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Sheet Harbour Aggregate Quarry Project

Publication date: January 31, 2019

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1	Native Council of Nova Scotia	Mar 1, 2019
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1	Anonymous	Feb 6, 2019
2	Anonymous	Feb 24, 2019
3	Anonymous	Feb 26, 2019

Date: February 5, 2019

To: Candace Quinn, Environmental Assessment Officer

From: Gillian Fielding, Aboriginal Consultation Advisor, Office of Aboriginal Affairs

Subject: Sheet Harbour Aggregate Quarry Project

It has been noted that Mi'kmaq use was reported within the proposed project site or in the immediate vicinity. The MEKS illustrates that deer, porcupine, partridge and rabbit hunting, as well as gathering for cranberries were the most commonly occurring activities in the Study Area. Section 6.14.2 of the EA Registration document indicates that discussions and engagement with Mi'kmaq organizations are ongoing in order to minimize and, where possible eliminate any potential impacts to traditional land and resource use. It is recommended that the proponent continue these discussions and engagement with the Mi'kmaq to address mitigation measures for potential impacts on traditional land and resource use.

From: Tan, Minh
Sent: February 11, 2019 4:41 PM
To: Quinn, Candace M
Cc: Roberts, Kent G
Subject: Dept Business response on Sheet Harbour Quarry EA

Hello Candace,

Thank you for the opportunity for the Department of Business to comment on the Environmental Assessment Registration for the proposed Sheet Harbour Aggregate Quarry Project. Please find below the comments from Department of Business:

“The proposed project is not inconsistent with the mandate of the Department of Business.”

Please let me know if you have questions or need any further clarification. Thank you.

Minh Tan
Corporate Strategist
Strategy & Policy

Department of Business

T. (902) 424-1728

A. 1660 Hollis Street, Suite 600
Halifax, NS B3J 1V7

From: [Currie, Paul D](#)
To: [Quinn, Candace M](#)
Subject: FW: Sheet Harbour Aggregate Quarry Project Environmental Assessment Registration (1 of 2)
Date: February 25, 2019 4:47:03 PM

Hi Candace

Comments from IMU engineering staff are below

Thanks

Paul

Hi Paul,

Comments on the sheet harbor quarry site reclamation

- The proponent should clarify if they intend to leave any ponds or standing water on the site once reclamation is complete.

When the reclamation plan is submitted, we would expect to see details on the following:

- Objectives for final land use
- Site contouring and stabilization:
 - for long term erosion control;
 - to mitigate impacts of offsite drainage to adjacent lands, wetlands, or watercourses;
 - and
 - to blend with natural topography.
- Slope specifications which ensure a safe & stable site
- Use of overburden for revegetation purposes
- Use of native vegetation
- Specifications of any ponds or standing water left on site
- Specifications of safe exits for any ponds or standing water feature
- Removal of equipment and structures

No further comments.



Date: February 27, 2019

To: Candace Quinn, Environmental Assessment Officer

From: Erin Morash, Fisheries Biologist, Regulatory Review, Ecosystem Management

Subject: Sheet Harbour Quarry Project

Dear Ms. Quinn,

Below you will find the comments from DFO, Fisheries Protection Program regarding impacts to fish and fish habitat for the above referenced project:

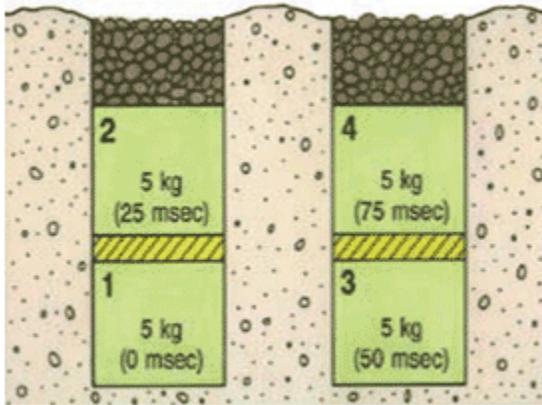
- Information provided states that over the life of the quarry, and most notably at the quarry's max capacity, surface water run-off levels entering nearby lakes including Lawrence Lake, East Mushaboom Lake and Big Eastern Lake are estimated to change significantly. Increases and decreases in surface water run-off entering lakes and/or streams can lead to physical alterations to the fish habitat that could have potential to cause serious harm to fish.
- No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery. Section 35 of the *Fisheries Act* (FA) prohibits serious harm which is defined in the act as "the death of fish or any permanent alteration to, or destruction of, fish habitat. When proponents are unable to completely avoid or mitigate serious harm to fish, their projects may require authorization under Subsection 35(2) of the FA.
- According to the information provided, the eventual footprint of the quarry will extend very close to Big Eastern Lake, up to a buffer of 30m. No information was provided on the quality of fish habitat and fish species currently using the lake. It would be prudent to gather baseline information regarding the water quality of the lake and, fish and fish habitat present prior to the start of the project. The submission in general has very little information on fish and fish habitat in the proposed project area.
- The current project design shows the quarry access road crossing three different

watercourses. Any watercourse crossings must adhere to current Nova Scotia Watercourse Alterations Standard and may be subject to review by DFO.

- The use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae. As the quarry operation expands over time and encroaches closer to Big Eastern Lake, any blasting or use of explosives should be conducted in a way that mitigates any potential impact to fish. Some measures provided below can help to mitigate the impacts of blasting on fish and fish habitat:
 - Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
 - **(SARA-listed aquatic species**
Do not use explosives where SARA-listed aquatic species, their residences or critical habitat occur, without review by DFO.)
 - If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:
 - Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries [timing windows](#).
 - Isolate the work site to exclude fish from within the blast area by using, for example, bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
 - Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
 - Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
 - Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
 - Place blasting mats over top of holes to minimize scattering of blast debris around the area.

- Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
- Remove all blasting debris and other associated equipment/products from the blast area.

Figure 1: sample blasting arrangement



Per Fig. 1: 20 kg total weight of charge; 25 msecs delay between charges and blast holes; and decking of charges within holes.

- If it is determined that serious harm to fish cannot be avoided or mitigated, a *Fisheries Act* Authorization may be required prior to the start of construction.



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Date: February 27, 2019

To: Candace Quinn, Environmental Assessment Officer, Nova Scotia
Environment

From: Emily Gregus, Environmental Assessment Officer, Canadian Environmental
Assessment Agency

Subject: Sheet Harbour Aggregate Quarry Project

The federal environmental assessment process is set out in the [Canadian Environmental Assessment Act, 2012](#) (CEAA 2012). The [Regulations Designating Physical Activities](#) (the Regulations) under CEAA 2012 set out a list of physical activities considered to be "designated projects." For designated projects listed in the Regulations where the Canadian Environmental Assessment Agency (the Agency) is the responsible authority, the proponent must provide the Agency with a project description that includes information prescribed by applicable regulations ([Prescribed Information for the Description of a Designated Project Regulations](#)).

The relevant entries in the Regulations for this type of project are:

16(g). The construction, operation, decommissioning and abandonment of a stone quarry or sand or gravel pit, with a production capacity of 3 500 000 t/year or more.

17(g). The expansion of an existing stone quarry or sand or gravel pit that would result in an increase in the area of mine operations of 50% or more and a total production capacity of 3 500 000 t/year or more.

Based on the information submitted to the Province of Nova Scotia on the proposed Sheet Harbour Aggregate Quarry Project, the production capacity beyond year 20 is not clear. The proponent is advised to contact the Agency directly to confirm whether the project could exceed the production capacity threshold listed in the Regulations. Should the production capacity exceed 3 500 000 t/year or more, the proponent would be required to submit a project description to the Agency.

The proponent is advised that under section 14 of CEAA 2012, the Minister may, by order, designate a physical activity that is not prescribed by regulations made under paragraph 84(a) if, in the Minister's opinion, either the carrying out of that physical activity may cause adverse environmental effects or public concerns related to those



effects may warrant the designation. Should the Agency receive a request for a project to be designated, the Agency would contact the proponent with further information.

The proposed project may be subject to sections 67-72 of CEEA 2012. Section 67 requires that, for any project occurring on federal lands, the federal authority responsible for administering those lands or for exercising any power to enable the project to proceed must make a determination regarding the significance of environmental effects of the project. The Agency is not involved in this process; it is the responsibility of the federal authority to make and document this determination.

If the proponent proposes a change to the project that meets the above or any other description of a designated project listed in the Regulations, the proponent is required to submit a project description to the Agency. It is ultimately the proponent's responsibility to determine whether their proposed project is listed in the Regulations. The Agency can provide guidance and advice in this determination process.

The proponent is encouraged to contact the Agency at (902) 426-0564 or ceaa.projects-projets.acee@canada.ca as indicated above.

Regards,

Emily Gregus
Environmental Assessment Officer
Canadian Environmental Assessment Agency
Emily.Gregus@canada.ca
902-426-8157

Environment

Date: February 27, 2019

To: Environmental Assessment Officer

From: Environmental Health Consultant, Sustainability and Applied Science

Subject: Sheet Harbour Quarry Development

Scope of review:

The focus of this Environmental Assessment review from the NSE Sustainability and Applied Science Division's Regional Environmental Health Consultant is potential impacts on human health. In general, the scope of this review includes the assessment of the potential for the proposed undertaking/project to adversely affect human health in all phases of the project. Note that while general comments on wetlands, groundwater, surface water quality, ecological impacts, and road safety may be included, applicable technical specialists should be consulted for specific guidance. The recommendations provided below are meant to supplement the actions that are outlined in the EA submission documents.

Documents reviewed:

The documents outlined below formed the basis for this EA review, and is referred to as the 'EA submission' through the rest of this memorandum:

- Environmental Assessment Registration Document – Dexter Construction Company Limited, Sheet Harbour Quarry. Including Appendices A - L. Report Prepared by Golder Associates Ltd. Registered on Jan 31, 2019, and accessed from <https://novascotia.ca/nse/ea/SheetHarbourAggregateQuarry//>

Comments re: Sheet Harbour Quarry EA document:

Well Water

Section 5.2 states *"The proposed quarry footprint is within a distance of following number of civic addresses (structures): 800 m – 0 (0); 1.0 km – 10 (17); 1.5 km – 81(124); 2 km – 100 (147). Given the nature of the area, it can be assumed that most of these locations indicated by the civic address count are residential or have a well for potable water supply."*

Section 6.3 states *"Select baseline domestic water quality surveys may be completed prior to construction to establish baseline conditions."*

Given that these wells may fall outside the required distance for pre-blast surveys and considering the size and duration of the project it would be recommended that baseline water quality and quantity assessments should be considered for these private wells. It is noted that there is minimal potential for change to water quality or quantity however as this project is

occurring in a potential recharge area for the groundwater table, the likelihood of impact increases. Due to this fact baseline information should be required as a condition of the approval of this submission, and baseline information would be considered an asset in the protection of health.

Surface Water

The proponent did not include information on the potential impacts to the food chain, specifically the impacts that discharge of effluent from the settling ponds may cause to aquatic organisms and the risk it may pose to human health. Metals and other contaminants of potential concern can bioaccumulate in the food chain which impacts humans that consume them.

The proponent did provide surface water quality data for many parameters but did not include mercury and methyl mercury analysis in their sampling. This should be included prior to implementation of this project.

Additionally, the proponent should be required to monitor water quality in the adjacent downstream area of all settling pond discharge. While comprehensive water quality monitoring would be ideal, at a minimum the proponent should provide routine monitoring for the lifespan of this project for contaminants that are known to bioaccumulate in the food chain and impact human health. These include but may not be limited to arsenic, lead, cadmium, mercury and methyl mercury.

Exceedance in accordance with the CCMA Canadian Water Quality Guidelines for the Protection of Aquatic Life, beyond those provided in the Appendix D of the EA submission document should be required to be reported to the Department of Environment as additional mitigation and monitoring measures may be required to adequately protect human health from bioaccumulation of such metals in the food chain.

Noise

Section 5.4 states “*Site noise levels may be periodically measured at the property boundaries as directed by NSE.*”

Given that the quarry is being located close to, or at near minimum separation distances to multiple residential properties noise monitoring at commencement of the project should be required as a condition of approval of this submission. This would include baseline for all activities such as crushing, blasting, etc. These original monitoring results should be used to determine if levels are within acceptable ranges or if additional mitigation measures must be taken to protect human health.

Section 6.11 states “*The key mitigation measures applied to the assessment of noise are:*

Blasting and crushing will occur as market demand requires.”

The focus of this section is mitigation measures; however, it then states that blasting and crushing will occur as per demand. This statement is not a mitigation measure. As a condition of approval for this submission blasting and activities that create excess noise should be restricted to day time hours.

Health Canada’s- *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise* uses the change in percentage of highly annoyed (%HA) as an appropriate indicator of noise-induced human health effects from exposure to project operational noise and to long-term construction noise exposure. Health Canada prefers that the increase in %HA per representative receptor (i.e. a group of residences in similar geographic proximity to the noise source) be evaluated and not the average increase in %HA for all receptors—which could

underestimate the project-related impact on community annoyance. Noise mitigation measures should be considered when a change in the calculated %HA at any given receptor location exceeds 6.5%. – Health Canada

Determination of Percent Highly annoyed (%HA) in *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise*. Any noise monitoring should require the appropriate %HA (project construction or project operation) be reported and mitigation required when %HA exceeds 6.5%. Additionally, Health Canada recommends that mitigation of project noise be applied if it exceeds a day-night sound level (Ldn) of 75 dBA, even if the change in %HA does not exceed 6.5%.

Risk to human health is determined using criteria from trusted authorities in health risk assessment such as Health Canada. While reference to the Pit and Quarry Guidelines and Nova Scotia Guidelines for Environmental Noise Measurement and Assessment are important from a regulatory point of view regarding noise, they do not represent the most up to date or preferred methodology for assessing risk to human health. The purpose of the EA is to evaluate impact on valued components. Human health is a valued component. The most up to date and relevant resources should be utilized by the proponent regarding risk assessment for it to be considered protective. Further to this point the proponent should use Appendix B: Noise Impacts in EA Checklist of *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise* as a guide for what should be included in an EA submission in relation to noise.

Air

Section 6.12 states “*Impacts to human health as a result of project related activities include potential effects to air quality, specifically fugitive dust on country foods, and from accidents and malfunctions*”

Sediment and dust deposition on lands impacted by the quarry site and trucking activities may increase the level of contaminants in plants and animals used as food sources. Dust may deposit on vegetation and be consumed directly or may be taken up by the plant and enter the food chain, as some contaminants have the ability to bioaccumulate (i.e. metals). Collection and analysis of local vegetation used as food sources in the area surrounding the quarry and the transportation route should be required as condition of approval of this submission. Routine and complaint-based monitoring of sediment and dust deposition on plants should be established and employed throughout the life of the project. Further information for the proponent on this topic is available in Health Canada’s Document “Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods”

http://publications.gc.ca/collections/collection_2018/sc-hc/H129-54-5-2018-eng.pdf



Environmental Stewardship Branch
16th Floor, Queen Square
45 Alderney Drive
Dartmouth, NS B2Y 2N6

February 28th, 2019

Candace Quinn
Environmental Assessment Officer
Nova Scotia Department of the Environment
1903 Barrington Street, Suite 2085
PO Box 442
Halifax, NS B3J 2P8

Dear Ms. Quinn:

RE

**Sheet Harbour Aggregate Quarry Project
Halifax County, NS**

EAS#: 2019-006

Environment and Climate Change Canada (ECCC) has reviewed the information that was provided regarding the above-noted project received with your January 25th, 2019 electronic notification. It is understood the proponent (Dexter Construction Company Ltd.) is proposing to construct and operate a new quarry (up to 81.5ha) to extract and supply aggregate for road and local construction projects. Access to the site would be through the existing Marine Gateway Road. Activities at the quarry would include excavation, blasting, crushing, stockpiling, trucking and reclamation. Site run-off would be collected and directed to a temporary settling pond(s). The quarry would operate 24 hours a day, 7 days a week, as demand requires. The lifespan of the project is estimated at 50 years.

ECCC has specialist knowledge and information relevant to the proposed project that stems from our mandate as set out in various statutes including the *Migratory Birds Convention Act (MBCA)*, *Canadian Environmental Protection Act (CEPA)*, *Canada Water Act*, *Canada Wildlife Act*, *Species at Risk Act*, *Department of Environment Act*, and the *Fisheries Act* (Section 36). ECCC is also the lead federal department in promoting a variety of federal policies and programs concerning the environment.

Review Comments

The Canadian Wildlife Service of ECCC has reviewed the environmental registration document for the proposed project and they have the following comments:

- Blue Felt Lichen, a species listed as Special Concern on Schedule 1 of the Species at Risk Act (SARA), was identified at 4 locations across the study area.

For federal environmental assessments, ss. 79(2) of the Species at Risk Act requires that persons responsible for an environmental assessment “must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out,

must ensure that measures are taken to avoid or lessen those effects and to monitor them.” These measures must:

- be consistent with best available information including any Recovery Strategy, Action Plan or Management Plan in a final or proposed version; and
- respect the terms and conditions of the SARA regarding protection of individuals, residences, and critical habitat of Extirpated, Endangered, or Threatened species.

It is best practice to consider species that are not yet listed under SARA, but have been assessed and designated by COSEWIC, as though they were listed under SARA. While there is no federal environmental assessment for this project, we advocate a similar approach for the provincial environmental assessment.

For species-specific technical information for terrestrial species at risk not protected under the *Migratory Birds Convention Act (MBCA)*, we recommend that the Nova Scotia Department of Natural Resources be consulted.

A monitoring plan to verify the efficacy of mitigation measures should also be submitted to appropriate regulatory authorities, including ECCC, for review.

- Some species of migratory birds, including the threatened Common Nighthawk, may be attracted to cleared areas for nesting. The proponent should clarify how it would respond should migratory birds nest in previously cleared areas of the site.
- CWS recommends a 200 m buffer from Common Loon nests during the months of May, June, and July. Also, we recommend that no high disturbance activities (e.g. blasting) occur within 1 km of active Common Loon nests during the nesting season (May, June and July).
- Bird collisions at lit and floodlit structures are a known problem. In coastal area, nocturnal migrants and night-flying seabirds (e.g. storm-petrels) are the birds most at risk of attraction to lights and lit structures. Attraction to lights may result in collision with lit structures or their support structures, or with other birds. Disoriented birds are prone to circling a light source and may deplete their energy reserves and either die of exhaustion or drop to the ground where they are at risk of depredation.

It is recommended that proponents avoid or restrict the time of operation of exterior decorative lights such as spotlights and floodlights whose function is to highlight features of buildings, or to illuminate an entire building. Especially on humid, foggy or rainy nights, their glow can draw birds from far away. It would be best for the birds if these lights were turned off, at least during the migratory season, when the risk to birds is greatest and also during periods when Leach's storm-petrels would be dispersing from their colonies.

Lighting for the safety of the employees should be shielded to shine down and only to where it is needed, without compromising safety.

Street and parking lot lighting should also be shielded so that little escapes into the sky and it is directed where required. LED lighting fixtures are generally less prone to light trespass and should be considered.

- If there is ultimately a need to decommission a building or structure used for nesting by gulls, swallows, or other species of migratory birds, Environment Canada's Canadian Wildlife Service (CWS) should be consulted in a timely manner in advance of any proposed decommissioning activities for species-specific considerations including potential permitting requirements.
- Since even small spills of oil can have very serious effects on migratory birds, every effort should be taken to ensure that no oil spills occur. The proponents should ensure that all precautions are taken by the contractors and/or staff to prevent fuel leaks from equipment, and that a contingency plan in case of oil spills is prepared.
- Fueling and servicing of equipment should not take place within 30 meters of environmentally sensitive areas (including wetlands).
- A variety of species of plants native to the general project area should be used in revegetation efforts. Should seed mixes for herbaceous native species for the area not be available, it should be ensured that plants used in revegetation efforts are not known to be invasive.

Measures to diminish the risk of introducing invasive species be developed and implemented during all project phases. These measures could include:

- cleaning and inspecting construction equipment prior to transport from elsewhere to ensure that no matter is attached to the machinery (e.g., use of pressure water hose to clean vehicles prior to transport); and
- regularly inspecting equipment prior to, during and immediately following construction in areas found to support Purple Loosestrife to ensure that vegetative matter is not transported from one construction area to another.

Applicable Legislation

The *Migratory Birds Convention Act* (MBCA) protects most bird species in Canada however, some families of birds are excluded. A list of species under MBCA protection can be found at <https://ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1> .

Under Section 6 of the *Migratory Birds Regulations* (MBR), no person shall disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities. Furthermore, Section 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

“5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

(2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds.”

It is the responsibility of the proponent to ensure that activities comply with the MBCA and regulations. In fulfilling its responsibility for MBCA compliance, the proponent should take the following points into consideration:

- Information regarding regional nesting periods can be found at <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>. Some species protected under the MBCA may nest outside these timeframes.
- Most migratory bird species construct nests in trees (sometimes in tree cavities) and shrubs, but several species nest at ground level (e.g., Common Nighthawk, Killdeer, sandpipers), in hay fields, pastures or in burrows. Some bird species may nest on cliffs or in stockpiles of overburden material from mines or the banks of quarries. Some migratory birds (including certain waterfowl species) may nest in head ponds created by beaver dams. Some migratory birds (e.g., Barn Swallow, Cliff Swallow, Eastern Phoebe) may build their nests on structures such as bridges, ledges or gutters.
- One method frequently used to minimize the risk of destroying bird nests consists of avoiding certain activities, such as clearing, during the regional nesting period for migratory birds.
- The risk of impacting active nests or birds caring for pre-fledged chicks, discovered during project activities outside the regional nesting period, can be minimized by measures such as the establishment of vegetated buffer zones around nests, and minimization of activities in the immediate area until nesting is complete and chicks have naturally migrated from the area. It is incumbent on the proponent to identify the best approach, based on the circumstances, to complying with the MBCA.

Further information can be found at <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=C51C415F-1>

The proponent should also be reminded that the prohibitions under the *Species at Risk Act* (SARA) are now in force. The complete text of SARA, including prohibitions, is available at www.sararegistry.gc.ca.

Water Quality

Pollution prevention and control provisions of the *Fisheries Act* are administered and enforced by ECCC. Subsection 36(3) of the *Fisheries Act* prohibits “anyone from depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter such water”.

It is the responsibility of the proponent to ensure that activities are managed so as to prevent the release of substances deleterious to fish. In general, compliance is determined at the last point of control of the substance before it enters waters frequented by fish, or, in any place under any conditions where a substance may enter such waters.

Accidents and Malfunctions

Hazardous materials (e.g. fuels, lubricants, hydraulic oil) and wastes (e.g. waste oil) should be managed so as to minimize the risk of chronic and/or accidental releases. For example, the proponent should encourage contractors and staff to undertake refueling and maintenance activities on level terrain, at a suitable distance from environmentally sensitive areas including watercourses, and on a prepared impermeable surface with a collection system.

The proponent is encouraged to prepare contingency plans that reflect a consideration of potential accidents and malfunctions and that take into account site-specific conditions and sensitivities. The Canadian Standards Association publication, *Emergency Preparedness and Response*, CAN/CSA-Z731-03, reaffirmed 2014), is a useful reference.

All spills or leaks, such as those from machinery or storage tanks, should be promptly contained and cleaned up (sorbents and booms should be available for quick containment and recovery), and reported to the 24-hour environmental emergencies reporting system (Maritime Provinces 1-800-565-1633)

I trust these comments will be of assistance. If you have any questions, please give me a call at (902) 426-5035 or email me at Suzanne.wade@canada.ca.

Sincerely,

Original signed by Suzanne Wade

Suzanne Wade
Environmental Assessment Section
Environmental Protection Operations Directorate, Atlantic

cc. M. Hingston
R. Gautreau

Agriculture

Date: 2019-03-01

To: Helen Yeh, Environmental Assessment Officer

From: Executive Director, Policy and Corporate Services
Nova Scotia Department of Agriculture

Subject: Sheet Harbour Aggregate Quarry Project Environmental Assessment

Thank you for the opportunity to review the Sheet Harbour Aggregate Quarry Project Environmental Assessment.

The Nova Scotia Department of Agriculture (NSDA) has the following comments:

Based on the Canada Land Inventory classification, the location of the quarry is on class 7 land, unsuitable for agriculture. NSDA has no further comments.

Fisheries and Aquaculture

Date: 2019-03-01

To: Helen Yeh, Environmental Assessment Officer

From: Executive Director, Policy and Corporate Services
Nova Scotia Department of Fisheries and Aquaculture

Subject: Sheet Harbour Aggregate Quarry Project Environmental Assessment

Thank you for the opportunity to review the Sheet Harbour Aggregate Quarry Project Environmental Assessment.

The Nova Scotia Department of Fisheries and Aquaculture (NSDFA) has the following comments:

- Given that the proposed project is not directly adjacent to the coastline, no further concerns are identified related to the commercial fishing industry or buying and processing sectors.
- There are several aquaculture operations in the vicinity of the proposed location as well as rockweed harvesting. Potential impacts to such operations should be considered, including turbid waters created by the project activities.
- Very little data is provided for Big Eastern Lake which is near the quarry footprint. Clarity on adherence to necessary setbacks in the riparian zone would be appreciated. The documents make no reference to fish in the lakes, so NSDFA recommends that a fisheries assessment be included to assess potential impacts of this development to adjacent fish populations and/or habitat.

Environment

Date: March 1st 2019

To: Candace Quinn, Environmental Assessment Officer

From: Inspector Specialist 3, Bedford

Subject: Sheet Harbour Aggregate Quarry Project Environmental Assessment

The majority of the environmental monitoring program lack detail. There is no quarry block plan, or plan for the site advancement.

The surface water and ground water monitoring programs are limited, the programs do not appear to be comprehensive and are not representative of the entire area.

Most of the wetlands are listed as "Isolated", but there is no definition of the term isolated. The topography suggests that the wetlands would be hydrologically connected. The details of the methods used during routine quarry operation to protect the wetlands prior to alteration appears to be minimal. It is a concern that a dedicated study for herpetofauna was not undertaken.

The fisheries monitoring was very limited. The watercourses were not actively tested for aquatic vertebrates. The hanging culvert should be repaired. If the hanging culvert is repaired, this should restore fish passage to the upper reaches of the watercourse.

The erosion and sedimentation control plan lacks detail.

The dust/particulate management strategy lacks detail.



Lands and Forestry

MEMORANDUM

TO: Candace Quinn, NS Department of Environment
FROM: Department of Lands and Forestry
DATE: March 1, 2019
RE: Sheet Harbour Aggregate Quarry Project

The Department of Lands and Forestry provides the following comments on the above project:

Crown Land

It does not appear that this project requires any authorizations from Land Administration. The location however is very close to a provincial park and other Crown lands. If the scope of the project extends to the Crown lands in the area authorizations will be required.

Wildlife

Department of Lands and Forestry requests the following:

1. Provide all shapefiles including survey locations and species observation data to Lands and Forestry for our records.
2. Provide map and data of vegetation survey transects or plots, this information would assist in remediation of the area and provide Lands and Forestry with valuable information related to pre-disturbance.
3. Surveys for wetlands and watercourses were performed in September. Provide details if additional field checks performed during high flow water times (i.e. spring or after storm events). Provide justification why surveys were not performed during high water times.
4. Blue Felt Lichen is identified in the project area. Provide mitigation measures that will be applied to the project to avoid this species, for more information review the At Risk Lichens Special Management Practices
[:https://novascotia.ca/natr/wildlife/habitats/terrestrial/pdf/SMP_BFL_At-Risk-Lichens.pdf](https://novascotia.ca/natr/wildlife/habitats/terrestrial/pdf/SMP_BFL_At-Risk-Lichens.pdf)

MEMORANDUM

To: Paul Currie, Manager, Industrial Management Unit

From: Hydrologist, Industrial Management Unit, Sustainability and Applied Science Division

Date: March 1, 2019

Subject: Sheet Harbour Quarry EA Review Comments

Scope of review:

The scope of this Environmental Assessment review from the NSE Sustainability and Applied Science Division Hydrologist is to assess the potential environmental impacts and proposed mitigations of the proposed undertaking on surface water quantity and management. While comments may also include considerations for impacts on general surface water quality, groundwater, freshwater fish habitat, and wetlands, appropriate technical specialists for these areas should be consulted for specific review and comment.

Documents reviewed:

The documents outlined below formed the basis for this EA review, and is referred to as the 'the submission' through the rest of this memorandum:

- Environmental Assessment Registration Document – Sheet Harbour Quarry. Including Appendices A - L. Report Prepared by GHD. Dated January 24, 2019, and accessed from <https://novascotia.ca/nse/ea/SheetHarbourAggregateQuarry/>

Review re: Sheet Harbour Aggregate EA document:

General:

- It is unclear in the submission what the 'Potential Aggregate Resource' area outlined in Figure 3 represents. Will this area be potentially disturbed as part of the proposed works? If yes, why is it not included within the final ~81.5 ha quarry extent that is used throughout the analyses completed in the submission?

Water quantity: Watercourses and Site Drainage

- Minimal detail is provided regarding the plan for the construction of the 5 km, 15 m wide access road, beyond stating that 2 km is already constructed (pg 15). Field surveys identified three watercourses to be crossed by the proposed access road, including the existence of a hung culvert at WC-1. There is no specific reference to the potential impacts resulting from the construction of this access road in the Surface Water and Resources VEC section, and minimal information in general surrounding this proposed activity to understand the plan, potential for environmental impacts, appropriate mitigations, or need for additional Departmental approval (i.e., watercourse alteration).
- A water balance was completed to understand the potential changes to flow resulting from the proposed works. This assessment outlined that "...EOQ conditions could potentially have a significant impact on Lawrence Lake, Big Eastern Lake and East Mushaboom Lake." (pg 5, Appendix E)
- No fish habitat studies were completed for the Lawrence Lake and East Mushaboom Lake/Big Eastern Lake watersheds that are outlined as potentially significantly impacted as a result of the proposed works
- Potential impacts outlined in the water balance analysis are not summarized within 'Section 7 – Effects of Project on the Environment', and no information is provided in the submission to understand the environmental impacts associated with the potential changes outlined
- "Grading of the quarry floor to direct have (*sp?*) the site towards the Big Eastern Lake drainage can be accomplished as the Project progresses" (pg 28) is provided as a potential mitigation for the increases of runoff outlined in the water balance, but is not supported by any further analysis or further discussed in the submission.
- Assumptions for water balance include quarry to be 100% impervious at mid and end of life. The rationale behind the assumption is reported as to represent a conservative look at the system post-development. It is unclear whether this assumption is valid in terms of effectively estimating runoff from the quarry, or in examining 'worst-case' conditions. For example, if the quarry surface instead is well draining due to the quarrying activities that occur on site (e.g., blasting), it could instead mean a significant reduction of flows to Lawrence Lake, which would have a different set of potential environmental impacts. In addition, regarding table 3.1 in Appendix E, from a check of the numbers provided, the numbers outlined in the table do not appear to reflect those in text. For example, for Evaporation, it appears that ~483 mm was used in calculating the values in Table 3.1, and not the ~512 mm mentioned in text.
- The EA submission indicates that surface flow will be directed around the Project and/or away from disturbed areas.
- The submission states that "Residual impacts on surface water resources and downstream fish habitat are expected to be negligible" (pg. 31), and an overall categorization of significance including mitigation and natural limitations of 'negligible' for surface water resources and wetlands (Table 7-1).

Water Quality

- Limited details surrounding the sedimentation pond are provided in the submission. It is unclear in the EA submission where the sediment pond will be located and how it will be operated.

Sufficient information surrounding how the sedimentation pond will be designed and operated is required in order to have confidence in mitigating water quality concerns. The sedimentation pond will need to be of sufficient size in order to handle the expected surface water inputs, which as outlined in the water balance may be significant. Design will also require considerations for storage and treatment of an appropriate return period storm event.

Reclamation

- General details related to reclamation are provided in the submission and the accompanying Appendix K. It is unclear what is proposed from a water management perspective for the reclamation phase. A cross section for the quarry extents is provided in Figure 10, but no details are available for how water within the quarry pit area is expected to be discharged in the closure case.

Conclusions:

My opinion is that the information that has currently been provided is insufficient for predicting adverse environmental effects resulting from the proposed works. Please see below for a summary of the considerations in making this recommendation:

- The submission outlines that 5 km of access road will be constructed as part of the proposed works, but provides no details surrounding this specific activity, and no specific considerations of this activity in the assessment of potential impacts and mitigations to surface water resources
- The submission provides results of a water balance that reports that "...EOQ conditions could potentially have a significant impact on Lawrence Lake, Big Eastern Lake and East Mushaboom Lake." (pg 5, Appendix E), but does not further assess these impacts and/or any potential mitigations, or provide any consideration of these significant impacts in the Monitoring and Follow-up sections of the report. As a result of this gap in analysis, the potential long-term impacts to East Mushaboom Lake, Big Eastern Lake, and Lawrence Lake and their associated watercourses and habitat are currently unknown. The potential impacts of these changes can include alterations to fish and fish habitat, flooding of downstream properties, and at current there is insufficient information provided to understand the potential extent of these impacts and what mitigations may be necessary or appropriate. Without this supporting information or focus on these considerations in this review, other reviewers with different focuses (e.g., fisheries, wildlife) may not be aware that the potential for these impacts exists, and may not consider these impacts as part of their review and recommendations.
- An area designated as 'Potential Aggregate Resource' is outlined in Figure 3 of the submission, but not described in the submission. Confirmation of the plan for this area is required in order to understand if there is potential for additional disturbance outside of the quarry extent resulting from the proposed works.
- It is unclear in the submission what the reclamation case will look like from a water perspective, and as a result the long-term effects of the proposed works.

Recommendations:

- An assessment of the potential impacts associated with the results of the water balance analysis and the identification of any appropriate mitigations is required. As part of this assessment, clarification of the assumptions made in the water balance and questions raised in the comments above is required.
- Additional details and explicit consideration and assessment of the potential impacts associated with the construction of the access road are required
- Additional details surrounding the plan for reclamation are required to understand the potential long-term impacts to water resources related to the proposed works, including a water balance scenario that outlines the reclamation case
- Clarification surrounding the 'Potential Aggregate Resource' area outlined in Figure 3. If this area is planned to be disturbed as part of the proposed works, it needs to be considered in the analyses completed within this submission.

- The culvert at WC-1 should be replaced with a properly sized and installed conveyance structure, and approvals/notifications for any watercourse alterations resulting from the proposed works must be obtained prior to the commencement of the works.
- Details related to final sedimentation pond design by a qualified professional is required as part of any industrial approval application for the works, including a plan to monitor compliance during the different operational phases of the year. A detailed sediment and erosion control plan is to be developed by a qualified professional and is required to be submitted as part of any industrial approval application for NSE review and approval prior to construction activities, including clearing, grubbing, and stripping, take place.

Environment

Date: **March 1, 2019**

To: **Candace Quinn**, Environmental Assessment Officer

From: **Bernard J. Matlock, P. Eng.**
Regional Engineer, NSE
Central Region

Subject: **Comments on Environmental Assessment Registration**
Sheet Harbour Aggregate Quarry Project

I have completed a review of the Environmental Assessment Registration document for the proposed Sheet Harbour Aggregate Quarry Project proposed to be situated off Marine Gateway Road in Sheet Harbour, HRM.

It is expected that the aggregate generated from the proposed project could be ship loaded to overseas destinations from the nearby provincial Sheet Harbour Marine Facility. The registration document did not fully elaborate on the potential environmental impacts that could originate from transporting and ship loading large volumes of aggregate through the Marine Port and Sheet Harbour.

The EA registration did not appear to have adequate mitigation measures to address the increase in surface water flows which would be received at Lawrence Lake prior to the quarry advancing to full development, possibly beyond the 20-year stage.

Should the Department multi-stakeholder EA review indicate that the project can proceed under terms and conditions, please consider the proponent provide the following items:

1. An Industrial Approval will be required for the quarry in accordance with the Activities Designation Regulations. The application information should demonstrate the capability to comply with the Nova Scotia Pit and Quarry Guidelines.
2. Approvals will be required prior to the alteration or destruction of wetlands which will include appropriate compensation.
3. Any application for Industrial Approval should include:
 - i) Detailed plans for stages of quarry development and progressive reclamation, which indicate key site features and include, but is not limited to, quarry footprint, direction of advance, stockpiles, berms, access roads, water courses, water supplies, settling ponds, drainage systems,
 - ii) Soil erosion and sedimentation plans,
 - iii) Site and facility drainage plans which including settling ponds,

- iv) A surface water monitoring program which includes point discharges from the quarry facility, baseline, upstream, background and downstream stations including, receiving streams leading to, and including, Lawrence Lake,
- v) A wetland monitoring program which considers protection of water quality and quantity in wetlands.
- vi) A groundwater monitoring program, which clearly identifies the location of monitoring stations, the water table in relation to the quarry depth and surrounding water bodies,
- vii) A program for ongoing evaluation of acid generating and acid drainage potential of the quarry facility, including the location of sample stations.

Date: March 1, 2019

To: Acting Manager, Water Management Unit, Sustainability and Applied Science Division

Cc: Environmental Assessment Officer

From: Senior Hydrogeologist, Sustainability and Applied Science Division

Subject: Sheet Harbour Aggregate Quarry Project

Environmental Assessment (EA) reviews from the NSE Sustainability and Applied Science Division Senior Hydrogeologist focus primarily on groundwater resources. This includes the potential for the proposed undertaking/project to adversely affect groundwater resources, including general groundwater quality, quantity, municipal water supplies, local water supply wells and groundwater contributions to stream baseflow, groundwater recharge and wetlands. The review is conducted of materials provided by the proponent during the EA registration process. Any recommendations made herein are based on this review.

The purpose of the proposed undertaking is to develop a rock quarry to supply aggregate markets on the Eastern Shore and beyond with quality construction aggregate. The project is located within 81 hectares on PID 40832503 off Marine Gateway Road in Sheet Harbour, Nova Scotia. The project is anticipated to commence in 2020 with initial volumes of 50,000 tonnes per year. Depending on market demand the anticipated life of the project is 20 – 50 years.

The Project includes site watercourse alteration, overburden removal, bedrock drilling, blasting, hauling, crushing, screening, washing, stockpiling, trucking/transport, on-site fueling activity, potential temporary on-site fuel storage, potential temporary asphalt plant, on-site surface water management and eventual decommissioning and reclamation of the site. Aggregate produced by the operations is intended primarily for road construction use.

Comments

The Sheet Harbour Aggregate Quarry Project is a new quarry proposal for the area.

- The location of the undertaking is not within a municipal drinking water Source Water Protection zone or Wellfield Protection Area (WHPA) or a regulated Protected Water Area. The nearest Protected Water Area is the Stewiacke Watershed Protected Water Area which is about 55 km northwest of the site. The nearest municipal

drinking water supplies are for the communities of Middle Musquodoboit and Sherbrooke – both greater than 50 km from the site.

- The project site is located over a topographic high which will in effect be levelled out by the activity. Surface water drainage direction is currently radially to the north, south, east and west of the site. The site boundary to the north, however, immediately borders on Big Eastern Lake.
- The nearest Public Registered Drinking Water Supplies are 5-6 km north, in the community of Sheet Harbour, across the Sheet Harbour inlet.
- The Nova Scotia Environment Well Logs Database (WLB) (as accessed through the Natural Resources Nova Scotia Groundwater Atlas online interactive map 2019) locates 29 drilled water wells in the Mushaboom area, within about 2 km radius of the project boundaries (See Figure 1).

The proponent states in the registration document:

“The proposed quarry footprint is within a distance of following number of civic addresses (structures): 800 m – 0 (0); 1.0 km – 10 (17); 1.5 km – 81(124); 2 km – 100 (147). Given the nature of the area, it can be assumed that most of these locations indicated by the civic address count are residential or have a well for potable water supply.”

The online Nova Scotia Coordinate Referencing System Viewer (online) was also accessed for viewing satellite imagery and mapping of the site, as it has a detailed 10K Ortho map for the area. This mapping confirms that there are a number of additional residential properties in the community of Mushaboom, immediately south of the proposed project site. These additional properties likely also use well water supply but may not have well logs entered into the provincial database or identified in the online mapping (NS Groundwater Atlas).

It has been noted previously that the Well Logs Database Records and any mapping based on these records need to be considered in terms of locational errors/accuracy of the original data. In addition, the Well Logs Database does not contain a complete listing of every water supply well in the province and some areas may contain water supply wells not reported. Field truthing and field surveys for actual water supply well locations would be needed for verification.

- The nearest likely residential wells are located within 1 km downgradient of the project site based on visual imagery and civic property mapping, assuming a water supply based on the existence of a residence and site buildings.
- Most of the coastal wells in the Mushaboom area (2 km search zone) are drilled wells averaging about 50 metres depth (range from 14-91 metres depth). A number of these wells are within 200 metres of the coast.
- The Nova Scotia Groundwater Atlas (online 2019) identifies areas of the province that are vulnerable or susceptible to seawater intrusion (SWI). These areas are evaluated based on a number of factors such as distance to coastline, topographic

slope, number of wells and so on. An area in Mushaboom is indicated to have both high and medium vulnerability to seawater intrusion (see Figure 2). It could be anticipated that any change in either groundwater recharge zones (such as by altering physical conditions by quarry activities) or coastal conditions (e.g. sea level rise) could affect these water wells already susceptible to seawater intrusion. The most likely indicators of SWI would be increases in groundwater chemistry for chlorides, sodium and other parameters. These changes could negatively and permanently impact water well supplies, and in worst cases could render the drinking water supply unusable.

- Based on topographical mapping such as presented in Figure 1 in the registration document, the project site area is located in a local topographic high. As such, this area is likely to be a groundwater recharge zone with infiltration of precipitation through soils into the underlying fracture bedrock aquifer.
- Groundwater Resources are listed as a Valued Environmental Component (VEC) on page 32 of the registration document. In particular, the established community of Mushaboom and surrounding area primarily relies on groundwater for drinking water supplies.
- Regarding the Groundwater VEC, the proponent states (page 35):

“No interactions are anticipated with groundwater resources from construction and operation of the Project. The quarry floor will be maintained at a minimum 1.0 m above the groundwater table. Residential wells are generally downgradient of the Project, but given the existing recharge capability of the site and distance to wells, no impacts are anticipated.”

- The proponent presents a preliminary surface water balance on page 27 of the document (with full description in Appendix E). This preliminary water balance notes post-quarry increases in runoff drainage of up to 45%.

“It can be seen that the mid-life quarry operations have minimal impact on the receiving water bodies with a maximum change in runoff percentage of 1.19%. However, EOQ conditions could potentially have a significant impact on Lawrence Lake, Big Eastern Lake and East Mushaboom Lake. Big Eastern Lake and East Mushaboom Lake lose approximately 14% of runoff that enters the lakes resulting in a potentially significant impact. Lawrence Lake experiences a 44.92% increase in runoff, based on the conservative assumption of the runoff coefficient of the quarry floor and the added drainage area.”

The potential impact of the fact of additional runoff discharge from the project site area is that this water would then not enter the groundwater system as recharge. Large changes in recharge conditions such as this preliminary water balance analysis indicates could potentially result in changes to the hydrogeologic regime, including changes in: water table elevations, equipotential head conditions, groundwater flow velocities and the location of the seawater-freshwater subsurface interface.

- Given the critical nature of groundwater supply to the local community, and its vulnerability to seawater intrusion, it is my view that additional work is necessary to evaluate whether the proposed activity may cause permanent negative impacts to

local groundwater conditions affecting local water supplies on Mushaboom and area.

- “Potential Effects, Proposed Mitigation, Monitoring and Follow-Up” for groundwater are described on page 35 of the registration document. As noted above, this needs to be updated to evaluate potential effects on seawater intrusion to the community’s coastal wells. This particularly important due to the long-term nature of the project and how impacts may slowly develop.

Monitoring of shallow groundwater on the site by the proponent is proposed with 3 monitoring wells. Any monitoring should include both shallow and deep groundwater conditions in order to evaluate recharge conditions and shallow vs. deep flow conditions. Therefore, nested wells or well pairs at each location is recommended.

- Acid rock drainage (ARD) potential from the site is discussed on page 23-24. The project site geology is Halifax Group, Goldenville bedrock which generally has negligible ARD. The proponent has tested two samples from one location near the site with results indicating not acid generating. Additional sampling may be necessary.
- The document indicates other activities on the site for which appropriate contingency and/or environmental protection plans should be put in place. These are related to:
 - Refuelling activities
 - Temporary asphalt plant operation

The proponent states that:

“A Draft Contingency and Emergency Response Plan (Appendix L) has been developed to address the potential loss of POL [petroleum, oils or lubricants] on site.”

Recommendations

- A) In my opinion, the information that has currently been provided in the registration document is insufficient for evaluating the potential for adverse environmental effects resulting from the proposed activity – particularly with respect to groundwater-surface water flow interactions and the potential effects of enhanced seawater intrusion contamination (due to seawater chemistry) on nearby coastal water supply wells. This is critical to the community of Mushaboom and area, which is 1-2 km directly downgradient of the site.

Portions of the community are already designated as vulnerable to seawater intrusion and the preliminary information presented indicates that the proposed activity may very well exacerbate these conditions in the long-term. Recommendations to address the insufficient information include:

- i. More information is needed to demonstrate that potential impacts to water supply wells in the area will be avoided. This should include the development of an overall groundwater-surface water integrated hydrologic numerical model. Information needs to include a more detailed analysis of surface water flows, integrated into a groundwater flow analysis. The analysis also needs to include a

quantitative evaluation of coastal seawater intrusion interface conditions and groundwater chemistry that could be affected by proposed site activity changes to groundwater and surface water flows.

The overall analysis should be conducted with the use of appropriate numerical (computer) flow models with proper validation and calibration to site conditions.

B) In addition to required information recommended in A), potential future operational considerations include the following:

- i. It is recommended that a minimum of four (4) monitoring well locations be established on the site to assess the water table location, groundwater flow directions, baseline (and background) water quality. Each location should include a multi-level piezometer (or an additional separate monitoring well at different depth) in order to determine vertical hydraulic gradient conditions (recharge).
- ii. The proponent does not intend to excavate below the water table. Should excavation within 1 metre of the measured maximum annual water table level, or below, be desired the proponent will need to provide additional information on potential effects and mitigation assessment and obtain an approval amendment.
- iii. It is recommended that standard precautionary statements be provided in any approval terms and conditions that state, to the effect, that “the Proponent should replace or repair any water supply well found to be adversely affected by their quarry operation to the satisfaction of the well owner”.
- iv. Groundwater discharge from the site (either subsurface or as surface water discharge and stream baseflow discharge) should be expected to meet the Canadian Guidelines for Drinking Water Quality, CCME Environmental Quality Guidelines – Freshwater Aquatic Life, and other regulatory requirements related to any water quality changes resulting from the site (not due to natural background conditions). Any exceedances likely due to quarry activities should be properly mitigated.
- v. Pre-blast surveys of all water supplies within 800 metres of the blast site should be a requirement. Well locations, well construction conditions, water levels, yield and water quality tests (including bacteria, general chemistry and metals) should be included in the survey.
- vi. Pre-Construction Water Well Surveys should be conducted in all water supply wells within 2 km of the proposed quarry boundaries. These surveys should occur prior to any construction activities. Both water quality and water levels should be evaluated in the surveys. Methodologies and monitoring proposed for the water well survey should be submitted to NSE for approval prior to implementation.



Identify Results (29)

Figure 1 Water Well Logs located within 2 km of project boundaries (NS Groundwater Atlas, accessed online 2019)

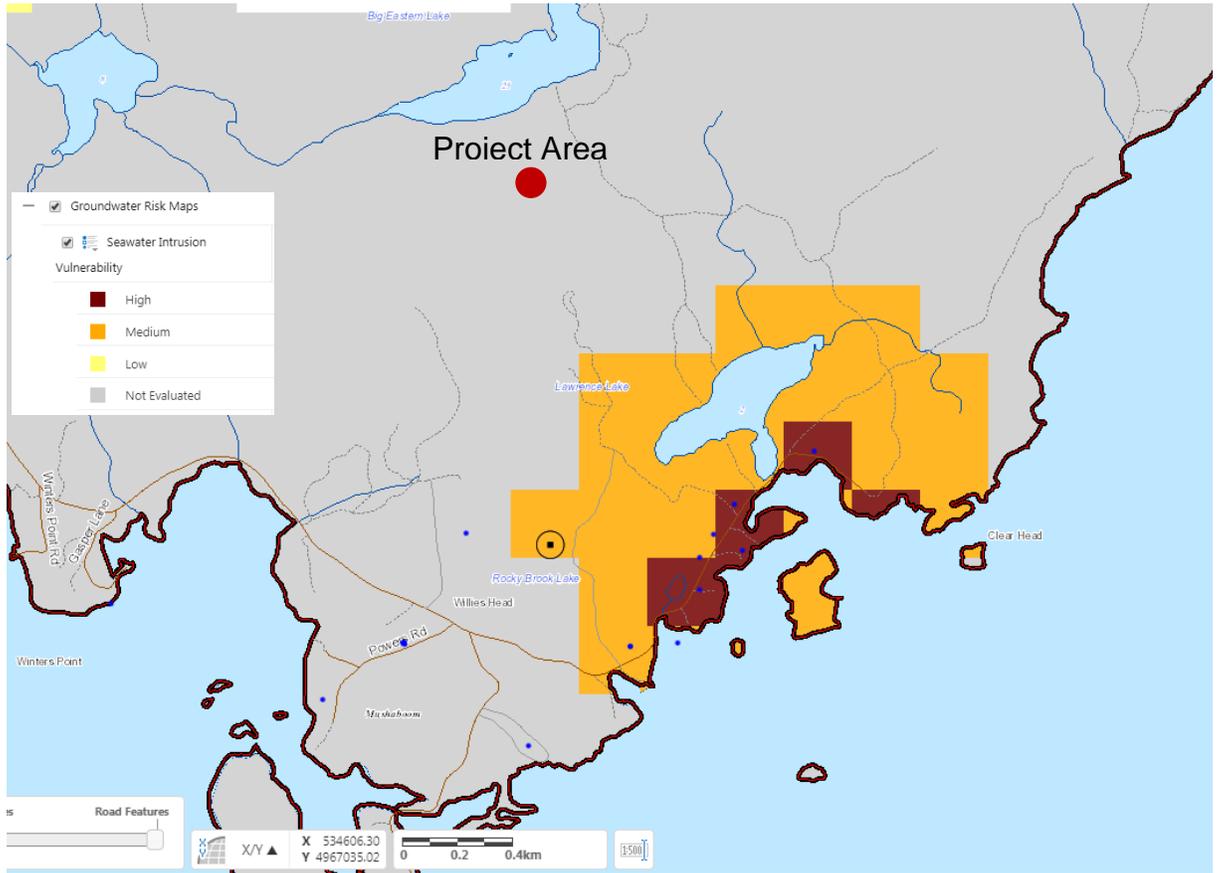


Figure 2 Seawater Intrusion Vulnerability near the Project Area (NS Groundwater Atlas, accessed online 2019)

Environment

Date: March 1, 2019

To: Manager, Water Management Unit

From: Senior Surface Water Quality Specialist, Water Management Unit

Subject: Dexter Construction Company Ltd. Sheet Harbour Quarry Environmental Assessment – Review Comments & Recommendations

Scope of Review

As Senior Surface Water Quality Specialist with the Nova Scotia Environment (NSE) Sustainability and Applied Science Division, the following Dexter Construction Company Limited Sheet Harbour Quarry Environmental Assessment (EA) review focuses on the following subjects:

- Surface water quality & its management
- General surface and groundwater resources, and fish and fish habitat & their management

The following review considers whether the environmental concerns associated with the above subjects and the proposed mitigation measures have been adequately addressed in the Environmental Assessment. The recommendations provided below are meant to supplement the actions outlined in the EA submission documents.

While general comments on fish and fish habitat, wetlands, surface water quantity, and groundwater quality and quantity may be included below, applicable technical specialists should be consulted for specific review and comment.

Reviewed Documents

The following document was the basis for this EA review:

GHD. 2019. *Environmental Assessment Registration Document Sheet Harbour Quarry Sheet Harbour, Halifax County, Nova Scotia*. Dexter Construction Company Limited. 11141046.

Comments

General

- Section 5.3 presents that a 5 km long, 15 m wide access road will be required for the Project. 2 km of this access road is an existing woods road. Section 6 Project Boundaries indicates the road will have a 15 m cleared right-of-way. No details are provided in the Registration Document about the proposed constructed road width within the right of way, the road construction materials, potential impacts to

localized drainage and associated mitigation measures (e.g., erosion and sediment controls, culverts).

Surface Water Resources

- Three unnamed small watercourses (labelled 1, 2 and 3; Section 5.1) were identified through site visits to be intersecting the Project footprint along the access road route.
- The Project footprint is in two secondary coastal watersheds (1EM-SD4 and 1EM-3), which both drain directly into the Atlantic Ocean. The proposed quarry area is located wholly within the 1EM-SD4 watershed. Within the 1EM-SD4 watershed the proposed quarry area is located on local topographic peak with existing condition drainage going in multiple compass directions (Figure 1, Appendix E).
- Three waterbodies, referred to as lakes, are located downstream of the proposed quarry site, which are Big Eastern Lake, East Mushaboom Lake and Lawrence Lake. Big Eastern Lake is located upstream of East Mushaboom Lake.
- Big Eastern Lake is located a minimum of 30 m away from the proposed active quarry site. Lawrence Lake is approximately 650 m south of the extents of the proposed active quarry site (Figure 10).

Surface Water Quality

- The access road identifies that Watercourse 1 has an existing culvert under the existing woods road that will become the main site access road. The culvert is hanging with its outlet approximately 60 cm above the watercourse channel bed. Hanging culverts can cause localised scour and erosion within the watercourse at the outlet, and present potential barriers to fish passage. There is no discussion within the Registration Document on whether the existing culvert will be replaced and whether the outlet elevation would be adjusted.
- Quarterly grab sampling from the five watercourse monitoring sites was conducted as part of the surface water quality baseline study between September 2017 and June 2018 (Section 6.2). Three of the monitoring sites (SW-03, SW-04 and SW-05) are located outside the project footprint area and were accessed from existing municipal roads. SW-04 represents a site close to the outlet of the East Mushaboom Lake watershed into the Atlantic Ocean. The East Mushaboom Lake watershed includes Big Eastern Lake, which is located a minimum of 30 m away from the proposed active quarry works (Section 5.1). There is no discussion in the Registration Document as to why the outlet from Big Eastern Lake or the lake itself was not included in the baseline surface water quality monitoring program given its proximity to the Project footprint and active quarry site, and the Appendix E water balance predicted impacts (14.36% reduction in surface water runoff; significant impact).
- None of the surface water quality monitoring sites are located within the Lawrence Lake watershed area and its mapped tributary (Figure 7). The Appendix E water balance indicates there will be a 44.92% increase in surface water runoff, which would potentially impact surface water quality within this water body and its inflow tributaries. Monitoring of baseline conditions prior to these potential impacts occurring will support effects monitoring and evaluation of proposed mitigation measure effectiveness.
- Baseline surface water quality monitoring (Section 6.2.1 Surface Water Quality)

indicated that aluminum and iron concentrations are elevated above the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines for Freshwater Aquatic Life (CEQG-FAL) criteria, and that is typical for the southern Nova Scotia terrain. There is no reference to support this statement that these concentrations are typical for the southern Nova Scotia terrain.

- Appendix D provides the quarterly surface water quality results in a report specific produced table. The table includes Nova Scotia Contaminated Site Regulations Tier 1 Environmental Quality Standards (EQS) criteria values for Surface Water – Freshwater (2013) as well as reportable detection limits. There is no discussion or statement in the Registration Document on whether the water quality samples were analysed at an accredited laboratory. The CCME CEQG-FAL criteria are not presented in the Appendix D table, which are the criteria compared to the water quality results in Section 6.2.1. Listing water quality criteria in the Appendix D table that are not applicable to the Environmental Assessment is confusing and not sufficient for confirming the baseline surface water quality results comparison to the CCME CEQG-FAL criteria discussion.
- The watershed area for Lawrence Lake is estimated for the end of quarry development condition to have an increase in surface water runoff of 44.92% (Appendix E). No baseline surface water quality sampling was conducted in Lawrence Lake or its mapped tributary, which is downstream of the active quarry site. Given the substantial change in surface water quantity there would potentially be changes in surface water quality in the Lawrence Lake and its tributary. The Registration Document does not provide enough information to adequately assess Project impacts to surface water quality in Lawrence Lake and its tributary and support the statement that impacts to surface water resources are negligible (Table 7-1).
- The Appendix E water balance predicts that the end of quarry development condition could potentially have a significant impact on surface water runoff to Big Eastern Lake (14.36% reduction) and the downstream East Mushaboom Lake (13.47% reduction). Given the substantial change in surface water quantity there would potentially be expected changes in surface water quality in Big Eastern and East Mushaboom Lakes. The Registration Document does not provide enough information to adequately assess Project impacts to surface water quality in Big Eastern and East Mushaboom Lakes and support the statement that impacts to surface water resources are negligible (Table 7-1).
- Sediment loading is identified as a potential contaminant of concern from site activities. Temporary settlings ponds are proposed to reduced sediment loads prior to discharge outside the active quarry area. Ponds will be designed with spillway overflows. No other design specific criteria, storm sizing or locations are proposed within the Registration Document. The relatively close proximity to potential fish habitat in Big Eastern Lake and potential receipt of discharge from settling ponds is not discussed with respect to potential impacts and associated mitigation measures. As Big Eastern Lake is potential fish habitat (Section 6.14.1) consideration of thermal charging from a pond discharges should be assessed as a potential impact and appropriate mitigation measures developed.
- Table 7-1 identifies surface water resources and wetlands as a valued environmental component (VEC). The types of effects list loss of wetland habitat and increased erosion and sediment loading as potential effects. There is no

listing of the potential effects of the diversion of surface water runoff for Big Eastern Lake and Lawrence Lake on this VEC, and associated runoff mitigation measures. There is not enough information presented to support the conclusion that effects to surface water resources are negligible.

Fish and Fish Habitat

- Section 6.2.2 states that potential impacts to fish habitat are related to surface water quality of runoff as the project footprint does not intersect fish habitat. Big Eastern Lake is identified as a trout fish area in Section 6.14.1. Fish and fish habitat in Big Eastern, East Mushaboom and Lawrence lakes were not assessed as part of the baseline study. There is no discussion of the estimated changes to surface water runoff to Big Eastern, East Mushaboom and Lawrence lakes and potential impacts those flow changes would have on fish and fish habitat. The Registration Document does not provide enough information to adequately assess potential Project effects on fish and fish habitat in these lakes, and their associated watercourses.

Surface Water Quantity

- Watercourse 2 is stated as having potential fish passage that is impeded by the existing woods road. Fish passage is indicated to be re-established as part of access road construction and installation of new appropriately sized culverts (Section 6.2.1 Watercourses). It would be assumed that surface water flows are also impeded by the existing roadway. An existing culvert crossing was not identified for the Watercourse 3 watercourse crossing of the proposed access road. There is no discussion on whether the proposed culverts would trigger the requirements for a Nova Scotia Department of Environment watercourse alteration approval application.
- The Appendix E water balance for the existing condition estimates water storage/infiltration using factors from the Ontario Ministry of Environment Stormwater Management Planning and Design Manual (2003). There is no supporting discussion provided with respect to why this Ontario-based guide was used to estimate infiltration for a Nova Scotia-based project. There are more appropriate infiltration factors available for Nova Scotia and Atlantic Canadian land cover and soil types, which should have potentially been used for the water balance.
- Evaporation rates for the water balance (Appendix E) were estimated using lake evaporation rates from the Truro, NS meteorological station. The Truro (Debert) Environment and Climate Change Canada station uses an evaporation pan to estimate this rate, which is stated as being 512 mm/year. Back calculating the evaporation rates used in Table 3.1 calculates a value of 483 mm. No explanation is provided as to why the value in Table 3.1 is different. Lake evaporation rates are typically less than evaporation pan measurements, which also differ from evapotranspiration rates. No explanation is provided as to why evaporation rates were used instead of evapotranspiration for the Project footprint whose land cover would predominantly not consist of open water. The discussion provided for evaporation rate value selection and use is insufficient to review if it is adequate for the water balance.
- The Appendix E water balance assumes that there is no infiltration into the quarry floor. This water balance input parameter assumption is a main reason for the predicted significant impacts to surface water runoff in the Big Eastern Lake, East Mushaboom Lake and Lawrence Lake watersheds. No reference is

provided to support this assumption. With exposed fractured bedrock there may be potential for an increase in the local infiltration rate. There is insufficient discussion to support the no infiltration assumption and what it represents a worst-case scenario for. The proposed scenario of no infiltration within the active quarry area would be a potentially worst-case scenario for the local groundwater system with reduced recharge. However, if the infiltration rate within the quarry site increased in comparison to existing conditions then there would be a reduction in surface water runoff, which would be a potential worst-case scenario for local surface water systems. Based on the lack of information to support the no infiltration assumption, there is not enough information to assess the adequacy of the water balance and its outputs.

- Section 6.2.1 Surface Water Quantity indicates that the quarry floor can be graded to direct flows to Big Eastern Lake instead of the initial assumed floor contouring that drains towards the Lawrence Lake watershed. No details are provided on how grading would be done and when during the Project operation timeline. The Appendix E water balance did not consider scenarios with revised quarry floor grading to direct a portion of flows to Big Eastern Lake. There is not enough information provided to adequately review the potential impacts to the Project water balance, including surface water runoff, of this proposed mitigation measure.
- The Appendix E water balance predicts that the end of quarry development condition could potentially have a significant impact on surface water runoff to Big Eastern Lake (14.36% reduction) and the downstream East Mushaboom Lake (13.47% reduction). The watershed area for Lawrence Lake is estimated for the end of quarry development condition to have an increase in surface water runoff of 44.92%. Section 6.2.2 and Table 7-1 both state that negligible effects to surface water resources, which would include quantity, are predicted for this project. These statements contradict each other, and not enough information is presented to indicate that the predicted Project effect on surface water quantity would not be significant.

Groundwater Quantity & Quality

- The Appendix E water balance considers a worst-case scenario of no infiltration within the Project quarry floor. A reduction in local groundwater recharge within this area potentially would impact local groundwater table levels and associated local uses (e.g., drinking water sources). Given the proximity of the site and local residential wells to the ocean, changes in groundwater table levels would potentially increase salt water intrusion into residential wells. There is not enough information presented in the Registration Document to assess this potential impact and its significance.

Recommendations

Planning/Design

The activities conducted in supporting the Project effects assessment for surface water resources are inadequate to determine the significance of the effects. Contradictory information is presented within the Registration Document and its Appendix E with respect to supporting the conclusion that the significance of effects on surface water

resources is negligible. A revised and detailed assessment related to surface water resources and the associated VECs of fish and fish habitat, and groundwater resources is required to adequately assess the significance of the Project impacts on them.

The following are associated recommendations for each of the above listed VECs:

- Potential impacts to surface water quality in the Big Eastern Lake, East Mushaboom Lake and Lawrence Lake waterbodies and their watersheds should be assessed to evaluate their significance, based on the predicted significant changes in surface water runoff at various Project stages. Based on the identified issues with the Registration Document water balance, the surface water quality assessment should be conducted using the revised Project water balance. This assessment should potentially use a hydrologic surface water quality model in conjunction with applicable baseline surface water quality data to estimate the impacts. A hydrological surface water quality model may be an appropriate tool for estimating a revised Project water balance. Appropriate mitigation measures should be developed based on the assessment results.
- The Appendix E water balance and its associated assessment is not adequate to review potential impacts to surface water quantity. A more detailed and comprehensive water balance, which may need to utilize hydrologic modeling tools, will be required to fully understand the Project surface water quantity impacts. This water balance should include an appropriate quarry floor infiltration rate and consideration of the impacts of revised quarry floor grading on surface water runoff to Big Eastern Lake, East Mushaboom and Lawrence Lake watersheds. Additionally, an appropriate evapotranspiration rate should be used with detailed discussion to support its selection. These tools would be used in conjunction with models and tools to assess impacts to surface water quality, and groundwater quality and quantity from the Project activities. This will assist with the development of effective mitigation measures, which may require further evaluation to confirm their effectiveness in addressing surface water quantity impacts.
- Based on the results of the revised water balance recommended in the Surface Water Quality Recommendations section and if changes in surface water runoff are predicted to the East Mushaboom Lake and Lawrence Lake waterbodies, additional baseline fish and fish habitat studies and a revised effects assessment should be conducted. Appropriate mitigation measures should be developed based on the results of the effects assessment.
- The Appendix E water balance and its associated assessment is not adequate to review potential impacts to groundwater quantity and quality. A revised water balance is required that considers potential groundwater impacts of the Project. This water balance may require the use of quantitative groundwater modeling to estimate groundwater quantity and quality impacts, particularly for residential wells in Mushaboom. Appropriate mitigation measures should be developed based on the revised water balance results.

Operational Issues/Other Permitting Processes

General

- Details should be provided on the proposed actual width of the proposed access

road, its construction materials and methods, and associated mitigation measures related to construction (e.g., erosion and sediment controls).

Surface Water Quality

- The surface water quality monitoring results should be confirmed with respect to whether analysis was conducted at an accredited laboratory, and include a revised results table with specific comparison to CCME CEQG-FAL criteria for applicable parameters.
- The surface water quality monitoring program should include additional monitoring sites that capture potential water quality impacts to Big Eastern Lake, East Mushaboom Lake and Lawrence Lake from Project activities, based on the results of the revised water balance and surface water quality effects assessment. Water quality monitoring should occur prior to the Project construction phase to provide adequate baseline water quality data and include multiple sample events. Baseline water quality data should be compared against the CCME CEQG-FAL criteria.
- The Watercourse 1 hanging culvert should be replaced with an appropriately designed water conveyance structure that reduces the potential for scour or obstructs potential fish passage at its outlet.
- Settling ponds should be designed by a qualified person to reduced sediment loading from the quarry site. Ponds that may discharge directly into Big Eastern Pond should consider potential thermal charging impacts and appropriate mitigation measures should be implemented. Pond design criteria, storm event sizing, and effluent discharge concentration and monitoring requirements should be developed in consultation with Nova Scotia Department staff.

Surface Water Quantity

- The proposed Project access road will require replacement or installation of new culverts or other watercourse conveyance structures. These structures may trigger the requirement for watercourse alteration approvals, which should be submitted to NSE for review, comment and approval.



**Communities,
Culture & Heritage**

1741 Brunswick Street
3rd Floor
P.O. Box 456
Halifax, NS
B3J 2R5

Tel: (902) 424-6475
Fax: (902) 424-0560

TO: Candace Quinn

FROM: Sean Weseloh McKeane

DATE: March 1, 2019

RE: **Environmental Registration
EA 19-01-31 Sheet Harbour Aggregate Quarry**

Staff of the Department of Communities, Culture and Heritage has reviewed the EA document for the Sheet Harbour Aggregate Quarry and have provided the following comments:

Archaeology

Staff reviewed the Registration Document and the sections particular to archaeology. Section 6.13 details the results and recommendations stemming from the Archaeological Resource Impact Assessment conducted by CRM Group Ltd. in 2017. There are no archaeological concerns at this time.

Botany

Staff reviewed the Registration Document and the sections particular to botany. Overall the scope and thoroughness of this EA leaves a good impression. The subcontractors used seem to be experts in their fields, and the survey methods used for plants and lichens were consistent with the priority of finding species that are at-risk, of special concern, or otherwise rare. The companies involved, both the proponent and the consultants, have clearly invested a significant amount of time into the process.

Comments by page number from the registration document:

Page 18 (table 4-5): It is recommended that re-vegetation be done with native species, and in a mix that approximates the pre-development species composition, as well as tree-planting of native species to facilitate rapid ecosystem recovery.

Page 22: If ditching is vegetated to minimize erosion it is recommended that native species be used. Furthermore, nitrogen-related emissions from hydrocarbon-based engines have potential to create eutrophic conditions in and around industrial sites and roadways. Using the quartz-based materials from the quarry for a road surface may reduce invasions of exotic species by limiting the availability of nitrogen to species on roadsides, at least as compared to dolomitic road surfaces.

Page 24: It is recommended that a mix of native Nova Scotia species be used during the site reclamation process. Mixes that included non-native grasses and clover tend to promote other grassland or non-native species. Maintenance of initial topsoil reserves combined with progressive reclamation (to minimize decomposition times of topsoil organic contents) should help with recovery of native species.

Quinn, C.
March 1, 2019
page 2

Page 31: Ground-truthing for ephemeral streams is often better-done in the spring. Clarification around methodology is necessary, particularly if plant indicators were used as surrogates of active flow-channels. It may be necessary to re-survey in the spring when ephemeral streams are easier to identify.

Page 75 (Table 7-1): The habitat destruction and/or removal of 15 priority bird species and 4 priority lichen species were categorized as negligible and minor respectively. However, these losses may not be possible to mitigate, and they may be more significant than is indicated in the report. Research shows, that some of these species are recruitment limited, making colonization of the reclaimed site unlikely https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/blue-felt-lichen-2010.html#_Toc282067727.

Page 83 (Figure 3): Larger buffer zones may be necessary for protection of priority lichens in wetlands. Note that the new Special Management Practices for lichens on Crown Lands in Nova Scotia stipulates a 100 m buffer zone for Blue Felt Lichen. It is recommended that something similar be implemented, for at least the more peripherally-located Blue Felt Lichen spots in this study area. <https://novascotia.ca/natr/wildlife/habitats/terrestrial/> For the more centrally-located lichens, the suggestion (earlier in the report) of possible collection and relocation should only be considered a last resort and should only be done in consultation with experts in lichen conservation. This should be done in consultation with the relevant biologists at DL&F (DNR), D of E, the Nova Scotia Museum, and academic ecologists, to arrange for removal of the lichens for research or preservation purposes (e.g., relocation-success trials, ex-situ conservation work, etc.). The Canadian Botanical Association has a position paper on transplanting rare or at-risk species. In general, they recommend that "neither transplanting nor seeding is a sufficiently reliable or guaranteed method of conserving rare species, communities and/or ecosystems. It should not automatically be the method of choice for mitigation of proposed development when other viable options for management and protection in situ are available." http://www.cba-abc.ca/ecolconspospaper_v4.pdf

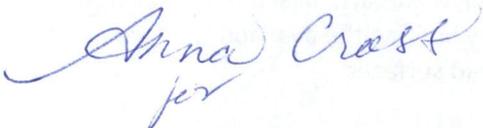
Palaeontology

Staff have reviewed the Registration Document, and sections particular to geology and paleontology resources. There does not appear to be any errors and there are no know significant fossil sites that would be potentially impact.

Zoology

Staff have reviewed the Registration Document, and sections particular to zoology. The document appears to be a reasonable description of the zoological landscape and potential impacts for the site. There are no additional comments to add.

Sincerely,



Sean Weseloh McKeane
Coordinator, Special Places
Nova Scotia Government Web Site
<http://www.gov.ns.ca>

MEMORANDUM

DATE: March 1, 2019

TO: Candance Quinn

FROM: Peter Labor, Director of Protected Areas and Ecosystems

SUBJECT: Dexter Construction Company Limited Sheet Harbour Aggregate Quarry Project

The Protected Areas and Ecosystems Branch have reviewed the Environmental Assessment Application for the Dexter Construction Company Limited Sheet Harbour Aggregate Quarry Project

Wetland Comments:

Project components include construction and operation of an aggregate quarry over a 50+ years period. Activities associated with quarry development will impact wetlands that have been identified within the study area through construction associated with access road to the quarry site and development of the quarry itself. Wetlands within the study area were identified and assessed using methodologies recognized by NSE and are presented within the supporting documents provided with the Registration Document.

Within the maximum quarry footprint, a total of 11 wetlands will be directly impact because of construction activities. This results in a direct loss of 32, 652 m² (3.26 ha) of wetland habitat within the quarry footprint or approximately 4% of the maximum quarry footprint. Fifteen (15) additional wetlands were identified to be outside the quarry footprint, within the study area, and may be subject to indirect impacts through changes to topography and site drainage features.

One wetland (WL19) has been identified within the access road and will be partially impacted by work required to upgrade and/or construct the access road to the facility. However, it was unclear whether the final access road design has been completed. The Registration Document provided very limited discussion relating to work associated with construction of the access road and the mitigation processes proposed to limit impacts to wetlands and watercourses intersected by the access road portion of the study area. The document suggests that 600 m² (0.06 ha) of WL 19, which extends beyond the study area, will be impacted by the access road.

Overall, wetlands within the study area tend to provide high terrestrial habitat services such as provision of healthy habitat for birds, mammals and plants than aquatic based services given that most wetlands are isolated from surface flows. While no vascular plant SAR were identified

to be present within the wetlands assessed, a blue felt lichen was observed in proximity to wetland edges.

While many of the wetlands identified within the quarry footprint provide capacity to retain water on the landscape, wetland alterations within the study area are not expected to result in significant changes to surface water flows or fish habitat, as a result of being isolated from surface drainage features. These isolated wetlands likely do provide habitat for other aquatic species. However, no SAR were identified to be specifically dependent on these wetlands and similar habitat appears to be represented within the local area. Changes to local drainage patterns are proposed to be mitigated primarily through stormwater management and standard sediment and erosion control measures. Upon development of the quarry, water inputs into the quarry development will be mitigated using grading, ditches, retention ponds and, ultimately, infiltration through quarry floor.

A preliminary water balance analysis has been presented to assess impacts associated with the identified watersheds to assess potential changes to water volumes discharged to receiving environments. Loss of the wetland habitat within the quarry footprint that provide hydraulic and water quality functions could be mitigated through appropriately designed water balancing and water retention programs. Water quality associated with discharges from the quarry should be monitored accordingly. Given that water retention ponds have not been located on the mapping provided, it is unclear where discharges from the quarry will be ultimately directed and whether additional wetland habitat may be impacted as a result.

Wetlands along the perimeter of the quarry footprint have been provided a 30 m buffer from the maximum extent of quarry limits. Monitoring of these wetlands has been proposed by the proponent and should be conducted in addition to surface water and groundwater monitoring programs. Additional losses of wetland habitat/function as result of indirect impacts can be mitigated through the wetland approval process.

Given the above, it is suggested that:

- Prior to any wetland alterations, the proponent must obtain Wetland Alteration Approval for any wetland directly or indirectly altered by the proposed development.
- Prior to work within 30 m of a wetland, the proponent should develop, in consultation with Lands and Forestry and other regulatory bodies, a wildlife management plan that includes relevant priority species associated with wetlands and be referenced in any wetland alteration applications.
- Prior to altering any wetlands, the proponent must develop a wetland monitoring plan, which should include the following:
 - How baseline conditions will be documented before construction (and grubbing) begins. This should include indicators of hydrology, water quality parameters and vegetation community.
 - How changes in hydrology of the partially impacted wetlands will be monitored and proposed performance indicators.

- How changes in the vegetation community of the partially in filled wetlands will be monitored, especially regarding the proportions of wetland specific plants, and invasive species and proposed performance indicators.
- How changes in water quality of the impacted wetlands will be monitored and proposed performance indicators.
- Prior to any wetland alterations, the proponent must develop a Wetland Compensation Plan. The Wetland Compensation Plan and associated reporting requirements must be developed to establish specific objectives intended to prevent the net loss of wetlands and functions in accordance with the Nova Scotia Wetland Conservation Policy.

Protected Areas Comments:

Several errors were noted in the document such as:

- the document stating re-vegetating with “endemic” species - this is not possible because there are no endemic plants in NS.
- There was a lack of detail on mitigation that has not been done before, at least not in NS e.g. transplanting lichens.
- The “NSLF” boreal felt lichen habitat mapping is actually NSE.

A potential concern is how the noise, lights and human activity will affect shorebirds and seabirds inhabiting the nearby Eastern Shore Islands Wilderness Area however the analysis in the environmental assessment does not tell what that effect might be. It does mention the IBA which is part of the wilderness area, but it makes no mention of the wilderness area.

It is recommended that the proponent look at scientific literature on avoidance behaviors of species of shorebirds and seabirds known to inhabit the wilderness area and then look at the level of noise, light and human activity the quarry will generate, factor in the distance to the wilderness area and then determine if there will be an effect on the wilderness area.

From: [Colomb, Sylvie](#)
To: [Quinn, Candace M](#)
Subject: RE: Sheet Harbour Aggregate Quarry Project Environmental Assessment Registration
Date: March 4, 2019 9:10:28 AM

Hi Candace,

Staff from NSTIR have had a chance to review this document. The proponent is proposing to build a quarry in the area of Marine Gateway Drive near Sheet Harbour. There do not appear to be any significant transportation issues as any trucks would be normal weight trucks. No significant traffic increase in the area is expected as a result of this project as well.

Access to the project is via a resource road that connects to Marine Gateway Drive. This access would need to meet Departmental specifications to be able to accommodate any trucks that would be utilizing this entrance. The proponent would need to contact local Department staff and the local Area Manager to complete a Working Within Highway Right of Way Permit so that this analysis can be completed.

Thank for the opportunity to review this project.
Have a good day,

Sylvie Colomb

Environmental Analyst/French-language Services Coordinator
Environmental Services Group
Nova Scotia Transportation and Infrastructure Renewal Department
Johnston Building, 3rd Floor, 1672 Granville Street, P.O. Box 186
Halifax, Nova Scotia, B3J 2N2
Phone: (902) 424-8143

Fax: (902) 424-7544

E-mail: sylvie.colomb@novascotia.ca

Please consider the environment before printing this e-mail. /

“A Healthy and Safe Environment: Everyone, Everywhere, Every day”

Environment

Date: 4th March 2019

To: Candace Quinn, Environmental Assessment Officer

From: Ebenezer Asamany, Engineer, Climate Change Unit

Subject: Sheet Harbour Aggregate Quarry Project

- The proponent did not provide much information on the potential for the actual greenhouse gas emissions. There were no estimates for potential CO₂, N₂O and CH₄ emission from the operation of onsite trucking, mobile equipment and utility vehicles. It is expected that the emissions associated with these onsite operations for the quarry will be comparatively low and will be captured by the reports of fuel supplier emitters under the Nova Scotia Greenhouse Gas Quantification Reporting Verification regulations.
- The proponent has committed to mitigative measures for greenhouse gas emissions. These include no idling of machinery and vehicles, and proper maintenance of equipment. For the estimation of potential emissions, these practices are deemed satisfactory for the mitigation of greenhouse gases

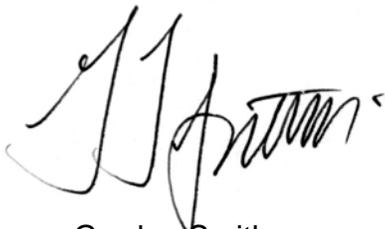
Date: March 6, 2019
To: Candace Quinn, Environmental Assessment Officer
From: Gordon Smith, Provincial Director of Planning
Subject: Sheet Harbour Aggregate Quarry Project Environmental Assessment

As requested, the Department of Municipal Affairs has reviewed the Environmental Assessment Registration Documents for the proposed Sheet Harbour Aggregate Quarry.

Although we have found nothing of concern respecting the Department's areas of mandate, we suggest ensuring that the proponent undertakes adequate consultation with all of the affected municipalities in order to understand relevant municipal planning policies and by-law provisions. Although quarries fall within Provincial rather than municipal jurisdiction, activities related to them may be regulated by relevant Municipal Planning Strategies and Land Use By-Laws.

Thank you for the opportunity to review the Registration Document for the above-noted project. Should you require additional information, please feel free to contact either Graham Fisher, Senior Planner (902-424-2990) or me (902-424-7918).

Yours truly,



Gordon Smith
Provincial Director of Planning

c: Graham Fisher, Senior Planner, DMA

From: [McKenna, Chuck W](#)
To: [Quinn, Candace M](#)
Subject: RE: Sheet Harbour Aggregate Quarry Project Environmental Assessment Registration
Date: March 7, 2019 9:41:01 AM

Candace,

No comments from Resource Management Unit.

Chuck McKenna
Manager, RMU

From: [Whiteway, Patrick](#)
To: [Quinn, Candace M](#); [MacPherson, George E](#)
Cc: [Mageste da Silva, Renata](#)
Subject: RE: Sheet Harbour Aggregate Quarry Project Environmental Assessment Registration
Date: March 7, 2019 12:21:36 PM

Hi Candace

Mineral Management has no comments to make on this EA Registration document.

Regards

Patrick



Native Council of Nova Scotia

The Self-Governing Authority for Mi'kmaq/Aboriginal Peoples residing Off-Reserve in Nova Scotia throughout traditional Mi'kmaq Territory

"Going Forward to a Better Future"

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February 19, 2019

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Rural & Native
Housing Group

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Netukulimkew'e'l
Commission

Wenjkwom Housing
Commission

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Micmac Language
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Native Social
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Program (Prenatal)

Aboriginal Homelessness
Program

Parenting Journey
Program

Youth Outreach Program

Mi'Kma'ki Environments
Resource Developments
Secretariat (MERDS)

Honourable Margaret Miller
Nova Scotia Environment
PO Box 442
Halifax, NS
B3J2P8

Dear; Madame Minister

Re: Sheet Harbour Quarry

The Native Council of Nova Scotia represents the Off-Reserve Community of section 91(24) Status and non-status Indians/Mi'kmaq/Aboriginal People continuing on their Traditional Ancestral Homelands throughout Nova Scotia as Heirs to Treaty Rights, Beneficiaries of Aboriginal Rights, with Interests to Other Rights. Our community accesses and uses the lands and waters within the project area for harvesting, fishing, fowling, and gathering.

Further to your correspondence about the Sheet Harbour Quarry sent to the Native Council of Nova Scotia (NCNS) we have reviewed the information contained in the Environmental Assessment Registration Document (EARD) and provide you with the following comments:

1. There are on-going concerns regarding the regulatory requirements for under 4 ha pits and quarries. There is a gap as to meaningful assessment of environmental effects for these developments. The NCNS requests a dialogue discussion with your office on modifications to the "Guide to preparing and EA Registration Document for the Pit and Quarry Developments in Nova Scotia" to fill in gaps.
2. According to the information, there appears to be very early pre-engagement with the province to determine potential issues of concerns with the proponent on this project. It is assumed this is normally the case and identifies an opportunity to build a meaningful pre-engagement process with the NCNS so that there is inclusion on determining potential issues or concern early in the process. The NCNS requests dialogue with your office on developing this pre-engagement mechanism; and

3. The NCNS request a consultation plan be developed to include all conditions to any approval for this project.

The Native Council of Nova Scotia Community off Off-Reserve Status and Non-status Indians/Mi'kmaq/Aboriginal Peoples support projects, works, activities and undertakings which do not significantly alter, destroy, impact or effect the sustainable natural life ecosystems, or natural eco-scapes formed as hills, mountains, wetlands, meadows, woodlands, shores, beaches, coasts, brooks, streams, rivers, lakes, bays, inland waters, and the near-shore, mid-shores and off-shore waters with their multitude of *in-situ* biodiversity.

Our NCNS Community has continued to access and use natural life within those ecosystems and eco-scapes where the equitable sharing of benefits arising from works, activities, projects, and undertakings serve a beneficial purpose towards progress in general and demonstrate the sustainable use of the natural wealth of Mother Earth, through respect for the Constitutional Treaty Rights, Aboriginal Rights, and Other Rights of the Native Council of Nova Scotia Community continuing throughout our traditional Ancestral Homeland in the part now known as the Province of Nova Scotia.

Please contact our office by phone at 902-895-1523 to arrange a meeting.

Progress through consultation, accommodation and participatory involvement and partnerships;

Going Forward To
A Better Future



Lorraine Augustine
Chief and President

LA:mw

CC: Tim Martin, Netcom Commissioner
Roger Hunka, Director of Intergovernmental Affairs

From: @ns.sympatico.ca>

Sent: Wednesday, February 06, 2019 12:58 PM

To: Environment Assessment Web Account <EA@novascotia.ca>

Subject: Aggregate Quarry at Marine Gateway

To Whom It May Concern,

This is a great announcement for Sheet Harbour and areas and will be a great economic driver for an area that has been economically depressed for a long time. This project will further enhance this area and create employment and tax base, which will assist us greatly to grow our community and maintain our essential services that will ensure our existence. I look forward in seeing this go to fruition and help create an environment that will draw families to our area. Hats off to Dexter Construction and all who participate to make this reality.

Best Regards,

From: @xplornet.com <eempringham@xplornet.com>

Sent: February 24, 2019 10:30 AM

To: Environment Assessment Web Account <EA@novascotia.ca>

Subject: Proposed Project Comments

Project: sheet-harbour-aggregate-quarry-project Comments: I support activities which create economic opportunity in our area .. BUT they must be done in a way that protects the environment and respects local communities. Reading through the proposal, it seems that my concerns are addressed. The proof will be in the delivery of the project and the monitoring, assessment and mitigation during the anticipated lifetime of the project. Name: Email:

[@xplornet.com](#) Address:

: Privacy-Statement: agree x:

75 y: 37

From: @cottagenorth.com <fern@cottagenorth.com>
Sent: February 26, 2019 10:40 AM
To: Environment Assessment Web Account <EA@novascotia.ca>
Subject: Proposed Project Comments

Project: sheet-harbour-aggregate-quarry-project Comments: 50 years is a long time :and the impact of a Quarry on the region and Sheet Harbour should be thoroughly reviewed .This certainly does not blend in with the pristine 100 Wild Island Preserve and protecting Natural resources for future generations <http://sheetharbour.org> Name: Email: @cottagenorth.com Address:

: Privacy-Statement: agree x: 60 y: 20