Nogha Enterprises Quarry Operational Plan 2020

Quarry KM 486

Nogha Enterprises Ltd application submission for site at KM 486 Mackenzie Hwy #1.

Type and quantity of material to be extracted is 3500m3 of sand.

Mapping

See attached maps (1:200 and 1:50,000). These maps include a North indicator arrow, area of existing/proposed quarry area, overburden storage area and access road.

Total Area of Identified Quarry

The total area of the quarry is 11,550 m2.

Area of Existing Quarry

The total area required is 10,000 m2.

Closure and Reclamation Plan

Abandonment of Active Quarry Face

Following completion of the work to be undertaken, the quarry site will be cleared of all equipment and debris and the area will be graded to a slope no greater than that of 2:1 to ensure stability of the land area and to enable future work to take place at this site.

Any stockpiled overburden and other clearing debris removed from the area prior to excavation will be spread over the side slopes and floor of the excavated area to mitigate erosion and to promote re-vegetation.

Waste Disposal

Any cleared brush and/or trees that have a diameter greater than 13 cm will be salvaged and left in a depleted area for local users. Debris of this nature will be piled adjacent to the treeline defining the cleared area to either be used prior to the abandonment of the quarry.

Any personal garbage or debris will be removed daily from the site with work pick up trucks and properly disposed of at the Fort Simpson Landfill.

Fuel

No fuel will be stored at the site as refueling will be conducted utilizing pick up trucks outfitted with tidy tanks. Further more, all equipment will carry a spill kit. Drip trays and absorbent pads are to be placed under equipment that are kept on site overnight.

Nogha Enterprises Ltd Pit Development Plan

KM 486

CONTENTS

SECTION 1: INTRODUCTION

1.1 PURPOSE

Government of the Northwest Territories – Department of Lands (GNWT Lands) is responsible for the sustainable use and management of granular resources to ensure long term availability and access of quality materials for the people of the Northwest Territories (NWT). GNWT Lands is responsible for ensuring appropriate plans and management criteria are in place before, during and after development of pits and quarries in the NWT. Part of this initiative is the implementation of pit development plans for new and active sources of granular resource extraction.

This pit development plan is submitted by Nogha Enterprises to describe how quarrying will occur within the parameters of best management practices of sand resource development. This development plan provides the direction required by GNWT Lands to permit and manage quarry source **KM 486** in an efficient and environmentally acceptable manner and to leave the area in a safe and productive condition. The pit development plan describes the aspects of managing source **KM 486** from the start of the project operation through to completion of the project. The plan is complementary to the terms and conditions in authorizations (licences and permits).

SECTION 2: DEPOSIT DESCRIPTION

2.1 TOPOGRAPHIC MAP

A copy of a topographic map is attached. The quarry location is indicated on the 95H map.

2.2 TEST HOLE LOCATIONS AND DESCRIPTIONS

There were no test holes conducted.

2.3 SUMMARY OF TEST HOLE RESULTS

Not applicable.

SECTION 3: SITE PREPARATION

3.1 ACCESS

The proposed quarrying operation is located within an already developed quarry. The is one access road that is utilized by all permit holders. Some maintenance may be required along the road access. The road access will not be compromised or blocked with regard to other users.

3.2 TIMBER REMOVAL

Any timber larger than 13 cm in diameter will be salvaged for local users. This salvaged timber will be stock piled near the edge of the *Land Use Permit* (LUP) area. There will be a 5 m gap between the stock piles and any adjacent treeline. Any timber smaller that 13 cm will be stored in windrows/stockpiles and will be burned once an approved *Permit to Burn* is obtained from the Department of Environment and Natural Resources (ENR) – GNWT. Since this is a previously developed location, timber removal should be minimal.

3.3 VEGETATION RETENTION

Most, if not all vegetation will be cleared during the site preparation activities. The vegetation will mainly be stored within the soil overburden, within the seed bed. Once the sand source is depleted, the soil overburden will be spread over the disturbed area and the seeds found in the seed bed will help promote natural re-vegetation.

3.4 CLEARING AND GRUBBING

A D-6 bulldozer and excavator will be utilized during clearing and grubbing activities. Salvageable timber will be stored along the edge of the LUP location and soil/overburden will be stored separately in an area where erosion potential is minimal.

3.5 SALVAGE AND STORAGE OF TOPSOIL AND STORAGE OR DISPOSALOF OVERBURDEN

Topsoil will be stripped and stockpiled in an area away from drainage and other stockpiles. It will eventually be used during the reclamation phase of the project. The stockpile for soil will be located near the Northern edge on a depleted section of the quarrying site. Since this is a previously developed area, there should be minimal topsoil that will require clearing.

3.6 BRUSH DISPOSAL

Brushed material will be stored within windrows on site. The brushed material will be stored either for future erosion control use or to be burned once an approved *Permit to Burn* from ENR is obtained. Since this is a previously developed site, the amount of brush that will be required to be cleared will be minimal.

3.7 SCALES, BUILDINGS AND OTHER FACILITIES

No camps or trailers will be required for the quarrying operation. The pit is located within 14 KM North of Fort Simpson. All employees will commute when required. Fuel will be delivered to the site via pick-up trucks and tidy/slip tanks.

3.8 TOPOGRAPHIC SURVEY FOR FUTURE VOLUME CHECKS

The topographic survey will be conducted after the closure of Quarry Permit 2018QP0017.

SECTION 4: PIT OPERATION

4.1 SEQUENCE OF DEVELOPMENT, MINING AND RECLAMATION

Development will take place for the entire area proposed in the quarrying application. The area will be prepared by removing timber and brush followed by removal of topsoil. Extraction will begin in the previously developed quarry to ensure complete depletion of marketable material. Extraction will then move along the active face of the previously developed area. Reclamation will occur after the quarry pit is depleted. This will encompass grading all slopes to a 2:1 ratio and spreading overburden and topsoil over the area.

4.2 LIMITS ON THE TYPE OF EQUIPMENT

The project may require the use of a D-6 bulldozer, loader, excavator, semi haul trucks w/trailers for hauling sand and pick-up trucks for re-fuelling and transport of employees.

4.3 GRADES OF THE PIT FLOOR

The pit floor will be graded for proper drainage off the quarrying location. Drainage will be graded to flow to the South where there is a pile of overburden.

4.4 EROSION PREVENTION

All stockpiles will be stored with no greater than a 2:1 slope ratio. Topsoil stockpile will be situated away from the drainage channel to prevent erosion of the topsoil. Once the LUP is closed, or soon to be expired, all slopes will be graded to a 2:1 ratio to prevent erosion.

4.5 PERMAFROST DEGRADATION

The area of the quarrying location does not have permafrost located within. No controls will be needed for the prevention of permafrost degradation.

4.6 LOCAL WATER MANAGEMENT

The quarry site will be graded for sufficient control of surface water.

4.7 GRADES OF THE SIDE SLOPES/BENCHES

All stockpiles on site will be left with a slope grade of 2:1. Side slopes and benches will all be left with a 2:1 slope grade once activity is complete.

4.8 STORAGE AREA FOR COARSE OF FINE REJECTS

The reject stockpile will be situated within the LUP area. This location can be found on the attached site map.

4.9 STORAGE AREA FOR FINISHED PRODUCTS (i.e. stockpile, and permits required)

The finished product stockpiles will be located within the proposed LUP area. There will be no stockpiles remaining after the *Quarry Permit* expires. Stockpile locations can be found on the attached site map.

SECTION 5: PROCESSING

5.1 PROCESSING LIMITS

Not applicable as there will be no crushing activity.

5.2 SCREENING SIZE LIMITS

Not applicable as there will be no crushing activity.

5.3 CRUSHING SIZE LIMITS

Not applicable as there will be no crushing activity.

SECTION 6: RECLAMATION

6.1 DESIRED FUTURE CONDITION OF THE SITE

After spreading stored topsoil and overburden over the disturbed area, the location will be left to re-vegetate naturally. The site will have no slopes with a slope grade greater than 2:1 and all stockpiles will be removed from the site. The quarry area will be similar to the surrounding developed area.

6.2 ENVIRONMENTAL PROTECTION

During quarrying activities all machinery that is stationary for more than 3 hours will have drip trays located underneath the engine. Any leaking machinery or equipment will be fixed immediately. These two practices will help prevent material and soil from being impacted by hydrocarbons which will help with reclamation once the project has reached that point. Topsoil will be stockpile separately and all other reject material stockpiles will also be stored separately. These stockpiles will be spread over the quarrying area. The reject and overburden stockpiles will be spread first followed by topsoil. The proposed disturbed area is relatively small in size so progressive reclamation does not seem to be feasible at this time.

6.3 AESTHETICS

The quarry location once reclamation activities are complete will blend in with the surrounding area. The surrounding area to the North is previously developed quarrying area. While to the South is forested area. The quarry location will blend into the surrounding profile and have similar appearance and similar vegetation since natural re-vegetation is preferred.

6.4 WILDLIFE HABITAT ENHANCEMENT

With the slopes being graded to a 2:1 slope, wildlife habitat enhancement is not being considered. There is already a couple of larger ponds within the old quarrying area and with the slopes being graded, wildlife will not have issues exiting the quarry location.

6.5 WATER DIVERSION OR PROTECTION

With the grading that will occur during the development phase of the operation, water diversion is not required during the reclamation phase. No surface runoff will be entering any natural water bodies during any phase of this project. The culvert that may be used to allow for drainage into the nearby man-made pond will be left in place since it would be under the access road. This access road is used by other quarry users in the area.

6.6 SLOPING/BENCHING

All slopes will be left at a grade of 2:1. No cliffs or anything of the kind will be left after reclamation occurs.

6.7 PERMAFROST STABILIZATION

No permafrost was found in the quarrying area. This is why no plans are made to promote stabilization of permafrost.

6.8 VEGETATION

No active re-vegetation will occur during the reclamation phase. Topsoil will be stockpiled separately from other stockpiles and spread over the disturbed area. This will help promote natural re-vegetation through the seed bed found in the topsoil and encroachment from the forested area to the South.