

AGGREGATE RESOURCES ACT REVIEW
SUBMISSION TO THE STANDING COMMITTEE

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Thank you for your consideration.

As a retired geoscientist after a lengthy career in geological mapping and interpretation with the Ontario Geological Survey, I have inadvertently developed an interest in the province's management of aggregate resources as a result of personal experience with the process while protecting a family-owned wetland from the impacts of a proposed aggregate pit. In 2010, I served on the Technical Expert Panel for the *State of the Aggregate Resource in Ontario Study*.

INTRODUCTION

I wish to address the topic of Ontario's licensed aggregate reserves. In doing so I present information on the actual amount of aggregate reserves presently under licensed. It appears that the province may have an over abundance of licensed reserves. It is of great importance to Ontario that the ARA is able to manage its need for aggregate reserves in an efficient manner that serves the province's needs for balance and sustainability. Over licensing of aggregate reserves can be just as harmful as under

licensing of aggregate reserves to Ontario's well-being and economy. Based on my conclusions, I provide some recommendations to bring present reserves into balance with required reserves.

Present Policies being practiced in Ontario

Representatives of the aggregate industry and MNR in charge with overseeing the Aggregate Resources Act (ARA) repeatedly make the claim that Ontario faces a looming shortage of reasonably priced aggregate in the very near future and **that** it needs to be close to market. This claim has been heard for the past 40 years since the Pits and Quarries Act in the early 1970's. If this claim was accurate Ontario should have faced dire shortages of aggregate long ago. A critical examination of the number of pits and quarries licensed for production across Ontario suggests that this **belief** no more valid **now** than it was 40 years ago.

To reinforce the ability to open more and more aggregate pits regardless of aggregate abundance, the "no need to show need" has been built into the ARA policies based on the premise that even if Ontario does not need the aggregate now, Ontario will need it soon. In any ARA review, this clause must be critically examined or removed and replaced with a requirement to show actual need according to location.

Although informative, the MNR's Status of Aggregate Resources Study (SAROS) has many omissions and deficiencies in its reports. One is that it ignores Ontario's reserves of aggregate except for licensed reserves of bedrock from the Amabel Formation along the Niagara Escarpment within 75km of Vaughan. The SAROS reports avoided consideration of reserves of the other aggregate commodities such as sand and gravel which are used in greater quantities.

All stakeholders agree that aggregate resources are vital to Ontario. The problem is that license holders of this resource enjoy confidentiality concerning their annual production and remaining reserves. In comparison, under the Mining Act, both private and public mining companies are required to report both statistics for each of their properties on an annual basis. To determine the real state of our aggregate resources, these figures should be made available. Aggregate extraction is a form of mining and has many features in common with many mines, in particular open pit mines currently under the Mining Act.

Crushed rock and high quality crushed rock reserves.

The reviewers are referred to Gravel Watch Ontario (GWO)'s website

<http://www.gravelwatch.org/>

where a review of the SAROS Paper #5 on Reserves of Aggregate in Ontario by Golder Associates in conjunction with MHBC Planning is posted.

<http://www.gravelwatch.org/orig-gw/saros/100815-Master-Final-SAROS-Review-Golder-GWO.pdf>.

GWO's analysis of SAROS paper # 5 on aggregate reserves finds that it only considers a portion of the possible high quality limestone/dolomite reserves actually found within 75km of Vaughan for consumption in the GTA area. This suggests that the estimated reserves presented in the paper are possibly understated. According to the MNR's Consolidated Report on SAROS, licensed reserves of high quality limestone/dolomite in Southern Ontario both within and not far beyond the 75 km radius of Vaughan are possibly in the billions of tonnes. (See:

<http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@aggregates/documents/document/286996.pdf>

Aggregate production/consumption is about 170 to 180 million tonnes per year, of which less than 70 million tonnes are from crushed limestone/ dolomite. (See TOARC http://www.toarc.com/pdfs/Stats_2010.pdf).

TOARC statistics only refer to crushed stone which would include more than just limestone / dolomite. Regardless, this figure of 70 million tonnes compared to MNR 's billions of tonnes of licensed limestone/dolomite reserves, suggests there are many years of limestone/dolomite reserves without further opening more large scale quarries in sensitive locations.

As mentioned, a significant portion of the 70 million tonnes of crushed rock may not be high quality crushed limestone/dolomite as used for high quality purposes e.g., construction of high-rises and bridges in Ontario. Other types of crushed rock are included in this figure. South Perth Township uses crushed limestone as surface gravel for maintenance of its roads from the St. Mary's quarries. Elsewhere, Precambrian rock is crushed for mixing with asphalt for high usage highway surfaces because high quality

limestone/dolomite is not suitable for this purpose. Lafarge's Manitoulin Island Quarry and St. Mary's Bowmanville quarries may be exporting a considerable quantity of crushed rock including high quality limestone/dolomite and thus, is not being used in Ontario.

Consumption of high quality crushed limestone/dolomite in Ontario may actually be less than 50 million tonnes per year. Reserves and statistics on the end-use of crushed stone needs better reporting in order to determine the actual use and need for more limestone/dolomite quarries containing high quality limestone/dolomite for Ontario's needs. It remains doubtful that more quarries need licensing and opening in the foreseeable future, in particular, near and in sensitive areas in light of the reserves of existing licensed quarries.

Sand and Gravel Consumption and Reserves:

SAROS Report #5 does not discuss sand and gravel reserves although the consumption of these two products is considerably larger than crushed rock, in particular that of high quality limestone/dolomite and is in many ways, just as vital to Ontario as is high quality crushed rock.

To gain an understanding of Ontario's reserves of sand and gravel, one must use a statistical approach in absence of specific data of production and remaining reserves for each license. Licensed holders for aggregate pits claim the need for confidentiality because of competition among aggregate producers, which suggests that they are not interested in the conservation of virgin aggregate resources.

The only statistics available are from the MNR's Aggregate Licensing and Permitting System (ALPS) current to early 2010 (see:

[Spreadsheet of all Ontario gravel pits/quarries](#)

and TOARC's annual statistics for 2010:

http://www.toarc.com/pdfs/Stats_2010.pdf

ALPS lists 6103 licenses for pits and quarries in Ontario in early 2010. In his presentation to the ARA review, Mr. Pichette from MNR's Natural Heritage, Lands and Protected Space Branch, has indicated that about another 100 licenses and 100 aggregate permits have been issued in the last two years. For each license in the ALPS data base, the owner, location, the hectare size and annual quota are given. However, initial and

remaining reserves are not included. Some of the licenses have unlimited annual quotas, and thus are allowed to produce more than 1 million tonnes per annum.

The total annual quota for all licenses for pits and quarries in Ontario is 2,253,727,476 tonnes assuming the licenses with unlimited quotas are assessed as 1 million tonnes.

TOARC's graph (page 9) shows Ontario's annual production/consumption as being in the range of 160 to 180 million tonnes per year between 2000 and 2010. There has been no large increase or decrease in consumption during that time. The average consumption for Ontario has been about 170 million tonnes of aggregate per year.

This means it would require 13.25 years or $2,253,727,476/170,000,000$ for Ontario to consume one year's full quota from each and every license. Pursuing this reasoning, Ontario's MNR has licensed approximately 13.25 times the annual requirement for Ontario. This does not include the additional 200 licenses and permits mentioned by Mr. Pichette.

Ontario's total reserves of licensed aggregate pits are more difficult to ascertain. As mentioned previously, actual figures for reserves for aggregate licenses are unavailable in the ALPS database and assumptions must be made. Many pits continue to produce after 30 years of production. It is not expected that these have filled their production quotas every year but some would be approaching depletion except for those licenses that have been dormant for long periods of time.

During the past 30 years aggregate production has changed. Instead of "pit run" production as during and before the 1970s, aggregate material in particular, sand and gravel, now undergoes crushing, sorting, washing and blending such that almost all material in an aggregate pit can be utilized for sale.

However, licensed annual quotas do give a clue to the size of aggregate reserves. Only the face of a pit or quarry can be under active extraction. Assuming a license has a 20-year life expectancy, a reasonable conservative figure for the licensed quota could then be about 1/20 of the license's reserves as long as its annual quota is extracted every year. Recalling that it takes 13 years for Ontario to consume the cumulative licensed annual quotas, it can then be expected that on average, the 6200 licenses will have half or more of their initial aggregate reserves remaining after 10 years, as only 1/13 of their cumulative quota will have been filled while the other 12/13 of their cumulative quota remains unused.

If it is accepted that on average aggregate licenses have $\frac{1}{2}$ their reserves remaining and that the initial reserves were 20 times their quota, it then follows that if all licenses produced their annual quota, thus aggregate reserves would be depleted in 10 years. In order for this to happen, Ontario would have to be consuming 2,253,727,476 tonnes per year instead of 170,000,000 tonnes per year. However, at the consumption rate of only 170 million tonnes per year, it requires 13.25×10 years (132.5 years) to deplete current aggregate reserves recorded in 2010. This does not include the recent 200 licenses and permits since 2010.

An alternative approach to calculate reserves can be taken based on reserves being 20 times the annual quota with half of the reserves remaining. It is that Ontario's aggregate licenses have reserves of $10 \times 2,253,727,476$ tonnes (annual quota), which amounts to 22.5 billion tonnes of aggregate under license. The 22.5 billion tonnes can be divided by 170 million tonnes consumption to reach the 132.5 years of reserve.

In the ALPS data base, if only licensed sand and gravel pits are considered at the exclusion of quarried crushed rock, the total annual quota for sand and gravel licenses is 1,630,557,712 tonnes. TOARC's figure for Ontario's 2010 consumption of sand and gravel is 78,782,659 tonnes. Using the same method of calculation that the quotas are $\frac{1}{20}$ of the initial reserve, and half the reserves remain, this will indicate reserves of sand and gravel as being about 16.3 billion tonnes. Thus it will take $16.3 / 0.0782659$ years or 208 years at present rates of consumption, to consume all the sand and gravel reserves under license in 2010. No doubt this 208 year supply has considerably increased with the additional 200 licenses and permits added to the inventory during the past 2 years.

Recommendations

Keeping in mind that undisturbed in situ aggregate provide many benefits to Ontario's society, economy and well being on a continuous basis, the forgoing is recommended:

1. Like the Mining Act, the ARA and its administration should require all aggregate licensed and permit holders to make available their production and remaining reserve tonnages of aggregate annually.
2. That policies under the ARA establish reasonable guidelines on licensed aggregate reserves that are meant to fulfill Ontario's realistic requirements for the foreseeable future based on recent consumption trends.

3. That the clause of “no need to show need” be removed from the ARA policies and be replaced by a requirement to show need based on recommendation #2.