

Rehabilitation of Pits and Quarries under Ontario's Aggregate Resources Act

Part One: The Framework

In the "Comprehensive Government Response to Standing Committee on General Government's Report on the Review of the Aggregate Resources Act" of February 2014, it is noted that:

- The rehabilitation of pits and quarries is an important component of the Aggregate Resources Act.
- There are some excellent examples of rehabilitation that is being done at pit and quarry sites, and the operators of those sites are to be commended for their efforts.
- We also recognize there is room for improvement. Good rehabilitation practices should be the standard for every pit and quarry site.
- We already have a framework in place that provides rehabilitation requirements for every site that is regulated under the Act. The Act even goes beyond regulated sites when it comes to rehabilitation, establishing funds through the Aggregate Resources Trust to provide for the rehabilitation of legacy sites that were abandoned before they were required to obtain a licence under the Act.



Part Two: The Challenges for Ontario

There are several challenges facing Ontario as regards the rehabilitation of pits and quarries, which include those mentioned above:

- The abandoned pits and quarries which precede the introduction of the Pits and Quarries Act means that **legacy** costs are being borne now by various levels of government as well as private industry. Similarly, the popular myth of grandfathering means that some operational pits and quarries would not be approved under today's regulations without rehabilitation plans.
- Pits and quarries awaiting rehabilitation pose **safety risks** to the public, as well as safety concerns to their owners.
- Rehabilitation is delayed by any potential other uses of the pits, such as recycling which introduces industrial uses into extraction sites, which alters **interim uses into permanent uses**.
- Delays to **progressive and final rehabilitation** seem frequent and common. License surrender or revocation is infrequent even when pits have been inactive for long periods.
- Rehabilitation may introduce **non-native** soils, elements or plant species into environments
- Open pits and quarries, active or awaiting rehabilitation, represent a **threat to ground water** quality and safety as they allow surface water runoff into or in proximity to ground water.

- Soil science suggests that the return of overburden and top soil does not re-establish **soil fertility** to the levels it previously had.
- Rehabilitation of former agricultural lands to industrial, recreational or residential uses takes land out of food-production, thus impacting a significant economic activity as well as food security. Nor are these processes of conversion easy or cheap.

Thanks to “Food and Water First we are “reminded of the value of Ontario's farmland to our \$34-billion agri-food sector and the 700,000 people it employs”.

- Rehabilitation plans for lands where aggregate extraction has taken place, mean depressions which often contain lakes. These pose a financial burden on municipalities in which they occur as they lower the taxes collected at the same time as extraction levies disappear. Progressive rehabilitation also may present a tax burden on municipalities as rates change from industrial to farmland, for instance.

A Legacy of Abandoned Pits and Quarries



- Melancton Township, Ontario

In 1979, A.G. McLellan, S.E. Yundt and M.L. Dorfman produced a report on “Quarries in Ontario: A Program for their Rehabilitation” for the Ministry of Natural Resources and the Region of Waterloo. According to its authors, “The legacy of land made derelict or otherwise left abandoned by the removal of mineral aggregates (sand, gravel and crushed stone) grew rapidly during the economically active 1960's in Ontario. The Ontario Government as a response to this and other problems enacted legislation to control the aggregate industry (The Pits and Quarries Control Act) in 1971. This act, however, was not retroactive and much of our past legacy

remains". Their recommendations, that the current industry fund the costs of rehabilitation which preceded regulation results in legacy costs for Ontario at all levels, as public entities account for over 60% of the sales of aggregate. As a result, 10% of levies were ascribed to rehabilitation funds.

According to The Ontario Aggregate Resources Corporation, "When the ARA was put into effect, the aggregate industry represented by the now Ontario Stone Sand & Gravel Association (formerly the Aggregate Producers Association of Ontario) agreed that \$0.005 per tonne of licence fees payable would be dedicated to a program having the purpose of rehabilitating these former extraction sites. Based on recent levels of extraction in Ontario, an approximate amount of \$400,000 to \$600,000 is made available on an annual basis for this purpose. These monies are held in a dedicated account known as the Abandoned Pits & Quarries Rehabilitation Fund. In addition to the rehabilitation of abandoned pits and quarries, monies from the fund also support research into ways and means of undertaking new and creative approaches to rehabilitation in the often harsh environments created in post extraction sites". The 2400 sites which TOARC lists as "removed from the active inventory" reduce the financial commitment but their removal does not alleviate environmental and water safety concerns, nor those of the reduction of available agricultural land.

According to the office of the Environmental Commissioner of Ontario, "In November 2003, the ECO received an application arguing that Ontario's pits and quarries are not being adequately rehabilitated by the aggregate industry, and requesting a review of relevant sections of the Aggregate Resources Act (ARA). The applicants estimated that between 1992 and 2001, approximately 6,000 hectares were dug up to extract aggregates – without the rehabilitation required under the ARA. ... The applicants also noted that an estimated 6,500 aggregate sites had been abandoned (excavated without rehabilitation) as of 1990. Since industry had, on average, rehabilitated only 13 such sites per year, the applicants estimated that it could take 489 years to get through the backlog."

Similarly the ECO notes that "The high cost of rehabilitating worked-out pits and quarries – an estimated average cost of \$12,495 per hectare – was also raised by the applicants. They suggested that Ontario's total rehabilitation costs could amount to \$74 million per decade, and asked, rhetorically, "When will this rehabilitation take place? Who will pay for it? Will this rate of deficit continue in the future?" In the past, rehabilitation security deposits had been used by the province to guarantee rehabilitation work; but the Ontario government dismantled this system in the late 1990s, and returned approximately \$49 million directly to aggregate operators". This is in sharp contrast to the TOARC assertion that levies of less than ½ million \$ are effective in rehabilitating pits and quarries.

Because the legislation in 1979 and then the ARA did not deal with pits and quarries which had no rehabilitation requirements, those from before The Pits and Quarries Control Act, grandfathered pits remain a problem. "One key barrier to adequate rehabilitation is the large number of old licences that were grandfathered when the ARA was enacted, effectively shielding them from rehabilitation requirements, and forcing ministry staff to use time-consuming site plan amendments on a case-by-case basis. These site plan amendments can be stalled by appeals to the Ontario Municipal Board, adding further challenges for MNR's over-extended aggregate staff" says the ECO report "Our Cratered Landscape".

Safety Risks

American research by GeoScience News and Information cites a large number of risks associated with abandoned quarries, resulting in annual deaths of between 20 and 30 individuals per year. Those result from

hazards which result in drowning: “Quarries are extremely dangerous places to swim. Steep drop-offs, deep water, sharp rocks, flooded equipment, submerged wire and industrial waste can make swimming risky”. Water temperature poses more risk: “Another risk factor is the very cold water. Many quarry operations excavate to depths below the water table and use pumps to keep the mine dry while it is in operation. When mining stops, the pumps are turned off and the quarry floods by the inflow of cold ground water. This ground water inflow can keep the quarry water very cold even in late summer. Jumping or falling into cold water can be fatal - even for a young healthy person” Citing the National Institute of Health on how a body responds to sudden immersion in cold water, GeoScience continues. “A fall in skin temperature elicits a powerful cardiorespiratory response, termed "cold shock," comprising an initial gasp, hypertension, and hyperventilation despite a profound hypocapnia. [...] The respiratory responses to skin cooling override both conscious and other autonomic respiratory controls and may act as a precursor to drowning”.



After drowning, according to research, ATV accidents are the second largest cause of loss of life. This results from falls, from crumbling walls of quarries and from remnants of equipment or fencing. “Riders unfamiliar with the quarry can speed over a quarry's high wall or embankment. Death can result when an ATV is driven too close to a high wall and the rock, previously fractured from blasting, collapses from vibrations or weight. ATV riders have been killed by driving into wire fences at high speeds and losing control on gravel or sand-covered surfaces”. Pits which have not been rehabilitated are inviting and dangerous.



Quarry walls also attract and endanger rock climbers. The rock walls surrounding the quarry floor may seem inviting due to their scarred surfaces providing hand-holds, but the fracturing which has allowed for extraction and has produced the scarring also makes the walls unstable. Falls can injure and kill.

While deaths in mines and quarries are most common among 11 – 20 year olds, the rates drop by less than a third in the next decade, then remain at about half that over the next two decades suggesting that dangers are not limited to any age group.

Interim Uses Into Permanent Land Uses

In a written communication regarding the conversion of former farmland to an industrial site, Diane Schwier, Aggregate Technical Specialist, at the Guelph office of the Ontario Ministry of Natural Resources states that an applicant could ask for permission to convert interim extraction sites into permanent industrial sites by means of a request for an amendment. She says “As would be the case with any landowner, Angbar Construction and Development Inc. can make application to the Township of North Dumfries to amend the zoning by-law to permit industrial development on their property. If they receive approval (i.e. Draft Plan of Subdivision), they would then need to make application under the ARA to amend their final rehabilitation plan from agriculture to industrial development. This is a major site plan amendment with circulation to the upper and lower tier municipality and posting on the Environmental Registry. If the amendment is approved the Draft Plan of Subdivision then becomes their final rehab plan. At that time, the MNR surrenders the licence

and the Township then becomes responsible for ensuring development takes place according to the approved Draft Plan of Subdivision. If they are not successful in rezoning the land then the site must be rehabilitated back to agriculture”.

In many places, the use of pits and quarries to store and reprocess asphalt, concrete and other forms of aggregate is under discussion, happening despite no sanction, or awaiting approval. This is an extreme example of interim permissions becoming permanent industrial sites both because of the risks to the environment and human health impacts and to the challenge it presents to regulation. In addition to concerns about the leakage of compounds from aggregate into water tables or land, there is the issue of volatility and dust in the air. The State of New Hampshire identifies several elements whose inhalation is not recommended.


<p>What chemicals are in asphalt fumes?</p> <p>The chemical composition of asphalt varies depending on the source of the crude oil, the type of asphalt being made, and the processes used to make it. In general, asphalt fumes are a mixture of several different types of compounds. These include:</p> <ul style="list-style-type: none">•Volatile organic compounds (VOCs)•Polycyclic aromatic hydrocarbons (PAHs)•Particulates•Sulfur•Nitrogen oxides•Carbon monoxide

While the use of industrial buildings for industrial purposes, including the processing of asphalt and cement waste, would seem an ideal, the conversion of pits and quarries to permanent industrial sites associated with “recycled aggregate” is problematic for several reasons. Firstly, it violates the intent of the original site plan which was for interim use and thus a covenant with the neighbours and community. Secondly, because the nature of aggregate removed from built structures is very different from virgin aggregate, this permanent use means permanent risk. Recycled asphalt contains many chemicals added to it. Because storing and processing of waste aggregate for recycling involves a high risk of releasing heavy metals, concentrated contaminants in fly ash, oil products, fibre content, spills, paint and coatings, biological content, etc., these should not be in open air, nor in proximity to ground or surface water. To contemplate them in short term is dangerous; in the long term is certain health impact.

Aggregate lands are in other cases converted to residential uses. This produces seemingly desirable homes, often on large lots with water features in the neighbourhood. If spring-fed and adequately drained, these can be enjoyable. Conversely, however, the urban sprawl they represent comes at a high cost to municipalities in terms of providing and maintaining services for them. This contradicts the planning priority of the Ontario government for intensification and densification of cities, towns and villages and reduces available lands for recreation and agriculture. The relationship between housing and other construction and aggregate extraction is complex. Rock and stone are significant in the construction of homes while the places where they are being

extracted are often considered undesirable near a home. Yet, the places where extraction has occurred can be a realtor's or a homeowner's dream. Lowered elevations combined with higher water tables, however, could result in a homeowner's nightmare of water.



Recreational uses in an urban or rural environment are possible. The City of Brampton was hailed by The Toronto Star for its rehabilitation of Professor's Lake. That Aug. 13, 2010 article by food columnist, Jennifer Bain, states "Professor's Lake is a former gravel/sand pit and small municipal dump that was transformed into a lake-oriented community in the 1980s by Amex Developments. It was named for Hans Abromeit, chairman of the board of Amex's parent company, the Lehndorff Group. (He had a doctorate and was nicknamed "the professor.") The spring-fed lake fights pollution by vetoing motorized boats

and preventing storm sewers from discharging into it. The former dump on the northwest shore was surrounded by polyethylene barriers and the lots around it can't be developed. The city claimed three acres on the south shore for a public beach and recreation centre that opened in 1981 after the beach area was dredged to a maximum depth of 5 feet (the lake can be more than 40-feet deep)". There is no doubting the value of the green space in urban planning to combat "nature deficiency" and provide recreation. There are, however, costs in maintaining such a facility which are borne by the city, and doubts about the permanence of the membrane holding dump contents away from the lake. Golf courses, recreation lands, wildlife habitats including wetlands are cited by OSSGA as end uses of holes their members have dug in the ground. The costs of those conversions to new purposes are often borne by the community through monetary and in-kind support. Groups of young people are often called on to aid in tree-planting or other rehabilitation projects often funded by community organizations.

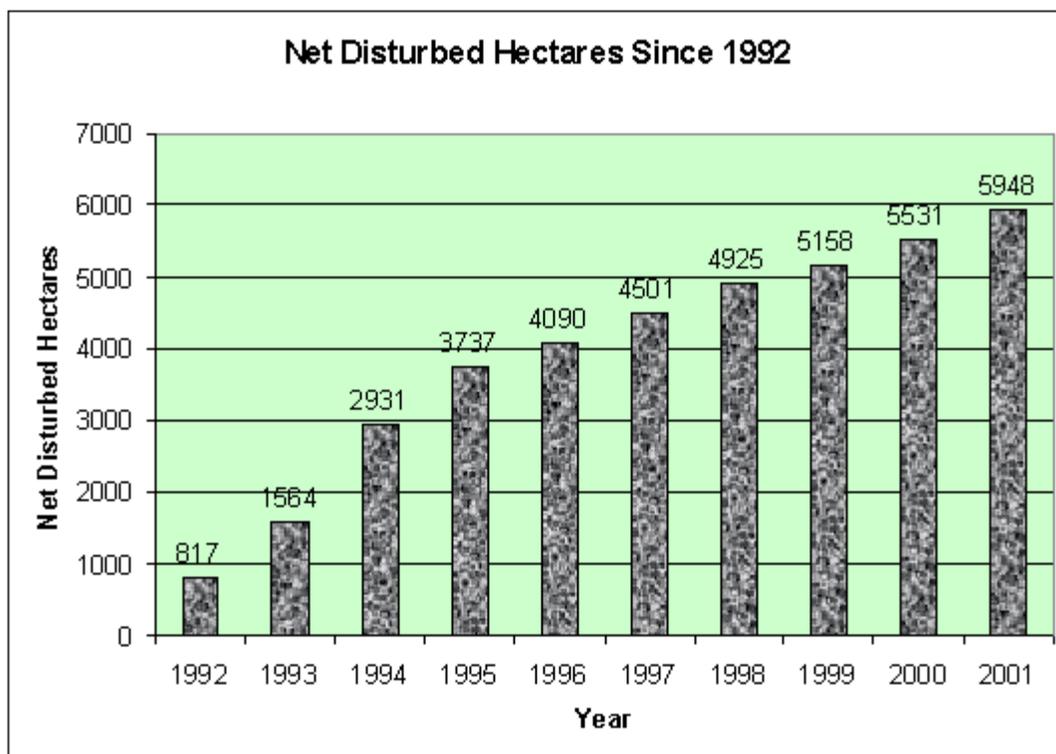
It is interesting to note that pits and quarries can have interim recreational uses too. In "Rock to Road" magazine, a journal for aggregate and road-building industry members, Treena Hein enthuses, without apparent irony, about the barren, other-worldly qualities of a gravel pit for a film set in an era when the world is no longer habitable and humans flee to other galaxies. She describes the filming of "Defiance" as follows: "The show being filmed in this Uxbridge Township gravel pit (as well as in nearby Toronto) is called Defiance, and it centres on a town of the same name. Defiance is set in 2046 on a "terra-formed" post-apocalyptic Earth where humans live alongside seven alien races". Many residents near operating pits and quarries describe them as "apocalyptic" and "alien" in their own ways. "Defiance" location manager Brad Gratkowski further describes the pit saying "With the show being post-apocalyptic, an unused look is critical" raising the issue again of dormant pits and the duration of extraction licences being extended for other uses which delay the return of the lands to original states. Rock videos and horse-back riding are other uses mentioned in the glowing article.

Progressive and Final Rehabilitation

The Ontario Aggregate Resources Act (ARA), Section 2(a), states that a purpose of the ARA is "to require the rehabilitation of land from which aggregate has been excavated". ARA Section 48(1) states that "every licensee and every permittee shall perform progressive rehabilitation and final rehabilitation on the site in accordance

with this Act, the regulations, the site plan and the conditions of the licence or permit to the satisfaction of the Minister". There is little doubt about the law: It requires rehabilitation, both progressive and final rehabilitation. Since less than one hectare out of each two newly excavated hectares is being rehabilitated, it seems clear that the law is being routinely violated.

In the decade 1992-2001, roughly the area of 10,000 football fields (5,948 hectares) have been excavated but not rehabilitated. This can be seen in the following chart, which shows the annual disturbed (newly excavated) but not rehabilitated area. The increasingly long bars show the amount of land that has been stripped but not rehabilitated. These statistics indicate that the law is routinely ignored.



Security deposits guaranteed rehabilitation: What happened to them? The Aggregate Resources Act required a security deposit from pit operators to guarantee rehabilitation. In 1999 the government liquidated these deposits, which consisted of \$49,000,000 and turned the cash over to the pit operators. With no deposits against future expenses to rehabilitate pits and quarries, the costs need to be borne throughout production but especially at the end of the production cycle when there is often least revenue. This acts to discourage rehabilitation, pit closure, license surrender.

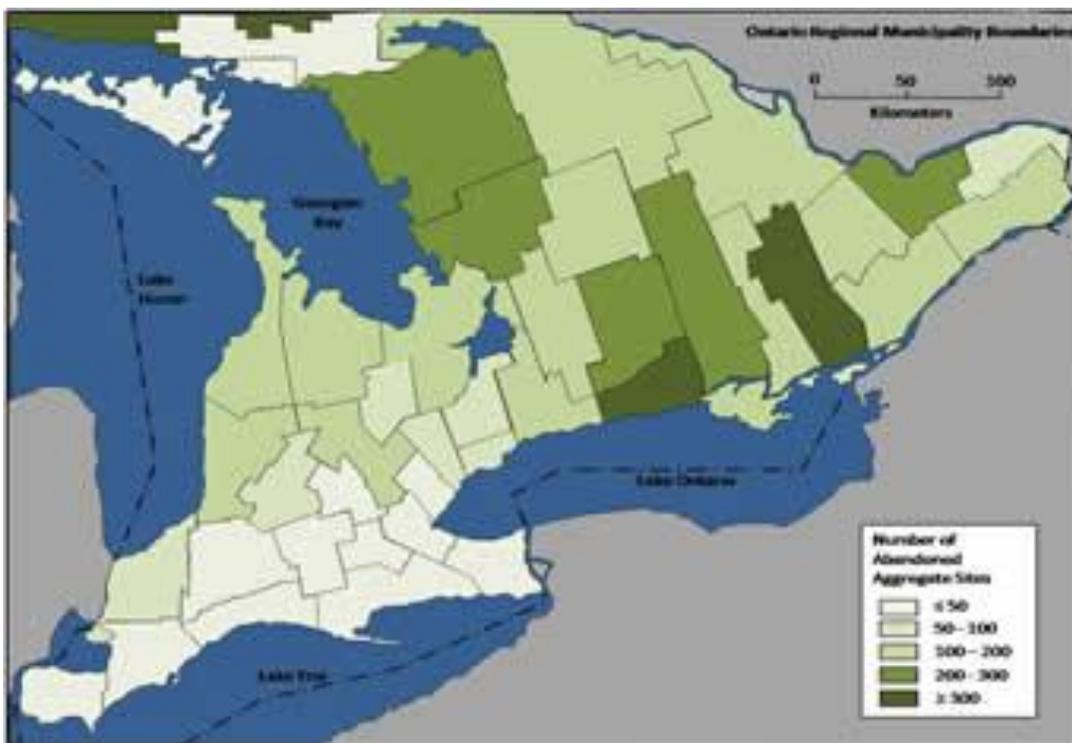
As a result, on Feb. 27, 2008, the Town of Milton passed a motion to ask the Ministry of Natural resources to review rehabilitation, the need for a deposit of funds towards it and "a review of the role OSSGA and TOARC with regard to rehabilitation and security deposits toward determining if this role has been in the public good and has been effective for promoting rehabilitation". Similarly, in 2012 hearings on the Aggregate Resources Act, Helen Purdy noted that "Thousands of pits and quarries in Ontario, either abandoned (approximately 7,900 sites or more) or under licence or permit, have not undergone progressive or final rehabilitation as required under the current Aggregate Resources Act, the former Pits and Quarries Act (1980), or a predecessor of these two Acts. A pit or quarry is considered abandoned if it was not licensed under the Aggregate

Resources Act (1990). The failure to rehabilitate lands that have been extracted is ongoing and appears to have intensified over the last two decades for various reasons including the discontinuation of rehabilitation security payments and licensee and permittee rehabilitation accounts”.

Delays to progressive and final rehabilitation

Frequent notice has been made of delays to progressive rehabilitation. Mined-out areas of quarries and pits can provide screens from visual offence, help control dust and erosion by air or water if progressively there is work to replant vegetation suitable to the region. That planting may be either agricultural or recreational in nature even when limiting access for safety reasons remains a priority. Various inventories of pits which have not been rehabilitated after use put that number very high. Each one of those depressions in the topography offers opportunities for surface waters to infiltrate ground water at unnaturally high speeds which in turn could result in problems around Safe and Clean Drinking Water (acts).

Where final rehabilitation of a small or wayside pit is on private property, the rights of other residents in the area may need to be considered when the property owner decides to forego any rehabilitation measure even if offered by a third party such as MAPP. Even where MAPP is involved in this work, the site plan requirements which constitute a covenant with the community are often ignored. The Aggregate Resources Act does, in fact, permit entry for rehabilitation of these. The problem of access has not been resolved since even in the 2010 SAROS Report, the authors report 2% refusals to examine the abandoned pits.



Complicating the count of abandoned pits is the fact that licences are seldom surrendered, meaning that pits which are inactive, such as at Paris or on the Speed River, can be reactivated after decades. Since the requirements of the pits and quarries have not kept pace with modern science nor with the realities of the development around them over the decades, they pose serious problems to communities and risk having health impacts on communities.

Some pits and quarries which appear abandoned to the general public are in fact under still valid licenses. Often, these sites have not experienced progressive rehabilitation to the extent required by law. Nor, since they are still considered under the ARA to be sites for potential extraction, has final rehabilitation occurred. In Ontario, many of these have been neglected long enough that they have re-wilded. Plant and animal species have taken over the barren spaces, establishing colonies of plants, trees, birds, amphibians, fish and other animals. To the community, they appear as recreation land but remain unavailable as they are under license and under private ownership. Restoration of these requires a scientific expertise in the natural species necessary to promote an eventual climax vegetative cover, and occasionally, human intervention to curb aggressive plant species like Manitoba maple or golden rods which look like naturalization but are an aberration.



Re-wilding of a dormant quarry

Introduction of non-native soils and other elements

When a pit or quarry is being rehabilitated, soils stripped from the area are intended to be returned. This is an economical and environmentally sound approach. Soil does not have to be moved, purchased or located. It remains on the site, stored for future use. This also means that the plant matter and seeds in the soil will represent those already on the site, in most cases, native species suited to the environment and posing little risk of rampant growth. If, however, non-native soils are introduced, there are a significant number of potential impacts on soil fertility, water quality, ecological integrity and human health. The retention of local soil is then ideal in rehabilitation projects.

While the Ministry of the Environment does have protocols for hazardous waste soils, contaminated brownfields soils but the province lacks an over-all clean soils policy. As a result, soil moves in ways which cause a significant number of problems. Not all brownfield or hazardous soil is handled as it should be. This results in harmful chemicals being trucked around the province and deposited in inappropriate sites such as airparks, pits, quarries, other excavations. Even during its movement it is dangerous due to the dust. Once dumped, it can dangerously alter the flow and quality of surface waters, the fertility of soils, groundwater

quality, affect people and livestock. At Tecumseh, the importation of soil into an excavation has resulted in a change in the surface topography from the previous state. The current mound alters surface flow.

Ontario recognizes a number of plant species as being invasive. Naturally, there is risk of transporting them if soils are transported onto rehabilitation sites. While purple loosestrife is perhaps the best known for its invasion of wetlands and ditches, the ubiquitous garlic mustard, aggressive Himalayan balsam, dog-strangling vine and highly dangerous Giant Hogweed are current threats as well.



The movement of soil into rehabilitation sites could transport these plants into new zones and/or provide disrupted soils for them to establish in.

If the goal of rehabilitation is to restore the lands used in the interim to its natural environmental state, then the use of imported soil is counter-productive. Where rehabilitation is to return agricultural land to productivity, the transport of soil is also problematic engendering risks of burying native topsoil, introducing contaminants, carrying invasive species and affected water quality and quantity available to farming. Restoration needs to be considered the first objective especially in light of Statistics Canada's 2011 observation that between 1976 and 2011, Ontario's farmland shrank from 15.5 acres to only 12.7, a significant crop loss.



Non-native materials of other sorts include ceramics (toilets and urinals), demolition waste, asphalt, cement, shingles and tiles, and varieties of garbage. None of these constituted rehabilitation or restoration but further the degradation of the site and its environs. Because they are used in the interim for the extraction of aggregate, pits and quarries can also contain fuel, scrap iron and other materials associated with the processes for unearthing sand, gravel and stone as well as with trucking it. Any remnants of leaked fuel, fuel tanks or other storage, metals from machinery or tools are non-native and thus should be removed from the site before

restoration. Otherwise, any work to restore the site will be in vain, as non-native and potentially harmful elements may remain.

Open Pits and Quarries



Pits and quarries represent actual and potential threats to groundwater. Water accumulations from rain or snowfall, surface water draining into them bring contaminants found in surrounding areas into closer contact with ground water. This presents a challenge and considerable expense to communities whose water comes from ground water as purification of surface water from lakes and rivers is a very different process from the treatment of well water. Naturally, surface water requires more effort, processes and money than to treat ground water due to animal life in or on the water, run-off from urban, industrial or agricultural areas, and the settling of air-borne contaminants on water.

Ontario's most notorious case of water contamination with e-coli bacteria was the fatalities and permanent disability at Walkerton when surface run-off containing manure breached a well for the town. In cases where water collects near the aquifer there is significant risk. Where the aquitard, the impermeable layer separating surface water from contacting groundwater, has been pierced, ground water is effectively surface water, a significant degradation in its quality from the view point of human and livestock consumption or for use in food processing, a major Ontario industry in agricultural regions, which, by coincidence, are often also aggregate extraction zones.

Soil Fertility

Soil disruption and loss of microbiological life are critical to subsequent uses of land after interim extraction of aggregate has ceased. When topsoil and other overburden materials are removed and stored before aggregate extraction occurs, it is assumed that the rich top soil material when returned to the restoration project will offer the same level of fertility for recreational or agricultural uses. This is a false assumption. Research by Laura F. Overstreet, North Dakota State University, and Jodi DeJong-Huges, University of Minnesota, shows that soil has a "best-before date" which is commonly less than the duration of aggregate operations. They note that "In general, younger organic material, from recently deposited roots and residue, dead organisms, or waste products, is the most biologically "active" fraction of the SOM (Soil Organic Matter), meaning that it serves as a food source for the living soil biological community. The younger fraction is also referred to as the "labile" SOM fraction, indicating that it is more readily decomposed than the passive/stable fraction. Generally, this fraction of the SOM is less than five years old". In addition to this shelf life, they and others note that disruption of soil interferes with the biological, physical and chemical properties of soil which make it a good growing medium.

The life of soil, microbial forms, worms and other borrowing animals, fungal matter and the breakdown of organic matter have been shown to be complex. Small scale studies to replicate soil fertility including the use of compost or bio-char have shown some success at recreating the natural environment's processes but at the expense of time, money and labour which suggests them to be impractical. Additionally, since industrial and municipal compost may contain a wide variety of components, some of them not natural to the environment, large-scale restoration projects may run afoul of other contaminants. The City of Toronto, for instance, encourages residents to dispose of the following in their Green Bins: Meat, poultry, fish products; Pasta, bread, cereals, rice; Dairy products, eggs and shells; Coffee grounds/filters, tea bags; Cake, cookies, candy; Diapers, sanitary products; Animal waste, bedding, cat litter; House plants, including soil; Paper – soiled, food packaging, ice cream containers, popcorn, flour and sugar bags, tissues, napkins, paper towels. The possibility of bacterial and pharmaceutical elements in these, especially in diapers, sanitary products, animal waste, bedding for animals and cat litter, makes some compost an undesirable amendment to crop lands, recreational fields or near water.

Bio-char, produced by partially burning wood scraps or brush piles, has other impacts on air quality which are not desirable. BlueLeaf's agricultural experiment, in conditions unlike that of a pit or quarry rehabilitation, were reported by Barry Hust of BlueLeaf and Julie Major, PhD as inconclusive in many ways. "The target application rate was 5.6 t/ha, but an estimated 30% of the material was wind-blown and lost during handling, transport to the field, soil application and incorporation. This resulted in an estimated 3.9 t/ha biochar application. Biochar was applied on a clay loam soil in a single, 1,000 m² swath and compared to an adjacent, unamended control swath, thus this is not a standard replicated experiment". Like the smaller study undertaken by TOARC, this study is inconclusive as a path forward. Thus, rehabilitation of pits and quarries, while in many ways desirable, will require careful study, considerable work to ensure soil fertility and monitoring of the productivity. Given the shrinking land base of prime farmlands in Ontario, it is inevitable that we will need to convert a significant portion of current aggregate lands to productive urban gardens and rural farms.

A Financial Burden on Municipalities

The rehabilitation of aggregate extraction lands seems a desirable outcome and should result in higher value to the community in which those lands are. Returned to agriculture, they become productive with food and agri-tourism. Converted to active or passive recreation, they bring tourist dollars and provide for a healthy population. This is welcome relief for municipalities whose roads have been pummelled to bits by overlaid trucks full of stone, sand or gravel, or so one would think.

Tax valuation on land, rehabilitated to recreational or agricultural land is lower than the industrial rate at which pits and quarries provide revenue to municipalities. Thus, the process of progressive rehabilitation, rather than being a financial obligation to pit and quarry operators, relieves them of costs thus benefiting their bottom line. Similarly, when pits and quarries fill with water, there is no land tax: bodies of water are not taxable. Coupled with MPAC claims for tax reductions for residents near pits and quarries, the cumulative effect of these revenue losses mean the top aggregate producing municipalities experience fiscal imbalances which are aggravated by increases in production then by reduction in revenues as extraction declines. One mayor remarked that the annual levies on stone and gravel shipped from her municipality "doesn't even pay for the potholes".



Part Three: Recommendations

1. Since its inception, the Aggregate Resources Act has been deemed to have precedence over agricultural, environmental and human health. This is based on the need for lime in steel production. The sad disappearance of steel-making is almost complete in Ontario so that this economic argument is less important. Similarly, any strategic importance of limestone to steel is reduced for Canada as a nation. On the other hand, Ontario's agricultural industry generates wealth as well as feeding our province and other nations. Environmental awareness is such that we no longer believe that our surroundings are merely nearby; we understand that we live in and because of the environment. The toll on human health of air, water and land contamination is extremely high in economic and human terms. Thus, we need to tilt the balance away from the "conservation of aggregate resources" and toward the preservation of the health of sustainable agriculture, environment and residents of Ontario. That would mean that we would evaluate the need for more pits or quarries before considering licences. Prevention would serve to reduce the need for rehabilitation.
2. Rehabilitation and restoration are not identical. It is clear from some perspectives that any other use for a spent pit is considered to be rehabilitation. Restoration, however, would better serve the interests of the people on Ontario in need of food, green space, active recreation as well as clean air and water. The often touted but few sites where model rehabilitations have occurred, need to be models of what should and will be done rather than what has been. "There are some excellent examples of rehabilitation that is being done at pit and quarry sites, and the operators of those sites are to be commended for their efforts". Based on the number of pits awaiting rehabilitation, the work is largely still to be done.
3. Research taken on sample sites is of limited value if it does not deal with the scale and number of devastated sites to be restored. Where non-native species are introduced, the research is clearly counter-productive. Where the research or practice does not address restoration, only some version of subsequent use, it misses the meaning of rehabilitation as it should be defined. Thus, it will be necessary to fully fund the full restoration of abandoned, dormant and currently active pits through funds generated by the industry in its sales of aggregate so that full cost accounting applies those cost

to applications, should any new ones be allowed, amendments where there is expanded need for restoration, on-going levies and other revenue streams.

4. Consultation with the public needs to be full, open and continuous as the government works through its response to the review of the Aggregate Resources Act. That consultation will need to address the gaps and failings in process leading to the review document, the overlapping authorities among various ministries which results in less than best practice, the declining value of aggregate in the marketplace likely due to oversupply, the health impacts of every stage of the industry on workers and the public, and the public's rightful desire for transparency.
5. Revised regulations and laws will need to be effectively communicated, monitored and enforced in a transparent way. Those communications with the public need to seek out public comment and consideration rather than merely be launched on a webpage or other publication. Additionally, for the public to fully engage in the process will require intervenor funds so that residents have access to experts where required. The current cost of engagement by members of the public is very high in terms of their time, energy and money. When a process is complaints-driven, there is an assumption that the public can mount those complaints without the assistance of experts. Those experts, in the current climate, include lawyers. The role of environmental lawyers in the discussion of legislation, regulations, codes of practice and their implementation is not to be underestimated. On the other hand, while environmental lawyers and community members are concerned about SLAPP suits, the process cannot be considered fair. Communities seeking to protect themselves from adverse effects should not see themselves also threatened with lawsuits, industry's costs or other damages. Anything else has to be perceived as a silencer. Similarly, the delay in decommissioning pits and quarries means that individuals and groups need to continue to be engaged over decades. That is not easy where the population ages and/or changes in areas of high turn-over of homes in a community.



6. The backlog of pits and quarries requiring rehabilitation is high. Time and finances to repair these are urgent. Active pits pose problems to communities which need to be resolved shortly. The review of the Aggregate Resources Act has revealed the lack of valid

research and models, a situation which means that even current rehabilitation practices may be inadequate. It is clear that community organizations are limited in their financial ability and human resources to address all of the issues, that Ministerial intervention has not resulted in the desired improvements and that industry advocacy continues to result in proposals which aggravate large segments of the population. The ARA review will need to enhance the role of the MNR in fostering clean and sustainable industry and support community engagement through a variety of concrete measures, all financed by those who make profit from the aggregate in Ontario.

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A Draft Paper

