

# **NEW HORIZON BUSINESS PARK**

## **COMPREHENSIVE DEVELOPMENT PROPOSAL**

### **Phase 4**



**Prepared for: The RM of Edenwold No. 158**  
**Submitted by: New Horizon Group of Companies**  
**March 6, 2026**

**Basis and Use of this Comprehensive Development Proposal**

The information contained in this Comprehensive Development Proposal (CDP) is intended for the sole use by New Horizon Park (Developer) as part of a development application to the RM of Edenwold No. 158. No other party may use or rely upon this CDP, or any portion thereof, without the written consent of Beaton Planning (Consultant). The Consultant will consent to any reasonable request made by the Developer to approve the use of this CDP by other parties.

The contents of this CDP are based on the specific site, land use, design, and background information that have been described or provided to the Consultant by the Developer. The material herein reflects The Consultant's best knowledge and understanding of the development, given the information available at the time that the CDP was prepared. The accuracy and reliability of this CDP are valid only to the extent that the information provided is correct.

This CDP has been prepared in a manner consistent with the level of skill ordinarily exercised by members of the profession practicing at the time of writing the report and under similar conditions. No other warranty is expressed or implied.

## TABLE OF CONTENTS

|          |                                                            |           |
|----------|------------------------------------------------------------|-----------|
| <b>1</b> | <b>Purpose</b>                                             | <b>3</b>  |
| <b>2</b> | <b>Description of the Proposed Development</b>             | <b>4</b>  |
| 2.1      | <i>Location</i>                                            | 4         |
| 2.2      | <i>Existing and Proposed Land Uses</i>                     | 6         |
| 2.3      | <i>Municipal Reserve</i>                                   | 7         |
| 2.4      | <i>Landscaping Standards</i>                               | 7         |
| 2.5      | <i>Business Licences</i>                                   | 9         |
| <b>3</b> | <b>Environmental and Heritage Sensitivity</b>              | <b>11</b> |
| 3.1      | <i>Environmental Site Assessment</i>                       | 11        |
| 3.2      | <i>Geotechnical Reports</i>                                | 11        |
| 3.3      | <i>Heritage Sensitivity</i>                                | 11        |
| <b>4</b> | <b>Servicing</b>                                           | <b>12</b> |
| 4.1      | <i>Drainage</i>                                            | 12        |
| 4.2      | <i>Aquifer Protection</i>                                  | 12        |
| 4.3      | <i>Access and Transportation</i>                           | 12        |
| 4.4      | <i>Utilities</i>                                           | 13        |
| 4.5      | <i>Water Supply and Sewage Disposal</i>                    | 14        |
| 4.6      | <i>Canada Post</i>                                         | 14        |
| 4.7      | <i>Emergency Response</i>                                  | 14        |
| 4.8      | <i>Servicing Costs</i>                                     | 15        |
| 4.9      | <i>Architectural Controls</i>                              | 15        |
| <b>5</b> | <b>Consultation and Public Engagement</b>                  | <b>16</b> |
| <b>6</b> | <b>Policy and Regulatory Compliance</b>                    | <b>18</b> |
| 6.1      | <i>Compliance with the RM's Official Community Plan</i>    | 18        |
| 6.2      | <i>Compliance with the RM's Zoning Bylaw</i>               | 23        |
| <b>7</b> | <b>Closure</b>                                             | <b>27</b> |
|          | <b>Appendix A – Parcel Picture SE ¼ 06-18-18-W2M Ext 4</b> | <b>28</b> |
|          | <b>Appendix B – Plan of Proposed Subdivision</b>           | <b>30</b> |
|          | <b>Appendix C – Concept Plan</b>                           | <b>32</b> |

|                                                                     |            |
|---------------------------------------------------------------------|------------|
| <b>Appendix D – Landscaping Plan</b>                                | <b>34</b>  |
| <b>Appendix E – Environmental Site Assessments</b>                  | <b>36</b>  |
| <b>Appendix F – Preliminary Geotechnical Investigation</b>          | <b>137</b> |
| <b>Appendix G – Heritage Screening Report</b>                       | <b>171</b> |
| <b>Appendix H – Preliminary Engineering Report</b>                  | <b>174</b> |
| <b>Appendix I – Email From RM of Edenwold Re: Drainage Approval</b> | <b>254</b> |
| <b>Appendix J – Aquifer Protection Plan</b>                         | <b>256</b> |
| <b>Appendix K – Comments from the Ministry of Highways</b>          | <b>260</b> |
| <b>Appendix L – Traffic Impact Assessment</b>                       | <b>264</b> |
| <b>Appendix M – Utilities Plan</b>                                  | <b>299</b> |
| <b>Appendix N – Water Rights Licence and Approval to Operate</b>    | <b>301</b> |
| <b>Appendix O – Letter from Sewage Hauler</b>                       | <b>306</b> |
| <b>Appendix P – Public Engagement Letter</b>                        | <b>312</b> |



## 1 PURPOSE

This Comprehensive Development Proposal (CDP) has been prepared on behalf of New Horizon Group of Companies (Developer) to describe and support their proposal to expand an existing commercial-light industrial development, known as New Horizon Business Park, located in the RM of Edenwold No. 158 (RM).

The Developer is a Saskatchewan-based company, specializing in the development and real estate of commercial and light industrial properties. The Developer has established other properties, some of which they own and operate, in the Town of Pilot Butte and the community of Emerald Park.

The RM's Official Community Plan (OCP) and Zoning Bylaw require a CDP to be submitted as part of an application to rezone, subdivide, re-subdivide, or re-develop three or more sites. This CDP has been prepared in accordance with the OCP and Zoning Bylaw; it describes the physical characteristics of the proposed development site (Site), the existing and planned land uses, and the provision of infrastructure services. Professional reports, site assessments, and other supporting background information are attached as appendices.



## 2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

### 2.1 LOCATION

The Developer is proposing to subdivide and develop 18.03 hectares (44.55 acres) of undeveloped land in the RM for commercial-light industrial use. The Site proposed for development is legally described as the SE ¼ 06-18-18-W2M Ext. 4 and will be the fourth and final phase of a multi-phased development known as the New Horizon Business Park. The development is located approximately 4 km (2.5 miles) east of the nearest boundary of the City of Regina, and 1 km (0.6 miles) west of the Town of Pilot Butte, as shown in the maps below. The parcel picture for the SE ¼ 06-18-18-W2M Ext 4 is attached to this CDP as Appendix A.

The Site is located on Treaty Four Territory, traditional lands of the Nêhiyawak (Cree), Nahkawé (Saulteaux) and Nakota, Dakota, Lakota, and homeland of the Métis.



**Figure 2-1:** Map depicting regional context of the development site, which is located within the blue circle.



**Figure 2-2:** Map depicting regional context of the development site, which is located within the blue circle.



**Figure 2-3:** Air photo depicting regional context of the development site, which is located within the blue circle.





**Figure 2-4:** Air photo depicting regional context of the development site, which is located within the blue circle.

## 2.2 EXISTING AND PROPOSED LAND USES

### **Within the Subject Source Parcel**

The parcel proposed for development is 18.03 hectares (44.55 acres) in area and is the remaining portion of the otherwise developed quarter section. Land within the source parcel is undeveloped and free of buildings and structures. The parcel is currently zoned AR-Agricultural Resource District but will need to be rezoned to accommodate the proposal. The Developer intends to request that Council consider rezoning the land to IND1-General Industrial District.

### **Within the Subject Quarter Section**

Most of the quarter section has been subdivided and developed for commercial-light industrial use. The northeast portion of the quarter section was subdivided into bareland condominium units (Condo Developments or Condo Plans), during phases 1 and 2. During phase 3, the southern portion of the quarter section, abutting Highway No. 46, was subdivided into eight lots and a municipal utility parcel (MU1). Phases 1 to 3 were addressed under CDPs dated June, 2023 and July, 2024, which were approved and accepted by the RM Council. Construction and installation of the buildings and infrastructure within the previous phases are complete and most of the units and lots have been built and rented.

A residential acreage, not associated with New Horizon Business Park, is located on Blk/Par C-Plan102164981 Ext 0, in the northeast corner of the quarter section.

Saskatchewan Water Corporation owns a small (0.562 ha) parcel of land, legally described as Blk/Par A, Plan 101858609 Ext 0, which houses a pumping station.

### **Surrounding Lands**

Land uses surrounding the quarter section are primarily cropland, pasture, and commercial and industrial operations. Businesses in the vicinity include KF Croft Aggregates Ltd., Inland Aggregates, TTN Farm Pro Wholesale Corp., and Regina Maintenance Plus. A gravel extraction operation is located directly

north and east of the Site. The Tor Hill and Murray golf courses are to the northwest. The intended commercial-light industrial use of the proposed subdivision is compatible with neighbouring uses.

#### **Phase Four**

The plan of proposed subdivision, attached as Appendix B, shows the locations of the lots and roads proposed for phase 4. The planned locations of the buildings, roads, and utilities for the Site are shown on the concept plan, attached as Appendix C. The concept plan also shows the lots and condo units that were subdivided during the previous phases, as well as the buildings, roads, and drainage works.

The Developer has applied to the Community Planning Branch (Community Planning) in Regina for subdivision approval of the eleven lots and access roads shown on the attached plan of proposed subdivision. The lots range from 1.00 hectare (2.47 acres) to 2.5 hectares (6.18 acres) in area and will be accessed from an internal subdivision road. The internal road will be constructed as part of phase 4 and will be a continuation of the road that provides access to the lots in phase 3.

### **2.3 MUNICIPAL RESERVE**

*The Planning and Development Act, 2007* (PDA) requires the owner of land that is proposed for subdivision to provide to the municipality in which the land is located:

- Land dedicated as municipal reserve;
- Money in lieu of any land required as municipal reserve; or
- A combination of land and money.

During the subdivision of the previous phases of this development, the Developer, the RM, and Community Planning agreed that given the use and location of the development, money in lieu of land dedication would be the most appropriate way of meeting the requirement for municipal reserve.

On this eleven-lot subdivision, approximately, 0.90 hectares (2.22 acres) are required for municipal reserve. Subject to the approval of Community Planning and the RM, the Developer intends to meet the requirement by paying cash in lieu.

### **2.4 LANDSCAPING STANDARDS**

Xeriscaping is proposed to limit the need for irrigation and maintenance. As required by the Zoning Bylaw, a landscaped area measuring a minimum of 5.0 meters (16.4 feet) in width will be provided along the front site line of each lot and 3.0 metres (9.8 feet) along the side site lines of corner lots. Once grading and construction activities are complete, vegetation, and other landscaping features may be incorporated at locations where they would not interfere with sight lines.

Designated areas for the outdoor storage of equipment and materials, garbage and recycling bins, and an oil drop will be provided on-site. Areas used for storage and solid waste will be suitably screened from view. Space for parking and loading will also be provided on-site and will be located so as to allow for the safe movement of vehicles and pedestrians.

The development will be enclosed with a silt screen fence, similar to those shown in Figures 2-5 and 2-6. Gates will be installed at the entrances to the development. As per the regulations established in the Zoning Bylaw:

- Fences will not exceed the height limits allowed in the applicable zoning district;
- All fences, hedges, and other structures will be located entirely within the property lines of each lot or unit and will not be placed in any required sight triangle; and
- The design and building materials of fences and screening devices will be consistent with and complementary to the primary building(s).

The landscaping plan attached as Appendix D shows the general locations of the proposed buildings, fencing, surface materials, road network, parking areas, sidewalks, and landscaped buffer strips.



**Figure 2-5:** Example of silt screen fence.



**Figure 2-6:** Example of silt screen fence.

## 2.5 BUSINESS LICENCES

The Developer will notify future occupants of the RM's requirement for all businesses to obtain a valid business licence.





### 3 ENVIRONMENTAL AND HERITAGE SENSITIVITY

#### 3.1 ENVIRONMENTAL SITE ASSESSMENT

Three phase 1 environmental site assessments, two of which are supplementary, have been completed for the development. All three assessments were carried out by Ground Engineering Ltd. and are attached as Appendix E.

The first report, dated October 15, 2010, indicates there was no evidence to suggest the land was ever developed or used for anything other than low intensity agriculture, such as field crops, pasture, forage, etc. Ground Engineering's research on the history of the property did not result in any records of hazardous spills having occurred or hazardous substances having been stored on the Site.

The second assessment, dated February 15, 2024, was conducted to determine if the use or condition of the quarter section or adjacent properties had changed since the previous assessment in 2010. The findings of this supplementary report indicate no evidence of additional fill materials having been placed on the property since 2010. Nor was there evidence of any adverse environmental impacts or changes in land use.

The most recent supplementary assessment, dated July 29, 2025, again confirms there have been no changes that would pose an environmental risk to the Site or render the Site unsuitable for the proposed development. The use and development of the property and the adjacent properties are not considered harmful to the environment. The risk of significant contamination to the soil and/or groundwater remains low.

#### 3.2 GEOTECHNICAL REPORTS

Ground Engineering conducted a preliminary geotechnical investigation for the Site, dated December 31, 2010. The investigation indicates the Site is located within the recharge area of the Condie Aquifer. The report also indicates the presence of groundwater and a water table at the location but does not identify any conditions that would make the Site unsuitable for the development. The geotechnical investigation is attached to this CDP as Appendix F.

Based on the geotechnical investigation, stratigraphy and groundwater conditions vary throughout the quarter section. Because of this, site-specific geotechnical assessments will be required for each proposed lot prior to construction, to determine requirements and recommendations for building design and construction.

#### 3.3 HERITAGE SENSITIVITY

A search of the Developers' Online Screening Tool, which is administered by the Saskatchewan Heritage Conservation Branch, Ministry of Parks, Culture and Sport, indicates that the land is not heritage-sensitive. A copy of the heritage screening report, dated July 3, 2025, is attached as Appendix G.

## 4 SERVICING

### 4.1 DRAINAGE

The quarter section is relatively flat and drains from north to south. Runoff from the Site flows to the north ditch of Highway No. 46. From there, water travels through a series of ditches and culverts to eventually meet Pilot Butte Creek south of Highway No. 46.

Prior to the development of the Condo Plans, water pooled in a shallow depression to form a natural slough. The topography and soil conditions presented a potential for poor drainage and flooding. During the development of the Condo Plans, a detention pond was constructed in the location of the slough to facilitate drainage and manage surface runoff on-site.

The Site will be graded to direct stormwater to a second detention pond, which was constructed on MU1 during phase 3. The pond is designed to detain 1:100-year, 24-hour rainfall events. The stormwater management plan is further detailed in the preliminary engineering report completed by WCE Design Inc. and attached as Appendix H. The report provides pre and post-development runoff conditions for the Site as well as a conceptual design for the stormwater retention pond.

During the development of phase 3, the RM confirmed that approval from the Water Security Agency for drainage works is not required as part of the CDPs for the development. An email from the RM office is attached as Appendix I.

The Estimated Peak Water Level (EPWL) of the 1:500-year flood event and Minimum Building Elevation (1:500 EPWL plus 0.5 metres) will be calculated and shown on the detailed drainage design drawing(s). In accordance with municipal regulations, all buildings will be constructed at or above the Minimum Building Elevation.

### 4.2 AQUIFER PROTECTION

The Site overlies a portion of the Condie Aquifer and is within a high-sensitivity aquifer area, as indicated on the RM's future land use map. An aquifer protection plan, dated July 29, 2025, was completed by Ground Engineering Ltd. for phase 4. Recommendations intended to limit potential impacts to the aquifer are outlined in the report, attached as Appendix J.

The preliminary engineering report (Appendix H) provides additional details regarding protection of the aquifer and requirements for design and construction.

### 4.3 ACCESS AND TRANSPORTATION

#### Access

The SE ¼ 6-18-18-W2M is bordered on the south by Provincial Highway No. 46. Range Road 2185, a paved two-lane road, sufficient to support industrial traffic, runs along the east boundary of the quarter section and provides access to the development.

Horizon Road, which was developed as part of phase 3 and connects to Range Road 2185, provides access to the Site. Opportunity Way, an internal subdivision road will provide access to the lots within phase 4. Opportunity Way will extend northwards from Horizon Road at two locations and form a loop around proposed Lots V, W, and X.

The existing and proposed internal roads will be registered public roads and once constructed will be owned and maintained by the RM in accordance with the timelines established in the servicing agreement. The locations of the approaches and internal road layout are shown on the plan of proposed subdivision and concept plan (Appendices B and C, respectively).

Sidewalks will be constructed along the front of each building to provide safe entry. Sidewalks will be a minimum of 1.5 metres (4.9 feet) in width and will meet universal design standards in accordance with the Zoning Bylaw. This will be a commercial-light industrial development, separated from the public by physical distance, fencing, and a highway, pedestrian movement into and out of the Site will be minimal. The RM has therefore indicated that a pedestrian access plan will not be required as part of this CDP.

### **Road Construction**

The internal road will measure 20.0 metres (65.6 feet) in width and accommodate two-way traffic. The timing and construction of the roads within phase 4 will depend on the timing of subdivision approval. Once registered and constructed, the internal road included in this phase of development will be named Opportunity Way.

### **Traffic Impact**

There will be minimal traffic through the Site; only vehicles associated with the businesses, such as customers and staff, will be entering and exiting the development. Vehicles entering the property will primarily be trucks arriving to pick up or drop off equipment and materials.

The Ministry of Highways (Highways) is in the process of completing a functional planning study for Highway No. 46. The purpose of the study is to determine if future twinning of the highway will be required and if so, how the highway corridor would accommodate a four-lane cross-section. A copy of Highways' comments regarding the proposed subdivision is attached as Appendix K.

Since Highways is conducting their own study for the area, the Developer is not required to submit a traffic impact assessment as part of this CDP. However, an assessment was conducted during the previous phases of development to determine potential traffic impacts. The assessment, dated June 20, 2023, is attached as Appendix L.

## **4.4 UTILITIES**

Shallow utilities, provided by SaskPower, SaskEnergy, and Sasktel are installed and available in the vicinity of the Site. Occupants will be responsible for the cost of connecting utilities to their respective properties. The locations of the proposed utilities are shown on the utilities plan attached as Appendix M.

#### 4.5 WATER SUPPLY AND SEWAGE DISPOSAL

##### **Water Supply**

Water will be supplied from an existing hygienic (non-potable) water well, which has been permitted by SaskWater Corporation. A renewed water rights licence and approval to operate works, dated March 27, 2024 is attached as Appendix N. The licence is valid until March 30, 2029. This constitutes approval by the provincial government to operate groundwater works within the development.

Waterlines will be extended to connect at the front of each lot. Since the well is considered hygienic, water drawn from the well is not suitable for human consumption. Individual owners and tenants will be responsible for obtaining their own potable water, likely bottled.

Additional details regarding water distribution can be found in the preliminary engineering report (Appendix H).

##### **Sewage Disposal**

On-site holding tanks will be installed on each lot. Sewage will be pumped from holding tanks and hauled to a licensed sewage lagoon in the City of Regina, Town of Balgonie, or Hamlet of Kronau. It will be the responsibility of each business to install a holding tank on their lot and to contact a licensed hauler to dispose of wastewater.

AAA Sewer Service has provided a letter, dated October 14, 2025 and attached as Appendix O, to confirm that their company can provide services to remove and dispose of effluent generated by the development. AAA Sewer Service is on the Water Security Agency's list of approved haulers and has permits for the disposal of this type of material at the wastewater treatment facilities mentioned above.

#### 4.6 CANADA POST

The Developer intends to contact Canada Post to have post office boxes or mailboxes installed and registered for the lots within the Site.

#### 4.7 EMERGENCY RESPONSE

The Town of Pilot Butte Fire Department was consulted during the planning of the previous phases of development. The department provided verbal confirmation that the department has adequate capacity to provide emergency response and fire suppression services to the entire development.



#### 4.8 SERVICING COSTS

The Developer will be responsible for the costs associated with the design, construction, and installation of all on-site and off-site services. The Developer is prepared to enter into a servicing agreement with the RM and pay the required servicing fees.

#### 4.9 ARCHITECTURAL CONTROLS

There will be no architectural controls for the proposed development. However, building and individual site plans should be reviewed and approved by the Developer prior to submitting a building permit application to the RM. This may be addressed in the servicing agreement between the RM and the Developer or in an agreement between the Developer and the individual landowners (for example, a sale or lease agreement).



## 5 CONSULTATION AND PUBLIC ENGAGEMENT

### Phases 1 and 2

During the subdivision of the Condo Plans, the Developer participated in two public hearings as part of the bylaw amendment process to rezone the land within the Condo Plans from AR-Agricultural Resource District to IND-General Industrial District. The Developer also attended a public hearing held for the application of a discretionary use permit for one of the businesses. Minimal to no concerns were received from the public at the hearings.

### Phase 3

The proposed bylaw amendment to rezone phase 3 was read a first time on June 10, 2024. The Developer hosted an open house to receive feedback from the public on Thursday, July 18, 2024 at the RM office in Emerald Park. Six members of the public attended the open house. Questions received from the public were primarily regarding the location and use of the proposed development; there were no objections to the rezoning or the proposed development.

### Phase 4

In October, 2025, the Developer met with neighbouring landowners and residents of Pilot Butte and distributed a public engagement letter. The letter, attached as Appendix P, provides a brief description of the proposed development and the Developer's contact information. The Developer did not receive any questions, comments, or objections.

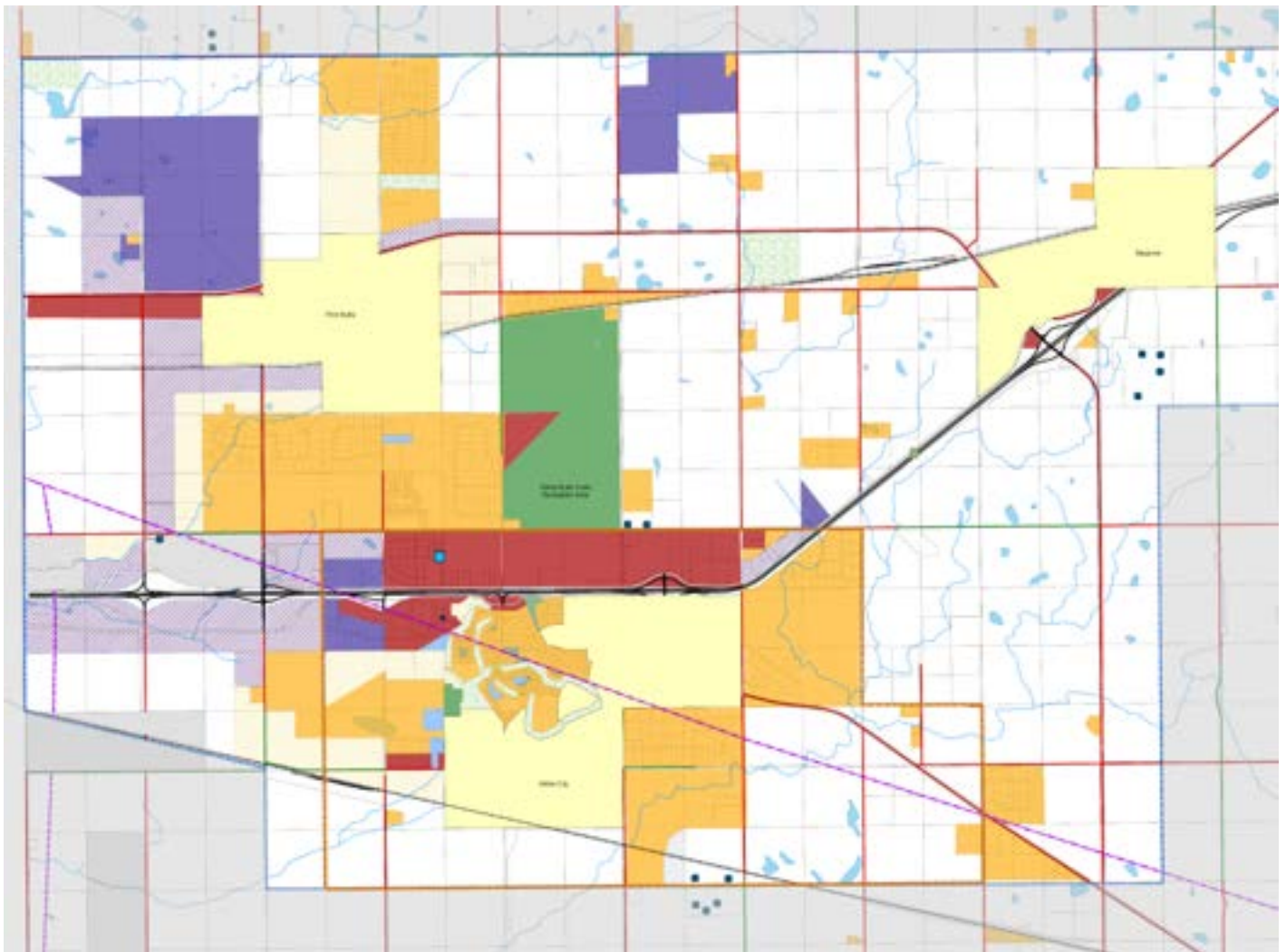


## 6 POLICY AND REGULATORY COMPLIANCE

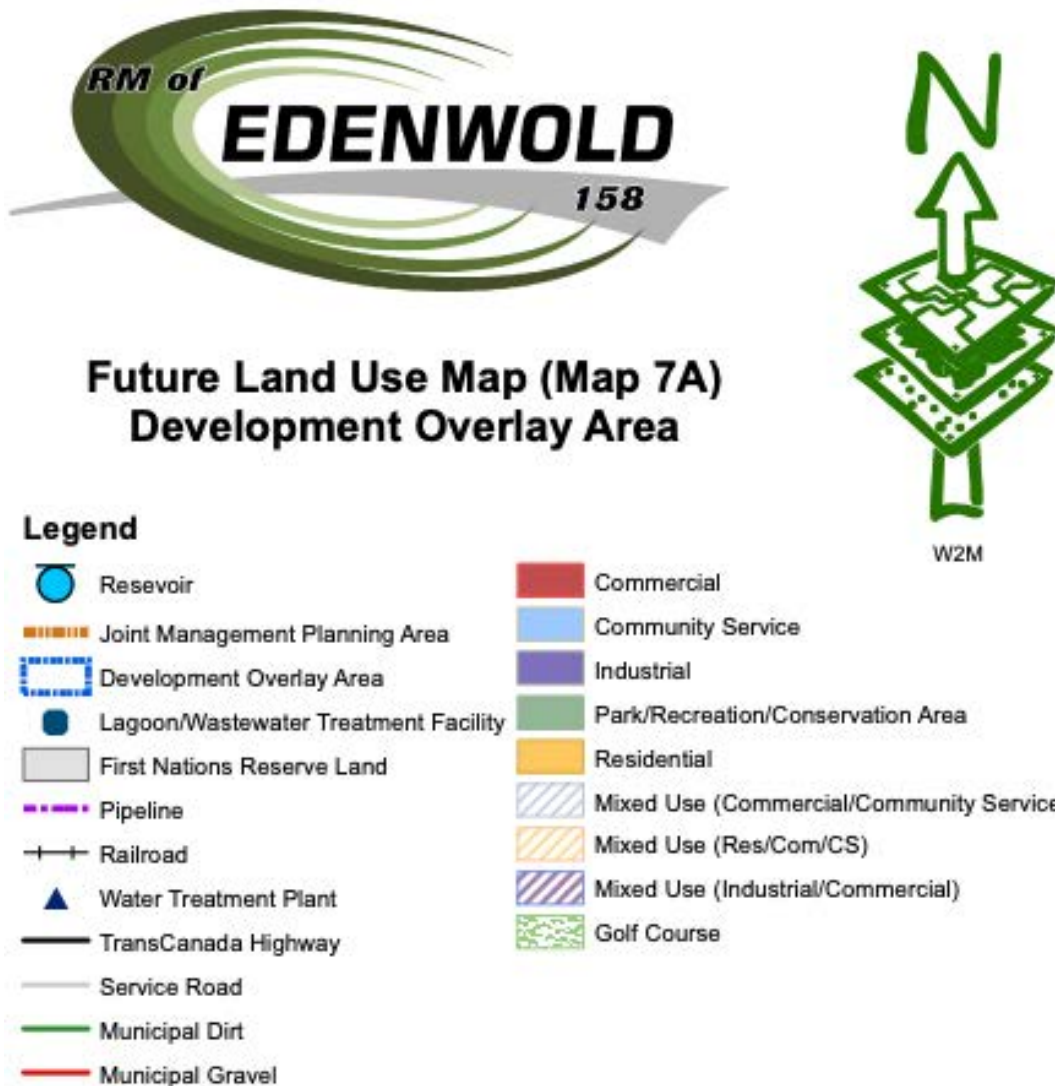
Development within the Site is subject to the policies and regulations for land use and development established in the OCP and Zoning Bylaw. This section outlines how the development is intended to comply with the RM's planning bylaws.

### 6.1 COMPLIANCE WITH THE RM'S OFFICIAL COMMUNITY PLAN

The land is designated as Mixed Use (Industrial/Commercial) on the RM's Future Land Use Map, as shown below, and is within the Development Overlay Area (46IP).



**Figure 6-1:** RM of Edenwold No. 158 excerpt of future land use map.



Map Reference Scale:

**1:25,000**

Author: M. Hodgins

Prepared For: RM of Edenwold No. 158

**DISCLOSURE: THIS MAP IS FOR REFERENCE USE ONLY, AND SHOULD NOT BE USED FOR SITE-SPECIFIC MEASUREMENTS. THE MUNICIPALITY IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE PRESENT ON THIS MAP. PLEASE NOTIFY THE RM OFFICE OF ANY ERRORS OR DISCREPANCIES.**

Figure 6-2: RM of Edenwold No. 158, legend of future land use map.



**Table 6-1: Compliance with the OCP**

| OCP Reference                                                                                                            | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.6 Community Priorities</b>                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Ensure compatible land uses across the municipality.                                                                     | <ul style="list-style-type: none"> <li>The development is located within the 46IP Business District. Existing and intended land uses conform to those identified in the OCP.</li> <li>The land uses in the proposed development are consistent and compatible with other commercial light industrial businesses in the vicinity.</li> </ul>                                                                                                |
| Protect and maintain the character of the residential subdivisions in Emerald Park and country residential developments. | <ul style="list-style-type: none"> <li>The land has been designated for commercial and industrial use on Map 7A (FLU) of the OCP.</li> <li>Aside from Blk/Par C-Plan 102164981 Ext 0, which is zoned CR1-Country Residential 1, the development is suitably separated from lands that are zoned or designated for residential use. The proposal would, therefore, not detract from existing or planned residential development.</li> </ul> |
| Encourage and support the development of local recreation and leisure amenities.                                         | <ul style="list-style-type: none"> <li>Since it would not be suitable to include community services for recreation and leisure as part of a commercial light industrial development, the Developer is proposing cash in lieu as the most appropriate means of meeting the municipal reserve requirement. The dollar amount will be based on a land appraisal following Council's acceptance of this CDP.</li> </ul>                        |
| Ensure new infrastructure and services are developed in an efficient and cost-effective manner.                          | <ul style="list-style-type: none"> <li>The development is in proximity to existing heavy haul routes and other infrastructure services that are of a standard suitable for commercial light industrial development.</li> </ul>                                                                                                                                                                                                             |
| Protect prime agricultural lands.                                                                                        | <ul style="list-style-type: none"> <li>Land within the development site has been designated for commercial and industrial use and has not been identified as prime agricultural land.</li> </ul>                                                                                                                                                                                                                                           |
| Address drainage issues.                                                                                                 | <ul style="list-style-type: none"> <li>An engineered drainage plan has been designed to provide on-site stormwater management and ensure minimal impacts off-site and downstream. As per the attached preliminary engineering report, the existing grades and topography will be maintained.</li> </ul>                                                                                                                                    |



|                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accommodate resource development while addressing potential related nuisances.                                                                                                    | <ul style="list-style-type: none"> <li>Although the use of the proposed development is not directly related to resource extraction and development, the businesses may provide support to the natural resource industry.</li> <li>The businesses and land uses within the proposed development will not conflict or restrict the existing gravel operation on the adjacent lands or any future resource development activities.</li> </ul> |
| Improve signage for roadways and business districts.                                                                                                                              | <ul style="list-style-type: none"> <li>Signage for the development will conform with all municipal, provincial, and federal transportation regulations and will consider required setbacks and sight lines.</li> <li>Appropriate signage for heavy industrial uses will be installed, if/where needed to ensure public safety.</li> </ul>                                                                                                  |
| Support the development of a variety of housing forms in appropriate locations to meet the needs of the local work force and the growing population.                              | <ul style="list-style-type: none"> <li>The development contributes to the local economy by providing business and employment opportunities for the regional population.</li> <li>Businesses are within a reasonable commuting distance from neighbouring towns and country residential subdivisions.</li> </ul>                                                                                                                            |
| Broaden transportation options in high-density areas.                                                                                                                             | <ul style="list-style-type: none"> <li>The development site is not within a high-density area.</li> <li>Will make use of existing paved and heavy haul roads and secondary highways, which are currently designed to accommodate heavy truck traffic.</li> <li>Internal subdivision roads will provide access to individual lots within the development.</li> </ul>                                                                        |
| Continue to work collaboratively with neighbouring municipalities, local First Nations, and other external authorities and improve working relationships with White City Council. | <ul style="list-style-type: none"> <li>The Developer is part of the local business community and is committed to establishing and strengthening relationships with the public and neighbouring jurisdictions.</li> </ul>                                                                                                                                                                                                                   |
| <b>2.5 Strategic Growth Sectors and Areas</b>                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2.5.4 Development Overlay Area                                                                                                                                                    | <ul style="list-style-type: none"> <li>The development site is located within the Development Overlay Area, which has been identified by the RM as suitable and preferable for industrial development.</li> </ul>                                                                                                                                                                                                                          |

| <b>3.9.6 Highway No. 46 Industrial Park (46IP) Policies</b> |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Land Use and Intensity                                   | a. Industrial businesses that require large site sizes and/or space for outdoor storage of materials or equipment shall be encouraged to locate within the 46IP.                                                                                     | <ul style="list-style-type: none"> <li>The large lots are consistent with the density of development intended within the 46IP.</li> </ul>                                                                                                                                                                                                                              |
|                                                             | b. A variety of commercial business shall also be accommodated within the southern area of 46IP, along Highway No. 46.                                                                                                                               | <ul style="list-style-type: none"> <li>Existing and intended businesses within the development will be commercial light industrial in nature.</li> </ul>                                                                                                                                                                                                               |
| 2. Access                                                   | a. All roadways surfaces in the 46IP shall be developed to a heavy haul standard and Council may require pavement depending on the density of development and expected traffic counts in the area.                                                   | <ul style="list-style-type: none"> <li>The development makes use of the existing heavy haul transportation network.</li> <li>Internal subdivision roads will be appropriately designed and constructed to accommodate the weight and volume of traffic generated by the development.</li> </ul>                                                                        |
| 3. Complementary and Compatible Development                 | a. Compatibility with adjacent land uses is of primary importance and developers may be required to construct screening, fencing, or carry out landscaping activities onsite and in buffer strips as part of initial onsite construction activities. | <ul style="list-style-type: none"> <li>Fencing will be installed as required to ensure construction activities are not visible to neighbouring landowners and the travelling public.</li> </ul>                                                                                                                                                                        |
| 4. Aesthetics and Business Promotion                        | a. Developers may be required to provide fencing around lots for screening, site control, or security.                                                                                                                                               | <ul style="list-style-type: none"> <li>Fencing, screening, and landscaping will be installed in appropriate locations to provide a buffer between neighbouring land uses and the travelling public.</li> </ul>                                                                                                                                                         |
| <b>6.0 Planning Tools and Procedures</b>                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                        |
| 6.3 Pre-Engineering Report                                  |                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>In addition to the preliminary engineering report attached to this CDP, if required by the RM, the Developer will provide a separate report to identify servicing and infrastructure needs and to establish engineering standards and detailed designs for the development.</li> </ul>                                          |
| 6.6 Servicing Agreements                                    |                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>The Developer will incur all costs associated with the installation of the infrastructure services required as part of the subdivision and is prepared to enter into a servicing agreement as part of the application to subdivide the proposed eight commercial-light industrial lots and municipal utility parcel.</li> </ul> |

#### **Applicable Official Community Plan Maps**

- Map 3 - Map of Business Districts
- Map 5A - Sensitive Environmental Area, Potentially Flood Prone and Potentially Hazardous Areas
- Map 6A - Lands with Special Designation
- Map 7A - Future Land Use Map

## 6.2 COMPLIANCE WITH THE RM'S ZONING BYLAW

As part of this application, the Developer is requesting that the RM rezone the land proposed for subdivision from AR-Agricultural Resource to IND1-General Industrial District.

**Table 6-2:** Zoning Bylaw Compliances.

| Zoning Bylaw Reference                       | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3.0 Administration and Interpretation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3.20 Additional Information                  | <ul style="list-style-type: none"> <li>Information describing the existing, completed, and planned development, phasing, and supporting site assessments are provided in this submission.</li> </ul>                                                                                                                                                                                                                                  |
| 3.22 Concept Plan                            | <ul style="list-style-type: none"> <li>The concept plan included in this submission, shows the layout of the Condo Plans, which were approved during the previous phases of development, as well as the location of proposed and planned lots, an overview of the drainage design, the location of existing and proposed utilities, internal road network, and the approximate location of approaches off Range Road 2185.</li> </ul> |
| 3.24 Pre-Engineering Report                  | <ul style="list-style-type: none"> <li>In addition to the preliminary engineering report attached to this CDP, if required by the RM, the Developer will provide a separate report to identify servicing and infrastructure needs and to establish engineering standards and detailed designs for the development.</li> </ul>                                                                                                         |
| 3.32 Servicing Agreement                     | <ul style="list-style-type: none"> <li>The Developer is prepared to enter into a servicing agreement with the RM to establish standards and timelines for development, payment of servicing fees, municipal reserve, and other requirements.</li> </ul>                                                                                                                                                                               |

| <b>4.0 General Regulations</b>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.3 Prohibited and Noxious Uses                                            | <ul style="list-style-type: none"> <li>Land uses within the development will conform to the uses allowed within the zoning district. The Developer will ensure the required approvals and permits are obtained prior to commencing construction.</li> <li>The Site is within an area that has been designated on the FLU map for commercial and industrial use. Construction and operating activities will be carried out to eliminate the potential for nuisance to neighbouring landowners and the general public.</li> </ul> |
| 4.6 Accessory Buildings, Structures, and Uses                              | <ul style="list-style-type: none"> <li>Principal buildings will be established prior to the construction of any accessory structures.</li> <li>The Developer will ensure the appropriate development permits are obtained prior to the construction of any accessory structures.</li> </ul>                                                                                                                                                                                                                                     |
| 4.10 Grading and Levelling of Sites                                        | <ul style="list-style-type: none"> <li>A preliminary drainage and grading plan has been designed for the proposed subdivision and is included in the attached preliminary engineering report.</li> </ul>                                                                                                                                                                                                                                                                                                                        |
| 4.11 Fences and Hedges                                                     | <ul style="list-style-type: none"> <li>Fences, hedges, and screening devices will comply with the height restrictions established in the zoning bylaw. Fences will be installed within the property lines and outside of required sight triangles.</li> </ul>                                                                                                                                                                                                                                                                   |
| 4.14 Approaches                                                            | <ul style="list-style-type: none"> <li>Approaches will be constructed by the Developer. The Developer will ensure Approach Permits are obtained, where required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                     |
| 4.15 Roadways                                                              | <ul style="list-style-type: none"> <li>Roads will be designed and constructed to meet RM standards as per the terms of the servicing agreement and any additional engineering reports.</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| 4.24 Outdoor Storage                                                       | <ul style="list-style-type: none"> <li>The development will involve some outdoor storage of equipment and materials. Storage will be restricted to designated areas on-site and will be suitably screened from view from adjacent roads and public lands.</li> </ul>                                                                                                                                                                                                                                                            |
| 4.27 Personal Vehicle Parking and<br>4.30 Loading Requirements             | <ul style="list-style-type: none"> <li>Designated areas for parking and loading vehicles as well as adequate space for the safe movement of vehicles and pedestrians will be provided on each lot. The number and size of parking and loading spaces will comply with the requirements of the zoning bylaw.</li> </ul>                                                                                                                                                                                                          |
| 4.31 Performance Standards for Commercial and Light Industrial Development | <ul style="list-style-type: none"> <li>The Developer recognizes the purpose and significance of the performance standards established in the zoning bylaw and agrees that nuisances to neighbouring landowners must be avoided.</li> </ul>                                                                                                                                                                                                                                                                                      |
| 4.32 Waste Disposal                                                        | <ul style="list-style-type: none"> <li>Each lot will have a holding tank for sewage disposal. Effluent will be pumped and hauled to a licenced wastewater treatment facility.</li> <li>The Developer has or will enter into agreements with licenced haulers and waste management companies to ensure solid and liquid wastes are removed and disposed of in compliance with municipal and provincial regulations.</li> </ul>                                                                                                   |

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.33 Groundwater                                                   | <ul style="list-style-type: none"> <li>• A preliminary geotechnical investigation is included in this submission. The report indicates the presence of groundwater but does not identify the potential for contamination or other adverse impacts to the aquifer. All guidelines of the Saskatchewan Health Authority and the Water Security Agency will be followed.</li> <li>• The Developer has obtained approval from WSA to increase the volume of water drawn from the same well that supplies the condo development. Water will be distributed to each lot through a communal system.</li> </ul> |
| 4.44 Landscape Buffers                                             | <ul style="list-style-type: none"> <li>• Landscape buffers, with a minimum depth of 5.0 metres will be provided along the front site lines of each lot.</li> <li>• 4.44.2(b) 3.0 metres on corner lost.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                      |
| 4.48 Development/Subdivision Adjacent to Potential Hazardous Lands | <ul style="list-style-type: none"> <li>• The land is identified on the RM's OCP Map 5A as potentially flood prone and potentially hazardous. A preliminary drainage design is included in this submission.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   |

#### **Current Zoning Designation**

- SE ¼ 06-18-18-W2M Ext 4 - zoned AR-Agricultural Resource District

#### **Town of Pilot Butte Future Growth Area**

Because the Site is close to the Town of Pilot Butte, a brief review of the Future Land Use and Annexation Areas Map, included in Pilot Butte's proposed new OCP is also included.

The Site is outside of the future growth and annexation area identified by Town of Pilot Butte in its OCP. The proposed Future Land Use Map designates land in the south half of 05-18-18-W2M as General Industrial Commercial District and Future Annexation Area. The land in the north half of 32-17-18-W2M is designated Highway Commercial, General Industrial Commercial, Community Service, and Future Annexation Area. The land uses intended within the proposed development are compatible with the uses planned for neighboring lands and would not impact the Town of Pilot Butte's plans for future growth.





## 7 CLOSURE

We trust this CDP and the attached appendices provide sufficient information for your purposes. Please direct any questions regarding the details of the development to New Horizon Group of Companies.



Seal

A handwritten signature in blue ink that reads "Ashley Beaton".

Ashley Beaton, MAsC, RPP, MCIP  
Beaton Planning

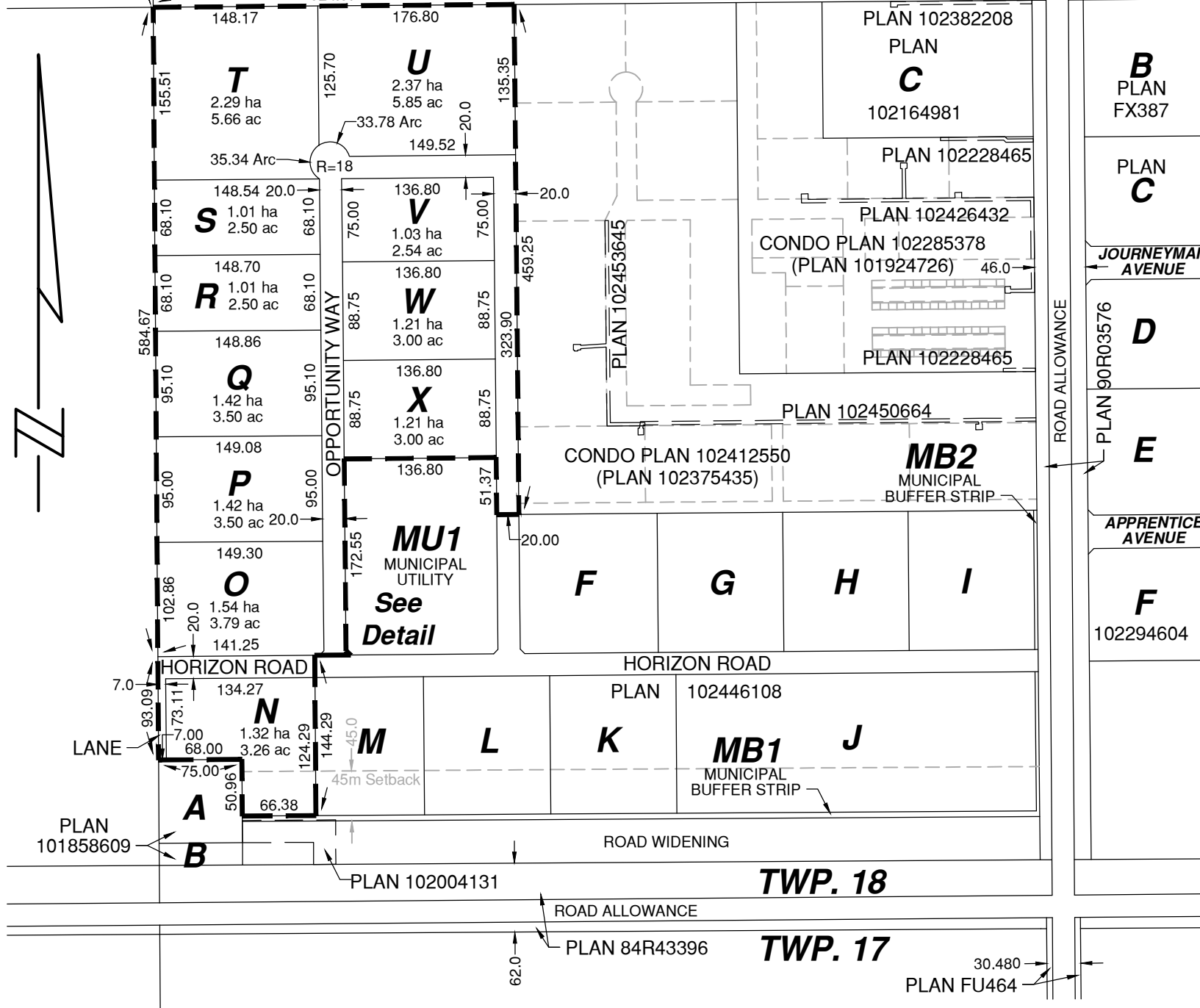
**APPENDIX A – PARCEL PICTURE SE ¼ 06-18-18-W2M EXT 4**

DISCLAIMER: THIS IS NOT A PLAN OF SURVEY. It is a consolidation of plans to assist in identifying the location, size and shape of a parcel in relation to other parcels. Parcel boundaries and area may have been adjusted to fit with adjacent parcels. To determine actual boundaries, dimensions or area of any parcel, refer to the plan, or consult a surveyor.

## APPENDIX B – PLAN OF PROPOSED SUBDIVISION



6  
18-18-2



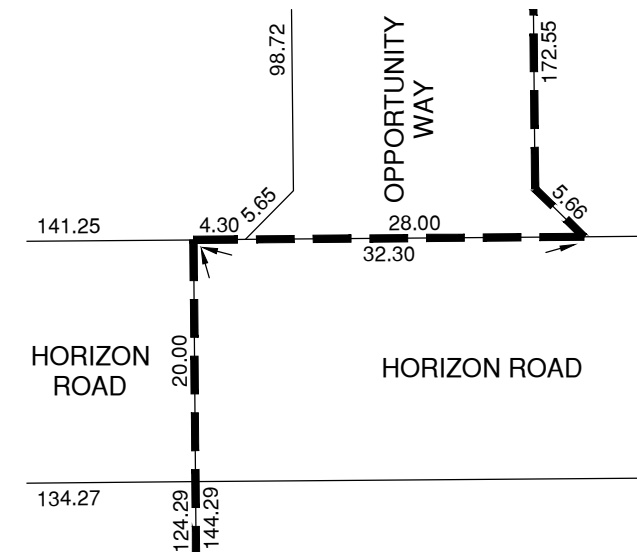
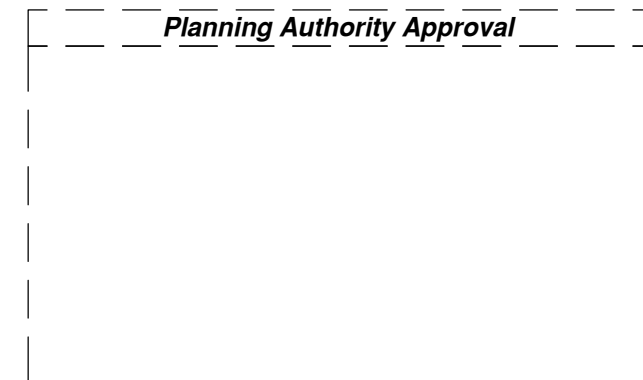
# PLAN OF PROPOSED SUBDIVISION

OF ALL OF  
**S.E.¼ SEC.6-TWP.18-RGE.18-W.2Mer.**  
**R.M. of EDENWOLD No. 158, SK**

SCALE 1:5000

## NOTES

PRELIMINARY SURVEY DONE ON DECEMBER 6, 2024.  
PORTION TO BE SURVEYED IS OUTLINED IN A HEAVY DASHED LINE, AND CONTAINS  
**18.03 ha. (44.55 acres).**  
MEASUREMENTS ARE IN METRES AND DECIMALS THEREOF.  
DISTANCES ARE APPROXIMATE AND MAY VARY BY ± 5 METRES.  
STANDARD ROAD ALLOWANCE SHOWN ARE 20.117m IN WIDTH.  
SOURCE PARCEL NUMBER IS 204128388.



**DETAIL**  
NOT TO SCALE

Daniel S. E. Cook  
Saskatchewan Land Surveyor

Representative of New Horizon Park Incorporated  
Approval: Owner S.E.¼ SEC.6-TWP.18-RGE.18-W.2Mer.

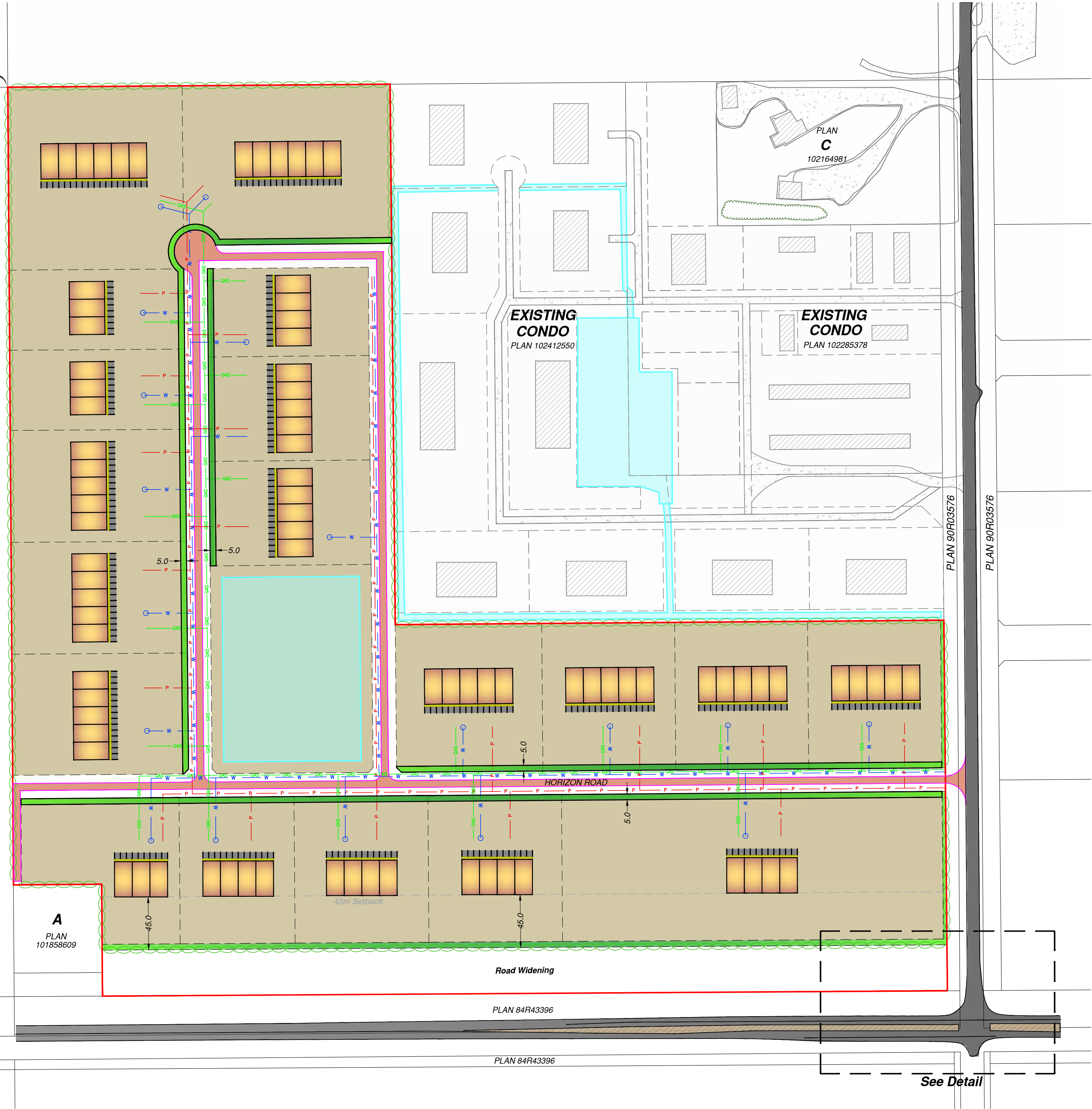
| No.            | REVISIONS          | DATE                      | DR. | CH.  |
|----------------|--------------------|---------------------------|-----|------|
| 1              | Update street name | June 2, 2025              | kmh | dsec |
| 0              | Preliminary Plan   | April 16, 2025            | kmh | dsec |
| FILE: RE232092 |                    | DWG.: RE232092-PH4-DEV-R1 |     |      |

**Meridian**  
Surveys Ltd.

## APPENDIX C – CONCEPT PLAN

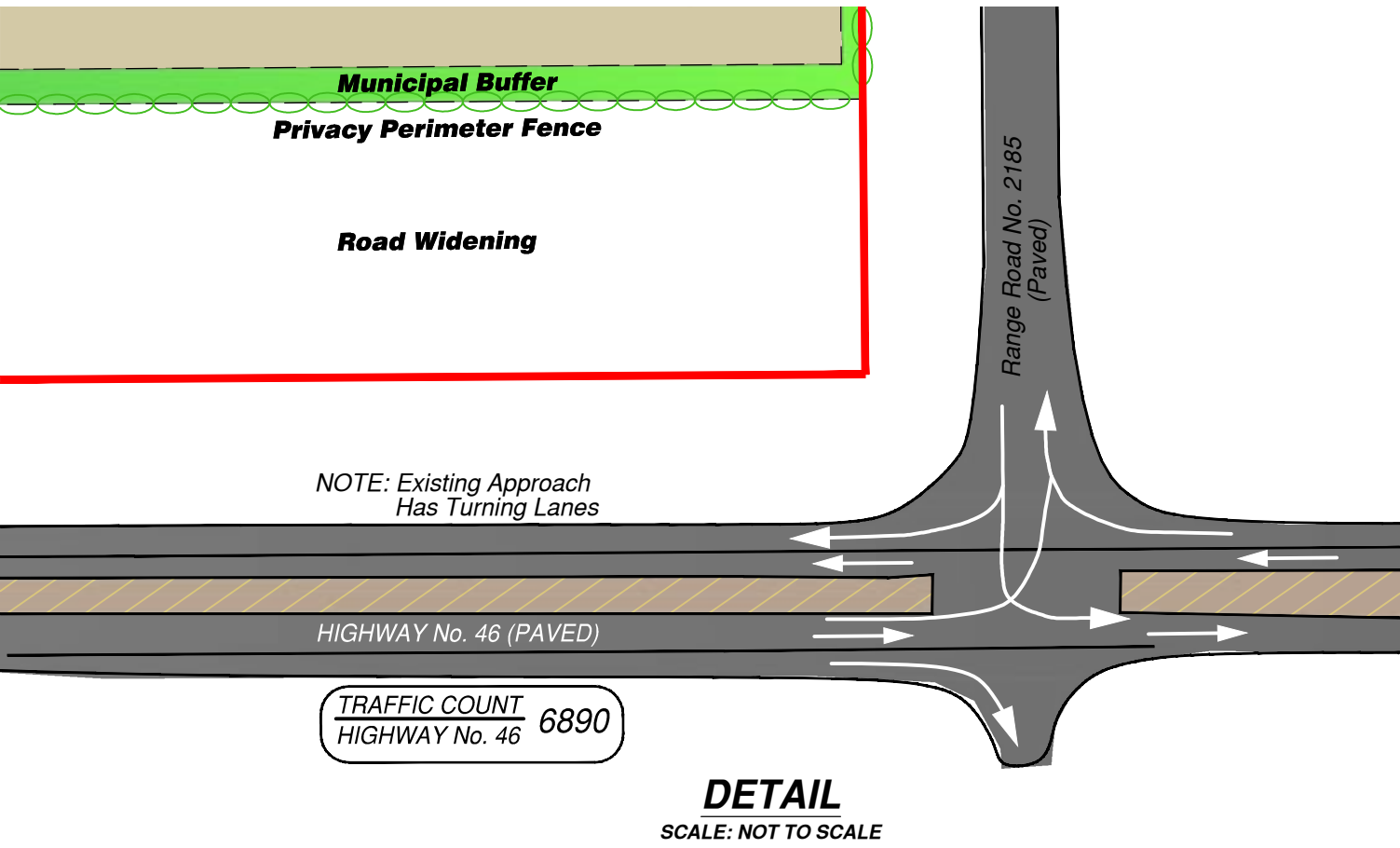


6  
18-18-2



PLAN VIEW  
SCALE: NOT TO SCALE

| Legend                     |  |                        |  |
|----------------------------|--|------------------------|--|
| Landscaping                |  | New Development        |  |
| Proposed Building          |  | Condo Subdivision      |  |
| Gravel Road (Main Traffic) |  | Privacy Fence          |  |
| Lot Gravel                 |  | Existing Fence         |  |
| Parking Stall              |  | Waterline              |  |
| Sidewalk                   |  | Powerline              |  |
| Drainage                   |  | Gasline                |  |
| Existing Building          |  | Curbstop / Water Valve |  |
| Existing Gravel Road       |  | Existing Well          |  |
| Existing Paved Road        |  |                        |  |



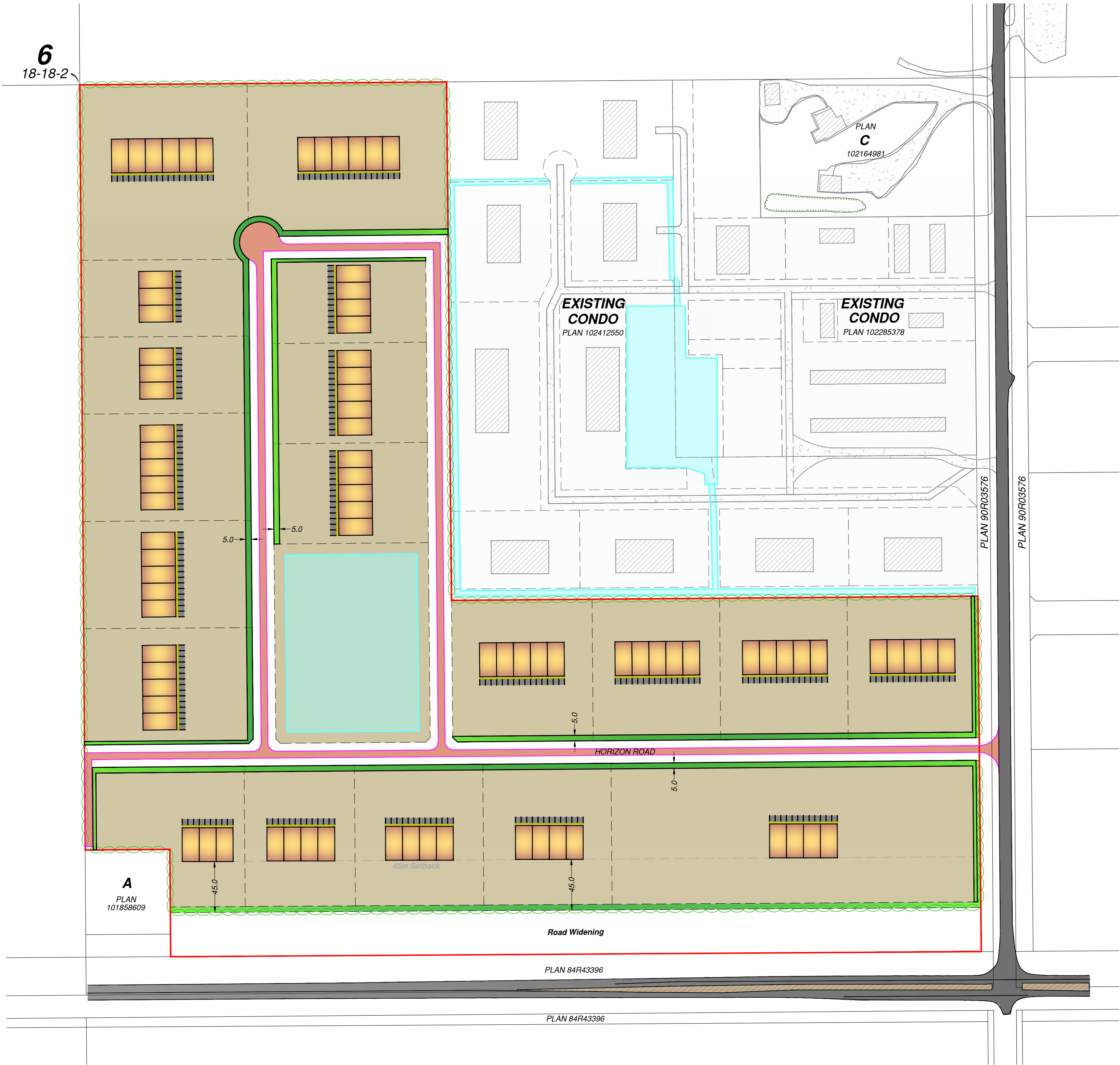
NOTE: Saskpower to complete power design  
Existing utilities not shown on plan.



| CONCEPT PLAN SHOWING DEVELOPMENT       |                            |                    |
|----------------------------------------|----------------------------|--------------------|
| ON                                     |                            |                    |
| S.E. ¼ SEC. 6-TWP. 18-RGE. 18-W. 2Mer. |                            |                    |
| RM OF EDENWOLD No. 158, SASKATCHEWAN   |                            |                    |
| DRAWING:                               | RE232092-CONCEPT-PLAN-Rev3 | DATE: May 22, 2024 |
|                                        |                            | REV No. 3          |

## APPENDIX D – LANDSCAPING PLAN





PLAN VIEW  
SCALE: NOT TO SCALE

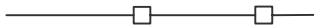
| Legend                     |                                                                                     |                   |                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|
| Landscaping                |  | New Development   |  |
| Proposed Building          |  | Condo Subdivision |  |
| Gravel Road (Main Traffic) |  | Privacy Fence     |  |
| Lot Gravel                 |  | Existing Fence    |  |
| Parking Stall              |  |                   |                                                                                     |
| Sidewalk                   |  |                   |                                                                                     |
| Drainage                   |  |                   |                                                                                     |
| Existing Building          |  |                   |                                                                                     |
| Existing Gravel Road       |  |                   |                                                                                     |
| Existing Paved Road        |  |                   |                                                                                     |



PHOTO INSERTS  
PRIVACY PERIMETER  
FENCE (6' HIGH)

NOTE: Saskpower to complete power design  
Existing utilities not shown on plan.



| LANDSCAPING PLAN SHOWING DEVELOPMENT |                           |         |                  |
|--------------------------------------|---------------------------|---------|------------------|
| ON                                   |                           |         |                  |
| S.E.¼ SEC.6-TWP.18-RGE.18-W.2Mer.    |                           |         |                  |
| RM OF EDENWOLD No. 158, SASKATCHEWAN |                           |         |                  |
| DRAWING:                             | RE232092-LANDSCAPING-Rev4 | DATE:   | February 6, 2026 |
|                                      |                           | REV No. | 4                |

## APPENDIX E – ENVIRONMENTAL SITE ASSESSMENTS



TITLE: ENVIRONMENTAL SITE ASSESSMENT – PHASE I  
SE 6-18-18-W2 EXT 2  
EAST OF REGINA, SASKATCHEWAN

CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION

FILE NO: GE-07133      DATE: OCTOBER 15, 2010

**TABLE OF CONTENTS**

|                                                          | <b><u>PAGE NO.</u></b> |
|----------------------------------------------------------|------------------------|
| <b>EXECUTIVE SUMMARY</b>                                 |                        |
| 1.0 INTRODUCTION                                         | 1                      |
| 2.0 SITE LOCATION                                        | 2                      |
| 3.0 RECORDS REVIEW                                       | 2                      |
| 3.1 Air Photos                                           | 2                      |
| 3.2 Property Use Records                                 | 3                      |
| 3.2.1 Insurance Maps                                     | 3                      |
| 3.2.2 Henderson Directories                              | 3                      |
| 3.3 Title Search and Assessment Rolls                    | 3                      |
| 3.3.1 Land Titles                                        | 3                      |
| 3.3.2 Assessment Records and Building Permits            | 3                      |
| 3.4 Previous Phase I ESA Reports                         | 4                      |
| 3.5 Building Plans                                       | 4                      |
| 3.6 Geological and Geotechnical Reports                  | 4                      |
| 3.6.1 Regional Geology                                   | 4                      |
| 3.6.2 Local Geology                                      | 4                      |
| 3.7 Regulatory Information                               | 4                      |
| 3.7.1 Rural Municipality of Edenwold                     | 4                      |
| 3.7.2 Saskatchewan Environment                           | 5                      |
| 3.7.3 National Pollutant Release Inventory               | 5                      |
| 4.0 SITE VISIT                                           | 5                      |
| 4.1 General                                              | 5                      |
| 4.1.1 Methodology                                        | 5                      |
| 4.1.2 Limitations                                        | 5                      |
| 4.1.3 Property Use                                       | 5                      |
| 4.1.4 Hazardous Materials                                | 6                      |
| 4.1.5 Unidentified Substances                            | 6                      |
| 4.1.6 Storage Tanks                                      | 6                      |
| 4.1.7 Storage Containers                                 | 6                      |
| 4.1.8 Odours                                             | 6                      |
| 4.1.9 Potable Water Supply                               | 6                      |
| 4.1.10 Special Attention Items                           | 6                      |
| 4.2 Interior Observations                                | 7                      |
| 4.3 Exterior Observations                                | 7                      |
| 4.3.1 Observations of Adjoining Properties               | 7                      |
| 4.3.2 Topographic, Geologic and Hydrogeologic Conditions | 7                      |
| 4.3.3 General Description of Structures                  | 7                      |
| 4.3.4 Wells                                              | 8                      |
| 4.3.5 Sewage Disposal                                    | 8                      |

**TABLE OF CONTENTS (cont'd)**

|                                                    | <b><u>PAGE NO.</u></b> |
|----------------------------------------------------|------------------------|
| 4.3.6 Pits and Lagoons                             | 8                      |
| 4.3.7 Stained Materials                            | 8                      |
| 4.3.8 Stressed Vegetation                          | 8                      |
| 4.3.9 Fill                                         | 8                      |
| 4.3.10 Wastewater                                  | 8                      |
| 4.3.11 Watercourses, Ditches or Standing Water     | 8                      |
| 4.3.12 Roads, Parking Facilities and Right-of-Ways | 9                      |
| 5.0 INTERVIEWS                                     | 9                      |
| 6.0 EVALUATION OF INFORMATION                      | 9                      |
| 6.1 Summary of Site History                        | 9                      |
| 6.2 Potential Environmental Concerns               | 9                      |
| 7.0 CONCLUSIONS AND RECOMMENDATIONS                | 9                      |
| 8.0 QUALIFICATIONS OF ASSESSOR                     | 10                     |
| 9.0 LIMITATIONS                                    | 10                     |
| 10.0 CLOSURE                                       | 10                     |
| STATEMENT OF GENERAL CONDITIONS                    |                        |

**APPENDICES**

|                    |                                                   |
|--------------------|---------------------------------------------------|
| <b>APPENDIX A:</b> | Site Plan Showing Location of Study Area          |
| <b>APPENDIX B:</b> | Air Photos                                        |
| <b>APPENDIX C:</b> | Historical Land Titles                            |
| <b>APPENDIX D:</b> | Photographs of the Subject Property               |
| <b>APPENDIX E:</b> | Site Plan Showing Details of the Subject Property |
| <b>APPENDIX F:</b> | Resume of Steve Harty, P. Eng.                    |

## **EXECUTIVE SUMMARY**

### **SITE DESCRIPTION**

The subject property is located approximately 6 kilometres east of the City of Regina, Saskatchewan in the Rural Municipality of Edenwold. The property covers an area of 128 acres approximately.

### **SITE HISTORY**

The subject property has never been developed and is cultivated farmland.

### **SUMMARY OF FINDINGS**

The information collected during this investigation indicates that the risk of significant soil and/or groundwater contamination as the result of former and present activities on the subject property and immediate adjacent properties is considered to be low. No further investigative work is warranted at this time.



## **GROUND ENGINEERING LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS

415 - 7th AVENUE • REGINA • SASKATCHEWAN • CANADA • S4N 4P1  
TELEPHONE: (306) 569-9075 FAX: (306) 565-3677 EMAIL: geground@accesscomm.ca

FILE: GE-07133

October 15, 2010

North Ridge Development Corporation  
395 Maxwell Crescent  
REGINA, Saskatchewan  
S4N 5X9

**ATTENTION: MR. PATRICK MAH**

Dear Sir:

**SUBJECT: ENVIRONMENTAL SITE ASSESSMENT – PHASE I  
SE 6-18-18-W2 EXT 2  
EAST OF REGINA, SASKATCHEWAN**

---

**1.0 INTRODUCTION**

This report documents our Phase I Environmental Site Assessment of the above captioned property located east of the City of Regina in the Rural Municipality of Edenwold, Saskatchewan. An environmental site assessment was required to determine if there are any potential environmental problems on the property as a general liability risk reduction. This report was prepared according to guidelines provided in CSA Standard Z768-01.



A MEMBER ORGANIZATION OF THE ASSOCIATION OF CONSULTING ENGINEERS OF CANADA

AFFILIEE A LA FIDIC MEMBER



- ☐ SOIL MECHANICS AND FOUNDATION CONSULTANTS
- ☐ SITE INVESTIGATIONS
- ☐ FOUNDATION DESIGN
- ☐ SPECIFICATIONS
- ☐ CONSTRUCTION SUPERVISION
- ☐ INSPECTION AND LABORATORY TESTING SERVICES
- ☐ SOILS
- ☐ CONCRETE
- ☐ ASPHALT
- ☐ PAVEMENT DESIGN AND EVALUATION
- ☐ SLOPE STABILITY
- ☐ REPORTS
- ☐ SEEPAGE CONTROL BARRIERS FOR MUNICIPAL AND INDUSTRIAL WASTE CONTAINMENT
- ☐ ENVIRONMENTAL STUDIES



The scope of work for this study consisted of the following tasks:

- .1 Review records, local information, site and building plans, agency searches, historical air photos, geological and hydrogeological data, previous environmental assessments and interview persons knowledgeable about the property to obtain information on the history of the site and adjacent areas. Emphasis shall be placed on determining whether potential contaminants have been released to the environment and the locations of those releases;
- .2 Conduct a visual inspection of the property and interior of any buildings in an effort to identify areas of potential contamination. The visual inspection will be conducted with particular interest in identifying the presence of contaminants and hazardous materials. Adjacent properties will be observed in an attempt to identify sources of potential contamination which may have impacted the subject property.
- .3 Utilizing information gathered through the visual inspection and historical review, prepare a report documenting conclusions regarding actual or potential site contamination associated with former uses of and activities on the subject property or adjacent properties. Where warranted, provide recommendations for additional investigative work and/or remediation.

## **2.0 SITE LOCATION**

The subject property is located approximately 6 kilometres east of the City of Regina, Saskatchewan in the Rural Municipality of Edenwold. The property borders the north side of Highway No. 46 and covers an area of 128 acres approximately. A site plan showing the location of the study area is included in Appendix A.

## **3.0 RECORDS REVIEW**

### **3.1 Air Photos**

Air photos taken in 1968, 1975, 1980, 1993 and 2004 were reviewed to obtain additional information on the history of the site. Copies of the air photos are included in Appendix B.

The subject property and adjacent properties are undeveloped cultivated farmland/grassland on all the air photos. There are several seasonal sloughs visible on the property. The existing farmyard is visible on the adjacent property to the northeast on all the photos. The existing Saskwater pumping station is visible on the adjacent property to the southwest on the 2004 air photo.

### **3.2 Property Use Records**

#### **3.2.1 Insurance Maps**

A review of Insurance Maps was performed at the Saskatchewan Archives Board. There were no Insurance Maps available for the study area.

#### **3.2.2 Henderson Directories**

A review of Henderson Directories was performed at the Saskatchewan Archives Board. There were no Henderson Directories available for the study area.

### **3.3 Title Search and Assessment Rolls**

#### **3.3.1 Land Titles**

The current legal description of the subject property is SE 6-18-18-W2 EXT 2. A property title search was conducted through the Information Services Corporation (ISC) from the current registered owner back to 1916. The historical titles are included in Appendix C and indicate the property has been owned by various individuals up until August 5, 2009 at which time it was sold to the current property owner (101056728 Saskatchewan Ltd.).

#### **3.3.2 Assessment Records and Building Permits**

The assessment records for the subject property was not available.

### **3.4 Previous Phase I ESA Reports**

We are not aware of any previous Phase I ESA reports which were conducted for the subject property.

### **3.5 Building Plans**

The subject property is not developed.

### **3.6 Geological and Geotechnical Reports**

#### **3.6.1 Regional Geology**

Information available in our Company files indicates that the subject property is located in the physiographic division known as the Assiniboine River Plain of the Saskatchewan Plains. The prominent landform in and around the City of Regina is a glacial lacustrine plain. The glacial sediments which form the surficial geology in the study area consist of lacustrine deposits silt and clay, glacial till and outwash sands and gravels. These drift materials are underlain by the Upper Cretaceous shale bedrock of the Bearpaw Formation.

#### **3.6.2 Local Geology**

Information available in our Company files indicates that the study area is underlain by glacial lacustrine deposits of highly plastic clay, silt and sand. The lacustrine deposits are underlain by a clayey glacial till stratigraphic unit.

### **3.7 Regulatory Information**

#### **3.7.1 Rural Municipality of Edenwold**

A request was submitted to the Rural Municipality of Edenwold to obtain any information they may have concerning the environmental status of the subject property. At the time this report was prepared no response had been received from the Rural Municipality.

### **3.7.2 Saskatchewan Environment**

A search of Saskatchewan Environments Hazardous Substance Storage Sites and Hazardous Substance Spills database and the Saskatchewan Environment "Saskatchewan Spills" website was conducted to determine if there has been any reported spills on the subject property or adjacent properties. There has been no registry of a hazardous substance storage site on the subject property or immediate adjacent properties. There are no spills recorded on the subject property or immediate adjacent properties.

### **3.7.3 National Pollutant Release Inventory**

A search of Environment Canada's National Pollutant Release Inventory (NPRI) was conducted to determine if there has been any reported pollutant releases on the subject property or adjacent properties. There are no registered pollutant releases on the subject property and immediate adjacent properties.

## **4.0 SITE VISIT**

### **4.1 General**

#### **4.1.1 Methodology**

Mr. Steve Harty, P. Eng. of GE Ground Engineering Ltd. conducted a visual inspection of the subject property and adjacent properties on August 10, 2010. Photographs of the subject property taken during the site inspection are included in Appendix D. Details of the subject property and adjacent properties are shown on the site plan included in Appendix E.

#### **4.1.2 Limitations**

The entire property was accessible.

#### **4.1.3 Property Use**

There was no current use or evidence of past uses of the subject property or immediate adjacent properties that involve, or have involved, such activities as the use, treatment,

storage, disposal, generation of hazardous materials, landfilling or the storage of wastewater in impoundments.

#### **4.1.4 Hazardous Materials**

There were no hazardous materials identified during our visit.

#### **4.1.5 Unidentified Substances**

There were no unidentified substances detected on the subject property or immediate adjacent properties.

#### **4.1.6 Storage Tanks**

There were no storage tanks noted on the subject property or immediate adjacent properties.

#### **4.1.7 Storage Containers**

There were no storage containers identified on the subject property.

#### **4.1.8 Odours**

There were no unusual odours noted during our site visit.

#### **4.1.9 Potable Water Supply**

There is currently no potable water supply for the subject property.

#### **4.1.10 Special Attention Items**

Comments pertaining to special attention items are as follows:

- .1 The subject property is presently undeveloped, therefore, the potential for special attention items related to buildings is not applicable.

- .2 No high tension transmission lines or electrical substations that could generate significant electromagnetic fields were identified on or immediately adjacent to the subject property.
- .3 No major or persistent sources of noise and vibration were identified during our site inspection.
- .4 There were no suspect PCB containing equipment identified at the property.

#### **4.2 Interior Observations**

The subject property is presently undeveloped.

#### **4.3 Exterior Observations**

There was no visual evidence of contamination noted during our exterior inspection of the subject property.

##### **4.3.1 Observations of Adjoining Properties**

With the exception of the farmyard (northeast) and Saskwater pumping station (southwest), the adjacent properties are all undeveloped cultivated farmland.

##### **4.3.2 Topographic, Geologic and Hydrogeologic Conditions**

The topography of the property and adjacent areas is relatively flat. The subject property is underlain by both the Condie and Regina Aquifers.

##### **4.3.3 General Description of Structures**

The subject property is presently undeveloped.



**4.3.4 Wells**

There were no wells identified on the property.

**4.3.5 Sewage Disposal**

There is currently no sewage generated at the property.

**4.3.6 Pits and Lagoons**

There are no pits or lagoons located on the subject property.

**4.3.7 Stained Materials**

There was no surficial staining noted during our inspection.

**4.3.8 Stressed Vegetation**

No surface vegetation was visible on the subject property at the time of our inspection.

**4.3.9 Fill**

Some fill material has been placed at the southeast corner of the property. There was no evidence that fill materials have been placed in other areas of the subject property.

**4.3.10 Wastewater**

There was no evidence of wastewater or other liquid discharge on the subject property.

**4.3.11 Watercourses, Ditches or Standing Water**

There is a dugout located at the southeast corner of the property.

#### **4.3.12 Roads, Parking Facilities and Right-of-Ways**

A grid road borders the east side of the property. Highway No. 46 borders the south side of the property.

### **5.0 INTERVIEWS**

The following people were interviewed to augment the information gathered during our records review and site visit:

- .1 Mr. Larry Lolacher (former property owner);
- .2 Mr. Larry Morrison (employee of local business).

No information of a potential environmental concern was noted during our interviews. The owner of the property from 1950 to 1979 (Mr. George Davis) is deceased. Mr. Thomas Davis owned the property from 1979 to 2005. Numerous unsuccessful attempts have been made to contact Mr. Thomas Davis.

### **6.0 EVALUATION OF INFORMATION**

#### **6.1 Summary of Site History**

The subject property has never been developed and is cultivated farmland.

#### **6.2 Potential Environmental Concerns**

There were no potential environmental concerns identified on the subject property or immediate adjacent properties during our historical review and site reconnaissance.

### **7.0 CONCLUSIONS AND RECOMMENDATIONS**

The information collected during this investigation indicates that the risk of significant soil and/or groundwater contamination as the result of former and present activities on the subject property and immediate adjacent properties is considered to be low. No further investigative work is warranted at this time.

## **8.0 QUALIFICATIONS OF ASSESSOR**

This assessment was performed by Mr. Steve Harty, P. Eng. The qualifications of Mr. Harty are outlined in his resume, included in Appendix F.

## **9.0 LIMITATIONS**

The conclusions and recommendations presented herein are based on the information obtained during our historical review and site reconnaissance. This report has been prepared for the exclusive use of North Ridge Development Corporation. It has been prepared in accordance with generally accepted engineering practices. No warranty is made, either expressed or implied, since even the most rigorous professional assessment may fail to identify all hidden problems on a site. A Statement of General Conditions is included, attached with this report.

## **10.0 CLOSURE**

We trust this report is satisfactory for your purposes. If you require additional information, please contact our office.



Yours very truly  
GE GROUND ENGINEERING LTD.

STEVEN HARTY, P. ENG.

SH:ss

Distribution:  
SH248

North Ridge Development Corporation (2 copies, 1 PDF copy)  
Office (1 copy)



**GE GROUND ENGINEERING LTD.**

**STATEMENT OF GENERAL CONDITIONS**

**1. STANDARD OF CARE**

This study and report have been prepared in accordance with generally accepted geotechnical and environmental consulting practices in this area. No other warranty, expressed or implied, is made.

**2. BASIS OF REPORT**

This report has been prepared for the specific site, development, design objectives and purpose that were described to GE Ground Engineering Ltd. (GE) by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alternation or variation from any of the said descriptions provided to GE, unless GE is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

**3. USE OF THE REPORT**

The information and opinions expressed in this document are for the sole benefit of the Client. No other party may use or rely upon the report or any portion thereof without GE's expressed written consent. GE will consent to any reasonable request by the Client to approve the use of this report by other parties as approved users. The contents of the report remain the copyright property of GE, who authorizes only the Client and "Approved Users" to make copies of the report only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make available this document or the report or any portion thereof, or any copy of the report or portion thereof, to any party without the expressed written permission of GE.

**4. COMPLETE REPORT**

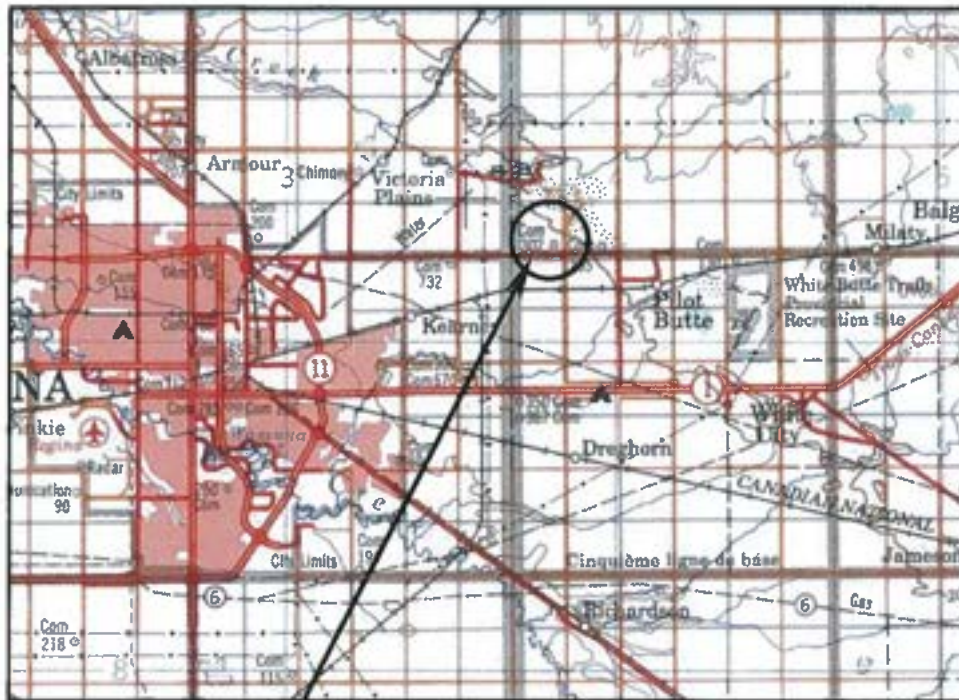
The report is of a summary nature and is not intended to stand alone without reference to the instructions given to GE by the Client, communications between GE and the client, and to any other reports, writings or documents prepared by GE for the Client relative to the specific site described herein, all of which constitute the report. Wherever the word "report" is used herein, it shall refer to any and all of the documents referred to herein.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. GE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OR PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

**5. INTERPRETATION OF THE REPORT**

Nature and Exactness of Soil and Contaminant Description. Classification and identification of soils, rocks, geological units, contaminant materials and contaminant quantities have been based on commonly accepted geotechnical and environmental consulting practices in this area. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs implemented with appropriate equipment by experienced personnel, may fail to locate some hidden conditions. All reasonable problems will involve an inherent risk that some conditions will not be detected and all reports summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such reports should be aware of and accept this risk. Some conditions are subject to change over time and those making use of the report should be aware of this possibility and understand that the report only presents the conditions at the sampled points at the time of sampling.

## **APPENDIX A**



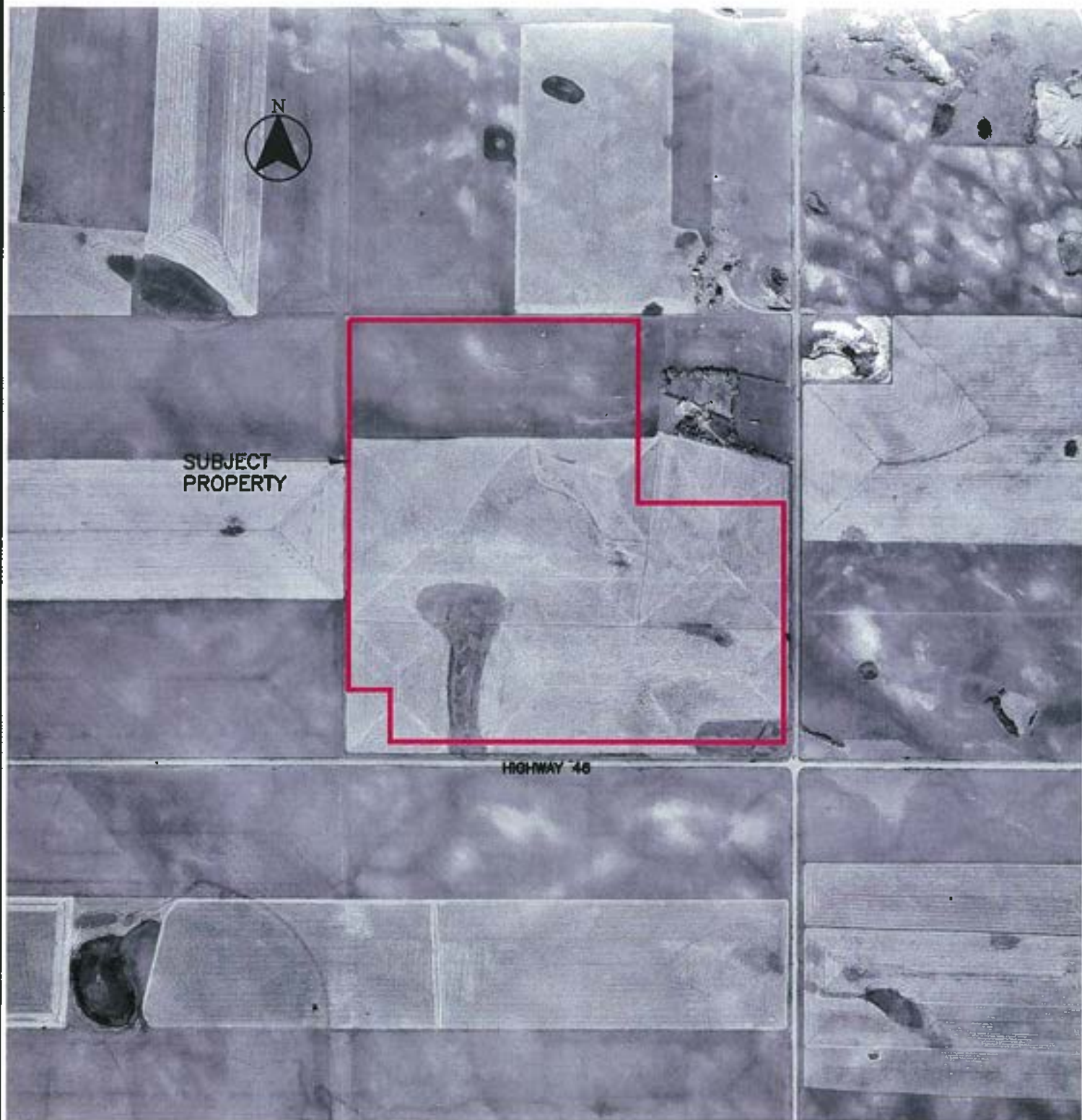
STUDY AREA





## **APPENDIX B**

ARCHIVE: 2007 FILES\2007 ENG FILES\GE-07133 NORTH RIDGE OF PILOT BUTTE PHASE 1\ARCHPHOTOS\07133\_1968\_AIRPHOTO.DWG



NOT TO SCALE



**GROUND ENGINEERING LTD.**

CONSULTING GEOENVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

1968 AIRPHOTO (A19290-58)  
ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT:

NORTH RIDGE DEVELOPMENT CORP.

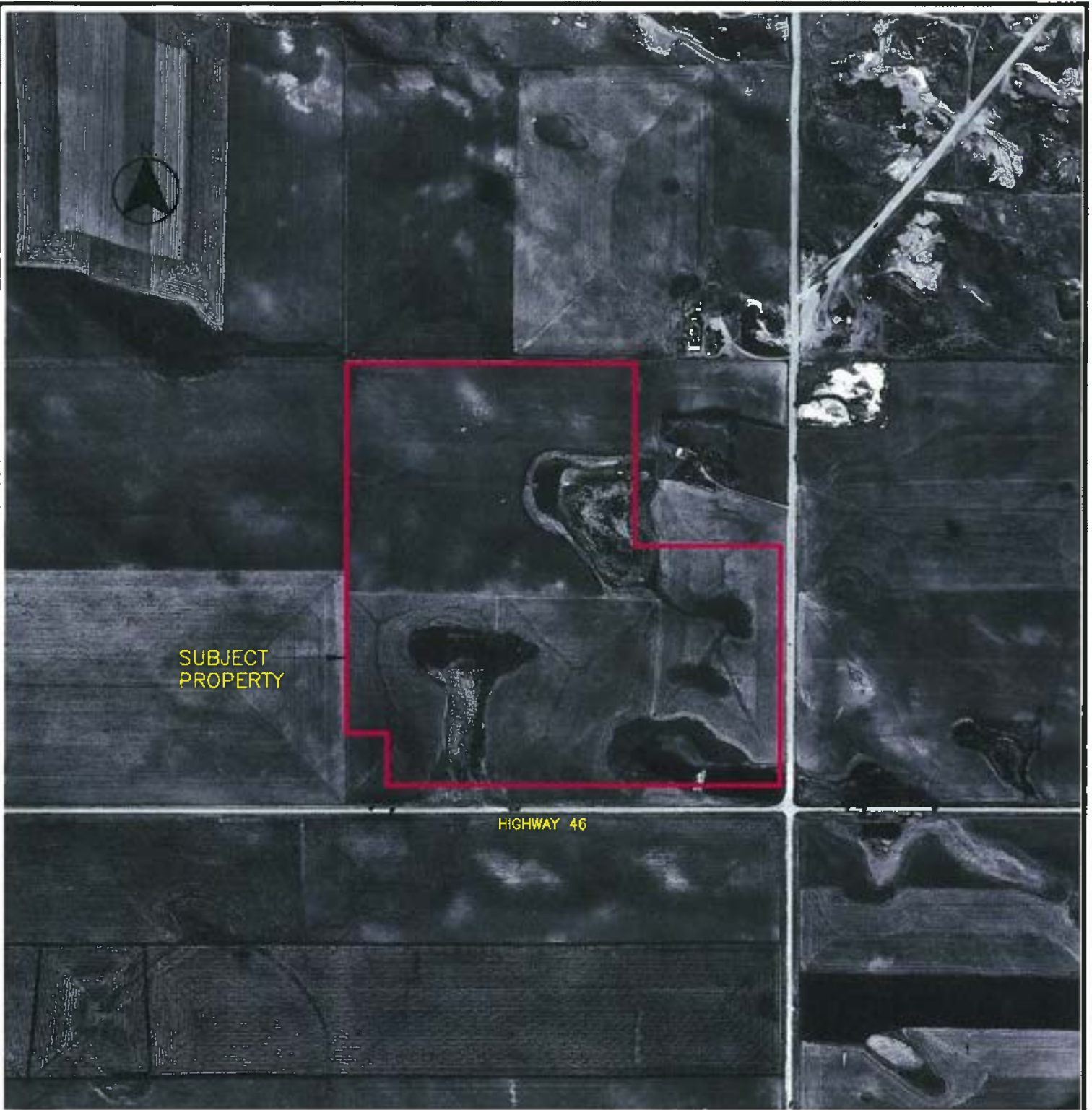
APPROVED:

DATE:

OCTOBER 15, 2010

DWG. No.:

GE-07133



SUBJECT  
PROPERTY

HIGHWAY 46

NOT TO SCALE



**GROUND ENGINEERING LTD.**

CONSULTING GEONVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

1975 AIRPHOTO (MA988-104)  
ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT:

NORTH RIDGE DEVELOPMENT CORP.

APPROVED:

DATE:

OCTOBER 15, 2010

DWG. No.:

GE-07133





NOT TO SCALE



**GROUND ENGINEERING LTD.**  
CONSULTING GEOENVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

1980 AIRPHOTO (CSMA 80183 07 REGINA L6-94)  
ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT:

NORTH RIDGE DEVELOPMENT CORP.

APPROVED:

DATE:

OCTOBER 15, 2010

DWG. No.

GE-07133



NOT TO SCALE



**GROUND ENGINEERING LTD.**  
CONSULTING GEOTECHNICAL ENGINEERS  
REGINA, SASKATCHEWAN

1993 AIRPHOTO (C.S.M.A. SUM3A645 02 --70)  
ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT:

NORTH RIDGE DEVELOPMENT CORP.

APPROVED:

DATE:

OCTOBER 15, 2010

DWG. No.:

GE--07133





NOT TO SCALE



**GROUND ENGINEERING LTD.**

CONSULTING GEOENVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

2004 AIRPHOTO  
ENVIRONMENTAL SITE ASSESSMENT – PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT: NORTH RIDGE DEVELOPMENT CORP.

APPROVED:

DATE:

JULY 28, 2010

DWG. No.:

GE-07133



## **APPENDIX C**

## **Province of Saskatchewan Land Titles Registry Title**

**Title #:** 137879117      **As of:** 07 Jul 2010 12:03:08.033  
**Title Status:** Active      **Last Amendment Date:** 14 Aug 2009 14:06:37.423  
**Parcel Type:** Surface      **Issued:** 05 Aug 2009 15:50:21.003  
**Parcel Value:** \$400,000.00 CAD  
**Title Value:** \$400,000.00 CAD      **Municipality:** RM OF EDENWOLD NO. 158  
**Converted Title:** 79R10492  
**Previous Title and/or Abstract #:** 134663272

101056728 SASKATCHEWAN LTD. is the registered owner of Surface Parcel  
#163512211

Reference Land Description: SE Sec 06 Twp 18 Rge 18 W2 Extension 2  
As shown on Plan 101924726

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 #:**  
**148257928**

CNV Easement

**Value:**  
**Reg'd:** 20 Dec 1972 02:00:45  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

E 400 Feet

**Holder:**

Saskatchewan Telecommunications  
13th Floor, 2121 Saskatchewan Drive  
Regina, Saskatchewan, Canada S4P 3Y2

**Client #:** 100006861

**Int. Register #:** 101300386

**Converted Instrument #:** 72R44698

**Interest #:**  
**148257940**

Pipelines Act - Easement

**Value:**  
**Reg'd:** 26 Sep 2007 08:54:46  
**Interest Register Amendment**  
**Date:** N/A

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

SASKATCHEWAN WATER CORPORATION

200 - 111 FAIRFORD STREET EAST

MOOSE JAW, SK, Canada S6H 1C8

**Client #:** 100313143**Int. Register #:** 113257638**Interest #:****148257951**Saskatchewan Water Corporation Act  
Easement**Value:****Reg'd:** 26 Sep 2007 09:14:35**Interest Register Amendment****Date:** N/A**Interest Assignment****Date:** N/A**Expiry Date:** N/A**Holder:**

SASKATCHEWAN WATER CORPORATION

200 - 111 FAIRFORD STREET EAST

MOOSE JAW, SK, Canada S6H 1C8

**Client #:** 100313143**Int. Register #:** 113257841**Addresses for Service:****Name****Address****Owner:**101056728 SASKATCHEWAN LTD. P.O. BOX 638 SASKATOON, SK, Canada S7K 3L7  
Client #: 118008019**Notes:**

Parcel Class Code: Parcel (Generic)

[Back](#)

# Interest Registration Summary

Permanent Pipeline Easement

Application Seq. #1



Information  
Services  
Corporation

Packet No: 120808133

## Interest Details

Interest Type: Pipelines Act - Easement

Holder's Mortgage or Interest Reference No:

Scheduled Expiry Date:

Interest Value: \$

Feature Number:

Description of Interest:

Conditions:

Type of Condition: No Conditions

Details (if any):

## Attach Interest

| Attach Interest To: | Number:   | Parcel Class Code | Holder/Owner          | Reference Land Description                           | Indicator      |
|---------------------|-----------|-------------------|-----------------------|------------------------------------------------------|----------------|
| Title               | 128673546 | Parcel (Generic)  | Davis, Thomas Charles | SE 06 18 18 2 Ext 1<br>As shown on Plan<br>101858609 | Not Applicable |

## Holder Details

Share

Fractional Share: 1/1

Holder:

| Client No. | Name                           | Address                   | Phone | Fax |
|------------|--------------------------------|---------------------------|-------|-----|
| 100313143  | SASKATCHEWAN WATER CORPORATION |                           |       |     |
| Email      |                                | Preferred Delivery Method |       |     |
|            |                                |                           |       |     |

## Summary of Title Requests

## Authorizations & Attachments

Authorizations:

No. of Authorizations: 0

Attachments:

No. of Attachments: 1

Attachment 1:

davis easement.tif

## OFFER TO GRANT AN EASEMENT

BETWEEN: Thomas Charles Davis  
of Regina in the Province of Saskatchewan,

Hereinafter called the "Offeror",

and

### **SASKATCHEWAN WATER CORPORATION**

Hereinafter called the "Offeree".

WHEREAS: the Offeror is registered owner of an estate in fee simple of those certain pieces or parcels of land situated in the Province of Saskatchewan and being described as follows:

Surface Parcel # 153964334  
Title # 128673546  
Reference Land Description SE Section 06 Twp 18 Rge 18 W 2  
Extension 1  
As described on Certificate of Title 79R10492

Except: All Minerals in the Crown

### **NOW THEREFORE THIS AGREEMENT WITNESSETH THAT:**

In consideration of mutual covenants set out herein, and in consideration of the sum of One Hundred Dollars (\$100.00), the Offeror does hereby grant an easement unto the Offeree for the full right and privilege to use as a right-of-way on, over and/or through that portion of the said lands being 0.21 hectares (0.52 acres) more or less, hereinafter called "permanent right-of-way", as shown outlined in red on the attached sketch marked Exhibit "A", for the laying down, construction, operation, maintenance, inspection, alteration, removal, replacement, reconstruction and/or repair of a pipeline or lines including, but without limiting the generality of the foregoing, all such works, structures and other equipment and appurtenances as may be necessary or convenient for the safe carriage, conveyance and/or transportation of water for the Regina East Well #3 Pipeline Tie-In, together with the right of ingress and egress to and from the same for its servants, agents, vehicles, machinery, supplies and equipment for all purposes necessary or incidental to the exercise and enjoyment of the rights and privileges herein granted, until the grantee surrenders or terminates the rights and privileges hereby granted.

**FIRST:** THE Offeree (Grantee) shall have the right to immediate use of the required portion of the said land although the required portion may not have been surveyed at that time.

**SECOND:** THE Offeree (Grantee) shall pay the consideration, for the pipeline right-of-way in the above mentioned land, set out above to the Offeror (Grantor), or such other person or persons entitled to it under provisions of The Public Utilities Easements Act, within 60 days after the date of registration of this easement in the appropriate Land Titles Office.

**THIRD:** THE Offeror (Grantor) shall not, without the prior written consent of the Offeree (Grantee), excavate, drill, install, erect or permit to be cultivated, excavated, drilled, installed or erected on or under the said right-of-way any crop, dugout, dam, well, pit, foundation, pavement, obstruction or other structure or installation, but otherwise the Offeror (Grantor) shall have the right fully to use and enjoy the said right-of-way provided that no appreciable damage is done to the Offeree's (Grantee's) vehicles, machinery, supplies and equipment, except as the same may be necessary for the purposes herein granted to the Offeree (Grantee).

**FOURTH:** The Offeree (Grantee) shall be solely responsible for the operation and maintenance of the works.



**FIFTH:**

THE Offeree (Grantee) shall also have the right to a temporary working space which shall consist of:

a strip of land 5 metres in width, lying North of, and a strip of land 20 metres in width, lying South of and adjacent to the permanent pipeline right-of-way, to facilitate the pipeline construction within the aforementioned permanent right-of-way, the said lands being 0.20 hectares ( 0.48 acres) more or less, hereinafter called "temporary right-of-way", as shown outlined in green on the attached sketch marked Exhibit "A"

Temporary working space will not be required after the pipeline has been fully constructed.

If additional temporary working space width is required over and above the width previously mentioned, the Offeree (Grantee) will contact and advise the Offeror (Grantor) of such. Additional compensation will be calculated in accordance with condition 6 (a) and (b), and paid to the Offeror (Grantor) by the Offeree (Grantee), within 30 days of being advised of such.

**SIXTH:**

Offeree (Grantee), in addition to the compensation mentioned on page 1, shall pay the following compensation:

- a. A lump sum of 0.00 for approximately 0.20 hectares ( 0.48 acres) of temporary working space right-of-way;
- b. A lump sum of 0.00 for temporary damages on both the permanent right-of-way and temporary work space right-of-way;
- c. For above ground structures pursuant to condition number 8 hereof, a lump sum of N/A Dollars ( \$ N/A ) shall be paid relative to the land taken out of production and inconvenience created to farming operations.

The sum of 0.00 will be paid by the Offeree (Grantee) to the Offeror (Grantor) or such other person or persons entitled to it under provisions of The Public Utilities Easements Act, within 30 days of the signing of this agreement by the Offeree (Grantee).

**SEVENTH:**

THE Offeree (Grantee) shall compensate the Offeror (Grantor) or any person claiming through or under the Offeror (Grantor) for damage done to any buildings, crops, grain, fences, livestock, or other goods or chattels of the Offeror (Grantor) or any person claiming through or under the said Offeror (Grantor) when such damage is caused by the Offeree (Grantee) while constructing, operating, maintaining or altering the works; subject to the provisions of those statutes of Saskatchewan governing the affairs and operations of the Offeree (Grantee) as to claims and settlements for damages in that behalf.

**EIGHTH:**

THE Offeree (Grantee) shall, as soon as weather and soil conditions permit, bury and maintain all pipelines and restore the permanent and temporary work space rights-of-way to the same condition, so far as may be practicable and usual so to do, as the same was in prior to the entry thereon and use thereof by the Offeree (Grantee). The following structures and appurtenances will remain above ground:

**NINTH:**

THE Offeree (Grantee), performing and observing the covenants and conditions on its part to be performed and observed, shall and may peaceably hold and enjoy the rights and liberties granted without hindrance, molestation or interruption on the part of the Offeror (Grantor).

**TENTH:**

EACH of the parties herein may assign this agreement and all rights and benefits accruing to him, and shall thereupon give notice thereof to the other party by registered mail.

**ELEVENTH:**

NOTWITHSTANDING that in constructing, maintaining and operating the works the Offeree (Grantee) may install works, structures and other equipment and appurtenances in, or under the permanent right-of-way in such manner that it or they become affixed to the realty, the title and property of such works, structures and other equipment and appurtenances together with the right to remove the same shall nevertheless remain in the Offeree (Grantee).

**TWELFTH:**

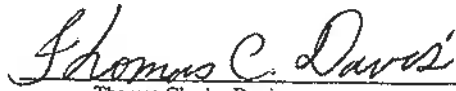
IN the event that the Offeree (Grantee) desires to abandon the right-of-way, the Offeree (Grantee) shall cause this easement to be discharged as an encumbrance from the title to the lands and will restore the surface of the lands to the same condition, so far as may be practicable so to do, as the same were in prior to the entry thereon and the use thereof by the Offeree (Grantee). The Offeree (Grantee) however may, if it so elects, leave the pipeline(s) or any part thereof in place. After abandonment as aforesaid, the Offeree (Grantee) shall have no further responsibility with respect to the right-of-way or the adjacent lands.

THIRTEENTH: NOTHING herein contained shall be deemed to vest in the Offeree (Grantee) any titles of mines, ores, metals, coal, slate, oil, gas or other minerals in or under the land comprising the said right-of-way.

FOURTEENTH: THIS easement may be registered in the appropriate Land Titles Office, under provisions of *THE PUBLIC UTILITIES EASEMENTS ACT*, and shall be of the same force and effect, to all intents and purposes, as a covenant running with the land, and shall be binding upon the heirs, executors, administrators, successors and assigns of the Grantor and the heirs, successors and assigns of the Grantee.

IN WITNESS WHEREOF the Offeror (Grantor) has hereunto set his hand and seal, and the Offeree (Grantee) has attached its Corporate Seal attested under the hands of its signing official, this 13<sup>th</sup> day of September, A.D. 2007.

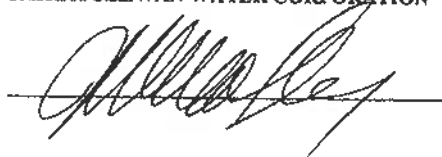
  
Witness

  
Thomas Charles Davis

Approved for Acceptance



SASKATCHEWAN WATER CORPORATION



Date: Sept. 14, A.D. 2007

CANADA  
PROVINCE OF SASKATCHEWAN  
TO WIT:

MAKE OATH AND SAY:

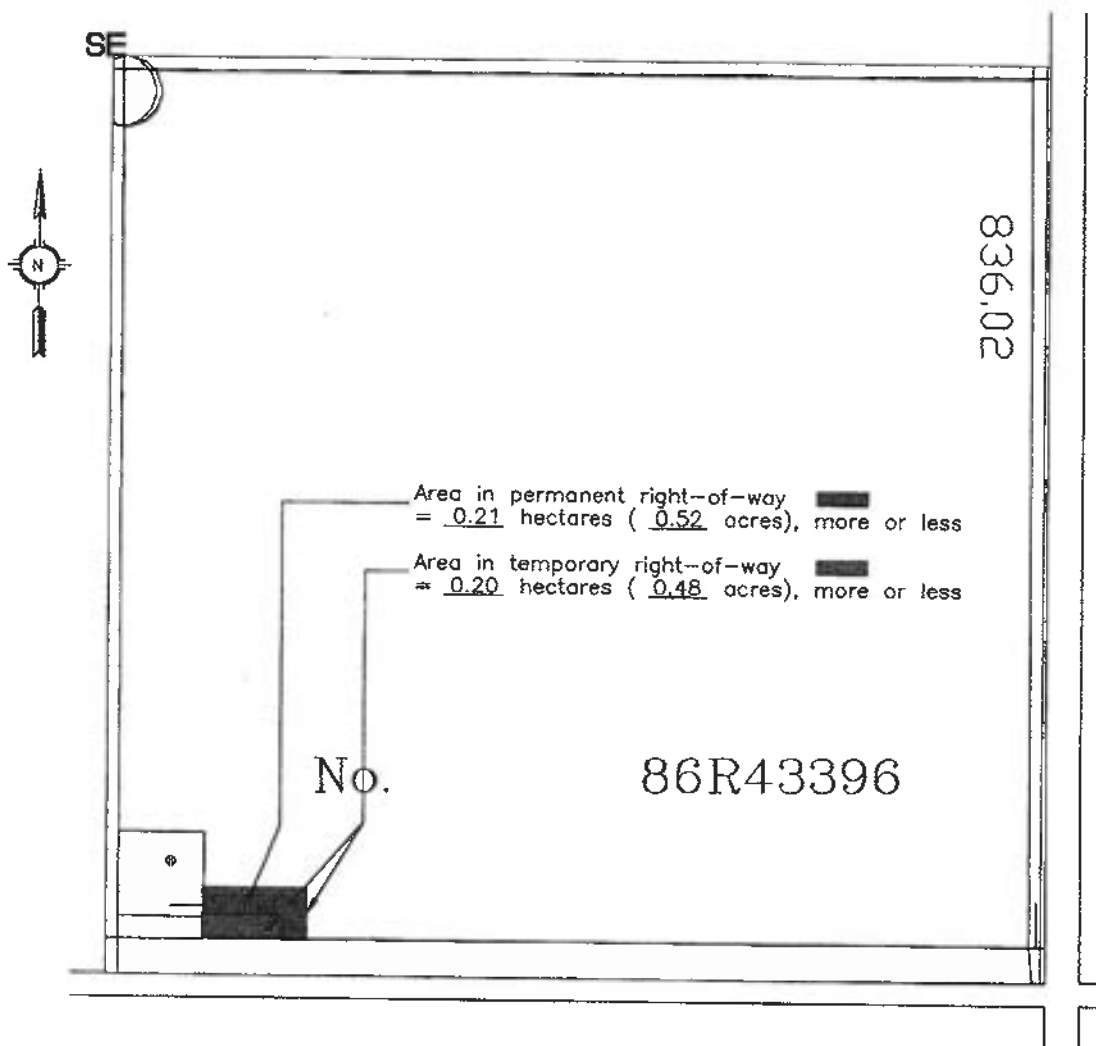
- SWORN BEFORE ME AT Moose Jaw in  
the Province of Saskatchewan, this 14th day of  
September, A.D. 2007.

Wm Rave  
A Commissioner for Oaths, in and for the  
Province of Saskatchewan  
My Appointment Expires: June 30, 2009

*H Davis*

**EXHIBIT 'A'**

Sketch showing details of right-of-way in the  
South East (SE) of Section Six (06),  
in Township Eighteen (18), Range Eighteen (18),  
West of the Second (2nd) Meridian, in the Province of Saskatchewan.



Signed by the Offeror (Grantor) at the R.M. of Edenwold,  
in the Province of Saskatchewan, this 13th day of September, A.D. 2007.

[Signature]  
Witness

Thomas C. Davis  
Offeror (Grantor)

plot date: Sept. 11, 2007

ref: SE0618182

## **Province of Saskatchewan Land Titles Registry Title**

**Title #:** 134663272      **As of:** 05 Aug 2009 15:49:21.0  
**Title Status:** Active      **Last Amendment Date:** 04 Feb 2009 09:51:00.457  
**Parcel Type:** Surface      **Issued:** 05 Nov 2007 15:41:00.640  
**Parcel Value:** \$117,000.00 CAD  
**Title Value:** \$117,000.00 CAD      **Municipality:** RM OF EDENWOLD NO. 158  
**Converted Title:** 79R10492  
**Previous Title and/or Abstract #:** 128673546

Larry Lolacher is the registered owner of Surface Parcel #163512211

Reference Land Description: SE Sec 06 Twp 18 Rge 18 W2 Extension 2  
As shown on Plan 101924726

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 #:**  
**139869040**      CNV Easement

**Value:**  
**Reg'd:** 20 Dec 1972 02:00:45  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

E 400 Feet  
**Holder:**  
Saskatchewan Telecommunications  
13th Floor, 2121 Saskatchewan Drive  
Regina, Saskatchewan, Canada S4P 3Y2  
**Client #:** 100006861  
**Int. Register #:** 101300386  
**Converted Instrument #:** 72R44698

**Interest #:**  
**139869051**      Miscellaneous Interest

**Value:**  
**Reg'd:** 23 Jun 2005 14:49:22  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**

**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
Larry Lolacher  
P.O. Box 94  
Pilot Butte, Saskatchewan, Canada S0G 3Z0  
**Client #:** 119153662  
**Int. Register #:** 109890715

**Interest #:**  
**139869062**

Pipelines Act - Easement

**Value:**  
**Reg'd:** 26 Sep 2007 08:54:46  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
SASKATCHEWAN WATER CORPORATION  
200 - 111 FAIRFORD STREET EAST  
MOOSE JAW, SK, Canada S6H 1C8  
**Client #:** 100313143  
**Int. Register #:** 113257638

**Interest #:**  
**139869073**

Saskatchewan Water Corporation Act  
Easement

**Value:**  
**Reg'd:** 26 Sep 2007 09:14:35  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
SASKATCHEWAN WATER CORPORATION  
200 - 111 FAIRFORD STREET EAST  
MOOSE JAW, SK, Canada S6H 1C8  
**Client #:** 100313143  
**Int. Register #:** 113257841

**Addresses for Service:**

**Name**

**Address**

**Owner:**

Larry Lolacher  
Client #: 119336698

Box 94 Pilot Butte, Saskatchewan, Canada S0G 3Z0

**Notes:**



Parcel Class Code: Parcel (Generic)

Back

## **Province of Saskatchewan Land Titles Registry Title**

|                                                    |                                                      |
|----------------------------------------------------|------------------------------------------------------|
| <b>Title #:</b> 128673546                          | <b>As of:</b> 05 Nov 2007 15:40:00.00                |
| <b>Title Status:</b> Active                        | <b>Last Amendment Date:</b> 26 Sep 2007 09:14:36.033 |
| <b>Parcel Type:</b> Surface                        | <b>Issued:</b> 10 Jan 2005 14:44:30.660              |
| <b>Parcel Value:</b> N/A                           |                                                      |
| <b>Title Value:</b> N/A                            | <b>Municipality:</b> RM OF EDENWOLD NO. 158          |
| <b>Converted Title:</b> 79R10492                   |                                                      |
| <b>Previous Title and/or Abstract #:</b> 104515242 |                                                      |

Thomas Charles Davis is the registered owner of Surface Parcel #153964334

Reference Land Description: SE Sec 06 Twp 18 Rge 18 W2 Extension 1  
As shown on Plan 101858609

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 #:**  
**127085722**

CNV Easement

**Value:**  
**Reg'd:** 20 Dec 1972 02:00:45  
**Interest Register Amendment Date:** N/A  
**Interest Assignment Date:** N/A  
**Expiry Date:** N/A

E 400 Feet

**Holder:**

Saskatchewan Telecommunications  
13th Floor, 2121 Saskatchewan Drive  
Regina, Saskatchewan, Canada S4P 3Y2

**Client #:** 100006861

**Int. Register #:** 101300386

**Converted Instrument #:** 72R44698

**Interest #:**  
**128802674**

Miscellaneous Interest

**Value:**  
**Reg'd:** 23 Jun 2005 14:49:22  
**Interest Register Amendment Date:** N/A  
**Interest Assignment**

**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
Larry Lolacher  
P.O. Box 94  
Pilot Butte, Saskatchewan, Canada S0G 3Z0  
**Client #:** 119153662  
**Int. Register #:** 109890715

**Interest #:**  
**139287976**

Pipelines Act - Easement

**Value:**  
**Reg'd:** 26 Sep 2007 08:54:46  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
SASKATCHEWAN WATER CORPORATION  
111 Fairford St. E  
Moose Jaw, SK, Canada S6H 7X9  
**Client #:** 100313143  
**Int. Register #:** 113257638

**Interest #:**  
**139288607**

Saskatchewan Water Corporation Act  
Easement

**Value:**  
**Reg'd:** 26 Sep 2007 09:14:35  
**Interest Register Amendment**  
**Date:** N/A  
**Interest Assignment**  
**Date:** N/A  
**Expiry Date:** N/A

**Holder:**  
SASKATCHEWAN WATER CORPORATION  
111 Fairford St. E  
Moose Jaw, SK, Canada S6H 7X9  
**Client #:** 100313143  
**Int. Register #:** 113257841

**Addresses for Service:**

**Name**

**Address**

**Owner:**

Thomas Charles Davis  
Client #: 103146397

Pilot Butte, Saskatchewan, Canada

**Notes:**

Parcel Class Code: Parcel (Generic)

Back

Canada

Province of Saskr

Value \$ 16,000.00

**SASKATCHEWAN**

No. 79R10492

Grant No. DB 12552 /

Ref. 187 BHO

## CERTIFICATE OF TITLE

THIS IS TO CERTIFY that

THOMAS CHARLES DAVIS  
of Pilot Butte, in the Province of Saskatchewan

is now the owner of an estate in fee simple  
of and in The South East Quarter of Section Six (6),  
in Township Eighteen (18),  
in Range Eighteen (18),  
West of the Second Meridian,

in the Province of Saskatchewan, in the Dominion of Canada, containing One Hundred and Sixty  
(160) acres, more or less, according to Dominion Government Survey thereof.

MINERALS INCLUDED

# Plan Ex

**SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM NOW OR  
HEREAFTER UNDERWRITTEN OR ENDORSED HEREON, OR WHICH ATTACH BY IMPLICATION UNDER  
THE LAND TITLES ACT.**

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal this Seventh  
day of March, A.D. 19 79.  
Post Office Address Pilot Butte, Saskatchewan

  
Registrar  
Regina Land Registration District

Regina

Province of Saskatchewan 14

**ABBREVIATIONS**  
T—Transfer  
Tr—Transmission  
M—Mortgage  
C—Caveat  
ML—Mechanic's Lien  
TL—Tax Lien  
E—Execution  
N—Notice

**Show Other Abbreviations Here**

# CERTIFICATE OF TITLE

|      |                                                  |
|------|--------------------------------------------------|
| Name | Thomas, Charles Davis                            |
| Land | SE $\frac{1}{4}$ of Sec 6-18-18-Mend Mer., Sask. |

## CHARGES, LIENS AND INTERESTS

[illegible]



# Saskatchewan Certificate of Title

VALUE, \$ 5600<sup>00</sup>

GRANT No. DB 12552

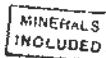
SEE R. No. ACV FOLIO 84

No. 18784Q

DAY BOOK No. EX5994

This is to Certify that George Davis  
of Pilot Butte in the Province of Saskatchewan  
Farmer

is now the owner of an estate in fee simple  
of and in the Southeast Quarter of Section Six (6) in Township  
Eighteen (18) in Range Eighteen (18) West of the Second Meridian  
in the Province of Saskatchewan, in the Dominion of Canada  
containing One Hundred and sixty (160) acres, more or less according  
to Dominion Government Survey thereof



**CANCELLED**

79R 10492

subject to the incumbrances, liens and interests notified by memorandum indorsed hereon,  
or which may hereafter be made in the register, or which attach by implication under The

COMPARED  
4/3/51  
DEC 2 1950

Land Titles Act.

In Witness Whereof I have hereunto subscribed my name and affixed my official  
seal at Regina this Twenty-second day of November A.D. 1950

Post Office Address Pilot Butte,  
Saskatchewan

J. L. L. L. L. per Registrar  
Land Registration District  
Regina Saskatchewan

1  
This Title is subject to a Caveat made by  
Residential Trust Company Limited  
Dated the 17 day of Feb 1922 and registered  
at 12 M. on the 12 day of Feb 1922  
as No. E X 3006  
Address for Service:  
Regina Sask  
REGISTRAR

2  
The within land is subject to a MORTGAGE made by  
Residential Trust Company Limited  
in favor of Edmund John David  
to secure repayment of the sum of \$1,000.00 with interest thereon at the rate of 4%  
per annum. Principal and interest to be paid on the 1st day of March 1922. Dated the  
17 day of Feb 1922 at 10 o'clock A.M.  
the 12 day of Feb 1922 as No. E X 3006  
Regina Sask  
REGISTRAR

3  
The CAVEAT registered as No. E X 3006 is WITHDRAWN by  
Residential Trust Company Limited  
Registered at 12 M. on the 12 day of Feb 1922 and  
as No. 44806759  
REGISTRAR

4  
This Title is subject to a Caveat made by  
Atlantic Richfield Company  
Dated the 28th day of March 1922 and registered  
at 11 M. on the 14th day of April 1922  
as No. 58818872  
Address for Service: MacPherson, Lealie & Tyerman,  
2236 Albert St., Regina, Sask.  
REGISTRAR

5  
No. 4001  
A mineral certificate as to petroleum and natural gas  
was issued under section 208 this 28th day of April  
A.D. 1922, pursuant to application registered as No. 58815826  
REGISTRAR

6  
A Mortgage registered as No. 58815826 made by Atlantic Richfield Company  
MORTGAGE made by Atlantic Richfield Company  
November 1922 day of December 1922  
REGISTRAR

7  
A Caveat made by George Davis  
between George Davis  
and The Franklake Rural Telephone Company Limited  
dated 12th day of December 1922  
at 11 M. on the 20th day of December 1922  
as No. 72844698  
REGISTRAR

8  
The CAVEAT registered as No. 58818872 is WITHDRAWN by  
Atlantic Richfield Company  
Dated the 15th day of March 1922 and  
Registered at 10 o'clock A.M. on the 25th day of March 1922  
as No. 75811477  
REGISTRAR

9  
This Certificate is CANCELLED BY Registrar  
and a new Certificate of Title No. 75811477 issued to  
Atlantic Richfield Company  
dated the 15th day of March 1922  
day of March 1922 as No. 75811477  
Registrar

10

11

12

13

14

15

16

17

18

19

20

CANADA

No. 84.

GRANT No.

PROVINCE OF SASKATCHEWAN

VALUE, \$ 5800<sup>00</sup>

See R. No. 827. Folio 46.

# Certificate of Title

DAY BOOK No. B. K. 4541.

## Assiniboia Land Registration District

This is to Certify that Samuel Summerville  
of Pilot Butte, in the Province of Saskatchewan, has

is now the owner of an estate in fee simple  
of and in the South East quarter of Section Six (6), in Township Eighteen (18),  
in Range Eighteen (18), West of the Second Meridian, in the Province  
of Saskatchewan, in the Dominion of Canada, containing One Hundred  
and sixty (60) acres, more or less according to Dominion Government  
survey thereof.

JAN 11 1916

FILED  
TO NO 1873HQ

subject to the incumbrances, liens and interests notified by memorandums underwritten or indorsed  
hereon, or which may hereafter be made in the registers

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this  
seventh day of January A.D. 1916.

Post Office Address

Pilot Butte  
Sask

M. W. Duggell Registrar  
Assiniboia Land Registration District

Percy H. Baragar.  
Law Union and Rock Insurance Company Limited.  
800<sup>00</sup>  
a 5<sup>th</sup> May 15<sup>th</sup> 1916  
% Belu, Hammond, Hamilton  
Munro, Man. M. W. Duggell  
B. G. 5716.

The Mortgage registered as No. 29,5716 is hereby cancelled  
by Law Union and Rock Insurance Company Limited  
this 19<sup>th</sup> day of July 1916, and is  
10.59 o'clock A.M.  
1916, No. 29,5635  
REGISTERED



|                             |                       |                               |                       |
|-----------------------------|-----------------------|-------------------------------|-----------------------|
| <b>Land Description</b>     |                       |                               |                       |
| SE 06-18-18-2 Ext 2         |                       |                               |                       |
| As shown on Plan 101924726  |                       |                               |                       |
| <b>Owner(s)</b>             |                       |                               |                       |
| 101056728 SASKATCHEWAN LTD. |                       |                               |                       |
| <b>Number</b>               | <b>Share</b>          | <b>Title Lock Information</b> |                       |
| Title 137879117             | 1/1                   | N/A                           |                       |
| <b>Last Amendment Date</b>  |                       | <b>Old Land Description</b>   |                       |
| 14-Aug-2009 14:06:37.423    |                       |                               |                       |
| <b>Parcel</b>               | <b>Parcel Type</b>    | <b>Municipality</b>           | <b>Ties</b>           |
| 163512211                   | Surface Regular       | RM OF EDENWOLD NO. 158        |                       |
| <b>Validated Ties</b>       | <b>Commodity/Unit</b> |                               | <b>Linked to Unit</b> |
|                             | N/A                   |                               | N/A                   |

|                                |                       |                               |                       |
|--------------------------------|-----------------------|-------------------------------|-----------------------|
| <b>Land Description</b>        |                       |                               |                       |
| Blk/Par B-Plan 101924726 Ext 0 |                       |                               |                       |
| <b>Owner(s)</b>                |                       |                               |                       |
| Lolacher, Karen                |                       |                               |                       |
| Lolacher, Larry                |                       |                               |                       |
| <b>Number</b>                  | <b>Share</b>          | <b>Title Lock Information</b> |                       |
| Title 138708007                | 1/1                   | N/A                           |                       |
| <b>Last Amendment Date</b>     |                       | <b>Old Land Description</b>   |                       |
| 24-Dec-2009 14:36:26.233       |                       |                               |                       |
| <b>Parcel</b>                  | <b>Parcel Type</b>    | <b>Municipality</b>           | <b>Ties</b>           |
| 163512200                      | Surface Regular       | RM OF EDENWOLD NO. 158        |                       |
| <b>Validated Ties</b>          | <b>Commodity/Unit</b> |                               | <b>Linked to Unit</b> |
|                                | N/A                   |                               | N/A                   |

|                                |                       |                               |                       |
|--------------------------------|-----------------------|-------------------------------|-----------------------|
| <b>Land Description</b>        |                       |                               |                       |
| Blk/Par A-Plan 101858609 Ext 0 |                       |                               |                       |
| <b>Owner(s)</b>                |                       |                               |                       |
| SASKATCHEWAN WATER CORPORATION |                       |                               |                       |
| <b>Number</b>                  | <b>Share</b>          | <b>Title Lock Information</b> |                       |
| Title 128673333                | 1/1                   | N/A                           |                       |
| <b>Last Amendment Date</b>     |                       | <b>Old Land Description</b>   |                       |
| 11-Sep-2008 14:52:38.347       |                       |                               |                       |
| <b>Parcel</b>                  | <b>Parcel Type</b>    | <b>Municipality</b>           | <b>Ties</b>           |
| 153964299                      | Surface Regular       | RM OF EDENWOLD NO. 158        |                       |
| <b>Validated Ties</b>          | <b>Commodity/Unit</b> |                               | <b>Linked to Unit</b> |
|                                | N/A                   |                               | N/A                   |

|                                                |                       |                               |                       |
|------------------------------------------------|-----------------------|-------------------------------|-----------------------|
| <b>Land Description</b>                        |                       |                               |                       |
| Blk/Par B-Plan 101858609 Ext 0                 |                       |                               |                       |
| <b>Owner(s)</b>                                |                       |                               |                       |
| Her Majesty The Queen in Right of Saskatchewan |                       |                               |                       |
| <b>Number</b>                                  | <b>Share</b>          | <b>Title Lock Information</b> |                       |
| Title 128673489                                | 1/1                   | N/A                           |                       |
| <b>Last Amendment Date</b>                     |                       | <b>Old Land Description</b>   |                       |
| 10-Jan-2005 14:44:30.410                       |                       |                               |                       |
| <b>Parcel</b>                                  | <b>Parcel Type</b>    | <b>Municipality</b>           | <b>Ties</b>           |
| 153964323                                      | Surface Regular       | RM OF EDENWOLD NO. 158        |                       |
| <b>Validated Ties</b>                          | <b>Commodity/Unit</b> |                               | <b>Linked to Unit</b> |
|                                                | N/A                   |                               | N/A                   |

|                         |  |  |  |
|-------------------------|--|--|--|
| <b>Land Description</b> |  |  |  |
| SE 06-18-18-2 Ext 0     |  |  |  |

As described on Certificate of Title 79R10492.

|                            |                                                                       |                        |                                                                     |                       |
|----------------------------|-----------------------------------------------------------------------|------------------------|---------------------------------------------------------------------|-----------------------|
| <b>Owner(s)</b>            |                                                                       |                        |                                                                     |                       |
| Davis, Thomas Charles      |                                                                       |                        |                                                                     |                       |
| <b>Title</b>               | <b>Number</b>                                                         | <b>Share</b>           | <b>Title Lock Information</b>                                       |                       |
| Title                      | 104515253                                                             | 1/1                    | Uncertified Mineral Title - Non-Producing Area (Transfer Permitted) |                       |
| <b>Last Amendment Date</b> |                                                                       |                        | <b>Old Land Description</b>                                         |                       |
| 22-Jan-2002 20:08:44.030   |                                                                       |                        |                                                                     |                       |
| <b>Parcel</b>              | <b>Parcel Type</b>                                                    | <b>Municipality</b>    |                                                                     | <b>Ties</b>           |
| 111654873                  | Mineral                                                               | RM OF EDENWOLD NO. 158 |                                                                     |                       |
| <b>Validated Ties</b>      | <b>Commodity/Unit</b>                                                 |                        |                                                                     | <b>Linked to Unit</b> |
|                            | All mines and minerals as referenced on Certificate of Title 79R10492 |                        |                                                                     | N/A                   |

|                                                                                                                 |                              |                        |                                                                                                                     |                              |
|-----------------------------------------------------------------------------------------------------------------|------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Land Description</b><br>SE 06-18-18-2 Plan 86R43396 Ext 1<br>As described on Certificate of Title 86R43396A. |                              |                        |                                                                                                                     |                              |
| <b>Owner(s)</b><br>Her Majesty the Queen (Saskatchewan)                                                         |                              |                        |                                                                                                                     |                              |
| <b>Title</b>                                                                                                    | <b>Number</b>                | <b>Share</b>           | <b>Title Lock Information</b>                                                                                       |                              |
|                                                                                                                 | 103132325                    | 1/1                    | N/A                                                                                                                 |                              |
| <b>Last Amendment Date</b><br>02-Dec-2001 13:58:30.497                                                          |                              |                        | <b>Old Land Description</b><br>SE 06-18-18-2 Plan 86R43396 Ext 1<br>As described on Certificate of Title 86R43396A. |                              |
| <b>Parcel</b>                                                                                                   | <b>Parcel Type</b>           | <b>Municipality</b>    |                                                                                                                     | <b>Ties</b>                  |
| 110871907                                                                                                       | Surface Regular              | RM OF EDENWOLD NO. 158 |                                                                                                                     |                              |
| <b>Validated Ties</b>                                                                                           | <b>Commodity/Unit</b><br>N/A |                        |                                                                                                                     | <b>Linked to Unit</b><br>N/A |

|                                                                                                                |                       |                        |                                                                                                                    |                       |
|----------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Land Description</b><br>SE 06-18-18-2 Plan 90R03576 Ext 1<br>As described on Certificate of Title 90R03576. |                       |                        |                                                                                                                    |                       |
| <b>Owner(s)</b><br>Her Majesty the Queen (Saskatchewan)                                                        |                       |                        |                                                                                                                    |                       |
| <b>Title</b>                                                                                                   | <b>Number</b>         | <b>Share</b>           | <b>Title Lock Information</b>                                                                                      |                       |
|                                                                                                                | 103454131             | 1/1                    | N/A                                                                                                                |                       |
| <b>Last Amendment Date</b><br>04-Dec-2001 03:19:27.497                                                         |                       |                        | <b>Old Land Description</b><br>SE 06-18-18-2 Plan 90R03576 Ext 1<br>As described on Certificate of Title 90R03576. |                       |
| <b>Parcel</b>                                                                                                  | <b>Parcel Type</b>    | <b>Municipality</b>    |                                                                                                                    | <b>Ties</b>           |
| 110872188                                                                                                      | Surface Regular       | RM OF EDENWOLD NO. 158 |                                                                                                                    |                       |
| <b>Validated Ties</b>                                                                                          | <b>Commodity/Unit</b> |                        |                                                                                                                    | <b>Linked to Unit</b> |
|                                                                                                                | N/A                   |                        |                                                                                                                    | N/A                   |

## **APPENDIX D**





PHOTO 1



PHOTO 2





PHOTO 3



PHOTO 4



PHOTO 5



PHOTO 6





PHOTO 7



PHOTO 8



PHOTO 9



PHOTO 10





PHOTO 11



PHOTO 12



PHOTO 13



PHOTO 14





PHOTO 15

## **APPENDIX E**



2004 AIRPHOTO

NOT TO SCALE



**GROUND ENGINEERING LTD.**

CONSULTING GEOENVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

SITE PLAN SHOWING DETAILS OF SUBJECT PROPERTY  
ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT:

NORTH RIDGE DEVELOPMENT CORP.

APPROVED:

DATE:

OCTOBER 15, 2010

DWG. No.:

GE-07133

## **APPENDIX F**

**STEVEN J. HARTY, P. ENG.**  
**GE Ground Engineering Ltd.**

Steven Harty, P. Eng., is a Senior Engineer for GE Ground Engineering Ltd. He is directly involved in all aspects of the geotechnical and environmental assessment process, including site characterization, investigation, remediating, monitoring and report preparation.

**EXPERIENCE**

- Prepare Phase I and II Environmental Site Assessment Reports and contract tender documents for site remediation.
- Prepare Geotechnical investigation reports to provide foundation, floor and parking lot/roadway design recommendations.
- Conduct residential and commercial foundation inspections, assessments and designs.
- Evaluate indoor air quality for mold and volatile organic compounds (VOCs) contamination.
- Air photo interpretation and slope stability studies in landslide terrain to identify suitable building sites and provide development guidelines.
- Supervise the test hole drilling, monitoring well installations, soil sampling for numerous geotechnical investigations.
- Supervise the test hole drilling, monitoring well installations, soil and groundwater sampling for numerous and Environmental Site Assessments.
- Supervise various site remediation projects.
- Supervise the construction of bentonite liners constructed at Key Lake, McArthur River and Saskatchewan Landing Provincial Park, Saskatchewan.
- Various laboratory tests on soil and asphaltic concrete.
- Quality assurance testing of concrete, aggregate, soil and asphaltic concrete during the construction process.
- Pile inspection during construction and preparation of the pile inspection report.

## **EMPLOYMENT HISTORY**

June 1986 to Present:      GE Ground Engineering Ltd., Regina, Saskatchewan.  
Geotechnical Engineer

June to September, 1985:      City of Melfort, Melfort, Saskatchewan.  
Surveyor and Draftsperson.

## **EDUCATION**

Bachelor of Science, Faculty of Civil Engineering, University of Saskatchewan, 1993

Civil Engineering Technology, Saskatchewan Technical Institute, 1986

## **TECHNICAL AFFILIATIONS AND MEMBERSHIPS**

Member of the Association of Professional Engineers and Geoscientists of Saskatchewan

Executive Member of Regina Geotechnical Group

Member of Regina Engineering Society

Organizing Committee Member for 1999 Canadian Geotechnical Conference

National Accreditation Team Member for Canadian Council of Technicians and Technologists -  
Environmental Programs

## **TECHNICAL PAPERS**

Design and Construction of Soil Bentonite Liners and Two Case Histories by Paul Kozicki, Steven Harty and John P. Kozicki, First International Congress on Environmental Geotechnics, Edmonton, Canada, July 10 - 15, 1994.

Engineered Foundation Package Designed to Perform in Areas with Expansive Clay Soils. Paul Kozicki and Steven Harty (co-author), Information Booklet prepared for Saskatchewan Department of Community Services, Housing Division, 1992.



# **GROUND ENGINEERING CONSULTANTS LTD.**

---

## **CIVIL & GEOENVIRONMENTAL ENGINEERS**

415 – 7<sup>TH</sup> AVENUE • REGINA • SASKATCHEWAN • S4N 4P1  
Tel: (306) 569-9075 Fax: (306) 565-3677 Email: admin@groundeng.ca

FILE: GE-14105

February 15, 2024

New Horizon Park Corp.  
Box 558  
PILOT BUTTE, Saskatchewan  
S0G 3Z0

### **ATTENTION: MR. ALLEN KILBACK**

Dear Sir:

**SUBJECT: SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT – PHASE I  
NEW HORIZON BUSINESS PARK – PHASE 3  
PORTION OF SE-6-18-18-W2  
R.M. OF EDENWOLD, SASKATCHEWAN**

---

### **1.0 INTRODUCTION**

This report documents our supplementary Phase I Environmental Site Assessment (ESA) of the above captioned property located east of Regina in the R.M. of Edenwold, Saskatchewan. Ground Engineering Consultants Ltd. conducted a Phase I ESA of the property in 2010 (File GE-07133, report dated October 15, 2010) at which time there were no potential environmental concerns identified. The study area including the subject property was cultivated farmland which was being used for forage at the time. The property had never been developed and had historically been cultivated farmland. The objective of this supplementary assessment was to determine if the development and activities on the subject property or adjacent properties have changed since the previous assessment in such a way that would impact the environmental condition of the subject property.

Authorization to proceed with this work was received verbally on February 5, 2024.

**A MEMBER FIRM OF THE ASSOCIATION OF CONSULTING ENGINEERING COMPANIES - SASKATCHEWAN**

---

• SOIL MECHANICS AND FOUNDATION CONSULTANTS • SITE INVESTIGATIONS • FOUNDATION DESIGN • SPECIFICATIONS  
• CONSTRUCTION SUPERVISION • INSPECTION AND LABORATORY TESTING SERVICES • SOILS • CONCRETE • ASPHALT  
• PAVEMENT DESIGN AND EVALUATION • SLOPE STABILITY • REPORTS • SEEPAGE CONTROL BARRIERS FOR MUNICIPAL  
AND INDUSTRIAL WASTE CONTAINMENT • ENVIRONMENTAL SITE ASSESSMENTS

## **2.0 SITE RECONNAISSANCE**

The subject property was visually inspected by Mr. Steve Harty, P. Eng. on February 12, 2024. Air photos taken in 2011 and 2022 showing details of the subject property are attached. Photographs of the subject property which were taken during our inspection are also attached. The following relevant observations were noted during a review of the historical air photos and our inspection.

- .1 The subject property and adjacent properties are undeveloped in both 2011 and 2022 photos. The existing SaskWater pumping station is present on the adjacent property to the west. The adjacent property to the east (north side) has been rough graded for development on the 2022 photo. Phase 1 of the New Horizon Business Park has been developed northeast of the property on the 2022 photo.
- .2 The subject property covers an area of 17.90 ha and is currently cultivated farmland which is being used for forage. There is no evidence that additional fill materials have been placed on the subject property since the previous assessment in 2010.
- .3 The adjacent properties to the east, west, south and north (west end) remain cultivated farmland. The adjacent property to the north (east end) is in the early stages of being developed with Phase 2 of the New Horizon Business Park. RTM homes are being constructed on the adjacent lots in the subdivision. There were no storage tanks or evidence of activities on the adjacent properties which would be considered a potential environmental concern.

## **3.0 CONCLUSIONS AND RECOMMENDATIONS**

The information collected during this supplementary assessment indicates that the subject property has remained cultivated farmland (forage) since the previous assessment. From an environmental standpoint, the activities and developments which have occurred on the subject property and adjacent properties since the previous assessment are not considered to pose an environmental risk to the subject property. We have found no change in the environmental status of the subject property since the previous assessment. The risk of significant soil and/or groundwater contamination on the subject property, particularly at levels that would exceed current environmental standards, remains low. No further investigative work is warranted to address the environmental status of the subject property at this time.

#### **4.0 LIMITATIONS**

The information presented herein is supplementary to the previous Phase I ESA prepared by Ground Engineering Consultants Ltd. (report dated October 15, 2010). The information in the previous report and this supplementary assessment must be reviewed and interpreted as a whole.

This report has been prepared for the exclusive use of New Horizon Park Corp. It has been prepared in accordance with generally accepted engineering practices. No warranty is made, either expressed or implied, since even the most rigorous professional assessment may fail to identify all hidden problems on a site. A Statement of General Conditions is included, attached with this report.

#### **5.0 CLOSURE**

We trust this report is satisfactory for your purposes. If you have any questions or require additional information, please contact our office.

Yours very truly  
Ground Engineering Consultants Ltd.



Steve Harty, P. Eng.



SH:vb  
Attach.  
Distribution:  
SH1406

New Horizaon Park Corp. (1 PDF copy)  
Office (1 copy)



**GROUND ENGINEERING CONSULTANTS LTD.**

**STATEMENT OF GENERAL CONDITIONS**

**1. STANDARD OF CARE**

This study and report have been prepared in accordance with generally accepted geotechnical and environmental consulting practices in this area. No other warranty, expressed or implied, is made.

**2. BASIS OF REPORT**

This report has been prepared for the specific site, development, design objectives and purpose that were described to Ground Engineering Consultants Ltd. (GEC) by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alternation or variation from any of the said descriptions provided to GEC, unless GEC is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

**3. USE OF THE REPORT**

The information and opinions expressed in this document are for the sole benefit of the Client. No other party may use or rely upon the report or any portion thereof without GEC's expressed written consent. GEC will consent to any reasonable request by the Client to approve the use of this report by other parties as approved users. The contents of the report remain the copyright property of GEC, who authorizes only the Client and "Approved Users" to make copies of the report only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make available this document or the report or any portion thereof, or any copy of the report or portion thereof, to any party without the expressed written permission of GEC.

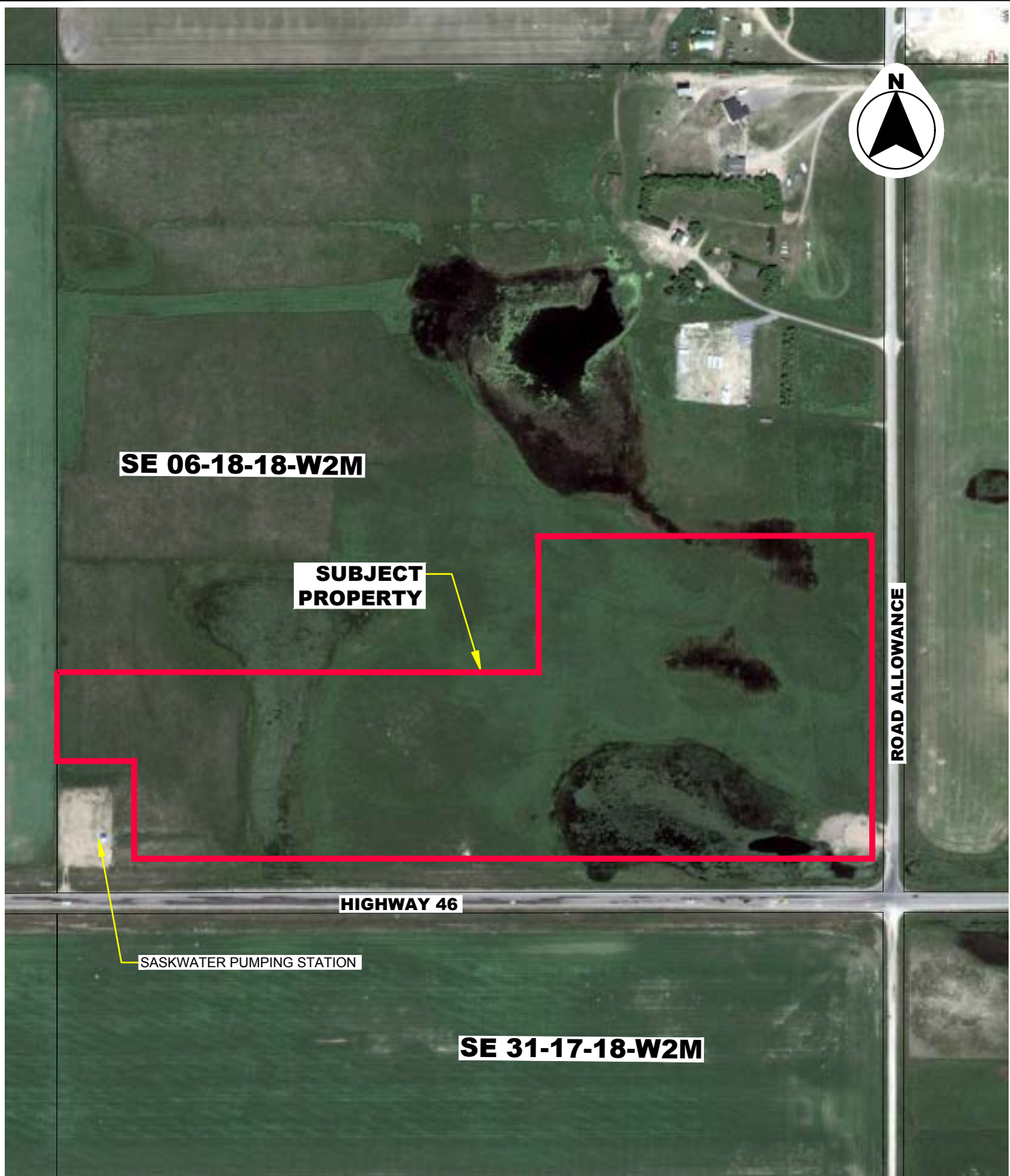
**4. COMPLETE REPORT**

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEC by the Client, communications between GEC and the client, and to any other reports, writings or documents prepared by GEC for the Client relative to the specific site described herein, all of which constitute the report. Wherever the word "report" is used herein, it shall refer to any and all of the documents referred to herein

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. GEC CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OR PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

**5. INTERPRETATION OF THE REPORT**

Nature and Exactness of Soil and Contaminant Description. Classification and identification of soils, rocks, geological units, contaminant materials and contaminant quantities have been based on commonly accepted geotechnical and environmental consulting practices in this area. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs implemented with appropriate equipment by experienced personnel, may fail to locate some hidden conditions. All reasonable problems will involve an inherent risk that some conditions will not be detected and all reports summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such reports should be aware of and accept this risk. Some conditions are subject to change over time and those making use of the report should be aware of this possibility and understand that the report only presents the conditions at the sampled points at the time of sampling.



SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

2011 AIR PHOTO  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 3  
PORTION OF 06-18-18-W2M  
R.M. OF EDENWOLD No 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

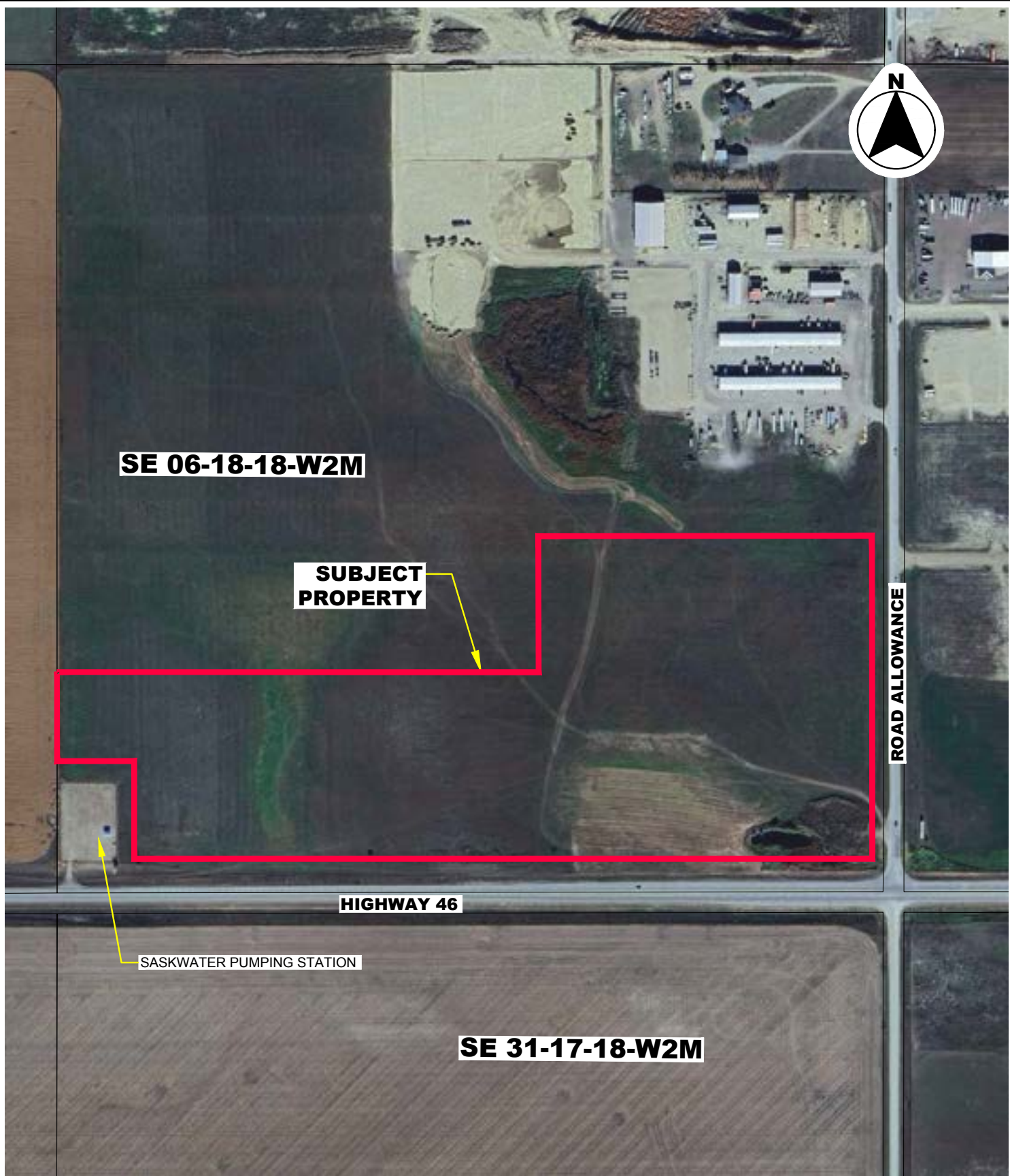
DATE:

FEBRUARY, 2024

DWG. No.:

GE-14105





SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

2022 AIR PHOTO  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 3  
PORTION OF SE 06-18-18-W2M  
R.M. OF EDENWOLD No. 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

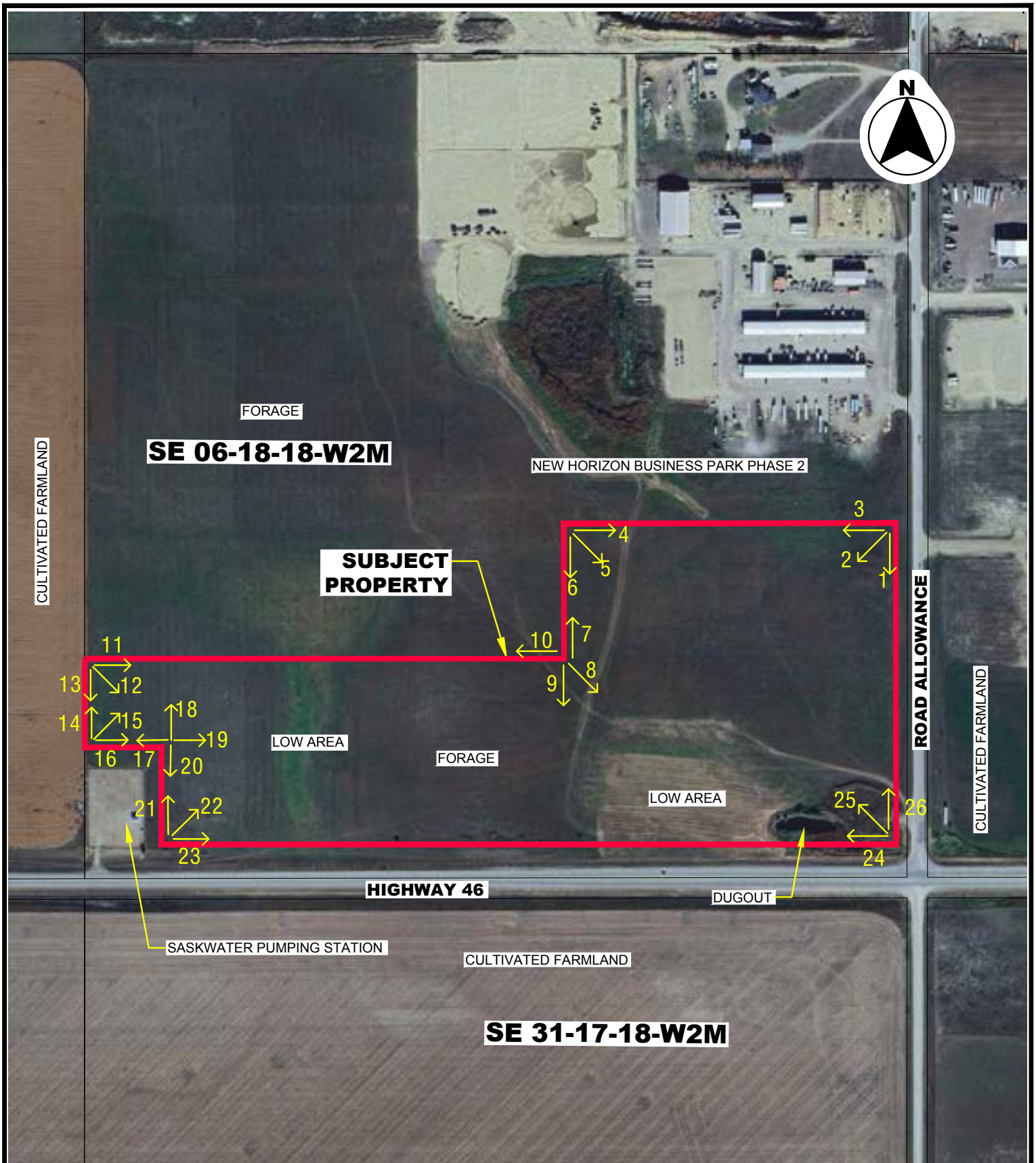
DATE:

FEBRUARY, 2024

DWG. No.:

GE-14105





2022 AIR PHOTO

SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

SITE PLAN SHOWING DETAILS OF THE SUBJECT PROPERTY  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 3  
PORTION OF SE 06-18-18-W2M  
R.M. OF EDENWOLD No. 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

DATE:

FEBRUARY, 2024

DWG. No.:

GE-14105



PHOTO 1



PHOTO 2





PHOTO 3



PHOTO 4



PHOTO 5



PHOTO 6





PHOTO 7



PHOTO 8



PHOTO 9



PHOTO 10





PHOTO 11



PHOTO 12



PHOTO 13



PHOTO 14



PHOTO 15



PHOTO 16





PHOTO 17



PHOTO 18



PHOTO 19



PHOTO 20





PHOTO 21



PHOTO 22



PHOTO 23



PHOTO 24





PHOTO 25



PHOTO 26

# **GROUND ENGINEERING CONSULTANTS LTD.**

## **CIVIL & GEOENVIRONMENTAL ENGINEERS**

415 – 7<sup>TH</sup> AVENUE · REGINA · SASKATCHEWAN · S4N 4P1  
Tel: (306) 569-9075 Fax: (306) 565-3677 Email: admin@groundeng.ca

FILE: GE-14105

July 29, 2025

New Horizon Park Corp.  
Box 558  
PILOT BUTTE, Saskatchewan  
S0G 3Z0

### **ATTENTION: MR. ALLEN KILBACK**

Dear Sir:

**SUBJECT: SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT – PHASE I  
NEW HORIZON BUSINESS PARK – PHASE 4  
PORTION OF SE 6-18-18-W2  
R.M. OF EDENWOLD, SASKATCHEWAN**

---

### **1.0 INTRODUCTION**

This report documents our supplementary Phase I Environmental Site Assessment (ESA) of the above captioned property located northeast of Regina in the R.M. of Edenwold, Saskatchewan. GE Ground Engineering Ltd. conducted a Phase I ESA of the study area (which included the subject property) in 2010 (report dated October 15, 2010) at which time there were no potential environmental concerns identified. The subject property had never been developed and was cultivated farmland at the time. The objective of this supplementary assessment was to determine if the development and activities on the subject property or adjacent properties have changed since the previous assessment in such a way that would impact the environmental condition of the subject property.

Authorization to proceed with this work was received via email on July 16, 2025.

### **2.0 SITE RECONNAISSANCE**

The subject property was visually inspected by Mr. Steve Harty, P. Eng. on July 28, 2025. The subject property covers an area of 18.03 ha. Air photos taken in 2011 and 2025 showing details of the subject property are attached. Photographs of the subject property which were taken during our

---

A MEMBER FIRM OF THE ASSOCIATION OF CONSULTING ENGINEERING COMPANIES - SASKATCHEWAN

· SOIL MECHANICS AND FOUNDATION CONSULTANTS · SITE INVESTIGATIONS · FOUNDATION DESIGN · SPECIFICATIONS ·  
CONSTRUCTION SUPERVISION · INSPECTION AND LABORATORY TESTING SERVICES · SOILS · CONCRETE · ASPHALT ·  
PAVEMENT DESIGN AND EVALUATION · SLOPE STABILITY · REPORTS · SEEPAGE CONTROL BARRIERS FOR MUNICIPAL AND  
INDUSTRIAL WASTE CONTAINMENT · ENVIRONMENTAL SITE ASSESSMENTS

inspection are also attached. The following relevant observations were noted during our inspection and review of the historical air photos.

- .1 There are no significant changes visible on the subject property and adjacent properties on the 2011 photo. The subject property and adjacent properties remain cultivated farmland.
- .2 The north side and southeast corner of the subject property have been rough graded on the 2025 photo. Stockpiles of aggregate and fill are visible at the north side of the property. The remainder of the subject property is undeveloped grassland/forage. The adjacent property to the east has been developed with the New Horizon Business Park which includes vacant lots, industrial buildings and parking/storage compounds. The adjacent properties to the south, north and west remain undeveloped.
- .3 The current condition of the subject property and adjacent properties is consistent with the details visible on the 2025 photo.
- .4 There were no storage tanks or evidence of activities on the immediately adjacent properties which would be considered to pose an environmental risk to the subject property.

### **3.0 CONCLUSIONS AND RECOMMENDATIONS**

The information collected during the supplementary assessment indicates that the subject property remained undeveloped until 2024 at which time some areas were rough graded for development. The majority of the subject property remains undeveloped grassland.

From an environmental standpoint, the activities and developments which have occurred on the subject property and immediately adjacent properties since the previous assessment are not considered to pose an environmental risk to the subject property. We have found no change in the environmental status of the subject property since the previous assessment. No further investigative work is warranted to address the environmental status of the subject property at this time.



#### 4.0 LIMITATIONS

The information presented herein is supplementary to the previous Phase I ESA prepared by GE Ground Engineering Ltd. (report dated October 15, 2010). The information in the previous report and this supplementary assessment must be reviewed and interpreted as a whole.

This report has been prepared for the exclusive use of New Horizon Park Corp. It has been prepared in accordance with generally accepted engineering practices. No warranty is made, either expressed or implied, since even the most rigorous professional assessment may fail to identify all hidden problems on a site. A Statement of General Conditions is included, attached with this report.

#### 5.0 CLOSURE

We trust this report is satisfactory for your purposes. If you have any questions or require additional information, please contact our office.

Yours very truly,  
Ground Engineering Consultants Ltd.

Steve Harty, P. Eng.



SH:vb  
Attach.  
Distribution:  
SH1443

New Horizon Park Corp. (1 PDF copy)  
Office (1 copy)

|                                                                          |              |           |
|--------------------------------------------------------------------------|--------------|-----------|
| Association of Professional Engineers & Geoscientists<br>of Saskatchewan |              |           |
| CERTIFICATE OF AUTHORIZATION                                             |              |           |
| GROUND ENGINEERING CONSULTANTS LTD.                                      |              |           |
| NUMBER C0008                                                             |              |           |
| Permission to Consult held by:                                           |              |           |
| Discipline                                                               | Sk. Reg. No. | Signature |
| Environmental                                                            | 06951        |           |

**GROUND ENGINEERING CONSULTANTS LTD.**

**STATEMENT OF GENERAL CONDITIONS**

**1. STANDARD OF CARE**

This study and report have been prepared in accordance with generally accepted geotechnical and environmental consulting practices in this area. No other warranty, expressed or implied, is made.

**2. BASIS OF REPORT**

This report has been prepared for the specific site, development, design objectives and purpose that were described to Ground Engineering Consultants Ltd. (**GEC**) by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alternation or variation from any of the said descriptions provided to **GEC**, unless **GEC** is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

**3. USE OF THE REPORT**

The information and opinions expressed in this document are for the sole benefit of the Client. No other party may use or rely upon the report or any portion thereof without **GEC**'s expressed written consent. **GEC** will consent to any reasonable request by the Client to approve the use of this report by other parties as approved users. The contents of the report remain the copyright property of **GEC**, who authorizes only the Client and "Approved Users" to make copies of the report only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make available this document or the report or any portion thereof, or any copy of the report or portion thereof, to any party without the expressed written permission of **GEC**.

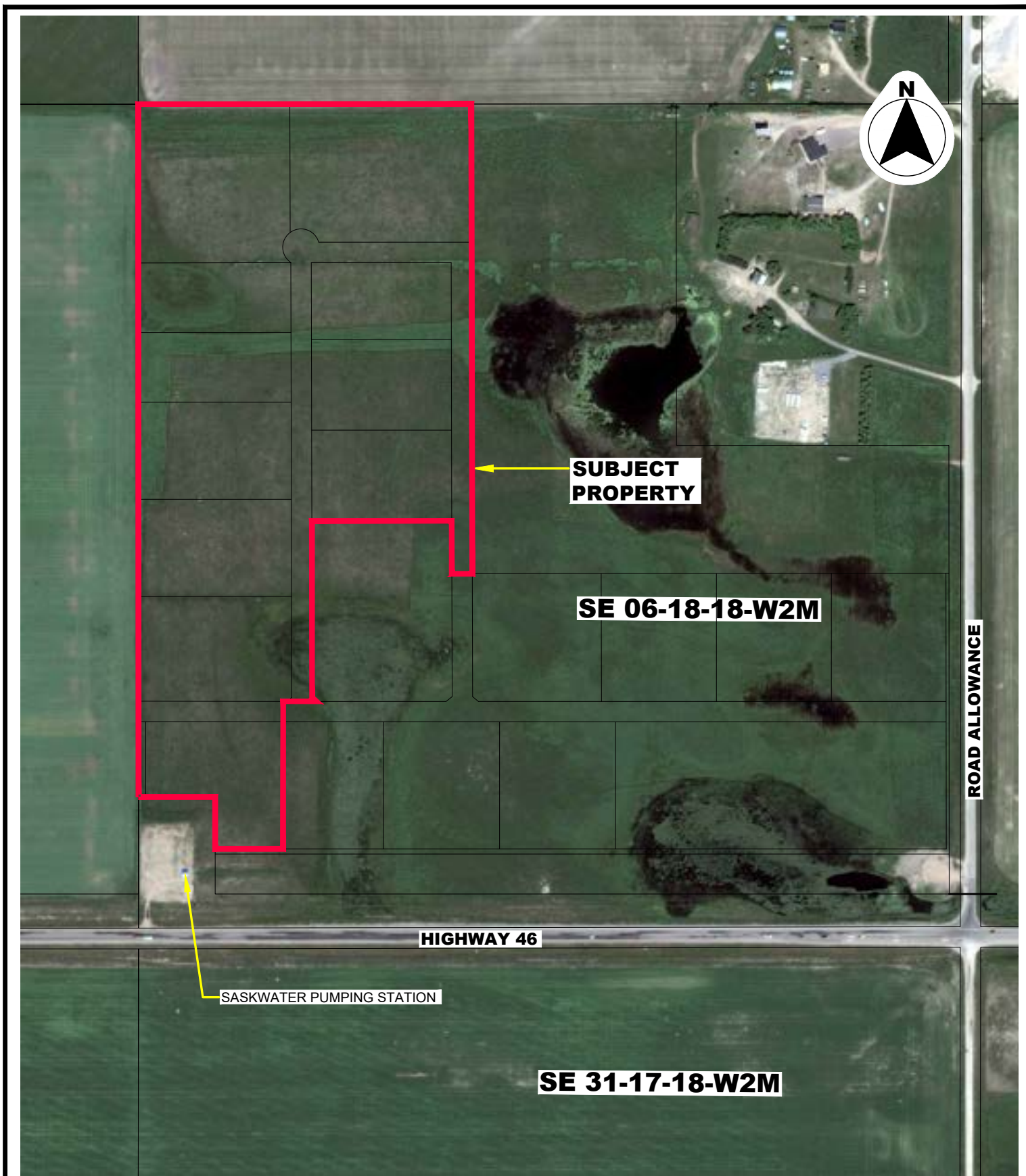
**4. COMPLETE REPORT**

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to **GEC** by the Client, communications between **GEC** and the client, and to any other reports, writings or documents prepared by **GEC** for the Client relative to the specific site described herein, all of which constitute the report. Wherever the word "report" is used herein, it shall refer to any and all of the documents referred to herein

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. **GEC** CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OR PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

**5. INTERPRETATION OF THE REPORT**

Nature and Exactness of Soil and Contaminant Description. Classification and identification of soils, rocks, geological units, contaminant materials and contaminant quantities have been based on commonly accepted geotechnical and environmental consulting practices in this area. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs implemented with appropriate equipment by experienced personnel, may fail to locate some hidden conditions. All reasonable problems will involve an inherent risk that some conditions will not be detected and all reports summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such reports should be aware of and accept this risk. Some conditions are subject to change over time and those making use of the report should be aware of this possibility and understand that the report only presents the conditions at the sampled points at the time of sampling.



SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

2011 AIR PHOTO  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 4  
PORTION OF 06-18-18-W2M  
R.M. OF EDENWOLD No 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

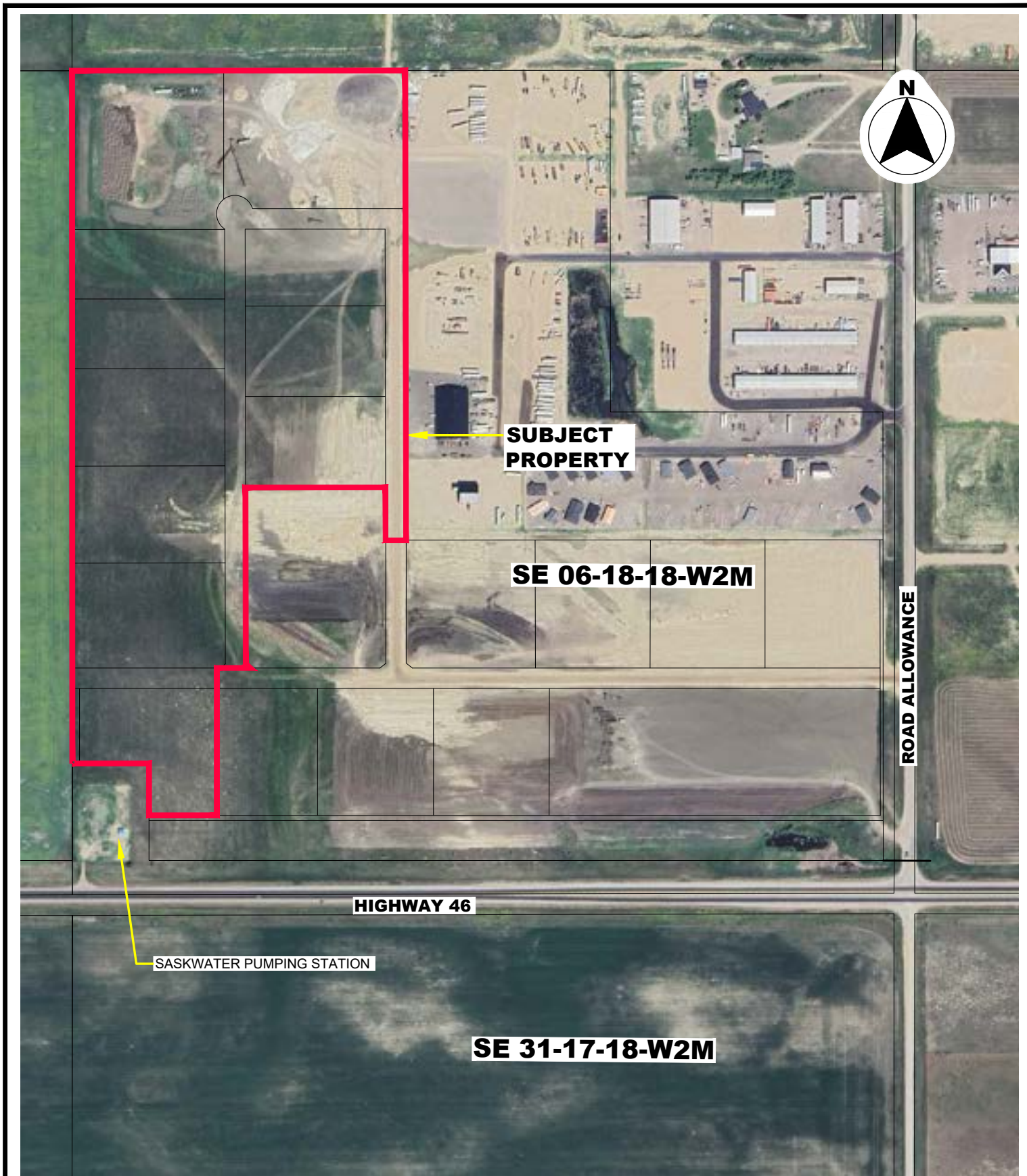
DATE:

JULY, 2025

DWG. No.:

GE-14105





SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

2025 AIR PHOTO  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 4  
PORTION OF SE 06-18-18-W2M  
R.M. OF EDENWOLD No. 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

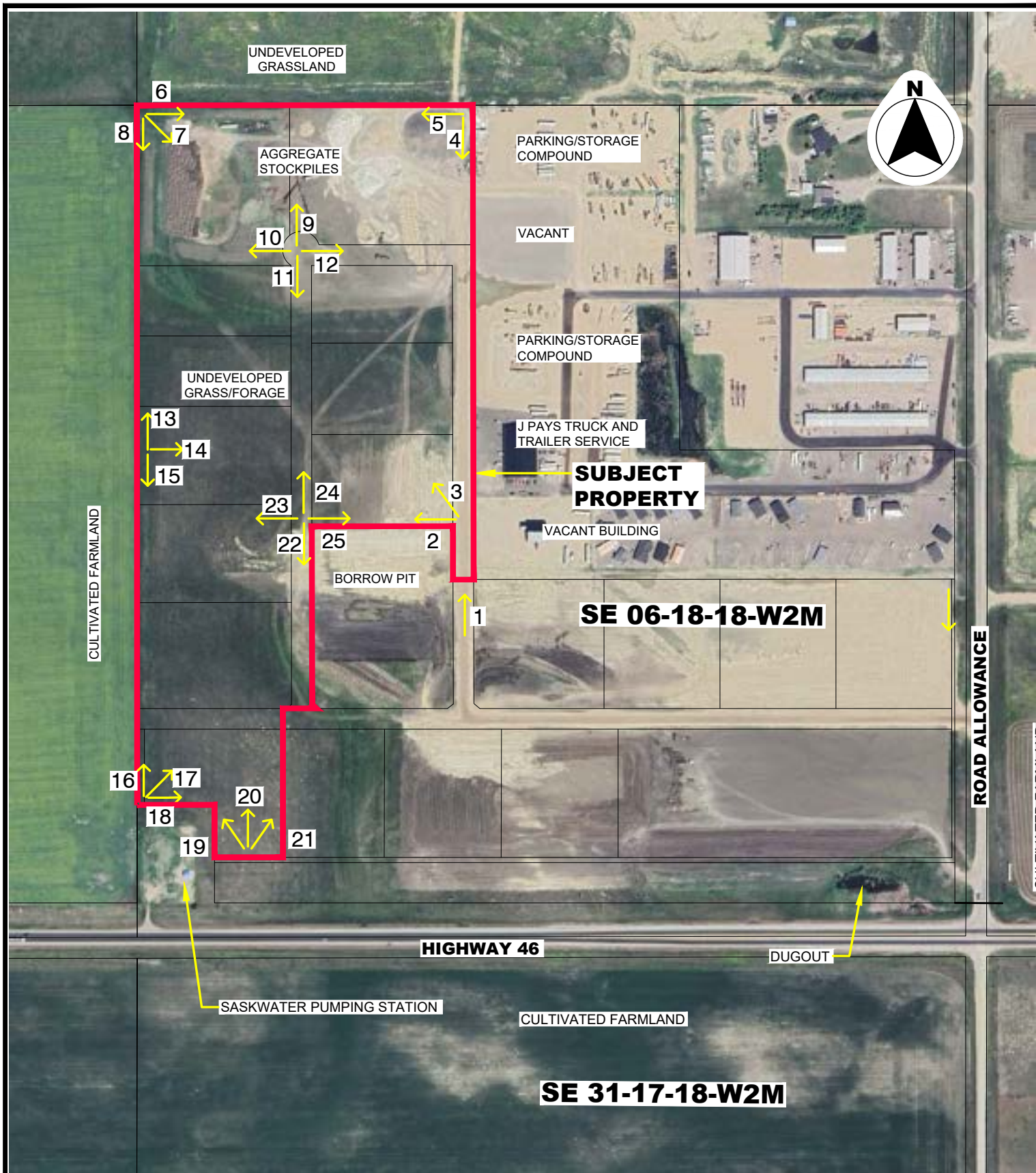
DATE:

JULY, 2025

DWG. No.:

GE-14105





2025 AIR PHOTO

SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

SITE PLAN SHOWING DETAILS OF THE SUBJECT PROPERTY  
SUPPLEMENTARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I  
NEW HORIZON BUSINESS PARK PHASE 4  
PORTION OF SE 06-18-18-W2M  
R.M. OF EDENWOLD No. 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

DATE:

JULY, 2025

DWG. No.:

GE-14105





PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4





PHOTO 5



PHOTO 6



PHOTO 7



PHOTO 8





PHOTO 9



PHOTO 10





PHOTO 11



PHOTO 12



PHOTO 13



PHOTO 14





PHOTO 15



PHOTO 16



PHOTO 17



PHOTO 18





PHOTO 19



PHOTO 20





PHOTO 21



PHOTO 22



PHOTO 23



PHOTO 24



PHOTO 25

## APPENDIX F – PRELIMINARY GEOTECHNICAL INVESTIGATION



**TITLE:   PRELIMINARY GEOTECHNICAL INVESTIGATION  
          PROPOSED INDUSTRIAL SUBDIVISION  
          PORTION OF SE-6-18-18-W2  
          WEST OF PILOT BUTTE, SASKATCHEWAN**

**CLIENT:   NORTH RIDGE DEVELOPMENT CORPORATION**

**FILE NO:  GE-07133       DATE:  DECEMBER 31, 2010**

**TABLE OF CONTENTS**

|                                        | <b><u>PAGE NO.</u></b> |
|----------------------------------------|------------------------|
| 1.0 INTRODUCTION                       | 1                      |
| 2.0 DESCRIPTION OF THE SITE            | 2                      |
| 3.0 FIELD AND LABORATORY INVESTIGATION | 2                      |
| 4.0 GEOTECHNICAL ANALYSIS              | 4                      |
| 4.1 Stratigraphy                       | 4                      |
| 4.2 Groundwater                        | 4                      |
| 5.0 FOUNDATION CONSIDERATIONS          | 5                      |
| 6.0 EXCAVATION CONSIDERATIONS          | 5                      |
| 7.0 OTHER                              | 5                      |
| 8.0 CLOSURE                            | 7                      |

**DRAWINGS**

|                                                  |                    |
|--------------------------------------------------|--------------------|
| Site Plan                                        | GE-07133-1         |
| Classification of Soils for Engineering Purposes | GE-07133-2         |
| Symbols and Terms Used in the Report             | GE-07133-3 to -4   |
| Stratigraphic Cross Section                      | GE-07133-5         |
| Test Hole Logs                                   | GE-07133-6 to -20  |
| Grain Size Analysis                              | GE-07133-21 to -23 |
| Guide for Sulphate Resistant Cement              | GE-07133-24        |



## **GROUND ENGINEERING LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS

415 • 7th AVENUE • REGINA • SASKATCHEWAN • CANADA • S4N 4P1  
TELEPHONE: (306) 569-9075 FAX: (306) 565-3677 EMAIL: geground@accesscomm.ca

FILE: GE-07133

December 31, 2010

North Ridge Development Corporation  
395 Maxwell Crescent  
REGINA, Saskatchewan  
S4N 5X9

**ATTENTION: MR. PATRICK MAH**

Dear Sir:

**SUBJECT: PRELIMINARY GEOTECHNICAL INVESTIGATION  
PROPOSED INDUSTRIAL SUBDIVISION  
PORTION OF SE-6-18-18-W2  
WEST OF PILOT BUTTE, SASKATCHEWAN**

---

**1.0 INTRODUCTION**

This report presents the results of a site specific subsurface soils investigation and geotechnical analysis carried out at the above captioned property located west of the Town of Pilot Butte, Saskatchewan. It is understood that the subject property will be developed with an industrial subdivision.

The objectives of this investigation were to provide the following information:

- .1 To define the subsurface soil stratigraphy, groundwater regime and engineering properties of the foundation soils at the site;



A MEMBER ORGANIZATION OF THE ASSOCIATION OF CONSULTING ENGINEERS OF CANADA

AFFILIEE A LA FIDIC MEMBER



☐ SOIL MECHANICS AND FOUNDATION CONSULTANTS ☐ SITE INVESTIGATIONS ☐ FOUNDATION DESIGN  
☐ SPECIFICATIONS ☐ CONSTRUCTION SUPERVISION ☐ INSPECTION AND LABORATORY TESTING SERVICES  
☐ SOILS ☐ CONCRETE ☐ ASPHALT ☐ PAVEMENT DESIGN AND EVALUATION ☐ SLOPE STABILITY ☐ REPORTS  
☐ SEEPAGE CONTROL BARRIERS FOR MUNICIPAL AND INDUSTRIAL WASTE CONTAINMENT ☐ ENVIRONMENTAL STUDIES

- .2 To identify suitable types of foundation systems to support the proposed buildings;
- .3 To comment on possible excavation and construction problems related to foundation construction, with particular reference to groundwater conditions;
- .4 To provide recommendations on pertinent geotechnical issues identified during the subsurface investigation.

## **2.0 DESCRIPTION OF SITE**

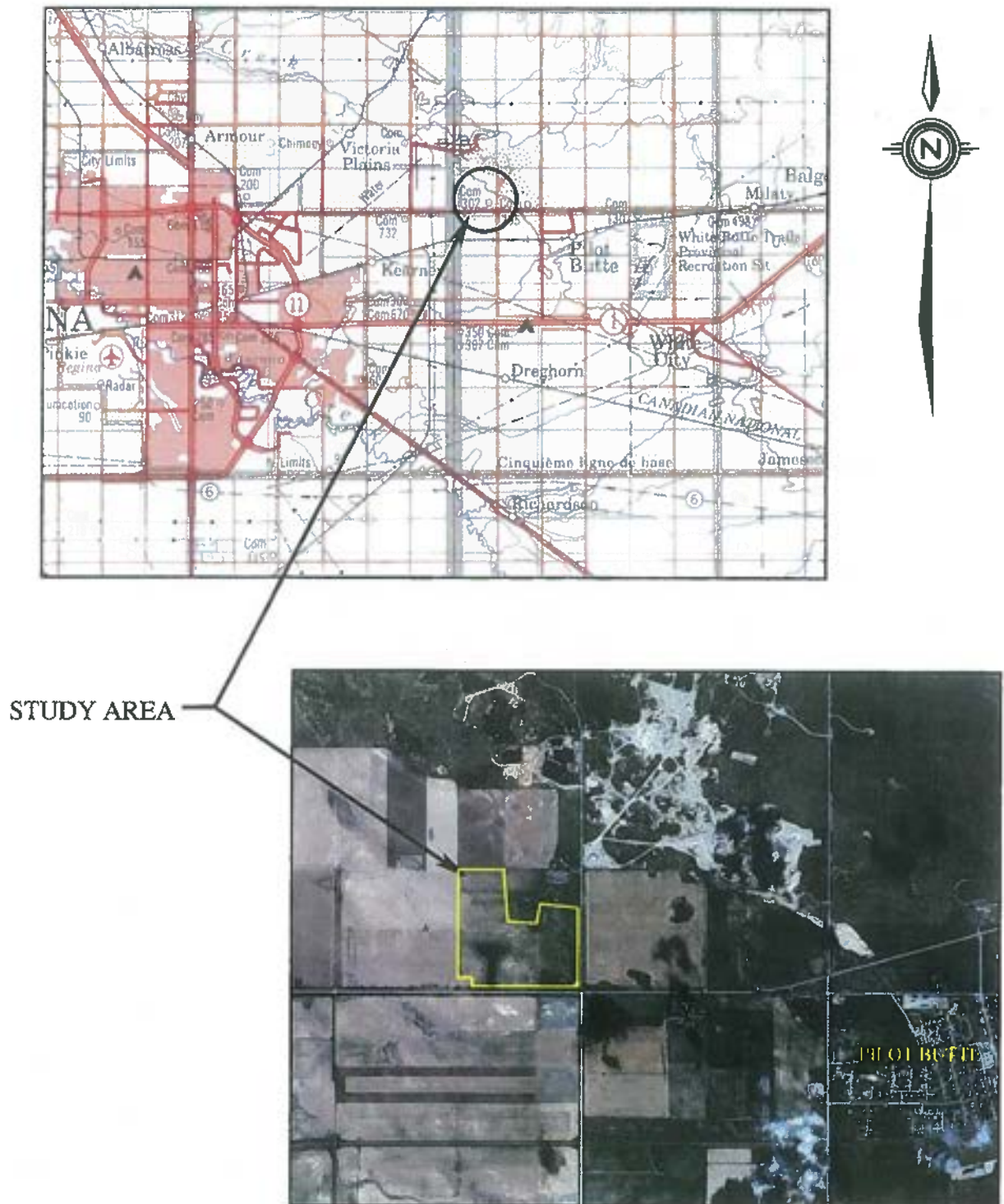
The study area shown in Figure 1 is located in the Rural Municipality of Edenwold No. 158 approximately 1.0 km west of the Town of Pilot Butte, Saskatchewan. At the present time, the property is used for forage. The property has never been developed and has historically been cultivated farmland. The topography is gently rolling with seasonal sloughs located in the low areas. There is an elevation difference of approximately 5 metres across the site.

## **3.0 FIELD AND LABORATORY INVESTIGATION**

The subsurface conditions were investigated by drilling 15 test borings at the locations shown on Drawing No. GE-07133-1. The test borings were drilled on July 7, 2009 (Test Holes 101 to 104) and October 18, 2010 (Test Holes 201 to 211) using a truck-mounted, CME digger equipped with a 150 mm diameter continuous flight auger. The test holes were terminated at depths ranging from 4.5 to 12.2 metres below existing grade. A total of 7 standpipe piezometers were installed to monitor groundwater levels.

Representative disturbed auger samples and undisturbed Shelby tube soil samples were recovered from the test borings at selected intervals and were taken to our laboratory for analysis. Each soil sample was visually examined to determine its textural classification and a natural moisture content test was performed on each soil sample. Grain size analysis tests were performed on selected soil samples. Standard Penetration tests were conducted in select test holes. Details of the soil profile, samples taken, laboratory test results, piezometer installations and stratigraphic interpretations of the subsoils are presented on Drawing Nos. GE-07133-5 to -23, inclusive.





**FIGURE 1**  
**LOCATION OF STUDY AREA**

The ground surface elevations at the test hole locations are referenced to geodetic datum provided by Midwest Surveys. There is an elevation difference of 3.55 metres between the test hole locations.

## **4.0 GEOTECHNICAL ANALYSIS**

### **4.1 Stratigraphy**

The drilling information indicates that the surficial topsoil is generally underlain by a highly plastic, silty clay stratigraphic unit which extends to depths ranging from 0.9 to 5.2 metres. The clay unit was not present in Test Hole 103. The clay is stiff to very stiff with undrained shear strength ranging from 50 to 120 kPa based on unconfined compression and vane shear strength tests. The Liquid Limit ranges from 65 to 85 percent and the Plasticity Index ranges from 40 to 60 percent.

The surficial clay is underlain by a silt unit which extends to depths ranging from 1.7 to 9.0 metres and the maximum depth penetrated in Test Holes 207 and 211 (9.1 metres). The silt is clayey, sandy, moist to very moist and firm in consistency.

The silt unit is underlain by a sand unit which extends to the maximum depth penetrated in the test holes (12.2 metres). The sand is silty, fine grained and contains occasional till lenses. The sand is normally consolidated and loose to medium dense with Standard Penetration test "N" values ranging from 8 to 19 blows per foot. The saturated sand is cohesionless and subject to sloughing. Typical gradations of the silt and sand strata are shown on Drawing Nos. GE-07133-21 to -23, inclusive.

### **4.2 Groundwater**

The drilling information indicates that there is a groundwater table at this site. The water levels measured in the piezometers are summarized in Table 1, below.

**TABLE 1**  
**PIEZOMETRIC SURFACE MEASUREMENTS**

| MONITORING WELL NO. | DATE MEASURED    | DEPTH TO BOTTOM OF SCREEN (m) | DEPTH TO GROUNDWATER BELOW GROUND SURFACE (m) | GROUNDWATER ELEVATION (GEODETIC) (m) |
|---------------------|------------------|-------------------------------|-----------------------------------------------|--------------------------------------|
| MW 102              | July 7, 2009     | 6.4                           | Dry                                           | -                                    |
|                     | November 6, 2009 |                               | Dry                                           | -                                    |
| MW 104              | July 7, 2009     | 4.6                           | Dry                                           | -                                    |
|                     | November 6, 2009 |                               | Dry                                           | -                                    |
| MW 201              | July 7, 2009     | 7.6                           | Dry                                           | -                                    |
|                     | November 6, 2009 |                               | 6.15                                          | 599.20                               |
| MW 204              | July 7, 2009     | 12.5                          | 11.41                                         | 596.29                               |
|                     | November 6, 2009 |                               | 11.40                                         | 596.30                               |
| MW 206              | July 7, 2009     | 7.9                           | 6.56                                          | 598.29                               |
|                     | November 6, 2009 |                               | 6.77                                          | 598.08                               |
| MW 208              | July 7, 2009     | 7.6                           | *                                             | -                                    |
|                     | November 6, 2009 |                               | *                                             | -                                    |
| MW 211              | July 7, 2009     | 12.5                          | 11.37                                         | 595.83                               |
|                     | November 6, 2009 |                               | 10.96                                         | 596.24                               |

\* Monitoring well was damaged.

Information obtained from Saskatchewan Environment and Resource Management report, "Groundwater Quality Analysis of the Condie Aquifer" dated May, 1997 indicates that the subject property is located within the recharge area of the Condie Aquifer. The Condie Aquifer was encountered at depths ranging from 6.1 to 11.4 metres below existing ground surface. The piezometric surface contours are shown on Drawing No. GE-07133-1. The contours show groundwater flows across the site in a westerly direction.

## **5.0 FOUNDATION CONSIDERATIONS**

The results of this investigation indicate that the stratigraphy and groundwater conditions vary considerably across the subject property. Due to the variable conditions, geotechnical investigations will be required for each lot to determine site specific foundation recommendations. The following foundation systems are considered options for the development depending on the size of the building and location on the site.

- Conventional Bored Concrete Piles
- Spread Footings
- Driven Timber/Steel Pipe Piles
- Augercast Bored Concrete Piles

## **6.0 EXCAVATION CONSIDERATIONS**

Excavations at this site will be in the clay, silt and sand strata. Excavations in which persons must work must be cut back to at least one (1) horizontal to one (1) vertical or a temporary shoring system must be used to support the sides of the excavation.

## **7.0 OTHER**

- .1 The ground surface adjacent to the buildings should be sloped away from the building at a grade of at least 5% to minimize infiltration of water into the subgrade. The building sites should be set as high an elevation as possible in relation to the surrounding area.
- .2 Test results on selected samples indicate that the soluble sulphate contents in the soil range from 0.02 to 0.50 percent by dry soil weight. Class 3 Concrete, with HS (Type 50) cement, as specified in the Guide for Use of Sulphate Resistant Cement on Drawing No. GE-07133-24, should be used for use for all concrete in contact with soil.
- .3 Attention is drawn to the presence of shale which is commonly found in concrete aggregates in Regina. Shale may produce "pop-outs" on concrete floors. These small holes are detrimental under tiled or on smooth finished floors. If finish is critical on the floors, the aggregate should be carefully checked to insure its acceptability.
- .4 In the event that changes are made in the design, location or nature of the project, the conclusions and recommendations included in this report would not be deemed valid unless the changes in the project were reviewed by our firm. Modification to this report would then be made if necessary. Furthermore, it is recommended that this firm be allowed an opportunity for a general review of the final design plans and specifications in order to ensure that the recommendations made in this report are properly interpreted and implemented. If this firm is not allowed the opportunity for this review, we assume no responsibility for the misinterpretation of any of the recommendations.



5 This preliminary report has been prepared for North Ridge Development Corporation and is intended for the specific application to the design and construction of the proposed industrial subdivision to be located approximately 1.0 km west of the Town of Pilot Butte, Saskatchewan. The analysis and recommendations are based in part on the data obtained from the test hole logs. The boundaries between soil strata have been established at bore hole locations. Between the bore holes, the boundaries are assumed from geological evidence and may be subject to considerable error. It is recommended that persons reviewing this report should make such tests, inspections and other on-site investigations as is considered necessary to satisfy themselves as to the nature of the conditions to be encountered.

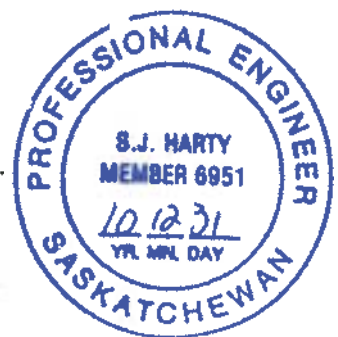
## 8.0 CLOSURE

We trust that this report is satisfactory for your purposes. If you have any questions or require additional information, please contact this office.

Yours very truly  
GE GROUND ENGINEERING LTD.



Prepared by: STEVE HARTY, P. ENG.

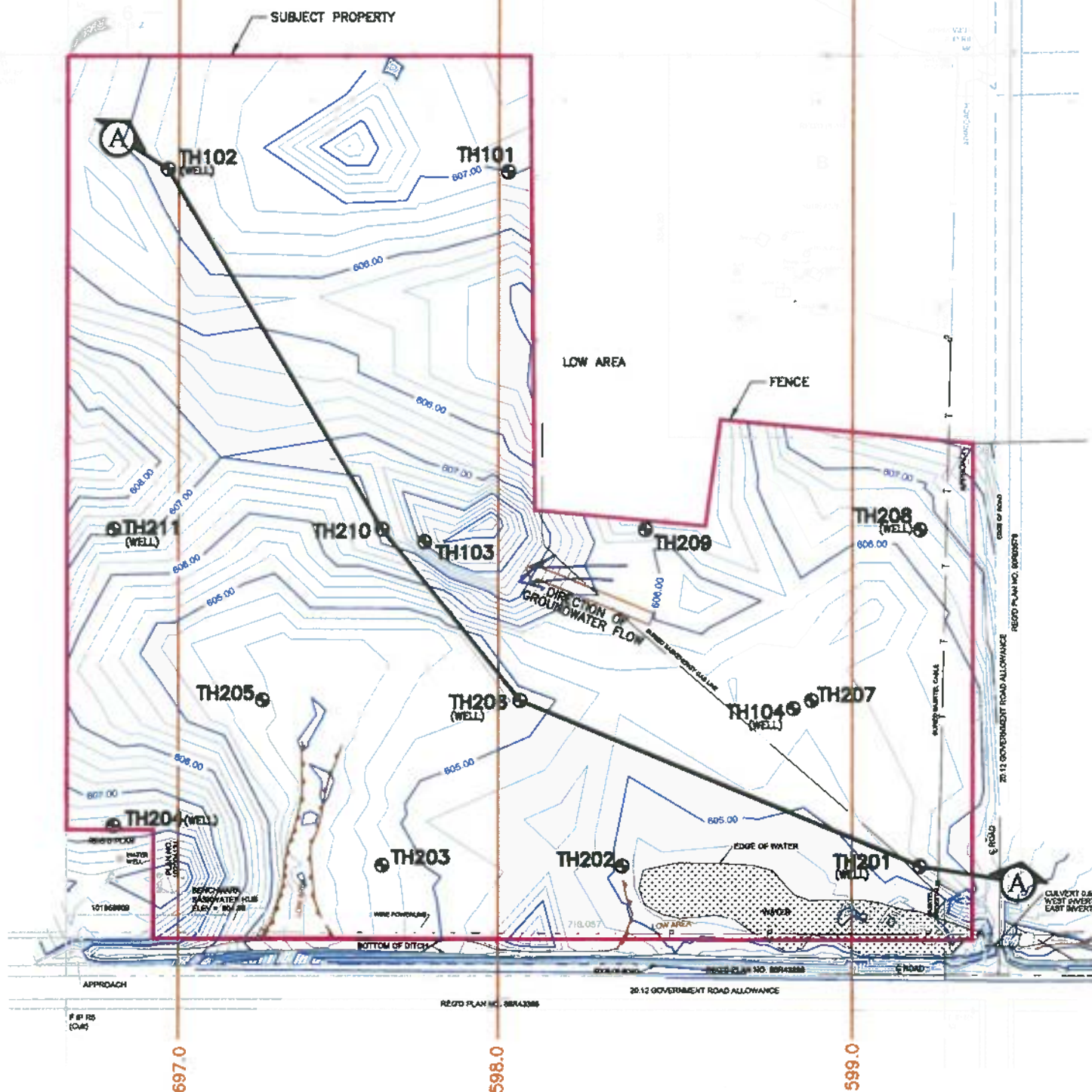


Reviewed by: TIM ADELMAN, P. ENG., P. GEO.

SH:ss  
Distribution: North Ridge Development Corporation (2 copies, 1 PDF copy)  
SH290 Office (1 copy)



## **DRAWINGS**



SCALE: 1:5000



**GROUND ENGINEERING LTD.**  
CONSULTING GEOTECHNICAL ENGINEERS  
REGINA, SASKATCHEWAN

SITE PLAN SHOWING LOCATION OF TEST HOLES  
PROPOSED COMMERCIAL/INDUSTRIAL SUBDIVISION  
PORTION OF SE 6-18-18-W2M  
WEST OF PILOT BUTTE, SASKATCHEWAN

CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION

APPROVED:

DATE:

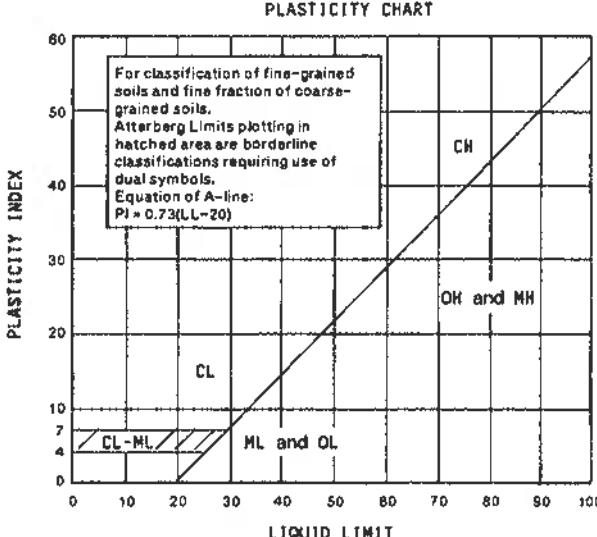
DECEMBER 21, 2010

DWG. No.:

GE-07133-1

# CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

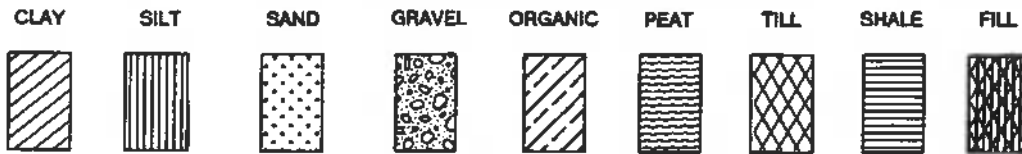
ASTM Designation: D 2487 - 69 AND D 2488 - 69  
(Unified Soil Classification System)

| Major Divisions                                                   |                                                                   | Group Symbols                              | Typical Names                                                                 | Classification Criteria                                                                           |                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coarse-grained soils<br>More than 50% retained on No. 200 sieve * | Gravels<br>50% or more of coarse fraction retained on No. 4 sieve | Clean gravels                              | GW                                                                            | Well-graded gravels and gravel-sand mixtures, little or no fines                                  | $C_u = \frac{D_{60}}{D_{10}} \text{ greater than 4:}$ $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}} \text{ between 1 and 3}$                                                                                                                                             |
|                                                                   |                                                                   |                                            | GP                                                                            | Poorly graded gravels and gravel-sand mixtures, little or no fines                                |                                                                                                                                                                                                                                                                           |
|                                                                   |                                                                   | Gravels with fines                         | GM                                                                            | Silty gravels, gravel-sand-silt mixtures                                                          | Not meeting both criteria for GW<br><br>Atterberg limits below "A" line or P.I. less than 4<br><br>Atterberg limits above "A" line with P.I. greater than 7<br><br>Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
|                                                                   |                                                                   |                                            | GC                                                                            | Clayey gravels, gravel-sand-clay mixtures                                                         |                                                                                                                                                                                                                                                                           |
|                                                                   | Sands<br>More than 50% of coarse fraction passes No. 4 sieve      | Clean sands                                | SW                                                                            | Well-graded sands and gravelly sands, little or no fines                                          | $C_u = \frac{D_{60}}{D_{10}} \text{ greater than 6:}$ $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}} \text{ between 1 and 3}$                                                                                                                                             |
|                                                                   |                                                                   |                                            | SP                                                                            | Poorly graded sands and gravelly sands, little or no fines                                        |                                                                                                                                                                                                                                                                           |
|                                                                   |                                                                   | Sands with fines                           | SM                                                                            | Silty sands, sand-silt mixtures                                                                   | Not meeting both criteria for SW<br><br>Atterberg limits below "A" line or P.I. less than 4<br><br>Atterberg limits above "A" line with P.I. greater than 7<br><br>Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
|                                                                   |                                                                   |                                            | SC                                                                            | Clayey sands, sand-clay mixtures                                                                  |                                                                                                                                                                                                                                                                           |
|                                                                   | Fine-grained soils<br>50% or more passes No. 200 sieve *          | Silt and clays<br>Liquid limit 50% or less | ML                                                                            | Inorganic silts, very fine sands, rock flour, silty or clayey fine sands                          |                                                                                                                                                                                       |
|                                                                   |                                                                   |                                            | CL                                                                            | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays |                                                                                                                                                                                                                                                                           |
| OL                                                                |                                                                   |                                            | Organic silts and organic silty clays of low plasticity                       |                                                                                                   |                                                                                                                                                                                                                                                                           |
| Silt and clays<br>Liquid limit greater than 50%                   |                                                                   | MH                                         | Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts |                                                                                                   |                                                                                                                                                                                                                                                                           |
|                                                                   |                                                                   | CH                                         | Inorganic clays of high plasticity, fat clays                                 |                                                                                                   |                                                                                                                                                                                                                                                                           |
|                                                                   |                                                                   | OH                                         | Organic clays of medium to high plasticity                                    |                                                                                                   |                                                                                                                                                                                                                                                                           |
| Highly organic soils                                              |                                                                   | Pt                                         | Peat, muck and other highly organic soils                                     |                                                                                                   |                                                                                                                                                                                                                                                                           |
|                                                                   |                                                                   |                                            |                                                                               |                                                                                                   |                                                                                                                                                                                                                                                                           |

\*Based on the material passing the 75mm (3in) sieve.

\*Based on the material passing the 75mm (3in) sieve.

## SYMBOLS AND TERMS USED IN THE REPORT



The symbols may be combined to denote various soil combinations, the predominate soil being heavier.

### RELATIVE PROPORTIONS

| TERM     | RANGE    |
|----------|----------|
| Trace    | 0 - 5%   |
| A Little | 5 - 15%  |
| Some     | 15 - 30% |
| With     | 30 - 50% |

### ASTM CLASSIFICATION BY PARTICLE SIZE

|         |                 |
|---------|-----------------|
| Boulder | > 300 mm        |
| Cobble  | 300 mm - 75 mm  |
| Gravel  | 75 mm - 4.75 mm |
| Sand    |                 |
| coarse  | 4.75 mm - 2 mm  |
| medium  | 2 mm - 425 um   |
| fine    | 425 um - 75 um  |
| Silt    | 75 um - 5 um    |
| Clay    | < 5 um          |

### DENSITY OF SANDS AND GRAVELS

| DESCRIPTIVE TERM | RELATIVE DENSITY <sup>1</sup> | N VALUE STANDARD <sup>2</sup><br>PENETRATION TEST |
|------------------|-------------------------------|---------------------------------------------------|
| Very loose       | 0 - 15%                       | 0 - 4 Blows per 300mm                             |
| Loose            | 15 - 35%                      | 4 - 10 Blows per 300mm                            |
| Medium Dense     | 35 - 65%                      | 10 - 30 Blows per 300mm                           |
| Dense            | 65 - 85%                      | 30 - 50 Blows per 300mm                           |
| Very Dense       | 85 - 100%                     | > 50 Blows per 300mm                              |

### CONSISTENCY OF CLAYS AND SILTS

| DESCRIPTIVE TERM | UNDRAINED<br>SHEAR STRENGTH<br>(kPa)<br>(CFEM, 2nd Ed., 1985) | N VALUE STANDARD <sup>2</sup><br>PENETRATION TEST | FIELD IDENTIFICATION<br>(ASTM D 2485-84)                       |
|------------------|---------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------|
| Very Soft        | <12                                                           | < 2 Blows per 300mm                               | Thumb will penetrate soil more than 25 mm                      |
| Soft             | 12 - 25                                                       | 2 - 4 Blows per 300mm                             | Thumb will penetrate soil about 25 mm                          |
| Firm             | 25 - 50                                                       | 4 - 8 Blows per 300mm                             | Thumb will indent soil about 6 mm                              |
| Stiff            | 50 - 100                                                      | 8 - 15 Blows per 300mm                            | Thumb will indent, but only with great effort (CFEM)           |
| Very Stiff       | 100 - 200                                                     | 15 - 30 Blows per 300mm                           | Readily indented by thumbnail (CFEM)                           |
| Hard             | >200                                                          | > 30 Blows per 300mm                              | Thumb will not indent soil but readily indented with thumbnail |

NOTES: 1. Relative Density determined by standard laboratory tests.

2. N Value - Blows/300mm of a 620N hammer falling 762mm on a 50mm O.D. Split Spoon.

GE GROUND ENGINEERING LTD.



# SYMBOLS AND TERMS USED IN THE REPORT (continued)

## GROUNDWATER

-  Water level measured in the borings at the time and under the conditions indicated. In sand, the indicated levels can be considered reliable groundwater levels. In clay soil, it is not possible to determine the groundwater level within the normal scope of a test boring investigation, except where lenses or layers of more pervious waterbearing soil are present and then a long period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed texture soils may not indicate the true level of the groundwater table. The available water level information is given at the bottom of the log sheet.
-  Water level determined by piezometer installation - In all soils the levels can be considered reliable groundwater levels.

## DESCRIPTIVE SOIL TERMS

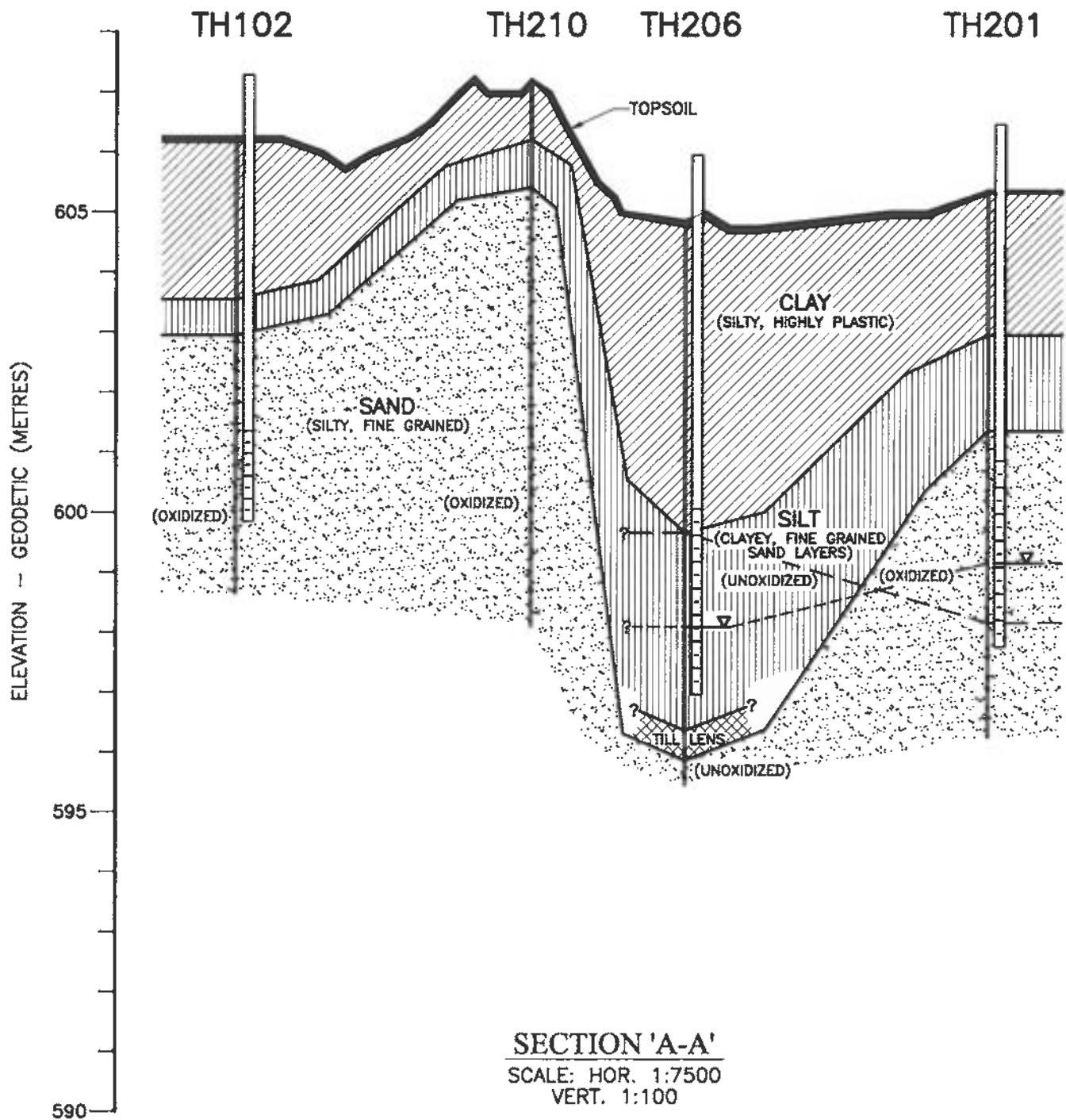
|               |                                                                                                                                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------|
| WELL GRADED   | Having wide range of grain sizes and substantial amounts of all intermediate sizes.                                                    |
| POORLY GRADED | Predominantly of one grain size.                                                                                                       |
| SLICKENSIDES  | Refers to a clay that has planes that are slick and glossy in appearance; slickensides are caused by shear movements.                  |
| SENSITIVE     | Exhibiting loss of strength on remolding.                                                                                              |
| FISSURED      | Containing cracks, usually attributable to shrinkage. Fissured clays are sometimes described as having a nuggetty structure.           |
| STRATIFIED    | Containing layers of different soil types.                                                                                             |
| ORGANIC       | Containing organic matter; may be decomposed or fibrous.                                                                               |
| PEAT          | A fibrous mass of organic matter in various stages of decomposition. Generally dark brown to black in color and of spongy consistency. |
| BEDROCK       | Preglacial material.                                                                                                                   |
| DRIFT         | Material deposited directly by glaciers or glacial melt-water.                                                                         |
| ALLUVIAL      | Soils that have been deposited from suspension from moving water.                                                                      |
| LACUSTRINE    | Soils that have been deposited from suspension in fresh water lakes.                                                                   |

## DRILLING AND SAMPLING TERMS

| SYMBOL                                                                                  | DEFINITION                            |
|-----------------------------------------------------------------------------------------|---------------------------------------|
| C.S.                                                                                    | Continuous Sampling                   |
| Sy                                                                                      | 75mm Thin Wall Tube Sample            |
| Sy (2)                                                                                  | 50mm Thin Wall Tube Sample            |
| SPT (SS)                                                                                | 50mm O.D. Split Spoon Sample          |
| <u>BLOWS</u><br>300mm                                                                   | "N" Value - Standard Penetration Test |
| Bag                                                                                     | Disturbed Bag Sample                  |
| No.                                                                                     | Sample Identification Number          |
|      | Piezometer Tip                        |
| S.I.                                                                                    | Slope Indicator                       |
| SPG  | Observed Seepage                      |

## LABORATORY TEST SYMBOLS

| SYMBOL                                                                              | DEFINITION                                                                  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|  | Moisture Content - Percent of Dry Weight                                    |
|  | Plastic and Liquid Limit determined in accordance with ASTM D-423 and D-424 |
|  | Dry Density - t/m <sup>3</sup>                                              |
|  | Shear Strength - As determined by Unconfined Compression Test               |
|  | Shear Strength - As determined by Field Vane                                |
|  | Shear Strength - As determined by Pocket Penetrometer Test                  |
| %SO <sub>4</sub>                                                                    | Water Soluable Sulphates - Percent of Dry Weight                            |
| M.A.                                                                                | Grain Size Analysis                                                         |



The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes, the boundaries are interpolated and may be subject to considerable error.



**GROUND ENGINEERING LTD.**  
CONSULTING GEOENVIRONMENTAL ENGINEERS  
REGINA, SASKATCHEWAN

STRATIGRAPHIC CROSS SECTION 'A-A'  
PROPOSED COMMERCIAL/INDUSTRIAL SUBDIVISION  
PORTION OF SE 6-18-18-W2M  
WETS OF PILOT BUTTE, SASKATCHEWAN

CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION

APPROVED:

DATE:

DECEMBER 21, 2010

DWG. No.:

GE-07133-5

|                                                                                                                                                                                                                                                                                   |  |                                        |  |                           |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|--|---------------------------|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                                                                                                                                                                                             |  | LOCATION: 13538050 E; 5593333 N        |  | TEST HOLE NO: 07133-TH101 |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                                                                                                                                                                                             |  | LOCATION: EAST OF REGINA, SASKATCHEWAN |  | PROJECT NO: GE-07133      |  |
| DRILL RIG: CME DIGGER                                                                                                                                                                                                                                                             |  | ELEVATION: 607.00 metres (GEODETIC)    |  | ELEVATION: 607.00 (m)     |  |
| SAMPLE TYPE <input checked="" type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input checked="" type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |                                        |  |                           |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL | POCKET PEN (kPa)<br>60 120 180 240 | SULPHATE CONTENT (%)<br>0.2 0.4 0.6 0.8 | PLASTIC   M.C.   LIQUID<br>20 40 60 80 | SOIL DESCRIPTION                   | BLOW COUNT<br>20 40 60 80 | VANE SHEAR (kPa)<br>60 120 180 240 | UNCONFINED (kPa)<br>60 120 180 240 | DRY DENSITY (t/m <sup>3</sup> )<br>0.4 0.8 1.2 1.6 | DEPTH (ft) |
|-----------|-------------|-----------|-----|-------------|------------------------------------|-----------------------------------------|----------------------------------------|------------------------------------|---------------------------|------------------------------------|------------------------------------|----------------------------------------------------|------------|
| 0.0       |             |           |     |             |                                    |                                         |                                        | TOPSOIL                            |                           |                                    |                                    |                                                    | 0.0        |
| 1.0       | N           | 1         |     |             |                                    |                                         |                                        | 75mm CLAY - silty, highly plastic  |                           |                                    |                                    |                                                    | 3.0in      |
| 2.0       | N           | 2         |     |             |                                    |                                         |                                        | - moist, stiff to very stiff       |                           |                                    |                                    |                                                    | 5.0        |
| 3.0       | N           | 2A        |     |             |                                    |                                         |                                        | - oxidized                         |                           |                                    |                                    |                                                    |            |
| 4.0       | N           | 3         |     |             |                                    |                                         |                                        | - till layers below 1.8 metres     |                           |                                    |                                    |                                                    | 10.0       |
| 5.0       | N           | 4         |     |             |                                    |                                         |                                        | - cobblestone at 1.8 metres        |                           |                                    |                                    |                                                    | 15.0       |
| 6.0       | N           | 5         |     |             |                                    |                                         |                                        | - dark grayish brown (2.5Y 4/2)    |                           |                                    |                                    |                                                    | 20.0       |
| 7.0       | N           | 6         |     |             |                                    |                                         |                                        | 2.7m SILT - clayey                 |                           |                                    |                                    |                                                    | 25.0       |
| 8.0       |             |           |     |             |                                    |                                         |                                        | - fine grained sand layers         |                           |                                    |                                    |                                                    |            |
| 9.0       |             |           |     |             |                                    |                                         |                                        | - moist to very moist, firm        |                           |                                    |                                    |                                                    |            |
| 10.0      |             |           |     |             |                                    |                                         |                                        | - oxidized                         |                           |                                    |                                    |                                                    |            |
| 11.0      |             |           |     |             |                                    |                                         |                                        | - olive brown (2.5Y 4/4)           |                           |                                    |                                    |                                                    |            |
| 12.0      |             |           |     |             |                                    |                                         |                                        | 4.9m SAND - silty, fine grained    |                           |                                    |                                    |                                                    | 25.0       |
| 13.0      |             |           |     |             |                                    |                                         |                                        | - moist, wet below 6.0 metres      |                           |                                    |                                    |                                                    |            |
| 14.0      |             |           |     |             |                                    |                                         |                                        | - interbedded silt layers          |                           |                                    |                                    |                                                    |            |
| 15.0      |             |           |     |             |                                    |                                         |                                        | - unoxidized below 7.2 metres      |                           |                                    |                                    |                                                    |            |
| 16.0      |             |           |     |             |                                    |                                         |                                        | - dark grayish brown (2.5Y 4/2) to |                           |                                    |                                    |                                                    |            |
| 17.0      |             |           |     |             |                                    |                                         |                                        | dark gray (5Y 4/1)                 |                           |                                    |                                    |                                                    |            |
| 18.0      |             |           |     |             |                                    |                                         |                                        | 7.6m END OF HOLE                   |                           |                                    |                                    |                                                    | 30.0       |
| 19.0      |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 35.0       |
| 20.0      |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 40.0       |
|           |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 45.0       |
|           |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 50.0       |
|           |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 55.0       |
|           |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 60.0       |
|           |             |           |     |             |                                    |                                         |                                        |                                    |                           |                                    |                                    |                                                    | 65.0       |

NOTES:

- Test hole was excavated on July 7, 2009 using a 150 mm dia. continuous flight auger.
- Seepage and sloughing was noted below a depth of 6.0 metres during drilling. Test hole sloughed to 6.1 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

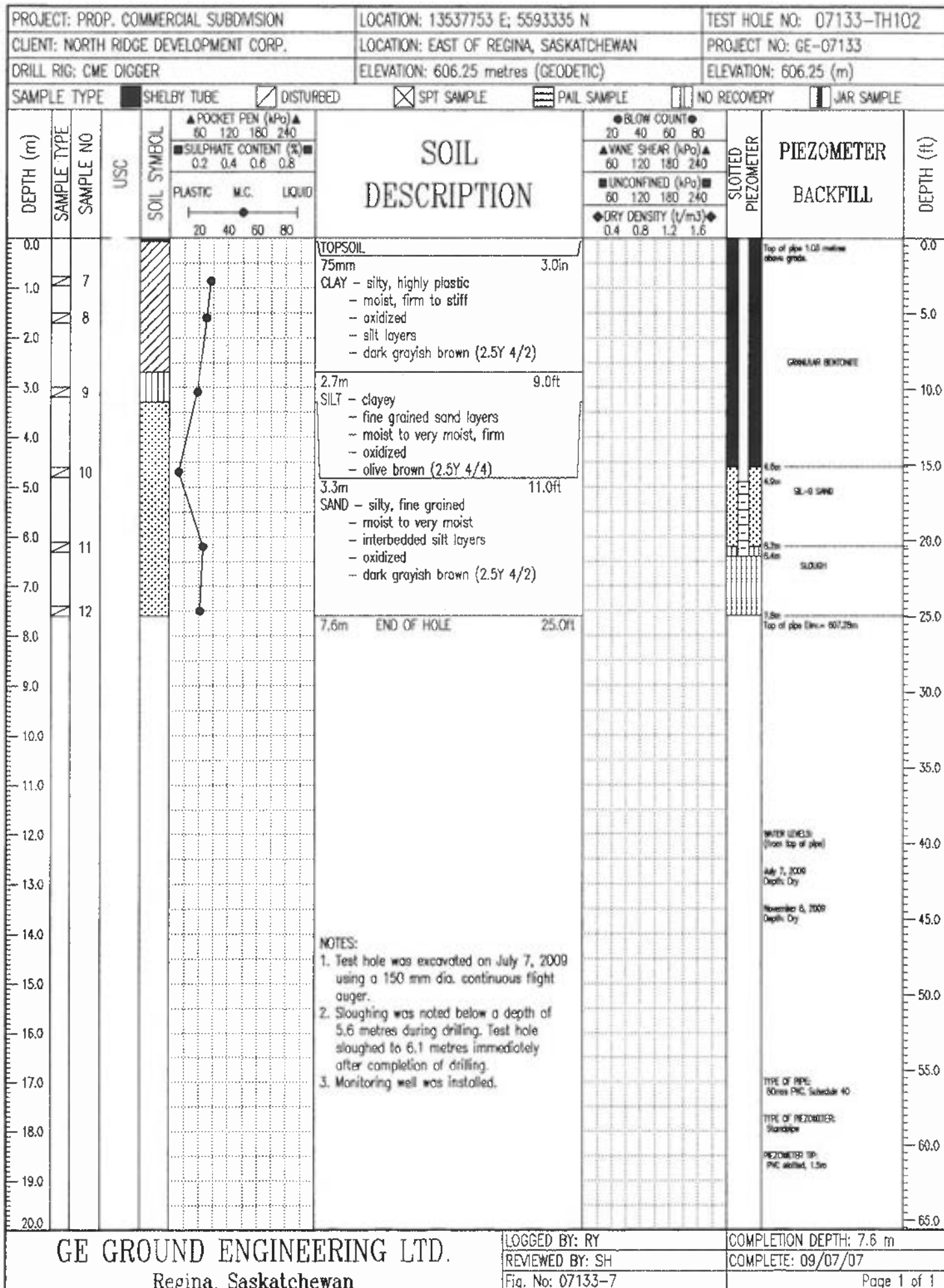
LOGGED BY: RY      COMPLETION DEPTH: 7.6 m

REVIEWED BY: SH      COMPLETE: 09/07/07

Fig. No: 07133-6      Page 1 of 1

**GE GROUND ENGINEERING LTD.**

Regina, Saskatchewan



|                                                                                                           |  |                                                                                                                                                              |  |                           |  |
|-----------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                     |  | LOCATION: 13537978 E; 5593009 N                                                                                                                              |  | TEST HOLE NO: 07133-TH103 |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                     |  | LOCATION: EAST OF REGINA, SASKATCHEWAN                                                                                                                       |  | PROJECT NO: GE-07133      |  |
| DRILL RIG: CME DIGGER                                                                                     |  | ELEVATION: 608.20 metres (GEODETIC)                                                                                                                          |  | ELEVATION: 608.20 (m)     |  |
| SAMPLE TYPE <input checked="" type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> DISTURBED |  | <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |                           |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL | SOIL DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DEPTH (ft) |  |
|-----------|-------------|-----------|-----|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|
|           |             |           |     |             | <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div>▲ POCKET PEN (kPa) ▲<br/>60 120 180 240</div> <div>■ SULPHATE CONTENT (%) ■<br/>0.2 0.4 0.6 0.8</div> </div> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div>PLASTIC</div> <div>M.C.</div> <div>LIQUID</div> </div> <div style="text-align: center; font-size: 0.8em;"> <div style="width: 100px; border-bottom: 1px solid black; position: relative; margin: 0 auto;"> <span style="position: absolute; left: 0; top: -5px;">20</span> <span style="position: absolute; right: 0; top: -5px;">80</span> </div> </div> |            |  |
|           |             |           |     |             | <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div>● BLOW COUNT ●<br/>20 40 60 80</div> <div>▲ VANE SHEAR (kPa) ▲<br/>60 120 180 240</div> </div> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div>■ UNCONFINED (kPa) ■<br/>60 120 180 240</div> <div>◆ DRY DENSITY (t/m<sup>3</sup>) ◆<br/>0.4 0.8 1.2 1.6</div> </div>                                                                                                                                                                                                                                                   |            |  |
| 0.0       |             |           |     |             | TOPSOIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.0        |  |
| 1.0       | N           | 13        |     |             | 50mm 2.0in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |  |
| 2.0       | N           | 14        |     |             | SILT - sandy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5.0        |  |
| 3.0       | N           | 15        |     |             | - fine grained sand layers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |  |
| 4.0       |             |           |     |             | - moist, loose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |  |
| 5.0       | N           | 16        |     |             | - oxidized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |  |
| 6.0       | N           | 17        |     |             | - till lense below 0.9 metres                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 10.0       |  |
| 7.0       |             |           |     |             | - olive brown (2.5Y 4/4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |  |
| 8.0       |             |           |     |             | 1.7m 5.5ft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 15.0       |  |
| 9.0       |             |           |     |             | SAND - silty, fine grained                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |  |
| 10.0      |             |           |     |             | - moist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |  |
| 11.0      |             |           |     |             | - interbedded silt layers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 20.0       |  |
| 12.0      |             |           |     |             | - oxidized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |  |
| 13.0      |             |           |     |             | - dark grayish brown (2.5Y 4/2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |  |
| 14.0      |             |           |     |             | 6.1m 20.0ft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 25.0       |  |
| 15.0      |             |           |     |             | END OF HOLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30.0       |  |
| 16.0      |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 35.0       |  |
| 17.0      |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 40.0       |  |
| 18.0      |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 45.0       |  |
| 19.0      |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 50.0       |  |
| 20.0      |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 55.0       |  |
|           |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 60.0       |  |
|           |             |           |     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 65.0       |  |

NOTES:

- Test hole was excavated on July 7, 2009 using a 150 mm dia. continuous flight auger.
- Seepage and sloughing was noted below a depth of 5.5 metres during drilling. Test hole sloughed to 5.5 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

|                                                           |  |                  |                         |
|-----------------------------------------------------------|--|------------------|-------------------------|
| <b>GE GROUND ENGINEERING LTD.</b><br>Regina, Saskatchewan |  | LOGGED BY: RY    | COMPLETION DEPTH: 6.1 m |
|                                                           |  | REVIEWED BY: SH  | COMPLETE: 09/07/07      |
|                                                           |  | Fig. No: 07133-8 | Page 1 of 1             |



|                                                                                                                                                                                                                                                                        |  |  |                                        |  |  |                           |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------------------------------------|--|--|---------------------------|--|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                                                                                                                                                                                  |  |  | LOCATION: 13538300 E; 5592863 N        |  |  | TEST HOLE NO: 07133-TH104 |  |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                                                                                                                                                                                  |  |  | LOCATION: EAST OF REGINA, SASKATCHEWAN |  |  | PROJECT NO: GE-07133      |  |  |
| DRILL RIG: CME DIGGER                                                                                                                                                                                                                                                  |  |  | ELEVATION: 605.30 metres (GEODETIC)    |  |  | ELEVATION: 605.30 (m)     |  |  |
| SAMPLE TYPE <input checked="" type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |  |                                        |  |  |                           |  |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL                                                                                                                                                                                                                                         | SOIL DESCRIPTION                                                                                                                                                                             | BLOW COUNT                                                                                                                                                    | PIEZOMETER            | PIEZOMETER BACKFILL                  | DEPTH (ft) |
|-----------|-------------|-----------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|------------|
| 0.0       |             |           |     | <div style="display: flex; justify-content: space-between;"> <div> <b>▲ POCKET PEN (kPa) ▲</b><br/> 60 120 180 240<br/> <b>■ SULPHATE CONTENT (%) ■</b><br/> 0.2 0.4 0.6 0.8 </div> <div> <b>PLASTIC M.C. LIQUID</b><br/> 20 40 60 80 </div> </div> | <b>SOIL DESCRIPTION</b><br>TOPSOIL<br>150mm<br>CLAY - silty, highly plastic<br>- moist, stiff to very stiff<br>- oxidized, iron stains<br>- salt crystals<br>- dark grayish brown (2.5Y 4/2) | <b>▲ VANE SHEAR (kPa) ▲</b><br>60 120 180 240<br><b>■ UNCONFINED (kPa) ■</b><br>60 120 180 240<br><b>◆ DRY DENSITY (t/m<sup>3</sup>) ◆</b><br>0.4 0.8 1.2 1.6 | SLOTTED<br>PIEZOMETER | PIEZOMETER<br>BACKFILL               | 0.0        |
| 1.0       | N           | 18        |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       | Top of pipe 1.03 metres above grade. |            |
| 2.0       | N           | 19        |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       | GRANULAR BENTONITE                   | 5.0        |
| 3.0       | N           | 20        |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       | 2.7m<br>3.1m                         | 10.0       |
| 4.0       | N           | 21        |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       | SIL-S SAND                           | 15.0       |
| 5.0       |             |           |     |                                                                                                                                                                                                                                                     | 3.5m<br>SILT - clayey<br>- fine grained sand layers<br>- very moist, firm<br>- oxidized<br>- dark grayish brown (2.5Y 4/2)                                                                   |                                                                                                                                                               |                       | 4.6m<br>Top of pipe Elev. = 605.33m  | 15.0       |
| 6.0       |             |           |     |                                                                                                                                                                                                                                                     | 4.6m<br>END OF HOLE                                                                                                                                                                          |                                                                                                                                                               |                       |                                      | 20.0       |
| 7.0       |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 25.0       |
| 8.0       |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 30.0       |
| 9.0       |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 35.0       |
| 10.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 40.0       |
| 11.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 45.0       |
| 12.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 50.0       |
| 13.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 55.0       |
| 14.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 60.0       |
| 15.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      | 65.0       |
| 16.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      |            |
| 17.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      |            |
| 18.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      |            |
| 19.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      |            |
| 20.0      |             |           |     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                              |                                                                                                                                                               |                       |                                      |            |

**NOTES:**

- Test hole was excavated on July 7, 2009 using a 150 mm dia. continuous flight auger.
- No seepage or sloughing was noted during drilling.
- Monitoring well was installed.

**WATER LEVELS:**  
(from top of pipe)

July 7, 2009  
Depth: Dry

November 6, 2009  
Depth: Dry

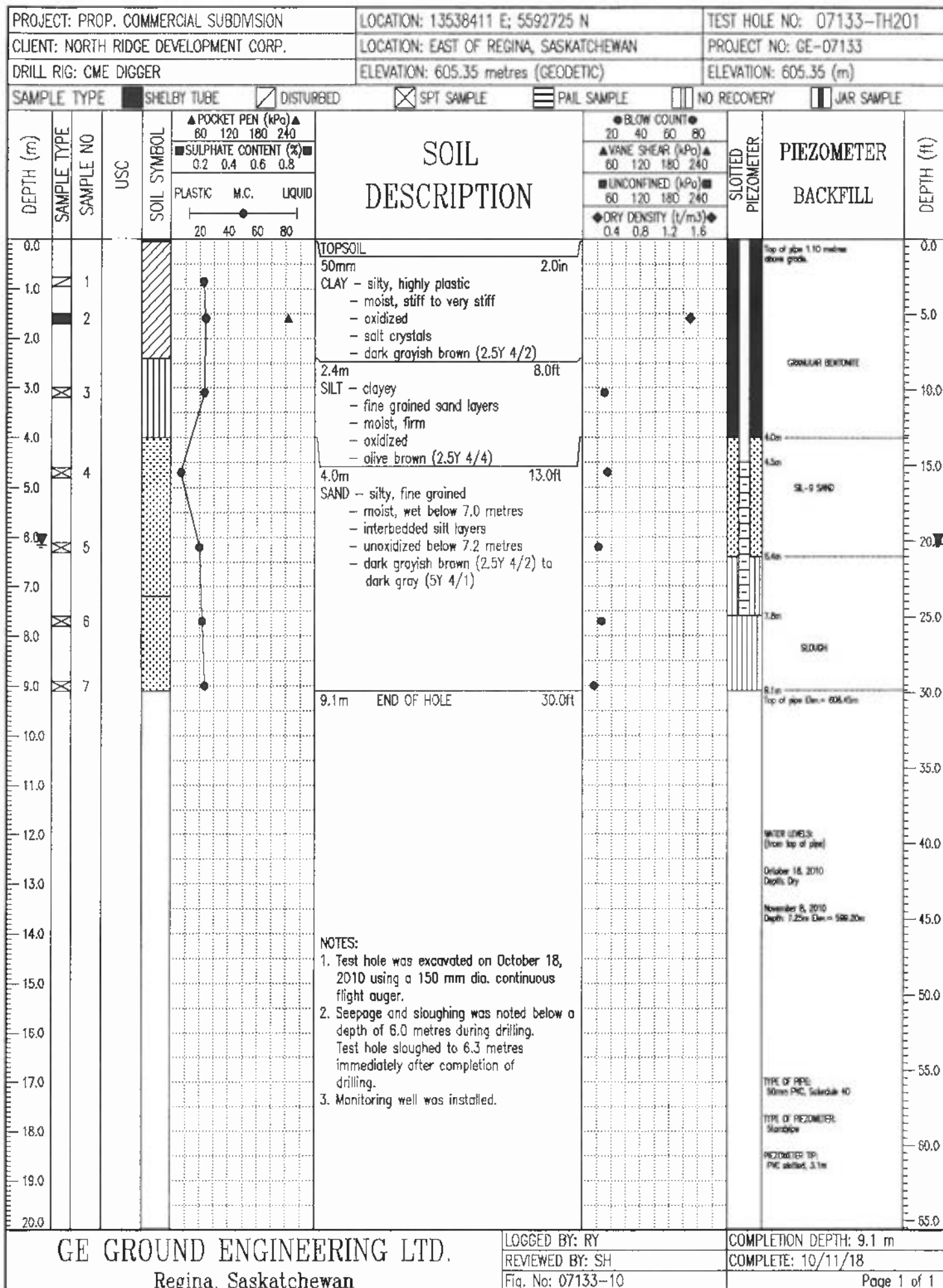
TYPE OF PIPE:  
60mm PVC, Schedule 40

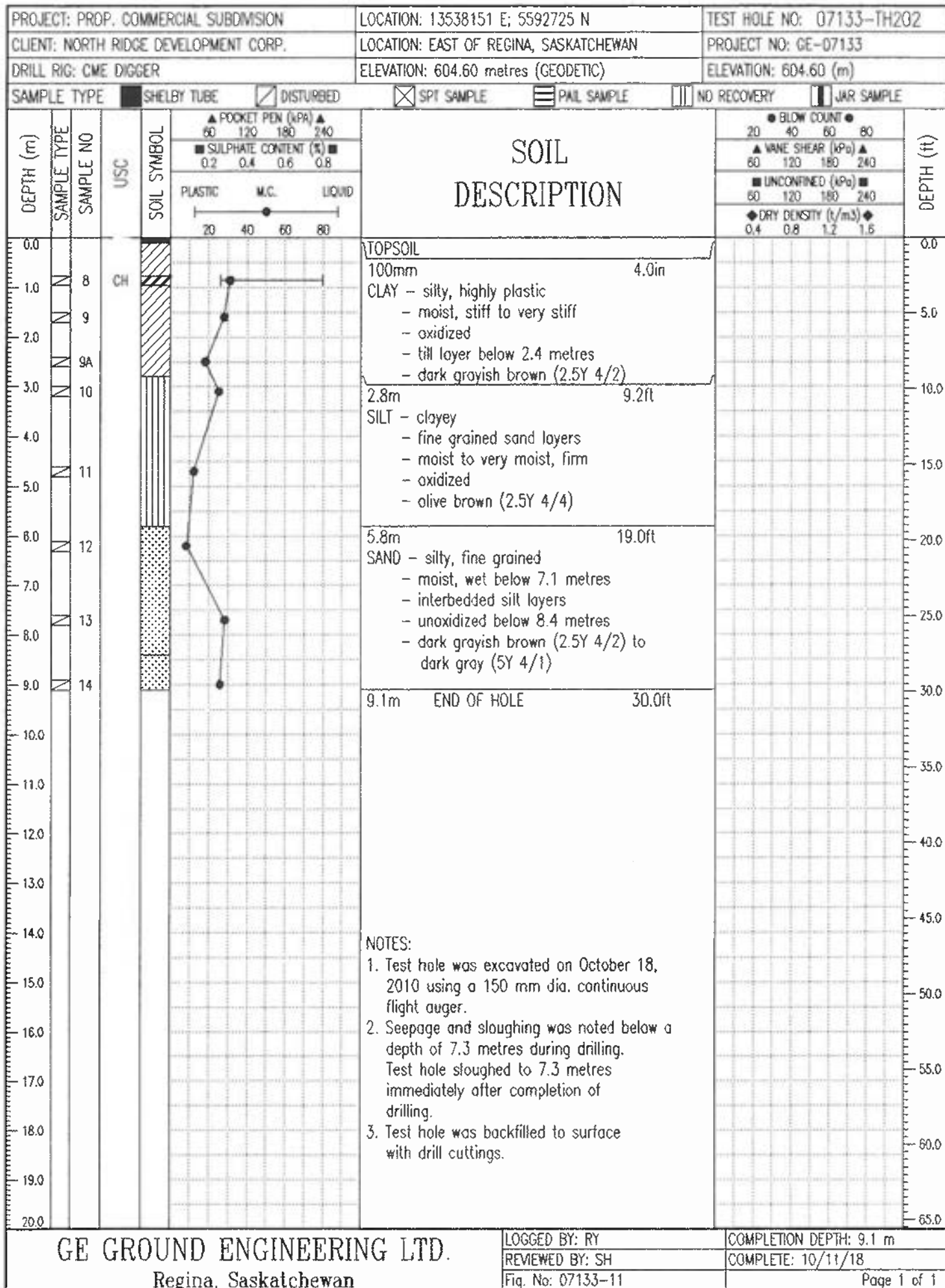
TYPE OF PIEZOMETER:  
Standpipe

PIEZOMETER TIP:  
PVC slotted, 1.5m

|                                                           |  |                  |                         |
|-----------------------------------------------------------|--|------------------|-------------------------|
| <b>GE GROUND ENGINEERING LTD.</b><br>Regina, Saskatchewan |  | LOGGED BY: RY    | COMPLETION DEPTH: 4.6 m |
|                                                           |  | REVIEWED BY: SH  | COMPLETE: 09/07/07      |
|                                                           |  | Fig. No: 07133-9 | Page 1 of 1             |





|                                                                                                                                                                                                                                                              |  |                                        |  |                           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|--|---------------------------|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                                                                                                                                                                        |  | LOCATION: 13537941 E; 5592725 N        |  | TEST HOLE NO: 07133-TH203 |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                                                                                                                                                                        |  | LOCATION: EAST OF REGINA, SASKATCHEWAN |  | PROJECT NO: GE-07133      |  |
| DRILL RIG: CME DIGGER                                                                                                                                                                                                                                        |  | ELEVATION: 604.65 metres (GEODETIC)    |  | ELEVATION: 604.65 (m)     |  |
| SAMPLE TYPE: <input checked="" type="checkbox"/> SHELBY TUBE <input type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |                                        |  |                           |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL                                                                                                                       | SOIL DESCRIPTION                                                                                                                                               | DEPTH (ft) |
|-----------|-------------|-----------|-----|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|           |             |           |     | ▲ POCKET PEN (kPa) ▲<br>60 120 180 240<br>■ SULPHATE CONTENT (%) ■<br>0.2 0.4 0.6 0.8<br>PLASTIC    M.C.    LIQUID<br>20 40 60 80 |                                                                                                                                                                |            |
|           |             |           |     |                                                                                                                                   | ● BLOW COUNT ●<br>20 40 60 80<br>▲ VANE SHEAR (kPa) ▲<br>60 120 180 240<br>■ UNCONFINED (kPa) ■<br>60 120 180 240<br>◆ DRY DENSITY (t/m3) ◆<br>0.4 0.8 1.2 1.6 |            |
| 0.0       |             |           |     |                                                                                                                                   | TOPSOIL                                                                                                                                                        | 0.0        |
| 1.0       | N           | 15        |     |                                                                                                                                   | 50mm 2.0in                                                                                                                                                     |            |
| 2.0       | N           | 16        |     |                                                                                                                                   | CLAY - silty, highly plastic                                                                                                                                   | 5.0        |
| 3.0       | N           | 17        |     |                                                                                                                                   | - moist, stiff to very stiff                                                                                                                                   |            |
| 4.0       |             |           |     |                                                                                                                                   | - oxidized                                                                                                                                                     |            |
| 5.0       |             |           |     |                                                                                                                                   | - dark grayish brown (2.5Y 4/2)                                                                                                                                |            |
| 6.0       | N           | 18        |     |                                                                                                                                   | 915mm 3.0ft                                                                                                                                                    | 10.0       |
| 7.0       |             |           |     |                                                                                                                                   | SILT - clayey                                                                                                                                                  |            |
| 8.0       | N           | 19        |     |                                                                                                                                   | - fine grained sand layers                                                                                                                                     | 15.0       |
| 9.0       |             |           |     |                                                                                                                                   | - moist to very moist, firm                                                                                                                                    |            |
| 10.0      |             |           |     |                                                                                                                                   | - oxidized                                                                                                                                                     |            |
| 11.0      |             |           |     |                                                                                                                                   | - olive brown (2.5Y 4/4)                                                                                                                                       |            |
| 12.0      |             |           |     |                                                                                                                                   | 3.3m 11.0ft                                                                                                                                                    | 20.0       |
| 13.0      | N           | 20        |     |                                                                                                                                   | SAND - silty, fine grained                                                                                                                                     | 25.0       |
| 14.0      |             |           |     |                                                                                                                                   | - moist, wet below 8.1 metres                                                                                                                                  |            |
| 15.0      |             |           |     |                                                                                                                                   | - interbedded silt layers                                                                                                                                      |            |
| 16.0      |             |           |     |                                                                                                                                   | - oxidized                                                                                                                                                     |            |
| 17.0      |             |           |     |                                                                                                                                   | - dark grayish brown (2.5Y 4/2)                                                                                                                                |            |
| 18.0      | N           | 21        |     |                                                                                                                                   | 9.1m END OF HOLE 30.0ft                                                                                                                                        | 30.0       |
| 19.0      |             |           |     |                                                                                                                                   |                                                                                                                                                                | 35.0       |
| 20.0      |             |           |     |                                                                                                                                   |                                                                                                                                                                | 40.0       |
|           |             |           |     |                                                                                                                                   |                                                                                                                                                                | 45.0       |
|           |             |           |     |                                                                                                                                   |                                                                                                                                                                | 50.0       |
|           |             |           |     |                                                                                                                                   |                                                                                                                                                                | 55.0       |
|           |             |           |     |                                                                                                                                   |                                                                                                                                                                | 60.0       |
|           |             |           |     |                                                                                                                                   |                                                                                                                                                                | 65.0       |

NOTES:

- Test hole was excavated on October 18, 2010 using a 150 mm dia. continuous flight auger.
- Seepage and sloughing was noted below a depth of 8.1 metres during drilling. Test hole sloughed to 8.1 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

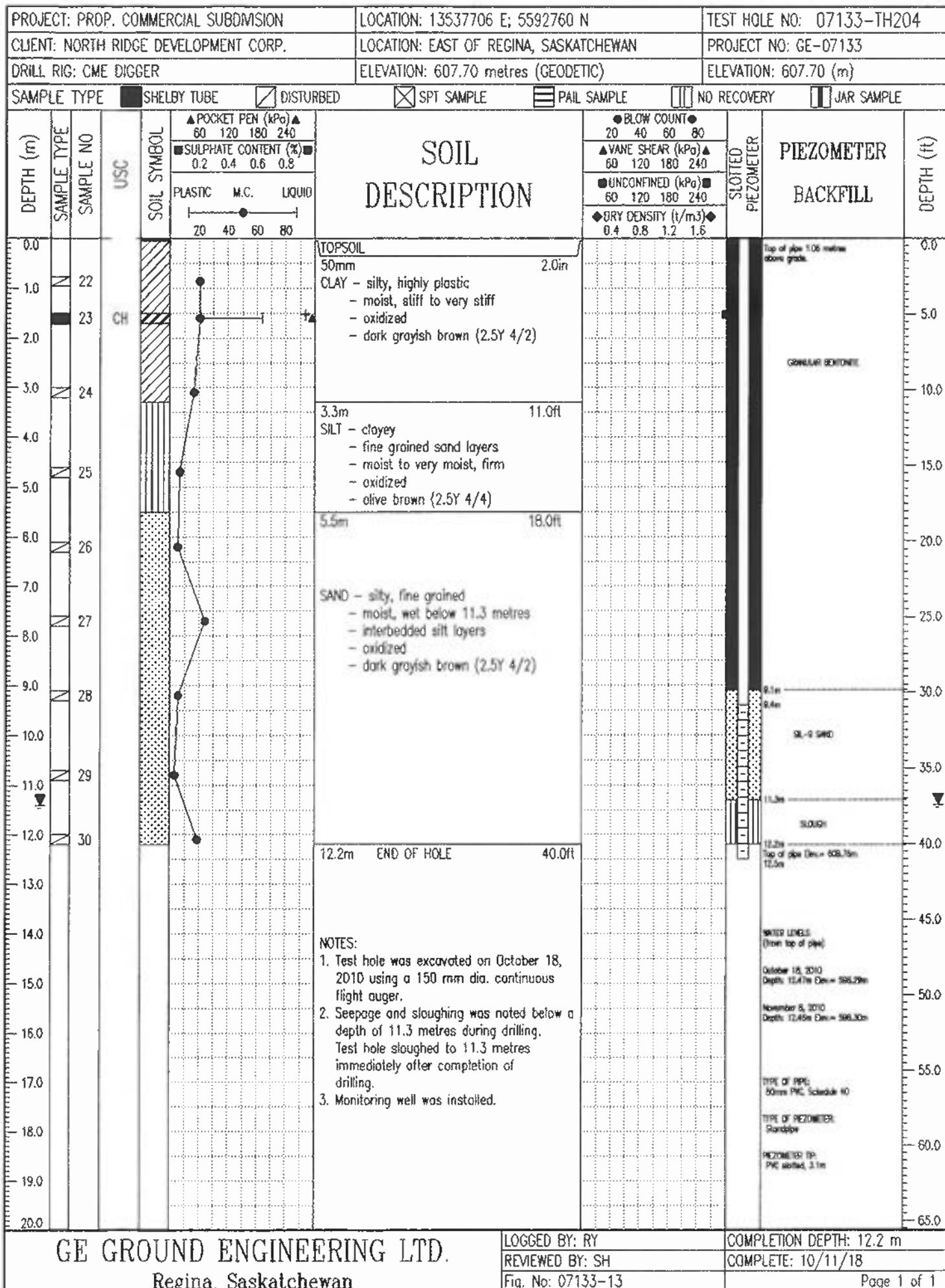
LOGGED BY: RY    COMPLETION DEPTH: 9.1 m

REVIEWED BY: SH    COMPLETE: 10/11/18

Fig. No: 07133-12    Page 1 of 1

**GE GROUND ENGINEERING LTD.**

Regina, Saskatchewan





|                                                                                                                                                                                                                                                              |  |                                        |  |                           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|--|---------------------------|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                                                                                                                                                                        |  | LOCATION: 13537836 E; 5592870 N        |  | TEST HOLE NO: 07133-TH205 |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                                                                                                                                                                        |  | LOCATION: EAST OF REGINA, SASKATCHEWAN |  | PROJECT NO: GE-07133      |  |
| DRILL RIG: CME DIGGER                                                                                                                                                                                                                                        |  | ELEVATION: 604.25 metres (GEODETIC)    |  | ELEVATION: 604.25 (m)     |  |
| SAMPLE TYPE: <input checked="" type="checkbox"/> SHELBY TUBE <input type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |                                        |  |                           |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL | POCKET PEN (kPa) |     |     | SULPHATE CONTENT (%) |     |     | PLASTIC                         |     |     | M.C. |     |     | LIQUID |    |    | SOIL DESCRIPTION                |  |  |  | BLOW COUNT |      |  |  | DEPTH (ft) |
|-----------|-------------|-----------|-----|-------------|------------------|-----|-----|----------------------|-----|-----|---------------------------------|-----|-----|------|-----|-----|--------|----|----|---------------------------------|--|--|--|------------|------|--|--|------------|
|           |             |           |     |             | 60               | 120 | 180 | 240                  | 0.2 | 0.4 | 0.6                             | 0.8 | 20  | 40   | 60  | 80  | 20     | 40 | 60 |                                 |  |  |  | 80         |      |  |  |            |
|           |             |           |     |             | VANE SHEAR (kPa) |     |     | UNCONFINED (kPa)     |     |     | DRY DENSITY (t/m <sup>3</sup> ) |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
|           |             |           |     |             | 60               | 120 | 180 | 240                  | 60  | 120 | 180                             | 240 | 0.4 | 0.8  | 1.2 | 1.6 |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 0.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | TOPSOIL                         |  |  |  | 0.0        |      |  |  |            |
| 1.0       |             | 31        |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | 100mm 4.0in                     |  |  |  | 5.0        |      |  |  |            |
| 2.0       |             | 32        |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | CLAY - silty, highly plastic    |  |  |  |            |      |  |  |            |
| 3.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - moist, stiff to very stiff    |  |  |  |            |      |  |  |            |
| 4.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - oxidized                      |  |  |  |            |      |  |  |            |
| 5.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - dark grayish brown (2.5Y 4/2) |  |  |  |            |      |  |  |            |
| 6.0       |             | 33        | CH  |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            | 10.0 |  |  |            |
| 7.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 8.0       |             | 34        |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | 4.1m 13.5ft                     |  |  |  | 15.0       |      |  |  |            |
| 9.0       |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | SILT - clayey                   |  |  |  |            |      |  |  |            |
| 10.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - fine grained sand layers      |  |  |  |            |      |  |  |            |
| 11.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - till layers at 5.5 metres     |  |  |  |            |      |  |  |            |
| 12.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - moist to very moist, firm     |  |  |  |            |      |  |  |            |
| 13.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - oxidized                      |  |  |  |            |      |  |  |            |
| 14.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    | - olive brown (2.5Y 4/4)        |  |  |  |            |      |  |  |            |
| 15.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 16.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 17.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 18.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 19.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 20.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 21.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 22.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 23.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 24.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 25.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 26.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 27.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 28.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 29.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 30.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 31.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 32.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 33.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 34.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 35.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 36.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 37.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 38.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 39.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 40.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 41.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 42.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 43.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 44.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 45.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 46.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 47.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 48.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 49.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 50.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 51.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 52.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 53.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 54.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 55.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 56.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 57.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 58.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 59.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 60.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 61.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 62.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 63.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 64.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |
| 65.0      |             |           |     |             |                  |     |     |                      |     |     |                                 |     |     |      |     |     |        |    |    |                                 |  |  |  |            |      |  |  |            |

**NOTES:**

- Test hole was excavated on October 18, 2010 using a 150 mm dia. continuous flight auger.
- Seepage and sloughing was noted below a depth of 6.7 metres during drilling. Test hole sloughed to 6.7 metres immediately after completion of drilling. Water level was measured at 6.3 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

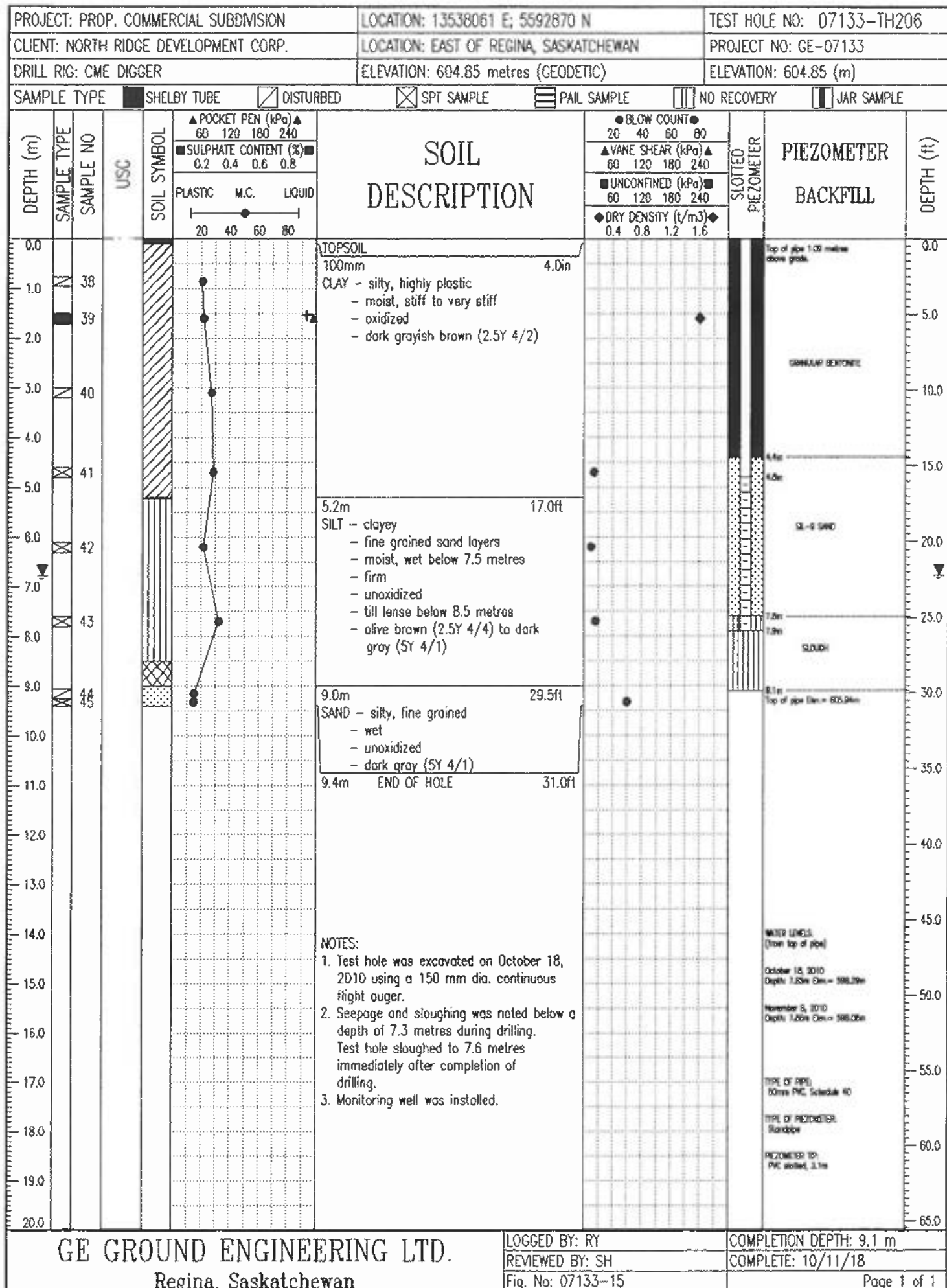
LOGGED BY: RY      COMPLETION DEPTH: 9.1 m

REVIEWED BY: SH      COMPLETE: 10/11/18

Fig. No: 07133-14      Page 1 of 1

**GE GROUND ENGINEERING LTD.**

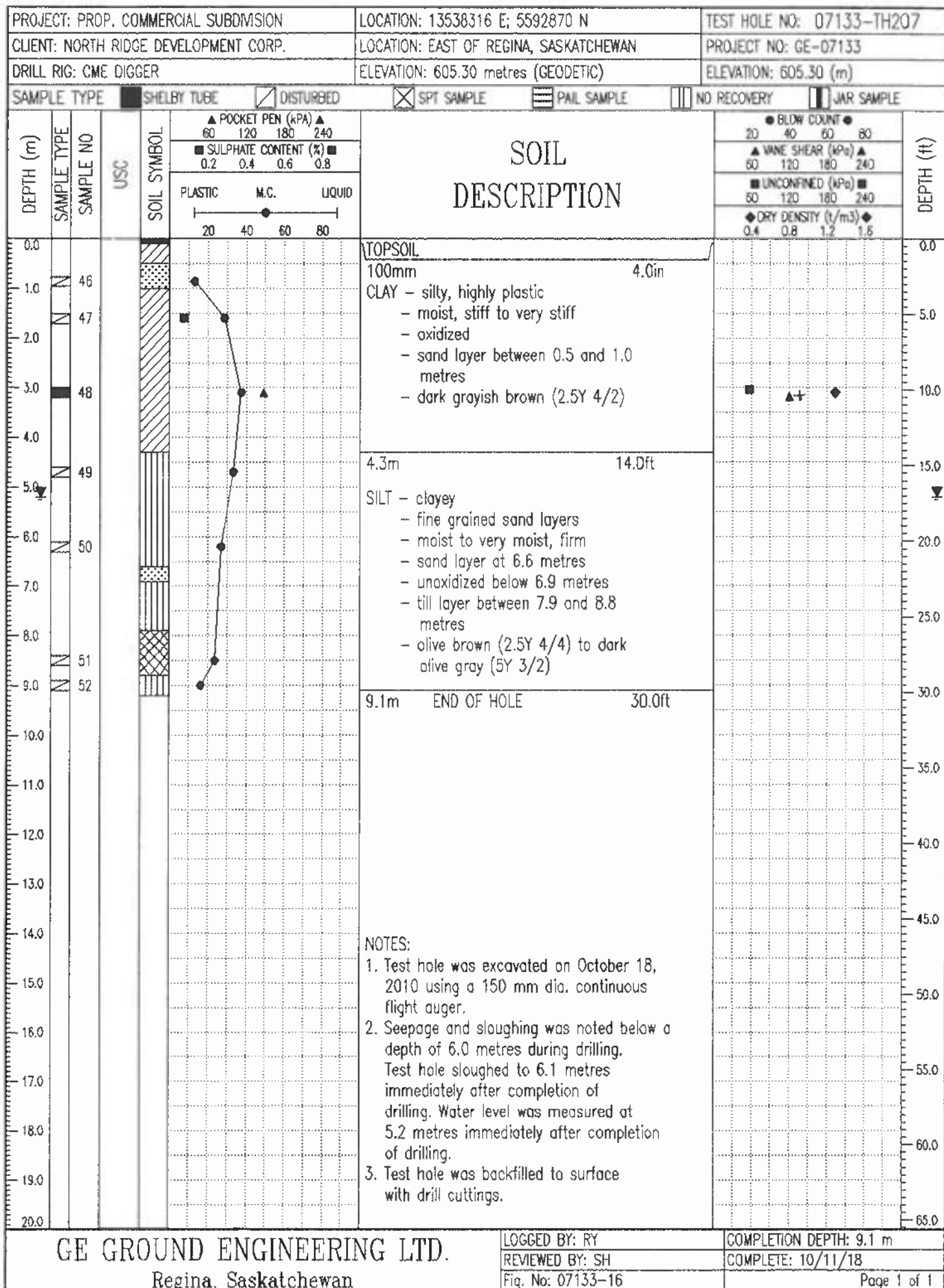
Regina, Saskatchewan

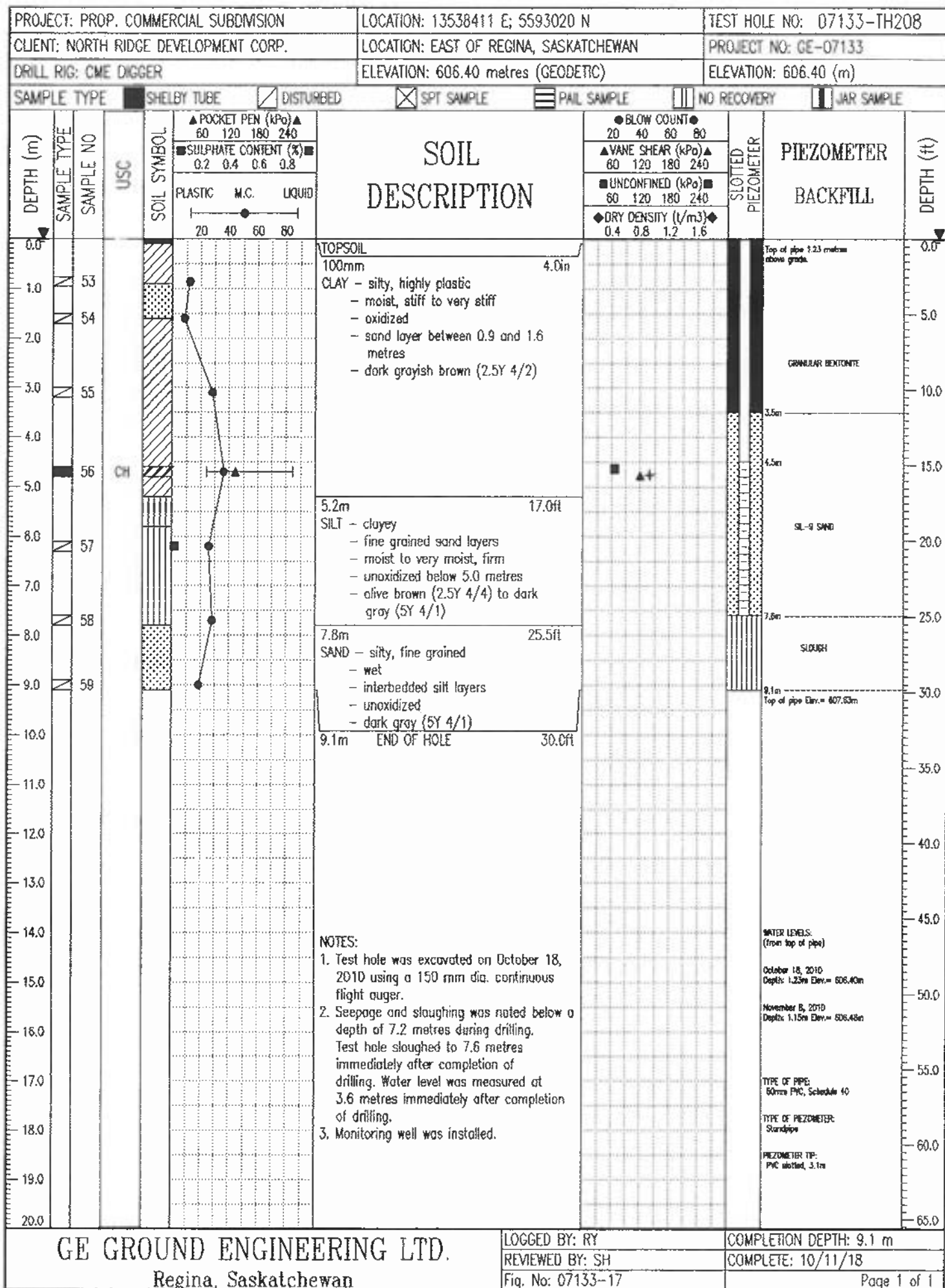


**GE GROUND ENGINEERING LTD.**  
Regina, Saskatchewan

LOGGED BY: RY  
REVIEWED BY: SH  
Fig. No: 07133-15

COMPLETION DEPTH: 9.1 m  
COMPLETE: 10/11/18





|                                       |  |                                                                                                                                                                                                                                                 |  |                           |  |
|---------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION |  | LOCATION: 13538171 E; 5593020 N                                                                                                                                                                                                                 |  | TEST HOLE NO: 07133-TH209 |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP. |  | LOCATION: EAST OF REGINA, SASKATCHEWAN                                                                                                                                                                                                          |  | PROJECT NO: GE-07133      |  |
| DRILL RIG: CME DIGGER                 |  | ELEVATION: 605.30 metres (GEODETIC)                                                                                                                                                                                                             |  | ELEVATION: 605.30 (m)     |  |
| SAMPLE TYPE                           |  | <input checked="" type="checkbox"/> SHELBY TUBE <input type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |                           |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL | SOIL DESCRIPTION                                      |                      |         | TEST DATA |        |            |                  | DEPTH (ft) |                  |                                 |
|-----------|-------------|-----------|-----|-------------|-------------------------------------------------------|----------------------|---------|-----------|--------|------------|------------------|------------|------------------|---------------------------------|
|           |             |           |     |             | POCKET PEN (kPa)                                      | SULPHATE CONTENT (%) | PLASTIC | M.C.      | LIQUID | BLOW COUNT | VANE SHEAR (kPa) |            | UNCONFINED (kPa) | DRY DENSITY (t/m <sup>3</sup> ) |
|           |             |           |     |             |                                                       |                      |         |           |        |            |                  |            |                  |                                 |
|           |             |           |     |             |                                                       |                      |         |           |        |            |                  |            |                  |                                 |
| 0.0       |             |           |     |             | TOPSOIL                                               |                      |         |           |        |            |                  | 0.0        |                  |                                 |
| 1.0       | N           | 60        |     |             | 100mm                                                 |                      |         | 4.0in     |        |            |                  |            |                  |                                 |
| 2.0       | N           | 61        |     |             | CLAY - silty, highly plastic                          |                      |         |           |        |            |                  | 5.0        |                  |                                 |
| 3.0       | N           | 62        |     |             | - moist, stiff to very stiff                          |                      |         |           |        |            |                  |            |                  |                                 |
| 4.0       | N           |           |     |             | - oxidized                                            |                      |         |           |        |            |                  |            |                  |                                 |
| 5.0       | N           | 63        |     |             | - dark grayish brown (2.5Y 4/2)                       |                      |         |           |        |            |                  |            |                  |                                 |
| 6.0       | N           |           |     |             | 2.7m                                                  |                      |         | 9.0ft     |        |            |                  | 10.0       |                  |                                 |
| 7.0       | N           | 64        |     |             | SILT - clayey                                         |                      |         |           |        |            |                  |            |                  |                                 |
| 8.0       | N           |           |     |             | - fine grained sand layers                            |                      |         |           |        |            |                  |            |                  |                                 |
| 9.0       | N           | 65        |     |             | - moist, wet below 5.0 metres                         |                      |         |           |        |            |                  | 15.0       |                  |                                 |
| 10.0      | N           |           |     |             | - firm                                                |                      |         |           |        |            |                  |            |                  |                                 |
| 11.0      | N           | 66        |     |             | - till layer at 4.3 metres                            |                      |         |           |        |            |                  | 20.0       |                  |                                 |
| 12.0      | N           |           |     |             | - oxidized                                            |                      |         |           |        |            |                  |            |                  |                                 |
| 13.0      | N           | 65A       |     |             | - olive brown (2.5Y 4/4)                              |                      |         |           |        |            |                  | 25.0       |                  |                                 |
| 14.0      | N           |           |     |             | 6.3m                                                  |                      |         | 20.5ft    |        |            |                  | 30.0       |                  |                                 |
| 15.0      | N           | 66        |     |             | SAND - silty, fine grained                            |                      |         |           |        |            |                  |            |                  |                                 |
| 16.0      | N           |           |     |             | - wet                                                 |                      |         |           |        |            |                  | 35.0       |                  |                                 |
| 17.0      | N           |           |     |             | - till layers below 8.9 metres                        |                      |         |           |        |            |                  |            |                  |                                 |
| 18.0      | N           |           |     |             | - interbedded silt layers                             |                      |         |           |        |            |                  | 40.0       |                  |                                 |
| 19.0      | N           |           |     |             | - unoxidized below 8.9 metres                         |                      |         |           |        |            |                  |            |                  |                                 |
| 20.0      | N           |           |     |             | - dark grayish brown (2.5Y 4/2) to dark gray (5Y 4/1) |                      |         |           |        |            |                  | 45.0       |                  |                                 |
|           |             |           |     |             | 9.1m                                                  |                      |         | 30.0ft    |        |            |                  | 50.0       |                  |                                 |
|           |             |           |     |             | END OF HOLE                                           |                      |         |           |        |            |                  | 55.0       |                  |                                 |
|           |             |           |     |             |                                                       |                      |         |           |        |            |                  | 60.0       |                  |                                 |
|           |             |           |     |             |                                                       |                      |         |           |        |            |                  | 65.0       |                  |                                 |

**NOTES:**

- Test hole was excavated on October 18, 2010 using a 150 mm dia. continuous flight auger.
- Seepage and sloughing was noted below a depth of 3.6 metres during drilling. Test hole sloughed to 0.9 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

LOGGED BY: RY      COMPLETION DEPTH: 9.1 m

REVIEWED BY: SH      COMPLETE: 10/11/18

Fig. No: 07133-18      Page 1 of 1

**GE GROUND ENGINEERING LTD.**

Regina, Saskatchewan



|                                                                                                                                                                                                                                                                        |  |  |                                        |  |  |                           |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------------------------------------|--|--|---------------------------|--|--|
| PROJECT: PROP. COMMERCIAL SUBDIVISION                                                                                                                                                                                                                                  |  |  | LOCATION: 13537941 E; 5593020 N        |  |  | TEST HOLE NO: 07133-TH210 |  |  |
| CLIENT: NORTH RIDGE DEVELOPMENT CORP.                                                                                                                                                                                                                                  |  |  | LOCATION: EAST OF REGINA, SASKATCHEWAN |  |  | PROJECT NO: GE-07133      |  |  |
| DRILL RIG: CME DIGGER                                                                                                                                                                                                                                                  |  |  | ELEVATION: 607.20 metres (GEODETIC)    |  |  | ELEVATION: 607.20 (m)     |  |  |
| SAMPLE TYPE <input checked="" type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> SPT SAMPLE <input type="checkbox"/> PAIL SAMPLE <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> JAR SAMPLE |  |  |                                        |  |  |                           |  |  |

| DEPTH (m) | SAMPLE TYPE | SAMPLE NO | USC | SOIL SYMBOL                                                                                                                 | SOIL DESCRIPTION                                                                                                                                                            | DEPTH (ft) |  |
|-----------|-------------|-----------|-----|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|
|           |             |           |     | ▲ POCKET PEN (kPa) ▲<br>60 120 180 240<br>■ SULPHATE CONTENT (%) ■<br>0.2 0.4 0.6 0.8<br>PLASTIC M.C. LIQUID<br>20 40 60 80 |                                                                                                                                                                             |            |  |
|           |             |           |     |                                                                                                                             | ● BLOW COUNT ●<br>20 40 60 80<br>▲ VANE SHEAR (kPa) ▲<br>60 120 180 240<br>■ UNCONFINED (kPa) ■<br>60 120 180 240<br>◆ DRY DENSITY (t/m <sup>3</sup> ) ◆<br>0.4 0.8 1.2 1.6 |            |  |
| 0.0       |             |           |     |                                                                                                                             | TOPSOIL                                                                                                                                                                     | 0.0        |  |
| 1.0       | N           | 67        |     |                                                                                                                             | 25mm 1.0in                                                                                                                                                                  |            |  |
| 2.0       | N           | 68        |     |                                                                                                                             | CLAY - silty, highly plastic<br>- moist, stiff to very stiff<br>- oxidized<br>- dark grayish brown (2.5Y 4/2)<br>- olive brown (2.5Y 4/4)                                   | 5.0        |  |
| 3.0       | N           | 69        |     |                                                                                                                             | 1.0m 3.0ft                                                                                                                                                                  | 10.0       |  |
| 4.0       |             |           |     |                                                                                                                             | SILT - clayey, sandy<br>- fine grained sand layers<br>- moist to very moist, firm<br>- oxidized                                                                             | 15.0       |  |
| 5.0       | N           | 70        |     |                                                                                                                             | 1.8m 6.0ft                                                                                                                                                                  | 20.0       |  |
| 6.0       | N           | 71        |     |                                                                                                                             | SAND - silty, fine grained<br>- moist, wet below 8.7 metres<br>- interbedded silt layers<br>- oxidized<br>- dark grayish brown (2.5Y 4/2)                                   | 25.0       |  |
| 7.0       |             |           |     |                                                                                                                             |                                                                                                                                                                             | 30.0       |  |
| 8.0       | N           | 72        |     |                                                                                                                             |                                                                                                                                                                             | 35.0       |  |
| 9.0       | N           | 73        |     |                                                                                                                             | 9.1m END OF HOLE 30.0ft                                                                                                                                                     | 40.0       |  |
| 10.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             | 45.0       |  |
| 11.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             | 50.0       |  |
| 12.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             | 55.0       |  |
| 13.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             | 60.0       |  |
| 14.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             | 65.0       |  |
| 15.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |
| 16.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |
| 17.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |
| 18.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |
| 19.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |
| 20.0      |             |           |     |                                                                                                                             |                                                                                                                                                                             |            |  |

NOTES:

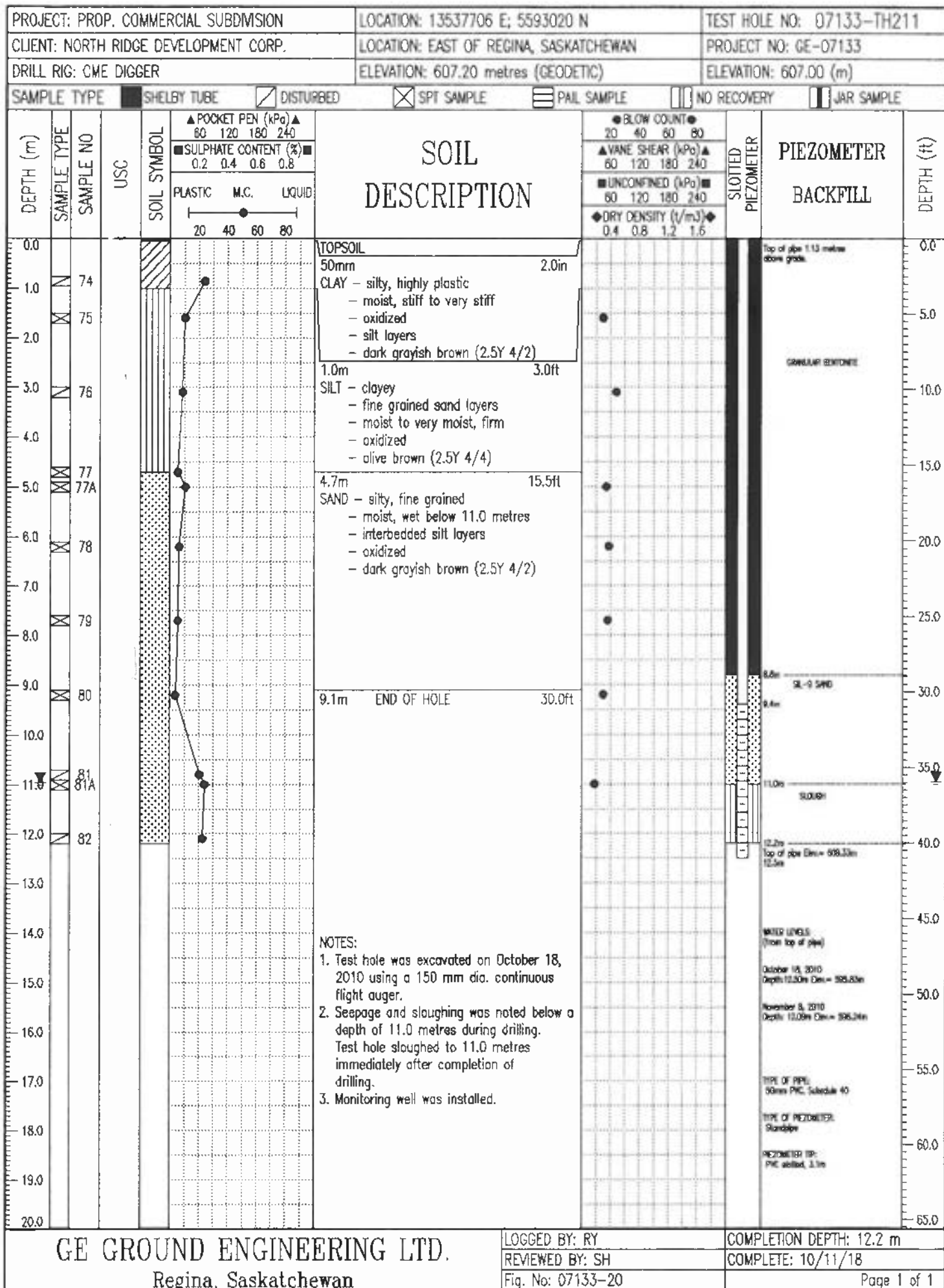
- Test hole was excavated on October 18, 2010 using a 150 mm dia. continuous flight auger.
- No seepage or sloughing was noted during drilling.  
Test hole sloughed to 8.8 metres immediately after completion of drilling.
- Test hole was backfilled to surface with drill cuttings.

COMPLETION DEPTH: 9.1 m

COMPLETE: 10/11/18

**GE GROUND ENGINEERING LTD.**  
Regina, Saskatchewan

LOGGED BY: RY  
REVIEWED BY: SH  
Fig. No: 07133-19



**GRAIN SIZE CURVE**

(A.S.T.M. C-136, C.S.A. A23.2-2A & 5A)

JOB No: GE-07133

DATE: October 20, 2010

TECH: R. YAREMKO

CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION

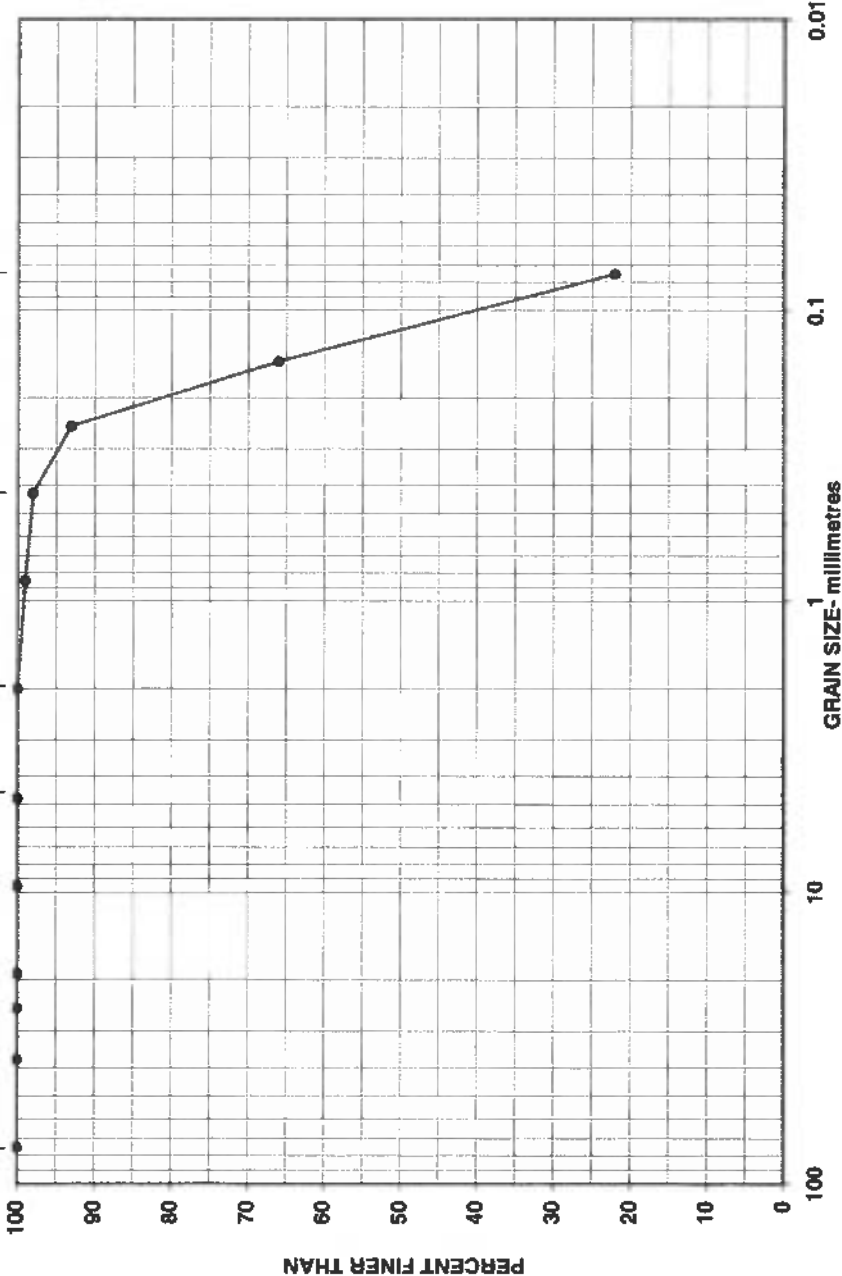
PROJECT: GEOTECHNICAL INVESTIGATION - SUBDIVISION DEVELOPMENT

LOCATION: SE-6-18-18-W2 EXT 2, NEAR PILOT BUTTE, SASKATCHEWAN

**GRAIN SIZE CATEGORIES AS DESIGNATED BY A.S.T.M.**

| COBBLES | GRAVEL SIZES |  |  | SAND SIZES |        |      | SILT AND CLAY SIZES |
|---------|--------------|--|--|------------|--------|------|---------------------|
|         |              |  |  | COARSE     | MEDIUM | FINE |                     |

| SIZE OF OPENING (mm) | SPECIFIED % FINER THAN | PERCENT FINER THAN |
|----------------------|------------------------|--------------------|
| 75.0                 |                        | 100                |
| 37.5                 |                        | 100                |
| 25.0                 |                        | 100                |
| 19.0                 |                        | 100                |
| 9.51                 |                        | 100                |
| 4.75                 |                        | 100                |
| 2.00                 |                        | 100                |
| 0.850                |                        | 99                 |
| 0.425                |                        | 98                 |
| 0.250                |                        | 93                 |
| 0.150                |                        | 66                 |
| 0.075                |                        | 22                 |



| GRAIN SIZE CATEGORY | PARTICLE SIZE RANGE (mm) | PERCENT RETAINED |
|---------------------|--------------------------|------------------|
| GRAVEL              | 75 to 4.75               | 0                |
| COARSE SAND         | 4.75 to 2.0              | 0                |
| MEDIUM SAND         | 2.0 to 0.425             | 2                |
| FINE SAND           | 0.425 to 0.075           | 76               |
| SILT & CLAY         | < 0.075                  | 22               |

SAMPLE DESCRIPTION: SAND, SOME SILT AND CLAY.

MATERIAL SUPPLIED BY:

SAMPLE LOCATION:

SAMPLE NUMBER: 18 AT 15' BELOW GRADE

DISTRIBUTION:

SAMPLED BY:

R. YAREMKO OF GE GROUND ENGINEERING LTD.

TEST HOLE 203

DATE SAMPLED: October 18, 2010

WE CERTIFY TESTING PROCEDURES IN ACCORDANCE WITH  
 C.S.A. & A.S.T.M. STANDARDS FOR THAT PORTION  
 OF THE TESTING PERFORMED BY THIS COMPANY  
 GE GROUND ENGINEERING LTD.

Per: KELLY MAUNDER, A.S.C.T.

**GRAIN SIZE CURVE**

(A.S.T.M. C-136, C.S.A. A23.2-2A & 5A)

JOB No: GE-07133  
 CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION  
 PROJECT: GEOTECHNICAL INVESTIGATION - SUBDIVISION DEVELOPMENT  
 LOCATION: SE-6-18-18-W2 EXT 2, NEAR PILOT BUTTE, SASKATCHEWAN

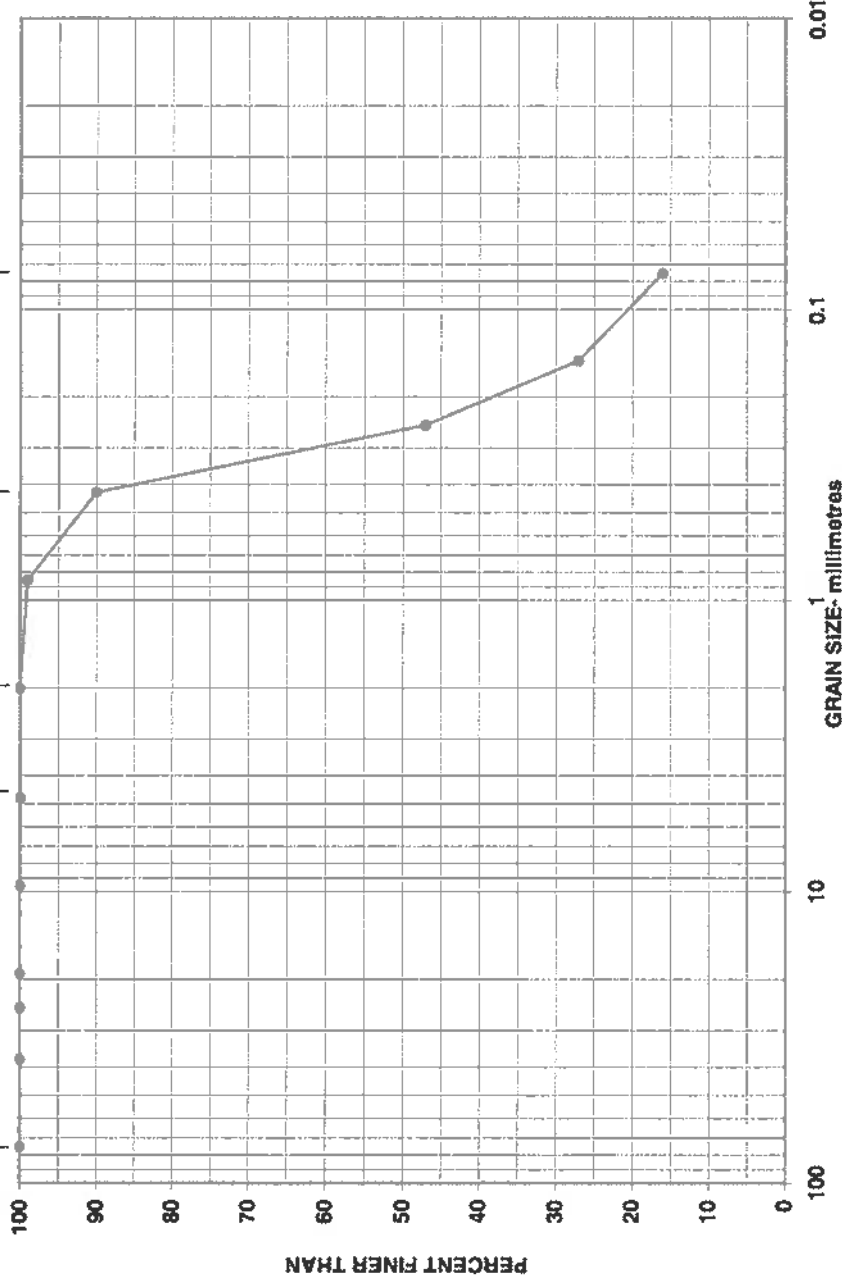
DATE: October 20, 2010  
 TECH: R. YAREMKO

**GRAIN SIZE CATEGORIES AS DESIGNATED BY A.S.T.M.**

| COBBLES | GRAVEL SIZES |  |  | SAND SIZES |        |      | SILT AND CLAY SIZES |  |
|---------|--------------|--|--|------------|--------|------|---------------------|--|
|         |              |  |  | COARSE     | MEDIUM | FINE |                     |  |

| SIZE OF OPENING (mm) | SPECIFIED % FINER THAN | PERCENT FINER THAN |
|----------------------|------------------------|--------------------|
| 75.0                 |                        | 100                |
| 37.5                 |                        | 100                |
| 25.0                 |                        | 100                |
| 19.0                 |                        | 100                |
| 9.51                 |                        | 100                |
| 4.75                 |                        | 100                |
| 2.00                 |                        | 100                |
| 0.850                |                        | 99                 |
| 0.425                |                        | 90                 |
| 0.250                |                        | 47                 |
| 0.150                |                        | 27                 |
| 0.075                |                        | 16                 |

| GRAIN SIZE CATEGORY | PARTICLE SIZE RANGE (mm) | PERCENT RETAINED |
|---------------------|--------------------------|------------------|
| GRAVEL              | 75 to 4.75               | 0                |
| COARSE SAND         | 4.75 to 2.0              | 0                |
| MEDIUM SAND         | 2.0 to 0.425             | 10               |
| FINE SAND           | 0.425 to 0.075           | 74               |
| SILT & CLAY         | < 0.075                  | 16               |



SAMPLE DESCRIPTION : SAND, SOME SILT AND CLAY.

MATERIAL SUPPLIED BY:

SAMPLE LOCATION: TEST HOLE 205

SAMPLE NUMBER: 37 AT 30' BELOW GRADE DATE SAMPLED : October 18, 2010

DISTRIBUTION:

SAMPLED BY:

R. YAREMKO OF GE GROUND ENGINEERING LTD.

WE CERTIFY TESTING PROCEDURES IN ACCORDANCE WITH  
 C.S.A. & A.S.T.M. STANDARDS FOR THAT PORTION  
 OF THE TESTING PERFORMED BY THIS COMPANY  
 GE GROUND ENGINEERING LTD.

Per: KELLY MAUNDER, A.S.C.T.

**GRAIN SIZE CURVE**

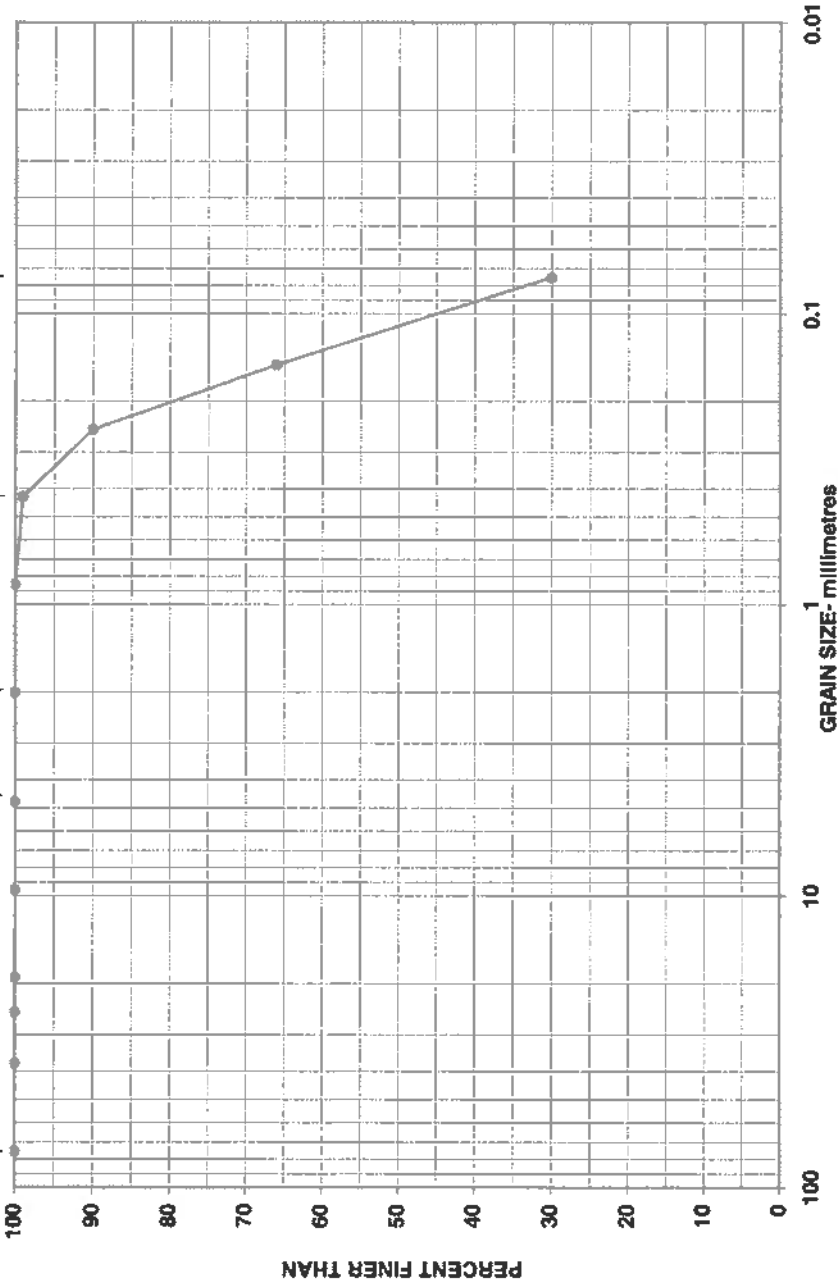
(A.S.T.M. C-136, C.S.A. A23.2-2A & 5A)

JOB No: GE-07133 DATE: October 20, 2010 TECH: R. YAREMKO  
 CLIENT: NORTH RIDGE DEVELOPMENT CORPORATION  
 PROJECT: GEOTECHNICAL INVESTIGATION - SUBDIVISION DEVELOPMENT  
 LOCATION: SE-6-18-18-W2 EXT 2, NEAR PILOT BUTTE, SASKATCHEWAN

**GRAIN SIZE CATEGORIES AS DESIGNATED BY A.S.T.M.**

| COBBLES | GRAVEL SIZES |        |      | SAND SIZES |        |      | SILT AND CLAY SIZES |
|---------|--------------|--------|------|------------|--------|------|---------------------|
|         | COARSE       | MEDIUM | FINE | COARSE     | MEDIUM | FINE |                     |

| SIZE OF OPENING (mm) | SPECIFIED % FINER THAN | PERCENT FINER THAN |
|----------------------|------------------------|--------------------|
| 75.0                 |                        | 100                |
| 37.5                 |                        | 100                |
| 25.0                 |                        | 100                |
| 19.0                 |                        | 100                |
| 9.51                 |                        | 100                |
| 4.75                 |                        | 100                |
| 2.00                 |                        | 100                |
| 0.850                |                        | 100                |
| 0.425                |                        | 99                 |
| 0.250                |                        | 90                 |
| 0.150                |                        | 66                 |
| 0.075                |                        | 30                 |



| GRAIN SIZE CATEGORY | PARTICLE SIZE RANGE (mm) | PERCENT RETAINED |
|---------------------|--------------------------|------------------|
| GRAVEL              | 75 to 4.75               | 0                |
| COARSE SAND         | 4.75 to 2.0              | 0                |
| MEDIUM SAND         | 2.0 to 0.425             | 1                |
| FINE SAND           | 0.425 to 0.075           | 69               |
| SILT & CLAY         | < 0.075                  | 30               |

SAMPLE DESCRIPTION : SAND, WITH SILT AND CLAY.

MATERIAL SUPPLIED BY: \_\_\_\_\_

SAMPLE LOCATION: TEST HOLE 210

SAMPLE NUMBER: 71 AT 20' BELOW GRADE

DISTRIBUTION: \_\_\_\_\_

SAMPLED BY: \_\_\_\_\_

DATE SAMPLED: October 18, 2010

R. YAREMKO OF GE GROUND ENGINEERING LTD.

WE CERTIFY TESTING PROCEDURES IN ACCORDANCE WITH  
 C.S.A. & A.S.T.M. STANDARDS FOR THAT PORTION  
 OF THE TESTING PERFORMED BY THIS COMPANY  
 GE GROUND ENGINEERING LTD.

Per: \_\_\_\_\_  
 KELLY MAUNDER, A.Sc.T.



## APPENDIX G – HERITAGE SCREENING REPORT

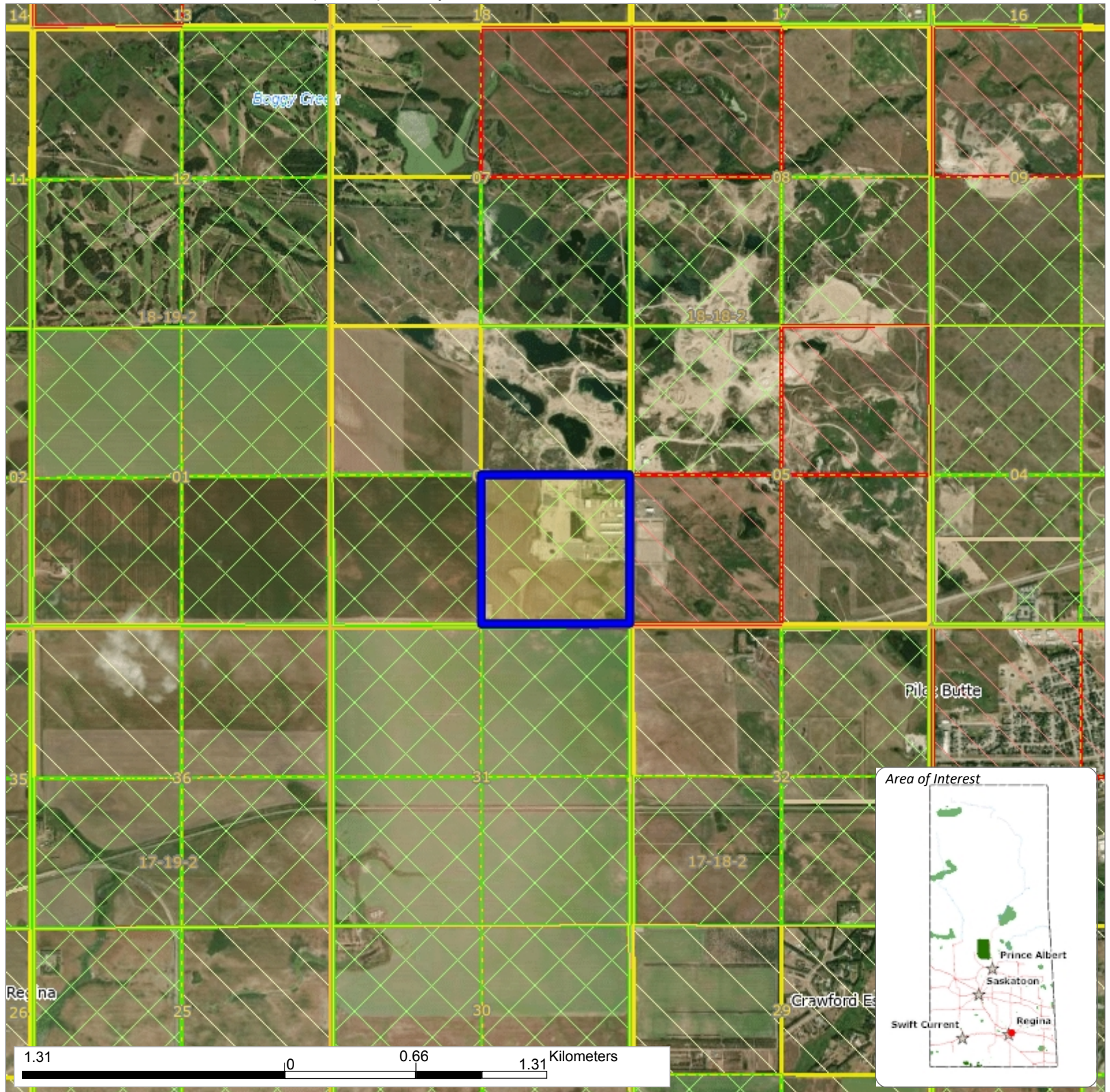
# Heritage Sensitivity Screening Report

**Sensitivity:** This selection is **Not Heritage Sensitive**.

This development has heritage clearance to proceed. Do not submit this project to the Heritage Conservation Branch. Keep this report for your records.

Report Generated

Jul/3/2025 5:44 PM



# Heritage Sensitivity Screening Report

| Parcel Description | Sensitivity | Parcel Description | Sensitivity |
|--------------------|-------------|--------------------|-------------|
| SE-06-18-18-2      | N           |                    |             |

**Sensitivity Legend:**

Y = Heritage Sensitive, C = Conditionally Heritage Sensitive, N = Not Heritage Sensitive, Blank = Heritage Sensitive.

When the parcel description and sensitivity listing is blank, the project is outside of the quarter sections screened for sensitivity. All projects within these areas are automatically heritage sensitive and require review.

If needed, please complete the appropriate referral form and submit the project to the Heritage Conservation Branch for further screening. Project referrals must be accompanied by survey plans. The Screening Report can be saved and/or printed for your records, but does not need to be submitted as part of the referral. <https://www.saskatchewan.ca/residents/parks-culture-heritage-and-sport/heritage-conservation-and-commemoration/archaeology/submit-your-land-and-resource-proposal-for-a-heritage-review>

**Disclaimer:**

Attention landowners: The majority of small scale activities that involve improvements to, or maintenance of, private property usually have little or no impact on archaeological heritage resources. Access the Exempt Activities Checklist for Private Landowners to determine if your proposed activity is exempt from archaeological heritage screening using the Developers' Online Screening Tool. If the activity is exempt, please retain a copy (paper or electronic) of the completed Exempt Activities Checklist for Private Landowners for your records. Include the completed checklist with any applications for regulatory approvals or permits that may be required for the proposed activity to confirm that heritage concerns have been addressed.

Exempt Activities Checklist: <https://applications.saskatchewan.ca/eachecklist>

**Contact us:**

For more information, please contact the Heritage Conservation Branch:

Email: [arms@gov.sk.ca](mailto:arms@gov.sk.ca)

Tel 306-787-2817.

## APPENDIX H – PRELIMINARY ENGINEERING REPORT



**New Horizon Business Park – Phase 3 and Phase 4**

# **Preliminary Engineering Report**

**Revised Submission**

**Prepared by:**

WCE design inc.  
80 Emerald Ridge East  
White City, SK, Canada S4L 0C3  
306.540.8312

**Project Number:**

24-012

**Date:**

February 25, 2026





## Statement of Qualifications and Limitations

The attached Report (the “Report”) has been prepared by WCE design inc. (“Consultant”) for the benefit of the client (“Client”) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the “Agreement”).

The information, data, recommendations, and conclusions contained in the Report (collectively, the “Information”):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the “Limitations”)
- represents Consultant’s professional judgement considering the Limitations and industry standards for the preparation of similar reports
- may be based on information provided to Consultant which has not been independently verified
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made, or issued
- must be read as a whole and sections thereof should not be read out of such context
- was prepared for the specific purposes described in the Report and the Agreement
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

- as agreed in writing by Consultant and Client
- as required by law
- for use by governmental reviewing agencies

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information (“improper use of the Report”), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to, and forms part of the Report and any use of the Report is subject to the terms hereof.



WCE design inc.  
80 Emerald Ridge East  
White City, SK. S4L 0C3

tel: 306.540.8312  
email: [dustin.weiss@wcedesign.ca](mailto:dustin.weiss@wcedesign.ca)

February 25, 2026

Clark Gates, P. Eng.  
Manager of Engineering and Public Works  
RM of Edenwold No. 158  
306.347.2967

Dear Mr. Gates:

**Project No: 24-012 – New Horizon Business Park – Phase 3 & 4**  
**Regarding: Preliminary Engineering Report**

WCE Design is pleased to submit this Preliminary Engineering Report for expansion of the New Horizon Business Park located on SE  $\frac{1}{4}$  6-18-18-W2M. This proposal establishes the preliminary servicing requirements to develop and subdivide a portion of the quarter section south of the existing Business Park.

Should you have any questions, please contact the undersigned at 306.540.8312.

Sincerely,  
**WCE Design**

A handwritten signature in black ink, appearing to read 'D. Weiss', with a stylized flourish at the end.

Dustin Weiss, P. Eng.  
Senior Civil Engineer  
WCE Design  
[dustin.weiss@wcedesign.ca](mailto:dustin.weiss@wcedesign.ca)

DW:bw  
Encl.  
CC: New Horizons Group

## Distribution List

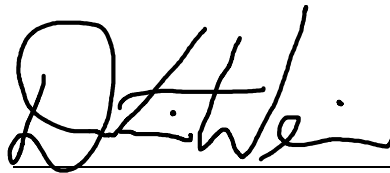
| # of Hard Copies | PDF Required | Association / Company Name     |
|------------------|--------------|--------------------------------|
| 0                | 1            | New Horizon Group of Companies |
|                  |              |                                |
|                  |              |                                |
|                  |              |                                |

## Revision Log

| Revision # | Revised By | Date     | Issue / Revision Description                                      |
|------------|------------|----------|-------------------------------------------------------------------|
| 0          | DW         | 24-02-16 | Issued for Draft Review                                           |
| 1          | DW         | 24-03-26 | Issued for Draft Review                                           |
| 2          | DW         | 24-05-13 | Final Draft                                                       |
| 3          | DW         | 24-05-13 | Final Draft Revision 1                                            |
| 4          | DW         | 25-10-10 | Revision 4 – Addition of the Phase 4 Plan of Proposed Subdivision |
| 4          | DW         | 26-02-25 | Revision 5 – Addition of the Phase 4 Plan of Proposed Subdivision |

## WCE Design Signatures

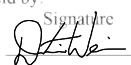
Report Prepared By:



Dustin Weiss, P. Eng.  
Civil Engineer  
WCE design inc.

Stamp



|                                                                          |              |                                                                                       |
|--------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------|
| Association of Professional Engineers & Geoscientists<br>of Saskatchewan |              |                                                                                       |
| CERTIFICATE OF AUTHORIZATION                                             |              |                                                                                       |
| <b>WCE Design Inc.</b>                                                   |              |                                                                                       |
| Number 65465                                                             |              |                                                                                       |
| Permission to Consult held by:                                           |              |                                                                                       |
| Discipline                                                               | Sk. Reg. No. | Signature                                                                             |
| Civil                                                                    | 21518        |  |

## Executive Summary

WCE Design (WCE) was commissioned by New Horizon Group of Companies (the Developer) to complete the Preliminary Engineering Report for expansion of the existing New Horizon Business Park in the SE ¼ Section 6-18-18 W2M, in the Rural Municipality of Edenwold No. 158 (the RM).

It is the intent of the Developer to subdivide the remainder of the section into nine separate parcels as an extension to the existing New Horizon Business Park. The proposed development site is 21.11 hectares (ha) for Phase 3 and 18.005 ha for Phase 4.

Land use at the site is currently agricultural. Land use west and south of the site is also agricultural. The existing New Horizon Business Park northeast of the site has several existing metal clad buildings that are occupied by various commercial and light industrial businesses. A light industrial development also exists east of the site.

The site is located in an area designated as *High Sensitivity to the Aquifer*. Section 4.38 of the Zoning Bylaw may require the Developer to provide an Aquifer Protection Plan. Clay fill will be placed on top of the site as part of the development site grading. As part of the building permit process with the RM, each new lot developer will be required to submit the measures used to protect the aquifer when installing foundations as well as any cistern and holding tanks.

The site is not located in an area designated as environmentally or heritage resource sensitive.

The development is located on Treaty 4 Territory, the original lands of the Cree, Ojibwe (OJIB-WĒ), Saulteaux (SO-TO), Dakota, Nakota, Lakota, and on the homeland of the Métis Nation. There are known First Nation lands 2.0 kilometres north of Parcel D.

Water service will be provided using a water line supplied from the existing well and current water distribution system. Water from the well is considered hygienic (i.e. non-potable) and will not be used for human consumption. The well currently has a licensed annual allocation to provide the full development build out at a higher weekly consumption rate than the current usage. In the event that the development acquires either a high water user or require potable water on site cisterns will be utilized with hauled water.

The site is relatively flat with drainage trending from north to south. Runoff from the site flows into the north ditch of Highway No. 46 and is eventually conveyed to Pilot Butte Creek south of Highway No. 46 via a series of culverts and ditches. The creek eventually flows into Wascana Creek at the east side of Regina.

Storm water management is proposed to include a dry bottom detention pond with the pond outlet restricted to the pre-development release rate. The site will be graded to direct runoff to the dry bottom detention pond. Site grading for the development will include providing compacted clay fill over the site to promote runoff and reduce infiltration. The proposed storm pond will be sized to detain the 1:100 year, 24 hour rainfall event.

Final site grading, pond configuration and pond outlet will be confirmed during detailed design.

Shallow utilities (SaskPower, SaskEnergy, and SaskTel) are located in the immediate vicinity of the development. The necessary installation and connection fees will be borne by the individual lot owner.

Access to the existing New Horizon Business Park is obtained from the existing Highway No. 46 via Range Road 2185. Access to the new development will be from a new approach to be installed off of Range Road 2185. A channelized intersection at the intersection of Highway 46 and Range Road 2185 has previously been constricted to accommodate additional traffic to the development north of the highway.

Fire fighting services are to be provided by the RM. The RM also has standard fire protection agreements with Balgonie, White City, Pilot Butte, the Village of Edenwold, and the Hamlet of Kronau. Police services in the RM are provided by the RCMP's White Butte Detachment.

Commercial Districts are also required to comply with the landscaping and buffer requirements as outlined in Section 4.44. As part of the building permit process with the RM, each new lot developer will be required to submit landscaping plans for each lot.

It is the intent of the Developer to complete the site grading and access road construction in one phase. Further development of the lots will be the responsibility of the owners.

The adjacent sites have already been zoned for development. Therefore, it has been assumed no further public consultation is required.



# Table of Contents

## Statement of Qualifications and Limitations

### Letter of Transmittal

### Distribution List

### Executive Summary

|                                                     | page      |
|-----------------------------------------------------|-----------|
| <b>1.0 Introduction .....</b>                       | <b>7</b>  |
| <b>2.0 Existing Conditions .....</b>                | <b>8</b>  |
| 2.1 Existing Land Use .....                         | 8         |
| 2.2 Existing Roadway Network .....                  | 9         |
| 2.3 Existing Municipal Services and Utilities ..... | 9         |
| 2.4 Topography .....                                | 10        |
| 2.5 Regional Surface Geology and Soils .....        | 11        |
| 2.6 Aquifer Sensitivity .....                       | 11        |
| 2.7 Heritage Resources .....                        | 12        |
| 2.8 First Nations .....                             | 12        |
| <b>3. Proposed Development .....</b>                | <b>12</b> |
| 3.1 Site Services .....                             | 12        |
| 3.1.1 Water .....                                   | 12        |
| 3.1.2 Wastewater .....                              | 13        |
| 3.1.3 Storm Water Management .....                  | 13        |
| 3.1.4 Site Access and Roadways .....                | 15        |
| 3.1.5 Utilities .....                               | 15        |
| 3.2 Fire and Protective Services .....              | 15        |
| 3.3 Phasing .....                                   | 15        |
| 3.4 Landscaping .....                               | 15        |
| 3.5 Public Consultation .....                       | 16        |

## List of Figures

|                                                   |           |
|---------------------------------------------------|-----------|
| <b>Figure 1.1: Site Location Map .....</b>        | <b>7</b>  |
| <b>Figure 2.1: Existing Site Plan .....</b>       | <b>8</b>  |
| <b>Figure 2.2: Existing Topography .....</b>      | <b>10</b> |
| <b>Figure 2.3: Regional Surface Geology .....</b> | <b>11</b> |

### Appendix A: Overall Drainage Plan

### Appendix B: Well Data

### Appendix C: TIA & Traffic Generation

## 1.0 Introduction

This Preliminary Engineering Report (PER) is prepared on behalf of the New Horizon Group of Companies (the Developer) in support of an application for development of the next phases of the New Horizon Business Park located in the Rural Municipality of Edenwold No. 158 (the RM). The Developer is proposing to expand the existing New Horizon Business Park to the south.

The location of the proposed development is shown in Figure 1.1<sup>1</sup>. The development is located west of the Town of Pilot Butte, north of Highway No. 46. The registered owner of in the south half of Section 6-18-18 W2M is currently 101245184 SASKATCHEWAN LTD. It is the intent of the Developer to subdivide the site into twenty separate lots in two additional phases: Phase 3 and Phase 4.

This PER is prepared in accordance with Sections 3.24 of the Zoning Bylaw and provides a framework for servicing the proposed development.



**Figure 1.1: Site Location Map**

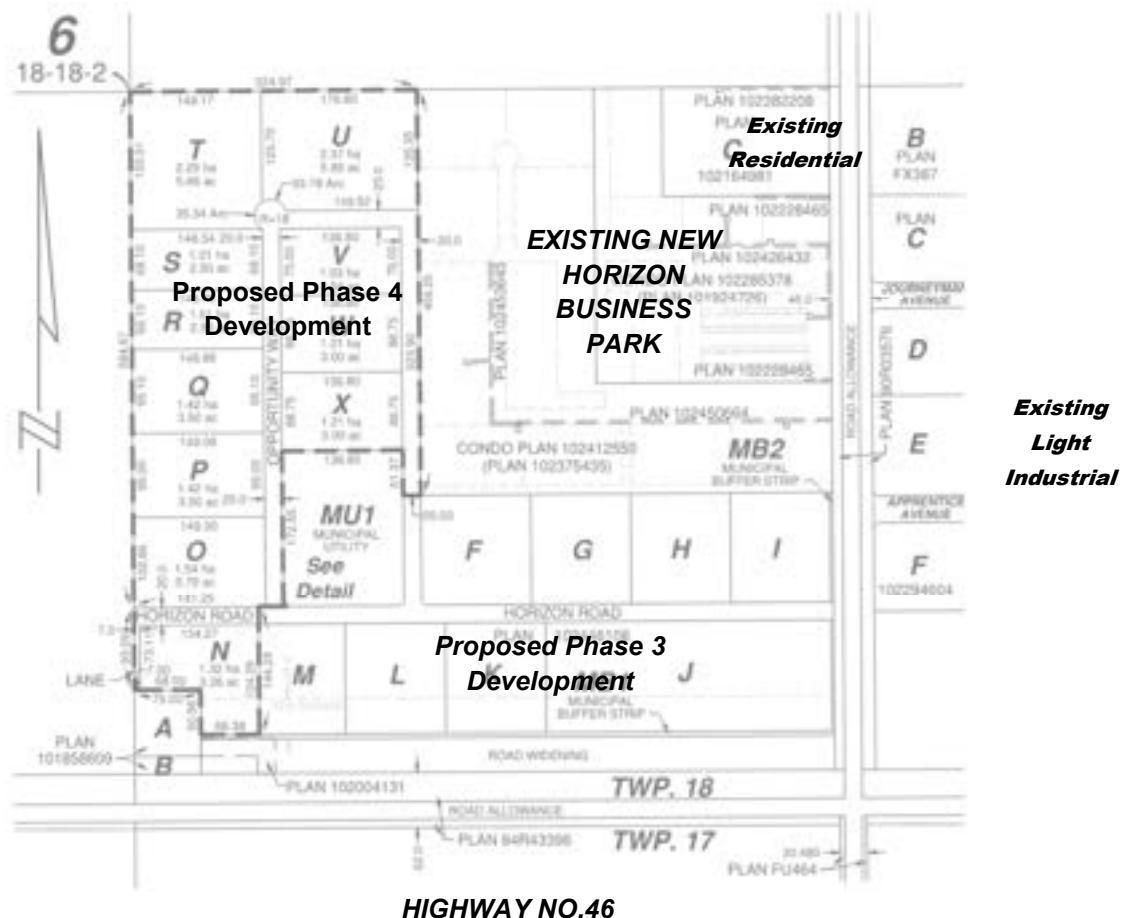
<sup>1</sup> Sask Interactive Mapping <https://gisappl.saskatchewan.ca/Html5Ext/index.html?viewer=saskinteractive>

## 2.0 Existing Conditions

### 2.1 Existing Land Use

The existing New Horizon Business Park is located in the northeast quadrant of the SE ¼ Section 6-18-18 W2M as shown in Figure 2.1<sup>2</sup> and within the Highway 46 Industrial Park Business District. The proposed Phase 3 is located south of the existing New Horizon Business Park and north of Highway No. 46. The Phase 4 is located to the west. The site is currently used for agricultural purposes.

The existing business park currently has several metal clad buildings with gravel roadways and parking area. Businesses in the existing New Horizon Business Park are light industrial.



The areas east, west and south of the are currently agricultural land. A light industrial development also exists east of the New Horizon Business Park.

New Horizon Business Park is zoned as General Industrial (IND1). The proposed development site is currently undeveloped agricultural land and zoned as Agricultural Resource (AR)<sup>3</sup>.

**Figure 2.2: Existing Site Plan**

<sup>2</sup> Google Earth

<sup>3</sup> RM of Edenwold, Zoning Map 5

The Saskatchewan Water Corporation (SWC) owns Parcel A in the southwest corner of the quarter section. A well and pump house building operated by SWC are located on Parcel A.

Future land use at the site is designated as Mixed Use (Industrial / Commercial)<sup>4</sup>.

## **2.2 Existing Roadway Network**

Existing roadways in the area include:

- Highway No.46 runs east-west along the south side of Section 6-18-18 W2M.
- Range Road 2185 is a two-lane, paved rural road runs north-south, east of the site.

A channelized intersection has been previously constructed at the intersection of Highway No. 46 and Range Road 2185.

## **2.3 Existing Municipal Services and Utilities**

Existing Municipal Services in the area include:

- Water service for the existing New Horizon Business Park is provided from an existing well producing 0.38 L/s (5 IGPM). Water is distributed to the existing buildings using two separate pressure loops. Each building is then supplied with pressure tanks that maintain the water storage for non-potable use. Potable water is supplied from delivered water. Based on consumption data from the development, a weekly volume of 3,000 imperial gallons (13.6 m<sup>3</sup>) is used or an average of 429 IGPD (1950 L/day). Based on the existing weekly usage of 13.6m<sup>3</sup>/week the development currently uses 708m<sup>3</sup> annually.
- Wastewater collection for the existing Business Park is accommodated by holding tanks.

Existing Utilities in the area include:

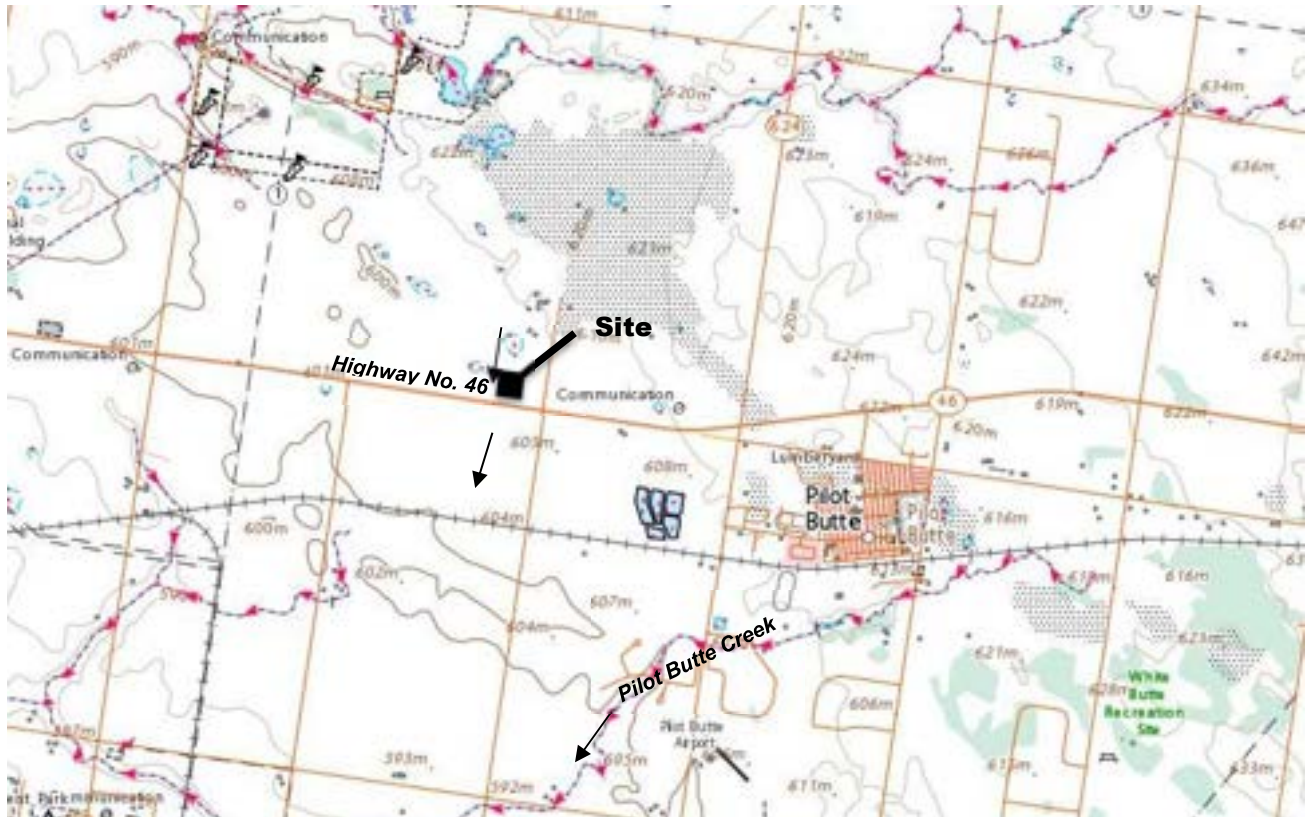
- Sask Power has an overhead power line along the east side of Township Road 2180.
- Sask Energy has a buried natural gas line along the north boundary of and internally within the SE ¼ Sec 6-18-18 W2M
- SaskTel has been installed with the SaskPower utility for communication use.

---

<sup>4</sup> RM of Edenwold, OCP Map 7A

## 2.4 Topography

The site is relatively flat with drainage trending from north to south as shown in Figure 2.3<sup>5</sup>. Runoff from the site flows into the north ditch of Highway No. 46 and is eventually conveyed to Pilot Butte Creek south of Highway No. 46 via a series of culverts and ditches. The creek eventually flows into Wascana Creek at the east side of Regina.



**Figure 2.5: Existing Topography**

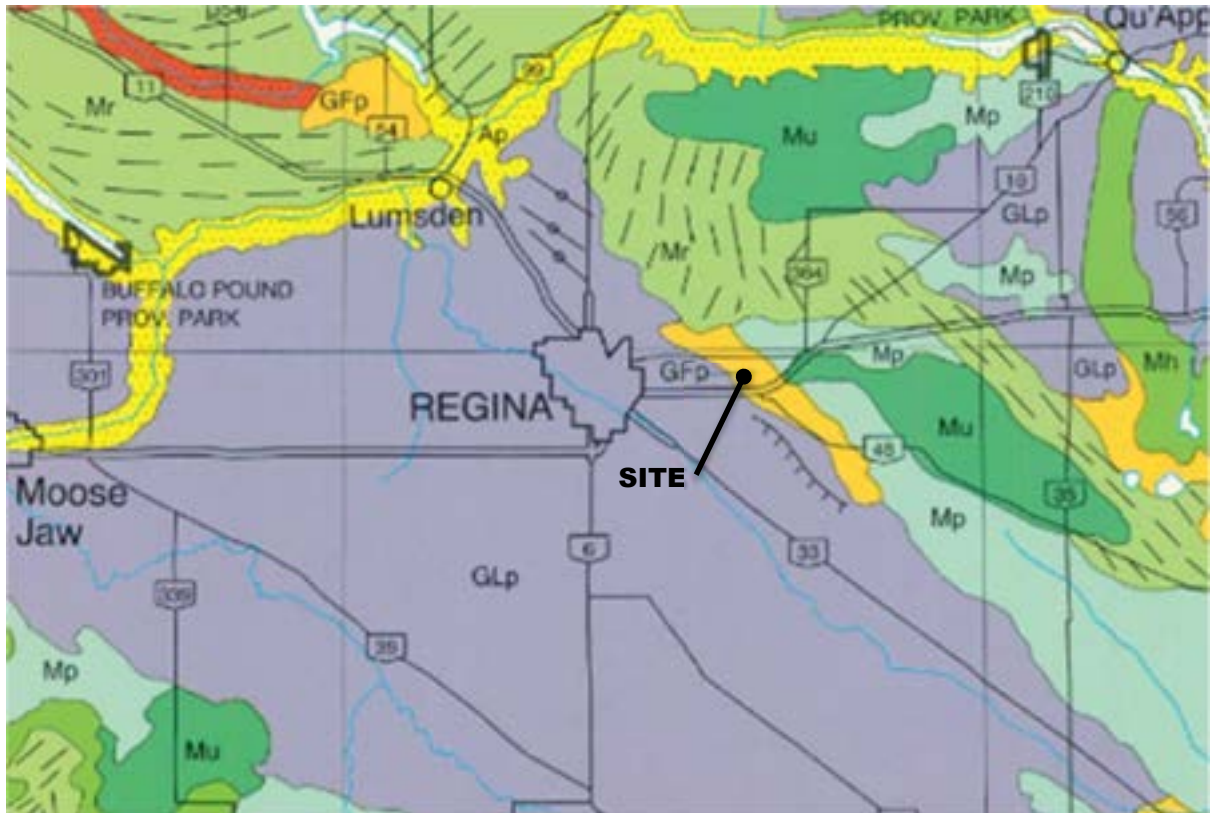
<sup>5</sup> <https://atlas.gc.ca/toporama/en/index.html>



## 2.5 Regional Surface Geology and Soils

The site is situated on a glacial-fluvial deposit (GFp) as shown in Figure 2.4<sup>6</sup>. GFp deposits generally consist of gravels, sand and silt accumulations transported and deposited by glacial meltwater.

Logs from water wells previously drilled near the site indicated topsoil is underlain by approximately 4.0 m to 4.5 of silt followed by approximately 10 m of sand.



**Figure 2.7: Regional Surface Geology**

**Figure 2.6: Regional Surface Geology**

## 2.6 Aquifer Sensitivity

The proposed development is located in an area designated as having *High Sensitivity to the Aquifer*. The site grading for the development will include providing a clay fill over the site to promote runoff and reduce infiltration.

Each new lot developer will be responsible to submit an aquifer protection plan to the RM as part of the building permit process. The plan should include measures for protection of the aquifer during installation of foundations as well as cisterns and holding tanks.

<sup>6</sup> Surficial Geology Map of Saskatchewan, Saskatchewan Geological Survey

Section 3.24C of the Zoning Bylaw may require the Developer to provide an *Aquifer Protection Plan* including:

- Site-specific information regarding groundwater and the local aquifer and the sensitivity of these systems with respect to potential breach, contamination, depletion, or other concerns.
- The impact the proposed development or subdivision may have on the quantity and quality of groundwater and the aquifer and the proposed mitigation measures that will be implemented in order to preserve and protect the ground water/aquifer.

As part of the building permit process with the RM, each new lot developer will be required to submit the measures used to protect the aquifer when installing foundations as well as any cistern and holding tanks.

## 2.7 Heritage Resources

The proposed development is not located in an area designated as *Heritage Sensitive*<sup>7</sup>. Confirmation of this designation was concluded by use of the 'Developer's Online Screening Tool', which designates this parcel as non-sensitive.

## 2.8 First Nations

The development is located on Treaty 4 Territory, the original lands of the Cree, Ojibwe (OJIB-WĒ), Saulteaux (SO-TO), Dakota, Nakota, Lakota, and on the homeland of the Métis Nation.

There are First Nation lands located 2.0 kilometres north of the site.

# 3. Proposed Development

## 3.1 Site Services

### 3.1.1 Water

Water service in the existing New Horizon Business Park is provided from an existing well, producing water at a flow rate of 5 imperial gallons per minute (IGPM) (0.38 L/s). The existing well is licensed for an annual allocation of 3,250 m<sup>3</sup>/year.

The existing Business Park (Phase 1) currently uses an average of approximately 3,000 imperial gallons per week (13.64m<sup>3</sup>/week or 709 m<sup>3</sup>/year). Assuming a similar consumption rate per hectare (39.83 m<sup>3</sup>/ha/year for the proposed new development and an annual consumption of 2,290 m<sup>3</sup>/year is assumed. The well license allows for a hectare rate of 56.52 m<sup>3</sup>/ha year, which is more than the current per hectare consumption rate.

In the event a single or multiple high water user is brought into the development or in the case for a user to require a potable water source, cisterns can be utilized with hauled in water from the RM of Edenwold to subsidize the water volume. An application to increase well production would also be an option as the well has more capacity than the license allows.

---

<sup>7</sup> RM of Edenwold, OCP Map 6B

Water obtained from the existing well is considered hygienic (or non-potable). Hygienic systems must not be used for human consumption including drinking, oral hygiene or food preparation. Potable water will be provided separately by each individual building owner, typically using bottled water.

The distribution of the water service for the existing development is provided by two separate pressured loops. The proposed water service to the new development will be completed by adding additional pressure loops to the system.

Each new building will be serviced using a hydro-pneumatic pressure tank. The pressure tank size will depend on the individual building usage and occupancy. Any heavy water users within the development will require the installation of a cistern for additional storage.

### 3.1.2 Wastewater

Wastewater from each new parcel will be collected in holding tanks. Holding tanks will be designed and installed in accordance with the *Saskatchewan Onsite Wastewater Disposal Guide (2018)*.

It will be the responsibility of the new parcel owners to install the holding tanks and to engage private septic waste haulers for disposal of wastewater. Private haulers typically dispose of septic waste at one of the wastewater treatment facilities in the area that accept septic waste.

### 3.1.3 Storm Water Management

The storm water management system will be designed in accordance with the most current version of Water Security Agency's Stormwater Guidelines (EPB 322) and other best management practices.

Storm water management is proposed to include a dry bottom detention pond with the pond outlet restricted to the pre-development release rate. The site will be graded to direct runoff to the retention pond. Site grading for the development will include providing compacted clay fill over the site to promote runoff and reduce infiltration.

The existing topography in the area generally slopes from north to south towards Highway No. 46. The storm pond is proposed to be sized to detain a 1:100-year, 24-hour rainfall event. The release rate will be restricted to the predevelopment runoff rate.

Rainfall runoff is based on the *Short Duration Intensity Duration Frequency (IDF)* curves for Regina for the period 1941 to 2017 obtained from *Environment Canada*. Rainfall intensity and rainfall amounts derived from the IDF curves for the 1:100-year, 24-hour duration rainfall event are summarized in Table 3.1.

**Table 3-1: Rainfall Data (1:100 Year, 24 Hour Event)**

| <b>Return Period<br/>(Tr)</b> | <b>Rainfall Amount<br/>(mm)</b> |
|-------------------------------|---------------------------------|
| 1:2                           | 39.9                            |
| 1:5                           | 59.4                            |
| 1:10                          | 72.2                            |
| 1:25                          | 88.5                            |
| 1:50                          | 100.6                           |
| 1:100                         | 112.6                           |

Based on an assumed pre-development and post-development runoff coefficient (C) of 0.25 and 0.80, respectively and a total area of 21.11 ha for Phase 3 and 18.005 ha for Phase 4, the estimated runoff volume during a 1:100, 24-year rainfall event is estimated in Table 3.2.

**Table 3.2: Estimated Runoff Volume**

|                         | <b>Runoff<br/>Coefficient</b> | <b>Phase 3<br/>Estimated<br/>Runoff Volume<br/>(m<sup>3</sup>)</b> | <b>Phase 4<br/>Estimated<br/>Runoff Volume<br/>(m<sup>3</sup>)</b> | <b>Total<br/>Estimated<br/>Runoff Volume<br/>(m<sup>3</sup>)</b> |
|-------------------------|-------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------|
| Predevelopment          | 0.25                          | 5,945                                                              | 5,070                                                              | 11,015                                                           |
| Post Development        | 0.80                          | 19,015                                                             | 16,220                                                             | 35,232                                                           |
| Required Storage Volume |                               | 13,070                                                             | 11,150                                                             | 24,220                                                           |
| Release Rate (L/s)      |                               | 76                                                                 | 65                                                                 | 141                                                              |

The excess runoff will be released over a 48-hour period (including during the 24-hour rainfall event and for a period of 24 hours following the event) as shown in Table 3.2

Pond side slopes are proposed to be 4 horizontals to 1 vertical (4H:1V). The pond depth will typically be between 1.5 and 2.4 m with freeboard of between 0.3 m and 0.6 m.

The proposed pond outlet includes a 450 mm CSP or HDPE pipe with a precast concrete manhole. The pipe would be designed to daylight to natural ground at the south limit of the site. An orifice plate or inlet control device is provided inside the manhole to control the release rate.

The preliminary site grading plan is shown in Appendix A. The final pond location, site grading, pond configuration and pond outlet will be confirmed during detailed design.

#### 3.1.4 Site Access and Roadways

Access to the site will be from a new approach constructed off of Range Road 2185. Internal roads will be paved with a top width of 8.0 metres. Swale ditches will be provided to remove and direct runoff from the road surface to the proposed storm pond.

A channelized intersection was previously constructed at the intersection of Highway 46 and Range Road 2185 to accommodate traffic to the developments north of the highway. The channelized intersection includes:

- Eastbound dedicated left and right turn lanes.
- Westbound dedicated right turn lane.
- Through lane in the east bound and westbound directions.

The RM required a traffic impact assessment (TIA) as part of the comprehensive development proposal (CDP) for the previous phase. The Phase 3 TIA assessed both Phase 3 & 4 of this development.

In discussion with the Saskatchewan Ministry of Highways (MHI) a functional design of the entire Highway 46 corridor is underway internally and the TIA would be utilized for traffic generation. An additional letter was supplied for this generation and is appended to the report.

#### 3.1.5 Utilities

Shallow utilities (SaskPower, SaskEnergy, and SaskTel) are located in the immediate vicinity of the development. The necessary installation and connection fees will be borne by the individual lot owner.

### 3.2 Fire and Protective Services

Fire fighting services in the area are provided by the RM. The RM also has standard fire protection agreements with Balgonie, White City, Pilot Butte, the Village of Edenwold, and the Hamlet of Kronau.

Police services in the RM are provided by the RCMP's White Butte Detachment.

### 3.3 Phasing

It is the intent of the Developer to complete the site grading and access road construction in one phase. Further development of the lots will be the responsibility of the owners.

### 3.4 Landscaping

Commercial Districts are also required to comply with the landscaping and buffer requirements as outlined in Section 4.44.

Each new lot owner will be responsible to submit a landscaping plan to the RM as part of the building permit process.

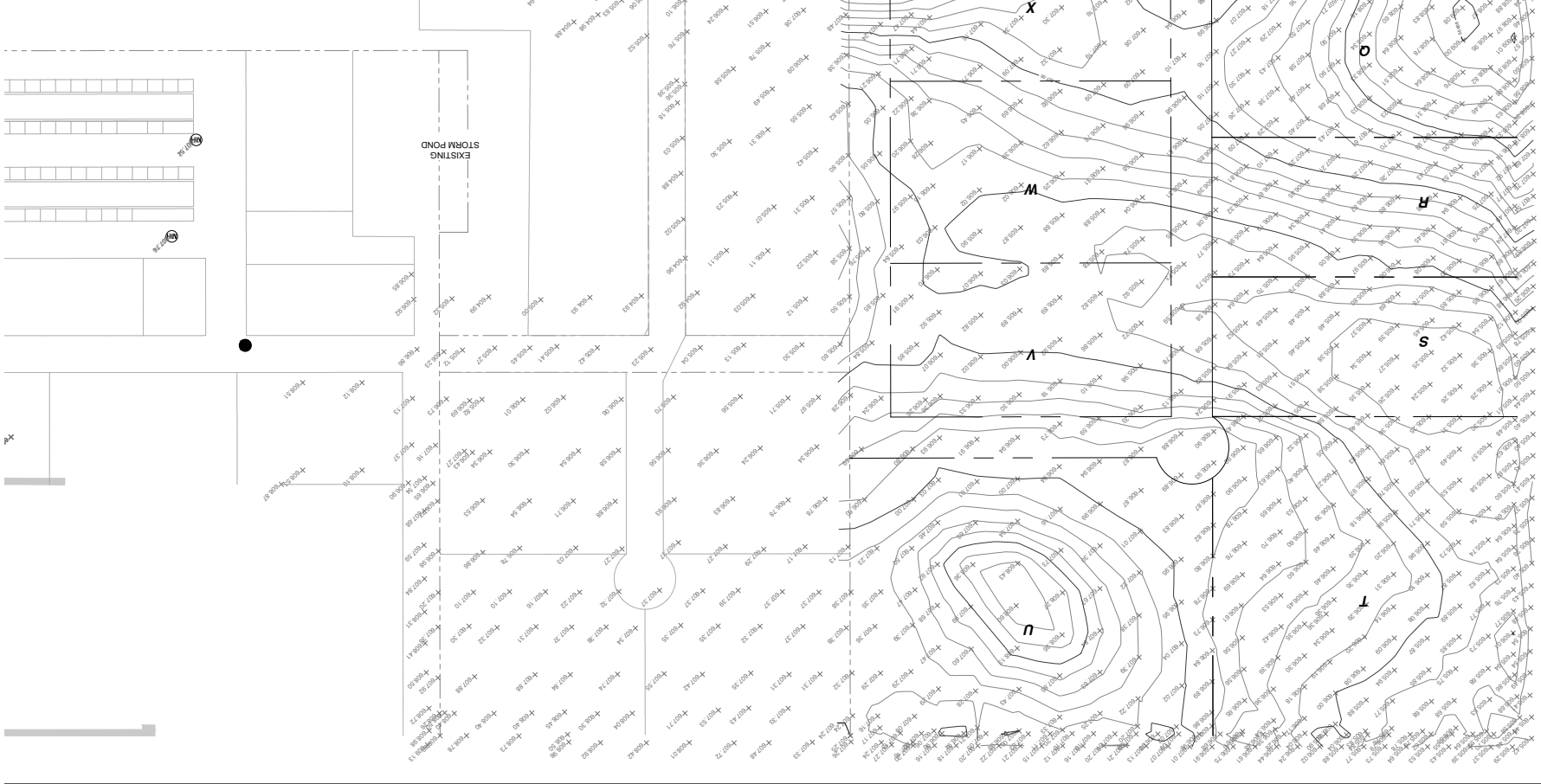


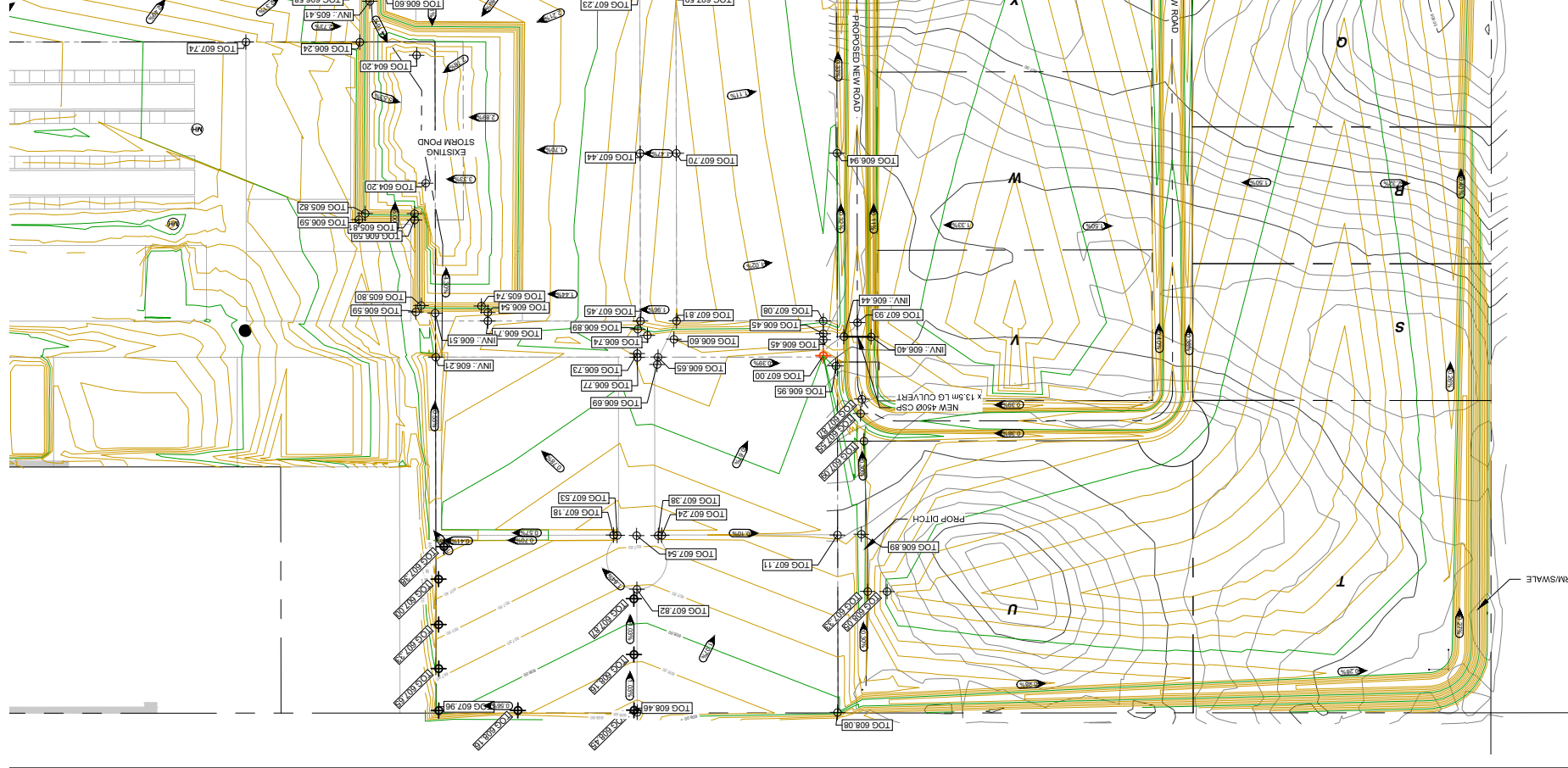
### **3.5 Public Consultation**

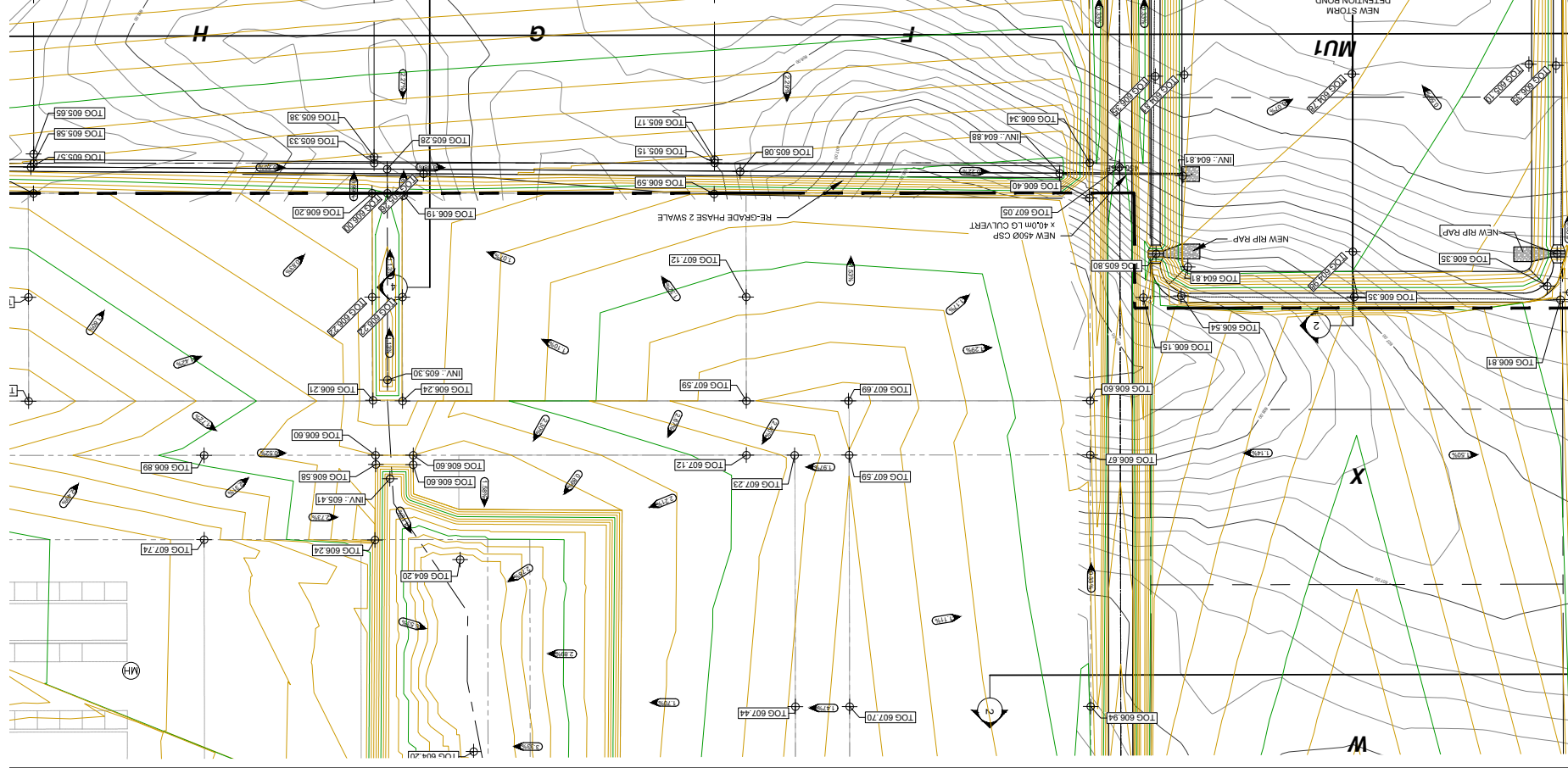
The adjacent sites have already been zoned for developments. Therefore, it has been assumed no further public consultation is required.

**APPENDIX A**

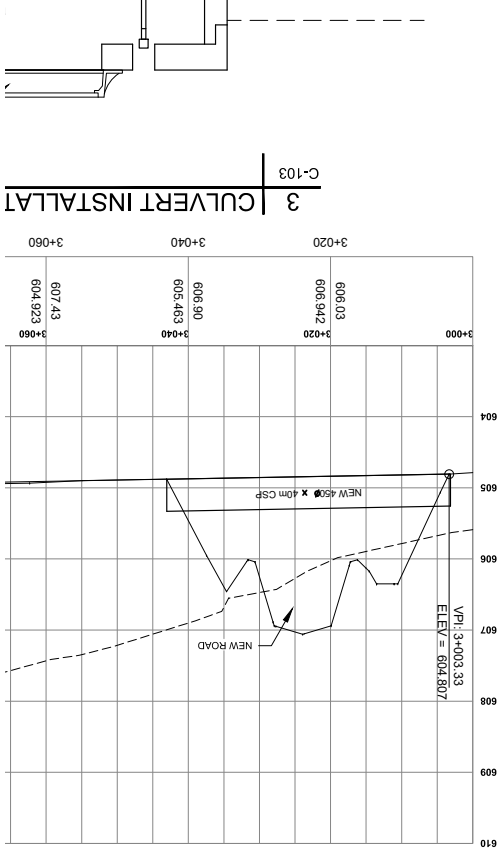
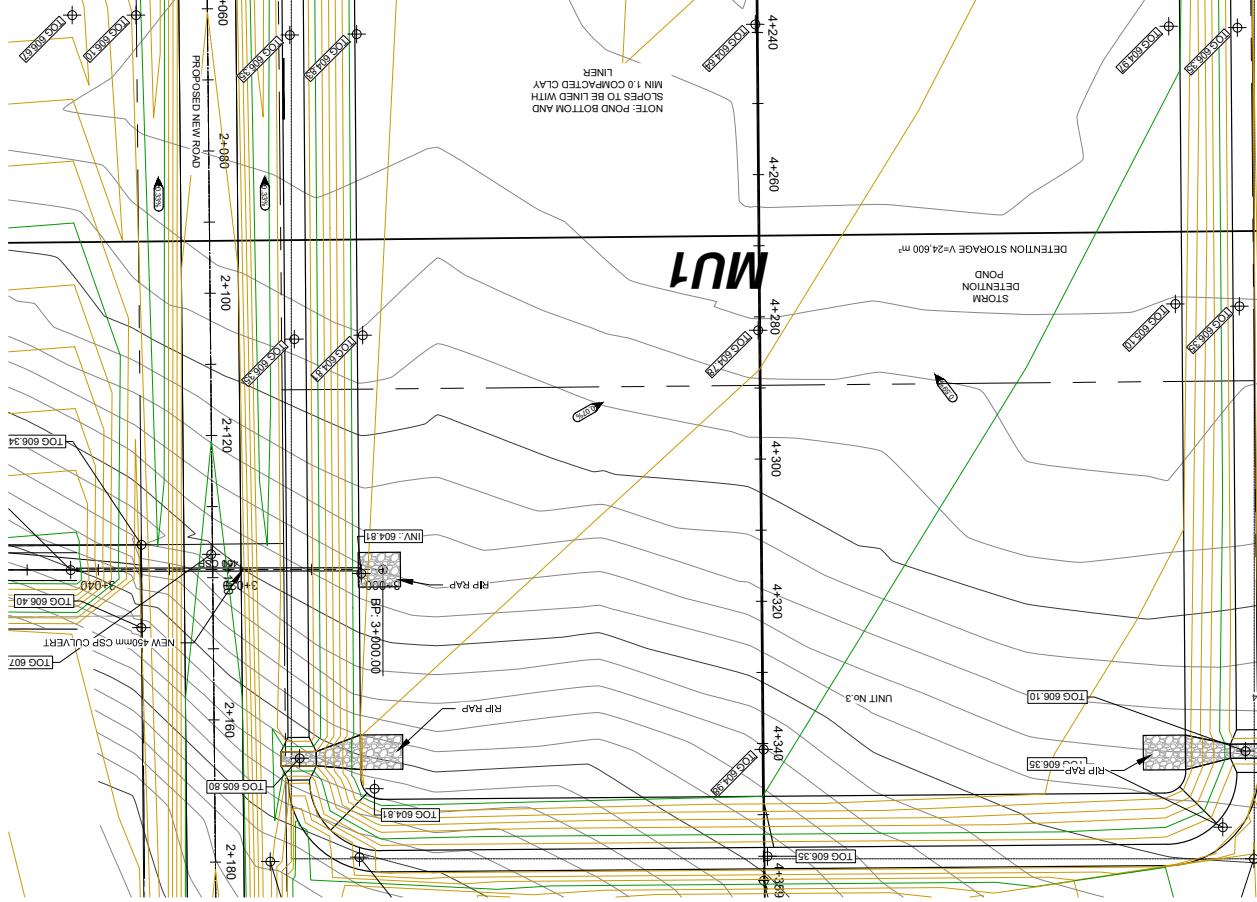
**Overall Drainage Plan**



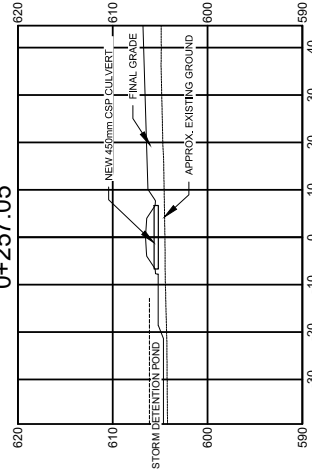
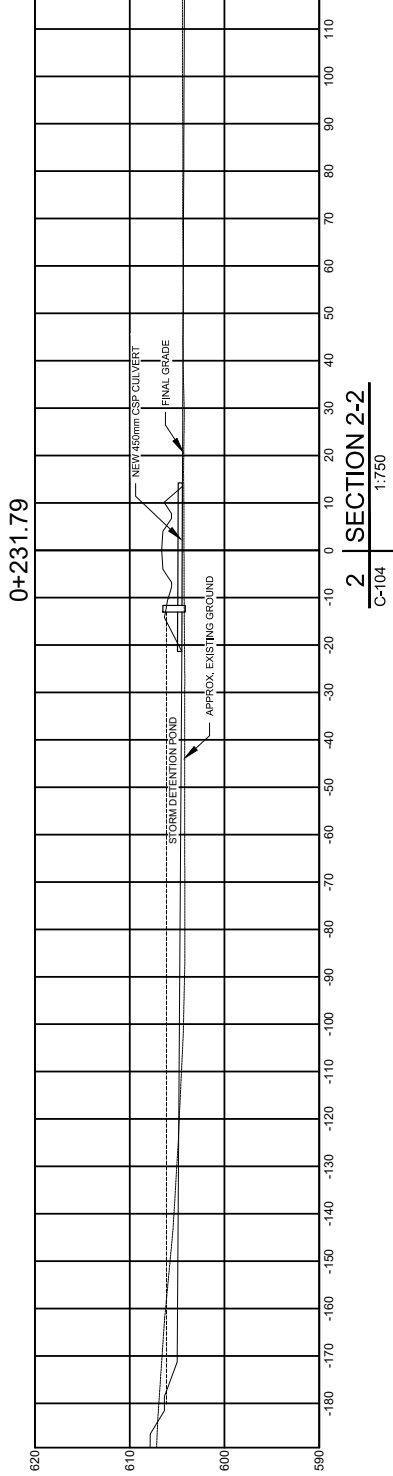
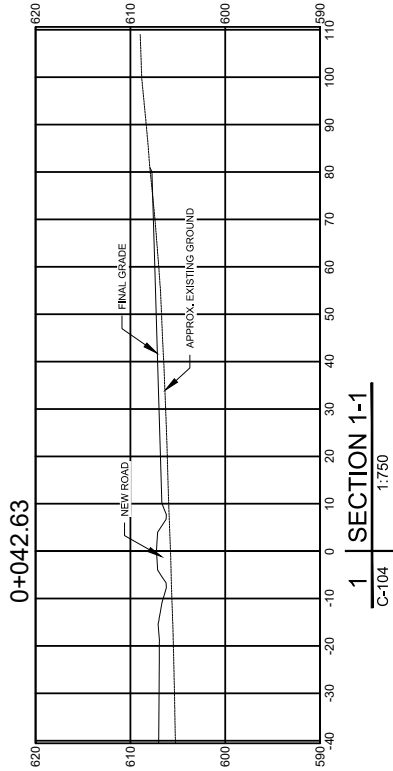




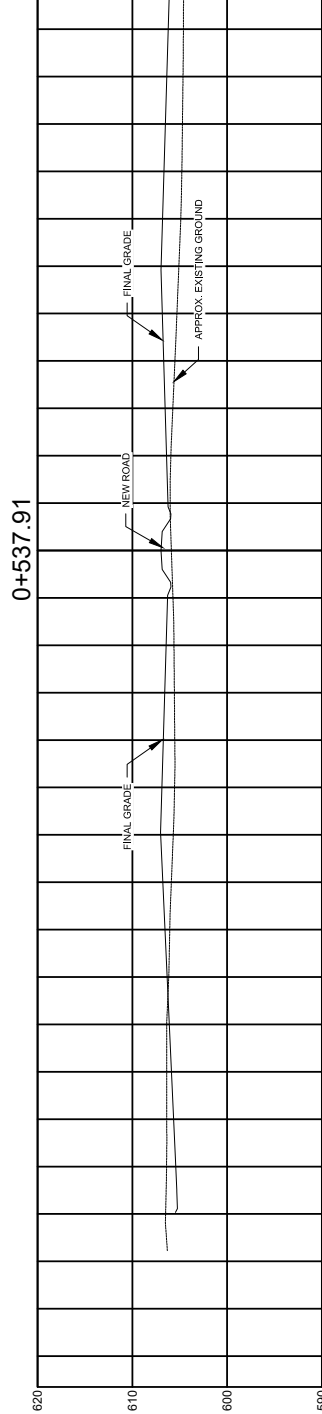




3 CULVERT INSTALLATION C-103



3 SECTION 3-3  
C-104 1:750



4 SECTION 4-4  
C-104 1:750









**APPENDIX B**

**Well Data**

# **WATER RIGHTS LICENCE TO USE GROUND WATER**

Licence No. E3/5074 issued on March 27, 2024

## **NEW HORIZON PARK INC. of EMERALD PARK, SASKATCHEWAN**

hereinafter called the licensee, is granted the right to use water in accordance with this Licence subject to the conditions and restrictions contained in *The Water Security Agency Act* and the regulations under that *Act*, each as amended or replaced from time to time.

**Annual Quantity of  
Water Allocated:** 3.25 cubic decametres (3,250 cubic metres)

**Well Name/Number:** PW1-2014

**Point of Diversion:** SE 06-18-18 W2 (Condo Plan 102285378)

**Point of Delivery:** SE 06-18-18 W2 (Condo Plan 102285378)

**Purpose:** Municipal (Commercial Facility)

**Expiration Date:** March 30, 2029

This Licence does not negate the licensee's responsibility to comply with the requirements of any other relevant municipal, provincial and/or federal legislation.

This Licence issued and recorded at Moose Jaw, Saskatchewan is subject to the conditions listed on the following page(s).

  
\_\_\_\_\_  
for Water Security Agency

## **Conditions (E3/5074)**

### **General Conditions**

1. This Licence is subject to cancellation, amendment or suspension on written notice pursuant to Section 53 of *The Water Security Agency Act* and the regulations under that *Act*.
2. In the event that the Water Security Agency determines that the effects of the project deviate significantly from those predicted in the studies which were the basis of the grant of the original or amended licence, the Water Security Agency may cancel this Licence.
3. This Licence does not guarantee that water will be available at all times during the currency of this licence. The Water Security Agency reserves the right to restrict the use of water under this Licence due to shortage or pressing necessity.
4. This Licence does not run with land tenure and automatically terminates on the date of disposition of the subject lands at the point of delivery. Any person who assumes ownership of or a legal interest in the lands at the point of delivery must file a new application for Water Rights Licence with the Water Security Agency. Upon acceptance of the application, a new Water Rights Licence may be issued.
5. The licensee shall pay such fees, levies, rates or charges as may be fixed from time to time by the Water Security Agency under the authority of *The Water Security Agency Act* for the privilege or authority granted by this licence.
6. No change in the purpose of the project, rate of diversion and/or annual quantity of water shall be made without prior authorization being obtained under *The Water Security Agency Act*.

### **Special Conditions**

1. Water allocated under this licence will be delivered by water supply works owned by the licensee under the Approval to Operate for E3/5074. This Licence will automatically expire if the licensee does not maintain a valid Approval to Operate Works for such ground water supply works.

**APPENDIX C**

**TIA & Traffic Generation**

# Memorandum

---

**To:** Dustin Weiss, WCE Design Inc.**Date:** February 29, 2024

---

**Project No.:** 23-4143-001

---

**From:** Nathan Gray

---

**Re:** New Horizons Business Park Trip Generation Update

---

KGS Group is pleased to provide this memorandum summarizing the additional trips generated by the full build-out of the New Horizons Business Park, based on the expanded site plan received on January 10, 2024. This memorandum provides a comparison between the updated site-generated traffic volumes compared to the site-generated traffic volumes presented in the original Transportation Impact Assessment dated June 2023. The anticipated change in vehicle trips for the site is presented within this memo for the morning and afternoon peak hours.

The original site plan and the revised New Horizons Business Park subdivision plan are available in **Appendix A**.

## TRIP GENERATION COMPARISON

### Original Trip Generation

The original New Horizons Business Park Transportation Impact Assessment (June 2023) classified the development as “Light Industrial” for trip generation purposes based on the Institute of Transportation Engineers (ITE) Trip Generation Manual. The original assessment included approximately 11.4 ha of light industrial development. The total trips generated by the proposed development included 88 new vehicle trips (77 trips entering and 11 trips exiting) during the weekday morning peak hour and 47 new vehicle trips (7 trips entering and 40 trips exiting) during the weekday afternoon peak hour.

### Updated Trip Generation - January 2024 Site Plan

The updated site plan proposes expanding the subdivision to the south and west of the existing development. The updated site plan, along with the land use areas, is shown in **Appendix A**.

The revised New Horizons Business Park site plan encompasses approximately 46.6 ha of land, which is expected to be developed as light industrial. The ITE Trip Generation Manual, 11<sup>th</sup> Edition, was used to estimate the trips generated by proposed industrial development for the weekday morning and weekday afternoon peak hours. The land use code, trip rates, and in/out ratios applied to the land uses within the proposed development are listed in **Table 1**.



**TABLE 1: TRIP GENERATION RATES**

| Land Use         | ITE Code | Peak Hour | Trip Generation Equation | Directional Distribution |         |
|------------------|----------|-----------|--------------------------|--------------------------|---------|
|                  |          |           |                          | Entering                 | Exiting |
| Light Industrial | 110      | AM        | $T = 0.68 (X) + 3.81$    | 88%                      | 12%     |
|                  |          | PM        | $T = X * 0.65$           | 14%                      | 86%     |

Note: T = Total Number of Peak Hour Trips X = 1,000 sq. ft. of Gross Floor Area (GFA)

The average trip generation rate was used to estimate the afternoon peak hour trips instead of the natural logarithmic equation, as the size of the development exceeds the data range in the ITE Trip Generation Manual, and would have underestimated the amount of vehicle traffic during the afternoon peak hour.

The Floor-to-Area Ratio (FAR) is assumed at 10% of the total area to estimate the gross floor area of the proposed New Horizons Business Park development. This assumption aligns with the assumption made in the original TIA and is based on existing developments in the surrounding region.

**Table 2** presents the total number of site-generated trips and the directional allocation (entering or exiting) for the proposed New Horizons Business Park for each peak hour.

**TABLE 2: SITE GENERATED TRIPS**

| Land Use         | AM Peak Hour |           |             | PM Peak Hour |            |             |
|------------------|--------------|-----------|-------------|--------------|------------|-------------|
|                  | Trips In     | Trips Out | Total Trips | Trips In     | Trips Out  | Total Trips |
| Light Industrial | 305          | 40        | 345         | 45           | 280        | 325         |
| <b>Total</b>     | <b>305</b>   | <b>40</b> | <b>345</b>  | <b>45</b>    | <b>280</b> | <b>325</b>  |

It is unlikely that any of the trips generated will be multi-use trips within the proposed development (i.e. vehicles stopping at one site before proceeding to work at another site within the proposed development) as it is a single-use site.

This development is also not expected to generate any pass-by trips.

The estimated number of new vehicle trips generated at full build-out includes **345 new vehicle trips (305 trips entering and 40 trips exiting)** during the weekday morning peak hour **and 325 new vehicle trips (45 trips entering and 280 trips exiting)** during the weekday afternoon peak hour.

### Comparison

A comparison of the original and revised trip generation is summarized in **Table 3**. The change in overall new trips associated with the revised site plan is approximately an additional 257 vehicle trips during the morning peak hour and 278 vehicle trips during the afternoon peak hour.

**TABLE 3: TRIP GENERATION COMPARISON**

|                           | Land Use         | AM Peak Hour       |                   |                    | PM Peak Hour      |                    |                    |
|---------------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
|                           |                  | Trips In           | Trips Out         | Total Trips        | Trips In          | Trips Out          | Total Trips        |
| <b>Original Site Plan</b> | Light Industrial | 77                 | 11                | 88                 | 7                 | 40                 | 47                 |
| <b>Revised Site Plan</b>  | Light Industrial | 305                | 40                | 345                | 45                | 280                | 325                |
| <b><i>Difference</i></b>  | --               | <b><i>+228</i></b> | <b><i>+29</i></b> | <b><i>+257</i></b> | <b><i>+38</i></b> | <b><i>+240</i></b> | <b><i>+278</i></b> |

## Conclusion

This memo compared the trips generated between the original site plan versus the revised site plan that includes an additional 35.2 ha of light industrial development. The revised site plan results in a total of 345 vehicle trips during the morning peak hour, and 325 vehicle trips during the afternoon peak hour.

We trust that this review will be sufficient for the Ministry of Highways to approve the revised site plan for the New Horizons Business Park.

Prepared By:

Approved By:

Destiny Piper  
Transportation Engineer

Nathan Gray, P.Eng., PTOE, PMP  
Senior Transportation Engineer

## STATEMENT OF LIMITATIONS AND CONDITIONS

### Limitations

This memorandum has been prepared for WCE Design Inc. in accordance with the agreement between KGS Group and WCE Design Inc. (the “Agreement”). This memorandum represents KGS Group’s professional judgment and exercising due care consistent with the preparation of similar documents. The information, data, recommendations and conclusions in this memorandum are subject to the constraints and limitations in the Agreement and the qualifications in this memorandum. This memorandum must be read as a whole, and sections or parts should not be read out of context.

This memorandum is based on information made available to KGS Group by WCE Design Inc. Unless stated otherwise, KGS Group has not verified the accuracy, completeness, or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this memorandum apply only as they existed at the time of KGS Group’s work.

### Third Party Use of Memorandum

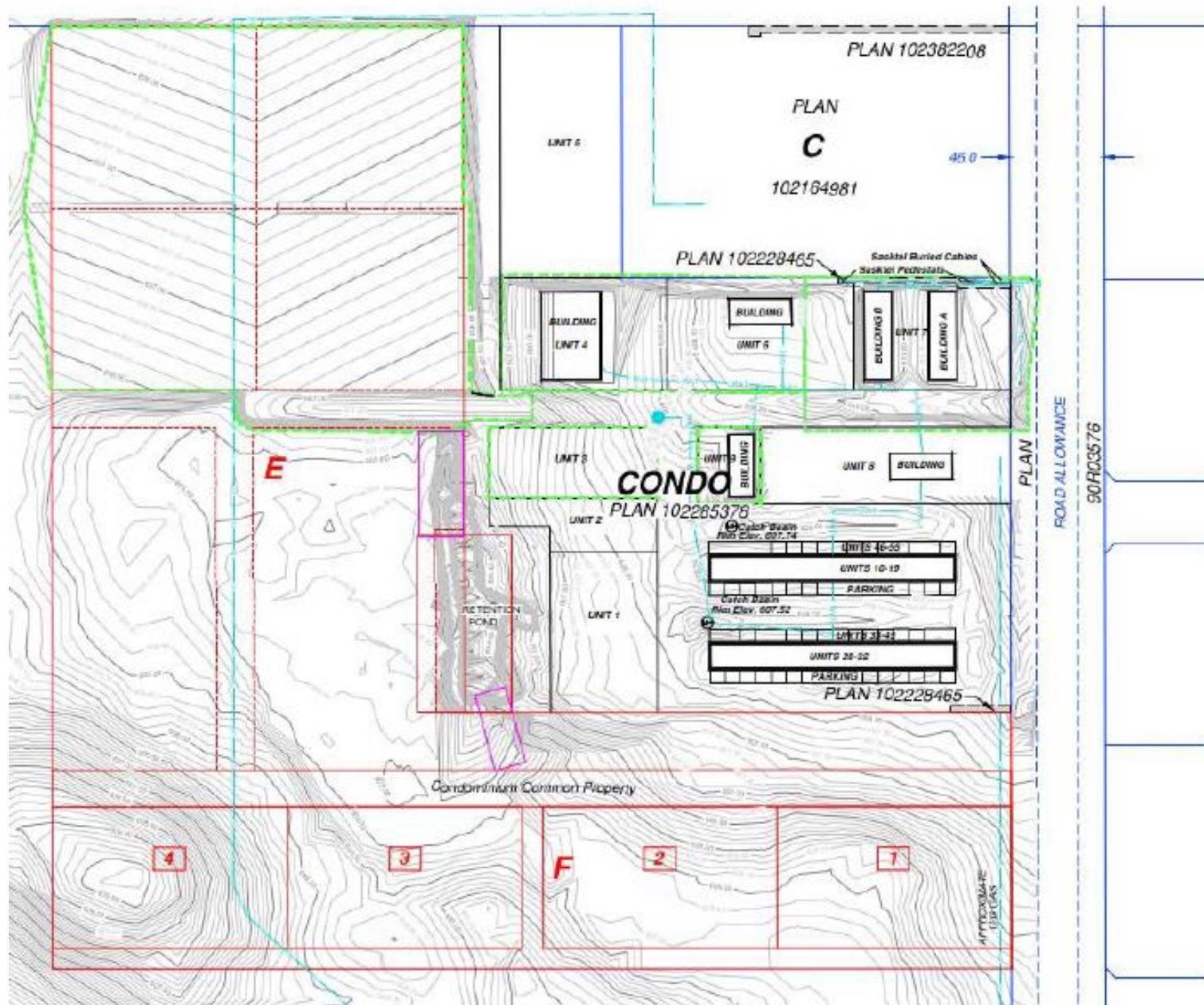
Any use a third party makes of this memorandum or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this memorandum.

# APPENDIX A

---

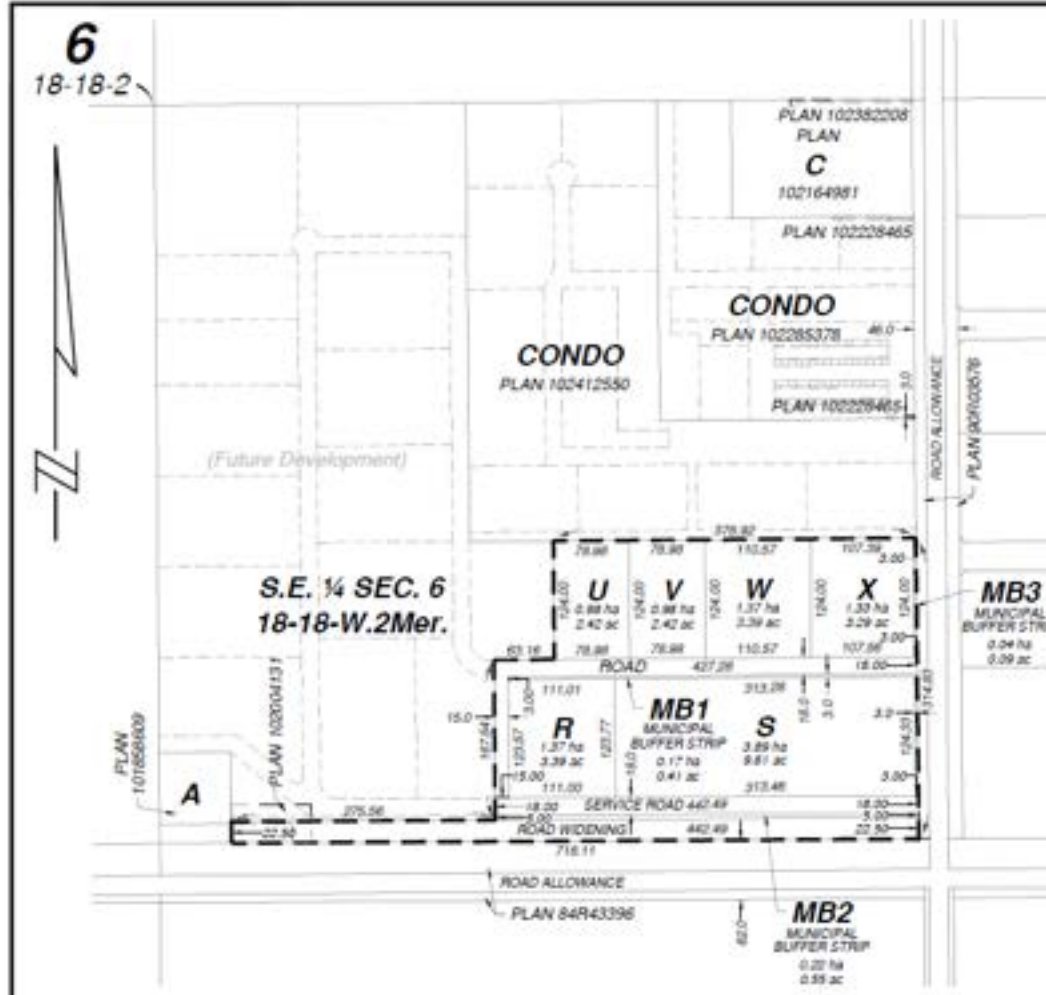
## Site Plan

# ORIGINAL SITE PLAN





# UPDATED SITE PLAN



## PLAN OF PROPOSED SUBDIVISION

OF PART OF

**S.E. 1/4 SEC. 6-TWP. 18-RGE. 18-W. 2Mer.**

**R.M. of EDENWOLD No. 158, SK**

SCALE 1:5000

### NOTES

PRELIMINARY SURVEY DONE ON MAY 31, 2023

PORTION TO BE SURVEYED IS OUTLINED IN A HEAVY DASHED LINE AND CONTAINS  
13.73 ha. (33.83 acres).

MEASUREMENTS ARE IN METRES AND DECIMALS THEREOF.

DISTANCES ARE APPROXIMATE AND MAY VARY BY  $\pm 5$  METRES.

STANDARD ROAD ALLOWANCE SHOWN ARE 20.117m IN WIDTH.

SOURCE PARCEL NUMBER IS 203820293.



June 20, 2023

WCE Design Inc.  
RM of Edenwold

Attention: Mr. D. Weiss

**Re: New Horizon Business Park Transportation Impact Assessment - Draft**

Dear Mr. Weiss:

KGS Group is pleased to submit the following letter report which outlines the results of the New Horizon Business Park Transportation Impact Assessment. The purpose of this assessment is to evaluate the impact that traffic generated by the proposed industrial development will have on the adjacent highway network and to recommend any required mitigation measures.

## INTRODUCTION

KGS Group has been commissioned by WCE Design Inc. to complete a transportation impact assessment (TIA) for an industrial development located along Gravel Pit Road in the Rural Municipality of Edenwold. The proposed development herein referred to as the New Horizon Business Park, is located north of the Highway 46 and Gravel Pit Road intersection. The New Horizon Business Park includes approximately 11.4 ha of light industrial development. This study will identify any mitigation measures on the surrounding road network necessary to accommodate the site generated traffic.

The study intersections for this assessment include:

- Highway 46 and Gravel Pit Road intersection
- Site access intersections along Gravel Pit Road

The location of the proposed development in relation to the city of Regina and the town of Pilot Butte is illustrated in **Figure 1**.



**FIGURE 1: STUDY AREA**

In finalizing the TIA parameters, the Ministry of Highways identified a potential mixed-use development (Bamboo Nations Mixed-use Development) located south of Highway 46 that is currently undergoing a separate TIA. The impact of that proposed development at the Highway 46 and Gravel Pit Road intersection was considered in a supplemental analysis and is presented in **Appendix A**.

## EXISTING SITE CONDITIONS

### Existing Roadways

**Highway 46** is a paved two-lane undivided provincial highway with a rural cross-section and a posted speed limit of 90 km/h adjacent to the proposed site. The Highway 46 and Gravel Pit Road intersection is stop-controlled in the north and south directions and there is corridor lighting present along Highway 46. There are dedicated left-, through-, and right-turn lanes in the eastbound direction and a shared through- and left-turn lane and a shared through- and right-turn lane (flared intersection treatment) in the westbound direction. There are no auxiliary lanes in the northbound or southbound directions.

The Ministry of Highways (Ministry) recently commissioned a functional planning study for the Highway 46 corridor that was to review if twinning would be required in the future and how the corridor would facilitate a four-lane cross-section. At the time of this transportation impact assessment, the functional planning study was not complete, and the future cross-section of Highway 46 was not available.

**Gravel Pit Road** is a north-south road with a paved surface to the north and gravel surface to the south. The speed limit is posted at 60 km/h north and south of the study intersection. There is a weight restriction of 10 tonnes on the gravel road to the south. Gravel Pit Road provides access to several light industrial businesses

and two commercial aggregate pits to the north, and one residential/farm, one residential/transport business, and one concrete and masonry plant to the south.

## Existing Development

The proposed development is located near the western border of the Rural Municipality of Edenwold. The proposed site is partially developed, and the surrounding area includes undeveloped fields, agricultural lands and other light industrial businesses. A light industrial development is located along Gravel Pit Road to the east of the proposed site, and north of the proposed development site are the KF Croft Aggregate and Inland Aggregates sites, which is where Gravel Pit Road terminates to the north.

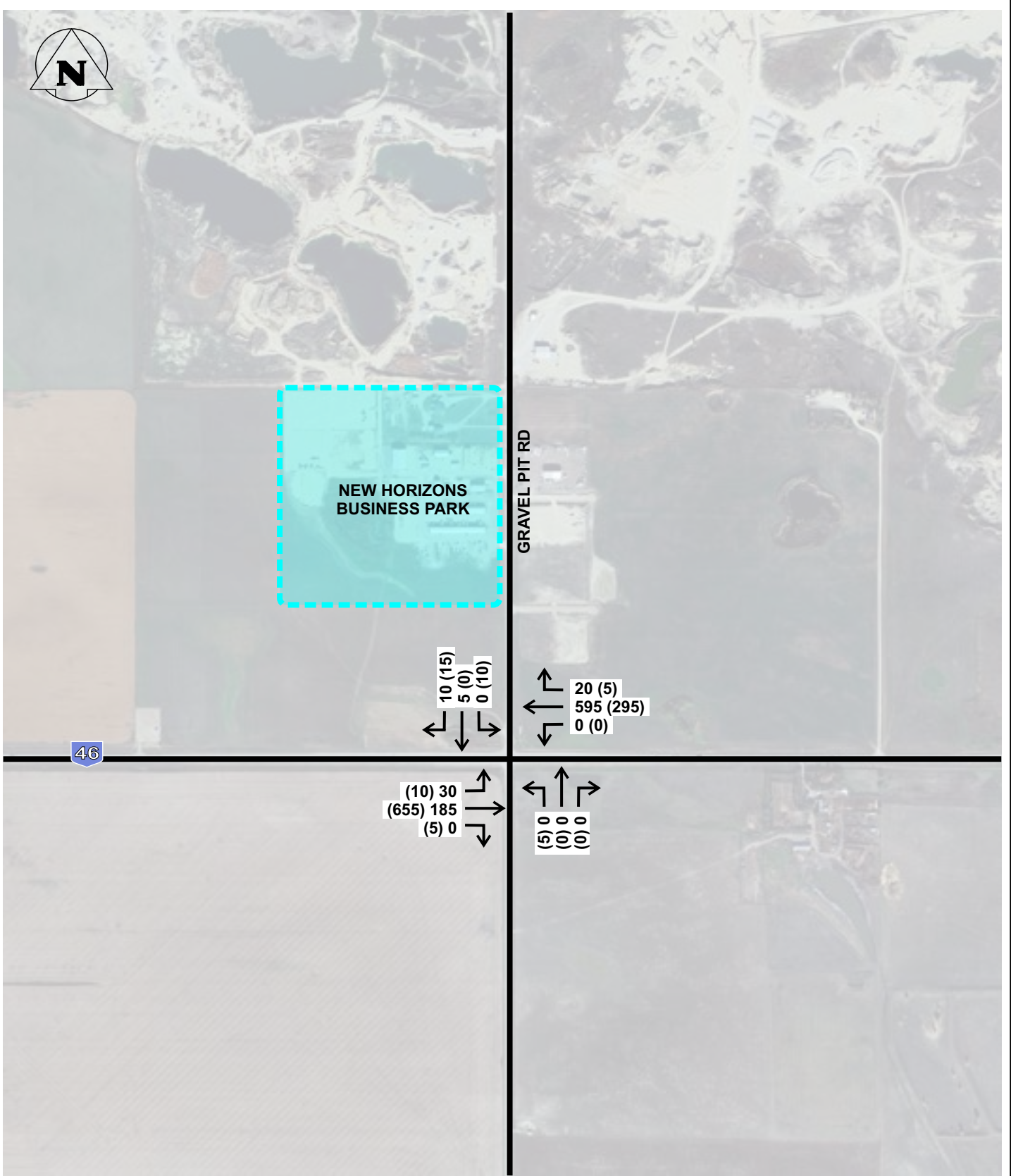
## Existing Traffic Volumes

Existing traffic volumes were collected in April 2023. Data collection avoided Good Friday and the week of April 9, 2023, as travel patterns may have been altered due to school break. The turning movement counts captured the weekday morning peak period (7:00 a.m. to 9:00 a.m.) and the afternoon peak period (4:00 p.m. to 6:00 p.m.), corresponding to typical commute hours. The traffic data was collected by turning movement and classified into cars, trucks, and buses.

**Figure 3** summarizes the total vehicular turning movements (rounded to the nearest five vehicles) recorded at the study intersections during both the morning and afternoon peak hours. The weekday morning peak hour was found to occur between 7:00 a.m. – 8:00 a.m. and the weekday afternoon peak hour was found to occur between 4:30 p.m. – 5:30 p.m.

The traffic volumes along Highway 46 are predominately directional in nature, with vehicles traveling westbound during the morning peak hour towards Regina, and vehicles traveling eastbound during the afternoon peak hour towards Pilot Butte. This travel pattern is consistent with people commuting for work in the morning and returning home in the evening.

The intersection capacity analysis for the existing site conditions is presented under **Traffic Analysis**. The Highway 46 and Gravel Pit Road intersection was found to be operating well overall (LOS A) during the peak hours; however, the north and south approaches are seeing some delay (LOS C) due to the higher volume of traffic on Highway 46.



**LEGEND:**

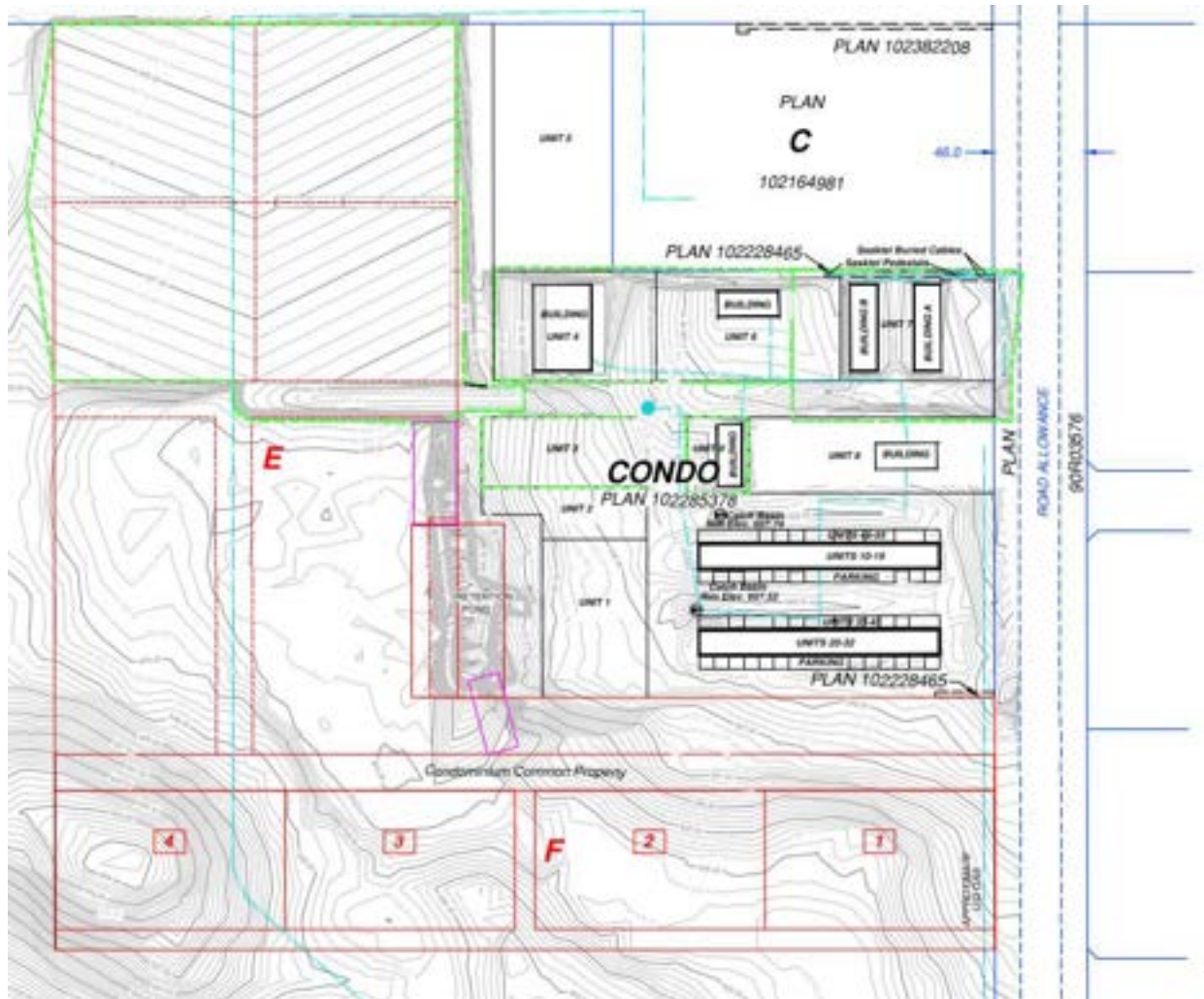
- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).

|                                                               |                |      |   |
|---------------------------------------------------------------|----------------|------|---|
| <div><div>KGS</div><div>GROUP</div></div>                     | WCE DESIGN INC |      |   |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT |                |      |   |
| 2023 EXISTING PEAK HOUR<br>TRAFFIC VOLUMES                    |                |      |   |
| JUNE_2023                                                     | FIGURE 2       | REV. | 0 |



## NEW HORIZON BUSINESS PARK

The proposed site plan is illustrated in **Figure 2**. The New Horizon Business Park has approximately 11.4 ha of land to be developed. The proposed development plan indicates a 30 m right-of-way for the internal circulating road, which is appropriate for the proposed development. The proposed development will have two accesses via Gravel Pit Road. Construction of the proposed industrial development is anticipated to occur in the fall of 2023 with full development estimated to be in 2038.



**FIGURE 3: SITE PLAN**

## TRAFFIC ANALYSIS

The study area was analyzed under three scenarios to identify how vehicles move through the study intersections. The scenarios analyzed include:

- Existing Traffic Volumes— How the intersections operate today.
- 2038 Background Traffic Volumes – How the intersections would operate in the future without the proposed development.
- 2038 Total Traffic Volumes – How the intersections would operate in the future with the proposed New Horizon Business Park.

**Appendix A** presents the background and total traffic volume analyses that includes the Bamboo Nations Mixed-use development.

### Analysis Assumptions

The study area was analyzed using the existing roadway geometry and traffic control to identify how traffic moves through the study intersections. Synchro 11 was used to assess the study intersections during the weekday morning and weekday afternoon peak hours, when adjacent street traffic is at its busiest.

Synchro, which is based on the methodology outlined in the Highway Capacity Manual, produces two key measures to determine the operations of an intersection. The first is level of service (LOS), which is based on the average delay per vehicle, and the second is the volume-to-capacity (v/c) ratio, which indicates the traffic volume at an intersection or for a traffic movement in relation to the capacity available. The LOS criteria for signalized and unsignalized (stop-controlled) intersections is presented in **Table 1**. A LOS A indicates good traffic flow with minimal delay and LOS F indicates congested traffic operations with considerable delay (i.e. stop and go conditions). The v/c ratio identifies the intersection's overall or individual movement's ability to accommodate fluctuations in traffic flow. In a rural environment, a system that is reaching the limits of its operational effectiveness will experience ratios greater than 80%.

SimTraffic, a traffic simulation software program included in the Synchro Studio 11 suite, was used to perform a queuing analysis. SimTraffic can be used to help predict the length of vehicle queues that will form at an intersection. The results for the SimTraffic analysis were based on an average of ten 60-minute simulation runs for all scenarios. The queuing analyses were conducted for the 95<sup>th</sup> percentile queues. The 95<sup>th</sup> percentile queue length provides the queue length that would only be exceeded five percent of the time. The 95<sup>th</sup> percentile queue represents the worst-case scenario, and they are used as an indicator to determine where further examination of storage length is required.

**TABLE 1: LEVEL OF SERVICE CRITERIA**

| Level-of-Service | Signalized Intersection | Unsignalized Intersection |
|------------------|-------------------------|---------------------------|
| <b>A</b>         | ≤ 10                    | ≤ 10                      |
| <b>B</b>         | >10 – 20                | >10 – 15                  |
| <b>C</b>         | > 20 – 35               | > 15 – 25                 |
| <b>D</b>         | > 35 – 55               | > 25 – 35                 |
| <b>E</b>         | > 55 – 80               | > 35 – 50                 |
| <b>F</b>         | > 80                    | > 50                      |

Source: Highway Capacity Manual

## 2023 Existing Traffic

The Highway 46 and Gravel Pit Road intersection was analyzed using the existing roadway geometry, traffic control, and 2023 peak hour traffic volumes. The results of the existing conditions operations analysis are summarized in **Table 5**.

The capacity analysis results show that the Highway 46 and Gravel Pit Road intersection operates generally well overall (LOS A) under the existing traffic conditions, with individual movements operating at a LOS C or better during the peak hours. Traffic on the north and south approaches are primarily delayed due to the higher volume of east- and westbound traffic on Highway 46. The analysis demonstrates that no modifications are required to accommodate the existing traffic volumes.

**TABLE 5: HIGHWAY 46 & GRAVEL PIT ROAD  
2023 INTERSECTION OPERATIONS**

| Peak Hour           | Measure            | Eastbound      |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|---------------------|--------------------|----------------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|                     |                    | L              | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| <b>AM Peak Hour</b> | <i>LOS (Delay)</i> | A (10 s)       | -- | -- | A (0 s)   | -- | -- | C (23 s)   |   |   | C (17 s)   |   |   |
|                     | <i>V/C ratio</i>   | 0.05           | -- | -- | 0.00      | -- | -- | 0.01       |   |   | 0.07       |   |   |
|                     | <i>Queue (m)</i>   | 16             | -- | -- | --        | -- | -- | 2          |   |   | 17         |   |   |
|                     | <b>Overall LOS</b> | <b>A (1 s)</b> |    |    |           |    |    |            |   |   |            |   |   |
| <b>PM Peak Hour</b> | <i>LOS (Delay)</i> | A (9 s)        | -- | -- | A (0 s)   | -- | -- | C (18 s)   |   |   | C (16 s)   |   |   |
|                     | <i>V/C ratio</i>   | 0.01           | -- | -- | 0.00      | -- | -- | 0.02       |   |   | 0.07       |   |   |
|                     | <i>Queue (m)</i>   | 9              | -- | -- | --        | -- | -- | 4          |   |   | 16         |   |   |
|                     | <b>Overall LOS</b> | <b>A (1 s)</b> |    |    |           |    |    |            |   |   |            |   |   |

## 2038 Background Traffic

Background conditions provide a point of reference to understand the relative impact of a development on the transportation network. Background conditions refer to the transportation network and how it is expected to operate, regardless of the proposed development.

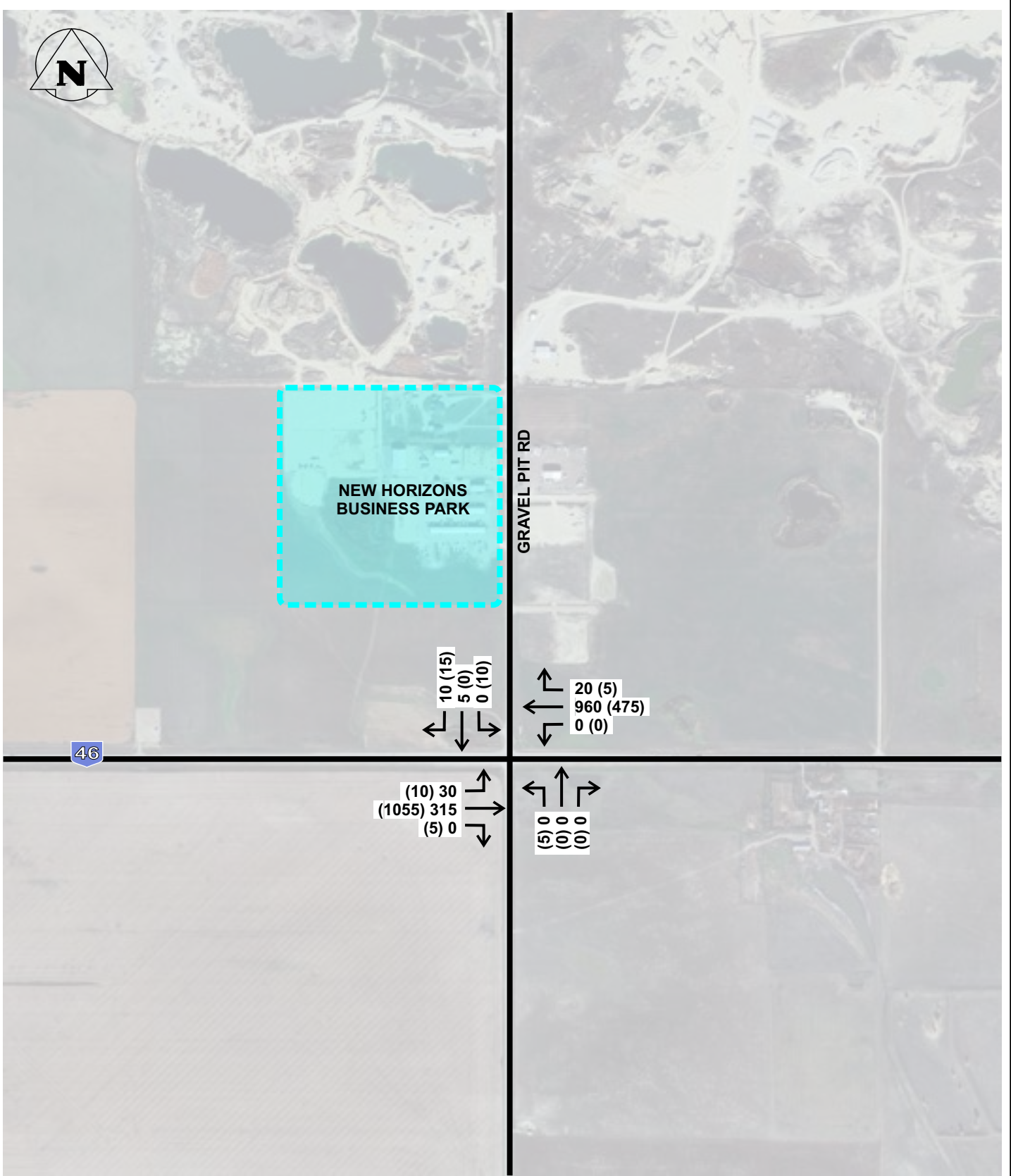
### 2038 BACKGROUND TRAFFIC FORECAST

The future background traffic volume projections were developed for the 2038 horizon, five years beyond full buildout of the development.

The Ministry's background growth rates consider open highway conditions and are largely impacted by community growth when applied to sections of highway within or adjacent to municipalities. The Ministry's 15-year growth rate is 1.60, which represents a 60% increase in traffic in the next 15 years.

The 2038 background traffic volumes were estimated by applying the 15-year growth rate of 1.60 to the 2023 eastbound and westbound through traffic volumes on Highway 46. No background growth rate was applied to the turning movements to the north or south as it is assumed that only new development would contribute to the growth of these movements.

The estimated 2038 peak hour background traffic volumes are illustrated in **Figure 4**.



**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).

|                                                               |  |                |        |
|---------------------------------------------------------------|--|----------------|--------|
| <div>KGS<br/>GROUP</div>                                      |  | WCE DESIGN INC |        |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT |  |                |        |
| 2038 BACKGROUND PEAK HOUR<br>TRAFFIC VOLUMES                  |  |                |        |
| JUNE_2023                                                     |  | FIGURE 4       | REV. 0 |



## 2038 BACKGROUND TRAFFIC OPERATIONS

The background capacity analysis evaluates the traffic conditions in the area that would occur if the proposed development did not proceed. The study intersection was analyzed using the existing roadway geometry and traffic control, and the 2038 peak hour background traffic volumes. The results of the 2038 background traffic conditions operations analysis are summarized in **Table 6**.

The Highway 46 and Gravel Pit Road intersection is operating well overall (LOS A) during both peak hours. However, the capacity analysis demonstrates that the northbound and southbound approaches are expected to see increased delay in the future. The northbound approach is estimated to have an average delay per vehicle of ~36 seconds (LOS E) during the peak hours. However, this is relatively a minor amount of traffic when compared to the volume of traffic on the other approaches (i.e. <5 vehicles during the peak hours). The southbound approach is estimated to have an average delay per vehicle of ~ 25-33 seconds (LOS D) during the peak hours.

The target operating parameters for individual movements is a LOS D on a highway network, and the Highway 46 and Gravel Pit Road intersection is at the threshold where intersection improvements should be considered.

**TABLE 2: HIGHWAY 46 & GRAVEL PIT ROAD  
2038 BACKGROUND INTERSECTION OPERATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|              | Delay (s)   | 12        | -- | -- | 0         | -- | -- | 36         |   |   | 25         |   |   |
|              | V/C ratio   | 0.06      | -- | -- | --        | -- | -- | 0.01       |   |   | 0.10       |   |   |
|              | Queue (m)   | 23        | -- | -- | 1         | 1  | 0  | 2          |   |   | 20         |   |   |
|              | Overall LOS | A (1 s)   |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|              | Delay (s)   | 10        | -- | -- | 0         | -- | -- | 36         |   |   | 33         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.04       |   |   | 0.16       |   |   |
|              | Queue (m)   | 12        | -- | -- | 1         | 1  | -- | 12         |   |   | 61         |   |   |
|              | Overall LOS | A (1 s)   |    |    |           |    |    |            |   |   |            |   |   |

## Development Traffic

### TRIP GENERATION

The proposed industrial development encompasses approximately 11.4 ha of land, which is expected to be developed as light industrial. The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition, was used to estimate the trips generated by the proposed industrial development for the weekday morning and afternoon peak hours. The land use code and trip rates and in/out ratios applied to the land uses within the proposed development are listed in **Table 3**.

**TABLE 3: TRIP GENERATION RATES**

| Land Use         | ITE Code | Peak Hour | Trip Generation Equation      | Directional Distribution |         |
|------------------|----------|-----------|-------------------------------|--------------------------|---------|
|                  |          |           |                               | Entering                 | Exiting |
| Light Industrial | 110      | AM        | $T = 0.68 (X) + 3.81$         | 88%                      | 12%     |
|                  |          | PM        | $\ln(T) = 0.72 \ln(X) + 0.38$ | 14%                      | 86%     |

T = Average Vehicle Trips      X = 1,000 sq. ft. GFA

The following assumptions were made as part of the trip generation analysis:

- The floor-area ratio (FAR) is assumed at 10% of the total area to estimate the gross floor area of the light industrial. The light industrial FAR was estimated by examining the existing developments at the New Horizon Business Park (12%) as well as similar development northwest of Regina in the RM of Sherwood, the Sherwood Industrial Park (7.8%), and the previously approved Chuka Creek Business Park (8%). It was assumed that the light industrial land use gross floor area would cover 10% of the total net land area allocated to light industrial.

**Table 2** presents the total number of site generated trips and the directional allocation (entering or exiting) for the proposed industrial development for each peak hour.

**TABLE 4: SITE-GENERATED TRIPS**

| Land Use         | AM Peak Hour |           |             | PM Peak Hour |           |             |
|------------------|--------------|-----------|-------------|--------------|-----------|-------------|
|                  | Trip In      | Trips Out | Total Trips | Trip In      | Trips Out | Total Trips |
| Light Industrial | 77           | 11        | 88          | 7            | 40        | 47          |
| <b>Total</b>     | <b>77</b>    | <b>11</b> | <b>88</b>   | <b>7</b>     | <b>40</b> | <b>47</b>   |

It is unlikely that any of the trips generated will be multi-use trips within the proposed development (i.e. vehicles stopping at one site before proceeding to work at another site within the proposed development) as it is a single-use site.

This development is also not expected to generate any pass-by trips.

The estimated number of new trips generated at full build-out, includes **88 new trips (77 trips entering and 11 trips exiting)** during the weekday morning peak hour and **47 new trips (7 trips entering and 40 trips exiting)** during the weekday afternoon peak hour. Sites that generate less than 100 vehicle trips during the peak hours, are typically accepted as a minor traffic generator and have minimal impact on the adjacent road network.

## TRIP DISTRIBUTION AND ASSIGNMENT

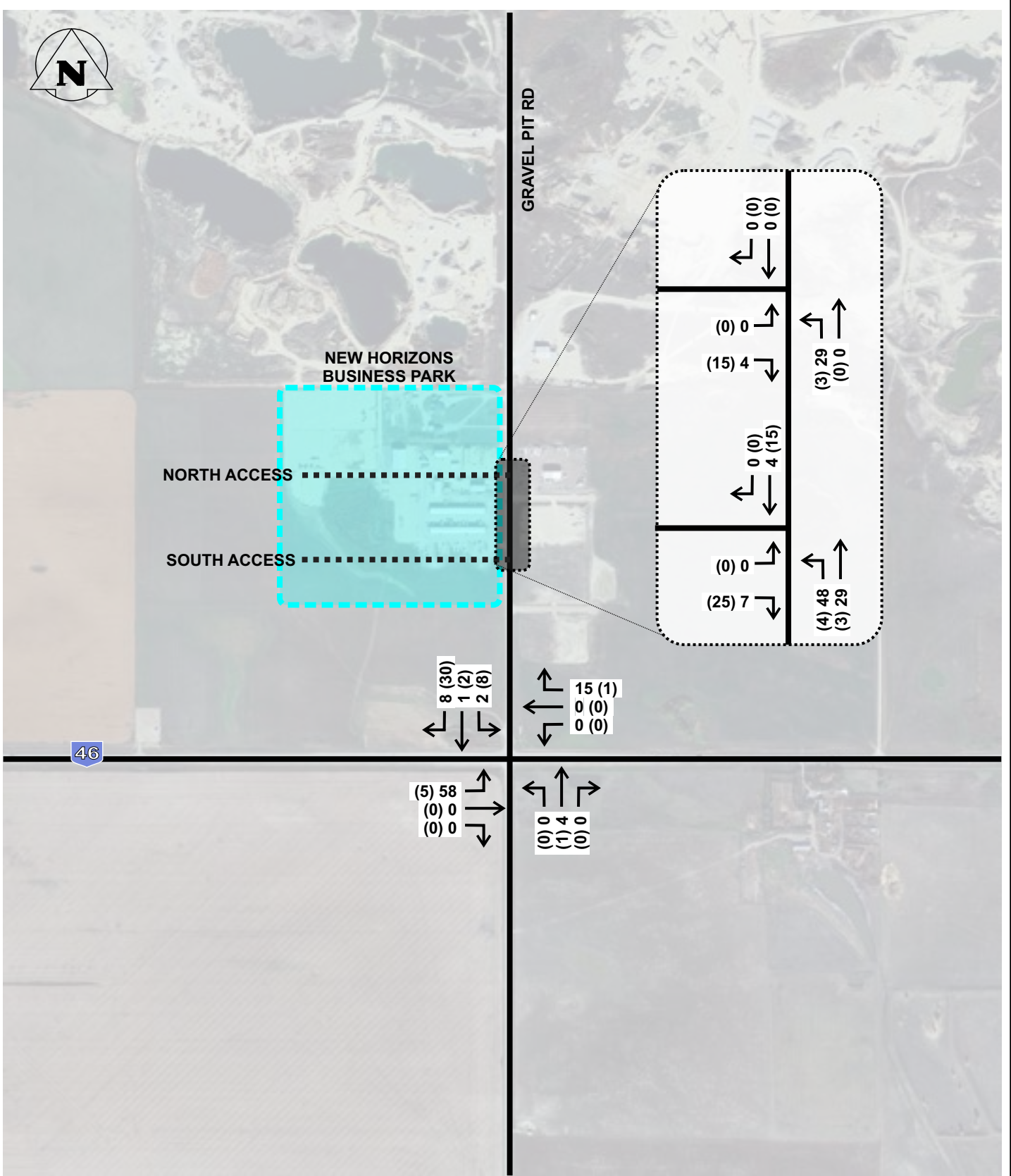
The traffic forecast was completed by distributing the site-related traffic volumes and assigning them to the road network based on an assessment of how people will access and egress the site. Trip distribution refers to the origins and destinations of the site-generated trips while trip assignment assesses the actual route that the vehicles will take between their origin and destination. The assignment process assumes that motorists will use the most efficient route.

To facilitate the trip distribution process, the surrounding area was divided into four zones with respect to the location of the proposed development. The trip distribution estimates are as follows:

- 0% will travel to / from the north
- 20% will travel to / from the east
- 5% will travel to / from the south
- 75% will travel to / from the west

The new vehicle trips were then assigned to the road network based on the distribution estimates. The vehicle assignment accounts for the routes that drivers will use to reach the site, and the access points that they will use.

The site-generated trips are illustrated in **Figure 5**.



**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) SITE GENERATED TRIPS
- ..... PROPOSED NEW ACCESS

|                                                                                       |                |      |   |
|---------------------------------------------------------------------------------------|----------------|------|---|
|  | WCE DESIGN INC |      |   |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT                         |                |      |   |
| SITE-GENERATED TRIPS                                                                  |                |      |   |
| JUNE_2023                                                                             | FIGURE 5       | REV. | 0 |

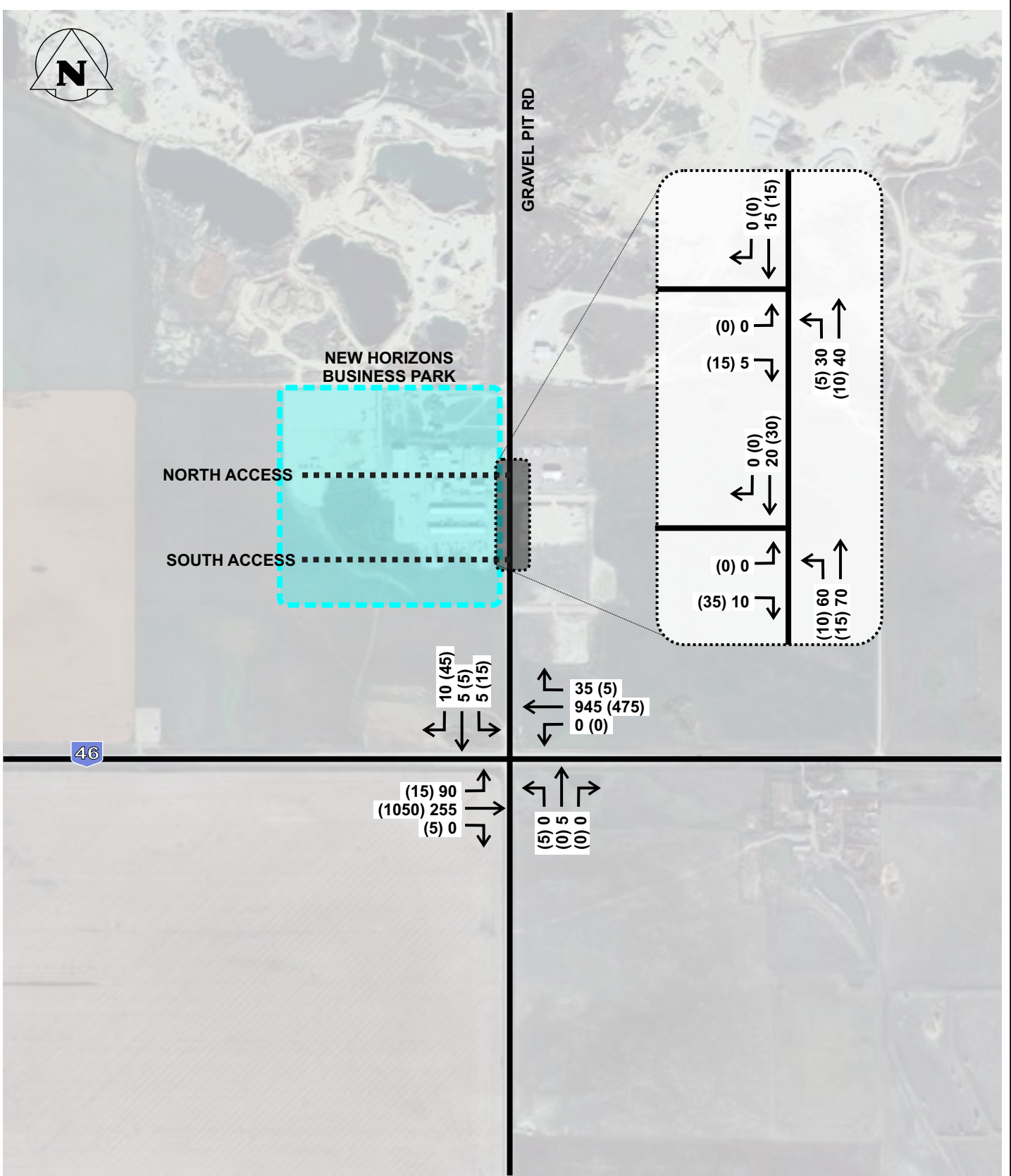
## 2038 Total Traffic

### 2038 TOTAL TRAFFIC FORECAST

The site-generated trips were added to the projected 2038 background traffic forecast volumes to obtain the 2038 total forecast traffic volumes, illustrated in **Figure 7**. The development traffic was assumed to be included within the 15-year growth rate. This means there will be fewer through vehicles when compared to the background forecast as they will be turning to go north instead.

The traffic forecast projects approximately 1,300 vehicles on Highway 46 during the morning peak hour, of which 88 trips will be generated by the proposed New Horizon Business Park. Similarly, the traffic forecast projects approximately 1,600 vehicles on Highway 46 during the afternoon peak hour, of which 47 trips are associated with the proposed New Horizon Business Park.





**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).
- ..... PROPOSED NEW ACCESS

|                                                               |                |      |   |
|---------------------------------------------------------------|----------------|------|---|
| <div><div>KGS</div><div>GROUP</div></div>                     | WCE DESIGN INC |      |   |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT |                |      |   |
| 2038 TOTAL PEAK HOUR<br>TRAFFIC VOLUMES                       |                |      |   |
| JUNE_2023                                                     | FIGURE 6       | REV. | 0 |

## 2038 TOTAL TRAFFIC OPERATIONS

The total capacity analysis evaluates the traffic conditions with the proposed industrial development. The Highway 46 and Gravel Pit Road intersection was modelled with existing geometry and as a two-way stop-controlled intersection and the new accesses were modeled as stop controlled intersections.

**Table 5** summarizes the traffic operations during the morning peak hour and **Table 6** summarizes the traffic operations during the afternoon peak hour. The delay on the north and south approaches are anticipated to continue to increase, operating at a LOS E/D during the peak hours. The modeling indicates a queue of 195 m on the southbound approach during the afternoon peak hour. There are few gaps in traffic on Highway 46 for vehicles to proceed through the intersection, which is resulting in the delay and queueing on the southbound approach.

Both site accesses are expected to operate well (LOS A) during the peak hours.

**TABLE 5: 2038 TOTAL MORNING PEAK HOUR TRAFFIC OPERATIONS**

| Peak Hour                       | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |    |
|---------------------------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|----|
|                                 |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R  |
| Highway 46 & Gravel Pit Road    | LOS         | B         | -- | -- | A         | -- | -- | E          |   |   | D          |   |    |
|                                 | Delay (s)   | 12        | -- | -- | 0         | -- | -- | 44         |   |   | 26         |   |    |
|                                 | V/C ratio   | 0.15      | -- | -- | --        | -- | -- | 0.06       |   |   | 0.16       |   |    |
|                                 | Queue (m)   | 44        | -- | -- | --        | -- | 1  | 4          |   |   | 44         |   |    |
|                                 | Overall LOS | A (2 s)   |    |    |           |    |    |            |   |   |            |   |    |
| Gravel Pit Road & South Access  | LOS         | A         |    |    |           |    |    | A          |   |   |            |   | -- |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   |            |   | -- |
|                                 | V/C ratio   | 0.02      |    |    |           |    |    | 0.05       |   |   |            |   | -- |
|                                 | Queue (m)   | 10        |    |    |           |    |    | 3          |   |   |            |   | -- |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |    |
| -Gravel Pit Road & North Access | LOS         | A         |    |    |           |    |    | A          |   |   |            |   | -- |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   |            |   | -- |
|                                 | V/C ratio   | 0.01      |    |    |           |    |    | 0.02       |   |   |            |   | -- |
|                                 | Queue (m)   | 6         |    |    |           |    |    | 2          |   |   |            |   | -- |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |    |

**TABLE 6: 2038 TOTAL AFTERNOON PEAK HOUR TRAFFIC OPERATIONS**

| Peak Hour                       | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|---------------------------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|                                 |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| Highway 46 & Gravel Pit Road    | LOS         | A         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|                                 | Delay (s)   | 9         | -- | -- | 0         | -- | -- | 38         |   |   | 32         |   |   |
|                                 | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.05       |   |   | 0.34       |   |   |
|                                 | Queue (m)   | 11        |    |    | 1         |    |    | 8          |   |   | 195        |   |   |
|                                 | Overall LOS | A (2 s)   |    |    |           |    |    |            |   |   |            |   |   |
| Gravel Pit Road & South Access  | LOS         | A         |    |    |           |    |    | A          |   |   | --         |   |   |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   | --         |   |   |
|                                 | V/C ratio   | 0.04      |    |    |           |    |    | 0.01       |   |   | --         |   |   |
|                                 | Queue (m)   | 13        |    |    |           |    |    | 0          |   |   | --         |   |   |
|                                 | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |
| -Gravel Pit Road & North Access | LOS         | A         |    |    |           |    |    | A          |   |   | --         |   |   |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   | --         |   |   |
|                                 | V/C ratio   | 0.02      |    |    |           |    |    | 0.01       |   |   | --         |   |   |
|                                 | Queue (m)   | 10        |    |    |           |    |    | 0          |   |   | --         |   |   |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |   |

## HIGHWAY WARRANT ANALYSIS

### Intersection Lighting Warrants

#### Highway 46 and Gravel Pit Road

There is corridor lighting along Highway 46 at the Highway 46 and Gravel Pit Road intersection. No delineation lighting is provided on the north or south approaches of the intersection.

The Ministry of Highways Design Manual for Partial or Area Lighting (DM 2621-1) considers delineation lighting to be warranted if one of the three warrant criteria are met:

- All provincial highway to highway intersections
- All intersections of the designated community access road with the provincial highway system
- All rural and urban public highway intersections with a provincial highway with an intersection roadway traffic volume greater than 150 AADT or 250 SADT for seasonal recreational roads.

Intersection delineation lighting was found to be warranted at the Highway 46 and Gravel Pit Road intersection with the existing 2023 traffic volumes.

It is recommended that the lighting levels are reviewed to ensure appropriate illumination is provided, and if substandard, that a delineation light is installed on the north approach.

### **Gravel Pit Road & Site Access**

Intersection illumination warrants were conducted for the Gravel Pit Road and site access intersection using the Ministry's design manual guidelines. It should be noted that the Ministry's warrants were developed for highways with a higher posted speed than Gravel Pit Road, but the warrants were used in the analysis as an indication of potential appropriateness of lights to improve visibility at night.

Intersection delineation lighting was found to be warranted at the Gravel Pit Road and site accesses at full build-out of the site. It is recommended that delineation lighting is installed at this intersection.

## Turning Lane Warrants

At the Highway 46 and Gravel Pit Road intersection there are dedicated left-, through-, and right-turn lanes in the eastbound direction and a flared intersection treatment in the westbound direction. The current length of the westbound flare intersection treatment is approximately 115 m in storage and 60 m in taper, for a total length of 175 m.

The intersection treatment warrants outlined by the Ministry of Highways Design Manual was completed for the Highway 46 and Gravel Pit Road intersection. The Ministry's Standard Plan No. 20614 indicates that right turn lanes are warranted at intersections with industrial access roads. Gravel Pit Road intersection provides access to two operational aggregate pits and the future industrial business park, a westbound right turn lane would be considered warranted.

The Ministry's Geometric Design Guide Supplement, SKS 9.14-A (Flared Intersections and Auxiliary Lanes – Right Turn Lanes) indicates that right turn lanes may be combined with flared intersection treatments by lengthening the parallel auxiliary lane of the flared intersection on the upstream side.

Standard Plan 20618 describes the geometric characteristics of right turn lanes, which indicates that at a 100 km/h design speed, and a stop condition on the minor approach, the right turn lane should have a minimum of 85 m of storage and 75 m of taper, for a total length of 160 m.

The existing flare treatment exceeds the total length requirements, and no geometric changes are warranted.

At the time Highway 46 is widened to a four-lane road, a dedicated westbound right-lane would continue to be warranted as the intersection is serving an industrial development.

## SITE ACCESS

The Ministry has established access management levels on the rural highway system ranging from “R-1” to “R-5”. “R-1” represents the highest level of control and “R-5” represents the lowest level of control. Highway 46 is currently classified as an “R-2” and may increase to an “R-1” as traffic volumes continue to increase. “R-2” roadways have the following access management criteria:

- At-grade intersections are allowed only at road allowances at a minimum spacing of 3.2 km and a desirable spacing of 8 km.
- Sections of highways established at “R-2” access management level can be upgraded to an “R-1” access management level with minor disruptions.
- Direct access to the main highway is not permitted. All access to the main highway is from a public road access via a service road.
- Generally, it is applied to highways classified as expressways or major arterials.

The existing control of access plan for Highway 46 was reviewed to determine the access type for Gravel Pit Road. The control of access plan identifies temporary and permanent intersections along Highway 46. Temporary intersections may be removed in the future as the ultimate highway access management plan is implemented and permanent intersections are anticipated to remain either as at-grade intersections or grade separated interchanges. The closure of temporary access points can occur at any time, but typically happens when capacity is constrained due to traffic volumes or when safety concerns necessitate access modification.

The Highway 46 and Gravel Pit Road intersection is classified as temporary accesses and the Highway 46 and Pilot Butte Access intersection, located 1.6 km east of Gravel Pit Road, is classified as a permanent access. The current long-term plan would require a long service road from Pilot Butte Access Road to the proposed industrial development at the time the temporary accesses are closed.

At the site accesses, adequate site distance is particularly important for the entry and exit manoeuvres at industrial development accesses. Objects that can affect site distance include utility cabinets and landscaping within the right-of-way. It is also desirable to avoid placing driveways on horizontal or vertical curves due to the safety concerns that can arise. Driveways that intersect at less than 70 degrees can result in restricted sight-lines, which can create additional safety concerns and increase collision potential. Based on the site plan drawings, the site access intersects the surrounding roadways at 90 degrees.

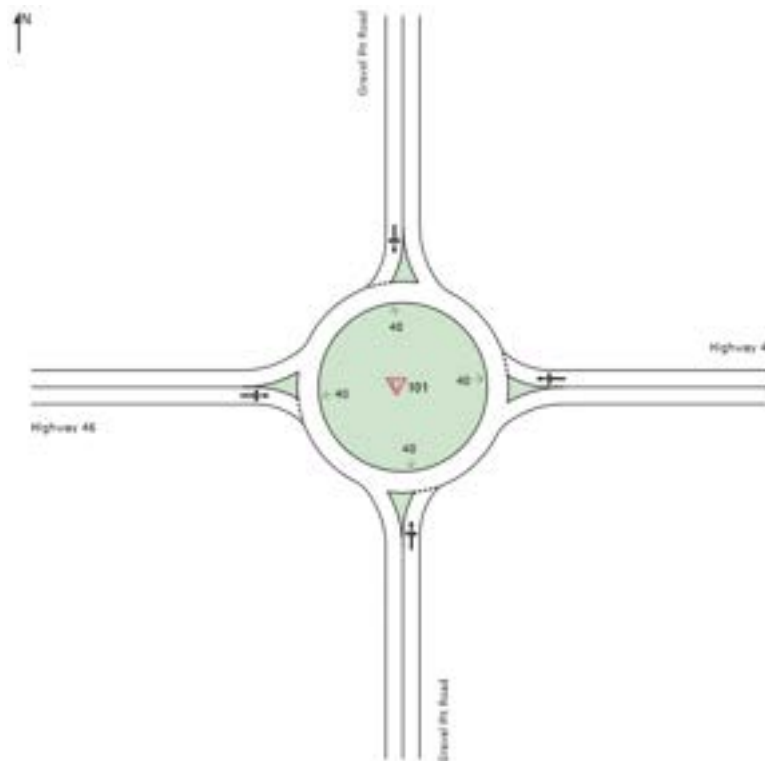
It is recommended that the sight-lines be kept free of obstructions (i.e. utility cabinets, landscaping) at the time of development.



## NETWORK MITIGATION MEASURES

The highway warrant analysis indicates that a westbound right-turn treatment is warranted at the Highway 46 and Gravel Pit intersection; however, it does not address the delay of the northbound or southbound approaches. The ultimate cross-section for Highway 46 will influence the mitigation measures needed to accommodate the proposed site development traffic, such as if Highway 46 has a wide median which allows two-stage crossing, or if a narrower, barrier median is used. The following intersection mitigation measures were assessed for the Highway 46 and Gravel Pit Road intersection.

- Option 1 – Single Lane Roundabout - Roundabouts channel traffic around a central island without traffic signals, which reduces driver delay by allowing motorists to yield rather than stop. Roundabouts can also serve to carry as much traffic as traffic signals while keeping all intersection legs moving safely. Option 1 is illustrated in **Figure 7**. There is the potential to stage the single lane roundabout to a two-lane roundabout at the time Highway 46 is expanded to a four-lane cross-section.



**FIGURE 7: OPTION 1 – SINGLE-LANE ROUNDABOUT**

- Option 2 - Highway 46 Divided Median – This option assumes a wide divided median which will allow vehicles to complete the crossing in two-stages. An eastbound left-turn lane and a westbound right-turn lane are included. While acceleration lanes were not included in the model for this option, they may be needed beyond the 2038 horizon of this study if the average delay for the stop-controlled approach reduces to a LOS D or if the median is not wide enough to store a Super B within the median. Option 2 is illustrated in **Figure 8**.



**FIGURE 8: OPTION 2 – HIGHWAY 46 DIVIDED MEDIAN**

- Option 3 – Highway 46 Barrier Median – This option assumes a narrow median is selected for Highway 46 and vehicles will need to complete the crossing in one-stage. In addition to the westbound right-turn lane, this option also assumes a median eastbound acceleration lane and a westbound acceleration lane, which provides traffic their own lane to accelerate to highway speeds prior to merging with the mainline traffic. Option 3 is illustrated in **Figure 9**.



**FIGURE 9: OPTION 3 – HIGHWAY 46 BARRIER MEDIAN**

Option 1 was modelled using SIDRA, an industry standard roundabout software tool. Option 2 was modeled as two separate intersections north and south of the median width. This two-stage crossing was modelled in SimTraffic and the delay from each intersection was combined to form the total delay. For example, the total delay for the southbound left-turn consists of the southbound through delay at the intersection with the westbound lanes and the southbound left-turn delay at the intersection with the eastbound lanes. The delay from SimTraffic was also used for Option 3 to provide a consistent comparison between the options.

The results of the capacity analysis for the various mitigation options are summarized in **Table 7** through **Table 9**.

**TABLE 7: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 1 – SINGLE-LANE ROUNDABOUT**

| Peak Hour    | Measure     | Eastbound |   |   | Westbound |   |   | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|---|---|-----------|---|---|------------|---|---|------------|---|---|
|              |             | L         | T | R | L         | T | R | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | A         |   |   | A         |   |   | A          |   |   | B          |   |   |
|              | Delay (s)   | 4         |   |   | 4         |   |   | 5          |   |   | 13         |   |   |
|              | V/C ratio   | 0.24      |   |   | 0.72      |   |   | 0.01       |   |   | 0.07       |   |   |
|              | Queue (m)   | 14        |   |   | 59        |   |   | 1          |   |   | 4          |   |   |
|              | Overall LOS | A (4 s)   |   |   |           |   |   |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         |   |   | A         |   |   | B          |   |   | A          |   |   |
|              | Delay (s)   | 3         |   |   | 3         |   |   | 16         |   |   | 7          |   |   |
|              | V/C ratio   | 0.67      |   |   | 0.33      |   |   | 0.01       |   |   | 0.07       |   |   |
|              | Queue (m)   | 62        |   |   | 17        |   |   | 1          |   |   | 3          |   |   |
|              | Overall LOS | A (3 s)   |   |   |           |   |   |            |   |   |            |   |   |

**TABLE 8: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 2 - HIGHWAY 46 DIVIDED MEDIAN**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | C         | A  | A  | A         | A  | A  | C          |   |   | C          |   |   |
|              | Delay (s)   | 22        | 0  | 0  | 6         | 3  | 2  | 24         |   |   | 18         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | -- | --         |   |   | 0.08       |   |   |
|              | Queue (m)   | 9         | 0  | 0  | 1         | 1  | 1  | 6          |   |   | 17         |   |   |
|              | Overall LOS | A (6 s)   |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | A         | A  | A  | C          |   |   | C          |   |   |
|              | Delay (s)   | 5         | 1  | 1  | 9         | 2  | 1  | 15         |   |   | 20         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | -- | 0.01       |   |   | 0.09       |   |   |
|              | Queue (m)   | 2         | 0  | 0  | 0         | 0  | 0  | 7          |   |   | 13         |   |   |
|              | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |

**TABLE 9: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 3 - HIGHWAY 46 BARRIER MEDIAN**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | F         | A  | A  | A         | A  | A  | F          |   |   | F          |   |   |
|              | Delay (s)   | 75        | 2  | 0  | 0         | 3  | 1  | 161        |   |   | 352        |   |   |
|              | V/C ratio   | 0.16      | -- | -- | --        | -- | -- | 0.06       |   |   | 0.15       |   |   |
|              | Queue (m)   | 59        | 9  | 0  | 1         | 1  | 1  | 7          |   |   | 68         |   |   |
|              | Overall LOS | B (13 s)  |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | A         | A  | A  | F          |   |   | E          |   |   |
|              | Delay (s)   | 9         | 3  | 1  | 0         | 2  | 1  | 171        |   |   | 47         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.05       |   |   | 0.20       |   |   |
|              | Queue (m)   | 11        | 1  | 0  | 0         | 0  | 0  | 7          |   |   | 22         |   |   |
|              | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |

The capacity analysis demonstrates that Option 1 or Option 2 will accommodate the traffic from the proposed industrial site. Option 3 results in poor operation (LOS F) of the northbound and southbound approaches. The required solution will ultimately depend on the preferred cross-section for Highway 46.

An alternative intersection treatment to alleviate the southbound and northbound left-turn delay is the Restricted Crossing U-turn (RCUT). An example of an RCUT is illustrated in **Figure 11**. The RCUT combines a

directional median, which allows direct left-turns from Highway 46 but prohibits Gravel Pit Road through and left-turning traffic from accessing Highway 46 at the intersection. The RCUT instead requires these movements from Gravel Pit Road to use downstream median U-turns. Gravel Pit Road left-turning and crossing traffic will be required to make these maneuvers indirectly by turning right, weaving to the left, making a downstream U-turn, and then returning to the intersection to complete their desired maneuver. RCUT intersections are typically used during the following conditions:

- Used in place of an interchange in that the merge control is similar to a freeway corridor but funding for an interchange is not available
- High volumes on the mainline and heavy left-turning volumes from the major street
- Typically used only for low left-turning volumes or through movements from minor street



**FIGURE 10: EXAMPLE RCUT INTERSECTION CONFIGURATION**

## CONCLUSIONS & RECOMMENDATIONS

The following conclusions and recommendations are made for the proposed industrial development, based on the results of the transportation analysis:

- The proposed industrial development includes 11.4 ha of light industrial.
- The proposed development will be accessed via Gravel Pit Road, which will connect to Highway 46.
- The estimated number of new trips generated at full build-out, includes 88 new trips (77 trips entering and 11 trips exiting) during the weekday morning peak hour and 47 new trips (7 trips entering and 40 trips exiting) during the weekday afternoon peak hour.
- It is unlikely that any of the trips generated will be multi-use trips within the proposed development as it is a single-use site, and the development is not expected to generate any pass-by trips.



- The Highway 46 and Gravel Pit Road intersection is expected to operate well overall (LOS A) during the peak hours at full build-out of the proposed industrial site. However, the northbound and southbound approaches will experience delay (LOS E or lower) during the peak hours with the existing intersection geometry.
- There is a potential for a residential commercial mixed-use site to be developed south of Highway 46 that would also use the Gravel Pit Road intersection. This development is anticipated to generate a substantial number of trips during the peak hours and will result in significant delay at the Highway 46 and Gravel Pit Road intersection. Additional analysis regarding this development is provided in **Appendix A**.
- The intersection delineation lighting warrants were completed for the Highway 46 and Gravel Pit Road intersection and the site accesses. Intersection delineation lighting was found to be warranted at full build-out at the three study intersections.
- The intersection treatment warrant analysis was completed for the Highway 46 and Gravel Pit Road intersection. The warrants identified that a westbound right-turn is warranted at the Highway 46 and Gravel Pit Road intersection. The Ministry's Design Guide indicates that right-turn lanes can be combined with a flared intersection treatment. The existing flare treatment exceeds the total length requirements as indicated by the Ministry's Design Manual, and no geometric changes are warranted. However, at the time Highway 46 is widened to a four-lane road, a dedicated westbound right-lane would be warranted and should be implemented.
- The future cross-section of Highway 46 is still being reviewed under a separate study. The intersection modifications will ultimately depend on the preferred cross-section for Highway 46.

### Recommendations

- Coordinate with the Ministry of Highways to identify the future cross-section and the timing of widening of the Highway 46 corridor. Select a preferred intersection treatment that corresponds with the preferred highway cross-section.
- Implement intersection modifications to accommodate site traffic.
- Review illumination lighting at the Highway 46 and Gravel Pit Road intersection. If needed, install intersection delineation lighting at the Highway 46 and Gravel Pit Road intersection.
- Install delineation intersection lighting at the Gravel Pit Road and Site Accesses.
- Sight-lines at all intersections, accesses, driveways should be kept free of obstructions (i.e. utility cabinets, landscaping etc.).

Prepared By:

Approved By:

Destiny Piper, P.Eng.  
Transportation Engineer

Nathan Gray, P.Eng., PTOE, PMP  
Senior Transportation Engineer

DP/xxx

## STATEMENT OF LIMITATIONS AND CONDITIONS

### Limitations

This report has been prepared for Victoria Square Industry Group Ltd. in accordance with the agreement between KGS Group and Victoria Square Industry Group Ltd. (the “Agreement”). This report represents KGS Group’s professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by Victoria Square Industry Group Ltd. Unless stated otherwise, KGS Group has not verified the accuracy, completeness or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group’s work.

### Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report

# APPENDIX A

---

## Network Analysis w Bamboo Nation Mixed-use Development

## BACKGROUND TRAFFIC

KGS coordinated with WSP Canada Inc., the consultant working on the proposed Bamboo Nation Mixed-use development to the south, to coordinate the estimated vehicle trips. This development is anticipated to be substantial in nature, including the following development:

- 225 single family detached residential units
- 107 townhomes
- 40 live / work townhomes
- 96 apartments
- Commercial under apartments - 1,300 sqm
- Commercial under live/work units – 350 sqm
- A clubhouse with an area of 2,600 sqm
- Primary school with kindergarten (350 students)
- Hotel with 20-30 rooms on top of the clubhouse
- 1 sports park which will include a soccer field
- 1 fieldhouse which will include a soccer field
- 1 hockey arena

The proposed residential and commercial development is anticipated to add an additional 328 trips (121 trips in, 207 trips out) during the morning peak hour and 389 trips (227 trips in, 162 trips out) during the afternoon peak hour to the Highway 46 and Gravel Pit Road intersection.

WSP provided the following site-generated trips and pass-by trips for the Bamboo Nation's Mixed-Use Development, which are presented in **Figure A-1** and **Figure A-2**, respectively.

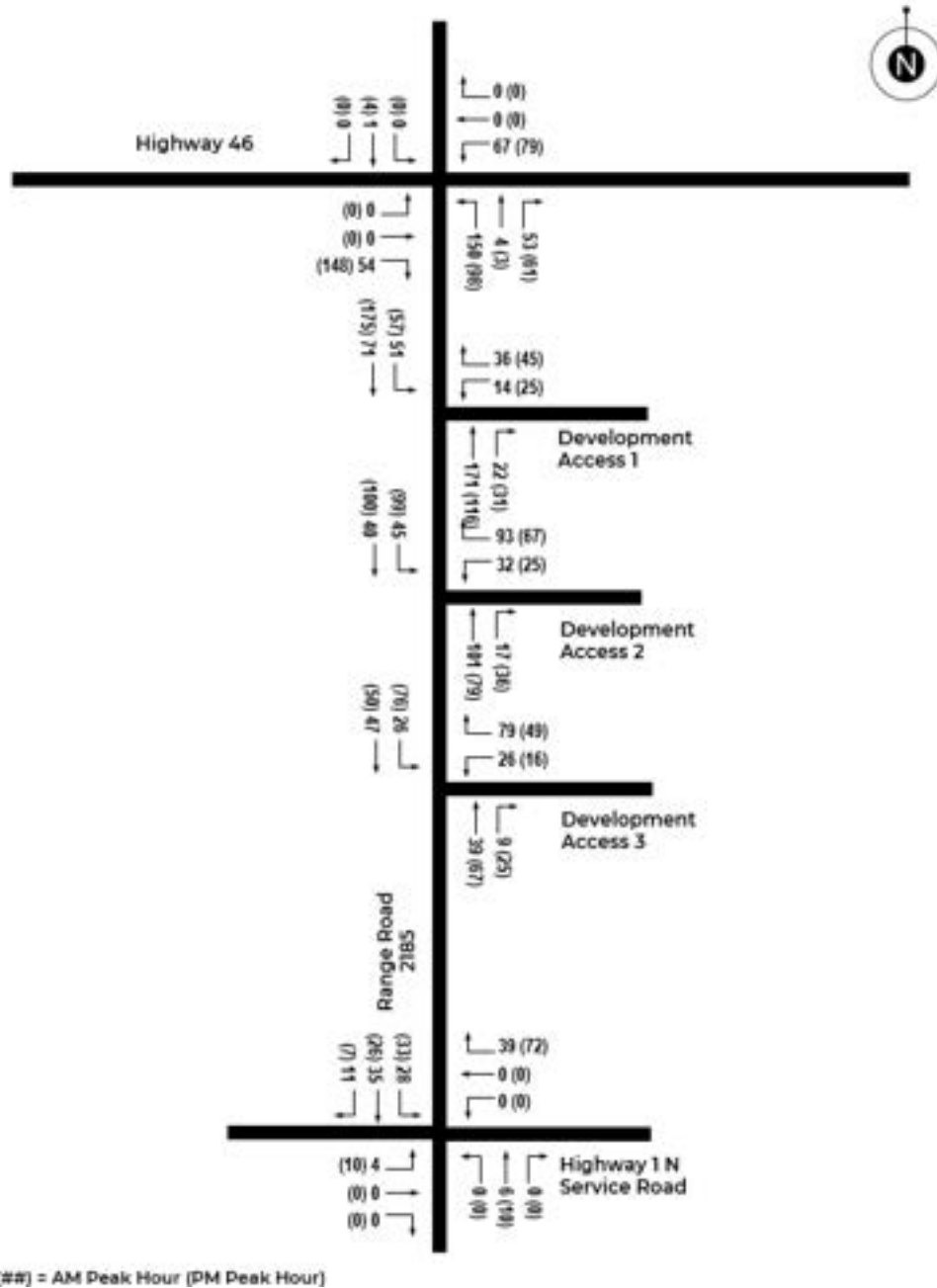
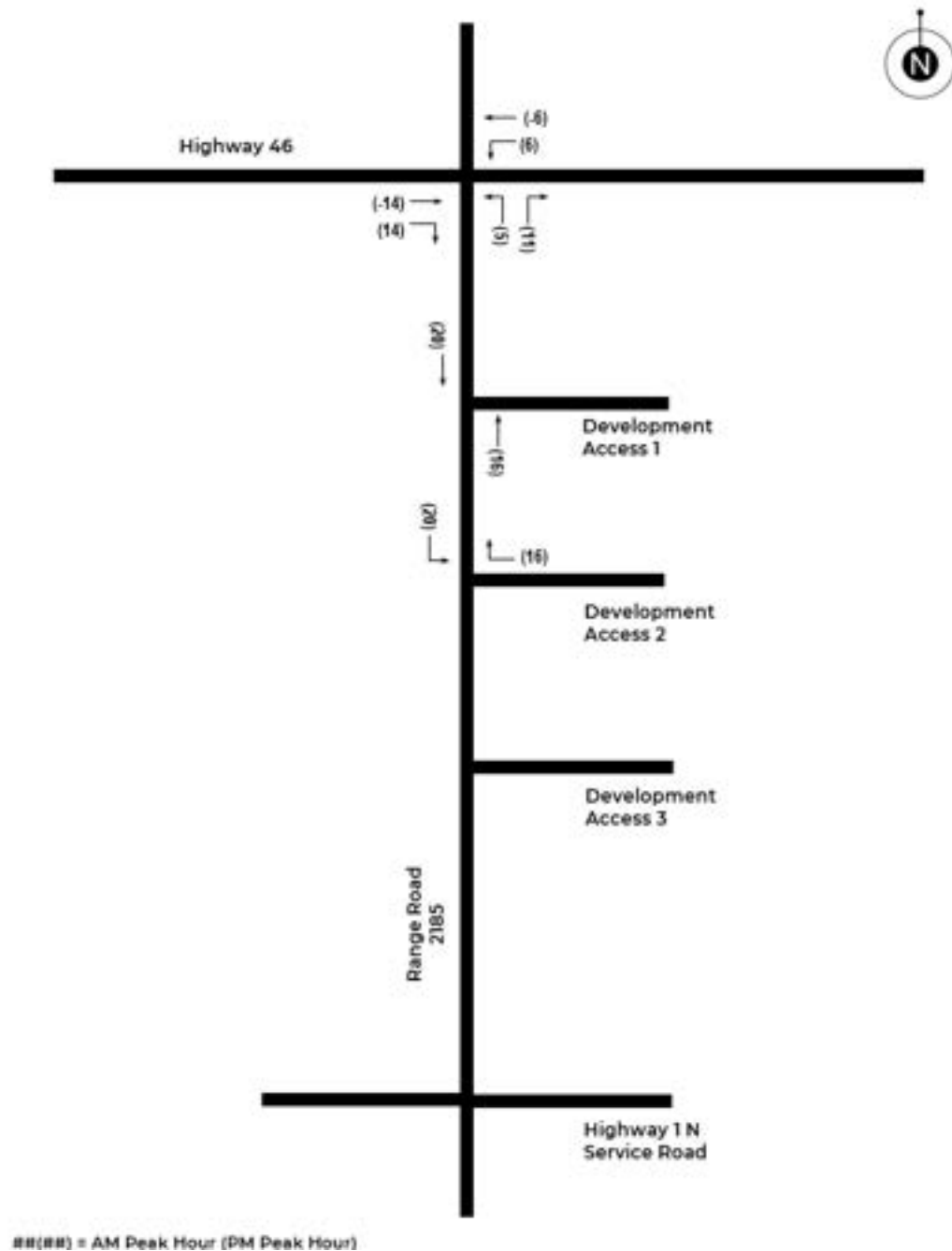


FIGURE A-1: BAMBOO NATION'S SITE-GENERATED TRIPS



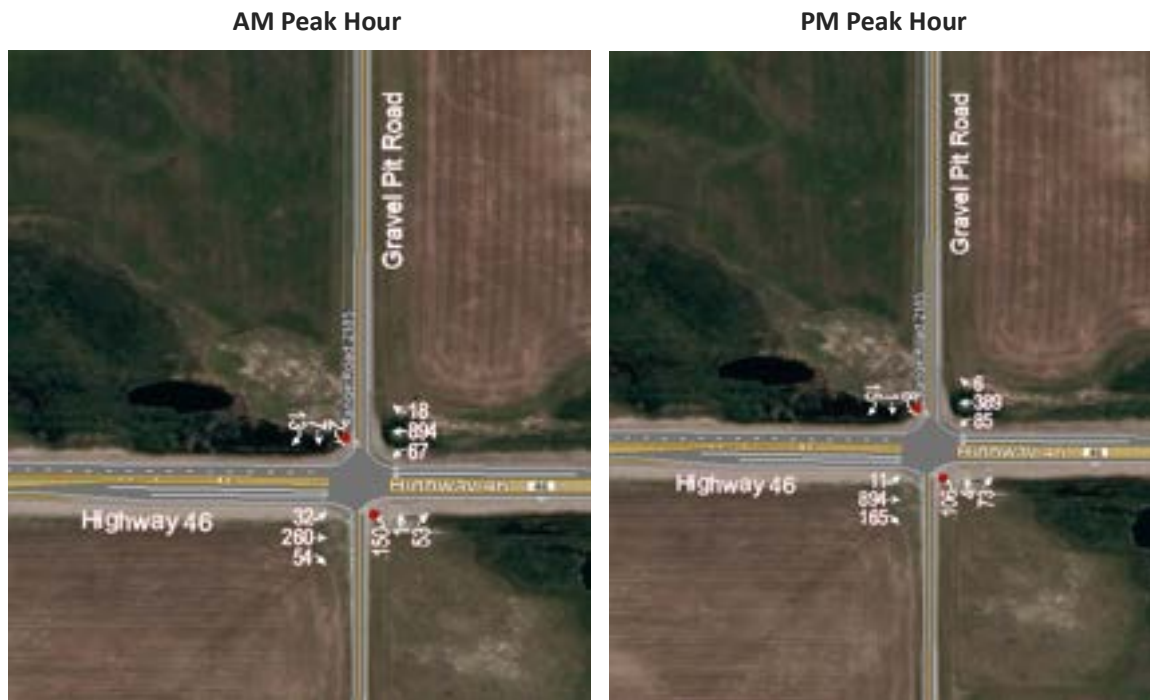


**FIGURE A-2: BAMBOON NATION'S PASS-BY TRIPS**

The 2038 background traffic volumes were estimated based on the 2023 existing traffic volumes, the anticipated residential and commercial development traffic provided by WSP, and the Ministry's 15-year growth factor for Highway 46 (1.60). The development traffic was assumed to be included within the 15-year growth rate as to

avoid over projecting traffic on this corridor. This means there will be fewer through vehicles when compared to the previous forecast as they will be turning to go south instead.

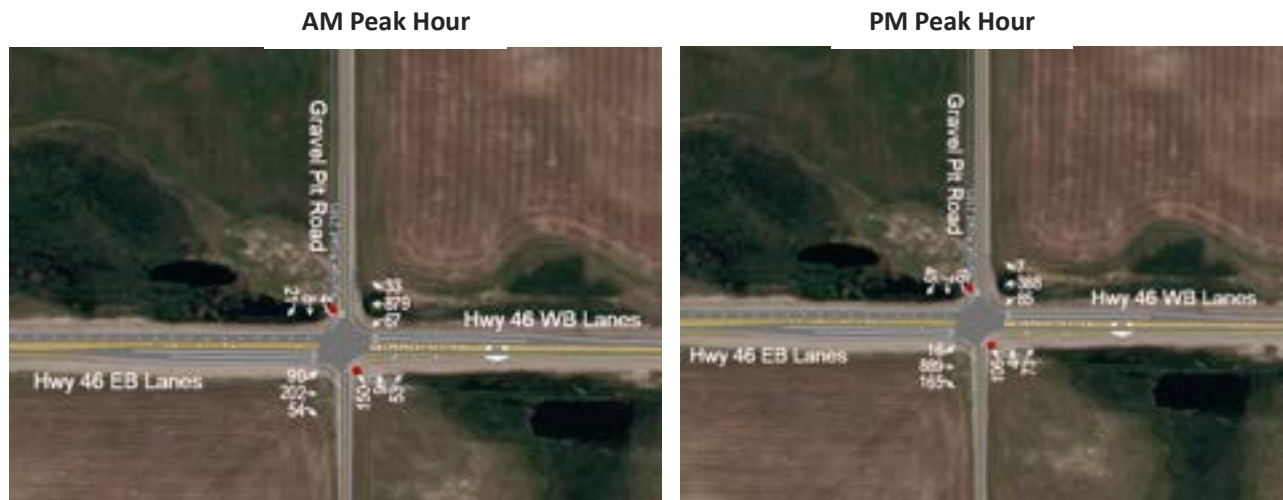
The 2038 estimated peak hour background traffic volumes, with the Bamboo Nations development, are illustrated in **Figure A-3**.



**FIGURE A-3: 2038 BACKGROUND PEAK HOUR TRAFFIC VOLUMES  
(WITH BAMBOO NATION'S TRAFFIC)**

## POST DEVELOPMENT TRAFFIC

The site-generated trips from **Figure 5** were added to the 2038 background traffic forecast to obtain the 2038 total peak hour traffic forecast, illustrated in **Figure A-4**. Again, the development traffic was assumed to be included within the 15-year growth rate to avoid over projecting traffic on this corridor. This means there will be fewer through vehicles when compared to the previous forecast as they will be turning instead.



**FIGURE A-4: 2038 TOTAL PEAK HOUR TRAFFIC FORECAST (WITH BAMBOO NATION'S TRAFFIC)**

## TRAFFIC OPERATIONS

### Background Traffic

The background capacity analysis evaluates the traffic conditions in the area that would occur if just the proposed Bamboo Nations Mixed-Use Development proceeded. The study intersection was analyzed using the existing roadway geometry, traffic control, and the 2038 peak hour background traffic volumes. The results of the 2038 background traffic conditions operations analysis are summarized in **Table A-1**.

The capacity analysis results show that the northbound and southbound approaches will operate poorly with significant delays with the existing intersection geometry, and intersection modifications will be needed to address the traffic operations.

**TABLE A-1: HIGHWAY 46 & GRAVEL PIT ROAD 2038 BACKGROUND  
INTERSECTION OPERATIONS WITH BAMOO NATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |     |     | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|-----|-----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T   | R   | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | A   | --  | F          |   |   | D          |   |   |
|              | Delay (s)   | 11        | -- | -- | 8         | 1   | --  | 125        |   |   | 34         |   |   |
|              | V/C ratio   | 0.06      | -- | -- | 0.06      | --  | --  | 1.06       |   |   | 0.16       |   |   |
|              | Queue (m)   | 16        | -- | 1  | 22        | 4   | 4   | 989        |   |   | 37         |   |   |
|              | Overall LOS | C (18 s)  |    |    |           |     |     |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | B         | A   | --  | F          |   |   | F          |   |   |
|              | Delay (s)   | 9         | -- | -- | 12        | 1   | --  | 285        |   |   | 52         |   |   |
|              | V/C ratio   | 0.01      | -- | -- | 0.14      | --  | --  | 1.42       |   |   | 0.25       |   |   |
|              | Queue (m)   | 9         | -- | 3  | 103       | 100 | 100 | 1051       |   |   | 105        |   |   |
|              | Overall LOS | D (33 s)  |    |    |           |     |     |            |   |   |            |   |   |

#### Total Traffic

The total traffic capacity analysis evaluates the traffic conditions in the area if both the New Horizon Business Park and the Bamboo Nations Mixed-Use Development proceeded. The capacity analysis results are presented in Table A-2.

The capacity analysis results show that the northbound and southbound approaches will operate poorly with the existing intersection geometry and intersection modifications will be needed to address the traffic operations.

**TABLE A-2: HIGHWAY 46 & GRAVEL PIT ROAD 2038 TOTAL  
INTERSECTION OPERATIONS WITH BAMOO NATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | A  | -- | F          |   |   | E          |   |   |
|              | Delay (s)   | 11        | -- | -- | 8         | 1  | -- | 210        |   |   | 36         |   |   |
|              | V/C ratio   | 0.15      | -- | -- | 0.06      | -- | -- | 1.27       |   |   | 0.24       |   |   |
|              | Queue (m)   | 15        | -- | 0  | 7         | 1  | 1  | 616        |   |   | 26         |   |   |
|              | Overall LOS | D (29 s)  |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | B         | A  | -- | F          |   |   | F          |   |   |
|              | Delay (s)   | 9         | -- | -- | 12        | 1  | -- | 354        |   |   | 68         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | 0.14      | -- | -- | 1.57       |   |   | 0.58       |   |   |
|              | Queue (m)   | 11        | -- | 3  | 89        | 83 | 83 | 1044       |   |   | 430        |   |   |
|              | Overall LOS | E (39 s)  |    |    |           |    |    |            |   |   |            |   |   |

## Network Mitigation

The total traffic volumes were assessed within Option 1 – single lane roundabout and are presented in **Table A-3**.

**TABLE A-3: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 1 – SINGLE-LANE ROUNDABOUT**

| Peak Hour    | Measure     | Eastbound |   |   | Westbound |   |   | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|---|---|-----------|---|---|------------|---|---|------------|---|---|
|              |             | L         | T | R | L         | T | R | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | A         |   |   | A         |   |   | A          |   |   | B          |   |   |
|              | Delay (s)   | 5         |   |   | 10        |   |   | 9          |   |   | 17         |   |   |
|              | V/C ratio   | 0.28      |   |   | 0.85      |   |   | 0.19       |   |   | 0.13       |   |   |
|              | Queue (m)   | 15        |   |   | 117       |   |   | 8          |   |   | 8          |   |   |
|              | Overall LOS | A (8 s)   |   |   |           |   |   |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         |   |   | A         |   |   | B          |   |   | A          |   |   |
|              | Delay (s)   | 4         |   |   | 5         |   |   | 14         |   |   | 8          |   |   |
|              | V/C ratio   | 0.77      |   |   | 0.39      |   |   | 0.33       |   |   | 0.08       |   |   |
|              | Queue (m)   | 73        |   |   | 24        |   |   | 18         |   |   | 4          |   |   |
|              | Overall LOS | A (5 s)   |   |   |           |   |   |            |   |   |            |   |   |

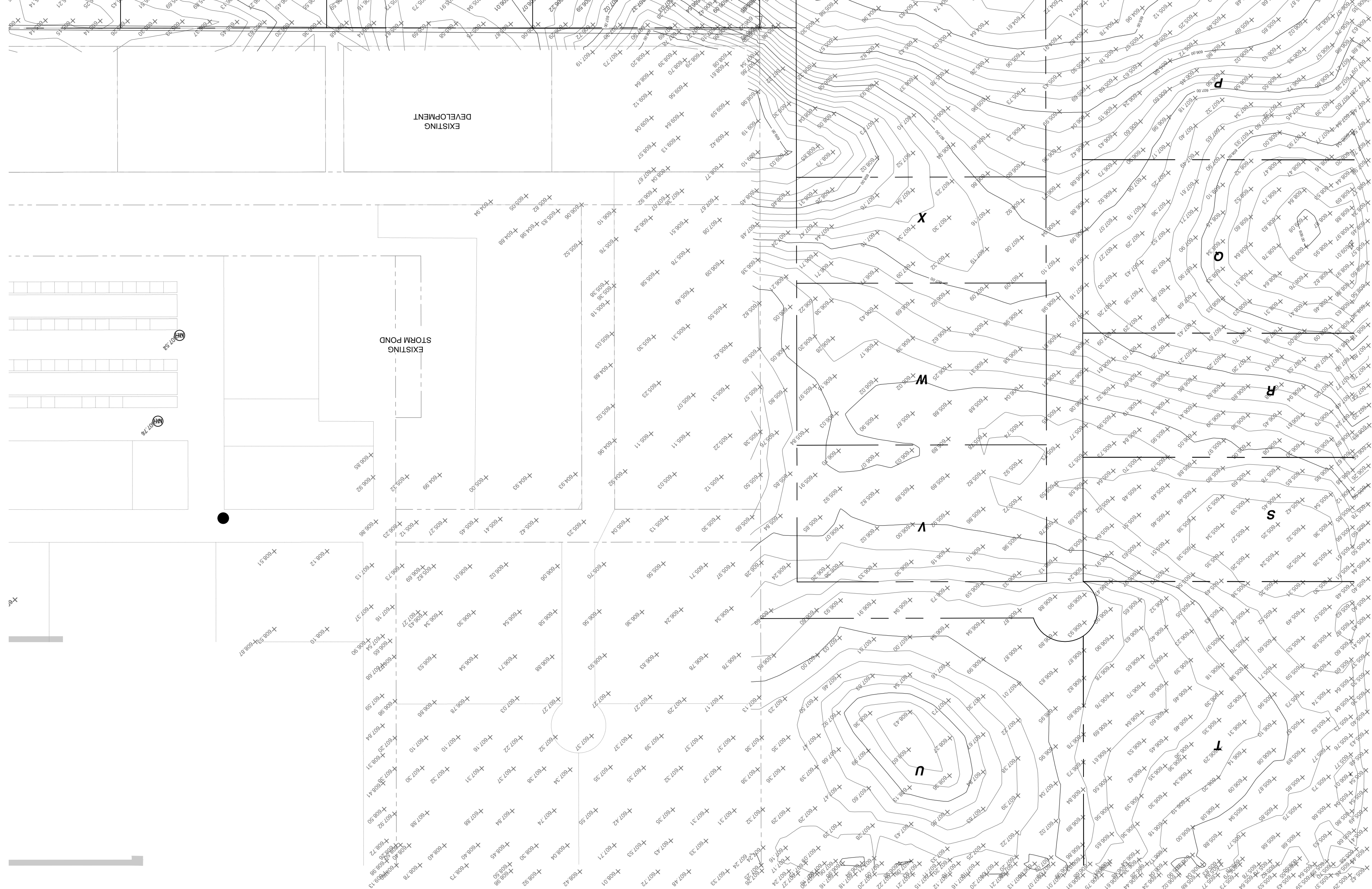
The total traffic volumes were assessed within Option 2 – Highway 46 Divided Median and are presented in **Table A-4**. This option also included a westbound median acceleration lane to accommodate the northbound left-turn traffic volumes.

**TABLE A-4: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 2 - HIGHWAY 46 DIVIDED MEDIAN**

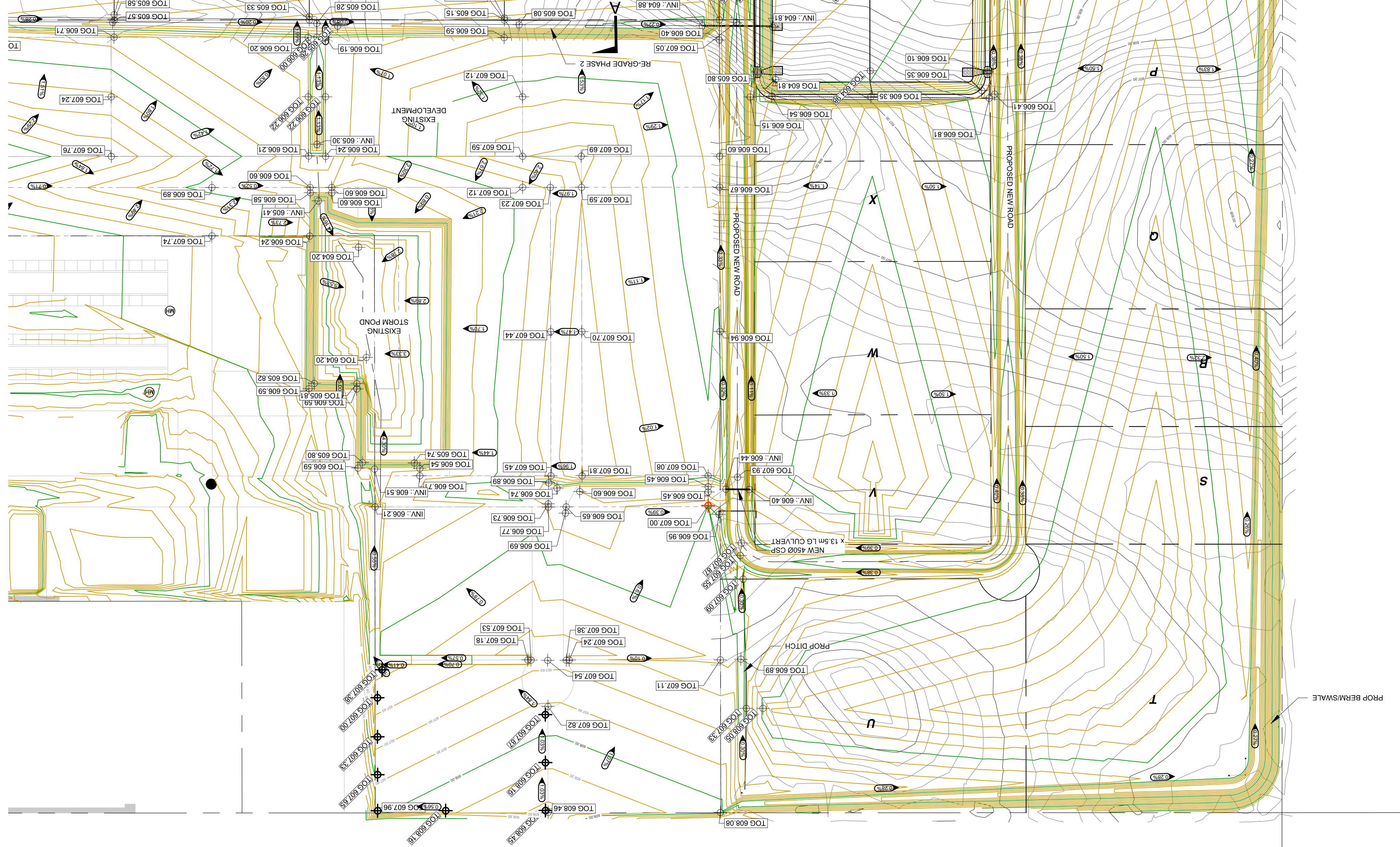
| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |     | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|-----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R   | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | D         | A  | A  | A         | A  | A   | D          |   |   | E          |   |   |
|              | Delay (s)   | 32        | 0  | 0  | 7         | 5  | 2   | 31         |   |   | 43         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | --  | 0.25       |   |   | 0.08       |   |   |
|              | Queue (m)   | 10        | 1  | 1  | 4         | 5  | 1.5 | 21         |   |   | 22         |   |   |
|              | Overall LOS | C (16 s)  |    |    |           |    |     |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | B         | A  | A   | C          |   |   | C          |   |   |
|              | Delay (s)   | 8         | 2  | 2  | 11        | 4  | 1   | 20         |   |   | 23         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | --  | 0.41       |   |   | 0.09       |   |   |
|              | Queue (m)   | 1         | 2  | 2  | 2         | 4  | 1   | 17         |   |   | 13         |   |   |
|              | Overall LOS | A (8 s)   |    |    |           |    |     |            |   |   |            |   |   |

Option 1 – single lane roundabout provides better traffic operations than the Highway 46 divided median option. The single-lane roundabout can also be staged to a two-lane roundabout depending on the time of widening Highway 46.

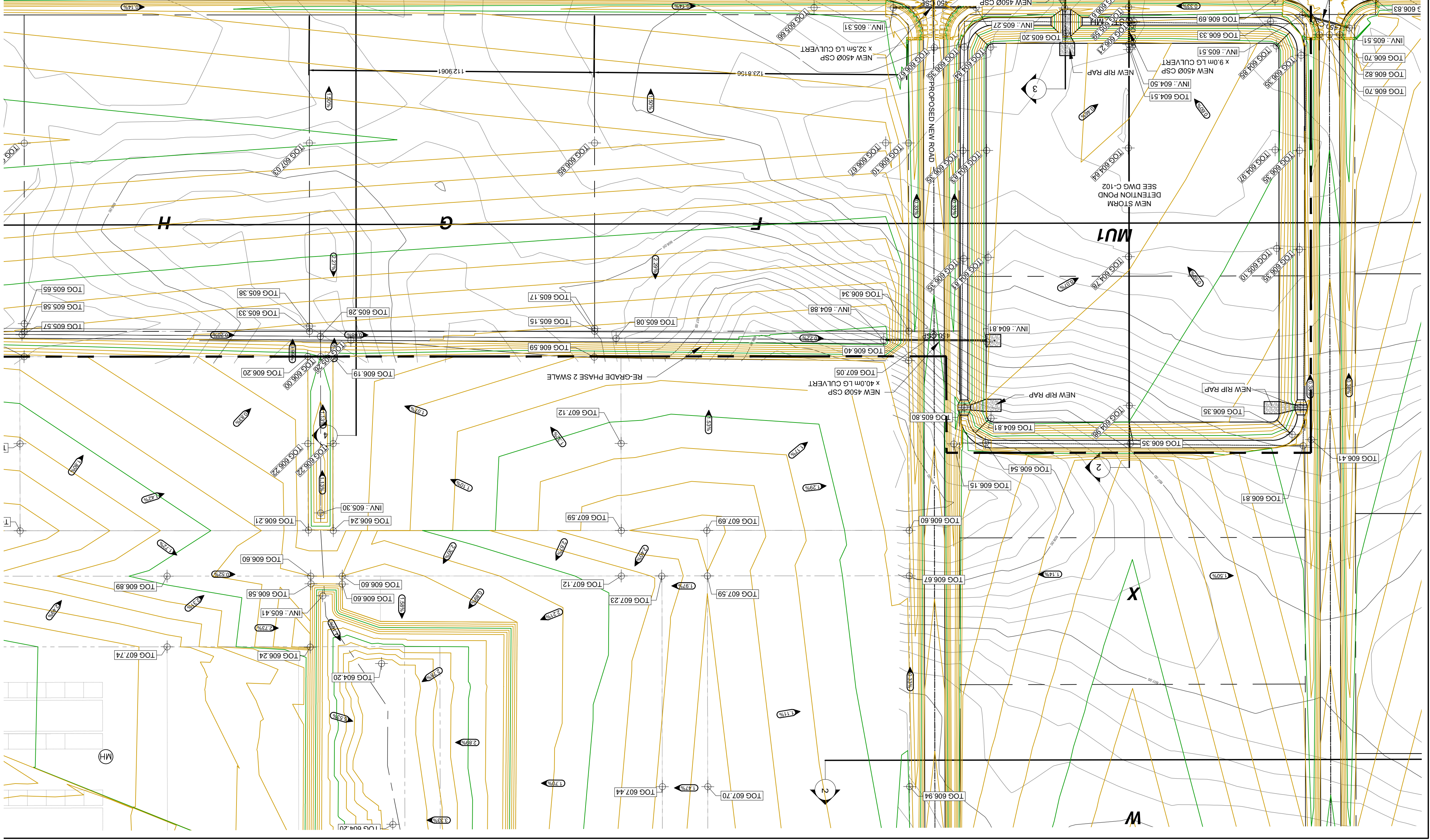




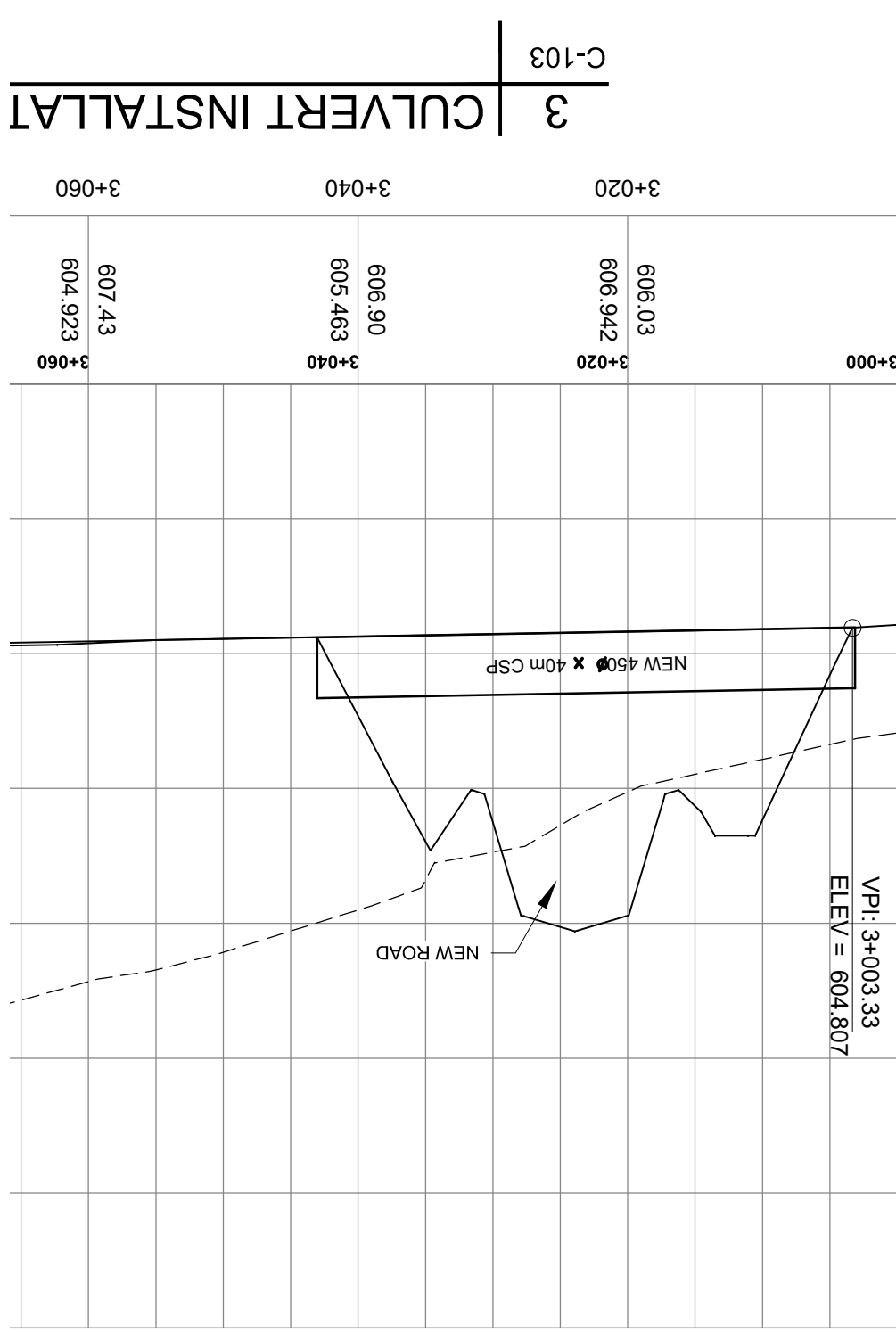
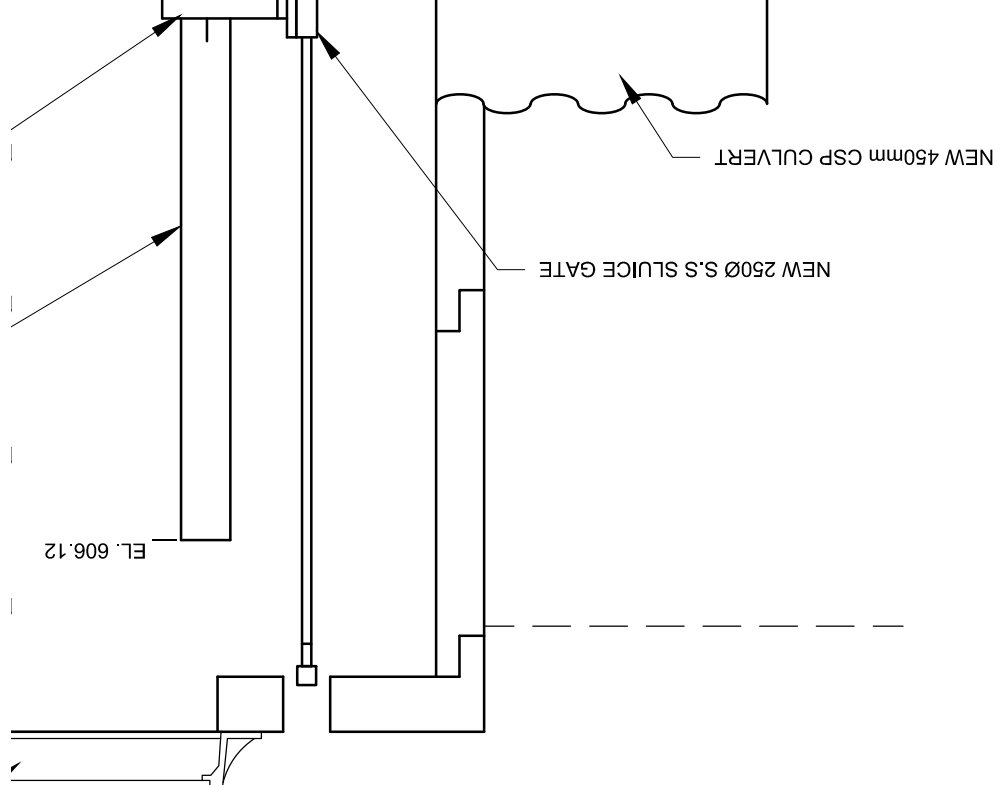
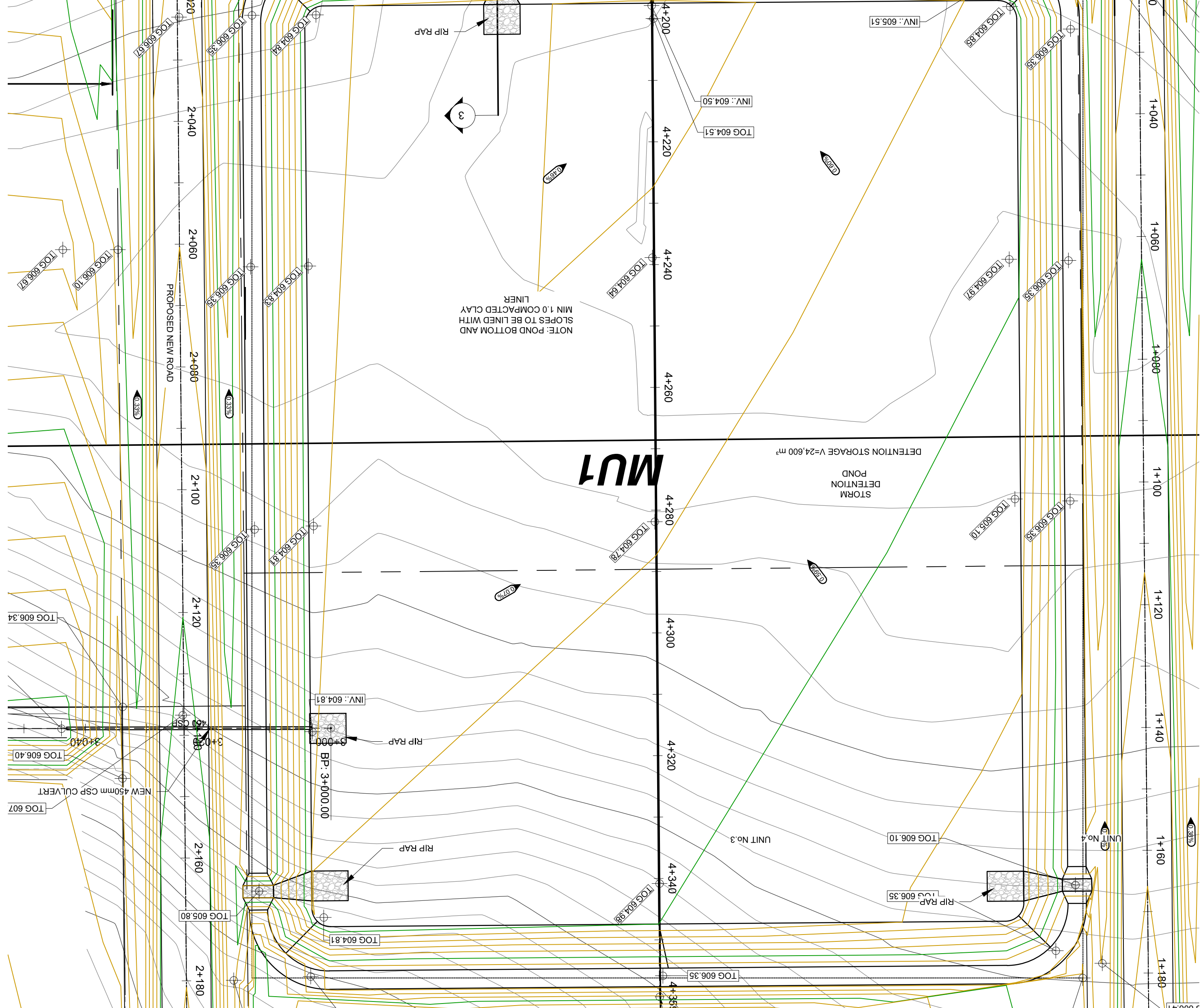




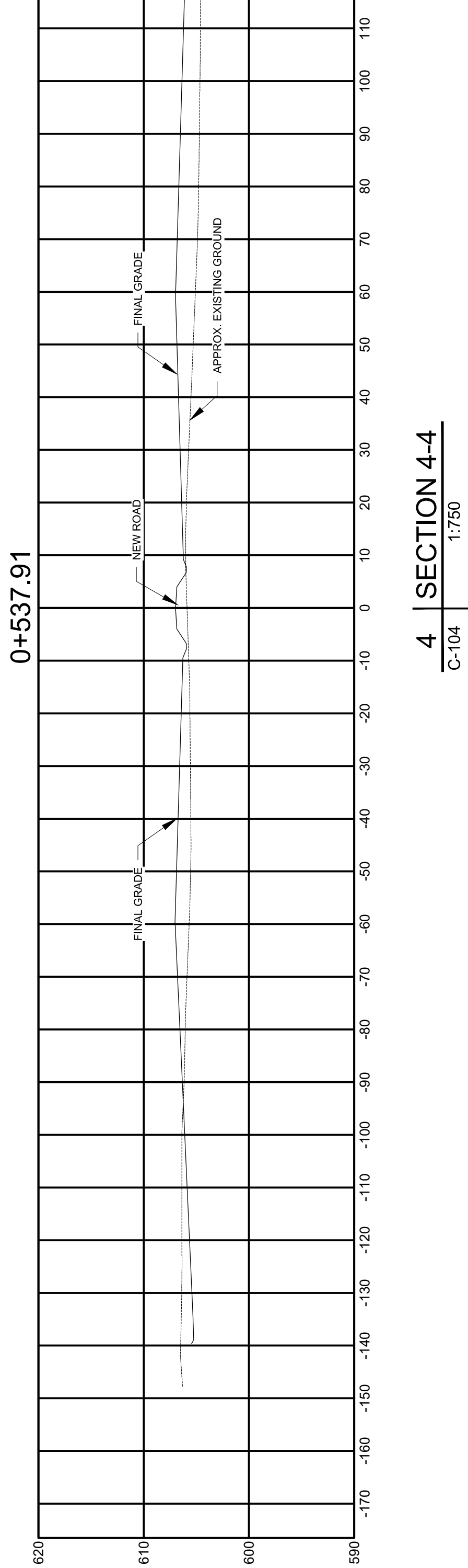
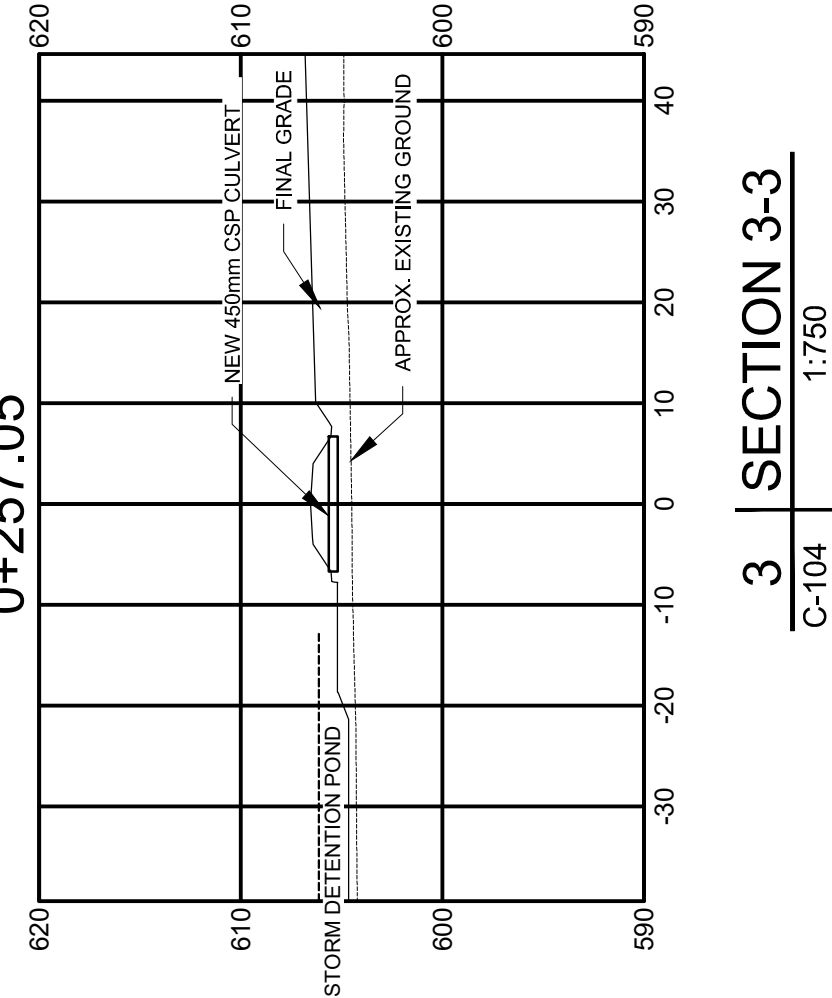
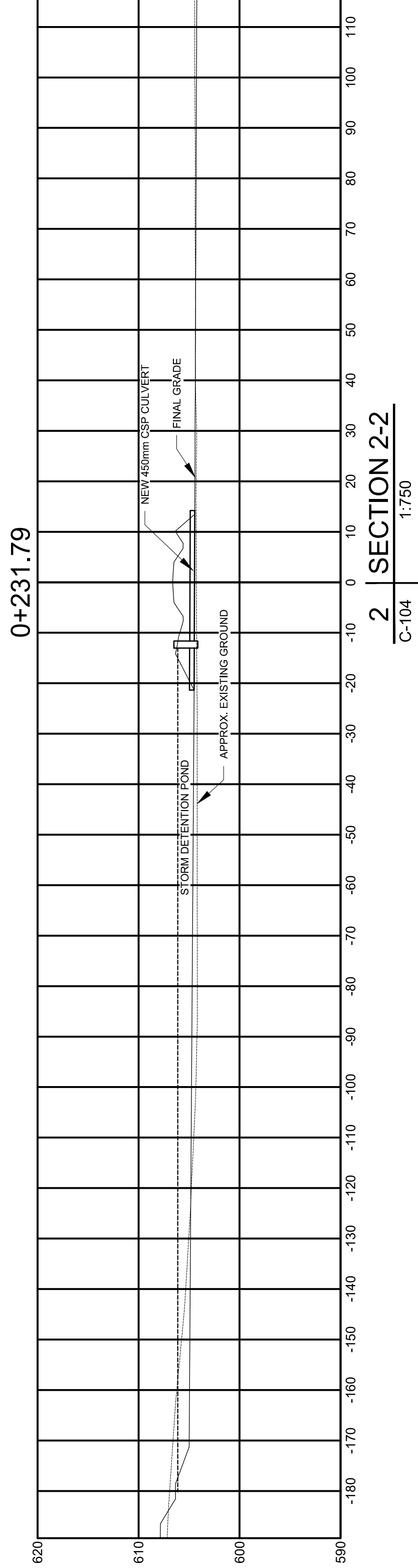
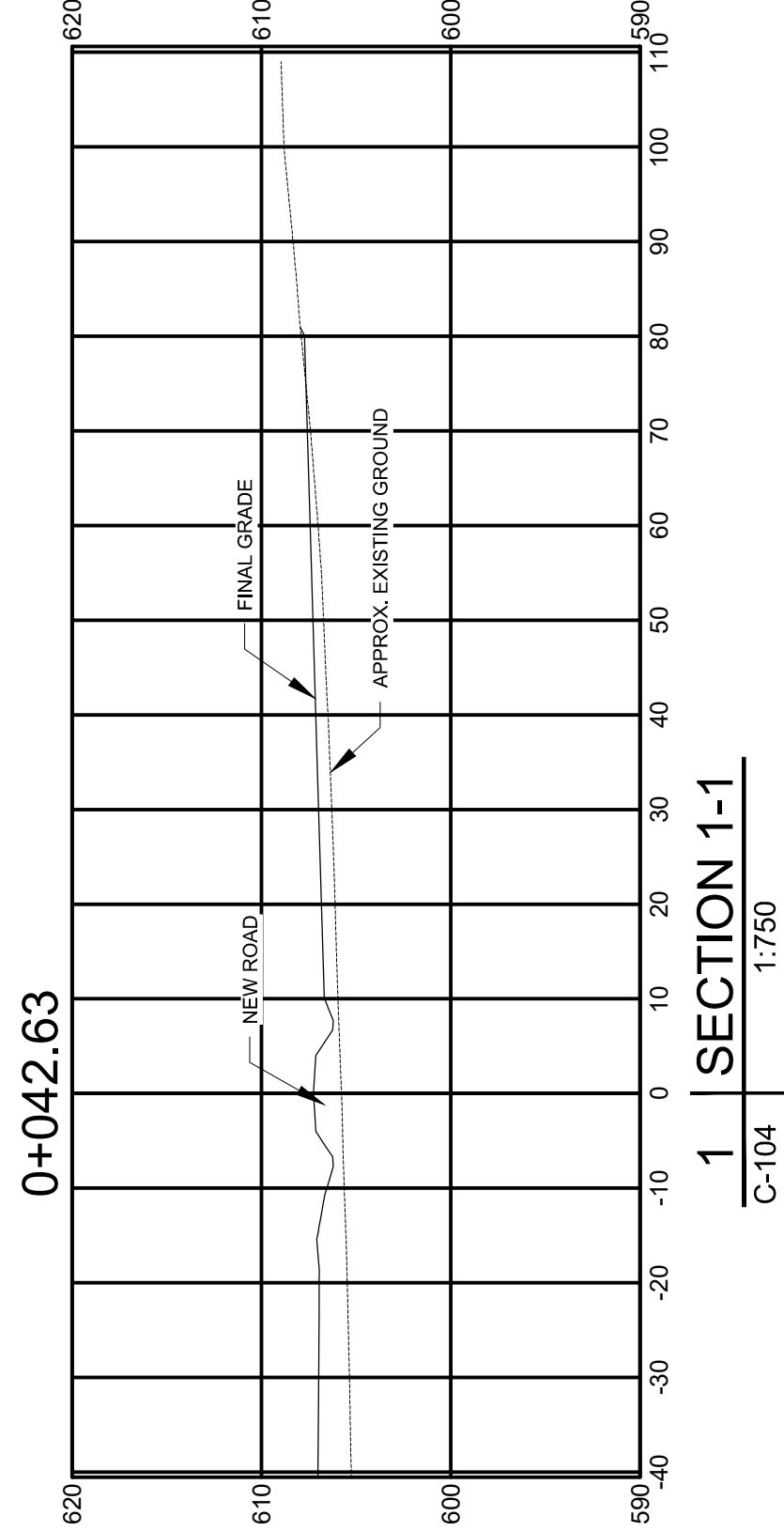








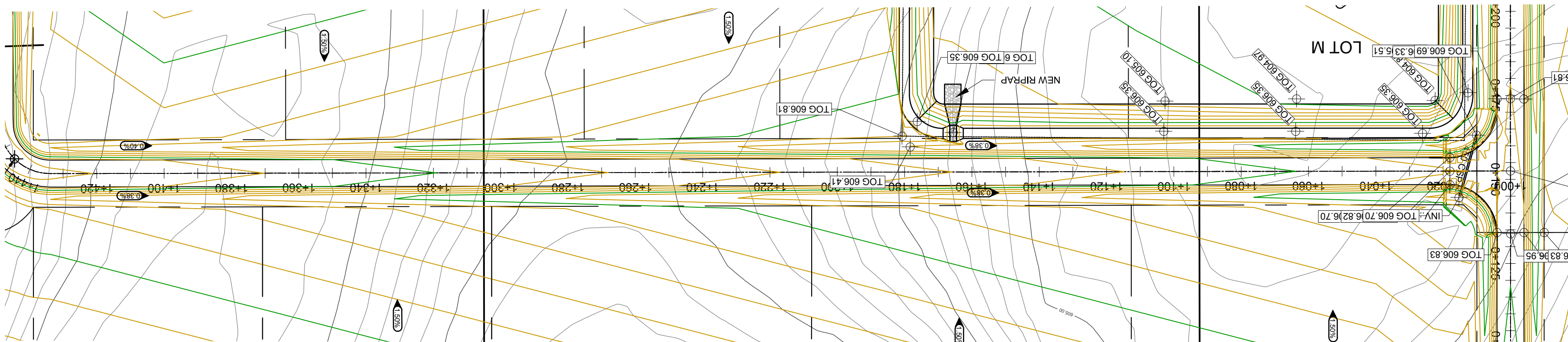
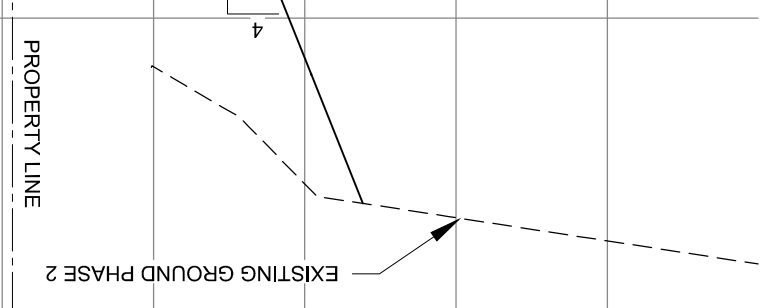
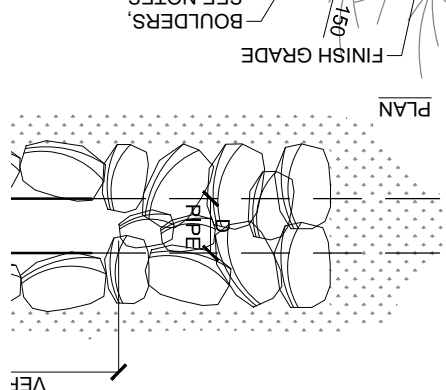
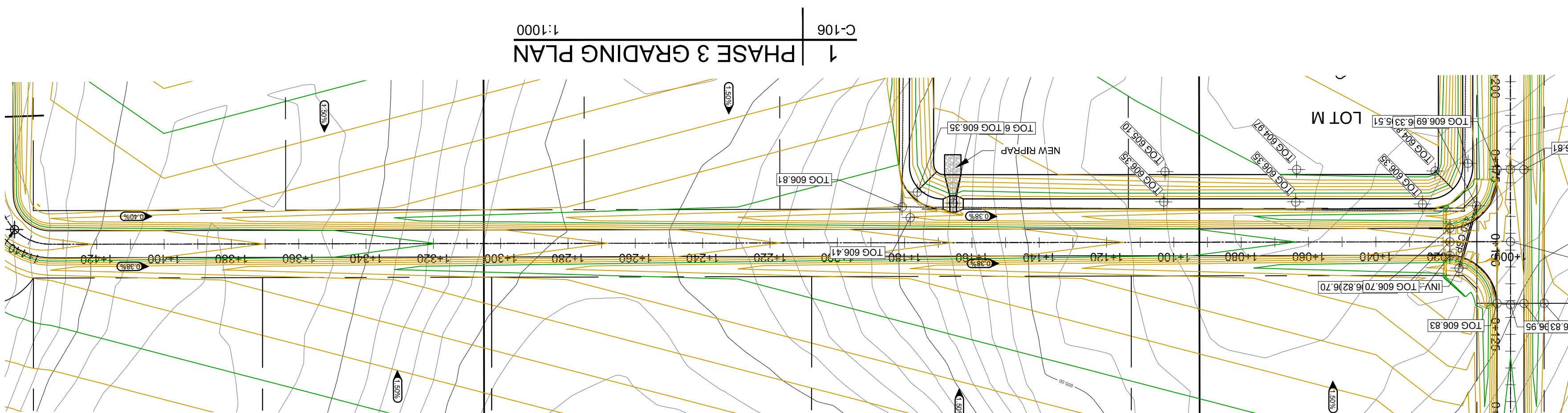
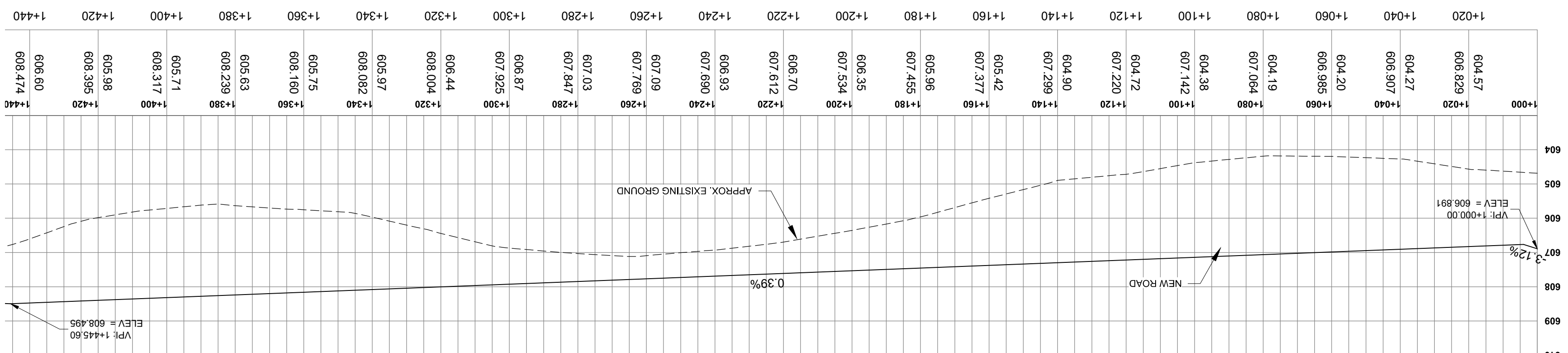
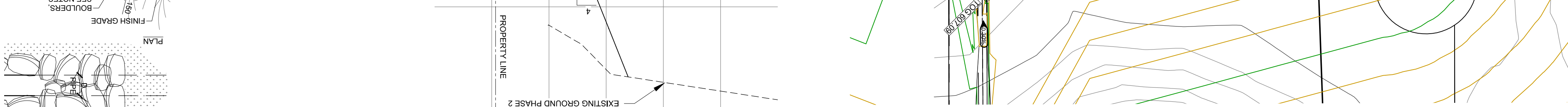




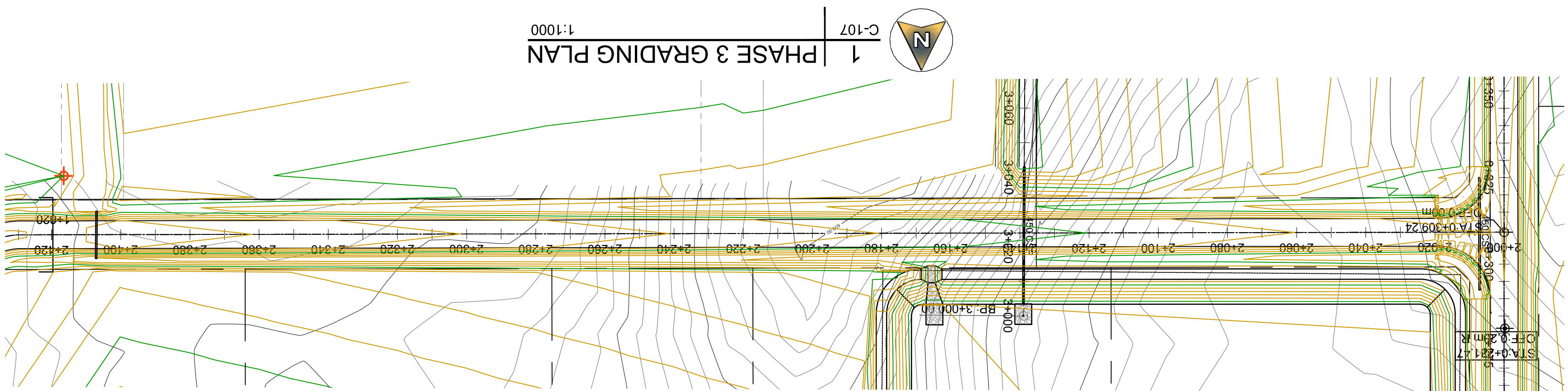












**APPENDIX I – EMAIL FROM RM OF EDENWOLD RE: DRAINAGE APPROVAL**

**From:** Paige Boha <[paige.boha@edenwold-sk.ca](mailto:paige.boha@edenwold-sk.ca)>

**Sent:** Thursday, March 28, 2024 1:52:54 PM

**To:** Project Management <[81@nhgoc.com](mailto:81@nhgoc.com)>

**Subject:** RE: WSA comments for the CDP

Hi Clint,

Thank you for your email and voicemails.

Yes, you can submit the CDP without the WSA comments, and the RM will review it. Most likely the RM will refer the CDP to WSA for comments during our review process.

Have a great long weekend!

**Best Regards,**

Paige Boha, RPP, MCIP, B.A.



**Manager of Planning and Development**

RM of Edenwold No. 158

100 Hutchence Road

Emerald Park, SK S4L 1C6

Office: 306-347-2967

Fax: 306-347-2970

[paige.boha@edenwold-sk.ca](mailto:paige.boha@edenwold-sk.ca)

**Community Proud**



## APPENDIX J – AQUIFER PROTECTION PLAN

# **GROUND ENGINEERING CONSULTANTS LTD.**

---

## **CIVIL & GEOENVIRONMENTAL ENGINEERS**

415 – 7<sup>TH</sup> AVENUE • REGINA • SASKATCHEWAN • S4N 4P1  
Tel: (306) 569-9075 Fax: (306) 565-3677 Email: admin@groundeng.ca

FILE: GE-14105

July 29, 2025

New Horizon Park Corp.  
Box 558  
PILOT BUTTE, Saskatchewan  
S0G 3Z0

### **ATTENTION: MR. ALLEN KILBACK**

Dear Sir:

**SUBJECT: AQUIFER PROTECTION PLAN  
NEW HORIZON BUSINESS PARK – PHASE 4  
PORTION OF SE-6-18-18-W2  
R.M. OF EDENWOLD, SASKATCHEWAN**

---

The above captioned proposed subdivision covers an area of 18.03 ha and will be developed with an industrial subdivision. The subject property has historically been cultivated farmland/forage and has never been developed. The extent of the proposed subdivision is shown on the attached plan. Our Company conducted a geotechnical investigation at the subject property in 2018 at which time it was determined that the property is underlain by a surficial layer of highly plastic clay followed by silt and sand. The groundwater table was located at depths ranging from 3 to 5 metres below grade at the time of the investigation.

The subject property is located within the High Sensitivity Aquifer zone as identified in the R.M. of Edenwold Official Community Plan (Map 12, Appendix A). The OCP requires that an Aquifer Protection Plan be implemented to limit potential contamination of the aquifer.

The following recommendations and comments are provided to limit the potential impact the development may have on the underlying aquifer:

- .1 Imported fill material which is required to grade the property shall consist of highly plastic clay or clay till obtained from a pre-approved borrow source. Random fill from various sources shall not be permitted. Importing of the fill shall be monitored. All fill shall be placed in lifts which are compacted and graded to provide effective drainage.

---

#### **A MEMBER FIRM OF THE ASSOCIATION OF CONSULTING ENGINEERING COMPANIES - SASKATCHEWAN**

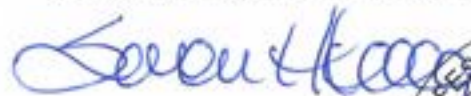
• SOIL MECHANICS AND FOUNDATION CONSULTANTS • SITE INVESTIGATIONS • FOUNDATION DESIGN • SPECIFICATIONS • CONSTRUCTION SUPERVISION • INSPECTION AND LABORATORY TESTING SERVICES • SOILS • CONCRETE • ASPHALT • PAVEMENT DESIGN AND EVALUATION • SLOPE STABILITY • REPORTS • SEEPAGE CONTROL BARRIERS FOR MUNICIPAL AND INDUSTRIAL WASTE CONTAINMENT • ENVIRONMENTAL SITE ASSESSMENTS

- .2 Trenches for site services may be backfilled with the excavated soil which is placed in lifts which are compacted. The upper 1.5 metres of trench backfill shall consist of highly plastic clay or clay till.
- .3 The transportation, storage, handling and use of Contaminants of Potential Concern (COPC) on the property shall comply with all applicable regulations. All COPC shall be stored in such a manner as to allow for visual confirmation that there have been no spills or leaks. Any spills or leaks shall be promptly addressed. Storage of COPC shall not occur over bare ground. COPC shall be stored within a secondary containment system to contain potential spills. An annual site inspection shall be conducted to evaluate the storage, handling and use of COPC.

Provided the mitigative measures outlined above are followed, the contaminant risk to the underlying aquifer will be satisfactorily managed.

We trust that this letter is satisfactory for your purposes. If you have any questions, please contact this office.

Yours very truly,  
Ground Engineering Consultants Ltd.



Steve Harty, P. Eng.

SH:vb

Attach:

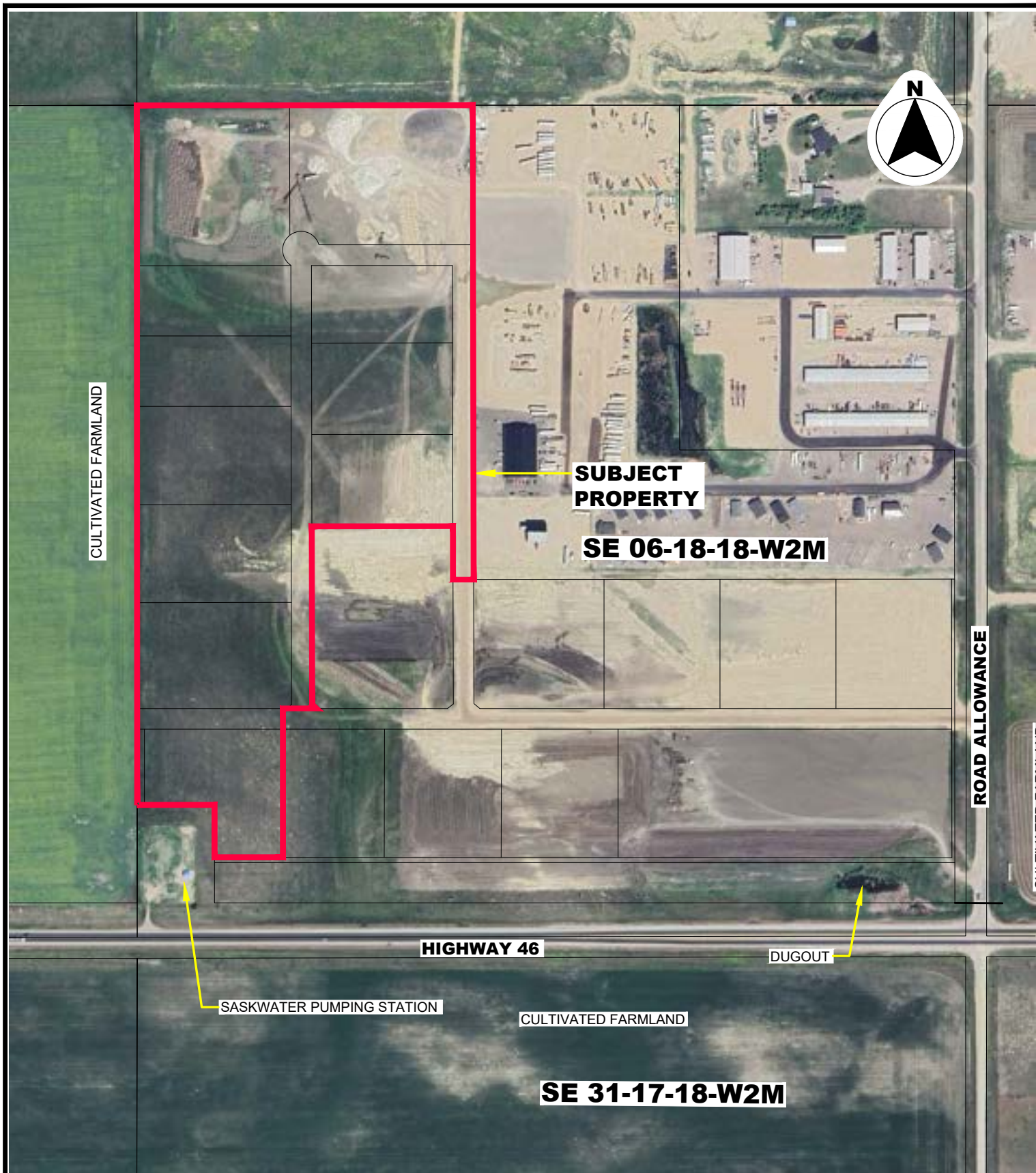
Distribution:

SH1442

New Horizon Park Corp. (1 PDF copy)

Office (1 copy)





2025 AIR PHOTO

SCALE: 1:5000

**GROUND ENGINEERING CONSULTANTS LTD.**

CIVIL & GEOENVIRONMENTAL ENGINEERS  
415-7th AVENUE  
REGINA, SASKATCHEWAN, CANADA

AQUIFER PROTECTION PLAN  
NEW HORIZON BUSINESS PARK PHASE 4  
PORTION OF SE 06-18-18-W2M  
R.M. OF EDENWOLD No. 158, SASKATCHEWAN

CLIENT:

NEW HORIZON PARK INCORPORATED

APPROVED:

S. HARTY

DATE:

JULY, 2025

DWG. No.:

GE-14105

## APPENDIX K – COMMENTS FROM THE MINISTRY OF HIGHWAYS



June 30, 2025

Our File: CS 46-01  
Your File: SUBD4978-2025

Evan Olson, Planning Consultant  
Community Planning, Ministry of Government Relations  
420 - 1855 Victoria Ave  
REGINA SK S4P 3T2

Dear Evan Olson:

**Re: RM of Edenwold No. 158  
SE 6-18-18-W2M  
Proposed Commercial/Industrial Subdivision**

The Ministry of Highways has reviewed the correspondence pertaining to the above-mentioned subdivision and recommends approval in principle of the updated plan, subject to the following conditions:

**Provincial Highway No. 46 is a controlled access highway and there are future plans to relocate and upgrade this roadway to a four-lane facility. The attached plan shows the location of the proposed future highway.**

**The ministry is currently conducting a functional planning study to establish a long-term plan for Highway 46 between Balgonie and Regina. Potential alignment options are currently being developed and analyzed. Once completed and approved, major stakeholders will be directly engaged with. The ministry will also conduct a full public engagement. The study is ongoing, but final timelines will depend on the feedback received during the stakeholder and public engagement.**

1. The Ministry is planning to construct a roundabout at the intersection of Provincial Highway No. 46 and the RM Road located east of the proposed subdivision. At this time, a construction timeline has not been identified.
2. Section 184 of The Planning and Development Act, 2007, provides that where a proposed subdivision abuts a provincial highway which is designed for future widening the design shall make provision for dedicating title for such land as required by the approving authority for highway widening.
3. Minimum setbacks measured from the property line of the new 4 lane facility of Provincial Highway No. 46 shall be 9 metres for homes and 4 meters for signs, trees, shrubs, dugouts, etc. and 4 metres for commercial developments. Any development within 90 metres of the new or existing highway right-of-ways requires a permit from our office.

4. No new access to Provincial Highway No. 46 will be allowed. Access will be from the RM Road located east of the proposed subdivision.
5. Sight lines at the intersection of Provincial Highway No. 46 and the RM Road, east of parcels, must be kept clear within the following defined sight triangles:

Measuring along the centreline of each road from their common intersection, 265 meters west along Provincial Highway No. 46 and 80 meters north along the RM Road, joining the two create the sight triangle

Please quote our file number SUBD4978-2024 on return correspondence. Please call Kelly Lima at (306) 787-4777 if you have any questions regarding the above comments.

Yours truly,

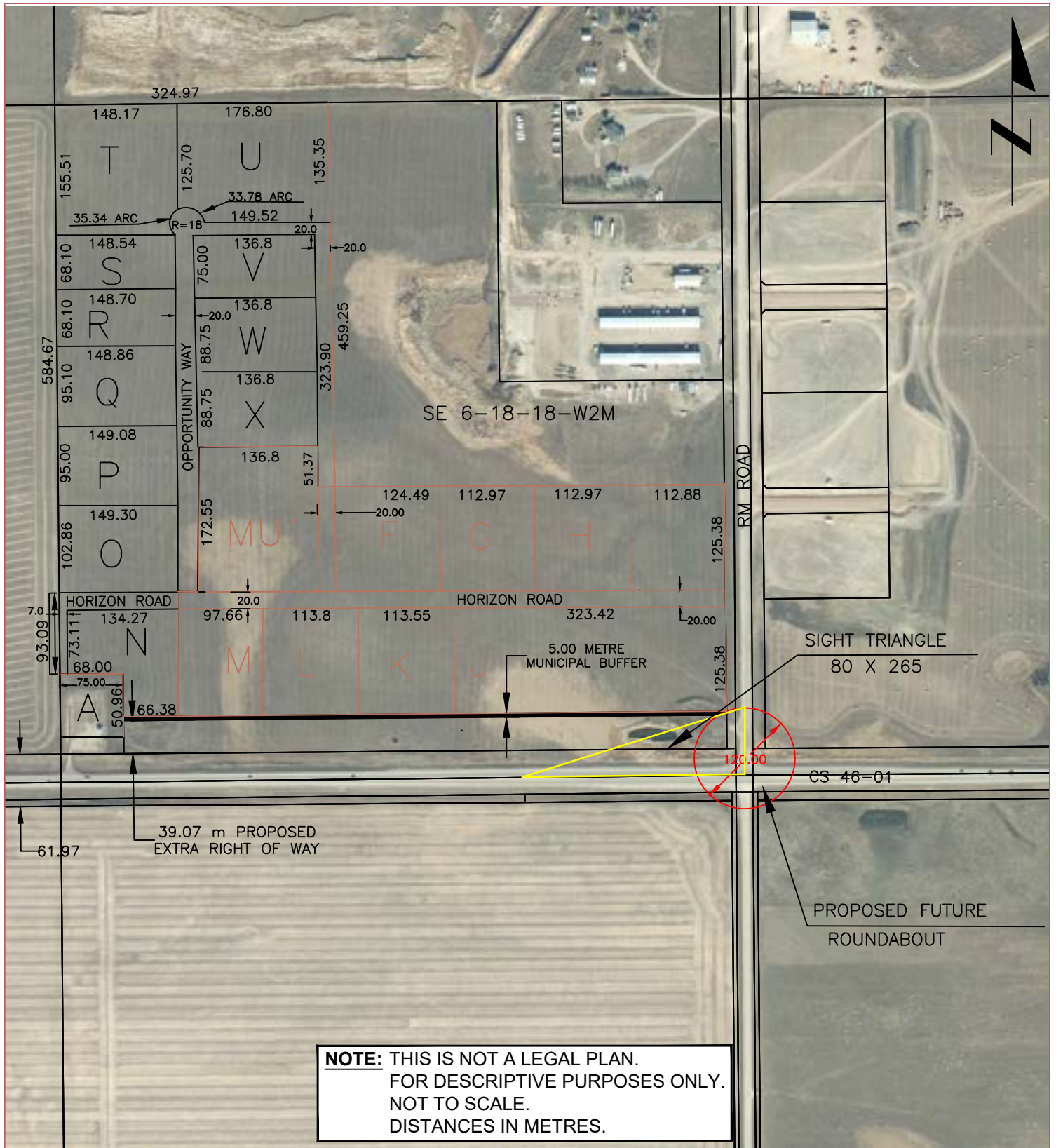


---

Douglas R. Kelly, P. Eng.

Director, Traffic Engineering & Development

Southern Operations



PROPOSED SUBDIVISION – SUBD4978–2025  
LOCATION PLAN  
HIGHWAY NO. 46  
SE 6-18-18-W2M

|             |         |      |         |          |       |        |                |
|-------------|---------|------|---------|----------|-------|--------|----------------|
| DRAWN BY    | K. LIMA | DATE | 30JUL25 | CS       | 46-01 | TAB NO | 8.5x11–LOC pdf |
| DESIGNED BY |         | DATE |         | CONTRACT |       | SHEET  | 1 OF 1         |

## APPENDIX L – TRAFFIC IMPACT ASSESSMENT

June 20, 2023

WCE Design Inc.  
RM of Edenwold

Attention: Mr. D. Weiss

**Re: New Horizon Business Park Transportation Impact Assessment - Draft**

Dear Mr. Weiss:

KGS Group is pleased to submit the following letter report which outlines the results of the New Horizon Business Park Transportation Impact Assessment. The purpose of this assessment is to evaluate the impact that traffic generated by the proposed industrial development will have on the adjacent highway network and to recommend any required mitigation measures.

## INTRODUCTION

KGS Group has been commissioned by WCE Design Inc. to complete a transportation impact assessment (TIA) for an industrial development located along Gravel Pit Road in the Rural Municipality of Edenwold. The proposed development herein referred to as the New Horizon Business Park, is located north of the Highway 46 and Gravel Pit Road intersection. The New Horizon Business Park includes approximately 11.4 ha of light industrial development. This study will identify any mitigation measures on the surrounding road network necessary to accommodate the site generated traffic.

The study intersections for this assessment include:

- Highway 46 and Gravel Pit Road intersection
- Site access intersections along Gravel Pit Road

The location of the proposed development in relation to the city of Regina and the town of Pilot Butte is illustrated in **Figure 1**.





**FIGURE 1: STUDY AREA**

In finalizing the TIA parameters, the Ministry of Highways identified a potential mixed-use development (Bamboo Nations Mixed-use Development) located south of Highway 46 that is currently undergoing a separate TIA. The impact of that proposed development at the Highway 46 and Gravel Pit Road intersection was considered in a supplemental analysis and is presented in **Appendix A**.

## EXISTING SITE CONDITIONS

### Existing Roadways

**Highway 46** is a paved two-lane undivided provincial highway with a rural cross-section and a posted speed limit of 90 km/h adjacent to the proposed site. The Highway 46 and Gravel Pit Road intersection is stop-controlled in the north and south directions and there is corridor lighting present along Highway 46. There are dedicated left-, through-, and right-turn lanes in the eastbound direction and a shared through- and left-turn lane and a shared through- and right-turn lane (flared intersection treatment) in the westbound direction. There are no auxiliary lanes in the northbound or southbound directions.

The Ministry of Highways (Ministry) recently commissioned a functional planning study for the Highway 46 corridor that was to review if twinning would be required in the future and how the corridor would facilitate a four-lane cross-section. At the time of this transportation impact assessment, the functional planning study was not complete, and the future cross-section of Highway 46 was not available.

**Gravel Pit Road** is a north-south road with a paved surface to the north and gravel surface to the south. The speed limit is posted at 60 km/h north and south of the study intersection. There is a weight restriction of 10 tonnes on the gravel road to the south. Gravel Pit Road provides access to several light industrial businesses

and two commercial aggregate pits to the north, and one residential/farm, one residential/transport business, and one concrete and masonry plant to the south.

## Existing Development

The proposed development is located near the western border of the Rural Municipality of Edenwold. The proposed site is partially developed, and the surrounding area includes undeveloped fields, agricultural lands and other light industrial businesses. A light industrial development is located along Gravel Pit Road to the east of the proposed site, and north of the proposed development site are the KF Croft Aggregate and Inland Aggregates sites, which is where Gravel Pit Road terminates to the north.

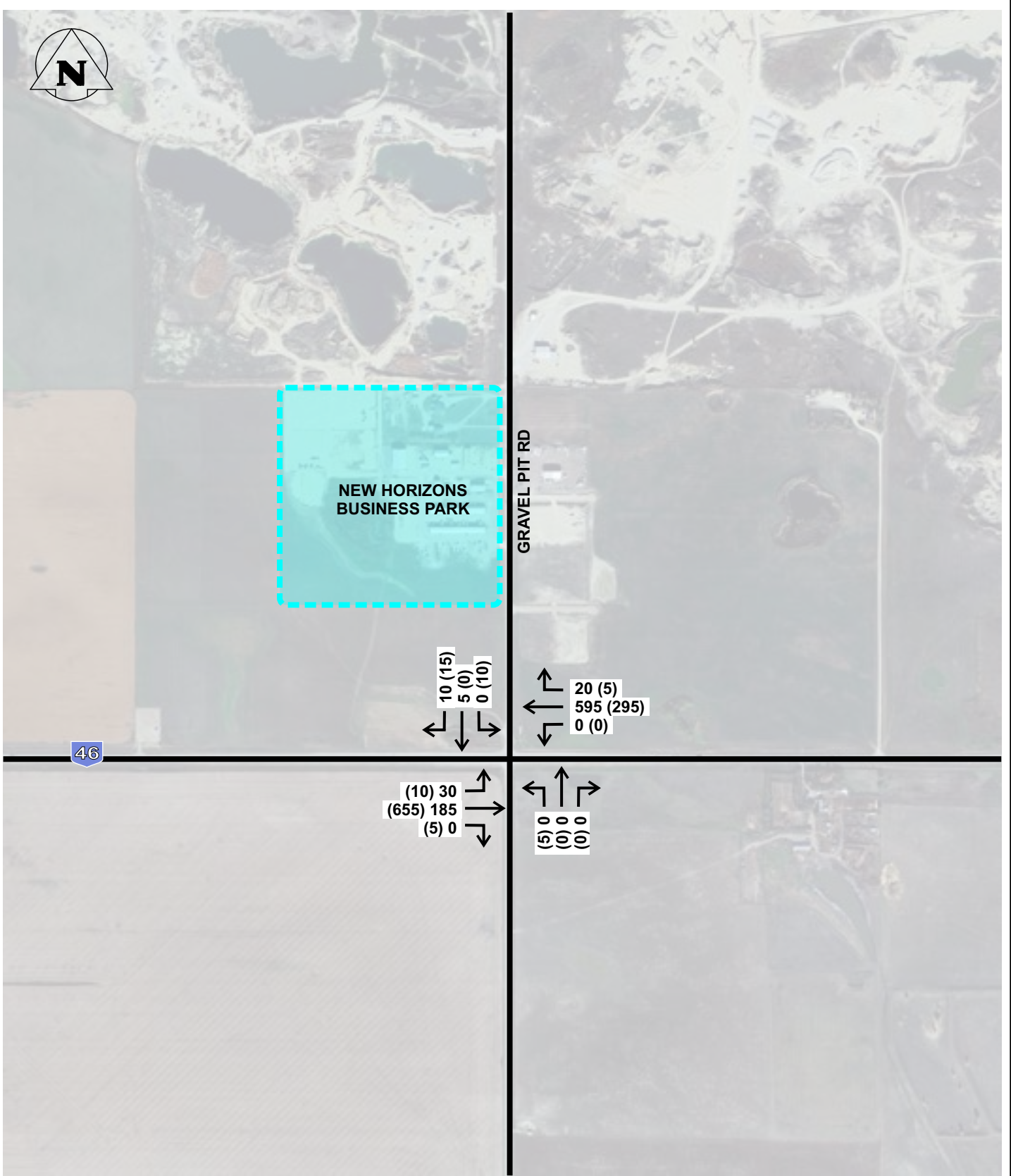
## Existing Traffic Volumes

Existing traffic volumes were collected in April 2023. Data collection avoided Good Friday and the week of April 9, 2023, as travel patterns may have been altered due to school break. The turning movement counts captured the weekday morning peak period (7:00 a.m. to 9:00 a.m.) and the afternoon peak period (4:00 p.m. to 6:00 p.m.), corresponding to typical commute hours. The traffic data was collected by turning movement and classified into cars, trucks, and buses.

**Figure 3** summarizes the total vehicular turning movements (rounded to the nearest five vehicles) recorded at the study intersections during both the morning and afternoon peak hours. The weekday morning peak hour was found to occur between 7:00 a.m. – 8:00 a.m. and the weekday afternoon peak hour was found to occur between 4:30 p.m. – 5:30 p.m.

The traffic volumes along Highway 46 are predominately directional in nature, with vehicles traveling westbound during the morning peak hour towards Regina, and vehicles traveling eastbound during the afternoon peak hour towards Pilot Butte. This travel pattern is consistent with people commuting for work in the morning and returning home in the evening.

The intersection capacity analysis for the existing site conditions is presented under **Traffic Analysis**. The Highway 46 and Gravel Pit Road intersection was found to be operating well overall (LOS A) during the peak hours; however, the north and south approaches are seeing some delay (LOS C) due to the higher volume of traffic on Highway 46.



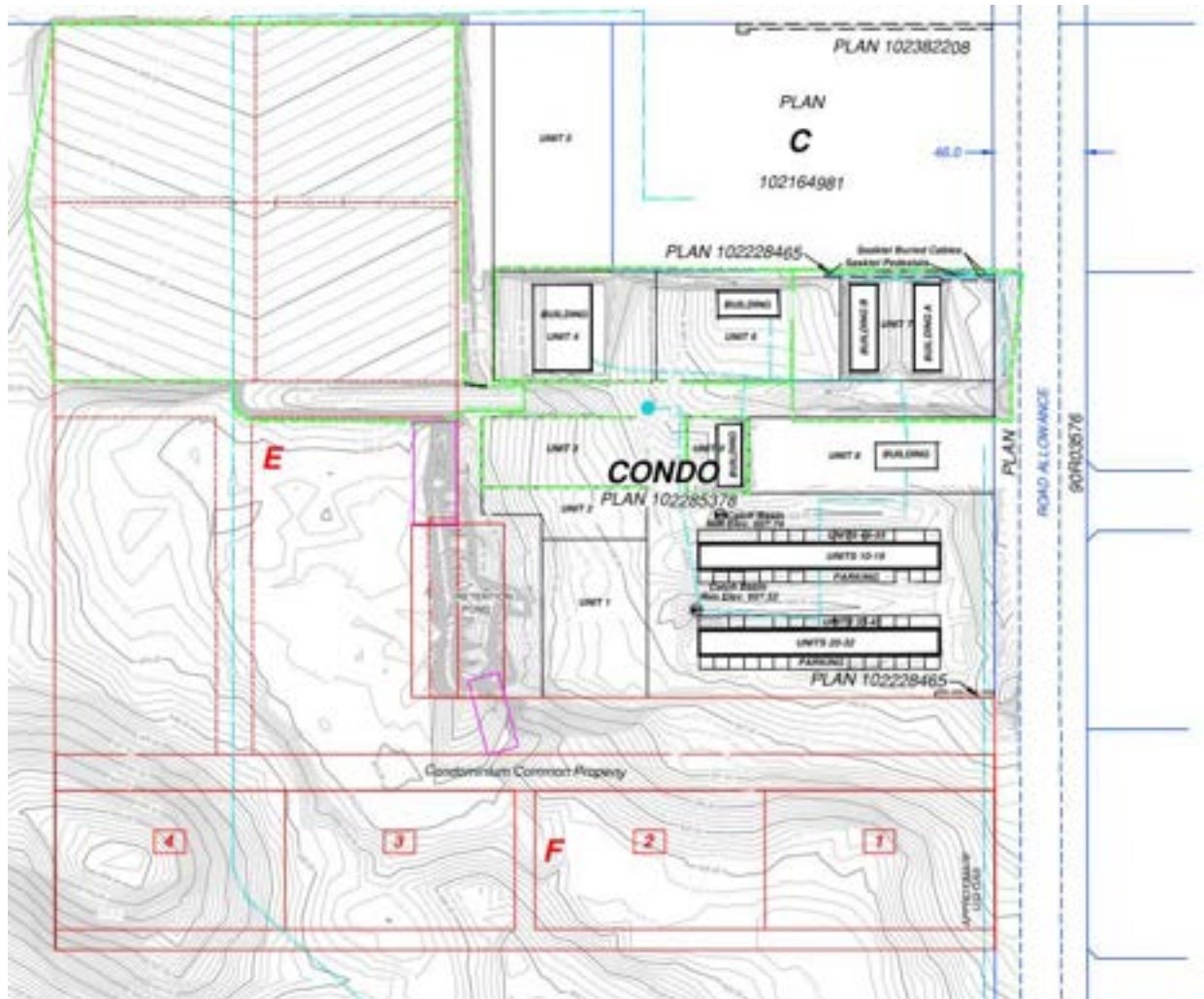
**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).

|                                                               |  |                |        |
|---------------------------------------------------------------|--|----------------|--------|
| <div><div>KGS</div><div>GROUP</div></div>                     |  | WCE DESIGN INC |        |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT |  |                |        |
| 2023 EXISTING PEAK HOUR<br>TRAFFIC VOLUMES                    |  |                |        |
| JUNE_2023                                                     |  | FIGURE 2       | REV. 0 |

## NEW HORIZON BUSINESS PARK

The proposed site plan is illustrated in **Figure 2**. The New Horizon Business Park has approximately 11.4 ha of land to be developed. The proposed development plan indicates a 30 m right-of-way for the internal circulating road, which is appropriate for the proposed development. The proposed development will have two accesses via Gravel Pit Road. Construction of the proposed industrial development is anticipated to occur in the fall of 2023 with full development estimated to be in 2038.



**FIGURE 3: SITE PLAN**



## TRAFFIC ANALYSIS

The study area was analyzed under three scenarios to identify how vehicles move through the study intersections. The scenarios analyzed include:

- Existing Traffic Volumes— How the intersections operate today.
- 2038 Background Traffic Volumes – How the intersections would operate in the future without the proposed development.
- 2038 Total Traffic Volumes – How the intersections would operate in the future with the proposed New Horizon Business Park.

**Appendix A** presents the background and total traffic volume analyses that includes the Bamboo Nations Mixed-use development.

### Analysis Assumptions

The study area was analyzed using the existing roadway geometry and traffic control to identify how traffic moves through the study intersections. Synchro 11 was used to assess the study intersections during the weekday morning and weekday afternoon peak hours, when adjacent street traffic is at its busiest.

Synchro, which is based on the methodology outlined in the Highway Capacity Manual, produces two key measures to determine the operations of an intersection. The first is level of service (LOS), which is based on the average delay per vehicle, and the second is the volume-to-capacity (v/c) ratio, which indicates the traffic volume at an intersection or for a traffic movement in relation to the capacity available. The LOS criteria for signalized and unsignalized (stop-controlled) intersections is presented in **Table 1**. A LOS A indicates good traffic flow with minimal delay and LOS F indicates congested traffic operations with considerable delay (i.e. stop and go conditions). The v/c ratio identifies the intersection's overall or individual movement's ability to accommodate fluctuations in traffic flow. In a rural environment, a system that is reaching the limits of its operational effectiveness will experience ratios greater than 80%.

SimTraffic, a traffic simulation software program included in the Synchro Studio 11 suite, was used to perform a queuing analysis. SimTraffic can be used to help predict the length of vehicle queues that will form at an intersection. The results for the SimTraffic analysis were based on an average of ten 60-minute simulation runs for all scenarios. The queuing analyses were conducted for the 95<sup>th</sup> percentile queues. The 95<sup>th</sup> percentile queue length provides the queue length that would only be exceeded five percent of the time. The 95<sup>th</sup> percentile queue represents the worst-case scenario, and they are used as an indicator to determine where further examination of storage length is required.



**TABLE 1: LEVEL OF SERVICE CRITERIA**

| Level-of-Service | Signalized Intersection | Unsignalized Intersection |
|------------------|-------------------------|---------------------------|
| <b>A</b>         | ≤ 10                    | ≤ 10                      |
| <b>B</b>         | >10 – 20                | >10 – 15                  |
| <b>C</b>         | > 20 – 35               | > 15 – 25                 |
| <b>D</b>         | > 35 – 55               | > 25 – 35                 |
| <b>E</b>         | > 55 – 80               | > 35 – 50                 |
| <b>F</b>         | > 80                    | > 50                      |

Source: Highway Capacity Manual

## 2023 Existing Traffic

The Highway 46 and Gravel Pit Road intersection was analyzed using the existing roadway geometry, traffic control, and 2023 peak hour traffic volumes. The results of the existing conditions operations analysis are summarized in **Table 5**.

The capacity analysis results show that the Highway 46 and Gravel Pit Road intersection operates generally well overall (LOS A) under the existing traffic conditions, with individual movements operating at a LOS C or better during the peak hours. Traffic on the north and south approaches are primarily delayed due to the higher volume of east- and westbound traffic on Highway 46. The analysis demonstrates that no modifications are required to accommodate the existing traffic volumes.

**TABLE 5: HIGHWAY 46 & GRAVEL PIT ROAD  
2023 INTERSECTION OPERATIONS**

| Peak Hour           | Measure            | Eastbound      |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|---------------------|--------------------|----------------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|                     |                    | L              | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| <b>AM Peak Hour</b> | <i>LOS (Delay)</i> | A (10 s)       | -- | -- | A (0 s)   | -- | -- | C (23 s)   |   |   | C (17 s)   |   |   |
|                     | <i>V/C ratio</i>   | 0.05           | -- | -- | 0.00      | -- | -- | 0.01       |   |   | 0.07       |   |   |
|                     | <i>Queue (m)</i>   | 16             | -- | -- | --        | -- | -- | 2          |   |   | 17         |   |   |
|                     | <b>Overall LOS</b> | <b>A (1 s)</b> |    |    |           |    |    |            |   |   |            |   |   |
| <b>PM Peak Hour</b> | <i>LOS (Delay)</i> | A (9 s)        | -- | -- | A (0 s)   | -- | -- | C (18 s)   |   |   | C (16 s)   |   |   |
|                     | <i>V/C ratio</i>   | 0.01           | -- | -- | 0.00      | -- | -- | 0.02       |   |   | 0.07       |   |   |
|                     | <i>Queue (m)</i>   | 9              | -- | -- | --        | -- | -- | 4          |   |   | 16         |   |   |
|                     | <b>Overall LOS</b> | <b>A (1 s)</b> |    |    |           |    |    |            |   |   |            |   |   |

## 2038 Background Traffic

Background conditions provide a point of reference to understand the relative impact of a development on the transportation network. Background conditions refer to the transportation network and how it is expected to operate, regardless of the proposed development.

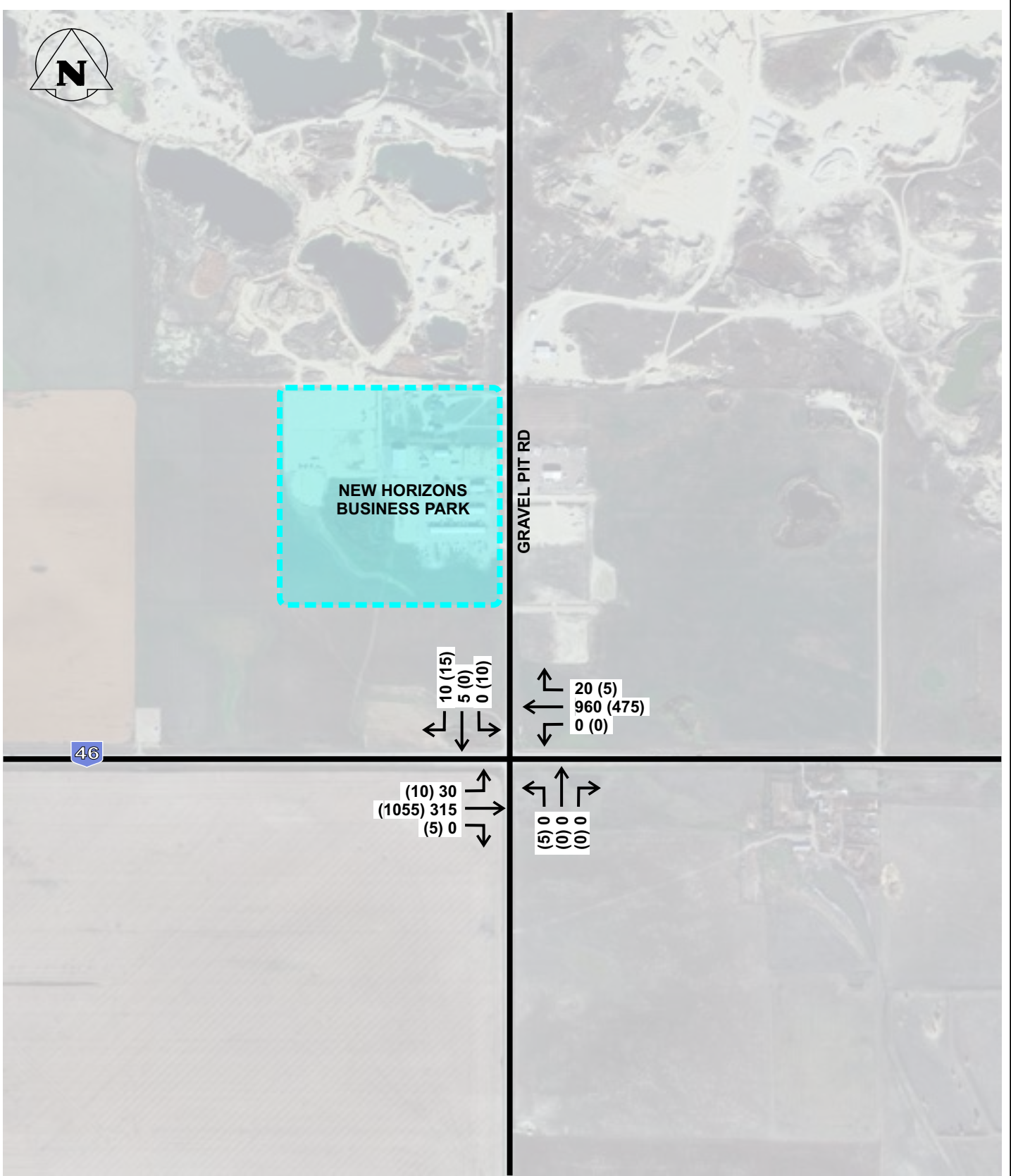
### 2038 BACKGROUND TRAFFIC FORECAST

The future background traffic volume projections were developed for the 2038 horizon, five years beyond full buildout of the development.

The Ministry's background growth rates consider open highway conditions and are largely impacted by community growth when applied to sections of highway within or adjacent to municipalities. The Ministry's 15-year growth rate is 1.60, which represents a 60% increase in traffic in the next 15 years.

The 2038 background traffic volumes were estimated by applying the 15-year growth rate of 1.60 to the 2023 eastbound and westbound through traffic volumes on Highway 46. No background growth rate was applied to the turning movements to the north or south as it is assumed that only new development would contribute to the growth of these movements.

The estimated 2038 peak hour background traffic volumes are illustrated in **Figure 4**.



**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).

|                                                                                       |  |                |        |
|---------------------------------------------------------------------------------------|--|----------------|--------|
|  |  | WCE DESIGN INC |        |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT                         |  |                |        |
| 2038 BACKGROUND PEAK HOUR<br>TRAFFIC VOLUMES                                          |  |                |        |
| JUNE_2023                                                                             |  | FIGURE 4       | REV. 0 |

## 2038 BACKGROUND TRAFFIC OPERATIONS

The background capacity analysis evaluates the traffic conditions in the area that would occur if the proposed development did not proceed. The study intersection was analyzed using the existing roadway geometry and traffic control, and the 2038 peak hour background traffic volumes. The results of the 2038 background traffic conditions operations analysis are summarized in **Table 6**.

The Highway 46 and Gravel Pit Road intersection is operating well overall (LOS A) during both peak hours. However, the capacity analysis demonstrates that the northbound and southbound approaches are expected to see increased delay in the future. The northbound approach is estimated to have an average delay per vehicle of ~36 seconds (LOS E) during the peak hours. However, this is relatively a minor amount of traffic when compared to the volume of traffic on the other approaches (i.e. <5 vehicles during the peak hours). The southbound approach is estimated to have an average delay per vehicle of ~ 25-33 seconds (LOS D) during the peak hours.

The target operating parameters for individual movements is a LOS D on a highway network, and the Highway 46 and Gravel Pit Road intersection is at the threshold where intersection improvements should be considered.

**TABLE 2: HIGHWAY 46 & GRAVEL PIT ROAD  
2038 BACKGROUND INTERSECTION OPERATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|              | Delay (s)   | 12        | -- | -- | 0         | -- | -- | 36         |   |   | 25         |   |   |
|              | V/C ratio   | 0.06      | -- | -- | --        | -- | -- | 0.01       |   |   | 0.10       |   |   |
|              | Queue (m)   | 23        | -- | -- | 1         | 1  | 0  | 2          |   |   | 20         |   |   |
|              | Overall LOS | A (1 s)   |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|              | Delay (s)   | 10        | -- | -- | 0         | -- | -- | 36         |   |   | 33         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.04       |   |   | 0.16       |   |   |
|              | Queue (m)   | 12        | -- | -- | 1         | 1  | -- | 12         |   |   | 61         |   |   |
|              | Overall LOS | A (1 s)   |    |    |           |    |    |            |   |   |            |   |   |

## Development Traffic

### TRIP GENERATION

The proposed industrial development encompasses approximately 11.4 ha of land, which is expected to be developed as light industrial. The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition, was used to estimate the trips generated by the proposed industrial development for the weekday morning and afternoon peak hours. The land use code and trip rates and in/out ratios applied to the land uses within the proposed development are listed in **Table 3**.

**TABLE 3: TRIP GENERATION RATES**

| Land Use         | ITE Code | Peak Hour | Trip Generation Equation      | Directional Distribution |         |
|------------------|----------|-----------|-------------------------------|--------------------------|---------|
|                  |          |           |                               | Entering                 | Exiting |
| Light Industrial | 110      | AM        | $T = 0.68 (X) + 3.81$         | 88%                      | 12%     |
|                  |          | PM        | $\ln(T) = 0.72 \ln(X) + 0.38$ | 14%                      | 86%     |

T = Average Vehicle Trips      X = 1,000 sq. ft. GFA

The following assumptions were made as part of the trip generation analysis:

- The floor-area ratio (FAR) is assumed at 10% of the total area to estimate the gross floor area of the light industrial. The light industrial FAR was estimated by examining the existing developments at the New Horizon Business Park (12%) as well as similar development northwest of Regina in the RM of Sherwood, the Sherwood Industrial Park (7.8%), and the previously approved Chuka Creek Business Park (8%). It was assumed that the light industrial land use gross floor area would cover 10% of the total net land area allocated to light industrial.

**Table 2** presents the total number of site generated trips and the directional allocation (entering or exiting) for the proposed industrial development for each peak hour.

**TABLE 4: SITE-GENERATED TRIPS**

| Land Use         | AM Peak Hour |           |             | PM Peak Hour |           |             |
|------------------|--------------|-----------|-------------|--------------|-----------|-------------|
|                  | Trip In      | Trips Out | Total Trips | Trip In      | Trips Out | Total Trips |
| Light Industrial | 77           | 11        | 88          | 7            | 40        | 47          |
| <b>Total</b>     | <b>77</b>    | <b>11</b> | <b>88</b>   | <b>7</b>     | <b>40</b> | <b>47</b>   |

It is unlikely that any of the trips generated will be multi-use trips within the proposed development (i.e. vehicles stopping at one site before proceeding to work at another site within the proposed development) as it is a single-use site.



This development is also not expected to generate any pass-by trips.

The estimated number of new trips generated at full build-out, includes **88 new trips (77 trips entering and 11 trips exiting)** during the weekday morning peak hour and **47 new trips (7 trips entering and 40 trips exiting)** during the weekday afternoon peak hour. Sites that generate less than 100 vehicle trips during the peak hours, are typically accepted as a minor traffic generator and have minimal impact on the adjacent road network.

## TRIP DISTRIBUTION AND ASSIGNMENT

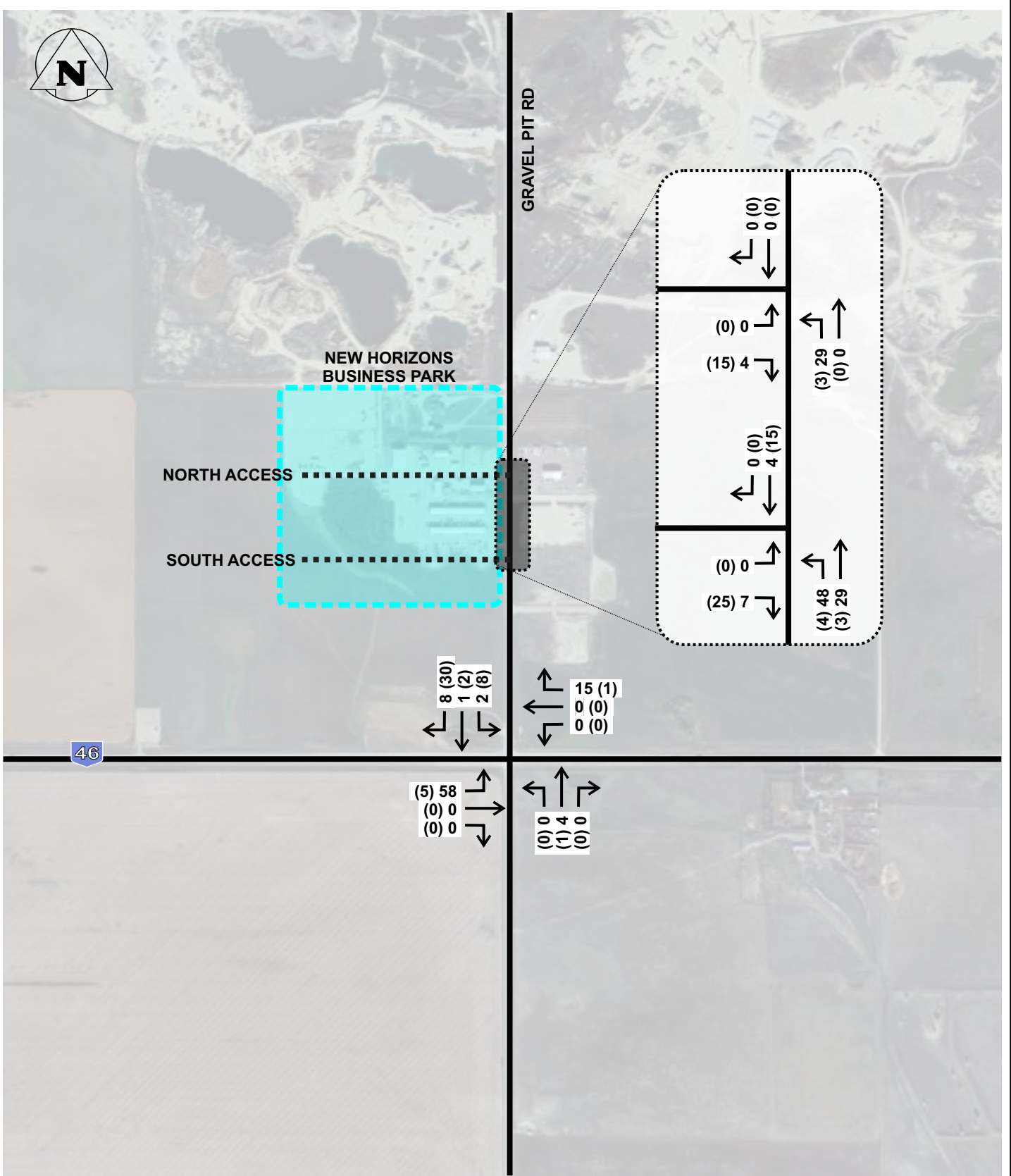
The traffic forecast was completed by distributing the site-related traffic volumes and assigning them to the road network based on an assessment of how people will access and egress the site. Trip distribution refers to the origins and destinations of the site-generated trips while trip assignment assesses the actual route that the vehicles will take between their origin and destination. The assignment process assumes that motorists will use the most efficient route.

To facilitate the trip distribution process, the surrounding area was divided into four zones with respect to the location of the proposed development. The trip distribution estimates are as follows:

- 0% will travel to / from the north
- 20% will travel to / from the east
- 5% will travel to / from the south
- 75% will travel to / from the west

The new vehicle trips were then assigned to the road network based on the distribution estimates. The vehicle assignment accounts for the routes that drivers will use to reach the site, and the access points that they will use.

The site-generated trips are illustrated in **Figure 5**.



**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) SITE GENERATED TRIPS
- ..... PROPOSED NEW ACCESS

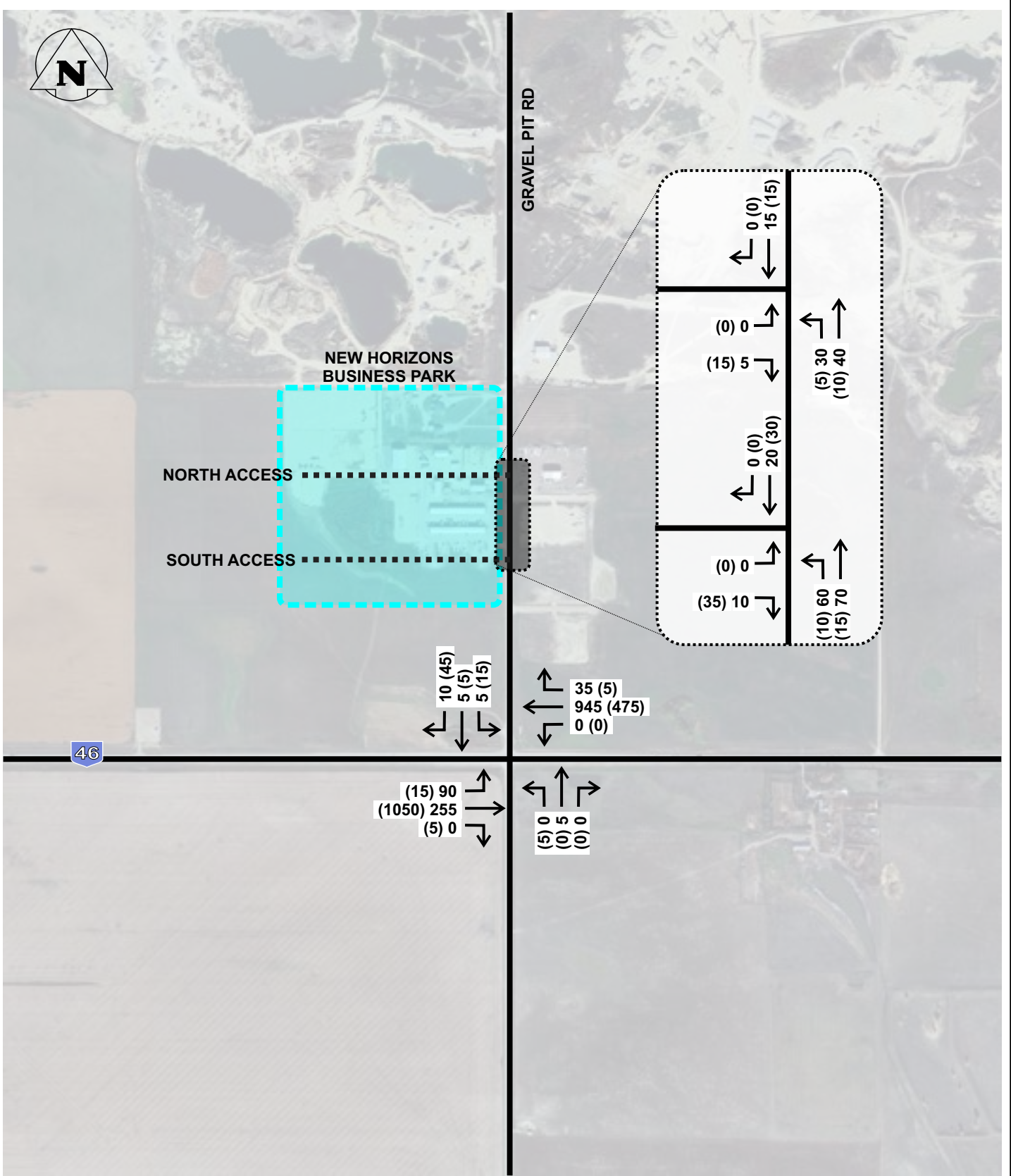
|                                                                                       |  |                |        |
|---------------------------------------------------------------------------------------|--|----------------|--------|
|  |  | WCE DESIGN INC |        |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT                         |  |                |        |
| SITE-GENERATED TRIPS                                                                  |  |                |        |
| JUNE_2023                                                                             |  | FIGURE 5       | REV. 0 |

## 2038 Total Traffic

### 2038 TOTAL TRAFFIC FORECAST

The site-generated trips were added to the projected 2038 background traffic forecast volumes to obtain the 2038 total forecast traffic volumes, illustrated in **Figure 7**. The development traffic was assumed to be included within the 15-year growth rate. This means there will be fewer through vehicles when compared to the background forecast as they will be turning to go north instead.

The traffic forecast projects approximately 1,300 vehicles on Highway 46 during the morning peak hour, of which 88 trips will be generated by the proposed New Horizon Business Park. Similarly, the traffic forecast projects approximately 1,600 vehicles on Highway 46 during the afternoon peak hour, of which 47 trips are associated with the proposed New Horizon Business Park.



**LEGEND:**

- PROJECT SITE
- XX (XX) AM PEAK HOUR (PM PEAK HOUR) TRAFFIC VOLUMES  
VOLUMES ROUNDED TO THE NEAREST FIVE (5).
- ..... PROPOSED NEW ACCESS

|                                                                                       |                |      |   |
|---------------------------------------------------------------------------------------|----------------|------|---|
|  | WCE DESIGN INC |      |   |
| NEW HORIZON BUSINESS PARK<br>TRANSPORTATION IMPACT ASSESSMENT                         |                |      |   |
| 2038 TOTAL PEAK HOUR<br>TRAFFIC VOLUMES                                               |                |      |   |
| JUNE_2023                                                                             | FIGURE 6       | REV. | 0 |

## 2038 TOTAL TRAFFIC OPERATIONS

The total capacity analysis evaluates the traffic conditions with the proposed industrial development. The Highway 46 and Gravel Pit Road intersection was modelled with existing geometry and as a two-way stop-controlled intersection and the new accesses were modeled as stop controlled intersections.

**Table 5** summarizes the traffic operations during the morning peak hour and **Table 6** summarizes the traffic operations during the afternoon peak hour. The delay on the north and south approaches are anticipated to continue to increase, operating at a LOS E/D during the peak hours. The modeling indicates a queue of 195 m on the southbound approach during the afternoon peak hour. There are few gaps in traffic on Highway 46 for vehicles to proceed through the intersection, which is resulting in the delay and queueing on the southbound approach.

Both site accesses are expected to operate well (LOS A) during the peak hours.

**TABLE 5: 2038 TOTAL MORNING PEAK HOUR TRAFFIC OPERATIONS**

| Peak Hour                       | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |    |
|---------------------------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|----|
|                                 |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R  |
| Highway 46 & Gravel Pit Road    | LOS         | B         | -- | -- | A         | -- | -- | E          |   |   | D          |   |    |
|                                 | Delay (s)   | 12        | -- | -- | 0         | -- | -- | 44         |   |   | 26         |   |    |
|                                 | V/C ratio   | 0.15      | -- | -- | --        | -- | -- | 0.06       |   |   | 0.16       |   |    |
|                                 | Queue (m)   | 44        | -- | -- | --        | -- | 1  | 4          |   |   | 44         |   |    |
|                                 | Overall LOS | A (2 s)   |    |    |           |    |    |            |   |   |            |   |    |
| Gravel Pit Road & South Access  | LOS         | A         |    |    |           |    |    | A          |   |   |            |   | -- |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   |            |   | -- |
|                                 | V/C ratio   | 0.02      |    |    |           |    |    | 0.05       |   |   |            |   | -- |
|                                 | Queue (m)   | 10        |    |    |           |    |    | 3          |   |   |            |   | -- |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |    |
| -Gravel Pit Road & North Access | LOS         | A         |    |    |           |    |    | A          |   |   |            |   | -- |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   |            |   | -- |
|                                 | V/C ratio   | 0.01      |    |    |           |    |    | 0.02       |   |   |            |   | -- |
|                                 | Queue (m)   | 6         |    |    |           |    |    | 2          |   |   |            |   | -- |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |    |



**TABLE 6: 2038 TOTAL AFTERNOON PEAK HOUR TRAFFIC OPERATIONS**

| Peak Hour                       | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|---------------------------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|                                 |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| Highway 46 & Gravel Pit Road    | LOS         | A         | -- | -- | A         | -- | -- | E          |   |   | D          |   |   |
|                                 | Delay (s)   | 9         | -- | -- | 0         | -- | -- | 38         |   |   | 32         |   |   |
|                                 | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.05       |   |   | 0.34       |   |   |
|                                 | Queue (m)   | 11        |    |    | 1         |    |    | 8          |   |   | 195        |   |   |
|                                 | Overall LOS | A (2 s)   |    |    |           |    |    |            |   |   |            |   |   |
| Gravel Pit Road & South Access  | LOS         | A         |    |    |           |    |    | A          |   |   | --         |   |   |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   | --         |   |   |
|                                 | V/C ratio   | 0.04      |    |    |           |    |    | 0.01       |   |   | --         |   |   |
|                                 | Queue (m)   | 13        |    |    |           |    |    | 0          |   |   | --         |   |   |
|                                 | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |
| -Gravel Pit Road & North Access | LOS         | A         |    |    |           |    |    | A          |   |   | --         |   |   |
|                                 | Delay (s)   | 9         |    |    |           |    |    | 7          |   |   | --         |   |   |
|                                 | V/C ratio   | 0.02      |    |    |           |    |    | 0.01       |   |   | --         |   |   |
|                                 | Queue (m)   | 10        |    |    |           |    |    | 0          |   |   | --         |   |   |
|                                 | Overall LOS | A (3 s)   |    |    |           |    |    |            |   |   |            |   |   |

## HIGHWAY WARRANT ANALYSIS

### Intersection Lighting Warrants

#### Highway 46 and Gravel Pit Road

There is corridor lighting along Highway 46 at the Highway 46 and Gravel Pit Road intersection. No delineation lighting is provided on the north or south approaches of the intersection.

The Ministry of Highways Design Manual for Partial or Area Lighting (DM 2621-1) considers delineation lighting to be warranted if one of the three warrant criteria are met:

- All provincial highway to highway intersections
- All intersections of the designated community access road with the provincial highway system
- All rural and urban public highway intersections with a provincial highway with an intersection roadway traffic volume greater than 150 AADT or 250 SADT for seasonal recreational roads.

Intersection delineation lighting was found to be warranted at the Highway 46 and Gravel Pit Road intersection with the existing 2023 traffic volumes.

It is recommended that the lighting levels are reviewed to ensure appropriate illumination is provided, and if substandard, that a delineation light is installed on the north approach.

### **Gravel Pit Road & Site Access**

Intersection illumination warrants were conducted for the Gravel Pit Road and site access intersection using the Ministry's design manual guidelines. It should be noted that the Ministry's warrants were developed for highways with a higher posted speed than Gravel Pit Road, but the warrants were used in the analysis as an indication of potential appropriateness of lights to improve visibility at night.

Intersection delineation lighting was found to be warranted at the Gravel Pit Road and site accesses at full build-out of the site. It is recommended that delineation lighting is installed at this intersection.

## Turning Lane Warrants

At the Highway 46 and Gravel Pit Road intersection there are dedicated left-, through-, and right-turn lanes in the eastbound direction and a flared intersection treatment in the westbound direction. The current length of the westbound flare intersection treatment is approximately 115 m in storage and 60 m in taper, for a total length of 175 m.

The intersection treatment warrants outlined by the Ministry of Highways Design Manual was completed for the Highway 46 and Gravel Pit Road intersection. The Ministry's Standard Plan No. 20614 indicates that right turn lanes are warranted at intersections with industrial access roads. Gravel Pit Road intersection provides access to two operational aggregate pits and the future industrial business park, a westbound right turn lane would be considered warranted.

The Ministry's Geometric Design Guide Supplement, SKS 9.14-A (Flared Intersections and Auxiliary Lanes – Right Turn Lanes) indicates that right turn lanes may be combined with flared intersection treatments by lengthening the parallel auxiliary lane of the flared intersection on the upstream side.

Standard Plan 20618 describes the geometric characteristics of right turn lanes, which indicates that at a 100 km/h design speed, and a stop condition on the minor approach, the right turn lane should have a minimum of 85 m of storage and 75 m of taper, for a total length of 160 m.

The existing flare treatment exceeds the total length requirements, and no geometric changes are warranted.

At the time Highway 46 is widened to a four-lane road, a dedicated westbound right-lane would continue to be warranted as the intersection is serving an industrial development.

## SITE ACCESS

The Ministry has established access management levels on the rural highway system ranging from “R-1” to “R-5”. “R-1” represents the highest level of control and “R-5” represents the lowest level of control. Highway 46 is currently classified as an “R-2” and may increase to an “R-1” as traffic volumes continue to increase. “R-2” roadways have the following access management criteria:

- At-grade intersections are allowed only at road allowances at a minimum spacing of 3.2 km and a desirable spacing of 8 km.
- Sections of highways established at “R-2” access management level can be upgraded to an “R-1” access management level with minor disruptions.
- Direct access to the main highway is not permitted. All access to the main highway is from a public road access via a service road.
- Generally, it is applied to highways classified as expressways or major arterials.

The existing control of access plan for Highway 46 was reviewed to determine the access type for Gravel Pit Road. The control of access plan identifies temporary and permanent intersections along Highway 46. Temporary intersections may be removed in the future as the ultimate highway access management plan is implemented and permanent intersections are anticipated to remain either as at-grade intersections or grade separated interchanges. The closure of temporary access points can occur at any time, but typically happens when capacity is constrained due to traffic volumes or when safety concerns necessitate access modification.

The Highway 46 and Gravel Pit Road intersection is classified as temporary accesses and the Highway 46 and Pilot Butte Access intersection, located 1.6 km east of Gravel Pit Road, is classified as a permanent access. The current long-term plan would require a long service road from Pilot Butte Access Road to the proposed industrial development at the time the temporary accesses are closed.

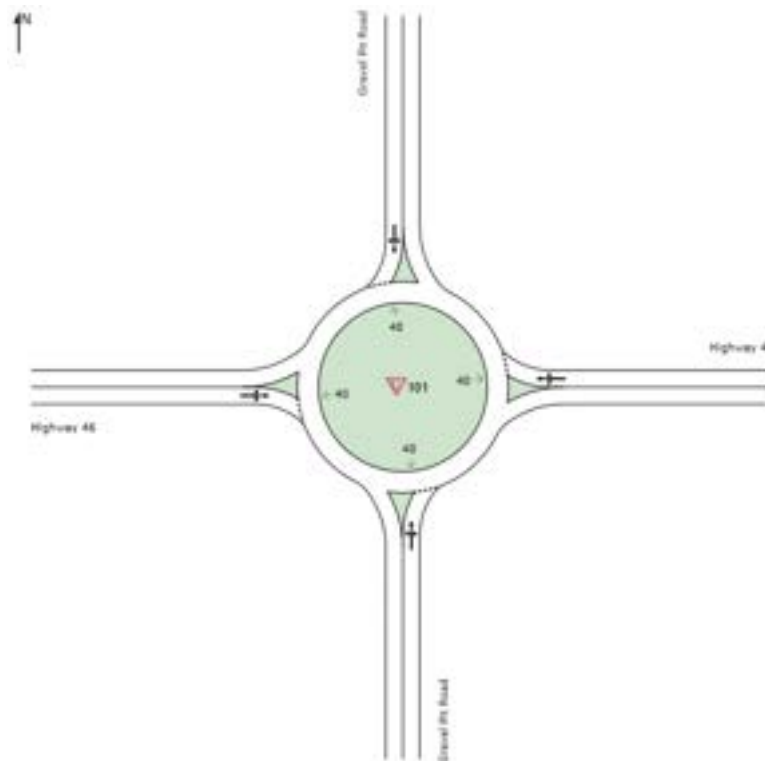
At the site accesses, adequate site distance is particularly important for the entry and exit manoeuvres at industrial development accesses. Objects that can affect site distance include utility cabinets and landscaping within the right-of-way. It is also desirable to avoid placing driveways on horizontal or vertical curves due to the safety concerns that can arise. Driveways that intersect at less than 70 degrees can result in restricted sight-lines, which can create additional safety concerns and increase collision potential. Based on the site plan drawings, the site access intersects the surrounding roadways at 90 degrees.

It is recommended that the sight-lines be kept free of obstructions (i.e. utility cabinets, landscaping) at the time of development.

## NETWORK MITIGATION MEASURES

The highway warrant analysis indicates that a westbound right-turn treatment is warranted at the Highway 46 and Gravel Pit intersection; however, it does not address the delay of the northbound or southbound approaches. The ultimate cross-section for Highway 46 will influence the mitigation measures needed to accommodate the proposed site development traffic, such as if Highway 46 has a wide median which allows two-stage crossing, or if a narrower, barrier median is used. The following intersection mitigation measures were assessed for the Highway 46 and Gravel Pit Road intersection.

- Option 1 – Single Lane Roundabout - Roundabouts channel traffic around a central island without traffic signals, which reduces driver delay by allowing motorists to yield rather than stop. Roundabouts can also serve to carry as much traffic as traffic signals while keeping all intersection legs moving safely. Option 1 is illustrated in **Figure 7**. There is the potential to stage the single lane roundabout to a two-lane roundabout at the time Highway 46 is expanded to a four-lane cross-section.



**FIGURE 7: OPTION 1 – SINGLE-LANE ROUNDABOUT**

- Option 2 - Highway 46 Divided Median – This option assumes a wide divided median which will allow vehicles to complete the crossing in two-stages. An eastbound left-turn lane and a westbound right-turn lane are included. While acceleration lanes were not included in the model for this option, they may be needed beyond the 2038 horizon of this study if the average delay for the stop-controlled approach reduces to a LOS D or if the median is not wide enough to store a Super B within the median. Option 2 is illustrated in **Figure 8**.



**FIGURE 8: OPTION 2 – HIGHWAY 46 DIVIDED MEDIAN**

- Option 3 – Highway 46 Barrier Median – This option assumes a narrow median is selected for Highway 46 and vehicles will need to complete the crossing in one-stage. In addition to the westbound right-turn lane, this option also assumes a median eastbound acceleration lane and a westbound acceleration lane, which provides traffic their own lane to accelerate to highway speeds prior to merging with the mainline traffic. Option 3 is illustrated in **Figure 9**.





**FIGURE 9: OPTION 3 – HIGHWAY 46 BARRIER MEDIAN**

Option 1 was modelled using SIDRA, an industry standard roundabout software tool. Option 2 was modeled as two separate intersections north and south of the median width. This two-stage crossing was modelled in SimTraffic and the delay from each intersection was combined to form the total delay. For example, the total delay for the southbound left-turn consists of the southbound through delay at the intersection with the westbound lanes and the southbound left-turn delay at the intersection with the eastbound lanes. The delay from SimTraffic was also used for Option 3 to provide a consistent comparison between the options.

The results of the capacity analysis for the various mitigation options are summarized in **Table 7** through **Table 9**.

**TABLE 7: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 1 – SINGLE-LANE ROUNDABOUT**

| Peak Hour    | Measure     | Eastbound |   |   | Westbound |   |   | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|---|---|-----------|---|---|------------|---|---|------------|---|---|
|              |             | L         | T | R | L         | T | R | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | A         |   |   | A         |   |   | A          |   |   | B          |   |   |
|              | Delay (s)   | 4         |   |   | 4         |   |   | 5          |   |   | 13         |   |   |
|              | V/C ratio   | 0.24      |   |   | 0.72      |   |   | 0.01       |   |   | 0.07       |   |   |
|              | Queue (m)   | 14        |   |   | 59        |   |   | 1          |   |   | 4          |   |   |
|              | Overall LOS | A (4 s)   |   |   |           |   |   |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         |   |   | A         |   |   | B          |   |   | A          |   |   |
|              | Delay (s)   | 3         |   |   | 3         |   |   | 16         |   |   | 7          |   |   |
|              | V/C ratio   | 0.67      |   |   | 0.33      |   |   | 0.01       |   |   | 0.07       |   |   |
|              | Queue (m)   | 62        |   |   | 17        |   |   | 1          |   |   | 3          |   |   |
|              | Overall LOS | A (3 s)   |   |   |           |   |   |            |   |   |            |   |   |

**TABLE 8: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 2 - HIGHWAY 46 DIVIDED MEDIAN**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | C         | A  | A  | A         | A  | A  | C          |   |   | C          |   |   |
|              | Delay (s)   | 22        | 0  | 0  | 6         | 3  | 2  | 24         |   |   | 18         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | -- | --         |   |   | 0.08       |   |   |
|              | Queue (m)   | 9         | 0  | 0  | 1         | 1  | 1  | 6          |   |   | 17         |   |   |
|              | Overall LOS | A (6 s)   |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | A         | A  | A  | C          |   |   | C          |   |   |
|              | Delay (s)   | 5         | 1  | 1  | 9         | 2  | 1  | 15         |   |   | 20         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | -- | 0.01       |   |   | 0.09       |   |   |
|              | Queue (m)   | 2         | 0  | 0  | 0         | 0  | 0  | 7          |   |   | 13         |   |   |
|              | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |

**TABLE 9: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 3 - HIGHWAY 46 BARRIER MEDIAN**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | F         | A  | A  | A         | A  | A  | F          |   |   | F          |   |   |
|              | Delay (s)   | 75        | 2  | 0  | 0         | 3  | 1  | 161        |   |   | 352        |   |   |
|              | V/C ratio   | 0.16      | -- | -- | --        | -- | -- | 0.06       |   |   | 0.15       |   |   |
|              | Queue (m)   | 59        | 9  | 0  | 1         | 1  | 1  | 7          |   |   | 68         |   |   |
|              | Overall LOS | B (13 s)  |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | A         | A  | A  | F          |   |   | E          |   |   |
|              | Delay (s)   | 9         | 3  | 1  | 0         | 2  | 1  | 171        |   |   | 47         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | --        | -- | -- | 0.05       |   |   | 0.20       |   |   |
|              | Queue (m)   | 11        | 1  | 0  | 0         | 0  | 0  | 7          |   |   | 22         |   |   |
|              | Overall LOS | A (4 s)   |    |    |           |    |    |            |   |   |            |   |   |

The capacity analysis demonstrates that Option 1 or Option 2 will accommodate the traffic from the proposed industrial site. Option 3 results in poor operation (LOS F) of the northbound and southbound approaches. The required solution will ultimately depend on the preferred cross-section for Highway 46.

An alternative intersection treatment to alleviate the southbound and northbound left-turn delay is the Restricted Crossing U-turn (RCUT). An example of an RCUT is illustrated in **Figure 11**. The RCUT combines a

directional median, which allows direct left-turns from Highway 46 but prohibits Gravel Pit Road through and left-turning traffic from accessing Highway 46 at the intersection. The RCUT instead requires these movements from Gravel Pit Road to use downstream median U-turns. Gravel Pit Road left-turning and crossing traffic will be required to make these maneuvers indirectly by turning right, weaving to the left, making a downstream U-turn, and then returning to the intersection to complete their desired maneuver. RCUT intersections are typically used during the following conditions:

- Used in place of an interchange in that the merge control is similar to a freeway corridor but funding for an interchange is not available
- High volumes on the mainline and heavy left-turning volumes from the major street
- Typically used only for low left-turning volumes or through movements from minor street



**FIGURE 10: EXAMPLE RCUT INTERSECTION CONFIGURATION**

## CONCLUSIONS & RECOMMENDATIONS

The following conclusions and recommendations are made for the proposed industrial development, based on the results of the transportation analysis:

- The proposed industrial development includes 11.4 ha of light industrial.
- The proposed development will be accessed via Gravel Pit Road, which will connect to Highway 46.
- The estimated number of new trips generated at full build-out, includes 88 new trips (77 trips entering and 11 trips exiting) during the weekday morning peak hour and 47 new trips (7 trips entering and 40 trips exiting) during the weekday afternoon peak hour.
- It is unlikely that any of the trips generated will be multi-use trips within the proposed development as it is a single-use site, and the development is not expected to generate any pass-by trips.

- The Highway 46 and Gravel Pit Road intersection is expected to operate well overall (LOS A) during the peak hours at full build-out of the proposed industrial site. However, the northbound and southbound approaches will experience delay (LOS E or lower) during the peak hours with the existing intersection geometry.
- There is a potential for a residential commercial mixed-use site to be developed south of Highway 46 that would also use the Gravel Pit Road intersection. This development is anticipated to generate a substantial number of trips during the peak hours and will result in significant delay at the Highway 46 and Gravel Pit Road intersection. Additional analysis regarding this development is provided in **Appendix A**.
- The intersection delineation lighting warrants were completed for the Highway 46 and Gravel Pit Road intersection and the site accesses. Intersection delineation lighting was found to be warranted at full build-out at the three study intersections.
- The intersection treatment warrant analysis was completed for the Highway 46 and Gravel Pit Road intersection. The warrants identified that a westbound right-turn is warranted at the Highway 46 and Gravel Pit Road intersection. The Ministry's Design Guide indicates that right-turn lanes can be combined with a flared intersection treatment. The existing flare treatment exceeds the total length requirements as indicated by the Ministry's Design Manual, and no geometric changes are warranted. However, at the time Highway 46 is widened to a four-lane road, a dedicated westbound right-lane would be warranted and should be implemented.
- The future cross-section of Highway 46 is still being reviewed under a separate study. The intersection modifications will ultimately depend on the preferred cross-section for Highway 46.

### Recommendations

- Coordinate with the Ministry of Highways to identify the future cross-section and the timing of widening of the Highway 46 corridor. Select a preferred intersection treatment that corresponds with the preferred highway cross-section.
- Implement intersection modifications to accommodate site traffic.
- Review illumination lighting at the Highway 46 and Gravel Pit Road intersection. If needed, install intersection delineation lighting at the Highway 46 and Gravel Pit Road intersection.
- Install delineation intersection lighting at the Gravel Pit Road and Site Accesses.
- Sight-lines at all intersections, accesses, driveways should be kept free of obstructions (i.e. utility cabinets, landscaping etc.).

Prepared By:

Approved By:

Destiny Piper, P.Eng.  
Transportation Engineer

Nathan Gray, P.Eng., PTOE, PMP  
Senior Transportation Engineer

DP/xxx

## STATEMENT OF LIMITATIONS AND CONDITIONS

### Limitations

This report has been prepared for Victoria Square Industry Group Ltd. in accordance with the agreement between KGS Group and Victoria Square Industry Group Ltd. (the “Agreement”). This report represents KGS Group’s professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by Victoria Square Industry Group Ltd. Unless stated otherwise, KGS Group has not verified the accuracy, completeness or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group’s work.

### Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report



# APPENDIX A

---

## Network Analysis w Bamboo Nation Mixed-use Development

## BACKGROUND TRAFFIC

KGS coordinated with WSP Canada Inc., the consultant working on the proposed Bamboo Nation Mixed-use development to the south, to coordinate the estimated vehicle trips. This development is anticipated to be substantial in nature, including the following development:

- 225 single family detached residential units
- 107 townhomes
- 40 live / work townhomes
- 96 apartments
- Commercial under apartments - 1,300 sqm
- Commercial under live/work units – 350 sqm
- A clubhouse with an area of 2,600 sqm
- Primary school with kindergarten (350 students)
- Hotel with 20-30 rooms on top of the clubhouse
- 1 sports park which will include a soccer field
- 1 fieldhouse which will include a soccer field
- 1 hockey arena

The proposed residential and commercial development is anticipated to add an additional 328 trips (121 trips in, 207 trips out) during the morning peak hour and 389 trips (227 trips in, 162 trips out) during the afternoon peak hour to the Highway 46 and Gravel Pit Road intersection.

WSP provided the following site-generated trips and pass-by trips for the Bamboo Nation's Mixed-Use Development, which are presented in **Figure A-1** and **Figure A-2**, respectively.

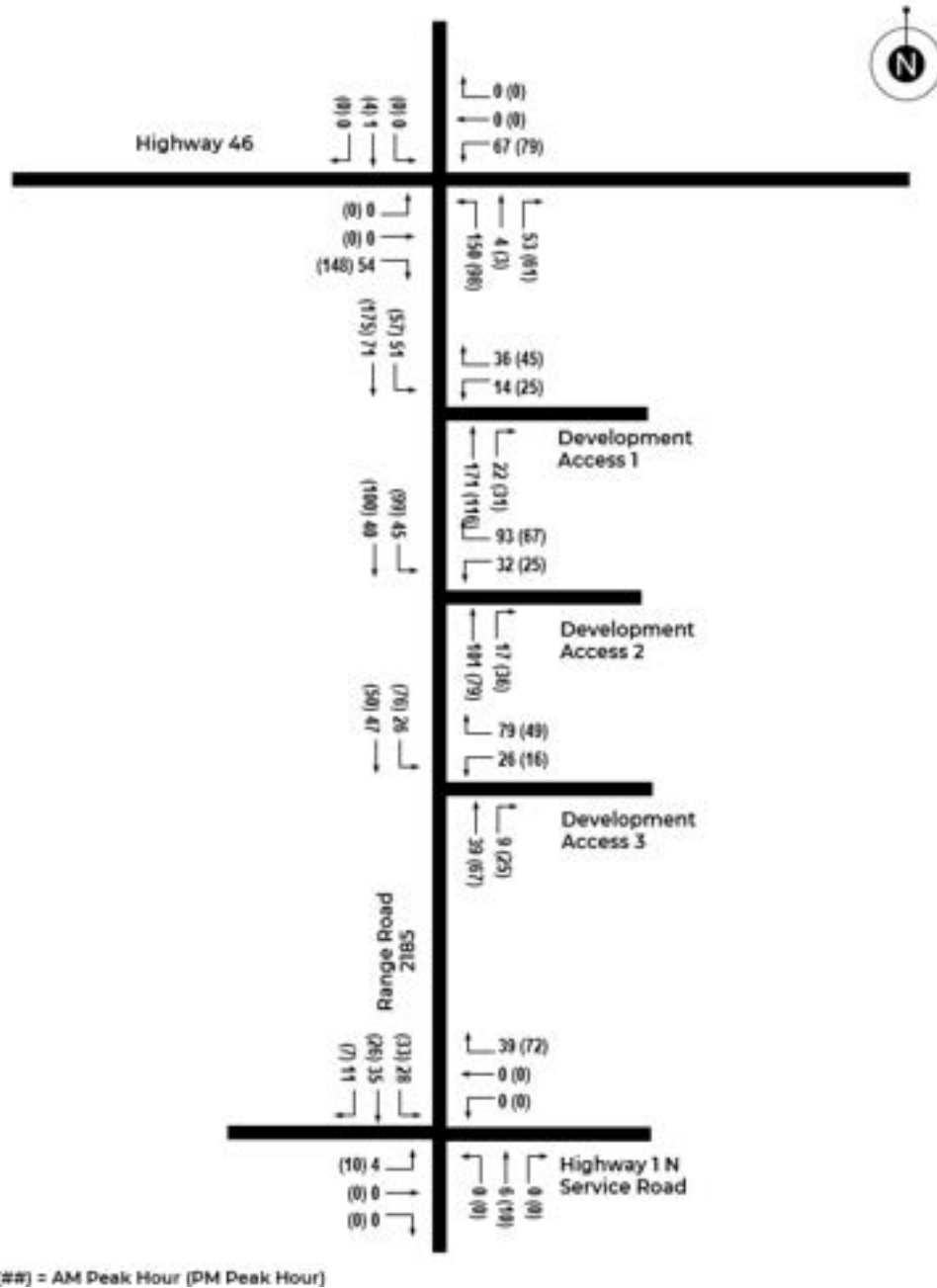
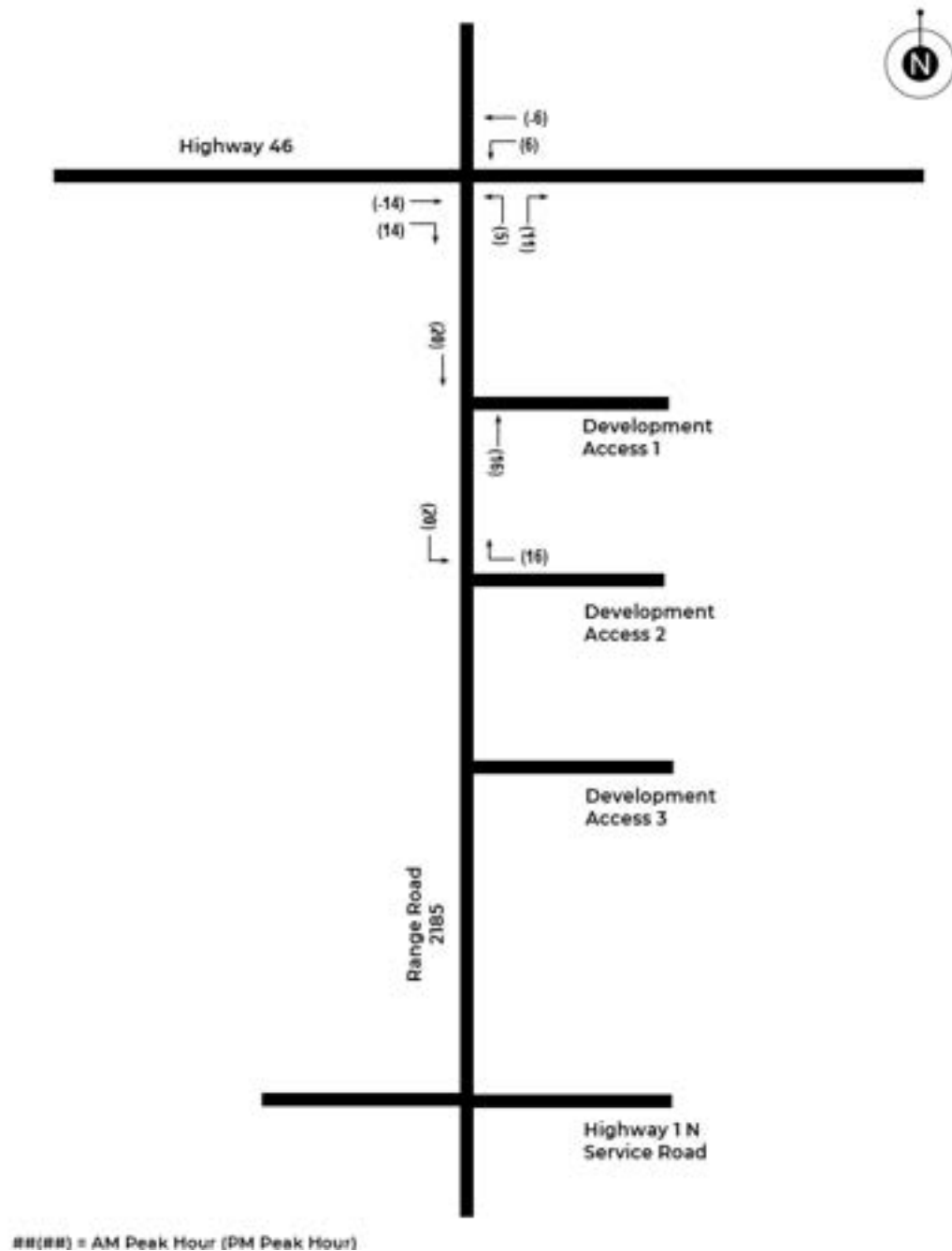


FIGURE A-1: BAMBOO NATION'S SITE-GENERATED TRIPS

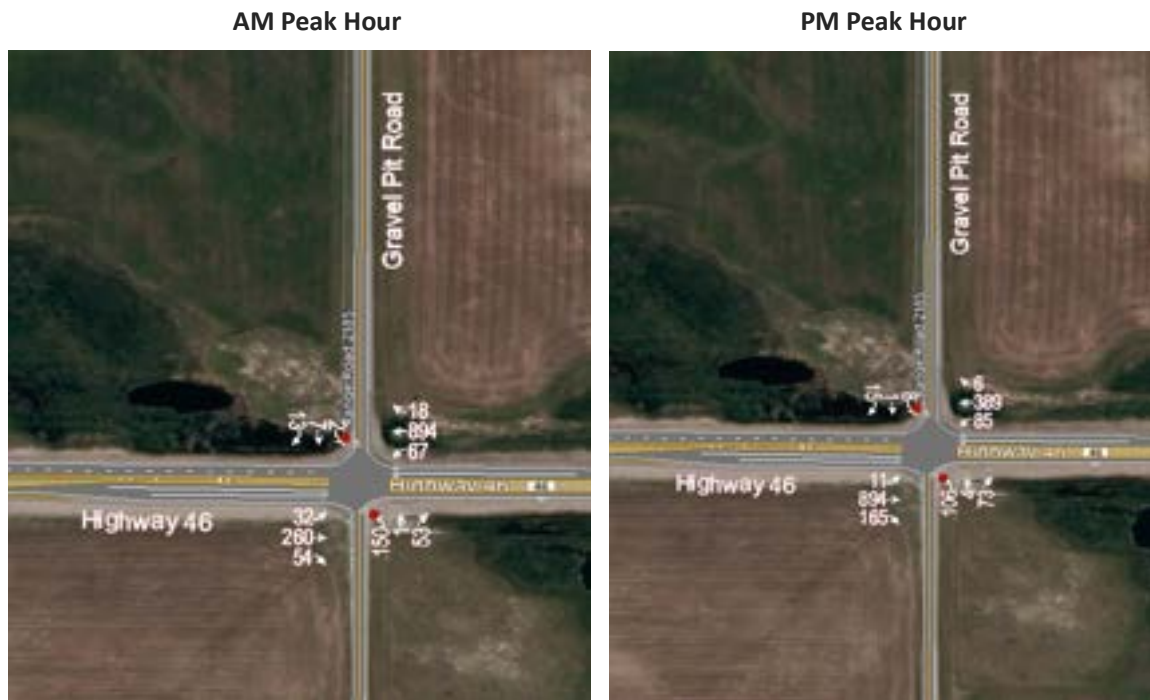


**FIGURE A-2: BAMBO NATION'S PASS-BY TRIPS**

The 2038 background traffic volumes were estimated based on the 2023 existing traffic volumes, the anticipated residential and commercial development traffic provided by WSP, and the Ministry's 15-year growth factor for Highway 46 (1.60). The development traffic was assumed to be included within the 15-year growth rate as to

avoid over projecting traffic on this corridor. This means there will be fewer through vehicles when compared to the previous forecast as they will be turning to go south instead.

The 2038 estimated peak hour background traffic volumes, with the Bamboo Nations development, are illustrated in **Figure A-3**.

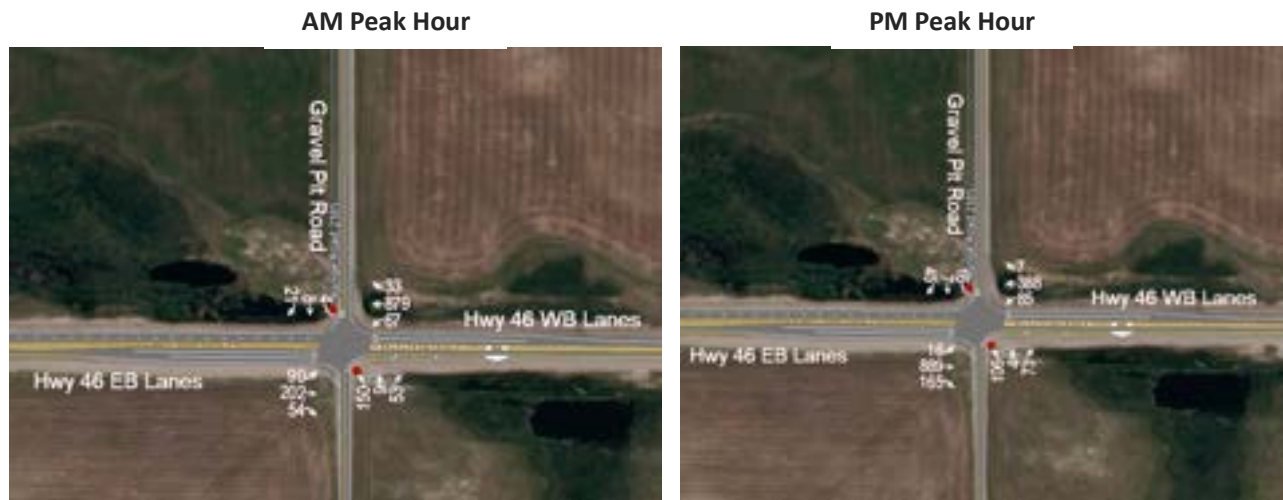


**FIGURE A-3: 2038 BACKGROUND PEAK HOUR TRAFFIC VOLUMES  
(WITH BAMBOO NATION'S TRAFFIC)**



## POST DEVELOPMENT TRAFFIC

The site-generated trips from **Figure 5** were added to the 2038 background traffic forecast to obtain the 2038 total peak hour traffic forecast, illustrated in **Figure A-4**. Again, the development traffic was assumed to be included within the 15-year growth rate to avoid over projecting traffic on this corridor. This means there will be fewer through vehicles when compared to the previous forecast as they will be turning instead.



**FIGURE A-4: 2038 TOTAL PEAK HOUR TRAFFIC FORECAST (WITH BAMBOO NATION'S TRAFFIC)**

## TRAFFIC OPERATIONS

### Background Traffic

The background capacity analysis evaluates the traffic conditions in the area that would occur if just the proposed Bamboo Nations Mixed-Use Development proceeded. The study intersection was analyzed using the existing roadway geometry, traffic control, and the 2038 peak hour background traffic volumes. The results of the 2038 background traffic conditions operations analysis are summarized in **Table A-1**.

The capacity analysis results show that the northbound and southbound approaches will operate poorly with significant delays with the existing intersection geometry, and intersection modifications will be needed to address the traffic operations.

**TABLE A-1: HIGHWAY 46 & GRAVEL PIT ROAD 2038 BACKGROUND  
INTERSECTION OPERATIONS WITH BAMOO NATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |     |     | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|-----|-----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T   | R   | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | A   | --  | F          |   |   | D          |   |   |
|              | Delay (s)   | 11        | -- | -- | 8         | 1   | --  | 125        |   |   | 34         |   |   |
|              | V/C ratio   | 0.06      | -- | -- | 0.06      | --  | --  | 1.06       |   |   | 0.16       |   |   |
|              | Queue (m)   | 16        | -- | 1  | 22        | 4   | 4   | 989        |   |   | 37         |   |   |
|              | Overall LOS | C (18 s)  |    |    |           |     |     |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | B         | A   | --  | F          |   |   | F          |   |   |
|              | Delay (s)   | 9         | -- | -- | 12        | 1   | --  | 285        |   |   | 52         |   |   |
|              | V/C ratio   | 0.01      | -- | -- | 0.14      | --  | --  | 1.42       |   |   | 0.25       |   |   |
|              | Queue (m)   | 9         | -- | 3  | 103       | 100 | 100 | 1051       |   |   | 105        |   |   |
|              | Overall LOS | D (33 s)  |    |    |           |     |     |            |   |   |            |   |   |

#### Total Traffic

The total traffic capacity analysis evaluates the traffic conditions in the area if both the New Horizon Business Park and the Bamboo Nations Mixed-Use Development proceeded. The capacity analysis results are presented in Table A-2.

The capacity analysis results show that the northbound and southbound approaches will operate poorly with the existing intersection geometry and intersection modifications will be needed to address the traffic operations.

**TABLE A-2: HIGHWAY 46 & GRAVEL PIT ROAD 2038 TOTAL  
INTERSECTION OPERATIONS WITH BAMOO NATIONS**

| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |    | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R  | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | B         | -- | -- | A         | A  | -- | F          |   |   | E          |   |   |
|              | Delay (s)   | 11        | -- | -- | 8         | 1  | -- | 210        |   |   | 36         |   |   |
|              | V/C ratio   | 0.15      | -- | -- | 0.06      | -- | -- | 1.27       |   |   | 0.24       |   |   |
|              | Queue (m)   | 15        | -- | 0  | 7         | 1  | 1  | 616        |   |   | 26         |   |   |
|              | Overall LOS | D (29 s)  |    |    |           |    |    |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | -- | -- | B         | A  | -- | F          |   |   | F          |   |   |
|              | Delay (s)   | 9         | -- | -- | 12        | 1  | -- | 354        |   |   | 68         |   |   |
|              | V/C ratio   | 0.02      | -- | -- | 0.14      | -- | -- | 1.57       |   |   | 0.58       |   |   |
|              | Queue (m)   | 11        | -- | 3  | 89        | 83 | 83 | 1044       |   |   | 430        |   |   |
|              | Overall LOS | E (39 s)  |    |    |           |    |    |            |   |   |            |   |   |

## Network Mitigation

The total traffic volumes were assessed within Option 1 – single lane roundabout and are presented in **Table A-3**.

**TABLE A-3: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 1 – SINGLE-LANE ROUNDABOUT**

| Peak Hour    | Measure     | Eastbound |   |   | Westbound |   |   | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|---|---|-----------|---|---|------------|---|---|------------|---|---|
|              |             | L         | T | R | L         | T | R | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | A         |   |   | A         |   |   | A          |   |   | B          |   |   |
|              | Delay (s)   | 5         |   |   | 10        |   |   | 9          |   |   | 17         |   |   |
|              | V/C ratio   | 0.28      |   |   | 0.85      |   |   | 0.19       |   |   | 0.13       |   |   |
|              | Queue (m)   | 15        |   |   | 117       |   |   | 8          |   |   | 8          |   |   |
|              | Overall LOS | A (8 s)   |   |   |           |   |   |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         |   |   | A         |   |   | B          |   |   | A          |   |   |
|              | Delay (s)   | 4         |   |   | 5         |   |   | 14         |   |   | 8          |   |   |
|              | V/C ratio   | 0.77      |   |   | 0.39      |   |   | 0.33       |   |   | 0.08       |   |   |
|              | Queue (m)   | 73        |   |   | 24        |   |   | 18         |   |   | 4          |   |   |
|              | Overall LOS | A (5 s)   |   |   |           |   |   |            |   |   |            |   |   |

The total traffic volumes were assessed within Option 2 – Highway 46 Divided Median and are presented in **Table A-4**. This option also included a westbound median acceleration lane to accommodate the northbound left-turn traffic volumes.

**TABLE A-4: HIGHWAY 46 & GRAVEL PIT ROAD  
OPTION 2 - HIGHWAY 46 DIVIDED MEDIAN**

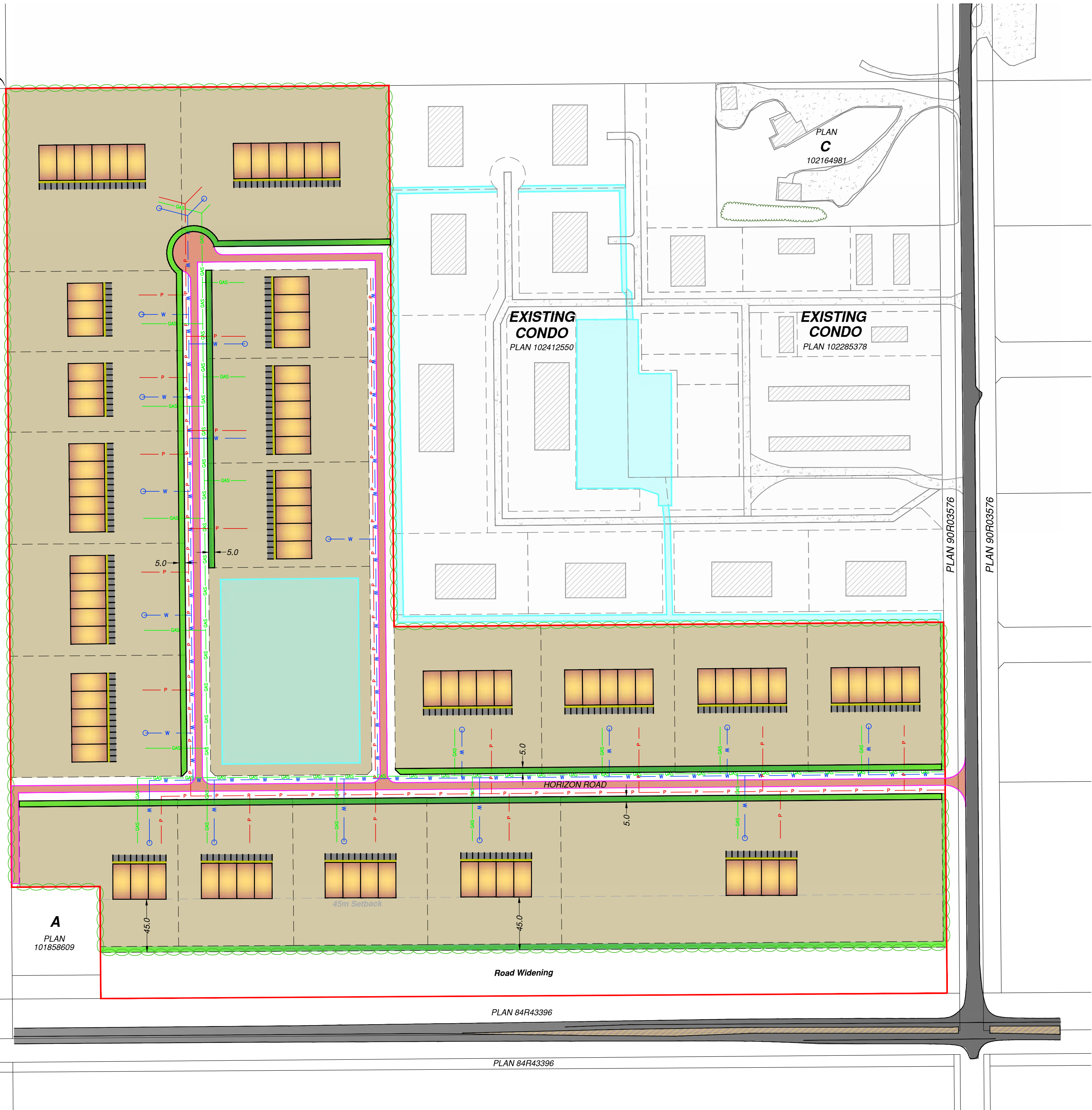
| Peak Hour    | Measure     | Eastbound |    |    | Westbound |    |     | Northbound |   |   | Southbound |   |   |
|--------------|-------------|-----------|----|----|-----------|----|-----|------------|---|---|------------|---|---|
|              |             | L         | T  | R  | L         | T  | R   | L          | T | R | L          | T | R |
| AM Peak Hour | LOS         | D         | A  | A  | A         | A  | A   | D          |   |   | E          |   |   |
|              | Delay (s)   | 32        | 0  | 0  | 7         | 5  | 2   | 31         |   |   | 43         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | --  | 0.25       |   |   | 0.08       |   |   |
|              | Queue (m)   | 10        | 1  | 1  | 4         | 5  | 1.5 | 21         |   |   | 22         |   |   |
|              | Overall LOS | C (16 s)  |    |    |           |    |     |            |   |   |            |   |   |
| PM Peak Hour | LOS         | A         | A  | A  | B         | A  | A   | C          |   |   | C          |   |   |
|              | Delay (s)   | 8         | 2  | 2  | 11        | 4  | 1   | 20         |   |   | 23         |   |   |
|              | V/C ratio   | --        | -- | -- | --        | -- | --  | 0.41       |   |   | 0.09       |   |   |
|              | Queue (m)   | 1         | 2  | 2  | 2         | 4  | 1   | 17         |   |   | 13         |   |   |
|              | Overall LOS | A (8 s)   |    |    |           |    |     |            |   |   |            |   |   |

Option 1 – single lane roundabout provides better traffic operations than the Highway 46 divided median option. The single-lane roundabout can also be staged to a two-lane roundabout depending on the time of widening Highway 46.

## APPENDIX M – UTILITIES PLAN



6  
18-18-2



PLAN VIEW  
SCALE: NOT TO SCALE

| Legend                     |  |                        |  |
|----------------------------|--|------------------------|--|
| Landscaping                |  | New Development        |  |
| Proposed Building          |  | Condo Subdivision      |  |
| Gravel Road (Main Traffic) |  | Privacy Fence          |  |
| Lot Gravel                 |  | Existing Fence         |  |
| Parking Stall              |  | Waterline              |  |
| Sidewalk                   |  | Powerline              |  |
| Drainage                   |  | Gasline                |  |
| Existing Building          |  | Curbstop / Water Valve |  |
| Existing Gravel Road       |  | Existing Well          |  |
| Existing Paved Road        |  |                        |  |

NOTE: Saskpower to complete power design  
Existing utilities not shown on plan.

**UTILITY & WATER PLAN SHOWING  
FOR PROPOSED DEVELOPMENT**  
ON  
**S.E. ¼ SEC. 6-TWP. 18-RGE. 18-W. 2Mer.  
RM OF EDENWOLD No. 158, SASKATCHEWAN**

|          |                               |       |              |         |   |
|----------|-------------------------------|-------|--------------|---------|---|
| DRAWING: | RE232092-UTILITY & WATER-Rev3 | DATE: | May 22, 2024 | REV No. | 3 |
|----------|-------------------------------|-------|--------------|---------|---|





**APPENDIX N – WATER RIGHTS LICENCE AND APPROVAL TO OPERATE**



March 27, 2024

306.694.3433

New Horizon Park Inc.  
Box 558  
PILOT BUTTE SK S0G 3Z0

File: E3/5074

Attention: Allen Kilback, CEO

**Re: Renewed Water Rights Licence & Amended Approval to Operate Works**

Enclosed is New Horizon Park Inc.'s amended Water Rights Licence to Use Ground Water (WRL) for the water supply well PW1-2014 and its associated non-potable water supply works at SE 06-18-18 W2 (Condo Plan 102285378).

The WRL grants New Horizon Park Inc. the right to use up to 3.25 cubic decametres (3,250 cubic metres or approximately 650,000 Imperial gallons) of groundwater annually from PW1-2014 as a non-potable municipal water supply to the buildings as shown on the Meridian Surveys Drawing RE213285-OVERALL-PLAN-21-22-R0 linked to the Approval to Operate Works (ATO) issued in April 2023.

**The WRL has a five year term, expiring March 30, 2029.** The Water Security Agency (WSA) can renew a WRL prior to its expiry provided the water use and water level data on file supports reissuance, and the licensee has adhered to the conditions of the WRL and ATO. WSA strongly recommends that you contact our office within 90 days of the expiry to confirm what information we may require to renew the WRL.

The Approval to Operate Works (ATO) for the well and its respective raw water supply pipeline does not expire and remains valid provided the works are consistent with what is noted on the ATO, and the proponent is adhering to the General and Special Conditions of the ATO. New Horizon Park Inc. is responsible for adhering to the General and Special Conditions on the reverse side of the WRL & ATO.

.../2

New Horizon Park Inc.

Page 2

March 27, 2024

---

If you have any questions, I can be reached at 306.694.3433 or [jayson.ford@wsask.ca](mailto:jayson.ford@wsask.ca).

Yours sincerely,

WATER SECURITY AGENCY



Jayson Ford, Senior Tech.  
Water & Wastewater  
Science & Licensing Division

Enclosure

# **WATER RIGHTS LICENCE TO USE GROUND WATER**

Licence No. E3/5074 issued on March 27, 2024

## **NEW HORIZON PARK INC. of EMERALD PARK, SASKATCHEWAN**

hereinafter called the licensee, is granted the right to use water in accordance with this Licence subject to the conditions and restrictions contained in *The Water Security Agency Act* and the regulations under that *Act*, each as amended or replaced from time to time.

**Annual Quantity of  
Water Allocated:** 3.25 cubic decametres (3,250 cubic metres)

**Well Name/Number:** PW1-2014

**Point of Diversion:** SE 06-18-18 W2 (Condo Plan 102285378)

**Point of Delivery:** SE 06-18-18 W2 (Condo Plan 102285378)

**Purpose:** Municipal (Commercial Facility)

**Expiration Date:** March 30, 2029

This Licence does not negate the licensee's responsibility to comply with the requirements of any other relevant municipal, provincial and/or federal legislation.

This Licence issued and recorded at Moose Jaw, Saskatchewan is subject to the conditions listed on the following page(s).

  
\_\_\_\_\_  
for Water Security Agency

## **Conditions (E3/5074)**

### **General Conditions**

1. This Licence is subject to cancellation, amendment or suspension on written notice pursuant to Section 53 of *The Water Security Agency Act* and the regulations under that *Act*.
2. In the event that the Water Security Agency determines that the effects of the project deviate significantly from those predicted in the studies which were the basis of the grant of the original or amended licence, the Water Security Agency may cancel this Licence.
3. This Licence does not guarantee that water will be available at all times during the currency of this licence. The Water Security Agency reserves the right to restrict the use of water under this Licence due to shortage or pressing necessity.
4. This Licence does not run with land tenure and automatically terminates on the date of disposition of the subject lands at the point of delivery. Any person who assumes ownership of or a legal interest in the lands at the point of delivery must file a new application for Water Rights Licence with the Water Security Agency. Upon acceptance of the application, a new Water Rights Licence may be issued.
5. The licensee shall pay such fees, levies, rates or charges as may be fixed from time to time by the Water Security Agency under the authority of *The Water Security Agency Act* for the privilege or authority granted by this licence.
6. No change in the purpose of the project, rate of diversion and/or annual quantity of water shall be made without prior authorization being obtained under *The Water Security Agency Act*.

### **Special Conditions**

1. Water allocated under this licence will be delivered by water supply works owned by the licensee under the Approval to Operate for E3/5074. This Licence will automatically expire if the licensee does not maintain a valid Approval to Operate Works for such ground water supply works.



**APPENDIX O – LETTER FROM SEWAGE HAULER**

To Whom it May Concern:

Re: Septic waste removal from the proposed development by New Horizon Group of Companies

I have been contacted by New Horizon Group of Companies, with respect to the removal of septic waste from the proposed development located at land location SE¼ Sec 6, TWP 18, RGE 18, W2 Mer, within the R.M. of Edenwold. Please be advised that this type of service falls within our scope of work. We presently service this development and the proposed increases fall within our capabilities.

A venture of this size could easily be accommodated by **AAA Sewer Service**, we are on the Water Security Agency's list of approved haulers and have permits for the disposal of this material at the Kronau, Balgonie, and the City of Regina disposal systems. Other waste products (wash pits and sumps) from businesses in this area can be disposed of through **Newalta or Travita?**. This minimizes any possible effects that could possibly arise with respect to the environment.

This letter is being forwarded to you via New Horizon Group of Companies. Should you require any further information I may be contacted directly at [kellykreutzer@sasktel.net](mailto:kellykreutzer@sasktel.net) or call Kelly at 1-306-552-8561

Best Regards,

Kelly Kreutzer / AAA Sewer Service

October 14, 2025

November 26, 2025

AAA Sewer Service  
Box 734  
BALGONIE, SK S0G 0E0

Dear Liquid Domestic Waste Hauler:

Please be advised that the Water Security Agency (WSA) has issued your Permit to Transport and Dispose of Liquid Domestic Waste. This permit (No. WSA-2029-050) is attached for your information and review; please ensure all collection, transportation and disposal operations abide by the conditions of the permit. This permit will remain in effect until February 28, 2029. Please note this permit is not transferable in the event of a change in owner and a new permit must be applied for.

Section 1 of the permit outlines some general conditions.

Section 4 of the permit requires each person hauling liquid domestic waste to complete training on the collection and disposal of liquid domestic waste as required by the Water Security Agency. You will be notified when training is available.

Section 5 of the permit includes a condition for ensuring liquid domestic waste is not leaking or discharging into the environment during transport.

If you have any questions regarding the Permit to Transport and Dispose of Liquid Domestic Waste or any other related matters, please contact me at 306-690-3524 or [liquiddomesticwaste@wsask.ca](mailto:liquiddomesticwaste@wsask.ca).

Sincerely,



Carlene Shaw  
Executive Administrator  
Water Security Agency

Attachment: Permit to Transport and Dispose of Liquid Domestic Waste

# Permit to Transport and Dispose of Liquid Domestic Waste

Issued pursuant to section 27(2) of *The Environmental Management and Protection Act, 2010* and Section 7.2(1) of *The Environmental Management and Protection (General) Regulations*

**Page: 1 of 3**

**Permit No. WSA-2029-050**

**To: AAA Sewer Service, Box 734, BALGONIE, SK S0G 0E0**

---

PURSUANT to section 27(2) of *The Environmental Management and Protection Act, 2010* and section 7.2(1) of *The Environmental Management and Protection (General) Regulations*, a Permit to Transport and Dispose of Liquid Domestic Waste is issued to the permittee, subject to the terms and conditions attached to this permit. In the event of an owner change permits are not transferable and a new permit shall be applied for.

The permittee shall dispose at the following location, as authorized on the Liquid Domestic Waste Disposal Permission Form:

1. RM of Lajord
2. Town of Balgonie

This permit takes effect on **March 1, 2026**.

This permit expires on **February 28, 2029**, unless cancelled or suspended before that date.

Issued by:



Jeff Paterson -P.Eng.  
Executive Director, Standards & Approvals  
Water Security Agency

\* The digital signature affixed to the permit is legally binding and is considered a sufficient electronic signature as required under *The Electronic Information and Documents Act, 2000*.

## **Terms and Conditions**

### **Section One: General**

- 1.1 All words and phrases have the same definitions as set out in *The Environmental Management and Protection Act, 2010*, or *The Environmental Management and Protection (General) Regulations*.
- 1.2 The permittee shall apply for renewal/alteration of this permit at least 60 days prior to its expiry.
- 1.3 This permit does not replace or supersede any approvals, licenses or authorizations that may be required due to municipal, provincial or federal legislation. The permittee shall maintain in force any and all such approvals, licenses or authorizations that may be required.

### **Section Two: Records**

- 2.1 The permittee shall ensure that the following records are kept and retained for at least 7 years from the date the record was created:
  - (a) the date, location of collection and disposal, description, and volume of liquid domestic waste collected and disposed of;
    - (i) the date, location of collection, description, and volume of liquid domestic waste collected shall be recorded immediately; and
    - (ii) the date, location of disposal, description, and volume of liquid domestic waste disposed of shall be recorded immediately.
  - (b) the written consent of the owner of the sewage works where liquid domestic waste was disposed of; and
  - (c) records of any environmental sampling, analysis or monitoring that has been conducted, including:
    - (i) the results of any environmental analysis;
    - (ii) the date, location and time of environmental sampling or monitoring;
    - (iii) the name of the person collecting the environmental sample;
    - (iv) an identification of the environmental sample type;
    - (v) the date of analysis of the environmental sample;
    - (vi) the sampling method used;
    - (vii) the name of the laboratory that performed the analysis of the environmental sample;
    - (viii) the name of the person responsible for performing analysis of the environmental sample; and
    - (ix) the quality assurance and quality control records of any environmental samples.
- 2.2 The permittee shall ensure that the records required to be kept pursuant to this section are carried in all vehicles used for transport and disposal of liquid domestic waste and are made available to the minister immediately on request.
- 2.3 The permittee shall ensure that, on transfer of ownership of their liquid domestic waste hauling business or operation, the records required to be kept pursuant to this section are transferred to the new owner.

### **Section Three: Reporting**

- 3.1 The permittee who intends to change the disposal location previously provided to the minister shall, before disposing of liquid domestic waste at the new disposal location, provide written notice to the minister:
  - (a) advising the minister that they intend to use a specified sewage works to dispose of liquid domestic waste; and
  - (b) setting out the legal land description of the sewage works they are proposing to dispose of the liquid domestic waste.



3.2 The permittee shall inform the minister in writing within 30 days of the transfer of ownership of their liquid domestic waste hauling business or operation.

3.3 The permittee shall inform the minister in writing within 30 days of their liquid domestic waste hauling business or operation ceasing to operate.

3.4 Where any notice or reporting is required to be given by the permittee, it shall be provided to:

Water Security Agency  
300 – 2365 Albert Street  
Regina, SK S4P 4K1  
Telephone: 306.787.0913  
Fax: 306.787.0780  
Email: [liquiddomesticwaste@wsask.ca](mailto:liquiddomesticwaste@wsask.ca)

#### **Section Four: Training**

4.1 Every person hauling liquid domestic waste shall complete training on the collection and disposal of liquid domestic waste as required by the Water Security Agency.

#### **Section Five: Prohibited Tanks**

5.1 Subject to subsection 5.2, no permittee shall haul liquid domestic waste in a liquid domestic waste hauler that has been used to transport a hazardous substance or a hazardous waste.

5.2 Subsection 5.1 does not apply to a liquid domestic waste hauler that has been used to transport a hazardous substance or a hazardous waste if that liquid domestic waste hauler, after the hazardous substance or hazardous waste has been removed:

- (a) contains less than 0.1% of the original amount of hazardous waste substance as residue in the container; and
- (b) if applicable, has all flammable vapours reduced to less than 10% of the lower explosive limit for that material.

#### **Section Six: Disposal of liquid domestic waste**

6.1 The permittee shall dispose of liquid domestic waste to a sewage works where:

- (i) the prior written consent of the owner of that sewage works is obtained;
- (ii) where the prior written consent of the owner of that sewage works remains in effect; and
- (iii) where the use of the sewage works for which prior written consent is in place is acceptable to the Water Security Agency.

6.2 For disposal of liquid domestic waste by land spreading, prior approval is required from the Water Security Agency.

6.3 Liquid domestic waste shall not to be mixed with:

- (a) grease from grease traps;
- (b) hazardous substances;
- (c) hazardous waste; or
- (d) industrial waste, including waste generated from a vehicle washing facility.

6.4 The permittee shall ensure liquid domestic waste is not leaking or discharging into the environment during transport.

**APPENDIX P – PUBLIC ENGAGEMENT LETTER**

**October 28, 2025**

**Dear Neighbour/Resident,**

We're reaching out to share information about our proposed development in the **Rural Municipality of Edenwold No. 158 (the RM)**.

We value the community's input and want to ensure you're kept informed as the project moves ahead.

Our company, New Horizon Group of Companies (the Developer), is in the process of subdividing 18.03 hectares (44.55 acres) of land to create 11 new lots for commercial-light industrial use. The subdivision will be the final phase (phase 4) of development of the New Horizon Business Park, located in the SE ¼ 06-18-18-W2M. A summary of the project is provided below:

#### Access and Servicing

- The subdivision area is bordered on the south by Provincial Highway No. 46 and on the east by Range Road 2185. Access to the development will be from Range Road 2185; a paved two-lane municipal road, designed to accommodate the weight and volume of traffic typically generated by industrial uses.
- Water will be supplied from an existing hygienic well that has been licensed and approved by SaskWater Corporation. Water will be distributed to individual lots through underground waterlines. Each lot-owner will be responsible for obtaining their own potable water.
- On-site holding tanks will be installed on each lot. Effluent will be pumped from holding tanks and hauled to a licensed sewage lagoon. Each lot-owner will be responsible for installing and maintaining their own sewage disposal system.

#### Drainage

- The detention ponds and related drainage work that were constructed during the previous phases were designed to manage stormwater from the entire development (phases 1 through 4).
- A site-specific engineered drainage plan will be completed for the land within phase 4.

#### Landscaping

- In order to limit the need for irrigation and maintenance, the lots will be xeriscaped.
- As required by the RM of Edenwold's Zoning Bylaw, a small, landscaped area will be provided along the front site line of each lot.

## Municipal Planning Bylaws

- The RM's Future Land Use Map, which forms part of the RM's Official Community Plan (OCP), identifies the land within the subdivision for Mixed Use-Industrial/Commercial development. The use of the proposed development aligns with the land use designation and policies established by the RM's OCP.
- Land within the subdivision area is currently zoned AR-Agricultural Resource District. The Developer intends to apply to the RM Council to rezone the land to IND1-General Industrial District.

Locational maps, a site plan, and photos are included in the following pages.

If you have any questions or concerns regarding the proposed development, please contact **Allen B. Kilback** at **306-541-7838** or **[Allen.Kilback@nhgoc.com](mailto:Allen.Kilback@nhgoc.com)**.

