

**ENVIRONMENTAL ASSESSMENT REGISTRATION
DOCUMENT**

Dean Clarke

Proposed Sand Quarry Operation - Piper's Hole River
(Near Swift Current)

File Reference No. 7119999

Prepared by:

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1.0 NAME OF UNDERTAKING

Piper’s Hole River Sand Quarry, NL (DNR File # 7119999)

2.0 PROPONENT

2.1 Name of Corporate Body

Dean Clarke’s Contracting

2.2 Address

P.O. Box 176
Terrenceville
Fortune Bay, NL
A0E 2X0

2.3 President/Chief Executive Officer

Mr. Dean Clarke
5 Seaward’s Lane
Clarenville, NL
A5A 1X1
709-427-1751

2.4 Principal Contact Person

Mr. Dean Clarke
5 Seaward’s Lane
Clarenville, NL
A5A 1X1
709-427-1751

3.0 THE UNDERTAKING

3.1 Name of the Undertaking

Piper’s Hole Sand Quarry Operation.

3.2 Purpose/Rationale/Need for the Undertaking

The purpose of the project is to develop additional sand and gravel quarry resources for supplying materials to Clients such as the Department of Works, Services and Transportation, independent Contractors in the construction industry and the general public.

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 Geographic Location

The proposed undertaking is located approximately 470 m west of the community of Swift Current off the Burin Peninsula Highway (Route 210), adjacent to Piper’s Hole River - NTS Map Sheet 01M16 (see Figures 1, 2 and 3).

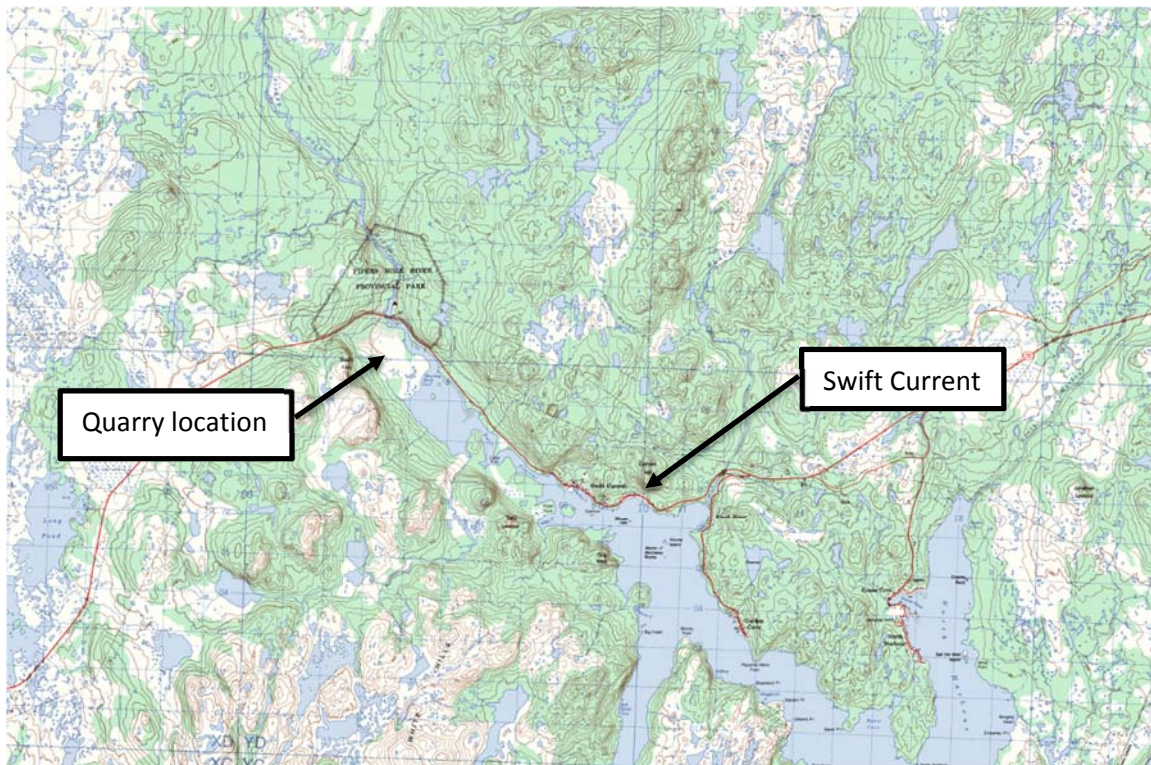


Figure 1: Location Plan



Figure 2: Map showing approximate location of the proposed quarry

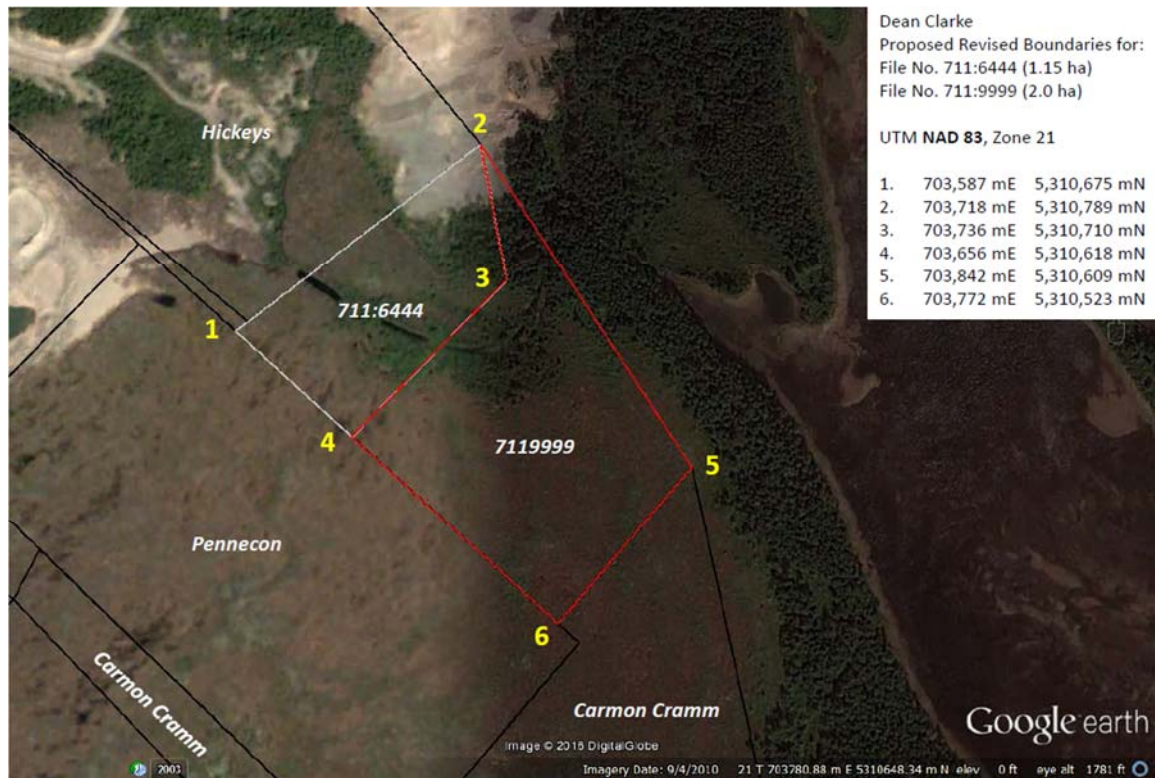


Figure 3: Map showing approximate boundaries of the proposed quarry ⁽¹⁾

⁽¹⁾ From Department of Natural Resources (DNR)

4.2 Physical Features

4.2.1 Site Description

The proposed undertaking will adjoin the proponent’s existing quarry in the same area, and will function as an extension to that operation. The primary physical feature of the undertaking will be the quarry itself, which will be accessed by an existing gravel road that already services the proponent’s existing quarry. The new quarry will be located immediately south of the proponent’s existing quarry (see figure 3). To the east of the project site is Piper’s Hole River, which will be separated from the new quarry by a buffer of existing trees that will be maintained in place throughout the life of the operation. To the south and west the new site will be bounded by quarries being developed by other proponents. There will be no buildings constructed on the site.

Access to the area will be via an existing gravel road that exits off Route 210 to the north. No power transmission lines or other public infrastructure currently exists in the area of the proposed undertaking. The size of the site to be developed is approximately 2 Ha.

4.2.2 Existing Physical and Biological Environment

The proposed site is located adjacent to Piper’s Hole River, which is a registered salmon river. The general location of the quarry is in an area that is underlain by granite bedrock of the Swift Current Intrusive suite, and has surficial soils consisting of glaciofluvial gravel and sand containing less than 5% silt and clay ⁽²⁾.

The topography is very flat, with vegetation generally consisting of a thin organic/peat layer supporting sporadic trees around the perimeter of the site. In the adjoining quarry, the peat and organic growth was relatively thin, generally consisting of a 0.3 – 1.0 m layer of material overlying the sand deposit. The perimeter of the site is dominated by spruce, birch, fir and larch trees.

Typical wildlife found in the area include black bear, moose, lynx, snowshoe hare, coyotes, mink and foxes.

Photos of the proposed site are shown below:



Photo 1 - looking south across the proposed property. Excavator in far distance is working on an adjacent site.

⁽²⁾ From DNR geoscience database



**Photo 2 - showing existing tree buffer between river and proposed quarry.
Quarry will be located on right side of photo.**



**Photo 3 - new quarry will extend through existing operation
shown in right background of photo**



Photo 4 – showing existing quarry. New site will be accessed through quarry face shown in right background behind screener



Photo 5 - existing quarry showing extent of organic overburden

4.3 Construction

The construction phase of site development will consist of the following four components:

- Site access upgrading;
- Clearing;
- Grubbing; and
- Pit development.

These activities will be carried out as follows:

4.3.1 Site Access

Access to the site will be via an existing gravel access road which currently extends to the boundary of the proposed new site through the proponent’s existing quarry. As such, no access road development will be required other than to continue developing the quarry through the proponent’s existing pit.

4.3.2 Clearing

Minimal clearing will be required for the operation as approximately 90% of the site is covered by un-treed peatland. Any clearing required will be carried out in a manner that salvages any merchantable timber encountered and maintains a permanent treed buffer between the quarry and the river.

4.3.3 Grubbing

All overlying organic material and topsoil will be excavated and stockpiled near the perimeter of the site for subsequent re-use in re-habilitating the area once the sand deposit has been mined out.

4.3.4 Pit Development

The new quarry site will cover a total area of approximately 2 hectares when fully developed. Development will start at the boundary of the proponent’s existing quarry and move south toward the center of the new property. Activities to be undertaken during this period will include removal of the existing organic and vegetative cover from the area to be developed first, sloping of the road and quarry surfaces toward a low point in the proponent’s existing quarry, and storing the removed organic material in a location that will not promote sedimentation or water run-off.

In the initial years of development, a pit area will be prepared which is capable of sustaining extraction operations for only one to two years. This activity is expected to take approximately two weeks. Any new pit development required beyond this will depend on the demand for sand products being supplied, and will expand each year in a similar manner as needed.

The proposed start of construction at the site will be June, 2016.

4.4 Potential Sources of Pollution during Construction

The construction phase of the work will involve vegetation removal and earth moving activities only. Potential sources of pollution during this period will include noise, air emissions from construction equipment, waste and litter from human activities, release

of sediments due to site drainage occurrences, and accidental release of hydrocarbons from heavy equipment leaks or re-fueling activities.

4.4.1 Noise and Air Emission Pollution Mitigation

The use of heavy equipment may result in an increase in noise, vehicle emissions and air quality degradation as a result of stirring up dust during operations. Impacts related to these activities are expected to be minimal due to the remote location of the site in relation to any populated areas. This will further be reduced through use of the following mitigative measures:

- All heavy equipment and machinery will be provided with well-maintained mufflers that are compliant with all applicable Provincial and municipal noise regulations and bylaws;
- All motorized equipment will be fitted with air emission controls that meet or exceed Provincial regulatory requirements;
- All machinery will follow designated project routes;
- All machinery will be properly maintained.
- Dust control measures such as water application will be provided if required.

4.4.2 Waste Materials

Construction of the quarry will result in the generation of a minimal amount of domestic waste. All such materials will be collected and disposed of in accordance with Provincial Waste Management Regulations.

4.4.3 Site Run-off

Construction activities could result in the mobilization of some onsite particulate matter such as silt or clay particles during heavy precipitation events. This is expected to be minimal however, as the sand deposits are indicated to be relatively clean and free of the type of materials which are most easily leached out by water ⁽²⁾. However, the following mitigative measures will be used to further reduce the possible occurrence and effects of such instances to levels that are unlikely to be significant:

- Work will be scheduled to avoid periods of heavy precipitation if any run-off issues are expected;
- Excavated areas will be graded towards a low point in the proponent’s existing quarry to reduce/prevent any run-off from the site. As the quarry is composed primarily of sand, any collecting water in the pit will typically leach down through the ground rather than promote overland flow;

- Erosion control measures such as filter fabric material will be installed across any drainage routes, settling ponds, etc, as needed to prevent erosion or release of sediment laden water.
- New excavation area footprints will be minimized by limiting the area exposed at any given time to only that which is needed for production.

4.4.4 Accidents and Malfunctions

Accidents or malfunctions of heavy equipment could result in a spill of fuel, engine oil, or hydraulic fluid. The following mitigative measures will be utilized to reduce the potential effects of such occurrences to levels that are unlikely to be significant;

- Maintenance and servicing of equipment will be conducted off site;
- Emergency response oil spill kits will be maintained on site at all times when the quarry is in operation, to respond to any accidental spills of deleterious substances in a quick and effective manner;
- All petroleum products will be handled in accordance with regulations governing the Storage and Handling of Gasoline and Associated Products under the Environmental Protection Act;
- A responsible worker trained in spill response measures will be present on site at all times that heavy equipment is being operated.

4.5 Operation

The typical quarry operation procedure to be employed at the site will be to first collect all organic overburden material from the area being excavated and stockpile it for future use. Only sufficient organic material will be removed at any given time to meet the near term needs of the quarry operation. At the current rate of demand, this would be equivalent to excavating approximately 5 - 10% of the total quarry area per year.

The quarry operation will see a sloped/vertical face being developed in the pit which will allow a loader to dig into the face to remove the dry sand and gravel material with minimal mechanical effort. This material will then be transported by a loader to a nearby mechanical screener, where it will be dumped into the equipment’s hopper. At this point a coarse screen will automatically remove any large rocks from the raw material before it enters the screener’s conveyor belt. The conveyor belt will carry the remaining material to multiple screens on the opposite end of the screener, where it will be automatically screened into different gradations, depending on customer needs.

All screened material will be stored in separate piles in the pit according to its gradation and intended use. Customers will typically come to the quarry in dump trucks to collect this material when ready, with their trucks being loaded by the proponent’s onsite loader. For customers who do not have their own trucks, the proponent will collect the material in a similar manner and transport it to the customer’s location. No crushing of materials is proposed at the site.

In all cases, sand will typically only be screened as customer orders are received. Waste and oversized rock will be stockpiled on site for future use.

Perimeter ditching is not expected to be required, as the Proponent’s existing pit is located below the elevation of the new quarry extension, and all run-off will be directed to this quarry to serve as a primary settling pond. Land adjoining the property generally consists of level ground, so no overland water flows are expected from this area either that would flow into the new quarry extension.

Equipment to be utilized on site will include:

- A tracked excavator during the site development stage (normally won’t be required for regular day to day operations of the quarry);
- Two front end loaders (wheeled) - (for use in obtaining material from the quarry face, moving it to the screener and loading the trucks);
- Two tandem dump trucks (for transporting material off-site)
- One mobile screener.

The pit operation will typically run from April to November depending on demand for products.

4.6 Potential Sources of Pollution during Operation

The operational stage of the project will involve sand and gravel removal from the quarry, earth moving activities and screening of materials only. Potential sources of pollution during this period will include noise, air emissions from equipment, waste and litter from human activities, release of sediments due to site drainage occurrences and accidental release of hydrocarbons from heavy equipment leaks or re-fueling activities.

4.6.1 Air Quality/Noise

The use of heavy equipment may result in an increase in noise, vehicle emissions and air quality degradation as a result of vehicle movement activities. Impacts related to these activities are expected to be minimal due to the remote location of the site in relation to any populated areas, and will be further reduced by implementing the following mitigation measures:

- All heavy equipment and related machinery will be provided with well-maintained mufflers that are compliant with all applicable Provincial and municipal noise regulations and bylaws;
- All motorized equipment will be fitted with air emission controls meeting or exceeding Provincial regulatory requirements;
- All machinery will follow designated project routes;

- All machinery will be properly maintained.
- Dust control measures such as water application will be provided if required.

4.6.2 Waste Materials

Construction of the quarry will result in the generation of a minimal amount of domestic waste. All such materials will be collected and disposed of in accordance with Provincial Waste Management Regulations.

4.6.3 Site Run-off

Operational activities could result in the mobilization of some onsite particulate matter such as silt or clay particles during heavy precipitation events. This is expected to be minimal however, as the sand deposits are indicated to be relatively free of the type of materials that are most easily leached out by water ⁽²⁾. However, the following mitigative measures will be used to further reduce the effects of any such occurrence to levels that are unlikely to be significant:

- Work will be scheduled to avoid periods of heavy precipitation;
- Excavated areas will be graded towards a low point in the quarry to reduce/prevent any run-off from the site. As the quarry is composed primarily of sand, any collecting water will typically drain down through the ground in this area rather than follow an overland route;
- Erosion control measures such as filter fabric material will be installed across any drainage routes, settling ponds, ditches, etc, as needed to prevent erosion and release of sediment laden water.
- Exposed excavation areas will be minimized by limiting the footprint area exposed at any given time to that which is necessary for production.

4.6.4 Accidents and Malfunctions

Accidents or malfunctions of heavy equipment could result in a spill of fuel, engine oil, or hydraulic fluid. The following mitigative measures will be utilized to reduce the potential effects of such occurrences to levels that are not likely to be significant;

- Maintenance and servicing of equipment will be conducted off site;
- Emergency response oil spill kits will be maintained on site at all times that equipment is operating to respond to any accidental spills of deleterious substances in a quick and effective manner;
- All petroleum products will be handled in accordance with regulations governing the Storage and Handling of Gasoline and Associated Products under the Environmental Protection Act;
- There will be a responsible worker trained in spill response measures on site at all times that heavy equipment is being operated there.

4.7 Potential Resource Conflicts during Operation

The proposed quarry site is located adjacent to a scheduled salmon river which could be impacted by excess sediment run-off. With proper environmental protection measures designed to prevent such release it is not anticipated that the quarry operation will have any significant impact on the river. Preventative measures to be employed to ensure this include the following:

- Overland flow from outside the quarry area is not expected, but if it is encountered it will be controlled by ditching the perimeter of the site in the affected area and preventing such flows from entering the site;
- Drainage within the quarry will be controlled by grading all excavation areas toward a low point near the center of the existing pit. This area will act as a collection point/settling pond for any surface drainage that should occur;
- Erosion will be prevented/mitigated by clearing only sufficient land to accommodate the immediate demands of the marketplace as the quarry advances.
- Filter fabric will be used if needed to prevent migration of sediment outside the quarry area;
- A buffer zone of at least 50 m will be maintained between the quarry site and Piper’s Hole river. Where native trees currently exist in this area they will be left undisturbed to provide sediment control, noise and visual barriers for the quarry operation;
- No fuel will be stored on site.
- Waste materials will be taken away on a daily basis.
- Spill kits will be maintained on the site.
- An employee having spill response training will be present at any time that heavy equipment is being operated.

4.8 Decommissioning/Rehabilitation

Upon completion of quarry operations, site rehabilitation shall be carried out in accordance with the following:

- All pit slopes will be graded to a maximum 30° slope.
- All organic overburden that was originally removed during the construction phase and stored on site will be reinstalled over the disturbed surfaces.

4.9 Occupations

The site construction and operation phases of the project are expected to employ the following occupations, in accordance with the National Occupational Classification, 2011.

4.9.1 Construction Phase

- 1 Site Foreman/Supervisor (7302).
- 1 Heavy Equipment Operator (7521)

4.9.2 Operations Phase

- 1 Pit Manager (7302)
- 1 Pit Foreman/supervisor (7302)
- 2 Heavy Equipment Operators – (1 Excavator, 1 Loader) (7521)
- 2 Truck Drivers (7521)
- Heavy Equipment Mechanics (7312) located offsite.

4.9.3 Hiring Practices

All work will be carried out by direct hiring using the proponent’s own employees. No contracting out is anticipated.

4.10 Project Related Documents

One permit has been applied for from the Department of Natural Resources for the undertaking as described in Application #7119999.

5.0 Approval of the Undertaking

The main permits and approvals required to proceed with the undertaking include approvals from the following agencies:

- Crown Lands
- Dept. of Tourism, Culture and Recreation
- Department of Environment and Conservation
- Department of Natural Resources
- Government Services Center
- Department of Forestry
- Department of Works, Services and Transportation

6.0 SCHEDULE

The proposed schedule for the undertaking will be as follows;

- Registration document submission – March, 2016
- Government Review and Decision - May, 2016
- Commencement of pit construction - June, 2016
- Commencement of pit operations – July, 2016

The purpose for the above dates is to provide sufficient time for the proponent to develop the quarry site and have it operational in time to be used for the 2016 year.

7.0 FUNDING

Funding for this project will be solely provided by the proponent.

8.0 SUBMISSION

DATE: _____

SIGNATURE: _____

NAME: Dean Clarke

Position: President/Owner

9.0 CLOSURE

This document has been prepared for the exclusive use of Dean Clarke by Meridian Engineering Inc. The project was conducted in accordance with our contract with Mr. Clarke, including verbal and written direction received from the client. The information presented herein is based solely on the scope of services described in our contract and information provided by the Client and other parties. Any use which a third party should make of this document, or any reliance on or decisions made based upon it, are the responsibility of such third parties. Meridian Engineering Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this document.