Rodneys Contracting Ltd. Junction Brook Quarry (EA Reg # 2097) - Water Management Plan (2 ha Quarry Area) Deer Lake Region of Western Newfoundland – Quarry File # 711:12689

October 20, 2019
(Submission Date of Quarry Permit)

July 05, 2024
(Water Resource Management Plan Submission Date)

Attached Documentation: Figure 1, Figure 2, Figure 3 & Google Earth Images

Introduction

Rodneys Contracting Ltd. is a construction business located in Deer Lake, Newfoundland. The Junction Brook Quarry permit is located ~7 km northeast of Deer Lake near the Trans-Canada Highway (TCH). The 2-ha permit area is mostly undeveloped and contains a resource of sand and gravel that will supply the company with the materials required to complete construction projects in the region.

The submission of this Water Management plan is required for issuance of the 2-ha quarry permit (File 711:12689) and conditional to its release from Environmental Assessment (Reg #. 2097). This Water Management Plan addresses primarily site water generated from surface runoff across the development area and describes measures used to protect adjacent water courses.

The Junction Brook Quarry is in an area of existing and historic quarry development. The operations will be comparable and consist of removing the sand and gravel material using heavy equipment, crushing and screening the material as required, and stockpiling products on site for transport to various construction projects. The quarry will not use water for secondary processing, such as aggregate washing, or require a Water Use License.

Site Location and Access

The quarry permit area is located ~5.1 km east of Reidville in the Deer Lake region of Western Newfoundland, within the National Topographic System (NTS) Index Map 12H/03 (**Figure 1**). The quarry area is also located within the Town of Deer Lake's Municipal Planning Area. The area consists of numerous historic quarries dating back to the 1990's. An existing gravel access road extends from the Trans-Canada Highway (Route 1) ~700 m northwest providing access to the quarry permit and other quarry operators including Rigid Trucking (File 711:12730; 4 ha; **Figure 2**). The southern permit boundary is ~150 m north of the TCH at its closest point. A forested area buffering the highway provides screening of the quarry project.

The Junction Brook watercourse is located 160 m north of the permit boundary at its closest point in a heavily forested area **(Figure 3**). The existing gravel access road surrounding the northern boundary of the permit area will provide additional protection of Junction Brook with site

effluent contained along previous ditching. The quarry area is generally flat lying and forested with elevations between 48 - 61 m in elevation. The elevation peaks in the center of the permit boundary where some forest clearing has previously occurred. The gentle topography of the quarry area will provide initial site drainage towards lower elevations. The vegetated areas surrounding the permit provide additional buffers to sensitive areas. Also, the surficial geology underlying the area consists of glaciofluvial unconsolidated sand and gravel expected to provide good subsurface drainage, due to it's permeable nature, for the proposed development.

Existing Site Plan

The permit area is mostly undeveloped except for some areas where previous site clearing has occurred. The quarry area will be utilized for the available sand and gravel resources. Basic bulk volumetric calculations of the 2 ha area estimate ~90,000 m^3 of available resource material. A 5 m wide permit buffer zone will be established for windrowing and preserving the overburden for future reclamation (**Figure 3**). This material will also be used to create privacy screens or berms along the southern and eastern boundary to obstruct views from the TCH. These berms will also help to contain site water runoff inside the quarry and facilitate implementing the Water Management Plan.

Site Drainage

Overland water drainage will initially follow the natural topographic profile of the project area prior to development. Initial quarry production will begin in the southwest permit area. This will also be the primary discharge point of site water during development (**Figure 3**). In the occasion of a 1 in 100 year 24-hour climate change rainfall event, check dams can be implemented, along shallow site drainage ditches, in this area to temporarily hold water allowing suspended particles to settle out or be filtered prior to discharge in the southwest corner of the permit boundary. The gravel access road outside and surrounding the permit boundary will serve as a berm to protect Junction Brook from any site drainage to the north.

As the development expands northward individual ~ 0.5 m - 1 m deep drainage channels may be required to collect surface runoff and direct it to the discharge area in the southwest permit area. These drainage channel locations will change to suit the development footprint and the operations. A depiction of the drainage channels for the initial development area is shown on **Figure 3**. During peak development the available quarry floor will be utilized to maintain adequate site drainage. Rather than pooling the run-off from the quarry will be directed to the discharge location where fine-grained particles can be filtered by check dams, hay bales and/or silt fencing prior to exiting the permit boundary.

Adjacent Water Courses

The nearest watercourse is Junction Brook located ~160 m north of the quarry permit boundary (**Figure 3**). The elevation of the brook is ~26 – 28 m above sea level and flows northwest into the Humber River ~ 3.2 km from the permit area. Other waterbodies and wetlands identified on 1:50,000 NTS scale maps are shown on **Figure 2**. These areas are not considered to have possible significant potential impacts from the proposed quarry.

Quarrying Method and Production Related to Water Management

The proposed quarry operations are for the excavation of sand and gravel from within the 2 ha quarry permit area. Production will begin in the southwest permit area and advance outwards along a development face not exceeding 5 m in height. Proposed drainage channels ranging upwards of 200 m in length and ~ 0.5 m - 1 m deep will direct runoff westward to the discharge point in the southwest corner of the permit boundary where it will be filtered by check dams, hay bales and/or silt fencing.

The annual production volume is anticipated to be 4,500 m^3 and is considered minimal from a commercial operation perspective. At this production rate it would take 20 years to exhaust the estimated available resource. Processing the excavated material to achieve product specifications will involve crushing, screening, and stockpiling using mobile equipment. No washing of materials or other secondary product processing will take place on site. The stockpiles will then be loaded onto trucks and transported to construction sites or production facilities in the region.

The initial construction of the proposed quarry project will consist of harvesting the trees, then stripping the site of overburden including organic material and mineral soil that conceal the sand and gravel resource. Grubbing will be stockpiled in designated areas or windrowed to create visibility berms along the boundary in the 5 m buffer zone (**Figure 3**). Topsoil will be stockpiled separately and used in the reclamation material to cover the site upon closure of the quarry along with the grubbing.

Quarry excavation depths will not exceed 5 m and is not anticipated to reach the groundwater table. The elevation of Junction Brook is ~25 m below the current topography thus based on the permeable nature of the sand and gravel it appears the water table will be well below the proposed quarry floor. Adjacent historic quarry areas excavating sand and gravel show no evidence of ponding or standing water and share the same site conditions as the Rodneys Contracting 2 Ha Junction Brook Quarry.

Site Water Management

The Water Resources Management Plan for the proposed quarry will utilise shallow drainage channels or ditching in the production area to collect overland runoff from the site and direct it toward a discharge area in the southwest corner of the permit area (**Figure 3**). The discharge point will be monitored to ensure adequate filtration of site water using rock check dams, silt screens and/or hay bales prior to exiting the boundary. Existing gravel access roads surrounding the permit boundary will act to further contain any excess site water generated from run off. Should a 1 in 100-year climate change 24-hour rainfall event occur additional containment inside the permit rea may be required to adequately remove suspended fine-grained particles from site drainage. Rodneys Contracting Ltd. commits to this Water Management plan and ensuring site runoff conforms to the Environmental Control Water and Sewage Regulations, 2003 and siltation does not enter Junction Brook. A 50 m buffer to all waterbodies and watercourses as required by the Quarry Materials Division will be always maintained.

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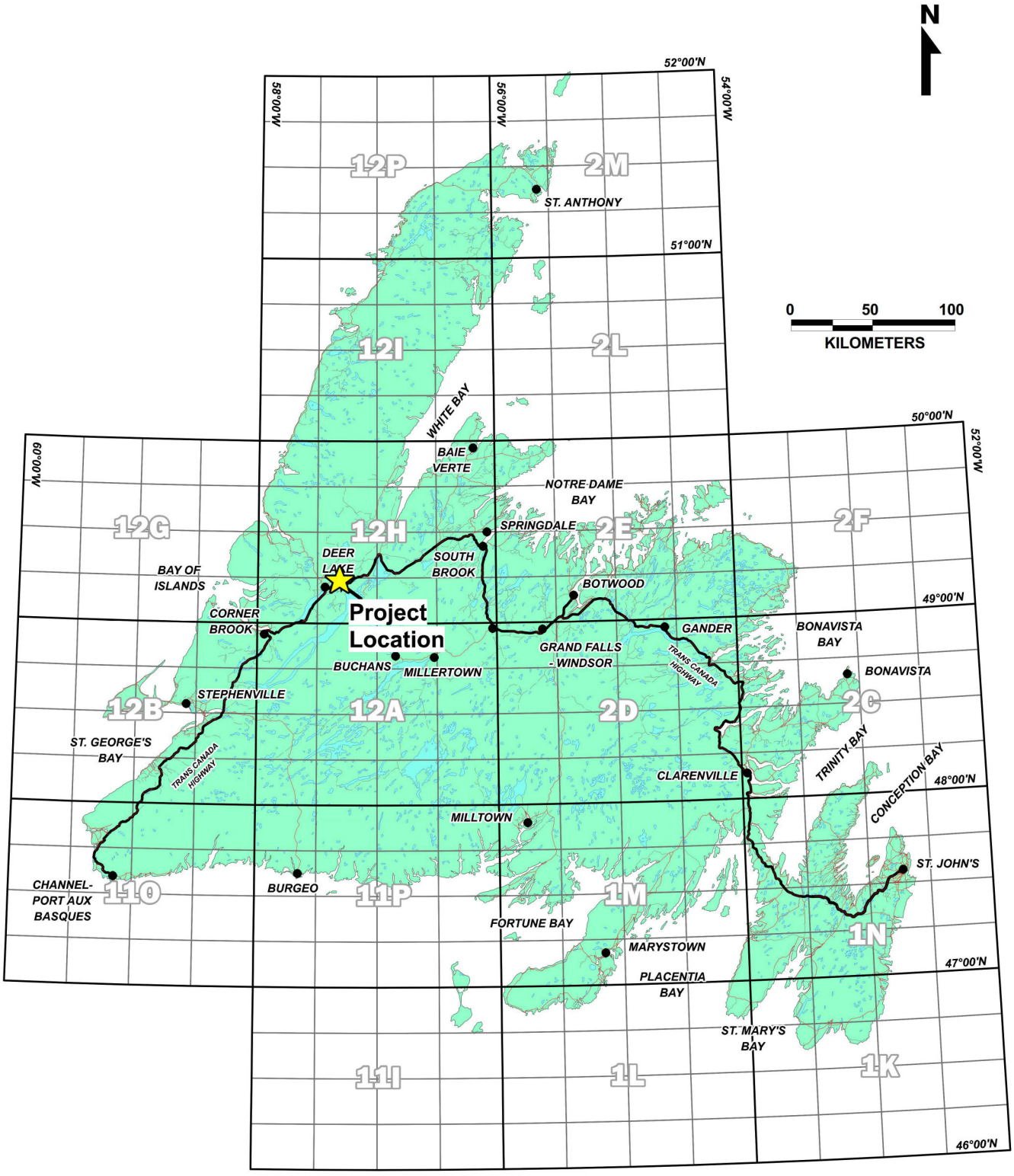

Figure 1: Project Location Map (N.T.S. 12H/03)

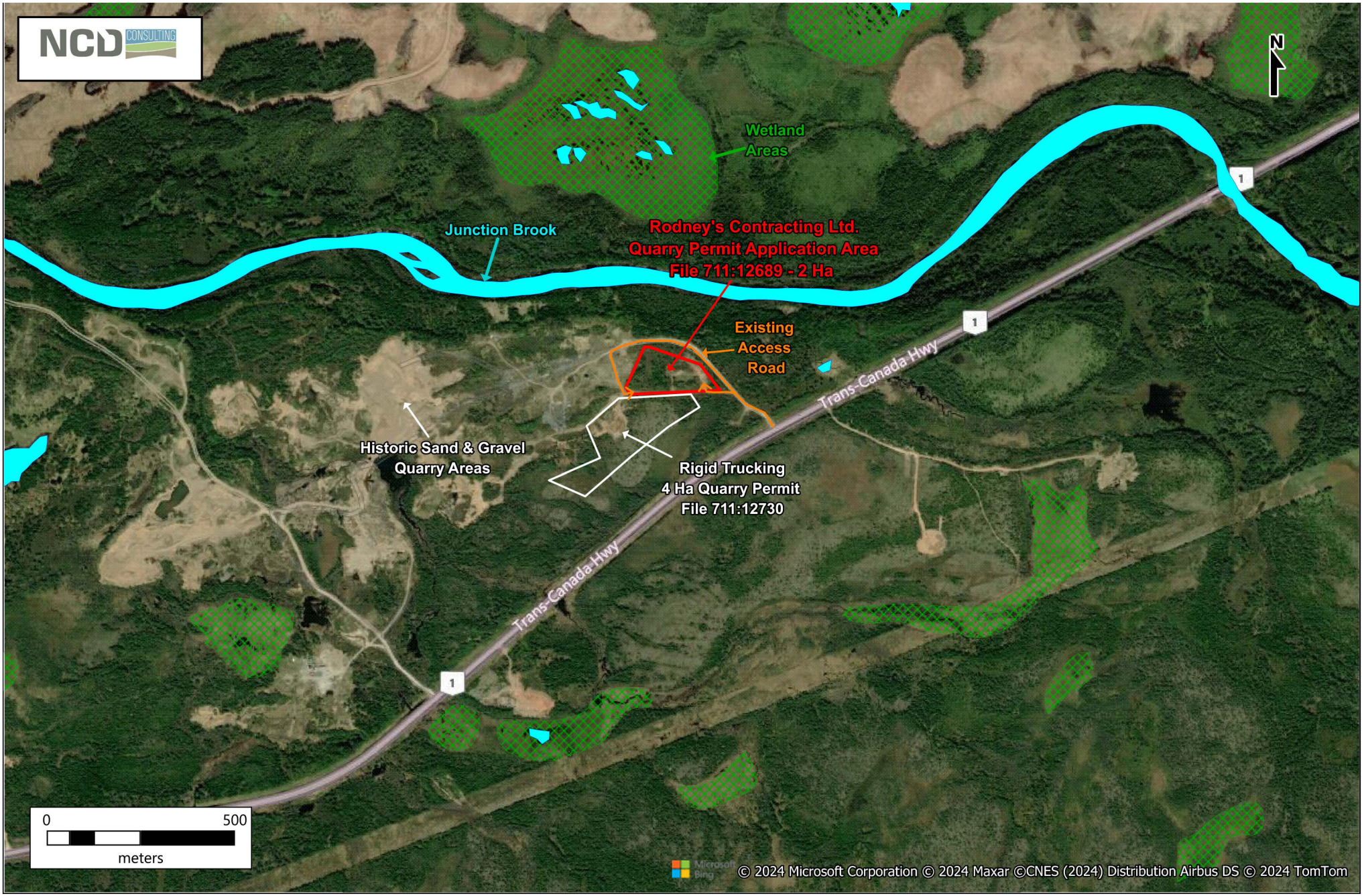

Figure 2: Regional Map of 1:50,000 Watercourse, Waterbodies and Wetlands

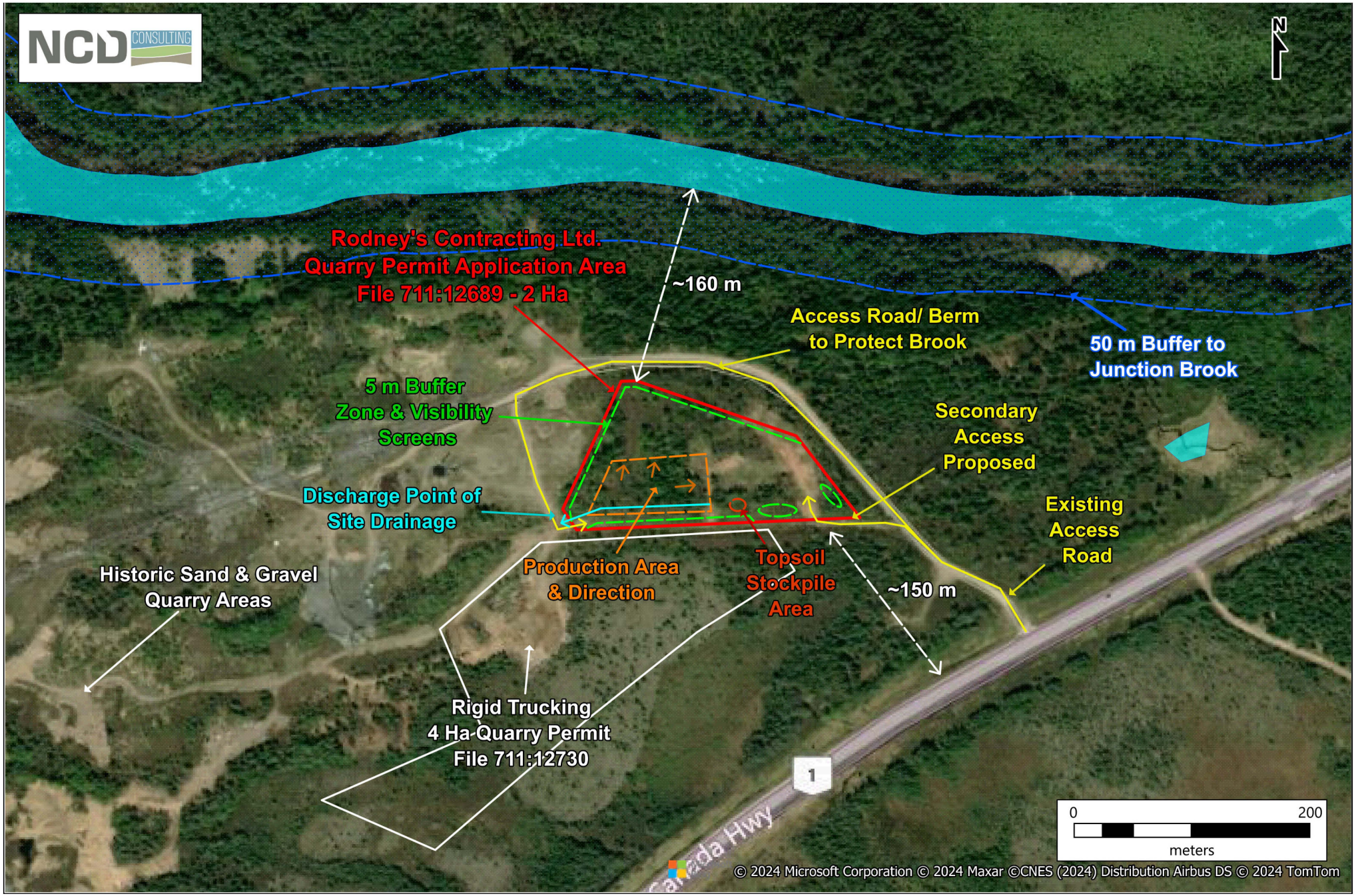

Figure 3: Quarry Layout and Water Management Plan

Google Earth Images

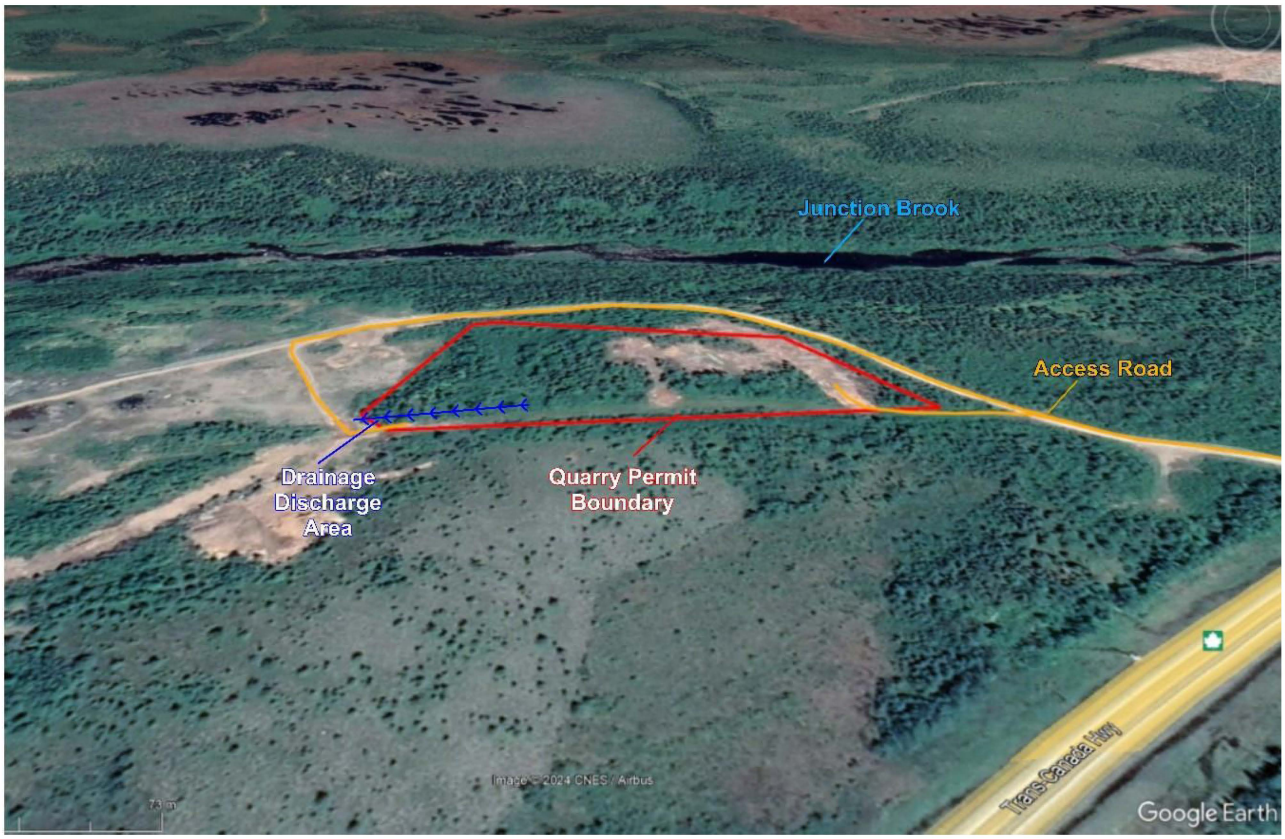

Plate 1: View of the quarry permit area looking north showing drainage area

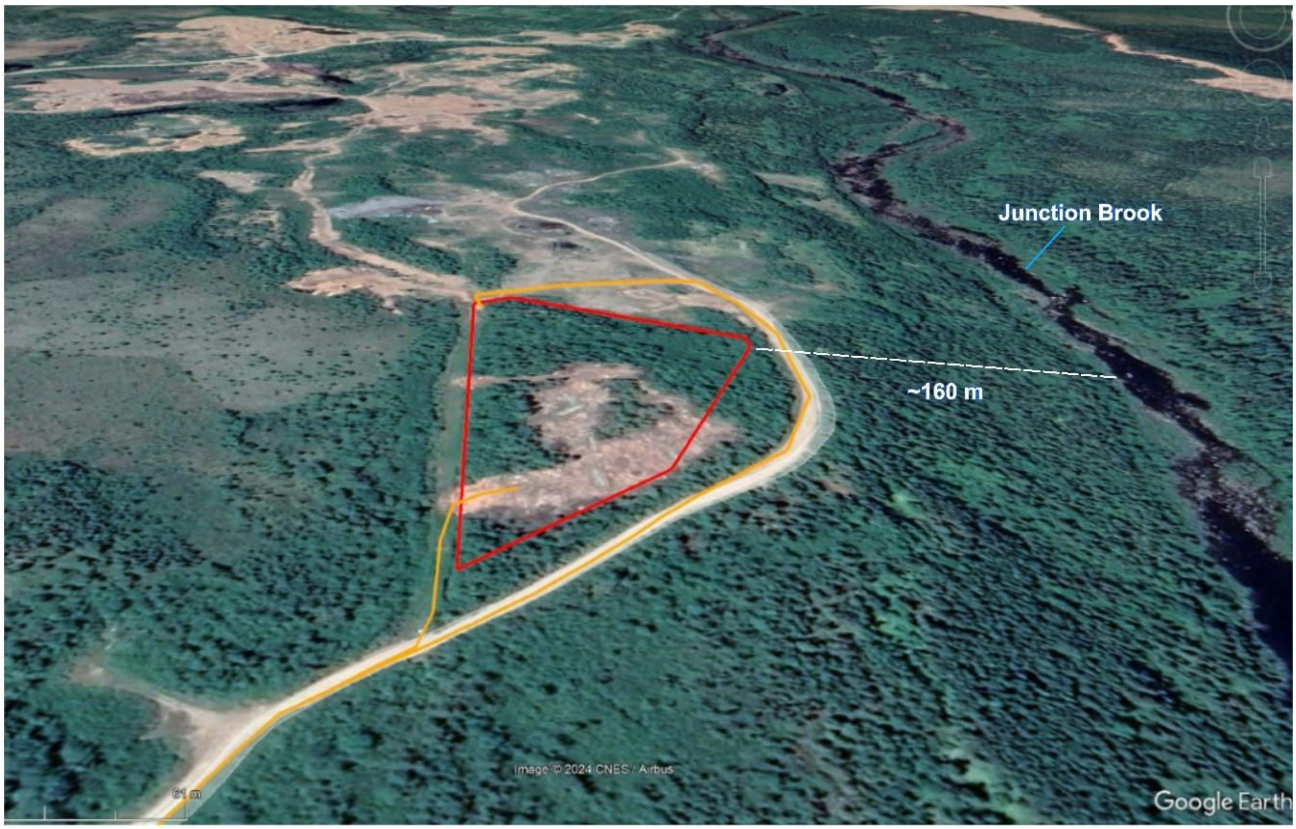

Plate 2: View of the quarry permit area looking west showing distance to Junction Brook.

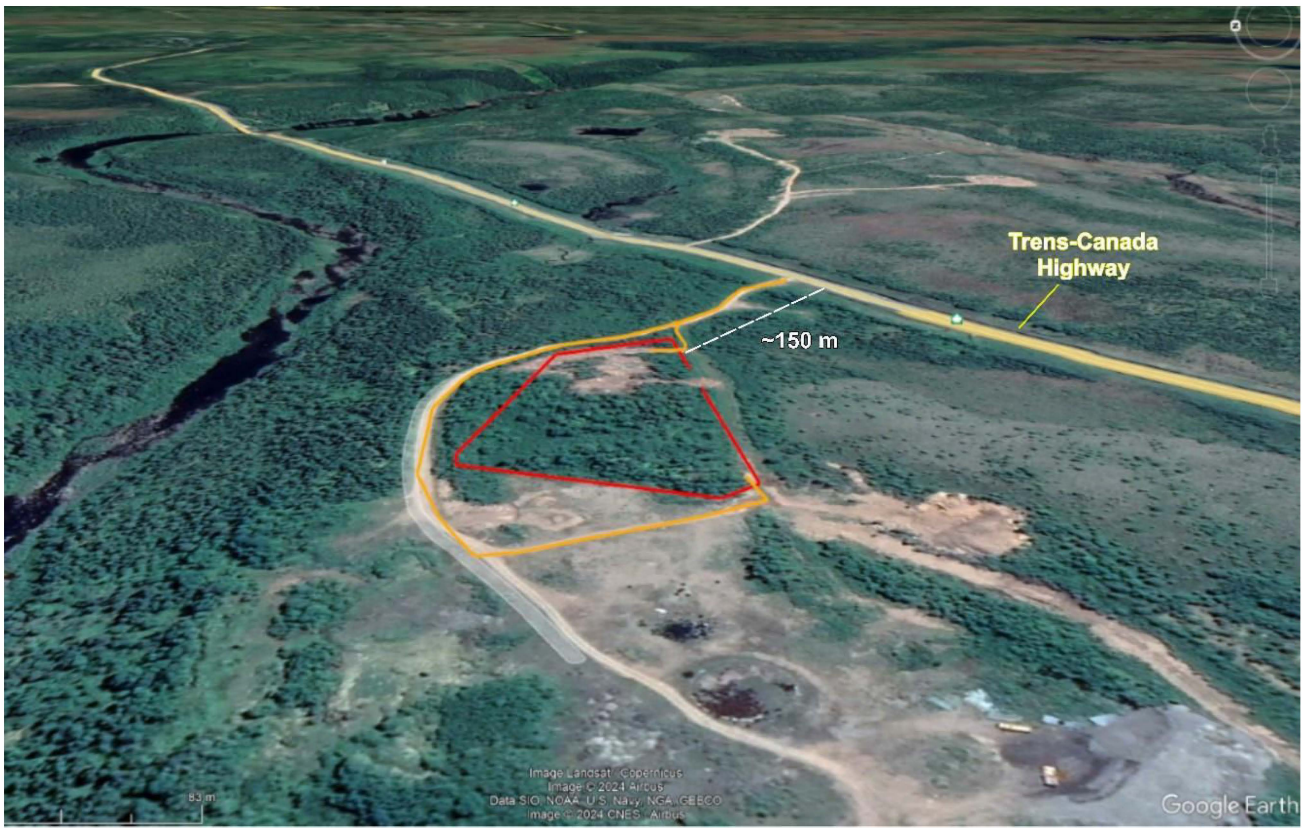

Plate 3: View of the quarry permit area looking east showing distance to TCH

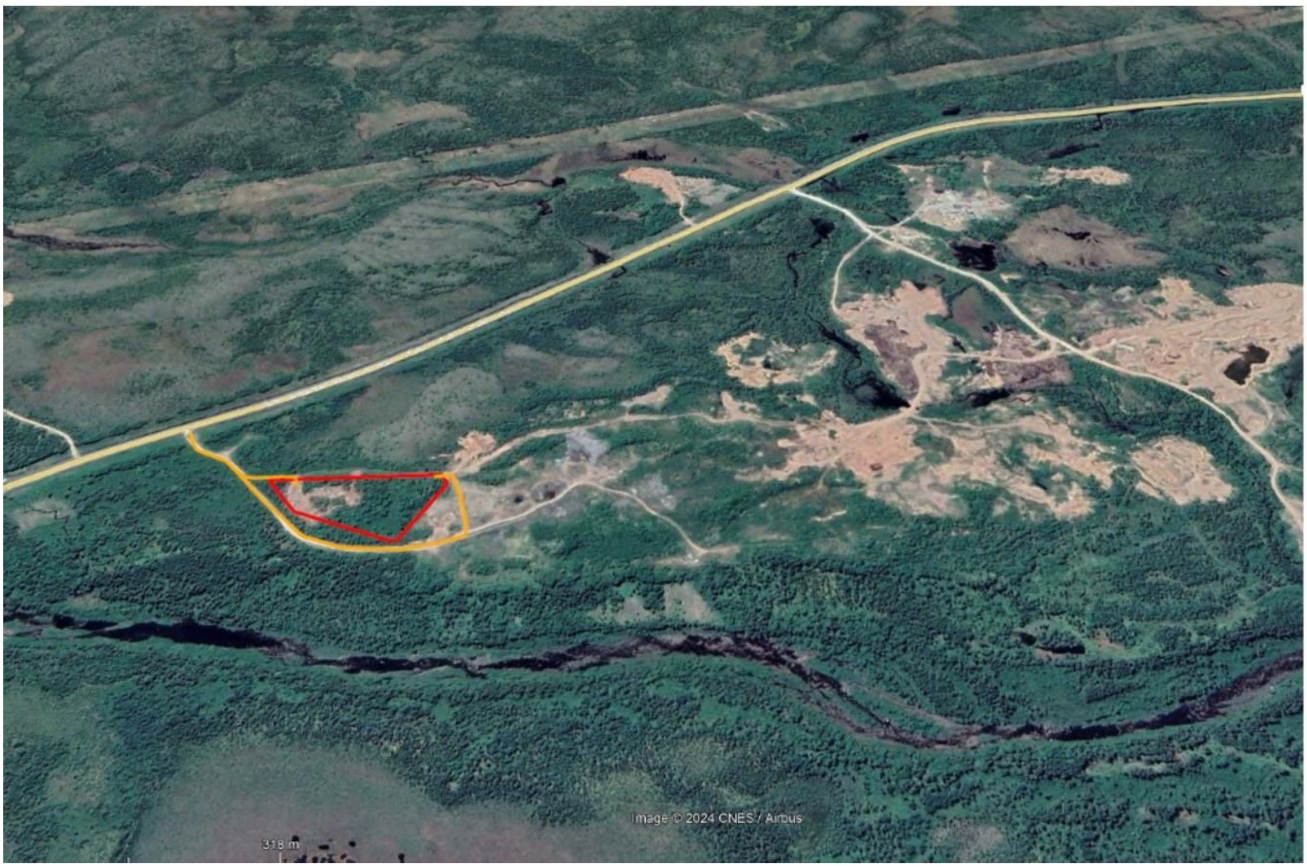

Plate 4: Overview of the historic quarry area looking south