:

(l) storm water collection systems or land levelling and landscaping for the development of building sites if:

(i) those systems or sites are located:

(A) wholly within the boundaries of a city as that term is defined in *The Cities Act*;

(B) wholly within the boundaries of a town, village, resort village, hamlet or organized hamlet as those terms are defined in *The Municipalities Act*; or

(C) wholly within the boundaries of a site for residential, commercial, industrial, institutional or mixed-use development where the boundaries have been determined in accordance with *The Planning and Development Act, 2007* and the regulations made pursuant to that Act

(ii) no water is diverted from the outlet through which the water would normally drain;

With the new exemption within the regulations, I would recommend that this review be addressed through the Rural Municipality of Corman Park No. 344 Official Community Plan.

Based on my review of this stormwater management plan, a drainage approval from Water Security Agency is not required based on the following criteria:

- The proposal is to subdivide the site for commercial/industrial use.
- Stormwater collection systems will be implemented to account for pre-development storage volumes, in addition to the post-development runoff volumes.
- Post-development runoff rates will match the pre-development runoff rates, using the 1:100 year 24-hour storm event flow rates.
- The site will be graded to the stormwater complex and will outlet the site at the same outlet which occurred naturally prior to development, therefore no diversion of water is being created from the site.

My only comment on this proposal is that there appears to be three small wetlands within the red "future development" area which do not appear to be graded to the proposed stormwater pond. Although the calculations account for these wetlands, on-site grading should take place to direct the loss of natural storage to the storage pond prior to exiting the site.

Please let me know if you have any further questions.

Thanks,  
Trenton

**Trenton Spence** - A.Sc.T.

Supervisor, Approvals North  
402 Royal Bank Tower 1101 - 101st Street  
North Battleford, SK S9A 0Z5  
Ph: 306.441.0271  
wsask.ca | trenton.spence@wsask.ca



 Please consider the environment before printing this e-mail

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---

From: Bill Delainey <delaineyb@ae.ca>  
Sent: Monday, August 12, 2024 10:34 AM  
To: Trenton Spence <Trenton.Spence@wsask.ca>  
Cc: Jason Forest <forestj@ae.ca>  
Subject: 2014-4469-04 - Patience Lake CDR

**CAUTION:** External to WSA. Verify sender and exercise caution opening links and attachments.

Good morning Trenton, it is my understanding that Spencer had shared a conceptual drainage plan we have prepared for a proposed light industrial subdivision within the RM of Corman Park for review and comments from your office. Are you able to confirm if anyone has been able to review the attached? We are seeking written comments or confirmation of your endorsement of the conceptual plan to include in our submission to the RM.

Thanks,

Bill Delainey, RPP, MCIP  
Project Manager  
Associated Engineering (Sask.) Ltd.  
1 - 2225 Northridge Drive, Saskatoon, SK S7L 6X6  
Tel: 306.653.4969 | Cel: 306.261.9612 | Dir: 306.808.3047



Associated  
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Platinum  
member

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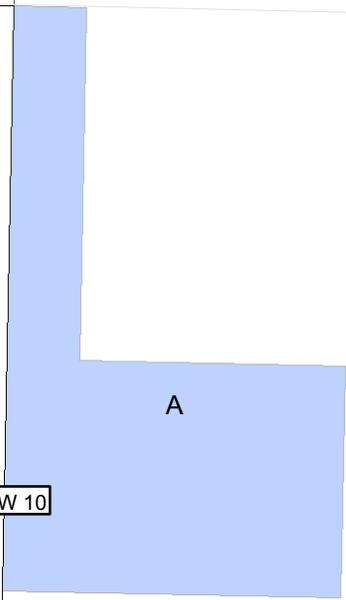
CORMAN PARK NO. 344

FREEBORN ROAD

SW 15

SE 15

SW 14



A

NW 10

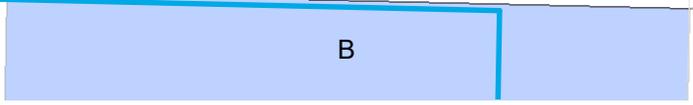
NE 10

36-04-3

NW 11

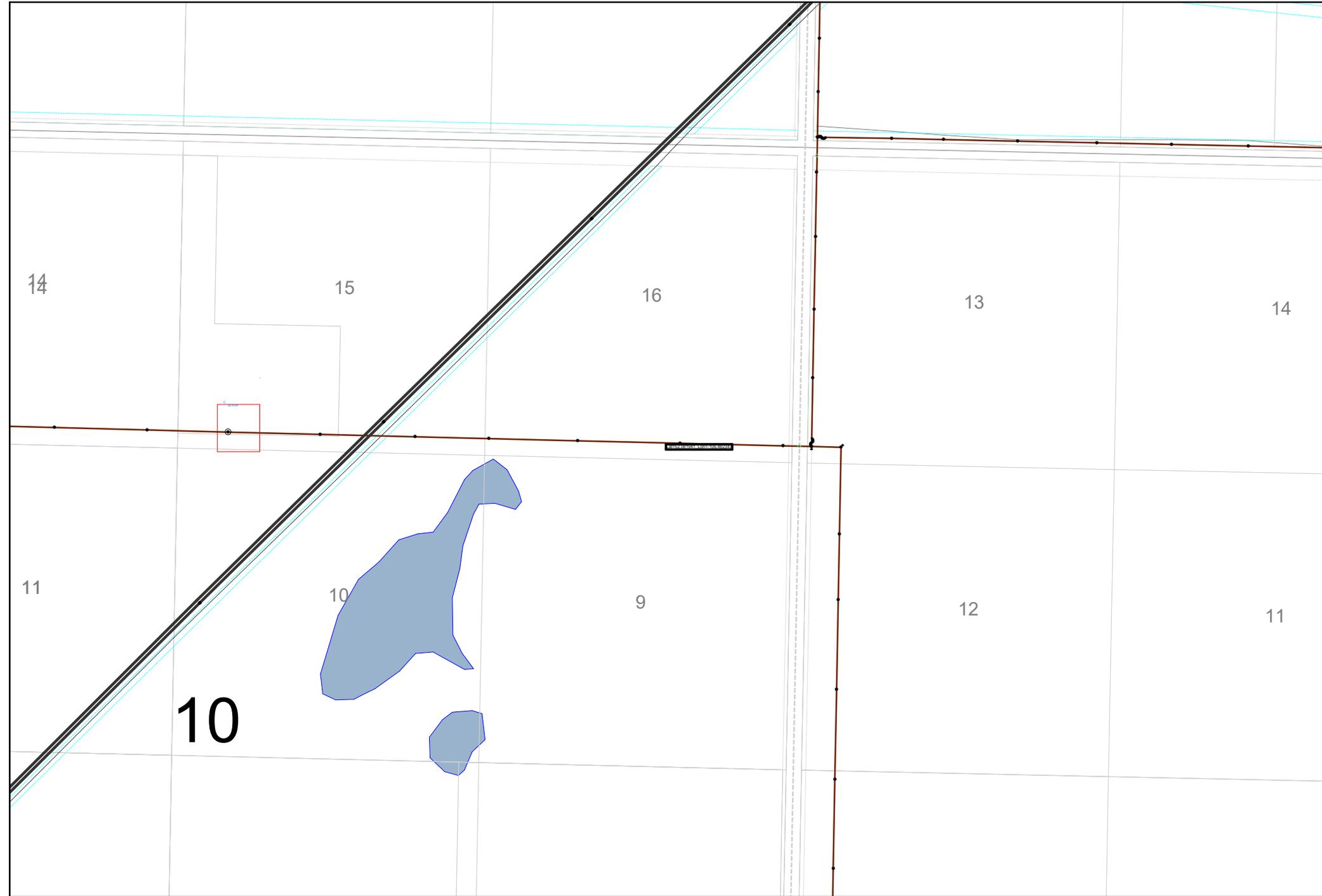
D

SE 10



B

SW 11



SE15  
36-04-W3

SW14  
36-04-W3

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A

NE10  
36-04-W3

SASKATOON  
CITY EXC.

NW11  
36-04-W3



SE10  
36-04-W3

B

SW11  
36-04-W3



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**Associated Engineering (Sask.) Ltd.**  
1 - 2225 Northridge Drive  
Saskatoon, SK S7L 6X6 Canada  
www.ae.ca

November 5, 2024  
File: 2014-4469.04

TEL: 306.653.4969

**Re: NEIGHBOUR NOTIFICATION  
PROPOSED NEW BUSINESS PARK DEVELOPMENT  
E1/2 10-36-4-W3M**

Dear Landowner:

We are writing to inform you of our client's intention to pursue an amendment to the P4G District Official Community Plan and Zoning Bylaw to support the subdivision and development of a multi-lot business park within the E ½ 10-36-4-W3M.

A Comprehensive Development Review (CDR) report is currently being prepared and is anticipated to be submitted later this year for consideration by the RM of Corman Park Council in early 2025. The proposed development, as illustrated in Figure 1, outlines a site plan comprising 41 lots. This includes nine lots (shaded in dark blue) zoned Business District, with the balance proposed to be developed under the Light Industrial District, as defined by the P4G Zoning Bylaw.



Figure 1: Development Concept



Platinum member



The CDR defines the following key findings:

- **Location and Accessibility:** The property is strategically located near major transportation routes, including the Saskatoon Freeway and Highway 394 (Patience Lake Road), providing excellent access to Saskatoon and surrounding areas.
- **Current Use and Physical Conditions:** The land has been previously used as a source of fill material for two major interchanges. These previous excavations combined with the central wetland and vegetated areas marginalize the viability of farming the land.
- **Environmental Considerations:** A natural area screening identified several wetlands and potential habitats for rare species. The development plan includes measures to mitigate environmental impacts, such as reconstructing the central wetland to function as a natural filter for stormwater and undertaking a habitat inventory before construction.
- **Geotechnical Assessment:** Preliminary geotechnical investigations confirm the site's suitability for development, with recommendations for conventional design and construction techniques.
- **Utility and Servicing Conditions:** The site will be serviced by existing utilities, including SaskPower, SaskEnergy, and SaskTel. A low-pressure water system will be provided by Lost River Water Utility, and wastewater will be managed through septic holding tanks.
- **Transportation and Access:** The development will include new paved internal roads and improvements to existing municipal and provincial roads to accommodate increased traffic. A Traffic Impact Assessment (TIA) supports the need for these improvements.
- **Policy and Regulatory Compliance:** The development aligns with the District Official Community Plan (DOCP) and other relevant policies, supporting the amendment of the land use designation from Agricultural to Rural Commercial/Industrial as a means of defining the highest and best use of land.

The plan acknowledges that this development will undoubtedly increase the level of activity in this area of the municipality. The development plan for the site seeks to minimize potential nuisances through a combination of approaches, including leveraging the site's location along a provincial highway, the configuration of the internal road design, site landscaping, property zoning, and the application of general and land use-specific zoning regulations.

Situating an industrial development along a paved provincial highway and adjacent to the planned Saskatoon Freeway significantly reduces the impact on nearby residential properties to the east. This location provides direct access to the broader provincial road network, directing traffic flow away from existing residential acreages. By channelling industrial traffic onto the provincial highway to the west, the use of local municipal roads is minimized, thereby reducing traffic congestion, noise, and dust in residential areas to the east. This approach ensures that the industrial development operates efficiently and reduces the potential impacts on the tranquillity and quality of life of nearby residents.

The development of the site is expected to include shelterbelt plantings along the common boundaries with adjacent non-industrial properties within the subject property. The lots situated along the



perimeter of the property and adjacent to the existing developed country residential acreage are planned to be zoned Business Industrial, which generates less noise, pollution, and traffic relative to light and heavy industrial development. This zoning often provides for a higher standard of landscaping within the sites, reducing the visual impact and creating greater visual harmony with nearby development.

A copy of the current draft CDR report can be accessed and viewed by scanning the QR code below. We are interested in hearing from you and potentially incorporating your ideas into the final plan for the site.



Written comments can be submitted by email to [delaineyb@ae.ca](mailto:delaineyb@ae.ca). For further information, please contact:

**Bill Delainey**  
**Associated Engineering Ltd.**  
**(306) 808-3047**

Comments received by Friday, December 6th will be incorporated directly into the CDR report.

Thank you for your attention to this matter. We look forward to your feedback.

Sincerely,

Yours truly,



Bill Delainey  
Project Manager

BD

Bill Delainey

---

From: Bill Delainey  
Sent: November 21, 2024 3:30 PM  
To: Phil Shilling  
Cc: Ron Olson; Monique Beaudry  
Subject: RE: Draft CDR - Patience Lake Road Business Park Ltd

Good afternoon, Phil,

Thank you for reaching out regarding this project. Please be assured that this communication will be included in our final submission to the RM in the coming weeks to maintain a fully transparent process.

Regarding your question about the TIA, a review of this intersection was not required by the Ministry of Highways when we initially scoped the work due to its distance from the project site. However, we have considered the impact of adding approximately 300 vehicles to the current intersection during the AM and PM peak hours. As part of our due diligence, we reviewed the City of Saskatoon Transportation Master Plan and the Saskatoon Functional Planning Study to understand how development in the southeast corner of the city and the eventual construction of the Saskatoon Freeway will affect Highway 394 west of our project area.

Both studies indicate an intention to redirect Highway 394 to connect to Market Drive, which is served by an existing signalized intersection along Zimmerman Road. Although the configuration of Market Drive differs between the two studies, it is clear that there is an intention to eventually abandon the current intersection due to its proximity to the Highway 16 intersection to the south. Our TIA assumes a five-year buildout with a 15-year study horizon, which is a more realistic development rate. The demand for the extension of Market Drive, as envisioned by the Saskatoon Transportation Master Plan, will be driven by planned industrial development as defined by the Rosewood Neighbourhood Plan. This likely aligns with the development timeframe of our client's property and also illustrates the Market Drive extension. If these timeframes align, it is likely that by the time we reach full development build-out, the intersection will have already been relocated. We do not believe that any improvements should be made to the existing intersection as a result of the proposed development, but we anticipate that the RM and City will provide their perspectives during the review of the CDR.

Regarding the scope of the geotechnical assessment, it did not assess the hydrogeotechnical conditions on the site. Development within the property will be serviced by low-pressure rural water and will exclusively use septic holding tanks to manage wastewater, as is the case with all rural industrial development within the RM. Since there is no interaction between the soil and wastewater streams, there is no provincial requirement to undertake this additional investigation.

In terms of the process moving forward, once the consultation period is closed, all communications received will be documented in the final CDR report and submitted to the RM for review and distribution to the P4G partnering communities, which will have 45 days to review and provide comments. The CDR is intended to support a request to amend the designation of the subject property from agriculture to rural industrial as defined by the current District Official Community Plan, as well as to support a subsequent application to rezone and subdivide the property in phases.

Feel free to reach out if you have any further questions or comments.

Regards,

Bill Delainey, RPP, MCIP  
Project Manager

Associated Engineering (Sask.) Ltd.  
1 - 2225 Northridge Drive, Saskatoon, SK S7L 6X6  
Tel: 306.653.4969 | Cel: 306.261.9612 | Dir: 306.808.3047



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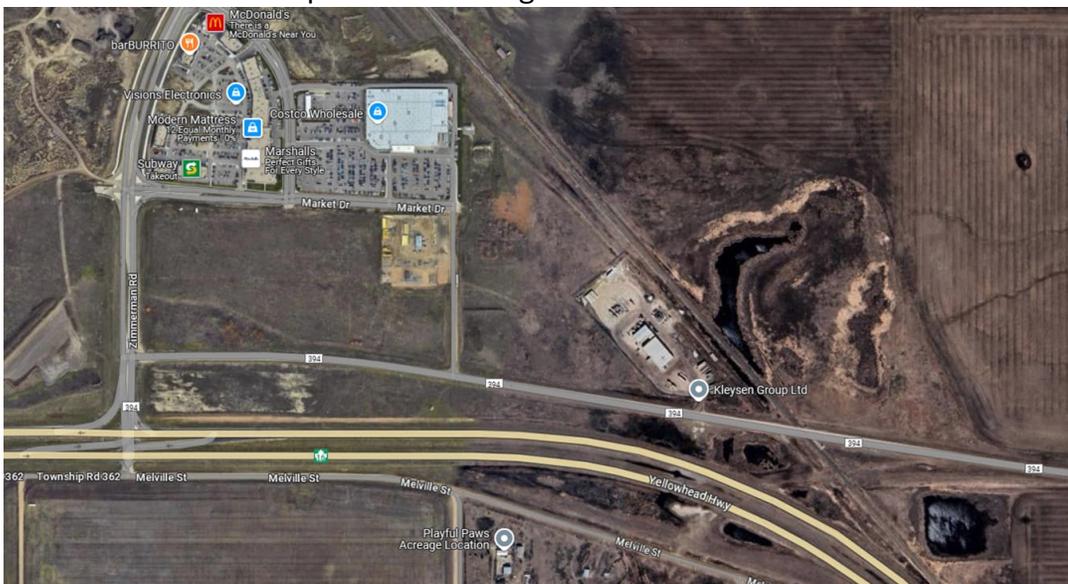
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From: Phil Shilling [REDACTED]  
Sent: November 15, 2024 3:07 PM  
To: Bill Delaine <delaine@ae.ca>  
Subject: Draft CDR - Patience Lake Road Business Park Ltd

Hi Delaine,

I have some comments regarding the Draft CDR for the Patience Lake Road Business Park Ltd.

1. What considerations does the TIA make for the intersection at Zimmerman Road and Highway 394 intersection? Since there is no defined timeline for the Saskatoon Freeway or the realignment of Hwy 394 to Market Drive by Costco, adding 41 light industrial/commercial lots will potentially generate 500-600 additional trips to this intersection. This will also impact the left turn off of Highway 16 due to the short distance between the intersection and Hwy 394 since most vehicles queue into the right-left turn lane to access Costco and Patience Lake Highway.



2. Does the preliminary geotechnical report assess the cumulative nitrate concentrations from wastewater for the development and the impact on groundwater and surrounding water wells?

3. Will the CDR be submitted to P4G for review and approval? The P4G District Land Use map identifies this area as agricultural land. Given its proximity to the East Floral Road Industrial area, is it suitable for rezoning?

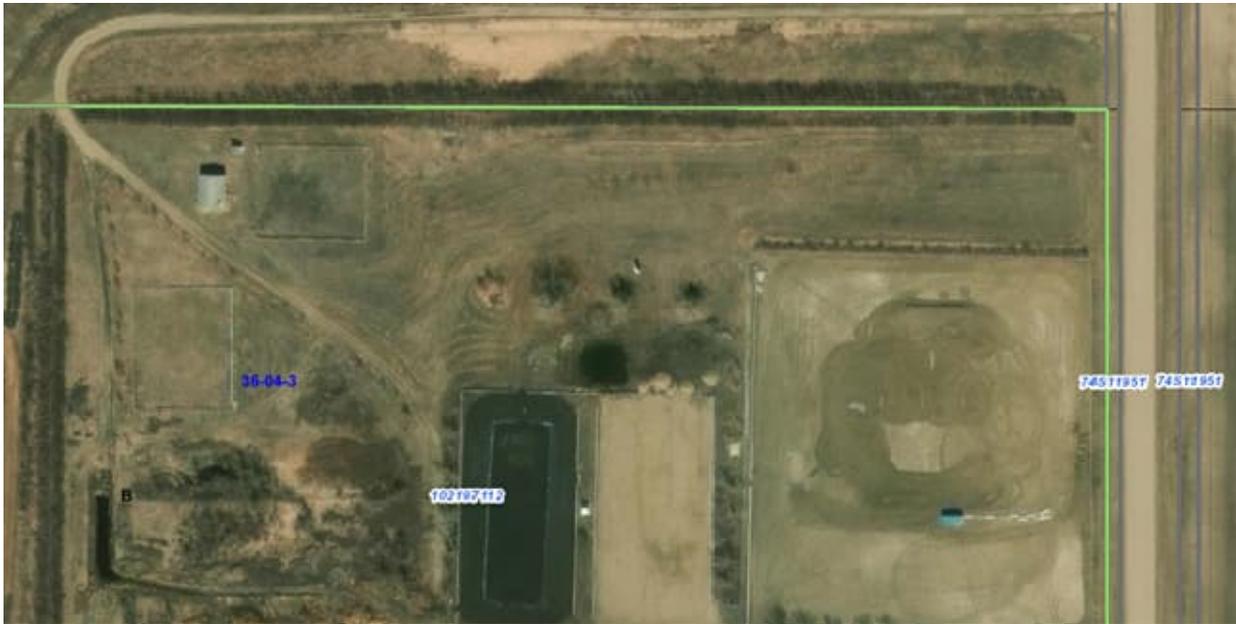
Phil Shilling ( [REDACTED] )

## Bill Delainey

---

From: Bill Delainey  
Sent: November 27, 2024 8:55 AM  
To: Coleman Murch; Ron Olson  
Subject: RE: 2014-4469-04 - Response to Murch

Good morning Coleman, the picture I attached from Land Titles illustrating the situation of the shelterbelt relative to the shared property boundary is reproduced below:



Feel free to contact me directly if you have any questions concerning this or the communication Ron shared with you.

Regards,

Bill Delainey, RPP, MCIP  
Project Manager  
Associated Engineering (Sask.) Ltd.  
1 - 2225 Northridge Drive, Saskatoon, SK S7L 6X6  
Tel: 306.653.4969 | Cel: 306.261.9612 | Dir: 306.808.3047



*Associated Engineering respectfully acknowledges that the lands on which we live and work are the ancestral territories of the Indigenous Peoples, who have cared for these lands since time immemorial.*

---

From: Coleman Murch [REDACTED]  
Sent: November 27, 2024 8:32 AM  
To: Ron Olson [REDACTED] Bill Delainey <delaineyb@ae.ca>  
Subject: Re: 2014-4469-04 - Response to Murch

Hello Ron and Bill, Can I get that picture resent that shows the proposed road and tree line to the north of our property? It did not come through on the last email.

Thank you!  
Coleman

On Tue, Nov 26, 2024, 12:58 p.m. Ron Olson [REDACTED] wrote:

Hi Coleman and Kyla; I am forwarding you the response from Bill Delainey; our engineer. If you have further questions please direct them to both of us. Thanks. Ron Olson  
Sent from my iPhone

Begin forwarded message:

**From:** Bill Delainey <delaineyb@ae.ca>  
**Date:** November 26, 2024 at 1:49:02 PM EST  
**To:** Ron Olson [REDACTED]  
**Subject:** Re: 2014-4469-04 - Response to Murch

Do you want me to respond on your behalf?

Bill

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---

From: Ron Olson [REDACTED]  
Sent: Tuesday, November 26, 2024 12:45:43 PM  
To: Bill Delainey <delaineyb@ae.ca>  
Subject: Re: 2014-4469-04 - Response to Murch

Looks good 👍 Bill. Thanks.  
Sent from my iPhone

On Nov 26, 2024, at 11:26 AM, Bill Delainey <delaineyb@ae.ca> wrote:

Good morning Ron, I have reviewed the comments provided by Coleman and Kyla and propose the following response:

*Dear Coleman and Kyla,*

*Thank you for taking the time to review our proposal, your input is important to ensure that our proposed development integrates well into the area.*

*Please be advised that all internal roads and municipal roads connecting the development to Highway 394 will be improved to a paved standard which reduces road noise and dust resulting from traffic generated by the development.*

*Regarding your questions, we can provide the following responses:*

- 1. Of the current trees growing on the North side of our property/South East side of yours, which ones will be taken out for your road access? There is currently a well-established barrier on the border of the North side of our property. I can't tell if these tree rows will remain as is, or will be partially removed as it is near your proposed roadway and the trees are on both sides of the property.*

*The following image taken from ISC (Land Titles) indicates the location of the existing shelterbelt along the north boundary of your property. These trees appear to straddle the property boundary.*

*<image002.png>*

*Your north property boundary is planned to be used as the southern extent of a planned 32-metre road ROW. The plan is to centre a 9-metre road within this ROW with the surrounding land being used to construct the associated ditches and side and back slopes. The tree line would be situated along the backslope of the road and we would intend to do everything we can to minimize any disruption to the existing tree line as possible while still meeting the RM's standards for the design of the roadway. Some of the methods for protecting the treeline during construction would be to carefully remove only the trees that are necessary for road construction, adjust the grading of the backslope to create a more gentle slope to reduce the impact on the root system or replant impacted*

*portions of the shelterbelt. All of these options will be discussed with the RM staff at the design stage of development.*

- 2. What is the estimated increased usage of your tenants and clients headed South on Freeborn Road to access HWY 16?*

*Our Traffic Impact Assessment accompanying the CDR report assumes that only 5% of the daily traffic from this development will choose to travel south along Range Road 3042 as much of the business within the development is likely going to relate to the Saskatoon area which is more readily accessible from Highway 394. We also believe that the ability to travel on a paved roadway will be preferred to travelling along a gravel-surfaced roadway.*

- 3. During road work on Freeborn Road will there be any road closures that will impede us and our clients having access to our property?*

*We can coordinate the construction of the necessary improvements along Range Road 3042 with you to ensure continued access to your facility. The methods available include phasing construction to enable traffic to be temporarily detoured through the planned internal road network to your site to access the planned approach onto Highway 394, or limiting construction to one of the driving lanes at a time and using flaggers and other traffic control measures to ensure safe navigation and maintain controlled access through the construction area. We are committed to working with you and other neighbours who may be impacted by road improvements to minimize the disruption of this construction as much as possible.*

- 4. Do you have a plan for the tree rows you have indicated? What type of shelter belts, spacing, and age?*

*Considering the distance separating the industrial lots from the west edge of your property, and the current tree line encompassing your lot, it is expected that the shelterbelt would utilize pole-sized trees which are larger than saplings but not yet fully mature. The species for the shelterbelt will likely be a mix of fast-growing shrubs and deciduous trees that are well-*

*suited to the local climate and soil conditions including caragana, green ash or poplars. It is expected that the details concerning the specific design of the shelterbelt will be confirmed during the design stage of development.*

- 5. Do you anticipate any water flow entering our property from yours? I see your water flow plan, but I don't know if there are any culverts or space allowing water flow to come onto our land.*

*Current provincial and municipal drainage regulations prohibit the construction of any drainage infrastructure which results in the displacement of incremental flows from a development onto a neighbouring property. Our drainage plan provides for the permanent retention of water currently stored on the property and accounts for the temporary storage of any incremental increase in run-off generated by the development (active storage) in the facilities constructed within the boundaries of the development. The active storage volumes are then released from the site along the natural path it follows today at a rate equal to the predevelopment rate.*

- 6. Do you have any anticipated issues or questions with our business or property as it relates to your development?*

*Not at this time. We have made every effort to consider your property in designing the layout for this development and look forward to further discussion with you as the project progresses toward construction.*

- 7. Can you give me more details on what light industrial businesses might look like? Are there areas in Saskatoon or surrounding communities we can take a drive by and get a better appreciation of what might be included in light industrial?*

*An example of rural light industrial development in your area would be the Floral Industrial Park to the south (excluding the Lafarge Cement Plant which is not part of this development and is zoned as a heavy industrial development). Other examples of light industrial developments include the*

*Bizhub and Yellowhead industrial parks along the west side of Highway 16 North and the East Cory Light Industrial Park situated between Highways 11 and 12 North.*

*Thank you for bringing your concerns regarding road dust and noise to our attention. We understand the importance of ensuring that the road infrastructure meets the needs of current and future traffic levels. The recent improvements made by the RM were completed to respond to current traffic levels and are meant to address the immediate needs of the community and ensure safe and efficient travel for all users.*

*Looking ahead, we recognize that the development will generate additional traffic, with a significant portion likely to access Saskatoon via Highway 394. To address this, the developer is committed to further improving the segment of the road connecting to Highway 394. These improvements will be designed to accommodate the anticipated increase in traffic, ensuring a smooth and safe connection for residents and visitors.*

*We are open to discussing potential ways to manage dust along the eastern boundary of your property as the development proceeds and results in a significant increase in traffic along your property. The long-term development plan is to support a larger single-lot development along the south boundary of the plan area in a final phase of development which would then trigger the need to upgrade the entire length of Range Road 3042 extending from the future property access south of your property to the termination of the pavement associated with the current proposal. In the meantime, this land will continue to be used for agricultural purposes and is not expected to contribute to any additional nuisance than is present today.*

*Understandably, increased activity in the area would raise concerns about security and privacy. A shared fence line may be a practical solution to address these issues. Given the current shelterbelt along the north side of your property and the constraints this currently presents to road construction, we feel that a fence along this boundary would not be feasible. We can explore the option of installing a shared fence along your western property line to help deter trespassing and illegal dumping while enhancing privacy and security for both properties. We are open to discussing the type, style, and cost-sharing arrangements for the fence. Ultimately the shelterbelt planting planned for the abutting lots combined*

*with the lack of a roadway is unlikely to create an opportunity for unwanted encroachment on your property.*

*We appreciate the opportunity to gain your perspectives on how the two developments can coexist and are committed to investigating reasonable solutions to any conflicts that may present themselves.*

Let me know if any revisions are necessary to accurately represent your intentions and if you would like me to respond directly to them on your behalf.

Regards,

**Bill Delainey, RPP, MCIP**  
**Project Manager**  
**Associated Engineering (Sask.) Ltd.**  
1 - [2225 Northridge Drive, Saskatoon, SK S7L 6X6](#)  
Tel: 306.653.4969 | Cel: 306.261.9612 | Dir: 306.808.3047

[<image001.png>](#)

*Associated Engineering respectfully acknowledges that the lands on which we live and work are the ancestral territories of the Indigenous Peoples, who have cared for these lands since time immemorial.*

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## Bill Delainey

---

From: Bill Delainey  
Sent: December 9, 2024 9:38 AM  
To: Douglas Winmill  
Cc: Ron Olson; Jason Forest  
Subject: RE: Neighborhood Notification - Proposed New Business Park Development E  
1/210-36-4-W3

Good morning Mr. Winmill and thank you for taking the time to provide your comments, they will be included in our submission to the RM in the coming weeks.

As you are aware, a substantial borrow pit was excavated within the south half of our client's property to facilitate the construction of the Boychuck and McOrmand Road overpasses. As defined in the CDR report, the intention is to convert this into a stormwater retention pond to support development of the site. Based on our engineering plans, a total storage volume of 140,500 m<sup>3</sup> of storage is required to meet the permanent and active storage requirements for the development. The current borrow pit is estimated to provide 400,000 m<sup>3</sup> of storage of which 72,500 m<sup>3</sup> of this would be permanently stored in the borrow pit and never released downstream. This leaves nearly 327,500 m<sup>3</sup> of active storage which is designed to be released from the pond downstream along the natural path at a predevelopment flow rate of 0.3 m<sup>3</sup>/s as required by provincial and municipal regulations.

The borrow pit offers nearly five times the required active storage required. The increased storage capacity allows the pond to hold more water during storm events, reducing the frequency and duration of high flow events downstream. This can help mitigate flooding and erosion in downstream areas, supporting the continuation of farming on your lands with less disruption than would occur under predevelopment conditions without the borrow pit. The larger storage volume also provides more surface area and time for water to evaporate. This can reduce the volume of water that needs to be discharged, especially in warmer climates or during dry periods. Converting the borrow pit to a storm retention pond with significantly more storage than required offers substantial benefits for downstream properties by reducing flood risks, improving water quality, and allowing for more evaporation of collected runoff.

Let me know if you would like to discuss your concerns further. I would be happy to coordinate a call with you and Jason Forest who is the civil engineer responsible for the proposed drainage design if desired. I have copied Jason Forest on this email in case you wanted to contact him directly.

Thanks again for your comments.

Bill Delainey, RPP, MCIP  
Project Manager  
Associated Engineering (Sask.) Ltd.  
1 - 2225 Northridge Drive, Saskatoon, SK S7L 6X6  
Tel: 306.653.4969 | Cel: 306.261.9612 | Dir: 306.808.3047



*Associated Engineering respectfully acknowledges that the lands on which we live and work are the ancestral*

*territories of the Indigenous Peoples, who have cared for these lands since time immemorial.*

---

From: Douglas Winmill [REDACTED]  
Sent: December 6, 2024 1:08 PM  
To: Bill Delaine <delaine@ae.ca>  
Subject: Neighborhood Notification - Proposed New Business Park Development E 1/210-36-4-W3

Good afternoon Mr. Delaine; I received the neighborhood notification for the above referenced project last month and reviewed the full Comprehensive Development Review. I own farmland to the south adjacent to the proposed development (NE-3-36-4-W3) and our home quarter and residence is within the 1.6 km buffer zone (NW-3-36-W3).

I have concerns regarding the impact that the development will have on snowmelt and rain water drainage to the south through the natural water runway that exists. With the exception of once in the past 50 years, the field has been able to be farmed east to west as a single field / parcel.. While the water runway is often active in the spring, it is dry by seeding time allowing the field to be worked in a single parcel, which is extremely beneficial. If the development increases, prolongs or alters the water flow in the runway in the spring or during the growing season, the field may need to be worked in two pieces greatly increasing farm operating costs, decreasing profitability, etc.. If the water runway cannot at a minimum be crossed with farm equipment at at least one location, farm equipment must be transported to the other side of the water runway on the gravel and paved roads, which involves an additional 3 mile trip. Once the perimeter highway is built, this travel distance will be further increased.

The report does discuss water management in a couple of areas. However, I have little confidence that the project won't be detrimental and cause hardships in the areas I have outlined above. The report also indicates that directly adjacent to my quarter is where Phase 5 of the development project is planned, which will include a large parcel single tenant. Since no details on that development plan are included in the report. I'm unable to provide any comments other than to note that I do have potential concerns.

I am opposed to the development of this project at the proposed location. I believe it should be located further away from the perimeter of the city to allow for future residential growth in the long term, and in the short term avoid the impacts I believe it will have on my farmland.

Sincerely  
Doug Winmill

# APPENDIX C - NATURAL AREA SCREENING REPORT

<b>Issue Date:</b>	March 26, 2024	<b>File:</b>	_____
<b>To:</b>	<b>Bill Delainey</b>	<b>Previous Issue Date:</b>	_____
<b>From:</b>	Suzanne Marshall		
<b>Client:</b>	Patience Lake Roadway Business Development		
<b>Project Name:</b>	Patience Lake Comprehensive Development Review	<b>Project No.:</b>	2014-4469-04
<b>Subject:</b>	Natural Area Screening Report		

## 1 INTRODUCTION

This desktop Natural Area Screening (NAS) report has been prepared by Associated Environmental on behalf of Patience Lake Road Business Development Ltd. (the Owner) to inventory and analyze data related to specific natural areas within E ½ 10-36-4-W3M. This memo is intended to support the redesignation, rezoning, and phased subdivision of approximately 64 ha (160 acres), as illustrated in Figure 1-1. In addition to considering the overall environmental context of the lands, the key components of this study include:

- Wetlands;
- Significant wildlife and plant species; and
- Heritage Resources.

The project area is currently cultivated land with the exception of several wetlands, small pockets of vegetation and soil stockpiles, and a borrow pit associated with an approved excavation in the southern half of the property. The lands are intended to be developed as a multi-lot commercial and industrial park.

## 2 ASSESSMENT METHODS

This screening was completed using readily available information for the project area (i.e., plans, maps, figures, imagery) and existing databases (e.g., the Saskatchewan Conservation Data Centre (HABISask), GeoSask, the Committee on the Status of Endangered Wildlife in Canada status reports, Schedule 1 of *Species at Risk Act* (SARA), the Government of Saskatchewan's Bird's Atlas, and the Government of Saskatchewan's Clubroot Map).

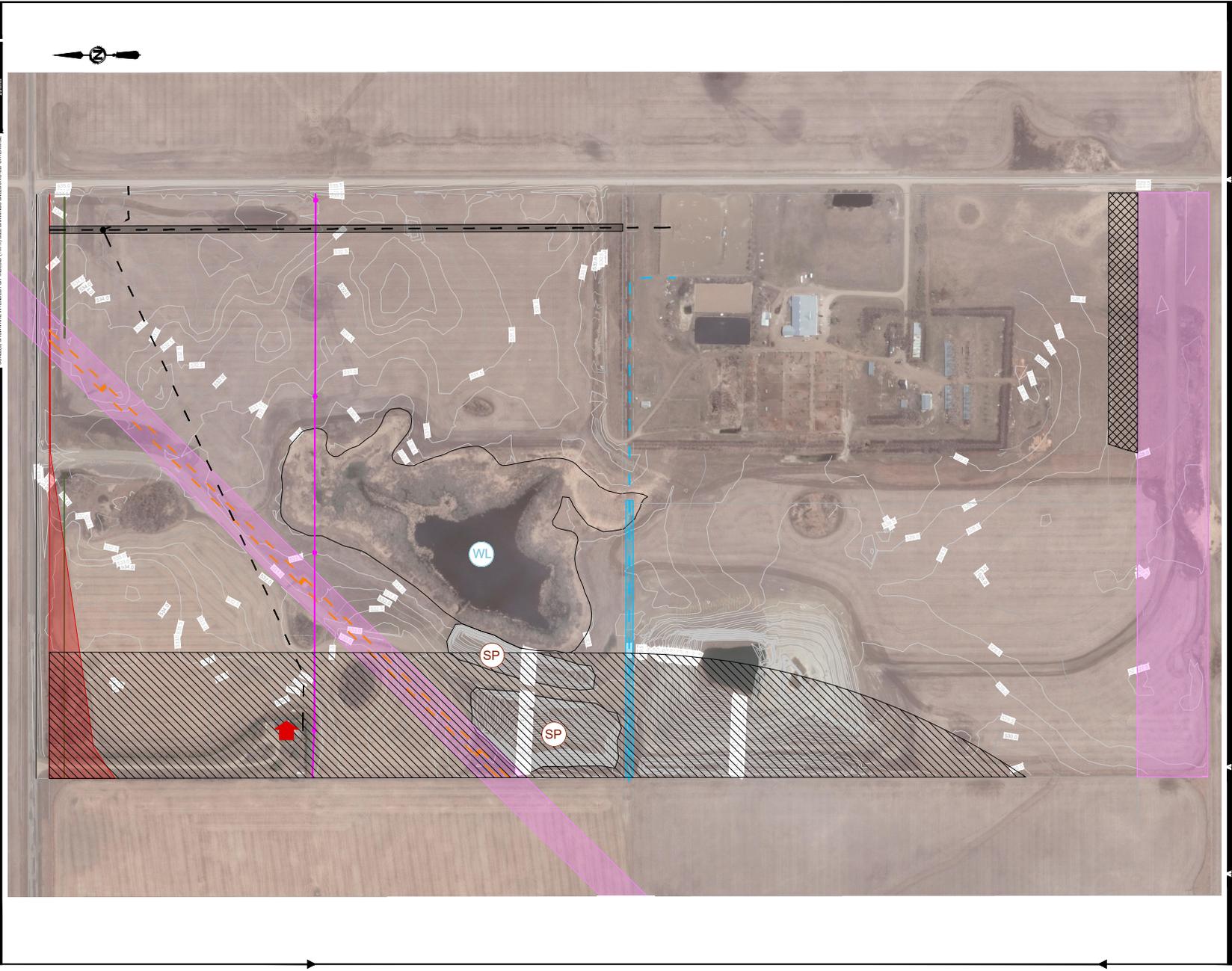
The desktop wetland assessment was completed in ArcMap GIS software using available imagery to identify wetland vegetation and hydrological signatures. Contour lines at 25 cm intervals were used to identify changes in local topography, which are indicative of the prairie pothole wetland basin morphology. Desktop delineation of wetlands using imagery and contours provides an approximate wetland boundary; field assessment and delineation of wetlands are required for the highest possible accuracy.

The heritage screening was completed using the Developer's Online Screening Tool published by the Heritage Branch of the Ministry of Parks, Heritage, and Sport.

IF NOT TO SCALE ADJUST SCALES

SCALES SHOWN ARE INTENDED FOR INFO ONLY. SIZE DRAWINGS IN THIS DRAWING ARE INTENDED FOR INFO ONLY. SIZE DRAWINGS IN THIS DRAWING ARE INTENDED FOR INFO ONLY.

PLT DATE: 2025-06-11 3:00:19 PM  
SAVE DATE: 2025-06-10 10:02:00 AM  
SAVE BY: PAVILURON  
PROJECT: E-10-36-4-W3M



**LEGEND**

- SASKENERGY EASEMENT
- SASKPOWER CORRIDOR
- SASKTEL EASEMENT
- SASKATOON FREEWAY DEDICATION
- WHOOPING CRANE 1000 m SETBACK
- LOGGERHEAD SHRIKE 400 m SETBACK
- SASKPOWER TRANSMISSION TOWER
- SASKPOWER DISTRIBUTION POLE
- SASKTEL PEDESTAL
- SASKPOWER TRANSMISSION LINE
- SASKPOWER DISTRIBUTION LINE
- SASKTEL LINE
- SASKENERGY LINE
- WL WETLAND
- HOUSE
- SP STOCKPILE

**FIGURE 1-1: PROJECT AREA  
E 1/2 10-36-4-W3M**

PATIENCE LAKE  
BUSINESS PARK

## 3 RESULTS

### 3.1 Desktop Wetland Assessment

Seven naturally occurring wetlands were identified and delineated in the study area, as illustrated in Figure 3-1, and described in Table 3-1. The borrow pit in the south part of the project area does not meet the definition of a naturally occurring wetland and is shown in Figure 3-1 as a non-natural feature.

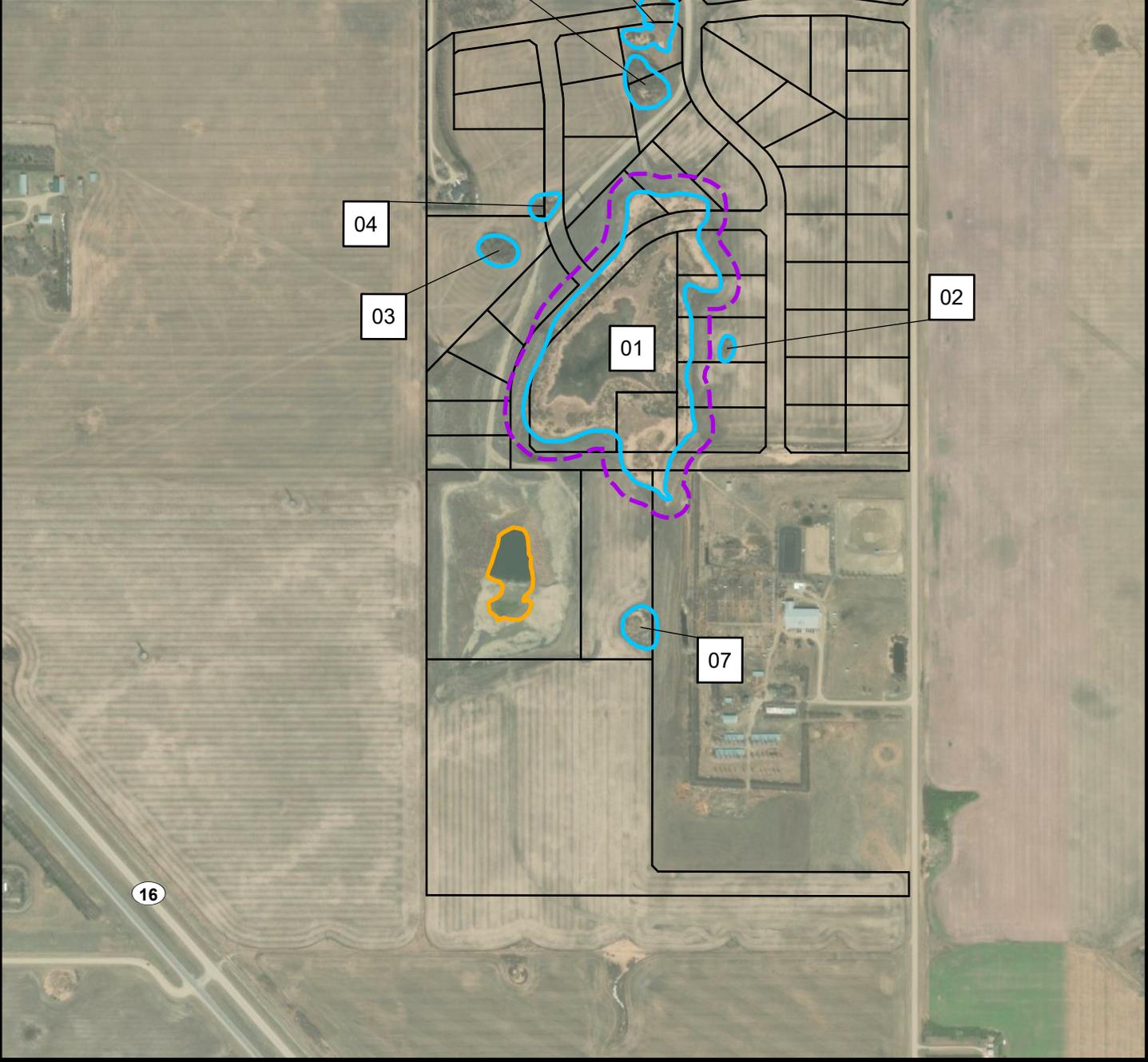
Wetlands were identified, delineated, and classified by interpreting 25 cm contour intervals and vegetation and hydrology indicators evident in imagery. Wetlands were classified according to Stewart and Kantrud's (1971) wetland classification system, which identifies specific vegetation zones throughout the wetland and assigns a class based on the vegetation present. The class of each wetland was determined by interpreting imagery that showed the number and type of vegetation communities present and the persistence of surface water in the deepest part of the wetland.

There are no watercourses (i.e., creeks) within the project area, and there is no evidence that any wetlands contain fish or provide fish habitat.

The project area includes Class II, Class III, and Class IV wetlands with temporary, seasonal, and semi-permanent hydroperiods, respectively. Wetland 01 is a semi-permanent wetland (Class IV) where surface water inundation can be expected most months of the year in most years. Wetland 05 is a shallow marsh (Class III) with a small seasonally flooded central zone. Surface water in the other five wetlands is expected to fluctuate seasonally, with surface water typically present for a couple of weeks (Class II) after snowmelt in spring or more briefly after storms. Class II and Class III wetlands typically lack surface water in the fall and winter months, unlike Class IV wetlands, which typically retain some surface water into fall and winter most years.

Some wetland areas include portions of woody cover by shrubs and or trees. Wetlands, as described by Stewart and Kantrud (1971), have multiple concentric wetland zones (i.e., deep marsh, shallow marsh, and wet meadow) that are typically displayed in a nested ring-like pattern. Wetland 01 shows this pattern with a semi-permanent deep marsh in the deepest central portion of the wetland, ringed by a shallow marsh zone outside the deep marsh zone, with a wet meadow zone outside the shallow marsh zone. Typically, a low prairie zone occurs outside the wet meadow zone; however, this zone is commonly impacted by cultivation and is lost. From interpreting imagery, much or all the low prairie zone has been cultivated and lost for all wetlands in the study area. The lack of this vegetated buffer due to cultivation around the wetland removes any natural protection of the health and function of the wetland.

To ensure that wetland boundaries are accurate and to understand the wetland's health and function, it is important to undertake a field-based wetland assessment to verify desktop wetland delineations and properly determine the naturally occurring boundary of wetlands and vegetation community structure using a combination of vegetation, hydrology, and soil indicator survey methods.



\\AE\CAD\DATA\WORKING\SAS\2014-4469-04\GIS\ARC/INFO\WETLAND\AE2014469\_WETLAND\_REV0\APRX  
 IMAGERY: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA FSA, USGS, AEX, GETMAPPING, TRANSPORTATION, GOVERNMENT OF CANADA, 2019.



- LEGEND**
- Proposed Subdivision
  - Wetland Buffer
    - Buffer (30m)

- Natural Water Bodies**
- Approximate Wetland Boundary
- Non-Natural Waterbody**
- Flooded Borrow Pit



**AE PROJECT NO.** 2014-4469-04  
**SCALE** 1:10,000  
**COORD. SYSTEM** NAD 1983 UTM ZONE 13N  
**DATE** 2024-03-20  
**REV** 00  
**DRAWN BY** WL  
**CHECKED BY** MK  
**DESCRIPTION** ISSUED FOR REPORT

**FIGURE 3-1**  
**WETLANDS IN**  
**THE STUDY AREA**  
 PATIENCE LAKE ROADWAY  
 BUSINESS DEVELOPMENT  
 PATIENCE LAKE CDR

**Table 3-1 Naturally Occurring Wetlands in the Study Area**

Area ID	Class	Description	Concerns	Potential Mitigation
01	Class IV	Large central area is open water some years and partly to completely vegetated in other years. Concentric shallow marsh – (Class III) and wet meadow – (Class II) zones outside central area include shrub cover.	Cultivation may have impacted or removed much or all of the low prairie (Class I) zone outside the wet meadow (Class II) zone. Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.
02	Class II	Central area temporarily flooded, surrounded by a mix of robust and fine-stemmed graminoids. Substantial cover by tree/shrub canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I). Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.
03	Class II	Central area temporarily flooded, surrounded by a mix of robust and fine-stemmed graminoids. Substantial cover by tree/shrub canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I). Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.
04	Class II	Central area temporarily flooded, surrounded by a mix of robust and fine-stemmed graminoids. Substantial cover by tree/shrub canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I). Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.
05	Class III	Small central area seasonally flooded, surrounded by robust graminoids. Substantial cover by tree canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I) zone outside the wet meadow (Class II) zone. Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.

Area ID	Class	Description	Concerns	Potential Mitigation
06	Class II	Central area temporarily flooded, surrounded by a mix of robust and fine-stemmed graminoids. Substantial cover by tree/shrub canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I). Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.
07	Class II	Central area temporarily flooded, surrounded by a mix of robust and fine-stemmed graminoids. Partial cover by tree/shrub canopy.	Cultivation may have impacted or removed much or all of the low prairie (Class I). Prairie pothole wetland fed by precipitation and groundwater. No obvious surface water connection.	Preserve sufficient catchment area and water inputs to maintain water balance. Selective planting of disturbed wetland areas. Preserve vegetated buffer to protect wetland area and allow natural restoration of low prairie zone.

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### 3.2 Functional Wetland Assessment

Based on the City of Saskatoon Wetland Policy, Class III, IV, and V wetlands require a further functional assessment using the Minnesota Routine Assessment Method where they are surrounded by natural areas (uncultivated), are part of a broader wetland complex, or are known to be home to rare and endangered species or suitable habitat.

The development plan for the site intends to fill the smaller isolated wetland areas directly bordering cultivated lands to support road construction and lot development. The plan provides for the relocation and replacement of Wetland 01 with a constructed wetland, naturalized to provide some wetland functions. The City of Saskatoon Wetland Policy considers constructed wetlands as a suitable basis for compensating for the loss of smaller isolated wetlands within the balance of the plan area.

The constructed wetland will be designed purposefully to mimic the functions of the existing natural wetland, while also acting as a natural filter for runoff from adjacent and upland properties, removing pollutants from stormwater, including sediments, nutrients, and other contaminants. The reconstructed wetland is not intended to provide stormwater retention but will function as a drainage conduit to capture, filter, and convey runoff from adjacent development lands for retention in the existing storm retention pond in the southern half of the property. The constructed wetland will be equipped with a culvert installed at an elevation to control the depth of the wetland and provide a consistent water elevation under typical climactic conditions.

The constructed wetland is planned to include re-establishment of a riparian zone within a 30-metre-wide perimeter around the constructed wetland to serve as a buffer between the constructed wetland and the surrounding upland properties. Re-establishing the riparian zone will include reintroducing native trees, shrubs, and plant species identified during the functional wetland assessments at existing wetlands. Design of the constructed wetland will include salvage of existing riparian and wetland soils from wetlands to be impacted during completion of the property development. All salvaged materials will be stockpiled and protected from erosion and admixing prior to re-use during completion of the constructed wetlands. The roots of established riparian plants will assist with soil stabilization and reduce erosion; however, temporary erosion and sediment control practices will be required to stabilize and protect exposed soil in reconstructed areas prior to establishment of native seed banks and revegetated areas. Native seed banks in salvaged riparian and wetland soils will help partially mitigate the loss and impacts of development on the existing wetlands.

A functional wetland assessment is planned to be completed for Wetland 01 and 05 during the active growing season between June 1 and September 30 in conjunction with the detailed civil design to collect detailed information on existing vegetation, soil, hydrology, morphology, habitat features, and other attributes, to inform the design of the constructed wetland as required under the City of Saskatoon Wetland Policy.

### 3.3 Protected Species Occurrence

The HabiSask project screening report showed historical records for three rare or endangered species noted within 1 km of the project area (Appendix A and Table 3-2).

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Given the generality of the HabiSask data, a qualified biologist should conduct a physical sweep of the property during the regional nesting period (late April to late August)<sup>1</sup> prior to initiating construction to confirm local habitat and prevent harm to migratory birds. Vegetation clearing will follow the required restricted periods and setbacks as per Saskatchewan Activity Restriction Guidelines for Sensitive Species<sup>2</sup>. Any timing restrictions and setbacks associated with construction are expected to be represented in the servicing agreement associated with the subdivision application.

**Table 3-2 Rare or Endangered Species with Records of Occurrence Within 1 km of the Project Area**

Common Name	Scientific Name	Provincial Ranking	Habitat Preference	Habitat Present
Northern blue-eyed-grass	<i>Sisyrinchium septentrionale</i>	S3	Mesic to dry meadows, stream banks, often in gravelly soil. <sup>3</sup>	Conduct a physical sweep to confirm if present in project area.
Loggerhead shrike	<i>Lanius ludovicianus excubitorides</i>	S3B	Open country with short vegetation and well-spaced shrubs or low trees. Nests in thorny vegetation, or in the absence of trees or shrubs will nest in brush piles or tumbleweeds. <sup>4</sup>	Recommend conducting a physical sweep to confirm if present in project area.
Whooping crane	<i>Grus americana</i>	SXB, S1M	During migration, roost and feed in a variety of wetlands and croplands. Nests only in colonies in northern Alberta. <sup>5</sup>	Recommend conducting a physical sweep to confirm if present in project area.

B = breeding, N = non-breeding, M = migrant, X = extirpated from the province.  
S1 = extremely rare, S2 = very rare, S3 = rare to uncommon.

### 3.4 Soils and Agricultural Productivity

Based on a recent survey of the province, there is historical evidence of clubroot within the Regional Municipality of Corman Park.<sup>6</sup> Clubroot is a soil-borne disease that affects the roots of various field crops, including canola, mustard, camelina, oilseed radish and taramira, and cruciferous vegetables such as arugula, broccoli, Brussels sprouts, cabbage,

<sup>1</sup> Government of Canada. 2023. General Nesting Periods of Migratory Birds. Available at: <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html>. Accessed February 14, 2024.

<sup>2</sup> Saskatchewan Activity Restriction Guidelines for Sensitive Species available at <https://publications.saskatchewan.ca/#/products/79241>. Accessed February 12, 2024.

<sup>3</sup> Flora of North America. Available at *Sisyrinchium septentrionale* in Flora of North America @ efloras.org. Accessed January 23, 2024.

<sup>4</sup> Cornell University. 2019. All about birds. Available at Loggerhead Shrike Life History, All About Birds, Cornell Lab of Ornithology. Accessed January 23, 2024.

<sup>5</sup> Govt of Can. 2021. Species at Risk Public Registry – Species Search. Available at Whooping Crane (*Grus americana*) - Species search - Species at risk registry (canada.ca). Accessed January 23, 2024.

<sup>6</sup> Government of Saskatchewan, 2023 Clubroot Distribution Map, January 9, 2024 Available at <https://www.saskcanola.com/news-articles/2023-clubroot-distribution-in-saskatchewan>. Accessed February 14, 2024.

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cauliflower, Chinese cabbage, kale, kohlrabi, radish, rutabaga, and turnip. As a soil-borne disease, activities involving the movement of significant volumes of soil pose a considerable risk, especially when the soil is moved across large geographic regions.

The lands have been historically cultivated to support the production of wheat and canola. Canola is considered an impacted field crop as defined by the Government of Saskatchewan. The property owner confirmed that there are no reported cases of clubroot in the project area.

Additionally, a sizable portion of the project area has been previously excavated to provide soil to support the construction of the Boychuck and McOrmand Drive interchanges within Saskatoon. There was no evidence of clubroot identified during the excavation activities.

Desktop mitigations for design and construction are developed for compliance under the *Pest Control Act*, with consideration for several factors, including future land uses relative to agricultural risks, contractor equipment management relative to preceding projects and subsequent soil handling, and mitigations relative to the risk of clubroot. Recommendations for clubroot prevention and management guidelines are provided by the Ministry of Agriculture.<sup>7</sup> Clubroot survey results are provided in Appendix B. Clubroot prevention and management best practices are provided in Appendix C.

### 3.5 Heritage Resource Screening

A desktop heritage screening was completed using the Developer's Online Screening Tool, which confirmed that lands within the plan area are not considered heritage sensitive and no further consultation or approvals are required. A copy of the report is attached as Appendix D.

## 4 REGULATORY

Table 4-1 summarizes the review of municipal, provincial, and federal acts, regulations, and policies.

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<sup>7</sup> Government of Saskatchewan, Clubroot prevention and management. Available at <https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/disease/clubroot-of-canola> . Accessed February 14, 2024.

Table 4-1 Summary of Legislation

Legislation	Description	Trigger	Approval/Permit Required
<b>MUNICIPAL LEGISLATION</b>			
City of Saskatoon Wetland Policy <i>The Municipalities Act</i>	Guidance document for integration of wetlands in accordance with mandates set out in their official community plan.	Future annexation of communities that will be developed near existing wetlands.	No permit required. A desktop wetlands review was conducted and identified, classified, and delineated wetlands and provided potential mitigation measure as per the policy in Section 3.
Corman Park – Saskatoon Planning District Official Community Plan	Document states that all industrial and residential development must assess potential environmental and heritage resources, to avoid or mitigate impacts in a means that is satisfactory to the RM. This includes alterations to drainages, which may create impacts to lands outside of approved areas. Document states that planning should consider existing natural resources to incorporate as recreational spaces or conservation and management.	Development of a project area with land considered significant natural areas, or with the potential to create impacts to human health, heritage resources and environment.	No permit required. A desktop NAS conducted to identify potential environmental and summarized in Section 3.
Saskatoon North Partnership for Growth (P4G) Official Community Plan (OCP)	Partnership between the five municipalities in the region to plan developments in a means that considers the sustained benefits of economic, social, and environmental features.	Development in areas with potential to impact, water resources, wetlands, heritage resources and natural areas.	No permit required. A desktop NAS conducted to identify potential environmental and heritage resources and summarized in Section 3.
<b>PROVINCIAL LEGISLATION</b>			
<i>The Environmental Assessment Act</i>	Review triggers to determine if there are required submissions under the Act.		No permit required.
<i>Environmental Management and Protection Act, 2010</i>	Provides protection of air, land and water against potentially harmful substances or activities. No person shall discharge or allow the discharge of a substance into the environment in an amount, concentration, or level or at a rate of release that may cause an adverse effect. The Act also regulates shoreline alteration activities required as part of water or sewage treatment system activities and states that a permit is required if any of the following are to occur: alter or cause to be altered the configuration of the bed, bank or boundary of any river, stream, lake, creek, marsh or other	The presence of protected environmental features (e.g., creek/river) that will be impacted through development of the project.	No permit required as the water bodies impacted are wholly located in the boundaries of the property in possession of the proponent completing the development and the water body does not flow directly or indirectly into another surface water body.

Legislation	Description	Trigger	Approval/Permit Required
	watercourse or water body; remove, displace or add any sand, gravel or other material from, in or to the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or water body; or remove vegetation from the bed, bank or boundary of any river, stream, lake, creek, marsh or other watercourse or water body.		
<i>Pest Control Act</i>	Regulations that declare the animals, insects or diseases designated as pests, and the responsibilities for their prevention, control, or destruction.	Historical records for clubroot within the RM of Corman Park.	No permit required. Required to follow Saskatchewan prevention and management regulations to prevent and manage clubroot.
<i>The Planning and Development Act, 2007</i>	Allows RM of Corman Park to receive lands as Environmental Reserve of Municipal Reserve. Environmental Reserve is deemed to be an appropriate designation where the land consists of: a. a ravine, coulee, swamp, natural drainage course or creek bed; b. wildlife habitat or areas that: are environmentally sensitive or contain historical features or significant natural features; c. land that is subject to flooding or is, in the opinion of the approving authority, unstable; or d. land that abuts the bed and shore of any lake, river, stream or other body of water and that is required for the purpose of: the prevention of pollution; the preservation of the bank; or the protection of the land to be subdivided against flooding.	The presence of wildlife habitat, wetlands, natural drainages, watercourses, and historical features.	No permit required.
<i>The Weed Control Act</i>	Regulations regarding the designation, responsibilities and control of plant species listed as prohibited, noxious or nuisance weeds.	Work, activities, or travel with the potential to interact with and spread prohibited, noxious or nuisance weeds.	No permit required.
<i>The Water Security Agency Act</i>	Mandate to manage and protect surface water and groundwater resources, features, and related lands.	Works around watercourses, waterbodies, and areas where there is potential to impact groundwater.	No permit required.

Legislation	Description	Trigger	Approval/Permit Required
<i>Wildlife Act</i>	Protection of wildlife and provincially listed species. Prohibits anyone from killing, injuring, possessing, disturbing, taking, capturing, harvesting, genetically manipulating, or interfering with any wild species at risk. Identifies where a breeding site for a species at risk is within a study area, and if consultation is required with Saskatchewan Ministry of Environment to confirm a recommended setback distance at the time of development.	The presence of wildlife and sensitive species in proximity to the project area.	No permit required. However, pre-clearing/pre-disturbance sweeps for nesting, breeding and migratory birds is required prior to disturbance of the Project site.

#### FEDERAL LEGISLATION

<i>Canada Wildlife Act</i>	The protection of at-risk plant and animal species. The Act prohibits actions that would impact species at risk and allows for the designation of these species as extirpated, endangered, threatened, or vulnerable.	Identifying and mitigating at-risk plants and animals.	No permit required. Desktop NAS.
<i>Canadian Environmental Protection Act</i>	Aimed at preventing pollution and protecting the environment and human health. The goal of the Act is to contribute to sustainable development – development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.	Discharges of pollution into the environment.	No permit required.
<i>Canadian Navigable Waters Act (CNWA)</i>	Approval required for potential impacts to navigation.	Anticipated review period: 3 months.	No permits or mitigation is required as the CNWA is not applicable to the project.
<i>Migratory Birds Convention Act</i>	Protection of migratory birds, their nests, or their habitats.	Development within areas of suitable nesting habitat during the regional migratory bird nesting period (April 15-August 31).	Screening of the site by a qualified environmental professional (QEP) is required if clearing is planned within the potential nesting period for migratory birds. If construction is rescheduled to begin within the breeding and nesting period, conduct a pre-construction wildlife sweep within 7 days prior to construction to identify potential issues as close to the time of construction as possible. Supplemental sweeps would be recommended if work stoppage of greater than 7-days occurs during the construction period. In the event any migratory bird nests containing

Legislation	Description	Trigger	Approval/Permit Required
			eggs are identified during construction, stop disruptive activities in the nesting area and use an appropriate setback with proper flagging to mark the buffer zone. Avoid the area until young have naturally left the nest.
<i>Species at Risk Act (SARA)</i>	Protection and conservation of species at risk in Canada.	Disturbance or destruction of a species at risk, its active residence, or its critical habitat.	No species at risk will be harmed during the project. Wildlife sweeps are required for activities if they will occur within the high- risk breeding periods for birds protected under SARA.
<i>Fisheries Act</i>	Management of fisheries and protection of fish and fish habitat, including pollution prevention and fish passage protection.	The potential for fish in wetlands and watercourses.	No permit required and does not apply to this project.

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March 26, 2024  
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## 5 RECOMMENDATIONS

1. Conduct a physical functional wetland assessment of Wetland 01 and Wetland 05 during the active growing season between June 1 and September 30. Information collected during the assessment will be used to support the detailed civil design, develop environmental mitigation measures and restoration plans for re-establishing riparian vegetation around the constructed wetland.
2. Conduct a wildlife and breeding bird sweep using a qualified biologist to identify any present or protected species or nests and to prevent harm to any nests during the general nesting period (mid-April to late August). If a nest is found, a qualified biologist must determine the regulated timing restrictions and setbacks during construction per federal and provincial regulations.
3. Schedule construction to avoid the restricted periods and setbacks as per Saskatchewan Activity Restriction Guidelines for Sensitive Species (mid-April to mid-August) to avoid the nesting and summer breeding periods for wildlife. Any timing restrictions and setbacks associated with construction are expected to be represented in the servicing agreement and associated with the subdivision application.

## 6 SUMMARY

Development of the property will result in the loss and alteration of natural wetlands present. Information gathered during the subsequent functional wetland assessments will be used to support detailed design of the constructed wetland to partially restore wetland function. Activity and site-specific environmental mitigation measures will need to be developed by a qualified professional and incorporated into construction practices to reduce the overall net negative impacts to wetlands resulting from the proposed development. Lands outside the existing construction footprint are not expected to be disturbed by the project.

The information provided in this report is based on the information reviewed and the anticipated construction methods. Any change in design or construction methods will require reassessment of mitigation measures.

**Prepared by:**



Suzanne Marshall, B.Sc.  
Regulatory Planner

**Reviewed by:**



Matt Freeman, M.Sc., P.Biol.  
Senior Biologist

## APPENDIX A: HABISask PROJECT SCREENING REPORT

Notes:

Report Generated  
02/06/2024

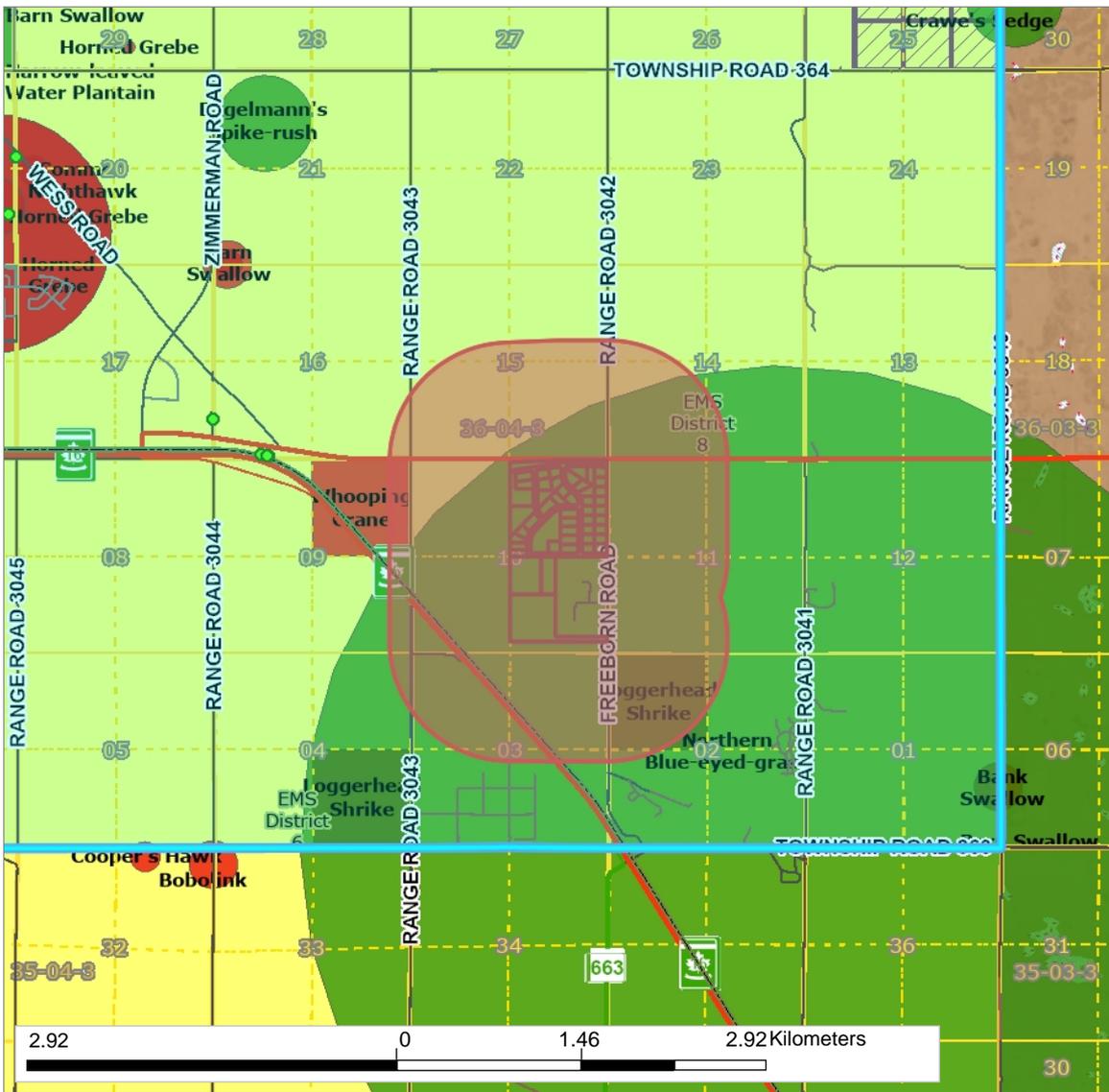
*Map Information*



Buffer Size:  
1 Kilometers

Feature Selection  
Uploaded Layer

*Area of Interest*

- Screened Areas:**
- Ecological Management Specialists (EMS) District
  - Compliance & Field Service (CFS) Area
  - Compliance & Field Service (CFS) Region
  - Area Fisheries Ecologists Area(s)
  - Area Wildlife Ecologist(s)
  - Rural Municipality
  - First Nation Reserve
  - AG Crown Land Management Specialist Districts
  - Rare and Endangered Species Fish Species
  - Woodland Caribou Range Species Predictive Models
  - Whooping Crane Corridor
  - Barren-ground Caribou
  - Federal Critical Habitat
  - Proposed Critical Habitat
  - Wind Energy Avoidance Zones
  - Important Natural Areas
  - Provincial Parks
  - Recreation Sites
  - Game Preserves
  - RC Game Preserve
  - National Wildlife Areas
  - Federal Pastures
  - Wildlife Habitat Protection Act Lands
  - Fish & Wildlife Development Fund Lands
  - Migratory Bird Sanctuary
  - Wildlife Refuge
  - Conservation Easements
  - Crown Conservation Easements
  - Ecological Reserves
  - Ramsar Wetlands
  - Reservoir Development Areas
  - Representative Areas
  - Special Management Areas

## Species Likely to be Present

### Known Species

“Known” species are species that have known occurrences in the area from the Saskatchewan Conservation Data Centre’s Rare and Endangered Species map layer. However, absence of species observation records does not preclude the existence of species in the area of interest. Observations may simply not have been recorded for the given area or may not have yet been entered into the ministry data holdings – new observation records are continuously being discovered. Information accessible through HABISask is not intended to be a definitive statement on the presence, absence or status of a species within a given area, nor as a substitute for onsite surveys.

### Rare and Endangered Species

#### Category: Vascular Plant

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Northern Blue-eyed-grass	<i>Sisyrinchium septentrionale</i>	G4	N4	S3			

#### Category: Vertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Loggerhead Shrike	<i>Lanius ludovicianus excubitorides</i>	G4T4	N3B	S3B	Threatened	Threatened	
Whooping Crane	<i>Grus americana</i>	G1	N1B	SXB,S1M	Endangered	Endangered	Endangered

### Expected Species

“Expected” is based on a modelled prediction if a species might occur in areas based upon developed statistical relationships between local and landscape characteristics and species presence. Models utilized by this report have only been created in the prairie ecozone for a selection of species. The boreal plain, boreal shield and taiga shield will not return any expected species results. Models are not a substitute for on the ground surveys to determine species presence.

### Species Predictive Models

#### Category: Invertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Monarch	<i>Danaus plexippus plexippus</i>	G4T3	N3B,NUM	S2B,SNRM	Endangered	Endangered	

#### Category: Vertebrate Animal

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
American Badger	<i>Taxidea taxus taxus</i>	G5T5	N4	S3	Special Concern	Special Concern	
Bank Swallow	<i>Riparia riparia</i>	G5	N4N5B, N5M	S4B,S5M	Threatened	Threatened	
Bobolink	<i>Dolichonyx oryzivorus</i>	G5	N5B, N4N5M	S5B	Special Concern	Threatened	
Common Nighthawk	<i>Chordeiles minor</i>	G5	N4N5B, N5M	S4B	Special Concern	Special Concern	
Horned Grebe	<i>Podiceps auritus</i>	G5	N5B, N4N5N	S5B	Special Concern	Special Concern	
Loggerhead Shrike	<i>Lanius ludovicianus excubitorides</i>	G4T4	N3B	S3B	Threatened	Threatened	
Northern Harrier	<i>Circus hudsonius</i>	G5	N5B,N4N	S4B	Not at Risk		
Northern Leopard Frog	<i>Lithobates pipiens</i>	G5	N5	S3	Special Concern	Special Concern	
Sprague's Pipit	<i>Anthus spragueii</i>	G3G4	N3N4B	S3B	Threatened	Threatened	

### Fish Species by Watershed

All fish species expected to be in any watershed that intersects the area searched are provided and their presence in the direct project area will depend on habitat.

#### Watershed: South Saskatchewan River

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Blacknose Dace	<i>Rhinichthys obtusus</i>	G5	N5	S3			
Brook Stickleback	<i>Culaea inconstans</i>	G5	N5	S5			
Brook Trout	<i>Salvelinus fontinalis</i>	G5	N5B,N5N, N5M	SNA			

**Watershed: South Saskatchewan River**

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
Burbot	<i>Lota lota</i>	G5	N5	S5			
Cisco	<i>Coregonus artedi</i>	G5	N5B,N5N, NUM	S5			
Common Shiner	<i>Luxilus cornutus</i>	G5	N5	S3			
Emerald Shiner	<i>Notropis atherinoides</i>	G5	N5	S5			
Fathead Minnow	<i>Pimephales promelas</i>	G5	N5	S5			
Finescale Dace	<i>Chrosomus neogaeus</i>	G5	N5	S4			
Flathead Chub	<i>Platygobio gracilis</i>	G5	N5	S3			
Goldeye	<i>Hiodon alosoides</i>	G5	N5	S4			
Iowa Darter	<i>Etheostoma exile</i>	G5	N5	S5			
Johnny Darter	<i>Etheostoma nigrum</i>	G5	N5	S5			
Lake Chub	<i>Couesius plumbeus</i>	G5	N5	S5			
Lake Sturgeon	<i>Acipenser fulvescens</i>	G3G4	N3	S2	Endangered		
Lake Trout	<i>Salvelinus namaycush</i>	G5	N5	S5			
Lake Whitefish	<i>Coregonus clupeaformis</i>	G5	N5B,N5N, N5M	S5	Not at Risk		
Logperch	<i>Percina caprodes</i>	G5	N5	S5			
Longnose Dace	<i>Rhinichthys cataractae</i>	G5	N5	S5			
Longnose Sucker	<i>Catostomus catostomus</i>	G5	N5	S5			
Mooneye	<i>Hiodon tergisus</i>	G5	N5	S3			
Ninespine Stickleback	<i>Pungitius pungitius</i>	G5	N5B,N5N, N5M	S5			
Northern Pike	<i>Esox lucius</i>	G5	N5	S5			
Pearl Dace	<i>Margariscus nachtriebi</i>	G5	N5	S5			
Prussian Carp	<i>Carassius gibelio</i>	GNR	NNA	SNA			
Quillback	<i>Carpoides cyprinus</i>	G5	N5	S4			
Rainbow Trout	<i>Oncorhynchus mykiss</i>	G5	N5B,N5N, N5M	SNA			
River Shiner	<i>Notropis blennioides</i>	G5	N5	S3			
Sauger	<i>Sander canadensis</i>	G5	N5	S5			
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	G5	N5	S4			
Silver Redhorse	<i>Moxostoma anisurum</i>	G5	N5	S4			
Slimy Sculpin	<i>Cottus cognatus</i>	G5	N5	S4			
Spoonhead Sculpin	<i>Cottus ricei</i>	G5	N5	S5	Not at Risk		
Spottail Shiner	<i>Notropis hudsonius</i>	G5	N5	S5			
Trout-perch	<i>Percopsis omiscomaycus</i>	G5	N5	S5			
Walleye	<i>Sander vitreus</i>	G5	N5	S5			
White Sucker	<i>Catostomus commersonii</i>	G5	N5	S4			
Yellow Perch	<i>Perca flavescens</i>	G5	N5	S5			
<b>Whooping Crane Corridor</b>	50% Core Area						
<b>Whooping Crane Corridor</b>	95% Core Area						
<b>Whooping Crane Corridor</b>	75% Core Area						

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
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**Species with Critical Habitat Present**

This dataset displays the geographic areas within which federal Critical Habitat for species at risk listed on Schedule 1 of the federal Species at Risk Act (SARA) occurs in Saskatchewan. Please be aware that not all of the area within these boundaries is necessarily Critical Habitat. To determine if a specific area is Critical Habitat and if your activity might be considered “destruction” of Critical Habitat, other information available in each individual species’ Recovery documents (<http://www.sararegistry.gc.ca>) need to be considered, including biophysical attributes and activities likely to result in destruction of Critical Habitat.

Note that recovery documents (and therefore Critical Habitat) may be amended from time to time. Species are added as the data becomes ready, which may occur after the recovery document has been posted on the SAR Public Registry. Although HABISask will try to provide the latest data, the SAR Public Registry should always be considered as the official source for Critical Habitat information.

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
No Critical Habitat found							

## Proposed Critical Habitat Present

This section identifies federally proposed critical habitat that is up for consultation as per the information contained within the federal recovery strategies developed under the federal Species at Risk Act (SARA). This information on location of critical habitat is intended for reference by landowners and/or lease holders. Shapefiles or additional maps of critical habitat can be obtained by contacting Environment and Climate Change Canada at [ec.leprn-sarapnr.ec@canada.ca](mailto:ec.leprn-sarapnr.ec@canada.ca).

Common Name	Scientific Name:	G Rank	N Rank	S Rank	COSEWIC	SARA Status	Wild Species at Risk Regulations
No Critical Habitat found							

## Managed Areas

Managed areas are a diverse collection of lands and waters on which the conservation of biodiversity and ecosystem function are among the goals of the land management programs. Each of the unique or sensitive landscapes, within the network of managed areas, have some level of protection or activity restrictions placed on them by legislation, agreement or policy. These lands include provincial and national parks, ecological reserves, wildlife lands, game preserves, conservation easements and other privately held stewardship lands.

### **Provincial Park**

Nothing Found

### **Ecological Reserve**

Nothing Found

### **Recreation Site**

Nothing Found

### **Ramsar Wetland**

Nothing Found

### **Game Preserve**

Nothing Found

### **Reservoir Development Area**

Nothing Found

### **Road Corridor Game Preserve**

Nothing Found

### **Representative Area Ecological Reserve**

Nothing Found

### **National Wildlife Area**

Nothing Found

### **Special Management Area**

Nothing Found

### **Pasture Boundary**

Nothing Found

### **Wildlife Habitat Protection Act (WHPA)**

Nothing Found

### **Fish & Wildlife Development Fund (FWDF)**

Nothing Found

### **Migratory Bird Sanctuary**

Nothing Found

### **Wildlife Refuge**

Nothing Found

### **Conservation Easement**

Nothing Found

### **Crown Conservation Easement**

Nothing Found

## Rare and Endangered Species Occurrences

The absence of information provided by the Saskatchewan Conservation Data Centre (SKCDC) does not categorically mean the absence of sensitive species or features. The quantity and quality for data collected by the SKCDC are dependent on the research and observations of many individuals and organizations. SKCDC reports summarize the existing natural heritage information, known to the SKCDC, at the time of the request.

SKCDC data should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The user therefore acknowledges that the absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

<b>Occurrence ID:</b>	9999104836	<b>First Observation:</b>	2005-10-24
<b>Occurrence Class:</b>	Vertebrate Animal	<b>Last Observation:</b>	2005-10-24
<b>Scientific Name:</b>	Grus americana		
<b>Common Name:</b>	Whooping Crane		
<b>Occurrence Rank:</b>			
<b>General Description:</b>	2 Adult(s) (Unknown Sex); 1 Juvenile(s); Breeding Bird Status: Migrant; (2005)		
<b>Occurrence Data:</b>			
<b>Directions:</b>	E SIDE OF SASKATOON		
<b>Occurrence ID:</b>	999923985	<b>First Observation:</b>	2005
<b>Occurrence Class:</b>	Vertebrate Animal	<b>Last Observation:</b>	2005
<b>Scientific Name:</b>	Lanius ludovicianus excubitorides		
<b>Common Name:</b>	Loggerhead Shrike		
<b>Occurrence Rank:</b>			
<b>General Description:</b>	5 - LOSH , SFS 2005 data		
<b>Occurrence Data:</b>			
<b>Directions:</b>	NW-02-36-04-3		
<b>Occurrence ID:</b>	16762	<b>First Observation:</b>	1958-08-15
<b>Occurrence Class:</b>	Vascular Plant	<b>Last Observation:</b>	1958-08-15
<b>Scientific Name:</b>	Sisyrinchium septentrionale		
<b>Common Name:</b>	Northern Blue-eyed-grass		
<b>Occurrence Rank:</b>	H - Historical		
<b>General Description:</b>			
<b>Occurrence Data:</b>	1958 - species observed in 1 site		
<b>Directions:</b>	Floral		

## Wild Species Research Permitting

A Research Permit is required to detect or observe plants or wildlife for commercial purposes, such as pre-screening surveys to collect baseline data or other activities, or to conduct academic research. Research Permits are not required if you are doing surveys for personal, recreational, educational or other non-commercial purposes. Revisions were made to Section 21 of The Wildlife Act in 2015 and to Section 6.2 of The Wildlife Regulations in 2016.

See the Government of Saskatchewan [Wild Species Research Permitting](#) page for more information.

All forms and related information pertaining to Research Permits can be found in the Publications Centre. Be sure to check out the Conservation Standards Terms and Conditions for Research Permits for general, wildlife and research-specific and information submission conditions that pertain to all research permits.

Subscribe to our Mail-out List Subscriptions for updates regarding Species Detection Permits, SKCDC Lists and Ranks, Legislation and Policy and HABISask.

## Species Detection Survey Protocols

The [Species Detection Survey Protocols](#) are used to detect rare and sensitive species so Activity Restriction Guidelines can be applied. Their use is required by industry/ environmental consultants for proposed or existing commercial activities.

## Activity Restriction Guidelines for Sensitive Species

The [Activity Restriction Guidelines for Sensitive Species](#) outline restricted activity periods and distance setbacks for rare and sensitive species to assist proponents in minimizing impacts to rare and sensitive species and habitats.

## Administrative Areas

District 8	Ecological Management Specialist (EMS) District(s)
District 6	Ecological Management Specialist (EMS) District(s)
Saskatoon	Compliance and Field Services Area(s)
Saskatoon	Compliance and Field Services Region(s)
Saskatoon	Area Fisheries Ecologist Area(s)
PARKLAND REGION	Area Wildlife Ecologist(s)
344 - CORMAN PARK	Rural Municipality
Nothing Found	First Nation Reserve
District 9	AG Crown Land Management Specialist District

## Contact Us

For more information, please contact our Client Service Office:  
Email: [centre.inquiry@gov.sk.ca](mailto:centre.inquiry@gov.sk.ca)  
Tel (toll free in North America): 1-800-567-4224  
Tel (Regina): 306-787-2584



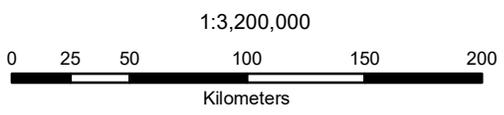
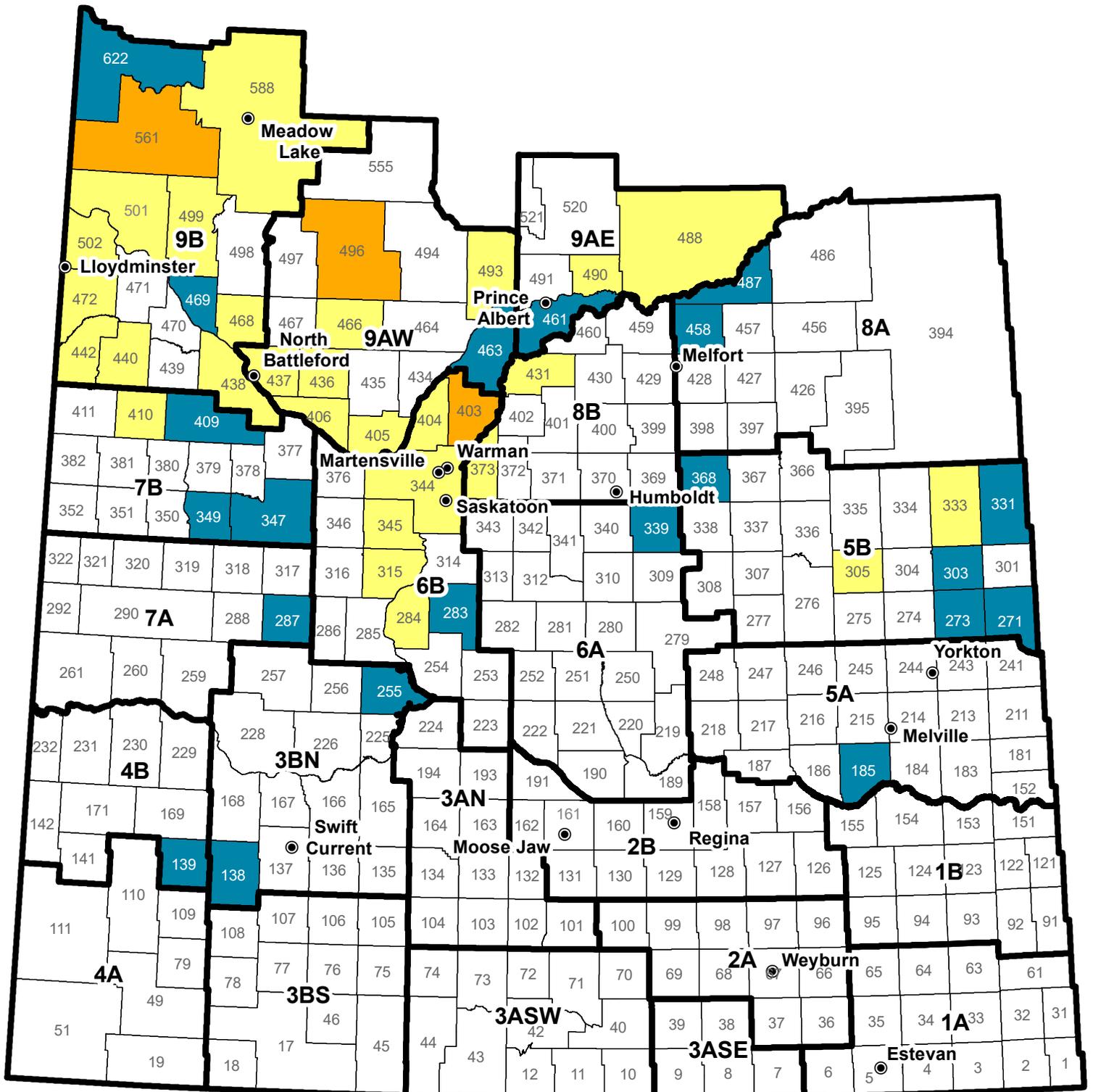
# NATURAL AREA SCREENING REPORT

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## APPENDIX B: CLUBROOT SURVEY MAP

# Clubroot Distribution in Saskatchewan (cumulative testing 2008 to 2023)

- City
- Rural Municipality
- Crop District
- Clubroot pathogen detected (no visible symptoms)
- 1 to 9 fields with clubroot symptoms
- ≥ 10 fields with clubroot symptoms



Data Source:  
Clubroot Survey - Crops and Irrigation Branch

Geomatics Services, Ministry of Agriculture January 8, 2024



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## **APPENDIX C: CLUBROOT MANAGEMENT BEST PRACTICES**

## Clubroot of Canola

### What is clubroot?

Clubroot is a soil-borne disease caused by the pathogen *Plasmodiophora brassicae*. Clubroot affects the roots of cruciferous field crops such as canola, mustard, camelina, oilseed radish and taramira, and cruciferous vegetables such as arugula, broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage, kale, kohlrabi, radish, rutabaga and turnip. Cruciferous weeds (such as stinkweed, shepherd's purse and wild mustard) can also serve as hosts.

Root infection of host plants by the clubroot pathogen results in swelling of the root tissue (galls), which reduces the plant's ability to obtain water and nutrients from the soil, resulting in yield loss. The level of yield loss will be related to the amount of pathogen in the soil, the susceptibility of the host crop and environmental conditions.

### Symptoms

- Clubroot-infected roots will have swollen root tissues (galls).
- Clubroot galls will initially appear white and fleshy. Later in the season they will start to decompose and appear rotten.
- Above-ground symptoms of stunting, yellowing and premature ripening may occur. These symptoms may indicate the presence of a clubroot patch, but could also be associated with other diseases or adverse environmental conditions. As a result, it is important to examine plant roots for the presence of clubroot galls.



*White, fleshy clubroot gall*



*Decomposing clubroot gall*



*Clubroot patch with above-ground symptoms*

## Clubroot disease development

The clubroot pathogen overwinters in the soil as long-lived, hardy resting spores. The resting spores may survive in the soil for up to 20 years and have been documented to have a half-life of two to four years. In the spring the resting spores germinate to produce zoospores. Zoospores have two flagella (tails) that enable them to swim very short distances in water or water film in the soil to come in contact with and infect root hairs.

During this initial stage of infection, no symptoms are visible with the naked eye. Within the infected root hairs, the pathogen multiplies and forms a plasmodium (a naked mass of protoplasm with numerous nuclei), which will divide to form secondary zoospores. The secondary zoospores are released back into the soil as the root hairs begin to decompose.

These secondary zoospores then re-infect the plant roots and are able to cause infection in the interior of the root (root cortex). At this stage, the pathogen will form secondary plasmodia in the infected cells and cause hormonal changes that result in an increase in cell size and cell number. This leads to swelling of the infected tissue, producing clubroot galls. The size of the gall is related to the amount of pathogen in

the soil present to cause infection. At low pathogen levels, galls are small and have a minimal impact on yield compared to large galls, which occur when pathogen levels are high.

As the plasmodia mature they divide into many resting spores, which fill the cells of the infected root tissue. At the end of the growing season, the galls start to decay and release the resting spores back into the soil to cause infection the next time a susceptible crop is grown. Every time a susceptible crop is grown, more resting spores are returned to the soil, increasing the pathogen populations and potential yield loss the next time a susceptible crop is grown.

## Clubroot prevention

Clubroot resting spores survive in the soil and can be moved any way that soil can be moved. This includes soil movement on agriculture or industrial equipment, vehicles, tires, shoes, animals, wind or water erosion, or contaminated inputs such as manures. Activities that move large volumes of soil are considered to have a higher risk, as do activities that move soil over large geographic regions and from regions where clubroot is known to be present.



*Soil remaining on air seeder opener*

The focus of clubroot prevention is preventing the introduction of clubroot-infected soil. The following practices can be used to prevent clubroot introduction and minimize the spread of clubroot once it has been confirmed in a field and/or region:

- Practise good sanitation to restrict soil movement;
- Knock soil off equipment between fields;
- Minimize traffic to and from fields;
- Practise zero or minimum tillage, which will reduce the movement of clubroot-infected soil through water and wind erosion;
- Create a separate exit as far as possible from the field entrance. Clubroot is often first found at the field entrance, and this area of the field will often have the highest concentration of the pathogen. Exiting the field as far as possible from the field entrance will reduce the amount of pathogen in the soil on equipment leaving the field;

- Notify occupants and landowners who have access to the land if clubroot has been confirmed; and
- Talk openly about biosecurity with all groups working on your land.

## Clubroot management

- Restrict movement of potentially contaminated soil on vehicles and equipment;
- Extend your crop rotation; include a break of at least two years, preferably three, between susceptible crops even when clubroot-resistant varieties are used;
- Grow clubroot-resistant varieties;
- Scout canola crops by examining roots for the presence of clubroot galls; focus scouting on field entrances, low areas, and suspicious patches;
- Collect soil and submit it to a laboratory for a DNA-based clubroot test; the test results will provide early detection of the clubroot pathogen and enable early management when pathogen levels are low; and
- See the [Clubroot Management and Scouting Tips](#) document for more information.

The key to clubroot management is to keep pathogen levels low to allow continued canola production in the infested fields with minimum impact on yield.

## Clubroot in Saskatchewan

All findings of visible clubroot symptoms and the detection of the pathogen using DNA-based testing since 2008 have been used to produce a cumulative [Saskatchewan Clubroot Distribution Map](#). This map illustrates the location, to a rural municipality (RM) level, of all findings of clubroot and the clubroot pathogen from 2008 to 2023 and provides an estimate of regional risk. This is a useful tool that can be used to identify areas in the province that have the highest clubroot risk. However, it is important to remember that no detection of clubroot in an RM does not mean it is not there. The distribution of clubroot and the clubroot pathogen across the northern agricultural region indicates that the risk is not isolated to a small area. All producers in Saskatchewan are encouraged to monitor their fields and think proactively about clubroot management.

## Clubroot and *The Pest Control Act*

In 2009, clubroot was declared a pest under *The Pest Control Act*. RMs have authority under *The Pest Control Act* to undertake prevention and enforcement measures related to the spread and control of clubroot. The Saskatchewan Ministry of Agriculture is committed to a farmer-driven approach to clubroot regulation and to working with RMs to develop effective and consistent management plans. This approach to clubroot management encourages farmers to take an active role in the management of any clubroot confirmed on their farm. The Saskatchewan Clubroot Management Plan, developed in

consultation with the Saskatchewan Clubroot Initiative, outlines the minimum science-based requirements that should be included in a clubroot management plan for infected fields in Saskatchewan.

To support RMs in fulfilling their duties under *The Pest Control Act*, the ministry and the Saskatchewan Association of Rural Municipalities (SARM) have [drafted a sample clubroot bylaw and policy](#) that can be implemented by RM councils. The draft clubroot bylaw makes clubroot reporting mandatory within the RM and provides guidance on how the clubroot report will be managed with reference to the farmer-driven approach to clubroot management. The sample bylaw and policy are to be used as a guideline and can be revised by an RM council to meet their specific needs. It is recommended you ask your RM for a copy of the bylaw if they have one enacted.

When an RM has a clubroot-specific bylaw enacted, all producers and operators are required to report the presence of clubroot within 30 days of confirmation of the disease. [SARM's Plant Health Technical Advisors](#) work closely with RMs to manage clubroot and keep a record of all RMs with a clubroot-specific bylaws enacted. This information is used to create the clubroot bylaw map. Please note that an RM can choose to enact a bylaw at any time, so it is still important to contact your specific RM to enquire whether or not they have a bylaw. This map is up to date as of November, 2021 and will be updated approximately every three months.

## For more information:

- [Saskatchewan Clubroot Management Plan](#)
  - [Clubroot Management Agreement – Non-irrigated land](#)
  - [Clubroot Management Agreement – Irrigated land](#)
- [Clubroot Scouting and Management Tips](#)
- [How to Report a Clubroot Infected Canola Field in Saskatchewan](#)
- [Interpreting a Clubroot Soil Test Results](#)
- [Biosecurity protocols](#)
- [Clubroot Bylaws By RM](#)

---

## Contact the Agriculture Knowledge Centre

**Toll Free Number: 1-866-457-2377**  
Agriculture Knowledge Centre

**Phone** 866-457-2377

✓ [More](#)

[View all contacts in the directory](#)



# NATURAL AREA SCREENING REPORT

Memo To: Bill Delainey  
March 26, 2024  
Page 18

## **APPENDIX D: HERITAGE RESOURCE SCREENING**



## PARKS, CULTURE AND SPORT

---

### ABOUT PARKS, CULTURE AND SPORT

---

*Inquiry was made on June 11, 2014 at 12:06 PM*

You are inquiring about the heritage sensitivity of the following land location:

**Quarter-section:**

NE

**Section:**

10

**Township:**

36

**Range:**

4

**Meridian:**

3

**This quarter-section is NOT heritage sensitive.**

It is not necessary to submit the project to the Heritage Conservation Branch for screening. These results can be printed for submission to other regulatory bodies (e.g. Saskatchewan Environment, Saskatchewan Industry and Resources). Please email [arms@gov.sk.ca](mailto:arms@gov.sk.ca) if you have any questions.

*Inquiry was made on June 11, 2014 at 12:06 PM*

[Home](#) / [About PCS](#) / [Heritage](#) / [Developers' Online Screening Tool](#) / [Land Locations Search](#)

---

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## PARKS, CULTURE AND SPORT

---

### ABOUT PARKS, CULTURE AND SPORT

---

*Inquiry was made on April 14, 2015 at 4:26 PM*

You are inquiring about the heritage sensitivity of the following land location:

**Quarter-section:**

SE

**Section:**

10

**Township:**

36

**Range:**

4

**Meridian:**

3

**This quarter-section is NOT heritage sensitive.**

It is not necessary to submit the project to the Heritage Conservation Branch for screening. These results can be printed for submission to other regulatory bodies (e.g. Saskatchewan Environment, Saskatchewan Industry and Resources). Please email [arms@gov.sk.ca](mailto:arms@gov.sk.ca) if you have any questions.

*Inquiry was made on April 14, 2015 at 4:26 PM*

[Home](#) / [About PCS](#) / [Heritage](#) / [Developers' Online Screening Tool](#) / [Land Locations Search](#)

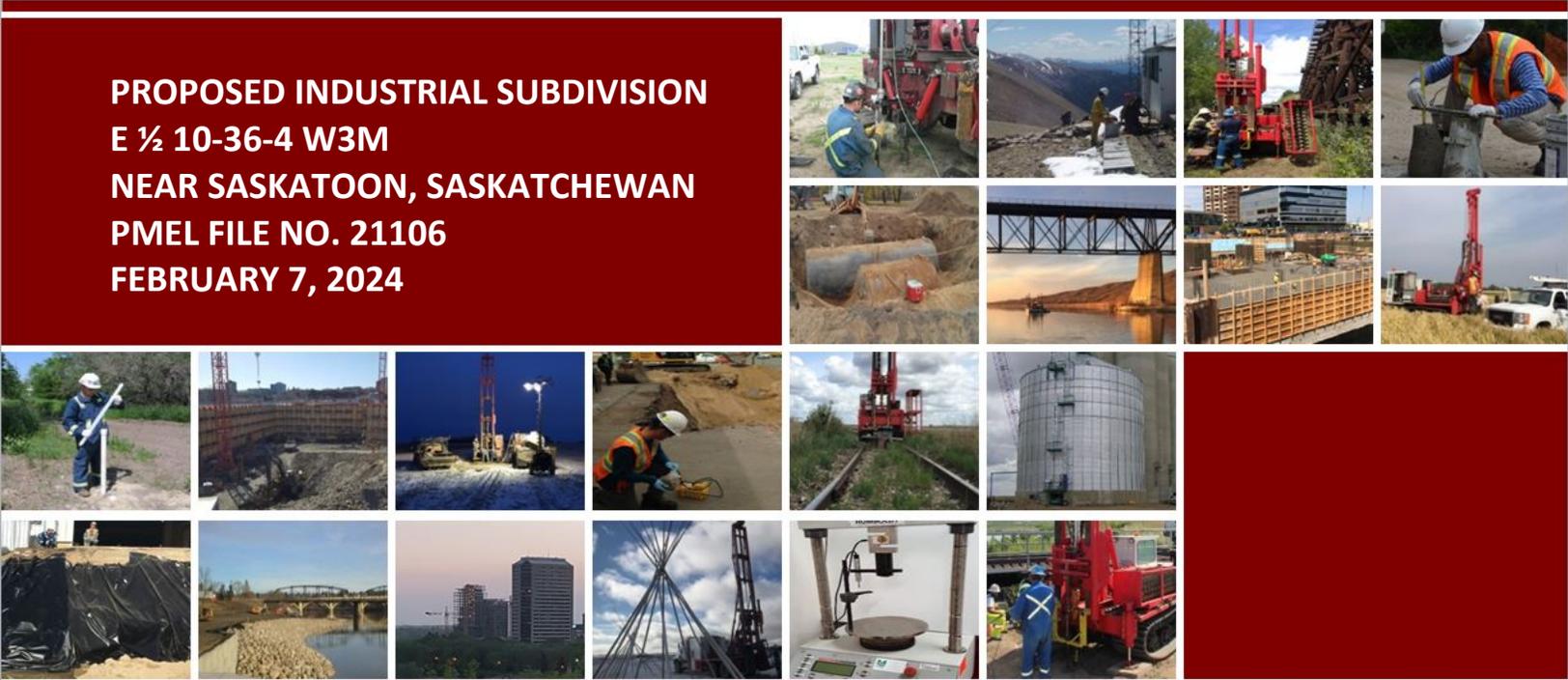
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# APPENDIX D - PRELIMINARY GEOTECHNICAL REPORT

# PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED INDUSTRIAL SUBDIVISION  
E ½ 10-36-4 W3M  
NEAR SASKATOON, SASKATCHEWAN  
PMEL FILE NO. 21106  
FEBRUARY 7, 2024



PREPARED FOR:  
Associated Engineering (Sask.) Ltd.

ATTENTION: Bill Delainey, RPP, MCIP, Manager – Urban Planning

**PROJECT:** Preliminary Geotechnical Investigation  
Proposed Industrial Subdivision  
E ½ 10-36-4 W3M  
Near Saskatoon, Saskatchewan  
PMEL File No. 21106  
February 7, 2024

**PREPARED FOR:** Associated Engineering (Sask.) Ltd.  
1 – 2225 Northridge Drive  
Saskatoon, Saskatchewan  
S7L 6X6

**ATTENTION:** Bill Delainey, RPP, MCIP, Manager – Urban Planning

**DISTRIBUTION:** Associated Engineering (Sask.) Ltd. – Digital Copy  
P. Machibroda Engineering Ltd. – Digital Copy

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### LIST OF DRAWINGS

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### LIST OF DRAWINGS

21106-1	Site Plan – Borehole Locations
21106-2 to 9	Borehole Logs and Soil Test Results

### LIST OF APPENDICES

Appendix A	Explanation of Terms on Borehole Logs
Appendix B	Borehole Logs from SNC-Lavalin Project No. 624017
Appendix C	Grain Size Distribution Test Results

---

# **1 INTRODUCTION**

## **1.1 GENERAL**

The following report has been prepared to provide preliminary geotechnical information for the proposed industrial subdivision to be developed within E ½ 10-36-4 W3M near Saskatoon, Saskatchewan.

The terms of reference for this investigation were presented in P. Machibroda Engineering Ltd. (PMEL) Proposal No. 21106, dated December 8, 2023. E-mail authorization to proceed with this investigation was provided by Bill Delainey of Associated Engineering (Sask.) Ltd. on December 19, 2023.

SNC-Lavalin (SNCL) conducted a geotechnical investigation in 2014 for the City of Saskatoon within the south and east portions of the site (SNCL Project No. 624017). The SNCL borehole locations and logs have been presented on the Site Plan, Drawing No. 21106-1 and in Appendix B, respectively. Permission to use the SNCL information was provided by the City of Saskatoon.

## **1.2 SITE LOCATION AND DESCRIPTION**

The proposed industrial subdivision is located within E ½ 10-36-4 W3M, south of Highway No. 394 and west of Freeborn Road, approximately 3 km east of Saskatoon, Saskatchewan. The site and surrounding areas are primarily agricultural. The site has a gradual slope from north to south with a maximum elevation difference of about 6.7 m between boreholes. A Site Plan showing the location of the study area and boreholes has been shown on Drawing No. 21106-1.

# **2 FIELD INVESTIGATION**

The field investigation was conducted on January 8 and 9, 2024.

Eight boreholes, located as shown on the Site Plan, Drawing No. 21106-1, were dry drilled using our truck-mounted, continuous flight auger drilling rig. The boreholes were 150 mm in diameter and extended to depths of 3.1 to 15.4 m below the existing ground surface. Borehole logs, as shown on the attached Drawing Nos. 21106-2 to 9, inclusive, were compiled during test drilling to record the soil stratification, the groundwater conditions, the position of unstable sloughing soils and the depths at which cobblestones and/or boulders were encountered.

Disturbed samples of auger cuttings, collected during test drilling, were sealed in plastic bags to minimize moisture loss. The soil samples were taken to our laboratory for analysis.

Standard penetration tests (SPT), utilizing a safety hammer with automatic trip were performed during test drilling.

The coordinates and ground surface elevation at each borehole location were provided by Associated Engineering (Sask.) Ltd.

Standpipe monitoring wells (slotted, 50 mm PVC pipe) were installed in BH's 24-3A and 24-6A to monitor the existing groundwater conditions.

SNCL monitoring wells 624021-04, 624021-06 and 624021-10 were accessible at the time of the PMEL field investigation; monitoring well 624021-01 was inaccessible (i.e., locked casing).

### 3 SOIL AND GROUNDWATER CONDITIONS

#### 3.1 SOIL PROFILE

The general soil profile consisted of a surface layer of topsoil (100 to 600 mm) overlying clay/silt deposits (to depths of approximately 1.0 to 3.5 m), followed by an extensive deposit of glacial till that extended to the maximum depth investigated (to a depth of at least 15.4 m below existing ground surface). Inter-till sand layers/lenses and cobbles/boulders were encountered at random depths during test drilling.

The clay was typically medium to highly plastic and moist. At the time of the PMEL field investigation (i.e., 2024), the clay was stiff; however, at the time of the SNCL field investigation (i.e., 2014), the clay was generally soft to firm. Based on a review of the PMEL and SNCL borehole logs, it appears that some of the material logged as “clay” on the SNCL logs would likely be more accurately identified as silt. The silt was low to medium plastic and moist to wet. At the time of the PMEL field investigation (i.e., 2024), the silt was firm to stiff; however, at the time of the SNCL field investigation (i.e., 2014), this material was typically soft to firm. The till was low to medium plastic, moist and stiff to very stiff initially, becoming hard with depth. The inter/intra till sand deposits were compact and saturated (groundwater seepage/sloughing zones).

#### 3.2 GROUNDWATER CONDITIONS, SLOUGHING

Groundwater seepage and sloughing conditions were encountered during test drilling. The depths at which groundwater seepage and sloughing conditions were encountered have been shown on the borehole logs. A summary of the groundwater levels recorded in the monitoring wells installed during the PMEL and SNCL investigations has been presented in Table I.

TABLE I RECORDED GROUNDWATER LEVELS

Borehole No.	Monitoring Well Rim Elevation (m)	Ground Surface Elevation (m)	Groundwater Depth (m)		Groundwater Elevation (m)	
			Nov. 27, 2014	Jan. 23, 2024	Nov. 27, 2014	Jan. 23, 2024
24-3A	531.9	530.9	--	2.9	--	528.0
24-6A	531.9	531.1	--	3.0	--	528.1
624017-01	534.6	533.5	2.4	NR	531.1	NR
624017-04	531.4	530.4	1.3	4.8	529.2	525.6
624017-06	531.6	530.6	2.3	6.8	528.4	523.8
624017-10	528.5	527.5	1.3	3.7	526.2	523.8

NR = not recorded.

Examination of Table I revealed that the groundwater table was measured at a depth of 1.3 to 2.4 m below ground surface in November, 2014 (elevation of 526.2 to 531.1 m). In January, 2024 the depth to groundwater ranged from 2.9 to 6.8 m below ground surface (elevation of 523.8 to 528.1 m). The groundwater levels in the SNCL monitoring wells dropped appreciably between 2014 and 2024 (i.e., 2.4 to 4.5 m). The change in groundwater levels is likely attributable to a general drying trend in the past 10 years, and was also likely influenced by site development over the past few years; based on a time lapse review of Google Earth imagery, it appears that a dugout has been excavated near the west-central portion of the site and that the drainage patterns within the site may have been altered due to site activities. Based on Google Earth imagery between 2002 and present day, it is apparent that the groundwater conditions (i.e., evidenced by water levels within the sloughs/low spots on site) and drainage conditions (i.e., evidenced by visible drainage paths, vegetation growth and agricultural seeding patterns) within the site have varied appreciably over that time period.

Higher water levels may be encountered, particularly during and/or following spring snowmelt and/or periods of precipitation, and during climatically wetter years.

### **3.3 COBBLESTONES AND BOULDERS**

Cobblestones and/or boulders were encountered at various depths within the till. The depths at which cobbles/boulders were encountered have been shown on the PMEL and SNCL borehole logs.

Glacial till consists of a heterogeneous mixture of gravel, sand, silt and clay-sized particles. Glacial till inherently contains sorted deposits of the above particle sizes as well as a random distribution of larger particle sizes in the cobblestone range (60 to 200 mm) and boulder-sized range (larger than 200 mm). Inter/intra till deposits of cobblestones, boulders, boulder pavements and isolated deposits of saturated sand or gravel should be anticipated.

It should be recognized that the statistical probability of encountering cobbles/boulders in the small diameter boreholes drilled at this large site was low. The frequency of encountering such deposits will increase proportionately with the number and depth of piles installed and/or volume of soil excavated.

## **4 LABORATORY ANALYSIS**

The soil classification and index tests performed during this investigation consisted of a visual classification of the soil, moisture contents, Atterberg limits, unit weights and grain size distribution analysis.

The results of the soil classification and index tests conducted on representative samples of soil have been plotted on the borehole logs alongside the corresponding depths at which the samples were recovered, as shown on Drawing Nos. 21106-2 to 9, inclusive. The results of the grain size distribution analyses have been presented in Appendix C.

---

## 5 DESIGN CONSIDERATIONS

The purpose of this investigation was to evaluate the existing subsurface soil and groundwater conditions for potential site development. Site specific investigation(s) will be required once the proposed development has been finalized.

The subsurface soil conditions consisted of silt/clay deposits followed by glacial till to the full depth explored (i.e., 15.4 m). Cobbles/boulders and saturated inter/intra till sand layers were encountered in the glacial till stratum. The depth to groundwater in January, 2024 ranged from 2.9 to 6.8 m below ground surface (elevation of 523.8 to 528.1 m), though significantly higher groundwater levels existed in 2014 (i.e., 2.4 to 4.5 m higher based on the SNCL monitoring wells, elevation of 526.2 to 531.1 m).

Preparation of the site for development should consist of the removal of all vegetation, topsoil, loose fill and organic material from the construction areas. Based on current conditions, it is anticipated that conventional site preparation (scarifying, moisture conditioning and re-compacting the soils) will suffice over the majority of the site.

The use of geosynthetics and additional fill thicknesses will likely be required in low lying/wetter areas of the site as weaker soils/poor trafficability is anticipated in these areas. It is noted that the near-surface soil conditions were noticeably weaker/wetter in 2014, and that if the groundwater conditions/drainage patterns change over time the conditions of the near-surface soils may change accordingly.

Within building footprints and traffic areas, the subgrade should be uniformly compacted to a specified density. Soils which are unstable during site preparation and fail to achieve the required compaction will require additional treatment, which may include: over-excavation and replacement and/or geosynthetic stabilization. Locally available soils which are similar to underlying soils should be suitable for use as subgrade fill; creating mixed soil conditions during site grading is not recommended.

Conventional open-cut excavations above the groundwater table should be feasible at this site. Below the groundwater table, dewatering will be required to maintain excavation stability, particularly where sand or silt soils exist.

The subgrade soils are considered frost susceptible and the potential depth of frost penetration could range from approximately 1.6 to 2.4 m, depending on surface cover, severity of winter and heat loss affects beneath/adjacent buildings; the depth of frost penetration will be greater where granular fills are utilized.

Potential deep foundation alternatives for structures at this site include drilled cast-in-place concrete piles (straight shaft or belled), continuous flight auger (CFA) piles, driven open end steel pipe piles or helical screw piles. Temporary casing will be required to complete the installation of drilled piles where unstable/saturated soils are encountered. Construction difficulties associated with cobbles/boulders should be expected during the installation of pile foundations. Coring, larger diameter augers and pre-boring may be required to assist in achieving the design pile depths at some locations. The presence of cobbles/boulders and the hard nature of the till with depth may cause shallow termination for driven or screw piles at some locations.

Footings and/or thickened edge raft (shallow) foundations bearing on undisturbed naturally occurring soils could be a suitable foundation alternative at some locations/for some structures. Shallow foundations bearing on uncontrolled fill soils or highly plastic clay are not recommended. Utilization of structural granular fill beneath shallow foundations could be viable provided the underlying subgrade consists of undisturbed, naturally occurring low to medium plastic soils. Setting the foundation below the depth of frost penetration or protecting from frost action using extruded polystyrene insulation will be required to mitigate frost induced foundation movements.

The most practical/economical foundation alternative will depend on the structure being supported and the location-specific soil conditions.

Provided a typical level of floor performance is considered acceptable (i.e., potential for some floor movements and cracking), the existing subgrade soils should provide stable support for grade-supported floor slabs.

Where site grades are low and large fill depths (i.e., in excess of 2 to 3 m) are needed to bring the site up to grade, construction of grade supported building floor slabs bearing on newly placed fill will be subject to potential excessive differential movements as the fill consolidates under its own weight. To minimize long term settlements, cut and fill activities should be undertaken such that the fill is placed and compacted in uniform thin lifts (i.e., 150 to 300 mm) to optimum density/moisture content prior to placing additional lifts.

All fill materials should be approved by the Geotechnical Consultant; in general, granular fill or non-expansive fine-grained soils are preferred over highly plastic clay. Quality assurance/control testing is recommended to confirm the fill has been placed to a uniform dense condition at an appropriate moisture condition. It is also recommended to delay construction of building floor slabs as long as practical after the site has been graded to allow for settlements to develop (minimum of a construction season/calendar year after placing). Where potential floor movements/cracking cannot be tolerated, the slabs should be structurally supported by piles.

If basements are constructed, they should be based an adequate depth above the groundwater table and permanent drainage systems should be constructed to control and discharge any water that may accumulate adjacent to or below the structure. Considering the large variation in the site groundwater conditions over time and the presence of relatively shallow groundwater conditions at some locations, basements should only be utilized if necessary.

---

Traffic structures constructed in accordance with typical RM of Corman Park construction practices/standards should perform satisfactorily at this site.

Based on the consistency of the subgrade soils encountered at this site and Table 4.1.8.4A of the 2020 National Building Code, the site classification for seismic site response falls within Class D.

## **6 LIMITATIONS**

The presentation of the summary of the borehole logs and preliminary design considerations has been completed as authorized. Eight, 150 mm diameter boreholes were dry drilled using continuous flight solid stem auger drilling equipment.

Borehole logs were compiled during test drilling which, we believe, were representative of the subsurface conditions at the borehole locations at the time of test drilling. Variations in the subsurface conditions from that shown on the borehole logs at locations other than the exact test location should be anticipated. If conditions should differ from those reported here, then we should be notified immediately in order that we may examine the conditions in the field and reassess our recommendations in the light of any new findings.

The Terms of Reference for this investigation did not include any environmental assessment of the site. No detectable evidence of environmentally sensitive materials was detected during the actual time of the field test drilling program. If, on the basis of any knowledge, other than that formally communicated to us, there is reason to suspect that environmentally sensitive materials may exist, then additional boreholes should be drilled and samples recovered for chemical analysis.

The subsurface investigation necessitated the drilling of deep boreholes. The boreholes were backfilled at the completion of test drilling. Please be advised that some settlement of the backfill materials will occur which may leave a depression or an open hole. It is the responsibility of the client to inspect the site and backfill, as required, to ensure that the ground surface at each borehole location is maintained level with the existing grade.

It is recommended that all monitoring wells should be decommissioned once they are no longer needed. PMEL will not accept any future liability associated with inadequate decommissioning of monitoring wells. Costs for decommissioning monitoring wells can be provided by PMEL upon request.

This report has been prepared for the exclusive use of Associated Engineering (Sask.) Ltd. and their agents for specific application to the proposed industrial subdivision to be developed within E ½ 10-36-4 W3M near Saskatoon, Saskatchewan. It has been prepared in accordance with generally accepted geotechnical engineering practices and reflects PMEL's understanding of the project based on information available at the time of preparation of this report. No other warranty, expressed or implied, is made.

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The design considerations presented in this report are for preliminary purposes only. Detailed, specific geotechnical investigation(s) are recommended once the building/structure details and locations have been finalized. PMEL will not accept responsibility on this project for any unsatisfactory performance if the design considerations presented in this report are utilized for the final building design in lieu of conducting a detailed, specific geotechnical investigation.

If this report has been transmitted electronically, it has been digitally signed and secured with personal passwords to lock the document. Due to the possibility of digital modification, only those reports sent directly by PMEL can be relied upon without fault.

We trust that this report fulfills your requirements for this project. Should you require additional information, please contact us.

**P. MACHIBRODA ENGINEERING LTD.**

Cory Zubrowski, P. Eng.



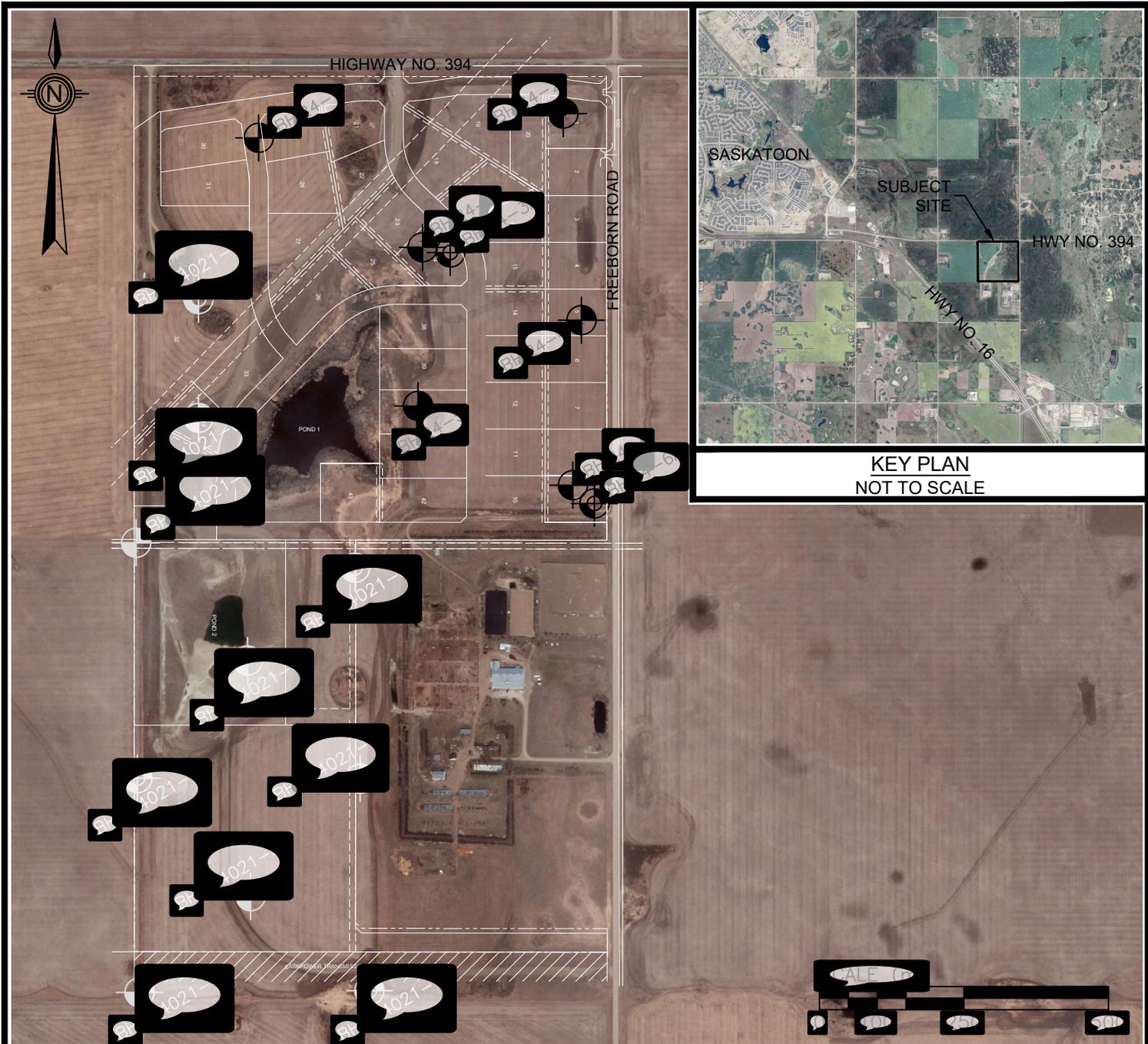
Kelly Pardoski, P. Eng.

CZ/KP

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# DRAWINGS

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**KEY PLAN**  
NOT TO SCALE

**NOTE:**  
 1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.  
 2. THIS DRAWING WAS COMPILED FROM GOOGLE EARTH PRO ©2023, IMAGE ©2023 DIGITALGLOBE, (IMAGERY DATE: 04/29/21).  
 3. THIS DRAWING WAS COMPILED USING HANDHELD GPS EQUIPMENT (TRIMBLE, MODEL No. GeoXH 6000).  
 4. THIS DRAWING WAS COMPILED USING A DRAWING PROVIDED BY ASSOCIATED ENGINEERING: q:\2014-4469-03\plan\model\4469-03-up-701-cnt\_pln.dwg, DATE: 08-25-2023.

<b>LEGEND</b>		BOREHOLE
		MONITORING WELL

**P. MACHIBRODA ENGINEERING LTD.**

**SITE PLAN - BOREHOLE LOCATIONS**

PROPOSED INDUSTRIAL SUBDIVISION  
E1/2 10-36-4 W3M, NEAR SASKATOON, SK

SASKATOON, SK

21106-1



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 397992

**EASTING (m):** 5771471

**ELEVATION (m):** 533.6

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling									
		DESCRIPTION										
0		TOPSOIL, moist, dark brown, rootlets, organics, frozen.										0
0.5		SILT, some sand, some clay, stiff, low to medium plastic, moist, brown.										8.9
1		frozen to 0.5 m.										6.6
1.5		sandy, trace clay, low plastic below 1.0 m.										
2		GLACIAL TILL, clay, silty, sandy, trace gravel, stiff to very stiff, low to medium plastic, moist, brown, oxide stained, gypsum crystals.										11.4
2.5												30
3												13
3.5												13.8
4		very stiff below 4.0 m.										
4.5												11.9
5		hard below 5.0 m.										
6												42
6.5												11.0
7												
7.5												12.1
8												
8.5		grey below 8.7 m.										
9												33
9.5												11.1
10												
10.5												12.1
11												
11.5												4.0
12												

02-07-2024 Y:\2023 Projects\21106 - Prelim Geotech - Industrial Subdivision - east half of 10-36-4 W3M, near Saskatoon\Drafting\dwg\BH1-21106.bo



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771471

**EASTING (m):** 397992

**ELEVATION (m):**

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS

SPLIT SPOON

SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling									
		DESCRIPTION										
12		GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, grey, oxide stained, gypsum crystals.										12
13												13
14												14
15		cobbles and boulders at 15.2 m.										15
16												16
17											17	
18											18	
19											19	
20											20	
21											21	
22											22	
23											23	
24											24	

**NOTES:**

- Borehole open and dry Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771499

**EASTING (m):** 398518

**ELEVATION (m):** 534.2

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling									
0						15.4						0
0						13.9						0
1						17.9						1
1												1
2												2
2					9	13.6		21.4				2
2						23.3						2
3						13.9					1.5	3
3												3
4												4
4												4
5												5
5					26	12.6		21.8				5
6						11.4						6
6												6
7												7
7												7
8												8
8					42	9.7		22.9				8
9						11.4						9
9												9
10												10
10												10
11												11
11					50	10.4		22.2				11
12						11.6						12

**NOTES:**

1. Borehole open with trace water Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771269

**EASTING (m):** 398288

**ELEVATION (m):** 530.9

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	% FINES	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)	WATER LEVELS	
												▼ After Drilling	▽ During Drilling
0		TOPSOIL, moist, dark brown, rootlets, organics frozen.			21.9	43	17		91.1		0		
1		CLAY, silty, some sand, stiff, medium plastic, moist, brown. frozen to 0.5 m.			20.4						1		
2		trace sand, highly plastic below 2.0 m.			27.6						2		
3		GLACIAL TILL, silt, sandy, some clay, trace gravel, stiff, low plastic, moist to wet, brown, oxide stained, gypsum crystals. trace seepage, trace sloughing to 2.9 m. some sand, low to medium plastic, moist below 2.9 m.		9	15.0			21.4			3		
4					16.7					1.5	4		
5		SAND, some silt, compact, poorly graded, fine grained, wet, brown, seepage, sloughing.									5		
6		GLACIAL TILL, silt, sandy, some clay, trace gravel, hard, low to medium plastic, moist, brown, oxide stained, gypsum crystals.		46	11.2			23.0			6		▽
7		mottled brown and grey below 7.0 m.			14.0					2.75	7		
8											8		
9		GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, grey.		29	12.7			21.8			9		
10					13.2					3.75	10		
11											11		
12											12		



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771269

**EASTING (m):** 398288

**ELEVATION (m):**

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling										
12				GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, grey.	<input checked="" type="checkbox"/>	38	12.7			22.0			12
13													13
14													14
15													15
16													16
17													17
18													18
19													19
20													20
21													21
22													22
23													23
24													24

**NOTES:**

- Borehole open Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 771269

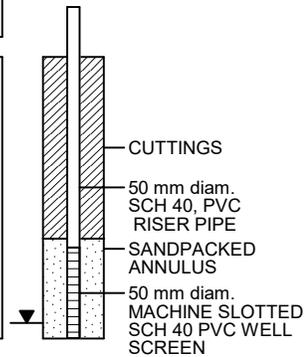
**EASTING (m):** 398288

**ELEVATION (m):** 530.9

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS  SPLIT SPOON  SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	MONITORING WELL: BH24-3A ELEV.: 531.9 m	DEPTH (m)
		▼ After Drilling	▽ During Drilling										
0													0
0 - 0.5	TOPSOIL, moist, dark brown, rootlets, organics, frozen.												0 - 0.5
0.5 - 2.0	CLAY, silty, some sand, stiff, medium plastic, moist, brown. frozen to 0.5 m.												0.5 - 2.0
2.0 - 2.9	trace sand, highly plastic below 2.0 m.												2.0 - 2.9
2.9 - 4.0	GLACIAL TILL, silt, sandy, some clay, trace gravel, stiff, low plastic, moist to wet, brown, oxide stained, gypsum crystals. trace seepage, trace sloughing to 2.9 m.												2.9 - 4.0
4.0 - 5.0	some sand, low to medium plastic, moist below 2.9 m.												4.0 - 5.0
5.0 - 6.0													5.0 - 6.0
6.0 - 7.0													6.0 - 7.0
7.0 - 8.0													7.0 - 8.0
8.0 - 9.0													8.0 - 9.0
9.0 - 10.0													9.0 - 10.0
10.0 - 11.0													10.0 - 11.0
11.0 - 12.0													11.0 - 12.0



**NOTES:**

- Borehole open with trace water Immediately After Drilling.
- Recorded Groundwater Level at 2.9 m below grade (Elev 528.0 m) on Jan 23/24.

02-07-2024 Y:\2023 Projects\21106 - Prelim Geotech - Industrial Subdivision - east half of 10-36-4 W3M, near Saskatoon\Drafting\dwg\BH3A-21106.bo



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771145

**EASTING (m):** 398542

**ELEVATION (m):** 533.0

**DATE DRILLED:** JAN 09/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
0		TOPSOIL, moist, dark brown, rootlets, organics, frozen.			18.7						0
		SILT, some sand, some clay, stiff, medium plastic, moist, brown.			13.2						
1		CLAY, silty, trace sand, stiff, medium plastic, moist, brown.			24.6						1
2		GLACIAL TILL, silt, some clay, sandy, trace gravel, stiff, low to medium plastic, moist, brown, oxide stained, gypsum crystals.			13.1					2.0	2
3											3
4											4
5											5
6		clayey, very stiff below 6.2 m. cobbles and boulders, trace seepage, sloughing at 6.5 m.			11.6			21.8			6
7											7
8											8
9		hard below 8.5 m.									9
10		GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, grey.			10.6			22.7			10
11											11
12										4.25	12

02-07-2024 Y:\2023 Projects\21106 - Prelim Geotech - Industrial Subdivision - east half of 10-36-4 W3M, near Saskatoon\Drifting\dwg\BH4-21106.bo



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771145

**EASTING (m):** 398542

**ELEVATION (m):**

**DATE DRILLED:** JAN 09/24

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling									
		DESCRIPTION										
12		GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, grey.										12
13												13
14												14
15												15
16												16
17												17
18												18
19												19
20												20
21												21
22												22
23												23
24												24

**NOTES:**

1. Borehole open with trace water Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5771002

**EASTING (m):** 398259

**ELEVATION (m):** 531.0

**DATE DRILLED:** JAN 08/24

**SAMPLE TYPE:**  CUTTINGS  SPLIT SPOON  SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)
		▼ After Drilling	▽ During Drilling									
		DESCRIPTION										
0		TOPSOIL, moist, dark brown, rootlets, organics, frozen.										0
1		SILT, some sand, some clay to clayey, stiff, medium plastic, moist, brown.										1
2		GLACIAL TILL, silt, some clay, sandy, trace gravel, stiff, low to medium plastic, moist, brown, oxide stained, gypsum crystals.										2
3												3
4		stiff to very stiff below 4.5 m.										4
5												5
6		cobbles and boulders at 6.1 m.										6
7												7
8		GLACIAL TILL, clay, silty, sandy, trace gravel, hard, low to medium plastic, moist, mottled brown and grey, oxide stained, gypsum crystals.										8
9		grey below 9.0 m.										9
10												10
11												11
12												12

**NOTES:**

- Borehole open and dry Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5770832

**EASTING (m):** 398552

**ELEVATION (m):** 531.1

**DATE DRILLED:** JAN 08/29

**SAMPLE TYPE:**  CUTTINGS     SPLIT SPOON     SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	DEPTH (m)	WATER LEVELS	
												▼ After Drilling	▽ During Drilling
0		TOPSOIL, moist, dark brown, rootlets, organics, frozen.			17.5						0		
1		SILT, some sand, some clay, stiff, low to medium plastic, moist, brown.			18.0						1		
2		CLAY, silty, trace sand, stiff, highly plastic, moist, brown.			12.7	31	16				2		
3				6	32.0						3		
4		GLACIAL TILL, silt, some clay, sandy, trace gravel, stiff, low to medium plastic, moist, brown, oxide stained, gypsum crystals. stiff to very stiff below 4.0 m.			29.8						4		
5		SAND, some silt, compact, poorly graded, fine grained, wet, brown, seepage, sloughing.		17	12.7			22.0			5		
6		GLACIAL TILL, silt, some clay, sandy trace gravel, very stiff, low to medium plastic, moist, brown, oxide stained, gypsum crystals.			13.0					3.0	6	▽	
7											7		
8				25	11.1			22.1			8		
9		GLACIAL TILL, clay, silty, sandy, trace gravel, very stiff, low to medium plastic, moist, grey.			14.0					3.75	9		
10		hard below 10.0 m.									10		
11				31	13.6			21.9		4.0	11		
12					13.3					3.75	12		

**NOTES:**

1. Borehole open Immediately After Drilling.



**PROJECT:** PROPOSED INDUSTRIAL SUBDIVISION

**LOCATION:** E 1/2 10-36-4 W3M, NEAR SASKATOON, SK

**NORTHING (m):** 5770832

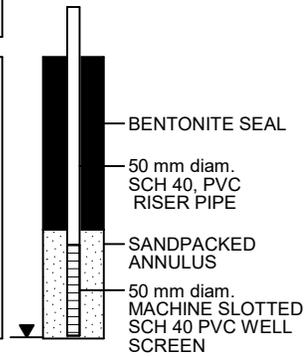
**EASTING (m):** 398552

**ELEVATION (m):** 531.1

**DATE DRILLED:** JAN 09/24

**SAMPLE TYPE:**  CUTTINGS  SPLIT SPOON  SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	WATER LEVELS		SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m <sup>3</sup> )	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/cm <sup>2</sup> )	MONITORING WELL: BH24-6A ELEV.: 531.9 m	DEPTH (m)
		▼ After Drilling	▽ During Drilling										
0													0
0													0
1													1
1													1
2													2
2													2
3													3
3													3
4													4
4													4
5													5
5													5
6													6
6													6
7													7
7													7
8													8
8													8
9													9
9													9
10													10
10													10
11													11
11													11
12													12
12													12



**NOTES:**

- Borehole open and dry Immediately After Drilling.
- Trace water in Monitoring Well on Jan 23/24.

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## **APPENDIX A**

Explanation of Terms on  
Borehole Logs

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## CLASSIFICATION OF SOILS

**Coarse-Grained Soils:** Soils containing particles that are visible to the naked eye. They include gravels and sands and are generally referred to as cohesionless or non-cohesive soils. Coarse-grained soils are soils having more than 50 percent of the dry weight larger than particle size 0.080 mm.

**Fine-Grained Soils:** Soils containing particles that are not visible to the naked eye. They include silts and clays. Fine-grained soils are soils having more than 50 percent of the dry weight smaller than particle size 0.080 mm.

**Organic Soils:** Soils containing a high natural organic content.

### Soil Classification By Particle Size

Soil Type	Particles of Size
Clay	< 0.002 mm
Silt	0.002 – 0.060 mm
Sand	0.06 – 2.0 mm
Gravel	2.0 – 60 mm
Cobbles	60 – 200 mm
Boulders	>200 mm

### TERMS DESCRIBING CONSISTENCY OR CONDITION

**Coarse-grained soils:** Described in terms of compactness condition and are often interpreted from the results of a Standard Penetration Test (SPT). The standard penetration test is described as the number of blows, N, required to drive a 51 mm outside diameter (O.D.) split barrel sampler into the soil a distance of 0.3 m (from 0.15 m to 0.45 m) with a 63.5 kg weight having a free fall of 0.76 m.

Compactness Condition	SPT N-Index (blows per 0.3 m)
Very loose	0-4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	Over 50

**Fine-Grained Soils:** Classified in relation to undrained shear strength.

Consistency	Undrained Shear Strength (kPa)	N Value (Approximate)	Field Identification
Very Soft	<12	0-2	Easily penetrated several centimetres by the fist.
Soft	12-25	2-4	Easily penetrated several centimetres by the thumb.
Firm	25-50	4-8	Can be penetrated several centimetres by the thumb with moderate effort.
Stiff	50-100	8-15	Readily indented by the thumb, but penetrated only with great effort.
Very Stiff	100-200	15-30	Readily indented by the thumb nail.
Hard	>200	>30	Indented with difficulty by the thumb nail.

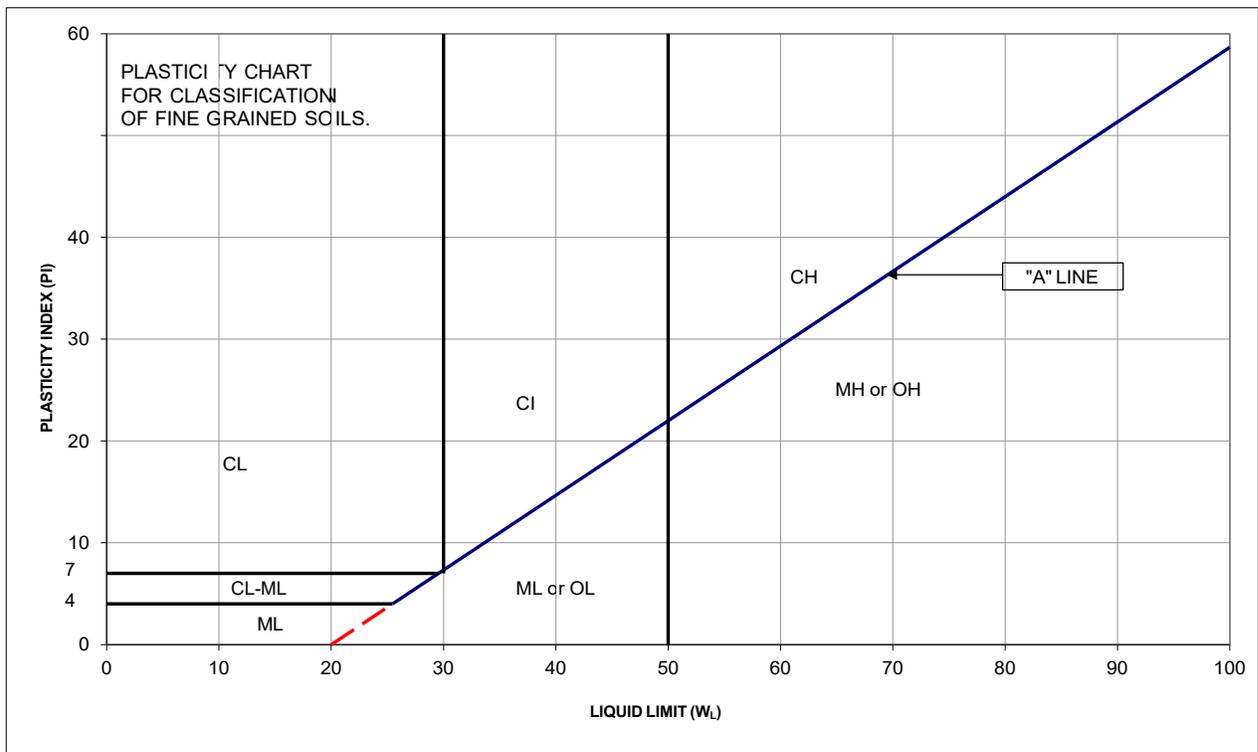
**Organic Soils:** Readily identified by colour, odour, spongy feel and frequently by fibrous texture.

### DESCRIPTIVE TERMS COMMONLY USED TO CHARACTERIZE SOILS

Poorly Graded	- predominance of particles of one grain size.
Well Graded	- having no excess of particles in any size range with no intermediate sizes lacking.
Mottled	- marked with different coloured spots.
Nuggety	- structure consisting of small prismatic cubes.
Laminated	- structure consisting of thin layers of varying colour and texture.
Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks.
Fractured	- broken by randomly oriented interconnecting cracks in all 3 dimensions

**SOIL CLASSIFICATION SYSTEM (MODIFIED U.S.C.)**

MAJOR DIVISION		GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
HIGHLY ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR AND OFTEN FIBROUS TEXTURE
COARSE-GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS More than half coarse fraction larger than No. 4 sieve size	CLEAN GRAVELS	GW WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$ $C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}} = 1 \text{ to } 3$
		DIRTY GRAVELS	GP POORLY-GRADED GRAVELS AND GRAVEL-SAND MIXTURES <5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS FOR GW
		CLEAN SANDS	GM SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $PI < 4$
		DIRTY SANDS	GC CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE WITH $PI > 7$
	SANDS More than half coarse fraction smaller than No. 4 sieve size	CLEAN SANDS	SW WELL-GRADED SANDS, GRAVELLY SANDS MIXTURES <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$ $C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}} = 1 \text{ to } 3$
		DIRTY SANDS	SP POORLY-GRADED SANDS OR GRAVELLY SANDS <5% FINES	NOT MEETING ALL GRADATION REQUIREMENTS FOR SW
		DIRTY SANDS	SM SILTY SANDS, SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $PI < 4$
		DIRTY SANDS	SC CLAYEY SANDS, SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE WITH $PI > 7$
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSING NO. 200 SIEVE SIZE)	SILTS Below "A" line on plasticity chart; negligible organic content	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$
		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$
	CLAYS Above "A" line on plasticity chart; negligible organic content	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$
		CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	$W_L > 30 < 50$
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$
	ORGANIC SILTS & ORGANIC CLAYS Below "A" line on plasticity chart	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$
		OH	ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$



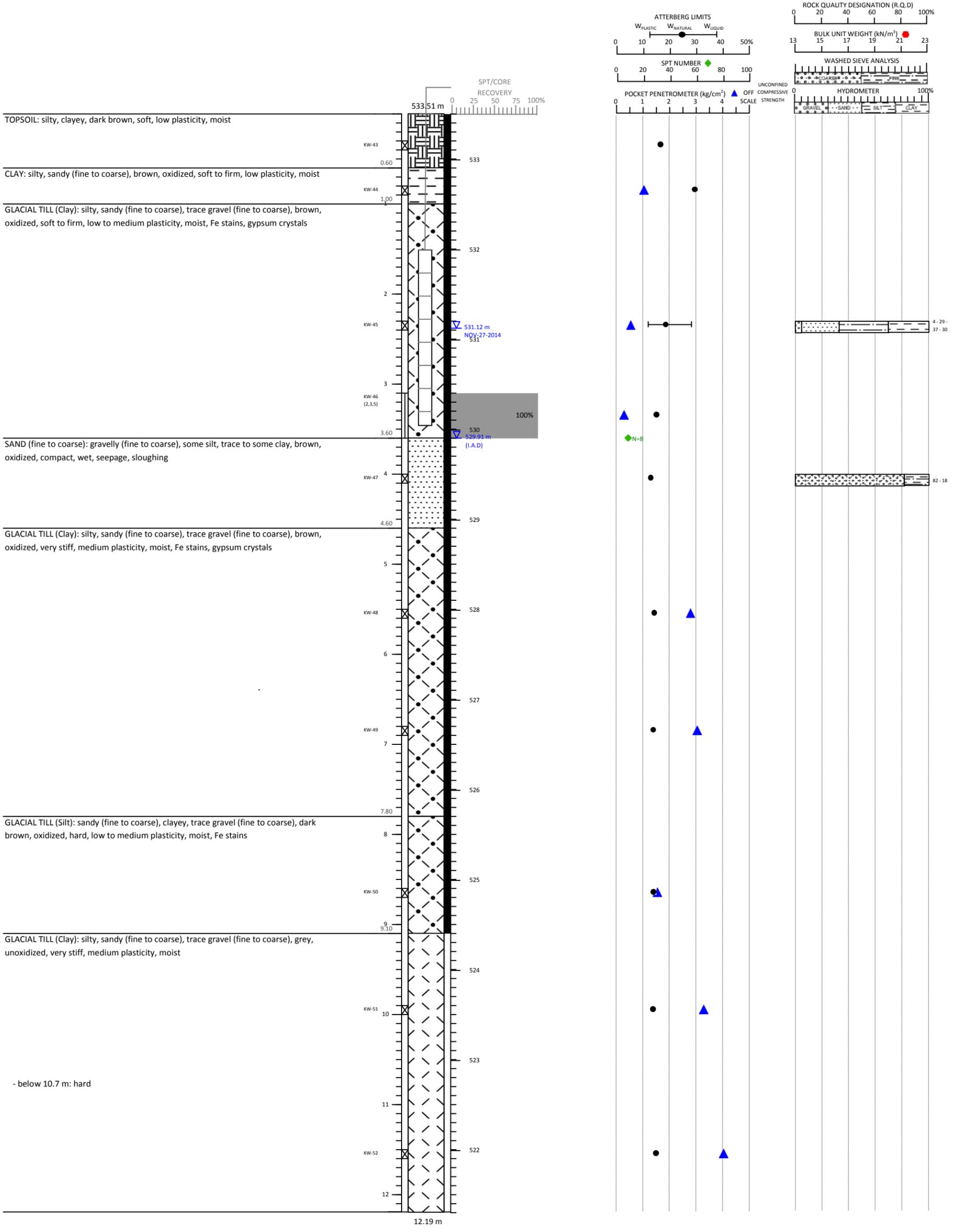
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## **APPENDIX B**

Borehole Logs from  
SNC-Lavalin File No. 624017

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**BOREHOLE 624021-01**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5771199.21 N 397884.97 E



- NOTES:**
- Borehole sloughed to 3.6 m immediately after drilling (I.A.D.). Groundwater at 3.6 m I.A.D.
  - Borehole backfilled with bentonite chips.
  - Piezometer installed in separate drilled hole; refer to piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#,#,#) denotes SPT blows per 152 mm (6 in).
  - Borehole coordinates and elevations provided by Associated Engineering.

**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b> KATHERINE WRIGHT	<b>CONTRACTOR</b> PADDOCK DRILLING LTD.	<b>APPROVED BY</b> CORY ZUBROWSKI, P.ENG.
<b>LOGGED BY</b> KATHERINE WRIGHT	<b>OPERATOR</b> BRIAN WOLANIUK / BRANDIN TAYLOR	<b>DRAWN BY</b> KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b> N/A	<b>TYPE OF DRILL RIG</b> ACKER MP-5 TRACK RIG	<b>PROJECT No.</b> 624017
<b>DATE DRILLED</b> 18-NOV-14	<b>ABANDONMENT</b> PIEZOMETER	<b>DATE</b> 4-DEC-14

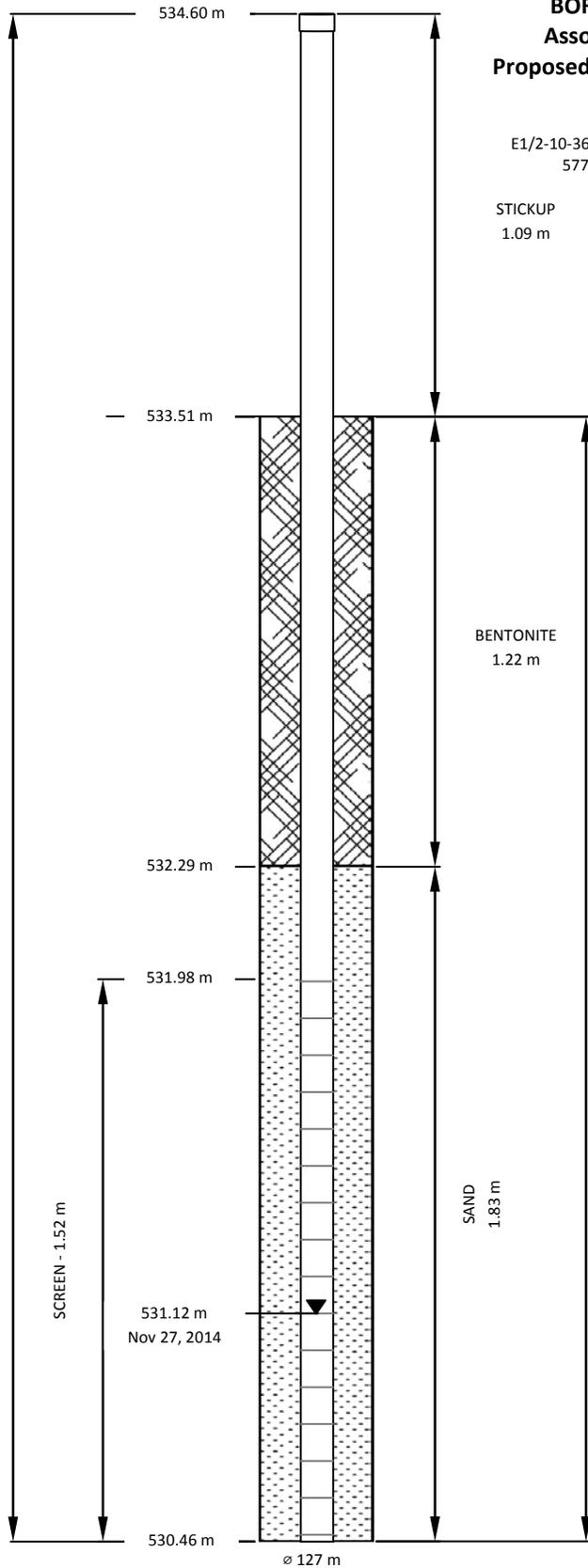
<b>CLIENT</b>	<b>PRODUCED BY</b>

**BOREHOLE 624021-01**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump**  
**2014**

E1/2-10-36-04-W3M, East of Saskatoon, SK  
 5771199.21 N 397884.97 E

STICKUP  
 1.09 m

PIEZOMETER CASING - 4.14 m



DRILLED DEPTH - 3.05 m

- FILTER PACK SEAL SPECIFICATIONS:**  
 - hydrated bentonite chips  
**FILTER PACK SPECIFICATIONS:**  
 - 10-20 filter sand  
**SCREEN SPECIFICATIONS:**  
 - 2 inch 10 slot slotted PVC  
**CASING SPECIFICATIONS:**  
 - 2 inch solid PVC



All depths are expressed in meters above or below natural ground surface, unless otherwise indicated. All elevations are expressed in meters above sea level.

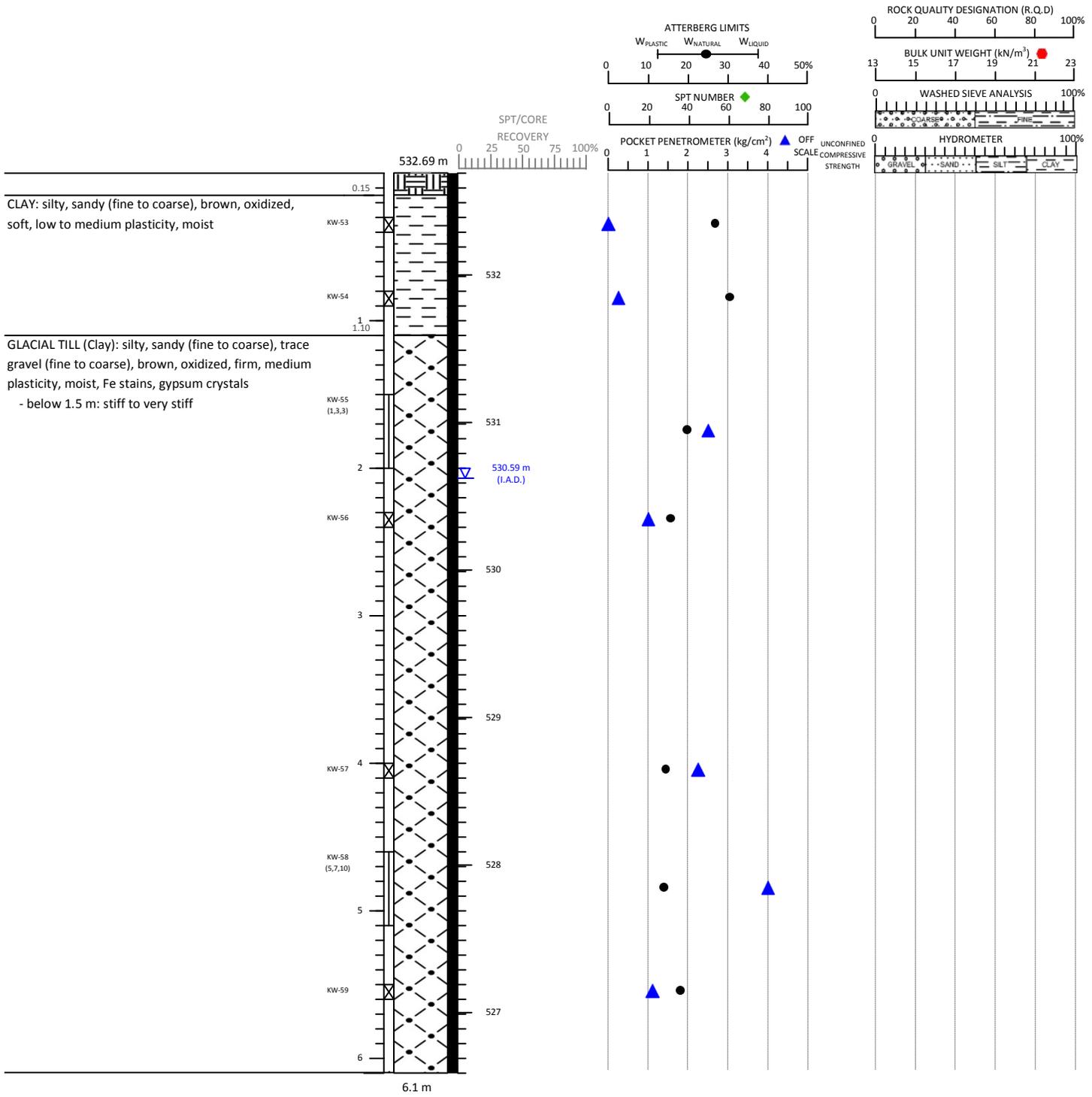
<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG
<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>DRAWN BY</b>	TARA STRATTON
<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>PROJECT No.</b>	624017
<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>DATE</b>	11-21-2014
<b>DATE INSTALLED</b>	18-NOV-14		

# BOREHOLE 624021-02

Associated Engineering

## Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK 2014

5770997.34 N 397884.97 E



- NOTES:
1. Borehole open immediately after drilling (I.A.D.). Groundwater at 2.1 m I.A.D.
  2. Borehole backfilled with bentonite chips.
  3. Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  4. (#,#,#) denotes SPT blows per 152 mm (6 in)
  5. Borehole coordinates and elevations provided by Associated Engineering.

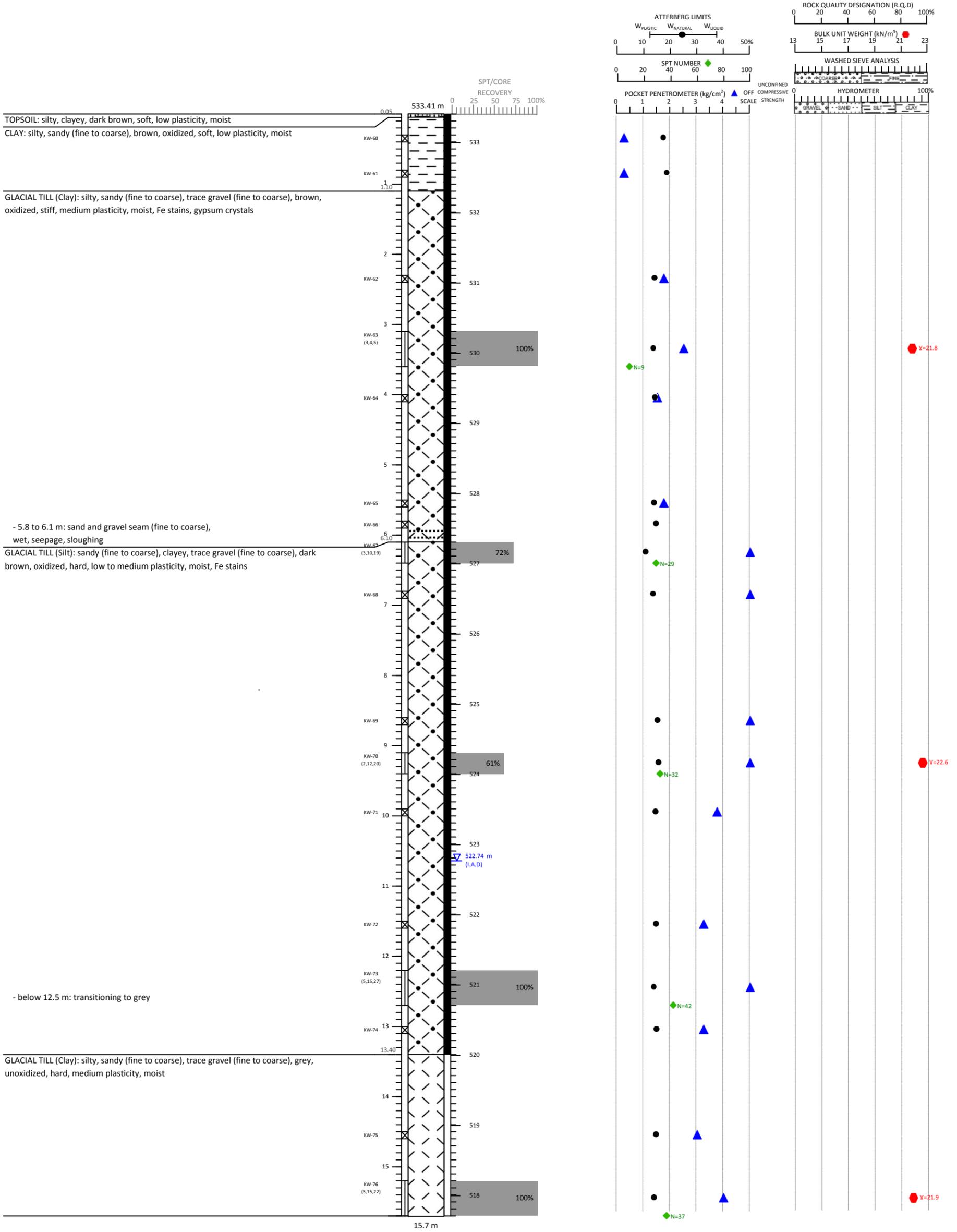
**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

CLIENT	PRODUCED BY

<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG.
<b>LOGGED BY</b>	KATHERINE WRIGHT	<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>DRAWN BY</b>	KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b>	N/A	<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>PROJECT No.</b>	624017
<b>DATE DRILLED</b>	18-NOV-14	<b>ABANDONMENT</b>	PIEZOMETER	<b>DATE</b>	4-DEC-14

**BOREHOLE 624021-03**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5770787.66 N 397776.03 E



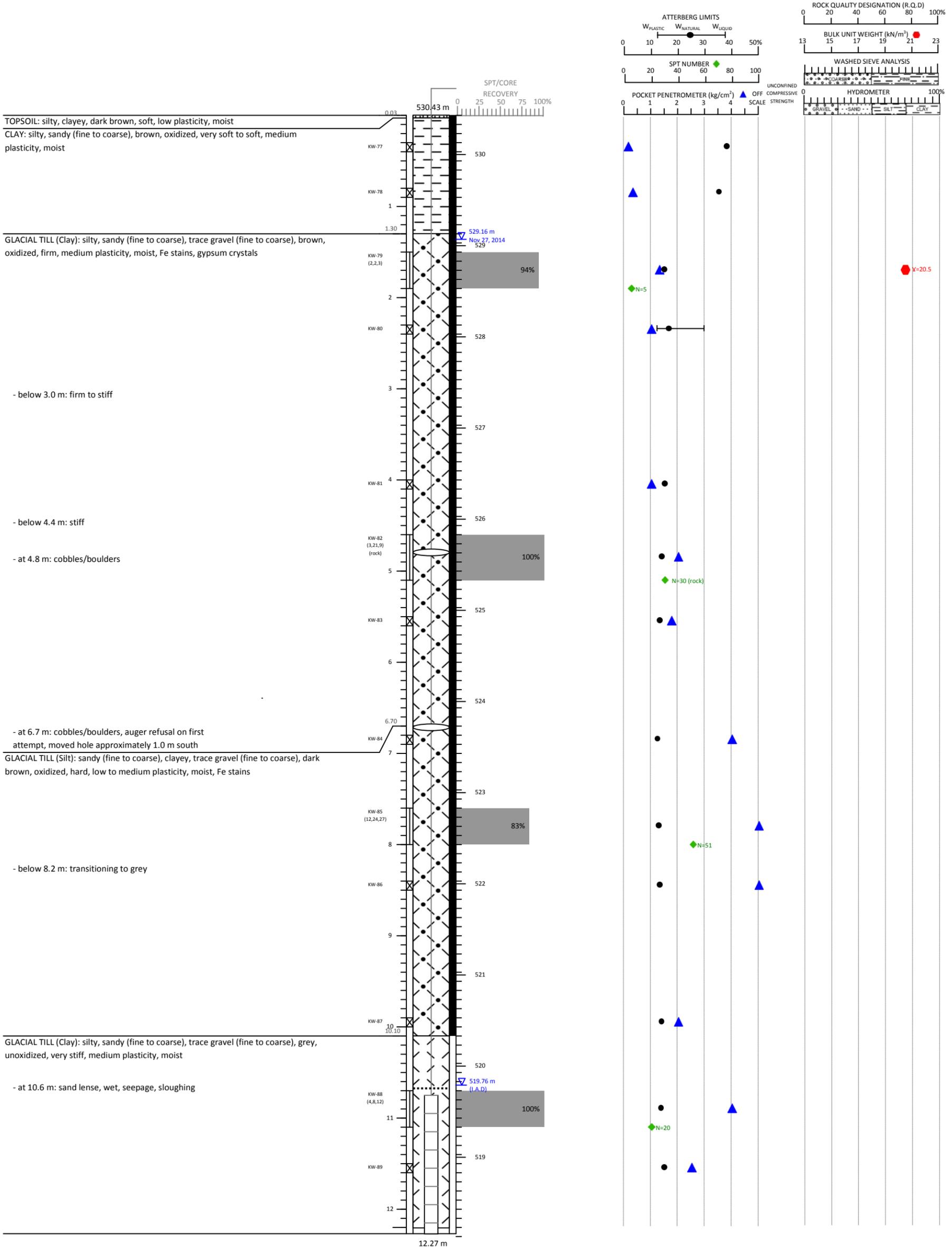
- NOTES:**
- Borehole open immediately after drilling (I.A.D.). Groundwater at 10.7 m I.A.D.
  - Borehole backfilled with bentonite chips.
  - Piezometer installed in separate drilled hole; refer to piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #, #) denotes SPT blows per 152 mm (6 in).
  - Borehole coordinates and elevations provided by Associated Engineering.

**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>CLIENT</b>	Associated Engineering	<b>PRODUCED BY</b>	SNC-LAVALIN
<b>LOGGED BY</b>	KATHERINE WRIGHT	<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG.	<b>DRAWN BY</b>	KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b>	N/A	<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>PROJECT No.</b>	624017	<b>PROJECT No.</b>	624017
<b>DATE DRILLED</b>	18-NOV-14	<b>ABANDONMENT</b>	BENTONITE CHIPS	<b>DATE</b>	4-DEC-14	<b>DATE</b>	4-DEC-14

**BOREHOLE 624021-04**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5770735.38 N 398148.79 E



- NOTES:**
- Borehole open immediately after drilling (I.A.D.). Groundwater at 10.7 m I.A.D.
  - See piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #, #) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

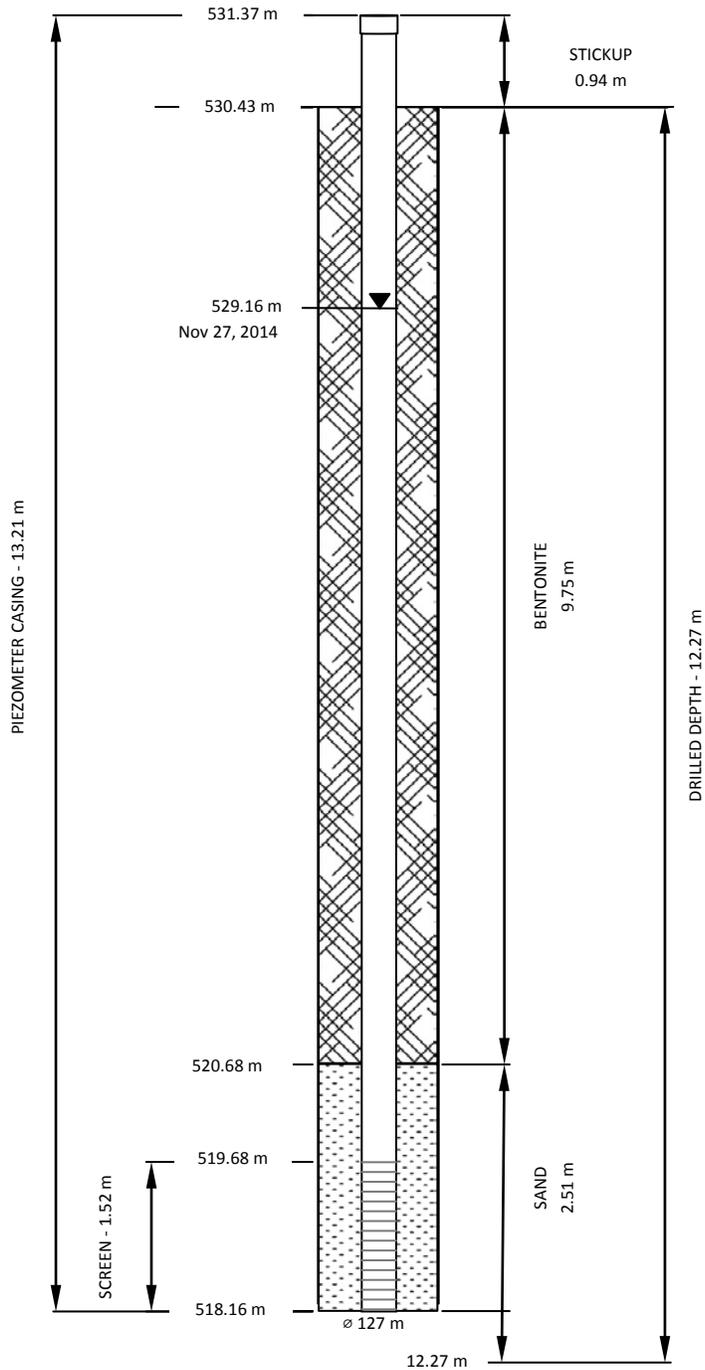
**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>CLIENT</b>	Associated Engineering	<b>PRODUCED BY</b>	SNC-LAVALIN
<b>LOGGED BY</b>	KATHERINE WRIGHT	<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG.	<b>DRAWN BY</b>	KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b>	N/A	<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>PROJECT No.</b>	624017	<b>PROJECT No.</b>	624017
<b>DATE DRILLED</b>	18-NOV-14	<b>ABANDONMENT</b>	PIEZOMETER	<b>DATE</b>	4-DEC-14	<b>DATE</b>	4-DEC-14

**BOREHOLE 624021-04**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump**  
**2014**

E1/2-10-36-04-W3M, East of Saskatoon, SK  
 5770735.38 N 398148.79 E  
 NAD 83 Zone 13



- FILTER PACK SEAL SPECIFICATIONS:
  - hydrated bentonite chips
- FILTER PACK SPECIFICATIONS:
  - 10-20 filter sand
- SCREEN SPECIFICATIONS:
  - 2 inch 10 slot slotted PVC
- CASING SPECIFICATIONS:
  - 2 inch solid PVC



All depths are expressed in meters above or below natural ground surface, unless otherwise indicated. All elevations are expressed in meters above sea level.

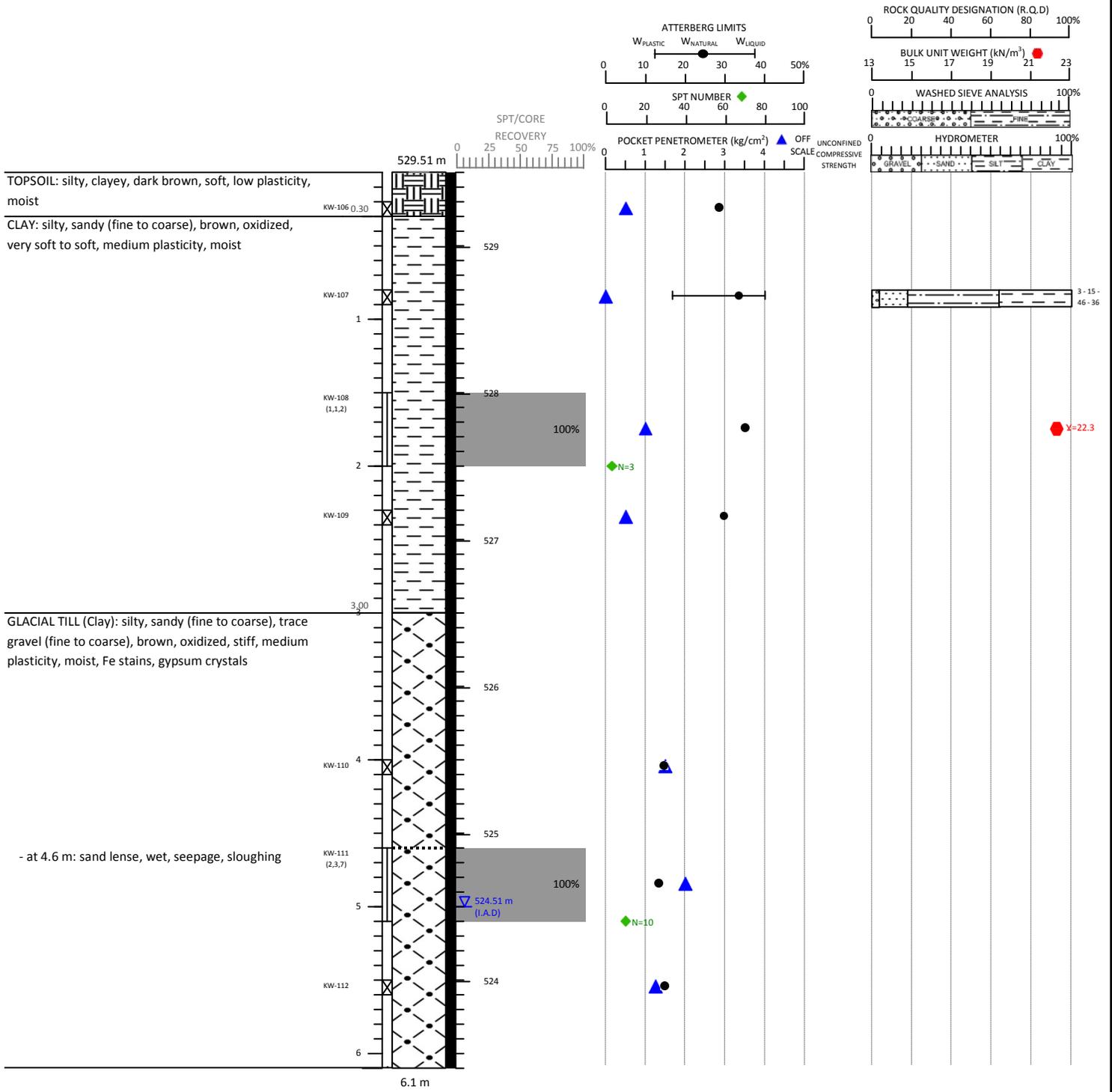
<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG
<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>DRAWN BY</b>	TARA STRATTON
<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>PROJECT No.</b>	624017
<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>DATE</b>	11-24-2014
<b>DATE INSTALLED</b>	NOV 18, 2014		

**BOREHOLE 624021-05**

**Associated Engineering**

**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK  
2014**

5770582.8 N 397960.17 E



- NOTES:**
- Borehole open immediately after drilling (I.A.D.). Groundwater at 5.0 m I.A.D.
  - Borehole backfilled with bentonite chips.
  - Piezometer installed in separate drilled hole; refer to piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #, #) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

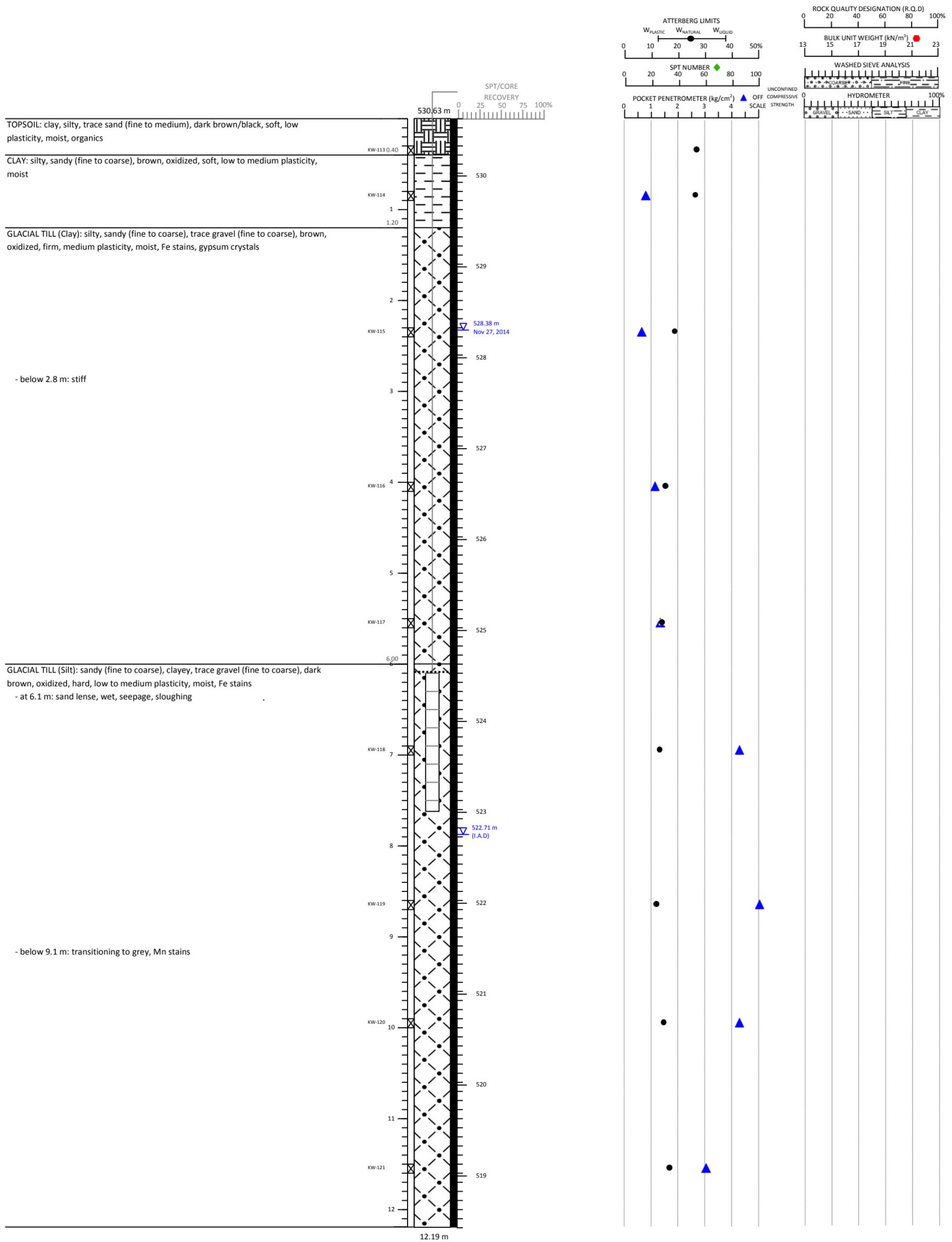
**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

CLIENT	PRODUCED BY

<b>SUPERVISOR</b> KATHERINE WRIGHT	<b>CONTRACTOR</b> PADDOCK DRILLING LTD.	<b>APPROVED BY</b> CORY ZUBROWSKI, P.ENG.
<b>LOGGED BY</b> KATHERINE WRIGHT	<b>OPERATOR</b> BRIAN WOLANIUK / BRANDIN TAYLOR	<b>DRAWN BY</b> KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b> N/A	<b>TYPE OF DRILL RIG</b> ACKER MP-5 TRACK RIG	<b>PROJECT No.</b> 624017
<b>DATE DRILLED</b> 19-NOV-14	<b>ABANDONMENT</b> BENTONITE CHIPS	<b>DATE</b> 4-DEC-14

**BOREHOLE 624021-06**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
577385.88 N 397768.21 E



- NOTES:
- Borehole open immediately after drilling (I.A.D.). Groundwater at 7.9 m I.A.D.
  - See piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #, #) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

**LIMITATION**

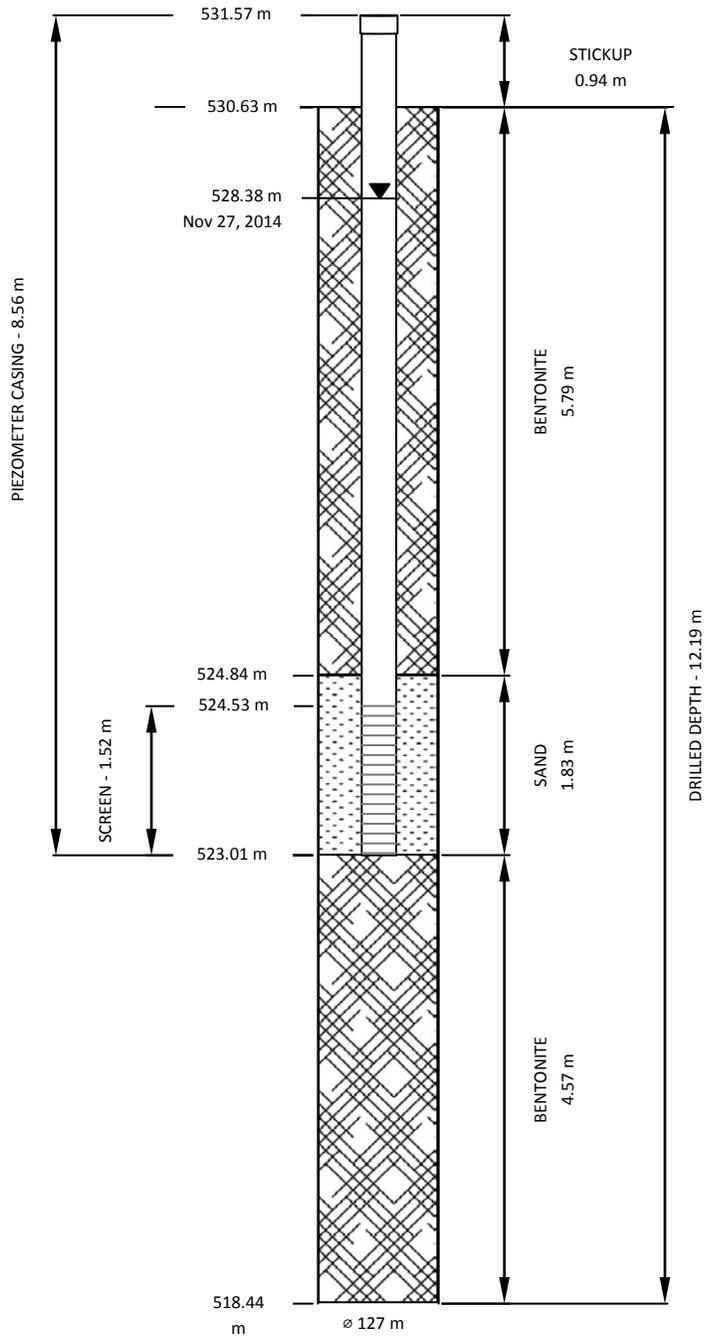
This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b> KATHERINE WRIGHT	<b>CONTRACTOR</b> PADDOCK DRILLING LTD.	<b>APPROVED BY</b> CORY ZUBROWSKI, P.ENG.
<b>LOGGED BY</b> KATHERINE WRIGHT	<b>OPERATOR</b> BRIAN WOLANIUK / BRANDIN TAYLOR	<b>DRAWN BY</b> KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b> N/A	<b>TYPE OF DRILL RIG</b> ACKER MP-5 TRACK RIG	<b>PROJECT No.</b> 624017
<b>DATE DRILLED</b> NOV 20, 2014	<b>ABANDONMENT</b> PIEZOMETER	<b>DATE</b> 4-DEC-14

CLIENT	PRODUCED BY
	

**BOREHOLE 624021-06**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump**  
**2014**

E1/2-10-36-04-W3M, East of Saskatoon, SK  
 577385.88 N 397768.21 E  
 NAD 83 Zone 13



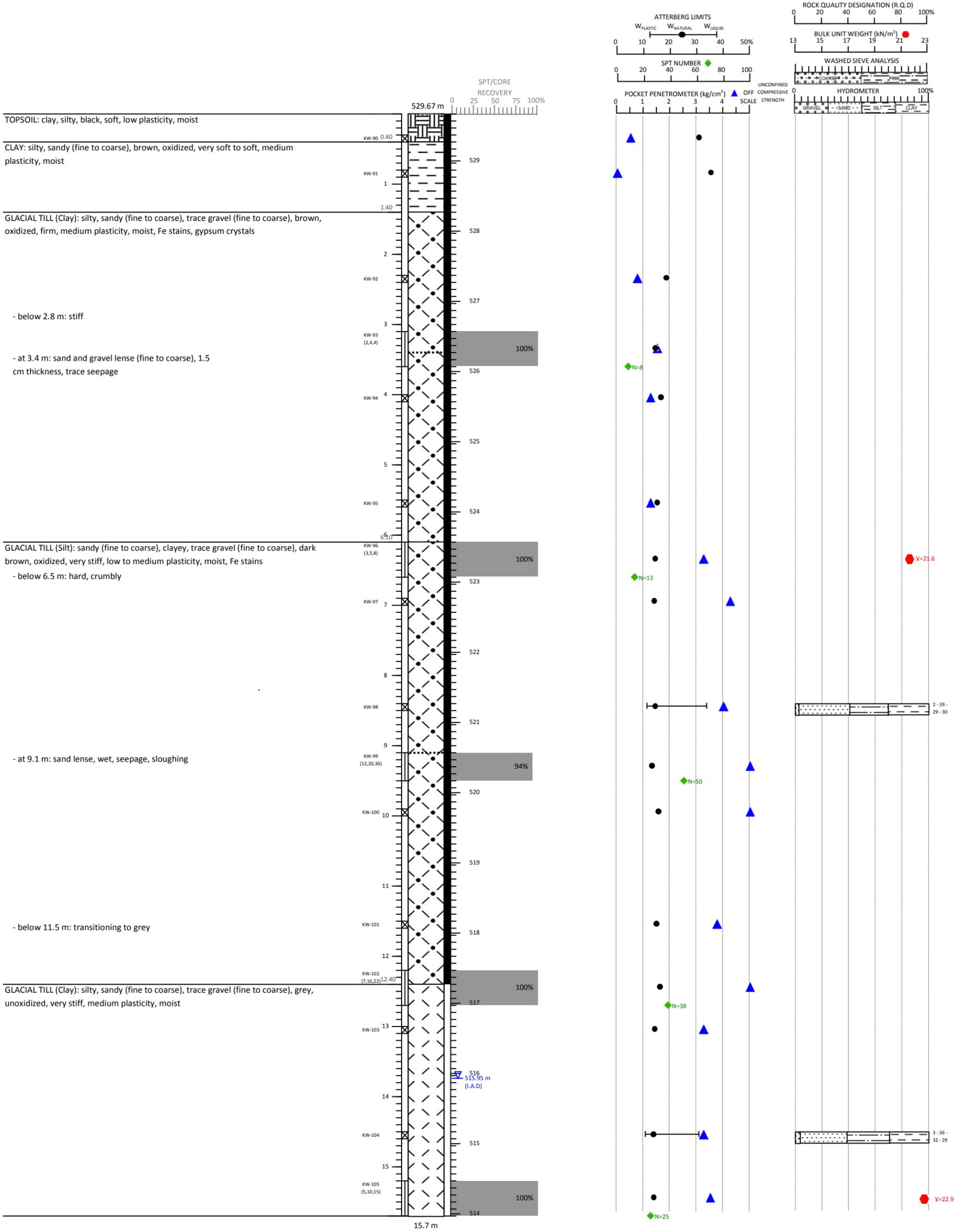
- FILTER PACK SEAL SPECIFICATIONS:**
- hydrated bentonite chips
- FILTER PACK SPECIFICATIONS:**
- 10-20 filter sand
- SCREEN SPECIFICATIONS:**
- 2 inch 10 slot slotted PVC
- CASING SPECIFICATIONS:**
- 2 inch solid PVC



All depths are expressed in meters above or below natural ground surface, unless otherwise indicated. All elevations are expressed in meters above sea level.

<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG
<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>DRAWN BY</b>	KATHERINE WRIGHT
<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>PROJECT No.</b>	624017
<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>DATE</b>	11-24-2014
<b>DATE INSTALLED</b>	NOV 20, 2014		

**BOREHOLE 624021-07**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5770377.93 N 398144.32 E



- NOTES:**
- Borehole open immediately after drilling (I.A.D.). Groundwater at 13.7 m I.A.D.
  - Borehole backfilled with bentonite chips.
  - Piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

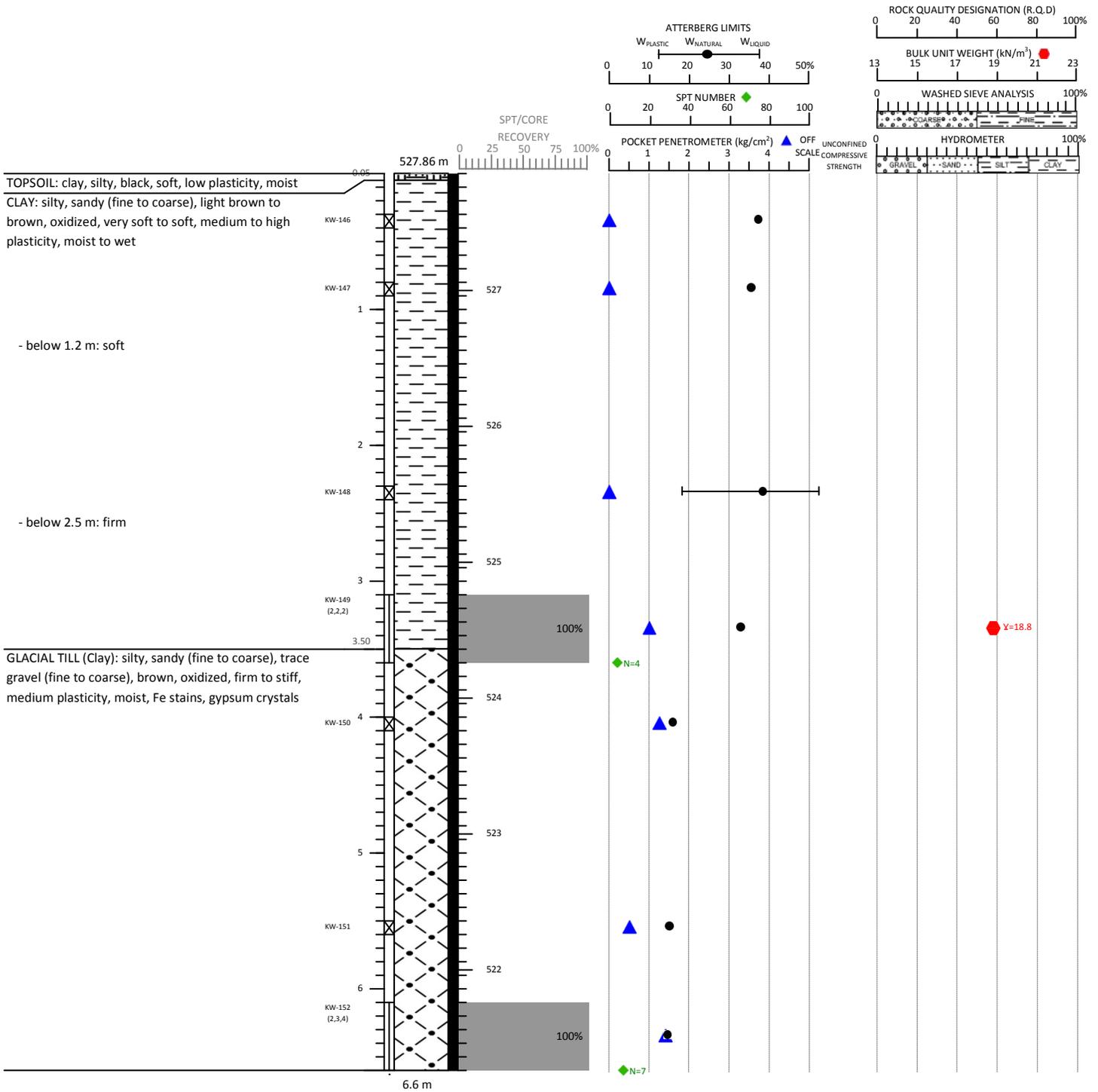
<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.	<b>CLIENT</b>	Associated	<b>PRODUCED BY</b>	SNC-LAVALIN
<b>LOGGED BY</b>	KATHERINE WRIGHT	<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR	<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG.	<b>DRAWN BY</b>	KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b>	N/A	<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG	<b>PROJECT No.</b>	624017	<b>PROJECT No.</b>	624017
<b>DATE DRILLED</b>	19-NOV-14	<b>ABANDONMENT</b>	BENTONITE CHIPS	<b>DATE</b>	4-DEC-14	<b>DATE</b>	4-DEC-14

# BOREHOLE 624021-08

Associated Engineering

## Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK 2014

5770181.01 N 397952.36 E



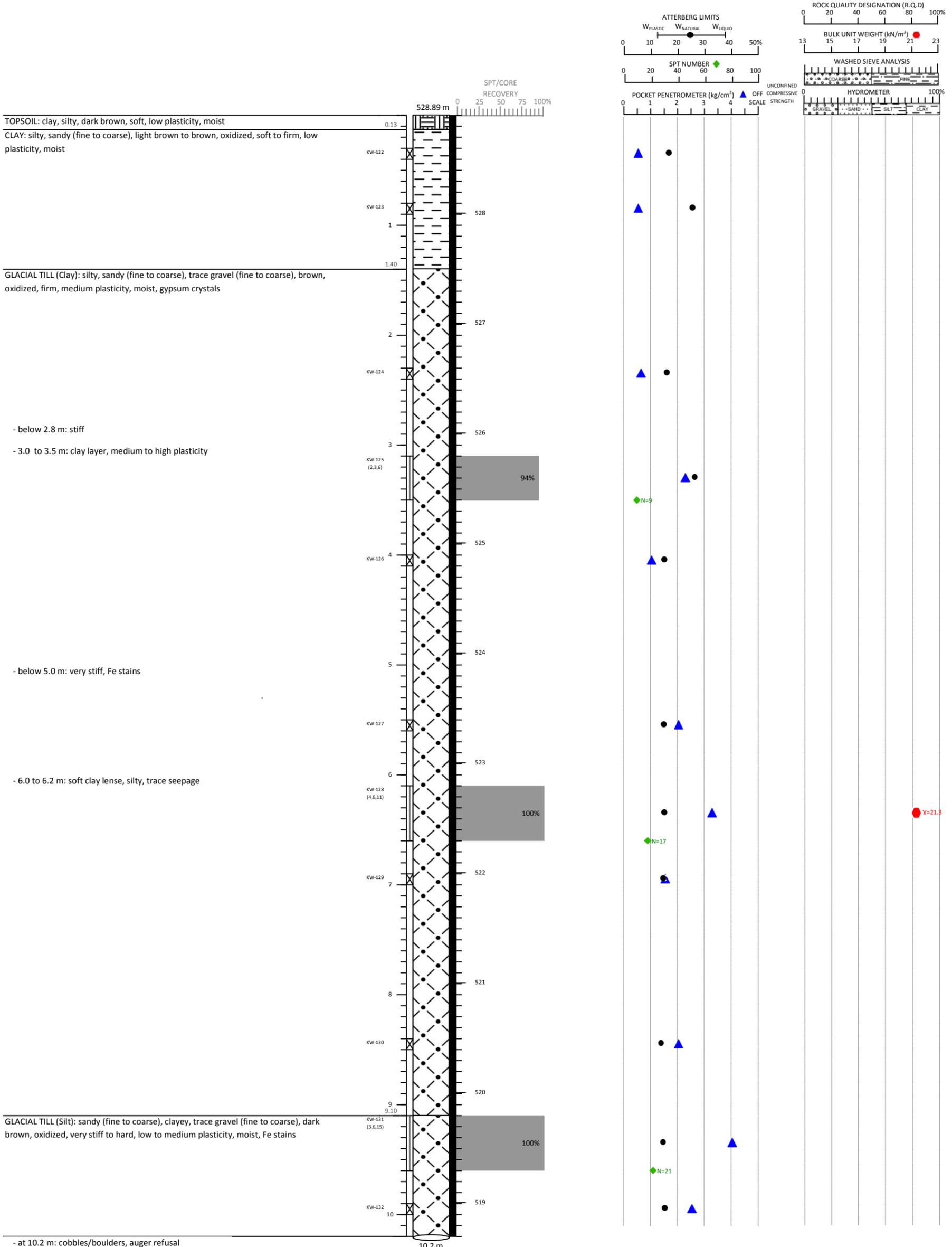
- NOTES:
1. Borehole dry and open immediately after drilling (I.A.D.).
  2. Borehole backfilled with bentonite chips.
  3. Piezometer drawing for backfill details.
  4. Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  5. (#,#,#) denotes SPT blows per 152 mm (6 in)
  6. Borehole coordinates and elevations provided by Associated Engineering.

**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

CLIENT		PRODUCED BY	
			
<b>SUPERVISOR</b>	KATHERINE WRIGHT	<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.
<b>LOGGED BY</b>	KATHERINE WRIGHT	<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR
<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG.	<b>DRAWN BY</b>	KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b>	N/A	<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG
<b>PROJECT No.</b>	624017	<b>DATE</b>	4-DEC-14
<b>DATE DRILLED</b>	20-NOV-14	<b>ABANDONMENT</b>	BENTONITE CHIPS

**BOREHOLE 624021-09**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5770024.5 N 397761.89 E



- NOTES:**
- Borehole open and dry immediately after drilling (I.A.D.).
  - Borehole backfilled with bentonite chips.
  - Piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#,#,#) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

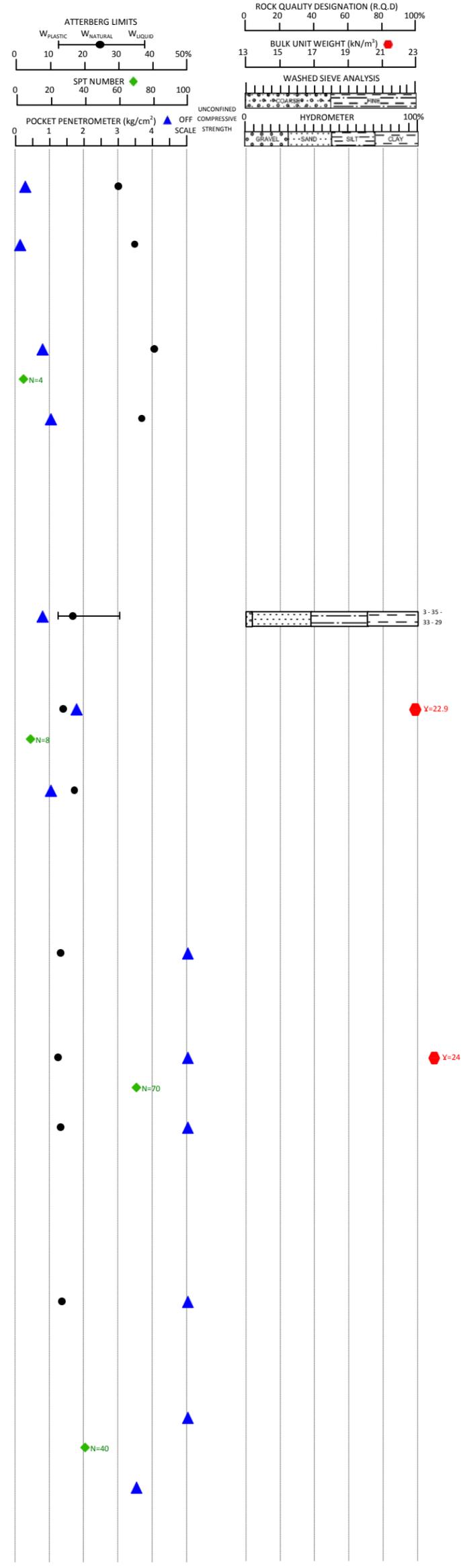
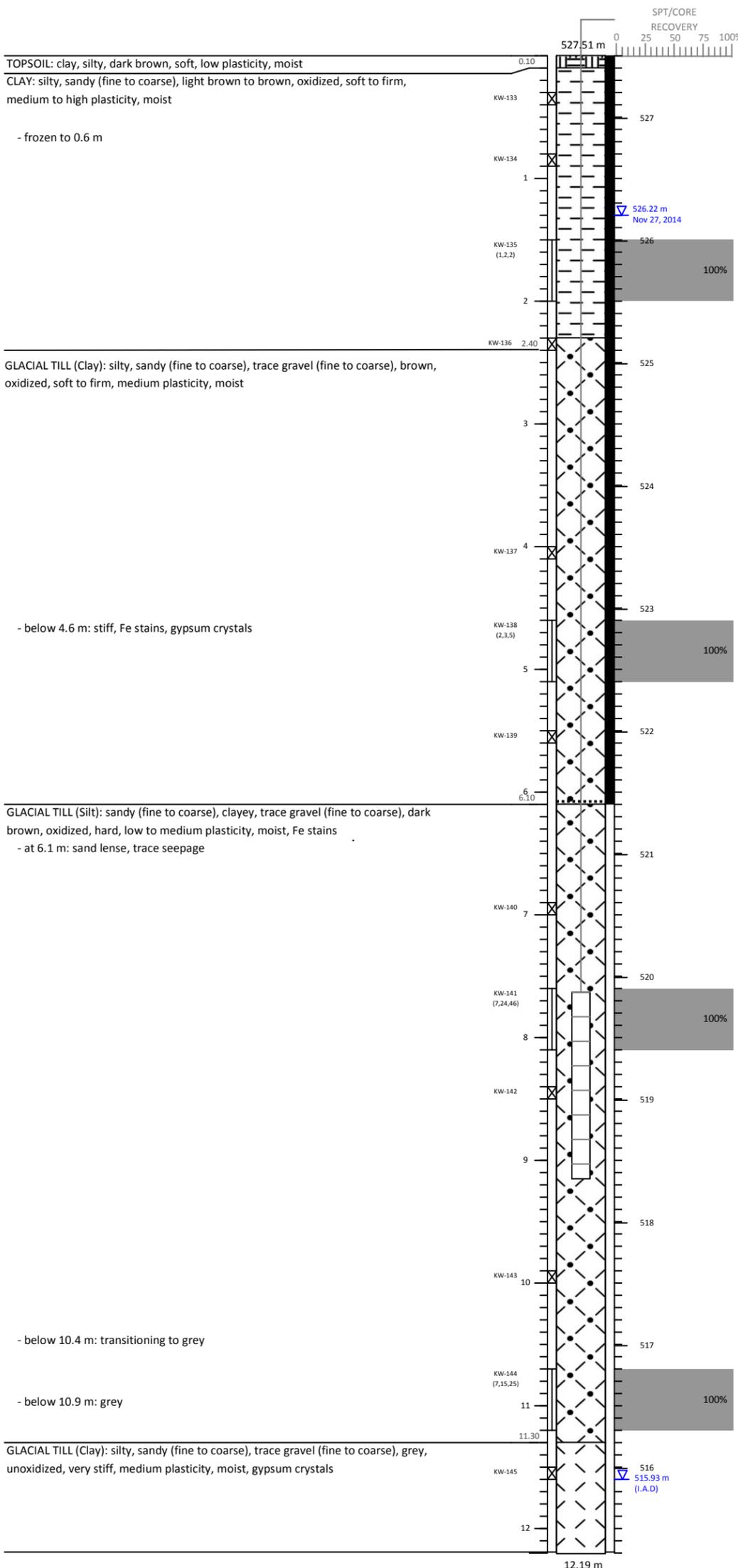
**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b> KATHERINE WRIGHT	<b>CONTRACTOR</b> PADDOCK DRILLING LTD.	<b>APPROVED BY</b> CORY ZUBROWSKI, P.ENG.
<b>LOGGED BY</b>	<b>OPERATOR</b> BRIAN WOLANIUK / BRANDIN TAYLOR	<b>DRAWN BY</b> KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b> N/A	<b>TYPE OF DRILL RIG</b> ACKER MP-5 TRACK RIG	<b>PROJECT No.</b> 624017
<b>DATE DRILLED</b> 20-NOV-14	<b>ABANDONMENT</b> BENTONITE CHIPS	<b>DATE</b> 4-DEC-14

<b>CLIENT</b>	<b>PRODUCED BY</b>

**BOREHOLE 624021-10**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump - E1/2-10-36-04-W3M, East of Saskatoon, SK**  
**2014**  
5770015.14 N 398152.34 E



- NOTES:**
- Borehole open immediately after drilling (I.A.D.). Groundwater at 11.6 m I.A.D.
  - See piezometer drawing for backfill details.
  - Standard Penetration Tests (SPT) conducted with 63.5 kg (140 lb) automatic trip hammer falling 762 mm (30 in).
  - (#, #, #) denotes SPT blows per 152 mm (6 in)
  - Borehole coordinates and elevations provided by Associated Engineering.

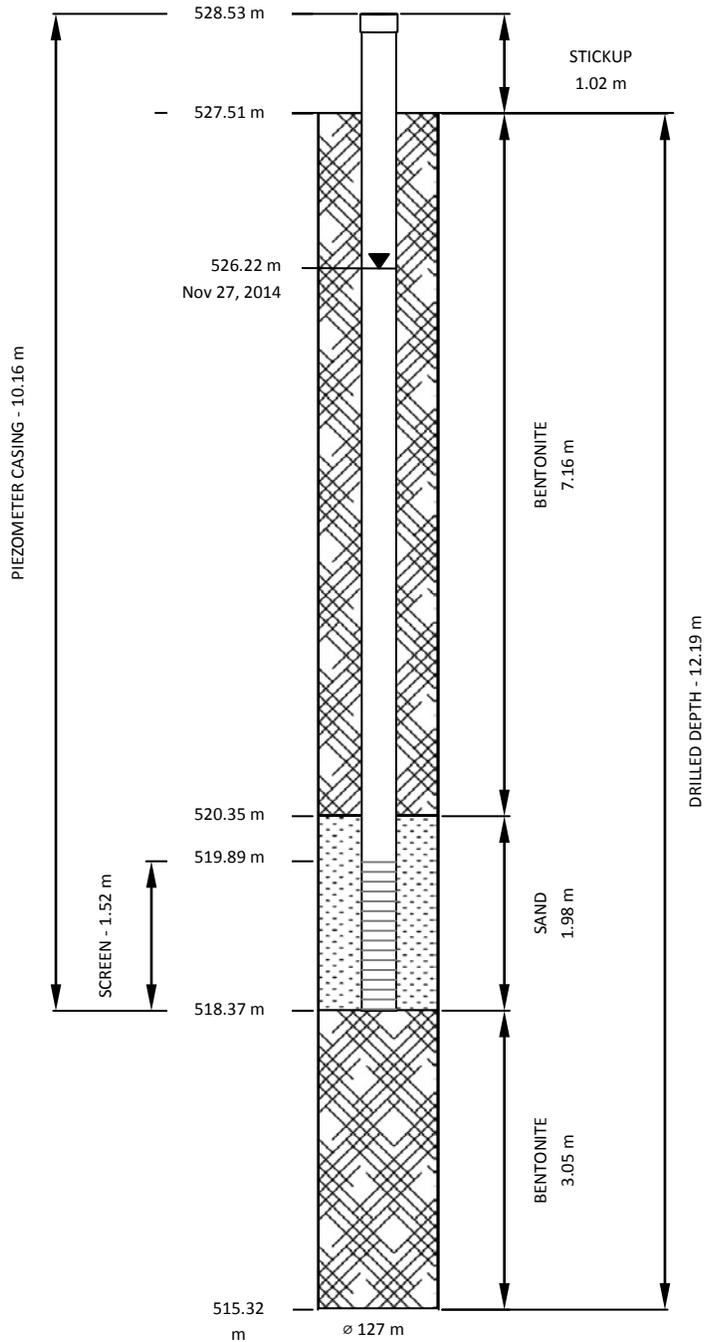
**LIMITATION**

This drill log is a summary of the conditions estimated by the field personnel at the specific location at the time of drilling. The conditions and properties described above will vary between locations and may vary with time.

<b>SUPERVISOR</b> KATHERINE WRIGHT	<b>CONTRACTOR</b> PADDOCK DRILLING LTD.	<b>CLIENT</b> 	<b>PRODUCED BY</b> 
<b>LOGGED BY</b> KATHERINE WRIGHT	<b>OPERATOR</b> BRIAN WOLANIUK / BRANDIN TAYLOR	<b>APPROVED BY</b> CORY ZUBROWSKI, P.ENG.	<b>DRAWN BY</b> KATHERINE WRIGHT, E.I.T.
<b>GEOLOGY BY</b> N/A	<b>TYPE OF DRILL RIG</b> ACKER MP-5 TRACK RIG	<b>PROJECT No.</b> 624017	<b>DATE</b> 4-DEC-14
<b>DATE DRILLED</b> 20-NOV-14	<b>ABANDONMENT</b> PIEZOMETER		

**BOREHOLE 624021-10**  
**Associated Engineering**  
**Proposed Saskatoon Snow Dump**  
**2014**

E1/2-10-36-04-W3M, East of Saskatoon, SK  
 5770015.14 N 398152.34 E  
 NAD 83 Zone 13



- FILTER PACK SEAL SPECIFICATIONS:**
- hydrated bentonite chips
- FILTER PACK SPECIFICATIONS:**
- 10-20 filter sand
- SCREEN SPECIFICATIONS:**
- 2 inch 10 slot slotted PVC
- CASING SPECIFICATIONS:**
- 2 inch solid PVC

All depths are expressed in meters above or below natural ground surface, unless otherwise indicated. All elevations are expressed in meters above sea level.

<b>SUPERVISOR</b>	KATHERINE WRIGHT
<b>CONTRACTOR</b>	PADDOCK DRILLING LTD.
<b>OPERATOR</b>	BRIAN WOLANIUK / BRANDIN TAYLOR
<b>TYPE OF DRILL RIG</b>	ACKER MP-5 TRACK RIG
<b>DATE INSTALLED</b>	NOV 20, 2014

	
	
<b>APPROVED BY</b>	CORY ZUBROWSKI, P.ENG
<b>DRAWN BY</b>	KATHERINE WRIGHT
<b>PROJECT No.</b>	624017
<b>DATE</b>	11-24-2014

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# APPENDIX C

Grain Size Distribution  
Test Results

---

Project: 21106  
 Location: E 1/2 10-36-4-W3M, Near Saskatoon, SK  
 Project No.: 21106  
 Date Tested: January 16, 2024  
 Borehole No.: 24-1  
 Sample No.: 4  
 Depth (m): 2.0

**Sieve Analysis:**

Sieve	Diameter mm	% Finer
1.5"	38.1	100
1"	25.4	100
3/4"	19.1	100
1/2"	12.5	100
3/8"	9.5	100
# 4	4.75	99
# 10	2	98
# 20	0.85	90
# 40	0.425	85.4
#60	0.25	79.0
# 100	0.15	71.2
# 200	0.075	60.9

**Hydrometer Analysis:**

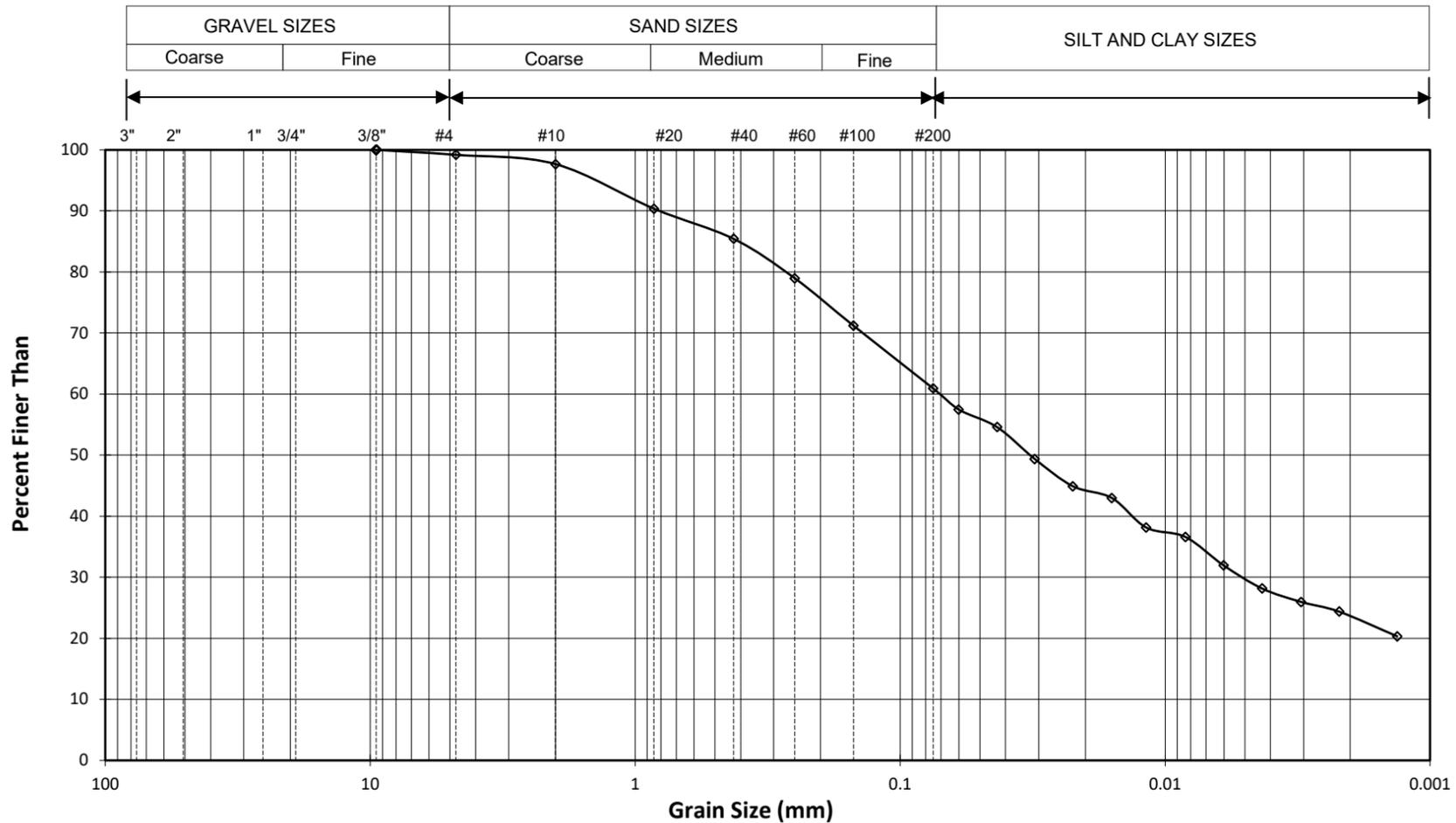
Diameter mm	% Finer
0.0602	57.5
0.0430	54.6
0.0310	49.4
0.0223	44.9
0.0159	43.0
0.0118	38.1
0.0084	36.6
0.0060	32.0
0.0043	28.2
0.0031	26.0
0.0022	24.4
0.0013	20.3

Dispersing Agent: Sodium Hexametaphosphate

**Material Description:**

% Gravel Sizes	% Sand Sizes	% Silt Sizes	% Clay Sizes
1	39	37	23

**Remarks:**



Drawing No.

**Appendix C-1**

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE  
 WITH AASHTO T 88 STANDARD  
 P. MACHIBRODA ENGINEERING LTD.  
 PER *Preston Scherwitz*



# APPENDIX E - TECHNICAL DRAINAGE MEMORANDUM



<b>Issue Date:</b>	October 30, 2024	<b>File No.:</b>	AERIS
<b>To:</b>	Water Security Agency	<b>Previous Issue Date:</b>	July 13, 2018
<b>From:</b>	Jason Forest, A.Sc.T.	<b>Project No.:</b>	2014-4469.030
<b>Client:</b>	Patience Lake Roadway Business Development		
<b>Project Name:</b>	Patience Lake Roadway Business Development		
<b>Subject:</b>	Application and Approval for Drainage Works		

## 1 INTRODUCTION

The Patience Lake Roadway Business Development (PLRBD) is preparing a concept plan to guide the development of a light industrial business park. The site, which encompasses the majority of the east half of Section 10, Township 36, Range 04, West of the third Meridian is located along Patience Lake Road and adjacent to Freeborn Road within the Rural Municipality of Corman Park (RM). Associated Engineering (Associated) has been retained by PLRBD to provide a conceptual drainage plan in support of the light industrial business park concept plan. The proposed development consists of 41 industrial lots ranging in size between 0.8 and 16.49 hectares.

## 2 LOCAL TOPOGRAPHY AND EXISTING LAND FEATURES

The development site consists primarily of cultivated cropland with an existing yard site present off Patience Lake Road. In addition to the cropland, some localized tree bluffs are present along with a significant slough. The area is characterized as gently undulating and drains well naturally to the south. The site receives surface runoff through an existing culvert along Patience Lake Road. This culvert allows runoff to follow the natural drainage course within the larger drainage catchment area. Refer to Figure No. 1 for the drainage catchment area and existing site conditions.

## 3 STORMWATER MANAGEMENT CONCEPT

Drainage is intended to be conveyed overland through the development via site grading, roadway ditches and within swales between lots to the existing slough and an existing borrow pit proposed to be converted to a stormwater pond. The proposed pond will be designed to accommodate both permanent and active storage volumes and will be hydraulically connected to the existing slough to control the water levels and mitigate flooding. Permanent storage within the pond will be sized to replace the natural depressional storage that is being filled-in, or graded, along with the changes in land use. Refer to Figure No. 2 for the proposed conceptual drainage plan.

\\lae.ca\data\working\sas\2014-4469-04\civil\analysis\app\_patience\_lake\_rbd\_wsa\_drainage\_final\_20241030\_jf.docx

Memo To: Water Security Agency, Patience Lake Roadway Business Development

October 30, 2024

Page 2

The Modified Rational Method was used in estimating stormwater predevelopment and post development flow/volumes. Parameters, assumptions, and data used in the calculations are summarized below:

- Intensity duration frequency data from Atmospheric Environment Service – Environment Canada using the Saskatoon U of S station, 4057200.
- 1:100-year return period 24-hour storm event.
- Runoff coefficients (C) were used in the calculations and where ranges of C values were given, professional judgment and experience was used in selecting an appropriate C value.
- A weighted runoff coefficient of 0.32 was used for estimating all predevelopment flows which is classified as farm/cultivated land with areas of ponding.
- Runoff coefficient for post development was estimated at 0.853 by calculating a weighted average on contributing areas. as shown in the following table:

*Table 3-1 Weighted Runoff Coefficient*

Land Description	Contributing Area (m <sup>2</sup> )	Coefficient (C)
Industrial	520,400	0.95
Ponds	86,400	1.00
Municipal Reserve/Environmental Reserve	49,200	0.30
Paved Roads	29,500	0.95
Ditches	70,900	0.30
<b>Weighted Post Development Coefficient</b>		<b>0.853</b>

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October 30, 2024

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### 3.1 Natural Depressions

Eleven (11) existing water bodies are to be filled-in or graded such that they no longer retain water. The existing slough will also be re-contoured, although the natural storage volume will be retained. The total natural depressional volume of storage impacted by the proposed development is estimated at 15,500 m<sup>3</sup>. Below is a summary of the natural depressions and associated volumes.

*Table 3-2 Existing Natural Depressions*

Depression	Volume (m <sup>3</sup> )	Depression	Volume (m <sup>3</sup> )
D1	1,500	D7	700
D2	5,500	D8	600
D3	1,600	D9	600
D4	2,000	D10	400
D5	1,000	D11	300
D6	1,300	<b>TOTAL</b>	<b>15,500</b>

The proposed pond will be designed to retain the post-development less pre-development volume in runoff resulting from the development during a 1:100 year 24-hour storm event. The difference between the average pre-development and average post-development flows is estimated to require a permanent storage volume of 57,000 m<sup>3</sup> due to the change in land use. The resulting total estimated permanent storage required is 72,500 m<sup>3</sup> (15,500 m<sup>3</sup> + 57,000 m<sup>3</sup>).

Active storage within the pond is required to temporarily store runoff during a storm event and slowly release this volume over time. The runoff will be released at a controlled rate equal to the estimated average pre-development conditions. The pre-development 1:100-year flow rate was estimated at 0.301 m<sup>3</sup>/s resulting in an active storage requirement of 68,000 m<sup>3</sup>. An outlet structure will be designed to restrict release rate from the stormwater pond to 0.301 m<sup>3</sup>/s. The proposed stormwater pond would discharge into a ditch system spilling at the current outlet for the existing drainage through the site. Below is a summary of the storage requirements for Pond 1.

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Table 3-3 Volume Summary

Development Catchment	Volume (m <sup>3</sup> )
Natural Depressions	15,500
Change in Land Use	57,000
Required Active Storage	68,000
<b>Total Storage Required – Pond 1</b>	<b>140,500</b>

To create a stormwater pond capable of storing 72,500 m<sup>3</sup> (15,500 m<sup>3</sup> + 57,000 m<sup>3</sup>) of water permanently, with an average depth of 1.5 meters, at least 48,300 m<sup>2</sup> of land is required. The proposed plan designates a 79,000 m<sup>2</sup> area, exceeding the minimum needed for permanent stormwater storage (natural depressions plus change in land use). The anticipated depth of active storage is estimated at 1.4 meters. The designated site for the pond includes a pre-existing borrow pit with a capacity of 400,000 m<sup>3</sup>, which will be repurposed to serve as the stormwater pond.

#### 4 CLOSURE

This technical memorandum was prepared for the Water Security Agency to outline the intended drainage plan for Patience Lake Roadway Business Development and to aid in the Application and Approval for Drainage Works.

The services provided by Associated Engineering (Sask.) Ltd. in the preparation of this memorandum were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Prepared by:



Jason Forest, A.Sc.T.

Reviewed by:

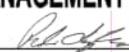


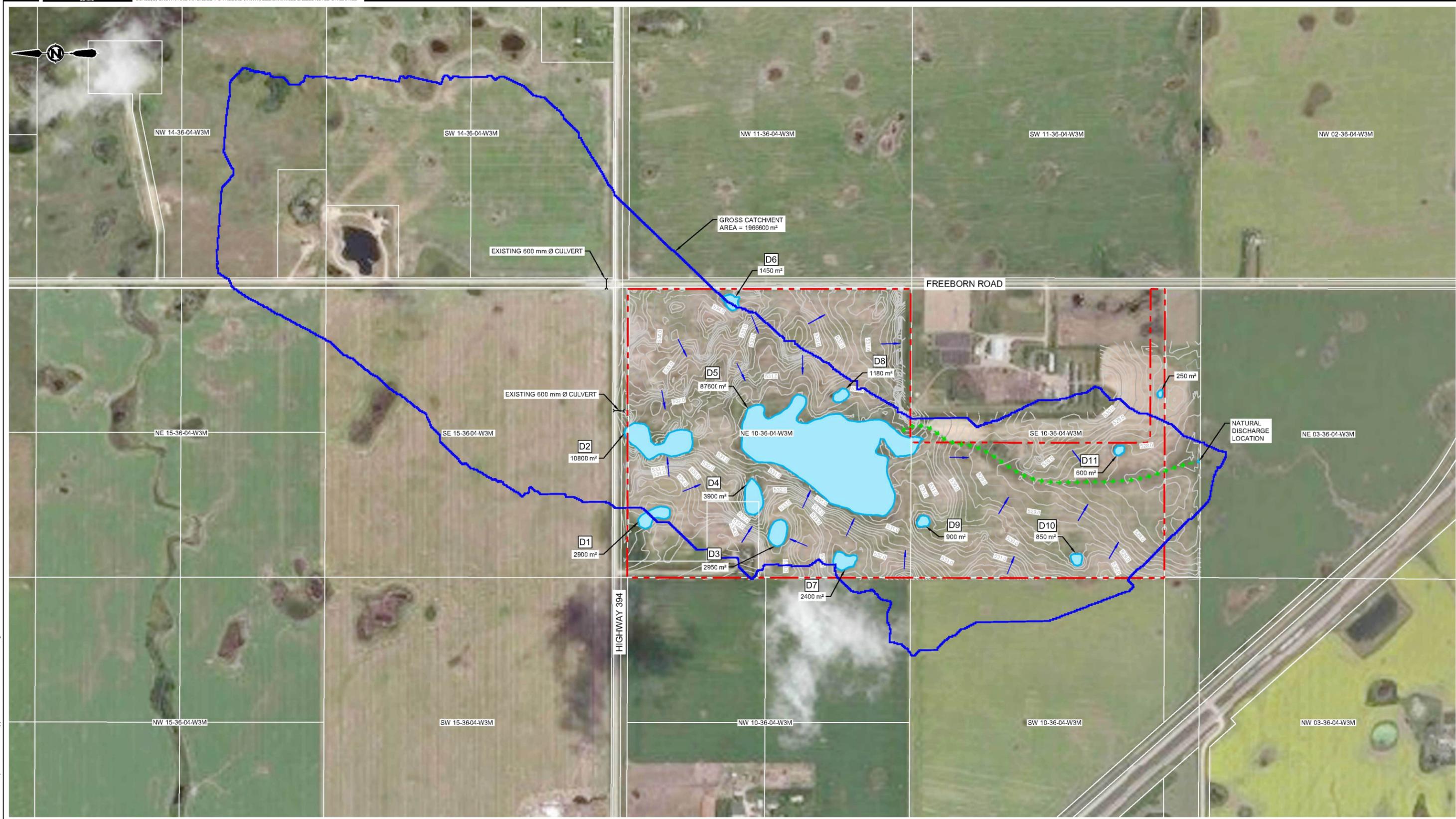
Alicia Masserey, P.Eng.



jf

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF SASKATCHEWAN CERTIFICATE OF AUTHORIZATION ASSOCIATED ENGINEERING (SASK.) LTD. NUMBER C116 Permission to Consult Held By:		
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ASSOCIATED ENGINEERING QUALITY MANAGEMENT SIGN-OFF	
Signature:	
Date:	_____



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AE PROJECT No.	20144469-03
SCALE	1:10000
APPROVED	B. DELAINEY
DATE	2024MAY27
REV	1
DESCRIPTION	ISSUED FOR MEMO

FIGURE No. 1
PATIENCE LAKE ROADWAY BUSINESS DEVELOPMENT
CIVIL EXISTING CONDITIONS



PLOT DATE: 6/6/2024 9:23:48 AM  
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**LEGEND**  
 → DRAINAGE FLOW  
 ---> CULVERT  
 - - - - OVERLAND FLOW

**AE PROJECT No.** 20144469-03  
**SCALE** 1:2000  
**APPROVED** J. FOREST  
**DATE** 2023JUN28  
**REV** 1  
**DESCRIPTION** ISSUED FOR APPROVAL

**FIGURE 9-2 STORMWATER**  
 PATIENCE LAKE ROADWAY BUSINESS DEVELOPMENT  
 CIVIL PLAN  
 CONCEPTUAL GRADING



# APPENDIX F – TRAFFIC IMPACT ASSESSMENT

Memo To: Nathan Morhart, P.Eng., Ron Olson, Patience Lake Roadway Business Development

November 27, 2024

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<b>Issue Date:</b>	November 27, 2024	<b>File No.:</b>	AERIS
<b>To:</b>	Nathan Morhart, P.Eng.	<b>Previous Issue Date:</b>	June 26, 2024
<b>From:</b>	Bill Delaine, RPP	<b>Project No.:</b>	2014-4469-04
<b>Client:</b>	Ron Olson, Patience Lake Roadway Business Development		
<b>Project Name:</b>	Patience Lake Comprehensive Development Review		
<b>Subject:</b>	Traffic Memorandum		

## 1 INTRODUCTION

The Patience Lake Roadway Business Development Ltd. (the Owner) retained Associated Engineering (Associated) to prepare a traffic memorandum to accompany the Comprehensive Development Review (CDR) for their proposed development. The proposed development is located within the Rural Municipality of Corman Park and is bound by Highway 394 to the north and Range Road 3042 to the east. The location of the proposed development is shown in Figure 1-1.

**Figure 1-1 Site Location**





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## 1.1 Scope of Work and Methodology

In July 2023, Associated contacted the Saskatchewan Ministry of Highways and Infrastructure (MoH) to discuss the proposed development of the study site. The MoH requested a high-level analysis of development traffic volumes including trip generation, type of traffic, and trip distribution and assignment. An earlier draft of this memorandum was provided and, since that time, the proposed Concept Plan and the analysis has been updated.

This memorandum analyses the trip generation and the MoH intersection warrants at full build-out of the proposed development with the updated Concept Plan and corresponding analysis. It recommends what improvements will be required to safely accommodate the additional traffic demand at Highway 394 adjacent to the site.

## 1.2 Existing Road Network

Highway 394 is a two-lane paved, rural highway which runs in the east-west direction and has a posted speed limit of 90 km/h. It is classified as an access management Level R-4 which allows Type I accesses at a desirable spacing of 400 m and a minimum spacing of 300 m.

A mid-block intersection with a temporary eastbound right turn lane has been constructed on Highway 394 at the site access 375 m from Range Road 3042. This intersection will be referred to as the mid-block intersection throughout the report.

## 1.3 Proposed Concept Plan

The proposed Concept Plan is illustrated in Figure 1-2. The Owner is planning to develop a 63.93 ha (157.97 ac) plot of land for light industrial purposes, east of the City of Saskatoon (the City). One access to the proposed development is at the Highway 394 mid-block intersection and two accesses are on Range Road 3042. Several lots also have direct access onto Range Road 3042.

## 1.4 Future Highway Plans

The MoH is planning for the future Saskatoon Freeway to be located immediately west of the study site, as illustrated in Figure 1-3. When the Saskatoon Freeway is opened, the Highway 394 mid-block intersection will be permanently closed and the accesses along Range Road 3042 will become the primary accesses.

The construction of the Saskatoon Freeway will also result in a reconfigured road layout to the west and into the City of Saskatoon. Currently Highway 394 intersects with Zimmerman Road at a stop controlled intersection located approximately 150 m north of Highway 16. The Saskatoon Freeway Functional Plan and the Saskatoon Transportation Master Plan both indicate Highway 394 will be redirected to an existing signalized intersection at Zimmerman Road via the extension of Market Drive near the Costco that is shown on Figure 1-2. This reconfiguration will allow the closure of the existing intersection. The timing for the realignment of Highway 394 is expected to be triggered by development within Saskatoon and the surrounding region. In the interim, traffic generated by this development will continue to utilize the current intersection at Zimmerman Road. Since the road network plans for the area serving a much larger volume of



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**LEGEND**

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<span style="display: inline-block; width: 15px; height: 10px; background-color: lightblue; border: 1px solid black;"></span>	POND

<b>AE PROJECT No.</b>	20144469-03
<b>SCALE</b>	1:2000
<b>APPROVED</b>	B. DELAINEY
<b>DATE</b>	2024OCT11
<b>REV</b>	0
<b>DESCRIPTION</b>	ISSUED FOR CLIENT

**FIGURE 6-1 LAND USE CONCEPT**

PATIENCE LAKE ROADWAY  
 BUSINESS DEVELOPMENT

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CIVIL  
 PLAN  
 PHASING PLAN

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traffic than is generated by Patience Lake Road and Zimmerman Road is four kilometres from the site, the Zimmerman Road intersections were not included in the scope of work for this traffic memorandum.

Figure 1-3 Future Saskatoon Freeway<sup>1</sup>



<sup>1</sup> Background Image Source: <https://saskatoonfreeway.org/phase-2/>

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## 2 TRAFFIC FORECAST

The purpose of the traffic forecast is to apply the MoH intersection treatment warrants for development-related traffic. This forecast focuses on the traffic movements needed to complete the warrant analysis.

### 2.1 Background Traffic

The MoH Traffic Services Branch provided 2022 traffic data indicating that Highway 394 has 1,643 vehicles per day and 140 trucks per day, with a 15-year growth factor of 1.3. The growth factor has been applied to the 2022 volumes which accounts for full build-out by 2027 plus ten years from full build out. Trucks have been converted to Passenger Car Equivalent using the MoH truck factor of 1.7 (SKS 9.3-C.5). This equates to 1,741 vehicles per day in 2022 and 2,263 for the forecast horizon.

The RM of Corman Park 2020 Traffic Count Program map shows that Range Road 3042 has 70 vehicles per day. The MoH has indicated the traffic volume on the range road has been declining, therefore a growth factor of 1.0 (i.e. no growth) has been applied.

### 2.2 Trip Generation

The projected number of jobs were estimated based on the North Concept Plan (Saskatoon North Partnership for Growth) trip generation rate of 13 jobs per hectare. This results in 831 jobs at full build out of the development.

The Institute of Transportation Engineers' Trip Generation Manual (ITE TGM), 11<sup>th</sup> Edition, Land Use Code 130 (Industrial Park) was used to estimate trip generation for the proposed development. Number of employees was used as the independent variable (represented by X in Table 2-1). ITE describes an "Industrial Park" as containing several individual industrial or related facilities characterized by a mix of manufacturing, service, and warehouse facilities. Some of the Industrial Parks in ITE's studies have a large number of small businesses, which is expected at the proposed development.

Employees are expected to have traditional working hours with the AM peak occurring between 7:00 and 9:00 AM, and the PM peak occurring between 4:00 and 6:00 PM. Table 2-1 summarizes the trip generation rates in the AM and PM peak hours.

**Table 2-1 Development Trip Generation**

Period	No. of Employees	Fitted Curve Equation	% In	% Out	Trips In	Trips Out	Total Trips
AM Peak	831	$\text{Ln}(T) = 0.82 \text{Ln}(X) + 0.39$	86%	14%	315	51	<b>366</b>
PM Peak	831	$\text{Ln}(T) = 0.74 \text{Ln}(X) + 0.93$	20%	80%	73	293	<b>366</b>

The proposed development is expected to generate 366 trips in the AM peak and PM peak.

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### 2.3 Trip Distribution and Assignment

The following sections discuss the trip distribution and assignment with the existing road network and with the road network after the Saskatoon Freeway is open. It is assumed that development-generated traffic will primarily travel to and from Saskatoon via Highway 394, while a small number may travel south to and from the broader region, as presented in Table 2-2.

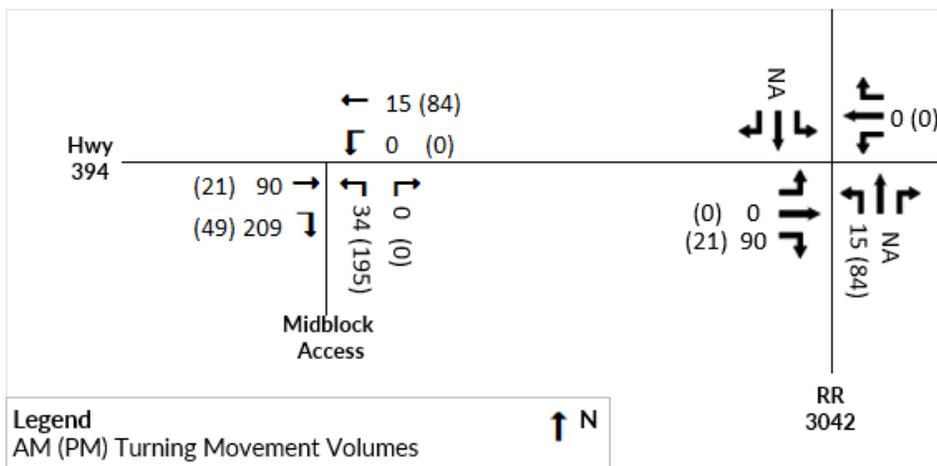
Table 2-2 Trip Distribution to/from the Study Area

Route	% Trips	AM Peak		PM Peak	
		Trips In	Trips Out	Trips In	Trips Out
West on Highway 394	95%	299	49	69	278
South on Range Road 3042	5%	15	3	4	15
<b>Total</b>	<b>100%</b>	<b>314</b>	<b>52</b>	<b>73</b>	<b>293</b>

#### 2.3.1 Trip Assignment - Existing Road Network

The majority of the traffic that is internal to the site will access Highway 394 via the mid-block access. The lots fronting onto Range Road 3042 and a small amount of the internal traffic will access Highway 394 via Range Road 3042. We have assumed that 70% of trips to and from Saskatoon will use the mid-block intersection along Highway 394 and the remaining 30% access via Range Road 3042. All trips to and from the south are expected to use the access along Range Road 3042. The estimated future total site generated turning movement volumes are illustrated in Figure 2-1.

Figure 2-1 Site Generated Turning Movement Volumes, Existing Road Network

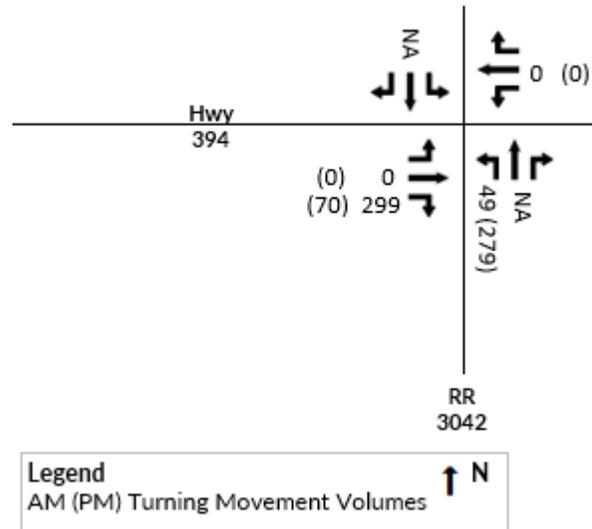


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**2.3.2 Trip Assignment - With Saskatoon Freeway**

After the Saskatoon Freeway is open, it is assumed the majority of new traffic will travel to and from Saskatoon via Highway 394 and the accesses on Range Road 3042. We assume 80% of trips to and from Saskatoon will use the north site access and the remaining 20% will use the south site access. All trips to and from the south are expected to use the south site access. The estimated site-generated turning movement volumes at Highway 394 and Range Road 3042 are illustrated in Figure 2-2.

**Figure 2-2 Site Generated Turning Movement Volumes, With Saskatoon Freeway**

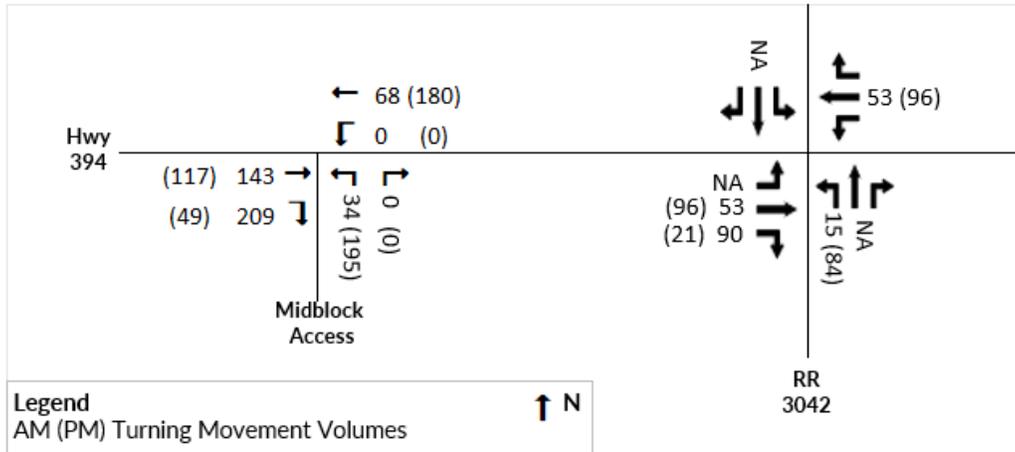


**2.4 Total Traffic**

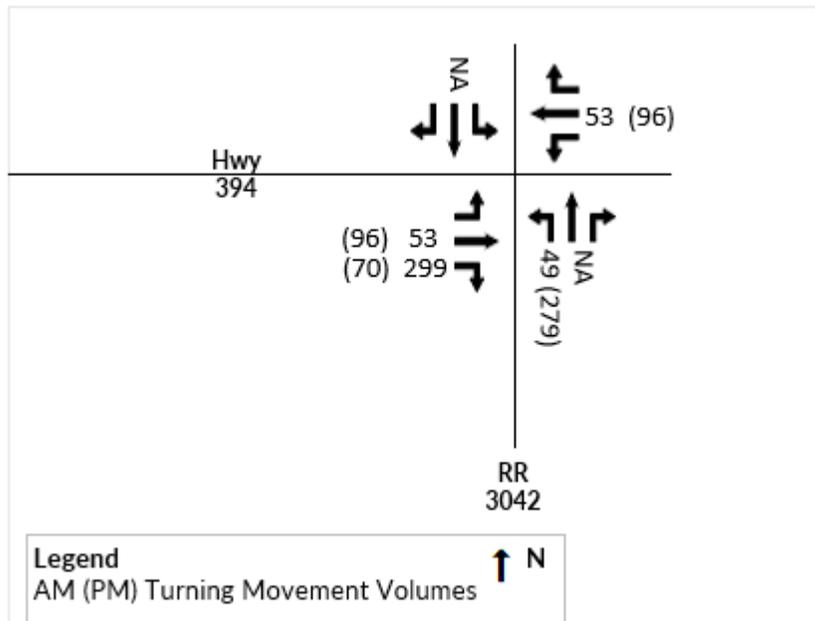
The forecasted traffic volumes used to complete the intersection treatment warrants are illustrated in Figure 2-3 and Figure 2-4. Exact turning movement volumes were not available from the RM of Corman Park and have been displayed as “Not Available” since they do not affect the warrant analysis for the intersection treatments. The forecast daily volume with the proposed developed will be approximately 6,700 vehicles per day by the 2037 horizon year on Highway 394 west of the mid-block access.

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**Figure 2-3 Full Build-Out Turning Movement Volumes, Existing Road Network**



**Figure 2-4 Full Build-Out Turning Movement Volumes, With Saskatoon Freeway**



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### **3 INTERSECTION TREATMENT WARRANTS**

#### **3.1 Forecast Volumes with Existing Road Network**

Highway 394 currently has a temporary eastbound right-turn lane at the mid-block intersection, but no intersection treatment at Range Road 3042. The right lane at the mid-block intersection is warranted and recommended to be reconstructed to MoH standard. No other treatment is warranted at the mid-block intersection.

Highway 394 at Range Road 3042 also warrants an eastbound right-turn lane with the additional traffic. Since this is a full turns intersection, the MoH standard is to construct a downstream taper (SKS 9.14-A.2) like a flared intersection. A right turn lane with a downstream taper would be appropriate at this intersection.

#### **3.2 Forecast Volumes with Saskatoon Freeway**

When the Saskatoon Freeway is open, the existing mid-block intersection along Highway 394 will be permanently closed and site generated trips will be redirected to Range Road 3042. No additional intersection treatments are warranted for this scenario.

### **4 ACCESS MANAGEMENT**

As noted in Section 1.2, Highway 394 is classified as Access Management Level R-4. There is a spacing of 375 m between Range Road 3042 and the existing mid-block intersection along Highway 394 to the west. This meets the minimum required spacing for Access Management Level R-4.

Eastbound right turn lanes are warranted on Highway 394 at both Range Road 3042 and the mid-block intersection. Highway 394 has a posted speed of 90 km/h and a corresponding design speed of 110 km/h. According to Standard Plan 20618, the required length for a right-turn deceleration lane on Highway 394 is 180 m, which includes an 80 m taper. There is sufficient spacing between the intersections to accommodate right-turn lanes at both intersections, so there should not be any geometric issues with including successive right turn lanes along Highway 394. Furthermore, the bulk of the traffic exiting the mid-block intersection will be turning left onto Highway 394 heading towards Saskatoon. This will tend to minimize the potential conflict between traffic turning right out of the intersection and accelerating to highway speeds and vehicles slowing to use the right-turn lane to turn onto Range Road 3042. Therefore, the successive right turn lanes should operate well with the spacing that is available.

The first driveway south of Highway 394 is 105 m. This was established in accordance with RM of Corman Park Approach Construction Standard which states that the minimum distance is 100 m from the intersection of any municipal road and/or highway.

### **5 CONCLUSION AND RECOMMENDATION**

The Patience Lake Roadway Business Development Ltd. is planning a light industrial development east of the City of Saskatoon. The proposed development is expected to generate 366 trips in the AM peak and PM peak.





# APPENDIX G - POLICY AND REGULATORY COMPLIANCE TABLE

**Table 1: DOCP Policy Summary**

P4G Policy Reference	Plan Influence
<p><b>6.3.4 Habitat Conservation</b>                      The conservation, enhancement, and restoration of habitats for wild species at risk under <i>The Wildlife Act, 1998</i> will be encouraged through development reviews, conservation initiatives, and cooperation with landowners.</p>	<ul style="list-style-type: none"> <li>• An online biophysical screening identified several sensitive animals that could be potentially present on the site. Although the cultivation of the property reduces the likelihood that the noted species are present, the RM may require a field survey in the future to provide physical verification.</li> </ul>
<p><b>6.3.6 Integration of Natural Features</b>                      Development should integrate and complement natural features and landscapes including the incorporation of natural vegetation and conserved wetlands.</p>	<ul style="list-style-type: none"> <li>• The site is predominantly cultivated farmland with limited vegetation.</li> <li>• The central wetland is planned to be retained and enhanced to serve a stormwater management function in conjunction with the constructed stormwater management facility. The two ponds will be designed to be hydrologically connected so they will act as a single system, enabling run-off to be discharged from the site along its natural route to the south.</li> <li>• The limited vegetation on the property is likely to be removed in conjunction with site development and landscaping.</li> </ul>
<p><b>8.3.1 Source Water Protection</b>                      Development shall not restrict the use of groundwater or surface water or alter the flow of surface water in a way that detrimentally affects other property or the ecology of the drainage system.</p>	<ul style="list-style-type: none"> <li>• Development within the plan area is anticipated to be connected to a low-pressure rural treated waterline and will not rely on groundwater for domestic water use.</li> <li>• The stormwater management plan for the sites respects and maintains the natural route for drainage.</li> <li>• The primary stormwater management facility will be designed to discharge at predevelopment rates.</li> </ul>
<p><b>8.3.2 Runoff from Site Development</b>                      Untreated stormwater runoff from a multi-parcel development should be directed to a retention pond or similar feature to reduce sediment and</p>	<ul style="list-style-type: none"> <li>• The combination of the central wetland and constructed stormwater management pond will exceed the total volume of storage required to manage the permanent</li> </ul>

P4G Policy Reference	Plan Influence
<p>pollutants inputs into surface water and wetlands.</p>	<p>and active storage requirements associated with development.</p> <ul style="list-style-type: none"> <li>The combination of the two ponds will allow sufficient time for sediments and pollutants to settle out before run-off is discharged from the site.</li> </ul>
<p><b>10.3.1 Land Use Compatibility</b> Development shall be compatible with surrounding uses.</p>	<ul style="list-style-type: none"> <li>Development immediately adjacent to the subject properties includes a horse stable along the southeastern boundary of the property and an acreage in the northwest corner of NE 10-36-04-W3M. Both developed properties are enclosed in well-established shelterbelts providing a visual and physical separation from planned industrial areas in the plan area.</li> <li>Consideration should be made in the plan to provide as much separation as possible between the potentially incompatible uses and to require additional landscaping on abutting industrial properties that share a common boundary with developed properties.</li> <li>The remaining properties in the vicinity are undeveloped farmland and not considered incompatible with industrial development.</li> </ul>
<p><b>10.3.2 District Land Uses</b> The general land use designations for the District are identified on Schedule B – District Land Use Map. These land uses are intended to guide refinement through more detailed planning.</p>	<ul style="list-style-type: none"> <li>The DOCP designates the subject properties for Agricultural use. It is expected that the RM of Corman Park will require the submission of a Comprehensive Development Review to support the redesignation of the property to a rural industrial use and to support subsequent rezoning and subdivision applications.</li> <li>It is our understanding that the RM will use the CDR as a basis for negotiating an amendment of the DOCP with its regional partners.</li> </ul>
<p><b>14.3.3 Location Criteria</b></p>	<ul style="list-style-type: none"> <li>A conceptual stormwater and grading plan has been prepared to provide for the</li> </ul>

P4G Policy Reference	Plan Influence
<p>Rural Industrial developments must be located where:</p> <ul style="list-style-type: none"> <li>a) The carrying capacity of the lands proposed for development and the surrounding area based on site conditions, environmental considerations, potential impacts, and other factors that may warrant consideration in the design of the proposal are addressed;</li> <li>b) Impacts on regional drainage patterns and other regional ecological systems are minimized;</li> <li>c) The suitability and availability of municipal and other services and infrastructure necessary to support the proposal are considered;</li> <li>d) The design is compatible with that of the surrounding area;</li> <li>e) Existing roads and infrastructure are sufficient to support the development while impacts to existing roadways and additional costs of maintenance are minimized;</li> <li>f) Nodal development is planned where key intersections of provincial highways, municipal roadways, and the Saskatoon Freeway can support access;</li> <li>g) Lands are not prone to natural hazards;</li> <li>h) Lands do not have unique historical or archaeological features;</li> <li>i) Lands do not have significant wildlife habitat;</li> <li>j) Lands do not have high-quality recreational resources;</li> <li>k) Surface and groundwater resources will not be impacted; and</li> <li>l) Any other costs to Corman Park associated with the development are minimized.</li> </ul>	<p>collection and temporary detention of stormwater generated as a result of development. This drainage plan considers and will not inhibit the conveyance of run-off from uplands through the property and retains the natural drainage routes.</p> <ul style="list-style-type: none"> <li>• The subject property has been traditionally cultivated and does not exhibit any significant environmental sensitivity. The central wetland is planned to be retained and incorporated into the plan for development, providing for the retention of any habitat it may provide.</li> <li>• The site is expected to connect to an existing treated rural water line that has sufficient capacity to meet the water demands. The site fronts on Highway 394 which is part of the provincial highway network and along Freeborn Road which is an all-weather municipal road constructed within a 30-m right-of-way. There are existing electrical, natural gas and telecommunication facilities in the immediate area.</li> <li>• Existing development on immediately adjacent lands is fully enclosed by shelterbelt plantings. The plan will need to provide for additional buffering on any industrial lands sharing a common boundary with developed non-industrial sites including limiting outdoor activities, and site landscaping.</li> <li>• The plan accounts for the planned construction of the Saskatoon Freeway.</li> <li>• There is no evidence of any natural hazards within the subject properties which would impact development.</li> <li>• An online heritage resource screening was completed for the site confirming that there is no unique historical or</li> </ul>

P4G Policy Reference	Plan Influence
	<p>archeological features that would need to be considered.</p> <ul style="list-style-type: none"> <li>The site does not exhibit any favourable characteristics for recreation development. According to the Canada Land Inventory Land Capacity for Recreation, the subject property is classified as Class 6 which is considered to have a low capacity for outdoor recreation.</li> <li>A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations. Connection to a treated rural waterline eliminates any need to access groundwater.</li> </ul>
<p><b>14.3.4 Industrial Parks</b> Industrial uses shall be restricted to industrial parks unless it can be clearly demonstrated that an industrial use has specific location requirements that limit its location to a specific alternate site.</p>	<ul style="list-style-type: none"> <li>An amendment to the DOCP Future Land Use Map will be required to redesignate the subject properties from Agriculture to Rural Industrial to support subsequent rezoning, subdivision, and development applications.</li> </ul>
<p><b>14.3.5 Industrial Development Adjacent to Urban Areas</b> Industrial development may not be located adjacent to the boundary of an urban municipality unless the proposal:</p> <ol style="list-style-type: none"> <li>Is compatible with current and planned urban land uses within the adjacent urban municipality;</li> <li>Will not place pressure on the adjacent urban municipality to develop, expand or upgrade services and infrastructure without an agreement for servicing and infrastructure costs between the urban municipality and Corman Park; and</li> <li>Is referred to the adjacent urban municipality for review.</li> </ol>	<ul style="list-style-type: none"> <li>The subject property is not adjacent to the City of Saskatoon boundary.</li> </ul>
<p><b>14.3.6 Buffered Uses in Industrial Parks</b> Industrial parks with a high potential for land use conflicts must include buffering from non-industrial uses of land, including locating uses</p>	<ul style="list-style-type: none"> <li>Potentially conflicting developments in the immediate vicinity are fully enclosed by mature shelterbelts.</li> </ul>

P4G Policy Reference	Plan Influence
<p>with fewer impacts near roadways, and other criteria as set out in this Plan and the District Zoning Bylaw.</p>	<ul style="list-style-type: none"> <li>• The subdivision concept will consider establishing additional buffers within industrial properties sharing a common boundary with a potentially impacted developed property to further mitigate offsite impacts which may include zoning, limiting outdoor activities, construction of an earthen berm, developers fence, or using landscaping.</li> <li>• Alternatively, the development plan may also propose that properties abutting developed sites would be zoned for business industrial uses which support lower intensity uses with less propensity to impact the use and enjoyment of adjacent non-industrial properties.</li> </ul>
<p><b>14.3.7 Hazardous Industries</b> Industries using hazardous materials or producing waste dangerous goods as defined by The Environmental Management and Protection Act, 2010 may be considered subject to providing evidence of compliance with the National Fire Code of Canada, The Hazardous Substances and Waste Dangerous Goods Regulations, and any other applicable codes, standards and provincial and federal approvals.</p>	<ul style="list-style-type: none"> <li>• The range of uses capable of being supported in future development in this area will be regulated by the provisions of the zoning standards.</li> </ul>
<p><b>26.3.2 Drainage Plans</b> Development must be designed and constructed to avoid or mitigate on and off-site impacts from alteration to drainage.</p>	<ul style="list-style-type: none"> <li>• A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations.</li> <li>• The plan provides for two stormwater management facilities with sufficient storage capacity to accommodate the incremental increase in run-off associated with a 1:100-year 24-hour storm event and equipped to control the discharge of run-off at a predevelopment rate along the natural drainage route.</li> </ul>
<p><b>26.3.4 Pollution Source Control</b></p>	<ul style="list-style-type: none"> <li>• A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations.</li> </ul>

P4G Policy Reference	Plan Influence
<p>The P4G municipalities will work toward reducing the pollutants entering surface waters through the stormwater drainage system.</p>	<ul style="list-style-type: none"> <li>The developer will work with the municipalities to define the basis for reducing the discharge of pollutants from stormwater management facilities.</li> </ul>
<p><b>26.3.6 Alignment of Hydrologic Modeling</b> The P4G municipalities will use common hydrological models, assumptions, and standards when developing assessments of local runoff and stormwater management facilities.</p>	<ul style="list-style-type: none"> <li>Section 3.10.1 of the P4G Zoning Bylaw states that where development may alter site drainage potentially affecting adjacent, upstream or downstream properties or the stability of the land, the applicant shall be required to construct engineered drainage works incorporating sufficient capacity to accommodate the surficial water runoff for a 1:100 year storm event with no incremental increase in offsite flows above what would have been generated from the property before the grading and levelling.</li> <li>A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations.</li> </ul>
<p><b>26.3.10 “No Net Impact” Standard</b> On-site stormwater management controls for site development will be encouraged to meet a “no net impact” standard, incorporating sufficient capacity to accommodate surface water runoff for a 1:100-year storm event with no incremental increase in offsite flows in excess of what would have been generated from the property prior to the new development.</p>	<ul style="list-style-type: none"> <li>A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations.</li> </ul>
<p><b>27.3.3 Roadway Access</b> Development must meet all municipal and provincial regulations respecting access to and from provincial highways and municipal roads.</p>	<ul style="list-style-type: none"> <li>The development will access Highway 394 as illustrated in the functional planning study figure for the Saskatoon Freeway project. Access to Range Road 3042 (Freeborn Road) will consider the applicable road standards.</li> <li>The current driveway access along Highway 394 would meet the requirements for a temporary road approach but does not meet the 1.6 km requirement to be classified as a permanent intersection.</li> </ul>

P4G Policy Reference	Plan Influence
	<ul style="list-style-type: none"> <li>The functional plan for the Saskatoon Freeway defines an intention to construct a service road along the south side of Highway 394 in the future. The subdivision concept accounts for this possibility while also considering the use of the current approach as a temporary intersection.</li> <li>The RM's requirement for property approach spacing is a minimum of 100 m from the intersection of any municipal roads and highways. The RM does not have published road intersection spacing requirements.</li> </ul>
<p><b>27.3.9 Road Widening</b>  Subdivisions must include allocations as necessary for the expansion of roads to standards as prescribed by Corman Park and, in the case of subdivision in Future Urban Growth Areas, the adjacent municipality.</p>	<ul style="list-style-type: none"> <li>Range Road 3042 is constructed in a 30 m right-of-way. The RM will likely require this road to be upgraded to an industrial standard. The RM's current standard considers 30 m as an adequate width for this type of roadway but does prefer a 46 m dedication. We have never been required to provide a 46 m dedication in any other project. This requirement will need to be confirmed with the RM during the preparation of a CDR.</li> <li>The RM has recently communicated a preference for a 32 m right-of-way for internal roadways to better support snow clearing. The attached concepts reflect this.</li> </ul>

**Table 2: District Zoning Bylaw Compliance**

P4G Zoning Bylaw Regulation	Plan Influence
<p><b>3.10 Drainage</b>            3.10.1 Where development may alter site drainage potentially affecting adjacent, upstream or downstream properties, or the stability of the land, the applicant shall be required to construct engineered drainage works incorporating sufficient capacity to accommodate the surficial water runoff for a 1:100-year storm event with no incremental increase in offsite flows in excess of what would have been generated from the property prior to the grading and levelling.</p>	<ul style="list-style-type: none"> <li>• A conceptual stormwater management plan has been prepared that aligns with municipal and provincial regulations.</li> </ul>
<p><b>3.15 Lighting</b>            3.15.1 All outdoor lighting for any site, building, sign, parking lot or pedestrian area shall be located, oriented and arranged so that no direct rays of light:            a) illuminate or shine onto adjacent lands;            b) interfere with the use, privacy and enjoyment of adjacent lands, adjacent dwellings and their amenity area;            c) interfere with airport safety; or            d) interfere with traffic safety on public roadways.</p>	<ul style="list-style-type: none"> <li>• The lighting regulations predominantly apply to private property development.</li> <li>• The CDR would be limited to defining the intention to provide street lighting or at the entrances to the subdivision. It has been our experience that industrial development in the RM has not typically included street lighting unless required by a TIA to delineate an intersection.</li> </ul>
<p><b>3.21 Property Approaches</b>            3.21.5 Approaches adjacent to blind corners, hills, ridges, railway crossings and any other obstructions shall be positioned so as to provide an unobstructed view of 100 m (328 ft) in either direction.</p>	<ul style="list-style-type: none"> <li>• The lot configuration acknowledges that driveways must be a minimum of 100 m from a road intersection and maintain a minimum spacing of 30 m between properties.</li> </ul>
<p><b>3.22 Public Roadways</b>            3.22.2 All development shall have frontage onto and direct physical and legal access to a maintained public roadway, except for:            a) agricultural operations;            b) development internal to a condominium plan containing private roadways; and            c) development internal to a dwelling group or multi-use development containing internal roadways as approved by the Development Officer.</p>	<ul style="list-style-type: none"> <li>• The subject property fronts directly onto the provincial highway and a maintained all-weather municipal roadway.</li> <li>• We anticipate that a traffic forecast will need to be prepared and submitted to the RM and Ministry of Highways to determine if a TIA will be required considering the intention for the existing driveway access to be</li> </ul>

P4G Zoning Bylaw Regulation	Plan Influence
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3.22.6 A traffic impact assessment may be required where the existing traffic counts and patterns are expected to be significantly altered as a result of the proposal.

used as a formal road intersection serving multiple properties.

**3.25 Separation Distances**

3.25.9 Notwithstanding any other provision in this Bylaw, hazardous uses and heavy industrial development shall not be permitted within 1.0 km (0.6 miles) of an existing or planned country residential development or urban residential neighbourhood.

- This regulation restricts heavy industrial uses within the planned area.

**3.26 Site and Slope Stability**

3.26.1 Except where otherwise provided for in this Bylaw, the following minimum building setbacks shall apply from the crest or bottom of a coulee, ravine, valley, escarpment slope, or any steep slope where the grade exceeds 15%, or is suspected of being unstable. The crest shall be that

Vertical Depth	Minimum Setback
Less than 15 m (49.2 ft)	10 m (32 ft)
Greater than 15 m (49.2 ft) and less than 30 m (98.4 ft)	15 m (49.2 ft)
Greater than 30 m (98.4 ft)	20 m (65 ft)

- The borrow pit has slopes that are more than 15%, and because it is deeper than 15 m but less than 30 m, a 15 m setback will need to be provided from the crest of the borrow pit.

3.26.4 Development or subdivision proposed within 30 m (98.4 ft) of the crest or bottom of a slope greater than 15% shall require supporting evidence of slope stability by a professional engineer. The Development Officer may require that an applicant submit a professionally prepared geotechnical analysis for any proposed subdivision or development on sites with slopes of less than 15%.

**3.31 Water Supply**

3.31.1 No development or use of land shall be allowed where the proposal will adversely affect domestic or municipal water supplies, or where a suitable, potable water supply cannot be furnished.

3.31.3 All new multi-parcel commercial, industrial, community service and country residential development shall be serviced by a centralized potable waterline to the satisfaction of the municipality.

- Lost River Water Co. operates a potable water distribution line that supplies water to the acreage developments to the east of the plan area. According to the published CDR for Meadow Ridge Estates, the existing water line is 100 mm diameter and is situated along the north side of Highway 394. The operator has been contacted and suggested that the utility operates another water line

P4G Zoning Bylaw Regulation	Plan Influence
<p><b>6.13 D - Light Industrial 1 District</b>  6.13.5 Site Development Regulations  a) Site Area - The minimum site area shall be 0.8 ha  b) Site Frontage - The minimum site frontage shall be 30 m</p>	<p>in the Floral area to the south which may also be an option. The operator is currently assessing both options to determine a potential connection - we are awaiting a response to our inquiry.</p> <ul style="list-style-type: none"> <li>• As a part of the CDR, a suitable water supply must be verified.</li> <li>• The conceptual subdivision plan considers the minimum frontage and area requirements for the Light Industrial and Business District zones which are identical.</li> </ul>



# APPENDIX H - PROPERTY TITLE

# Province of Saskatchewan Land Titles Registry Title

**Title #:** 146010394

**Title Status:** Active

**Parcel Type:** Surface

**Parcel Value:** \$1,460,000.00 CAD

**Title Value:** \$1,460,000.00 CAD

**Converted Title:** 83S47967

**Previous Title and/or Abstract #:** 120517860

**As of:** 21 Oct 2024 07:38:47

**Last Amendment Date:** 31 May 2024 14:35:40.780

**Issued:** 03 Dec 2014 11:34:56.603

**Municipality:** RM OF CORMAN PARK NO. 344

PATIENCE LAKE ROAD BUSINESS PARK LTD. is the registered owner of Surface Parcel #146963223

Reference Land Description: NE Sec 10 Twp 36 Rge 04 W 3 Extension 1  
As shown on Plan 101261326

This title is subject to any registered interests set out below and the exceptions, reservations and interests mentioned in section 14 of *The Land Titles Act, 2000*.

## Registered Interests:

**Interest #:**

**169459598**

CNV Easement

**Value:** N/A

**Reg'd:** 02 May 1963 01:45:07

**Interest Register Amendment Date:** N/A

**Interest Assignment Date:** N/A

**Interest Scheduled Expiry Date:** N/A

**Expiry Date:** N/A

for Right of Way purposes

**Holder:**

SASKATCHEWAN POWER CORPORATION

2025 VICTORIA AVE

REGINA, SK, Canada S4P 0S1

**Client #:** 100307618

**Int. Register #:** 103350103

**Converted Instrument #:** 63S07219

**Interest #:**

**169459611**

Power Corporation Act  
Easement (s.23)

**Value:** N/A

**Reg'd:** 17 Aug 2005 15:50:02

**Interest Register Amendment Date:** 09 Feb  
2010 10:43:33

**Interest Assignment Date:** N/A

**Interest Scheduled Expiry Date:** N/A

**Expiry Date:** N/A

EASEMENT FOR COMMUNICATION, PROTECTION AND CONTROL SYSTEM  
DATED AUGUST 9, 2005 BETWEEN SASKATCHEWAN POWER CORPORATION  
AND EBON FARMS INC.

**Holder:**

SASKATCHEWAN POWER CORPORATION

2025 VICTORIA AVE

REGINA, SK, Canada S4P 0S1

**Client #:** 100307618

**Int. Register #:** 110011835  
**Feature #:** 100165036

**Interest #:**  
**172169804**

Power Corporation Act  
Easement (s.23)

**Value:** N/A  
**Reg'd:** 24 Aug 2015 13:47:25  
**Interest Register Amendment Date:** N/A  
**Interest Assignment Date:** N/A  
**Interest Scheduled Expiry Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
SASKATCHEWAN POWER CORPORATION  
2025 VICTORIA AVE  
REGINA, SK, Canada S4P 0S1  
**Client #:** 100307618

**Int. Register #:** 121048310

**Interest #:**  
**199262199**

Miscellaneous Interest

**Value:** N/A  
**Reg'd:** 31 May 2024 14:35:41  
**Interest Register Amendment Date:** N/A  
**Interest Assignment Date:** N/A  
**Interest Scheduled Expiry Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
CAP EST HOLDINGS LTD.  
7 Elbow River Circle  
Calgary , AB, Canada T3Z 2T6  
**Client #:** 140224812

**Int. Register #:** 126122419

**Addresses for Service:**

**Name**

**Address**

**Owner:**

PATIENCE LAKE ROAD BUSINESS PARK LTD. PO BOX 39136 LAKEWOOD SASKATOON, Saskatchewan,  
Canada S7V 0A9

Client #: 130033763

**Notes:**

Parcel Class Code: Parcel (Generic)



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# Province of Saskatchewan Land Titles Registry Title

**Title #:** 147406484

**Title Status:** Active

**Parcel Type:** Surface

**Parcel Value:** \$700,000.00 CAD

**Title Value:** \$700,000.00 CAD

**Converted Title:** 87S49819(1)

**Previous Title and/or Abstract #:** 147207719

**As of:** 21 Oct 2024 07:37:19

**Last Amendment Date:** 17 Jul 2018 15:47:35.210

**Issued:** 10 Dec 2015 15:18:30.353

**Municipality:** RM OF CORMAN PARK NO. 344

PATIENCE LAKE ROAD BUSINESS PARK LTD. is the registered owner of Surface Parcel #203141753

Reference Land Description: SE Sec 10 Twp 36 Rge 04 W 3 Extension 15

This title is subject to any registered interests set out below and the exceptions, reservations and interests mentioned in section 14 of *The Land Titles Act, 2000*.

## **Registered Interests:**

**Interest #:**

**173349726**

Power Corporation Act  
Easement (s.23)

**Value:** N/A

**Reg'd:** 16 Apr 2015 15:26:58

**Interest Register Amendment Date:** N/A

**Interest Assignment Date:** N/A

**Interest Scheduled Expiry Date:** N/A

**Expiry Date:** N/A

**Holder:**

SASKATCHEWAN POWER CORPORATION  
2025 VICTORIA AVE  
REGINA, SK, Canada S4P 0S1

**Client #:** 100307618

**Int. Register #:** 120764808

**Interest #:**

**182564804**

Planning and Development  
Act, 2007-Interest  
Protecting Agreement  
(Section 235)

**Value:** N/A

**Reg'd:** 17 Jul 2018 15:47:35

**Interest Register Amendment Date:** N/A

**Interest Assignment Date:** N/A  
**Interest Scheduled Expiry Date:** N/A  
**Expiry Date:** N/A

**Holder:**

RURAL MUNICIPALITY OF CORMAN PARK NO. 344  
111 PineHouse Drive  
Saskatoon, Saskatchewan, Canada S7K 5W1  
**Client #:** 101591580

**Int. Register #:** 123004381

**Addresses for Service:**

**Name**

**Address**

**Owner:**

PATIENCE LAKE ROAD BUSINESS PARK  
LTD.

PO BOX 39136 LAKEWOOD SASKATOON, Saskatchewan,  
Canada S7V 0A9

Client #: 130033763

**Notes:**

Parcel Class Code: Parcel (Generic)



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