

Developing Guidelines for the Rehabilitation of Aggregate Extraction Sites in Prime Agricultural Areas



Case Study 2

Proposed Agricultural Rehabilitation of a Recently Licenced Pit Expansion





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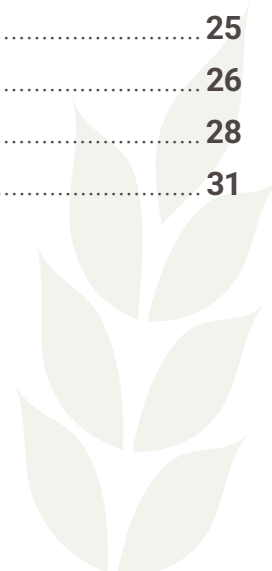
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Background

With urban and rural development on the rise, there is a growing need for aggregate resources, such as sand and gravel, to build public and private infrastructure.¹ At the same time, population growth and urbanization are putting pressure on agricultural production and agricultural land.² It is critical to protect and sustainably manage both aggregate and agricultural resources. However, high quality aggregate resources are often found within prime agricultural areas or specialty crop areas.³ As such, the aggregates and agriculture industries must work together to sustainably manage resources.

The Ontario Provincial Policy/Planning Statements (PPS) outline the provincial government's land use planning policies for both the aggregates and agricultural industries.⁴ While the PPS (2024) requires prime agricultural areas be protected for long-term use, it also allows planning authorities to "permit non-agricultural uses in prime agricultural areas for extraction of minerals, petroleum resources, and mineral aggregate resources".⁵ In prime agricultural areas, on prime agricultural land, aggregate extraction is permitted as an interim land use, only if the impacts to the agricultural system are mitigated and minimized as recommended by an agricultural impact assessment (AIA) and the site is rehabilitated back to an agricultural condition upon the completion

of extractive activities. The PPS (2024) defines agricultural condition as "a condition in which substantially the same areas and *same average soil capability* for agriculture is restored".⁶ For specialty crop areas, the PPS (2024) requires that "the same range of specialty crops common in the areas can be achieved, and where applicable, the microclimate on which the site and surrounding area may be dependent for specialty crops will be maintained and restored".⁷ The only time that an aggregate extraction site does not have to be rehabilitated back to an agricultural condition is when the depth of aggregate extraction makes rehabilitation "unfeasible", typically due to extraction below the water table.⁸

¹ Ministry of Natural Resources. (2025). Aggregate resources. *Government of Ontario*, <https://www.ontario.ca/page/aggregate-resources>

² Brooks, T. (2022). Ontario farmland under intense pressure. *Ontario Federation of Agriculture (OFA)*, <https://ofa.on.ca/newsroom/ontario-farmland-under-intense-pressure/>; Spoelstra, D. (2024). We must protect farmland for the sake of future generations. *Ontario Federation of Agriculture (OFA)*, <https://ofa.on.ca/newsroom/we-must-protect-farmland-for-the-sake-of-future-generations/>

³ Ontario Farmland Trust. (2020). The Impacts of Aggregate Mining on Farmland. *Ontario Farmland Trust*, <https://ontariofarmlandtrust.ca/2020/07/02/the-impacts-of-aggregate-mining-on-farmland/>

⁴ The Ontario Provincial Planning Statement was released in 2024, replacing the Ontario Provincial Policy Statement (PPS 2020) and the A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019). Previous versions of the Policy Statement include PPS 1997, 2005, 2014. Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>. Ministry of Municipal Affairs and Housing. (2020). Provincial Policy Statement. *Government of Ontario*, <https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf>. *Government of Ontario*. (2020). A Place to Grow: Growth Plan for the Greater Golden Horseshoe. *Government of Ontario*, <https://files.ontario.ca/mmah-place-to-grow-office-consolidation-en-2020-08-28.pdf>. Penaud, A., Holy, K., Lemay, M. A., Fullerton, C. (2025). Policy Timeline – the Intersection of Agriculture and Aggregates. VISTA Science and Technology.

⁵ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

⁶ *Ibid.*

⁷ *Ibid.*

⁸ *Ibid.*



The Aggregate Resources Act (ARA) includes requirements for the rehabilitation of aggregate extraction sites including those in prime agricultural areas.⁹ The ARA states that every licensee/permittee has the duty to rehabilitate the site by performing “progressive and final rehabilitation of the site in accordance with the Act”.¹⁰ To ensure that effective and sustainable rehabilitation of aggregate extraction sites on prime agricultural land is carried out, aggregate producers must provide a rehabilitation plan as part of the site plan, in accordance with the Ministry of Natural Resources and Forestry (MNR) site plan standards.¹¹ Rehabilitation plans include rehabilitation notes, which outline the steps that will be carried out to restore the site to an agricultural land use. Rehabilitation notes may also be included in the operational plan of the site plan, which describes progressive rehabilitation recommendations from technical reports such as an AIA. Aggregate producers must comply with all rehabilitation notes included in the approved site plan. Because of this, rehabilitation plans and notes are critical in holding the aggregates industry accountable to restoring agricultural land.

Detailed rehabilitation plans that incorporate best management practices are critical for effective rehabilitation. However, research and guidance on best practices for rehabilitation of aggregate extraction sites in prime agricultural areas is limited. To increase clarity on best practices, it is important to understand industry norms, common concerns and recommendations from stakeholders and government agencies related to the rehabilitation of aggregate extraction sites located in prime agricultural areas.

This case study report is the second in a series of case studies analyzing records related to licence applications for aggregate extraction sites located in prime agricultural areas that will be rehabilitated back to an agricultural condition. The case studies seek to identify rehabilitation norms, common challenges in preparing aggregate applications and rehabilitation plans and recurring recommendations regarding rehabilitation back to an agricultural condition as required by the PPS. The case studies are a part of a broader research project developing evidence-based guidelines for rehabilitation of aggregate extraction sites located in prime agricultural areas in Ontario (Appendix A). Common industry terms are defined in Appendix B - Glossary of Terms. 🌱

⁹ Government of Ontario. (2021). *Aggregate Resources Act*. *Government of Ontario, E-laws*, <https://www.ontario.ca/laws/statute/90a08>

¹⁰ *Ibid.*

¹¹ Ministry of Natural Resources and Forestry. (2020). *Aggregate Resources of Ontario: Site Plan Standards*. *Government of Ontario*, <https://files.ontario.ca/mnrf-aggregate-resources-of-ontario-site-plan-standards-2020-en-2021-03-18.pdf>





Case Study Introduction

This case study report focuses on the rehabilitation plan for a recently licenced aggregate extraction site situated on agricultural land in Ontario. The ARA licence of the site is listed as Category 1, Class A, which permits the aggregate producer to extract more than 20,000 tonnes of aggregates annually. The site is an expansion of a pre-existing pit, owned and operated by the same aggregate producer. The site (expansion lands) shares processing facilities and haul routes with the pre-existing adjacent pit.

This case study report draws upon information prepared during the licence application process. The following documents were analyzed:

- Initial site plan submitted with the application
- Final site plan approved by the Ministry of Natural Resources and Forestry (MNRF)¹² when the licence was issued
- Agricultural impact assessment
- AIA peer-review
- Comments from MNRF on the licence application
- Comments from a local agricultural federation
- Compliance Assessment Report (CAR)

Site plan documents approved by MNRF are legally-binding, meaning aggregate producers must comply with any requirements detailed in the site plan. A critical part of site plan is the notes pertaining to rehabilitation of the site following aggregate extraction. Rehabilitation of the site is typically discussed in the operational plan and rehabilitation plan; each of which represent separate elements of the site plan.

The application for the aggregate extraction licence was completed under the requirements of the PPS 2005 and 2014 . These versions of the PPS did not

require an AIA be to completed for sites designated as prime agricultural areas. The AIA was prepared under the requirements of the Greenbelt Plan (2017), which required that AIAs be prepared to evaluate the impacts of non-agricultural uses to prime agricultural areas in the Greenbelt.¹³ This included evaluating potential losses of prime agricultural land and potential impacts to surrounding agricultural activities. The AIA outlined recommendations to help minimize impacts to the agricultural system and increase agricultural viability post-extraction. The methodology used for the AIA is outlined in Appendix C.

Site Features and Conditions

The licenced site is ~55 hectares, with ~44 hectares of this land located within the extraction area. The site consists of two separate areas. The first area represents a smaller portion of the site (<10%) and is zoned as “Secondary Agricultural Lands” based on the county’s official plan. Under the PPS (2005, 2014), this area is designated as “rural area”.¹⁴ Aggregate extraction in the first area will be below the water table and the area will be restored to a pond, wetland and forested environment. The second area of the site represents most of the extraction lands (>90%) and is zoned as a prime agricultural area.

¹² The Ministry of Natural Resources and Forestry (MNRF) was the official title of the Ministry at the time that this licence application was submitted and approved. The Ministry’s official title was changed to the Ministry of Natural Resources (MNR) in June 2024.

¹³ Government of Ontario. (2017). Greenbelt Plan. *Government of Ontario*, <https://files.ontario.ca/greenbelt-plan-2017-en.pdf>. Clark, A., Holy, K., Lemay, M. A., Fullerton, C. (2025). Policy Timeline – the Intersection of Agriculture and Aggregates. VISTA Science and Technology.

¹⁴ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>



Most of this area will be restored to an agricultural condition in accordance with requirements of the PPS (2024).¹⁵

Based on the results of a soil survey completed as part of the AIA, the site was classified as Canada Land Inventory (CLI) Class 1 (~20%) and Class 3 (~70%), with the remainder being Disturbed Soil Areas (~10%).¹⁶ Both Class 1 and Class 3 soils have high soil capability for agriculture. All Class 1 soils and 70% of Class 3 soils¹⁷ fall within phase 2 extraction lands, which will be rehabilitated back to an agricultural condition following extraction. The remaining 30% (~3 hectares) of the Class 3 soils are adjacent to the disturbed soil area and together, comprise phase 1 extraction lands, which will not be rehabilitated back to an agricultural condition.

The Class 1 and Class 3 soils at the site were identified in the soil survey as sub-class F (low natural fertility) and sub-class M (moisture deficient), resulting in some minimal cropping limitations. The soil survey further categorized the soils as fine sandy loams. The topography of the land was identified to be relatively flat, with no greater than 10 m of relief throughout the site. No surface water features, such as watercourses, agricultural drains or wetlands were identified on the site.

The aggregate producer owns the site and leases a portion of the site to a local farmer. The portion of the lands being leased to the farmer consist of cash crop and forage production. This has included wheat, soybeans, forage and pasture for horses. According to recent annual Compliance Assessment Reports (CARs) submitted to MNRF, extraction has begun in the first area of the site. This area has not yet been depleted of aggregate resources. Therefore, progressive rehabilitation has not yet begun at the site, which is to be expected given that the licence was only recently approved under the ARA. The farmer

continues to farm phase 2 lands, while extraction is underway in phase 1.

Impacts to Agriculture

According to the AIA, ~43 ha of the site were being farmed prior to aggregate extraction. The rehabilitation plan proposed that ~28 ha of this farmland would be rehabilitated back to an agricultural condition. This means that ~30%, or ~14 ha, of land zoned as prime agricultural area would be lost due to the side slopes required to create the final landscape. The AIA also stated that the loss of agricultural lands would be offset by a “comprehensive agricultural rehabilitation” that connected the site with the adjacent pre-existing licence to create a uniform agricultural field. Because of this, the AIA noted that “permanent loss of farmland from the expansion would be nominal.” The AIA did not specify the exact amount of permanent loss of farmland, nor did it define “nominal”.

It is important to note that the AIA discussed the loss of lands that were actively farmed (~43 ha) prior to aggregate extraction. It did not consider the additional ~10 ha of the site that were designated as prime agricultural area as per CLI land classifications but were not being farmed. These additional areas will be extracted below the water table and are therefore not being returned to an agricultural condition.

The AIA also assessed impacts to the agricultural system and how agricultural rehabilitation could help minimize such impacts. In the case of this site, there were 18 farms located within a 1 km radius, including equestrian operations, pasture lands, hay production, corn production and cash crops. Aggregate extraction can impact the agricultural system by affecting water availability for nearby farms, especially if extraction is below the water table.¹⁸ While a small portion of the site will be extracted below the water table, the AIA stated that a

¹⁵ *Ibid.*

¹⁶ Government of Canada. (2013). Overview of Classification Methodology for Determining Land Capability for Agriculture. *Government of Canada*, <https://sis.agr.gc.ca/cansis/nsdb/cli/classdesc.html>

¹⁷ This represents 70% of the total amount of Class 3 soils on the site (i.e., 70% of the 70% of Class 3 soils on site).

¹⁸ Baker, D. and Shoemaker, D. (1995). Case Report No. 3 Environmental Assessment and Aggregate Extraction in Southern Ontario: The Puslinch Case. *Department of Environment and Resources Studies, University of Waterloo*, https://uwaterloo.ca/applied-sustainability-projects/sites/default/files/uploads/documents/ontario_3_bakershoemaker_puslinch_aggregates.pdf



hydrogeological assessment prepared for the licence application concluded that the proposed extraction would not adversely impact groundwater resources in the area. The AIA also addressed agricultural fragmentation as a potential factor that could impact productivity of the agricultural system. However, the AIA stated that rehabilitation would not result in agricultural fragmentation because the site would be rehabilitated alongside the adjacent pit to form a uniform agricultural field.

Throughout the AIA, rehabilitation to an agricultural condition is reiterated as the primary strategy for minimizing losses of prime agricultural land and mitigating impacts to surrounding farms. 🌱





Agricultural Rehabilitation

The site is intended to be rehabilitated comprehensively with the adjacent site. However, the AIA stated that an official site plan amendment to the adjacent licence would be required to allow for both sites to be rehabilitated together. Rehabilitation of the adjacent pit is not discussed in this case study report as it falls under a separate ARA licence.

This section compares the rehabilitation notes in the initial site plan with the rehabilitation notes in the revised site plan, which incorporated recommendations from reviewing and commenting agencies. It also provides an analysis of the extent to which recommendations in the AIA were implemented in the initial and/or revised site plans.

Phased Rehabilitation

The approved site plan for the site stated that progressive rehabilitation would follow a phased approach and that “mitigation measures and best management practices (BMPs) would be monitored and enforced under provision of the Aggregate Resources Act.” The site plan did not go further to specify which BMPs they were referring to or would use. However, the site plan did offer additional details on the phased rehabilitation approach that would be implemented.

Phased agricultural rehabilitation at the site will rely heavily on a sequential approach proposed in a 1982 report by Mackintosh and Mozuraitis (Figure 1).¹⁹ This report was funded by the Ministry of Natural Resources (MNR) in 1980, when the Pits and Quarries Control Act regulated aggregate operations in much of Ontario. Now, the Aggregate Resources Act (ARA) regulates aggregate operations in Ontario. Even though this document was prepared under different legislation and agricultural knowledge base, it remains cited in the site plan as a standard approach for phased agricultural rehabilitation of aggregate extraction sites. 🌱

¹⁹ Mackintosh, E. E. and Mozuraitis, E. J. (1982). Aggregates and the Aggregate Industry: Industrial Mineral Background Paper 3. *Ministry of Natural Resources*, https://toarc.com/wp-content/uploads/2019/02/Agri_Aggre.pdf



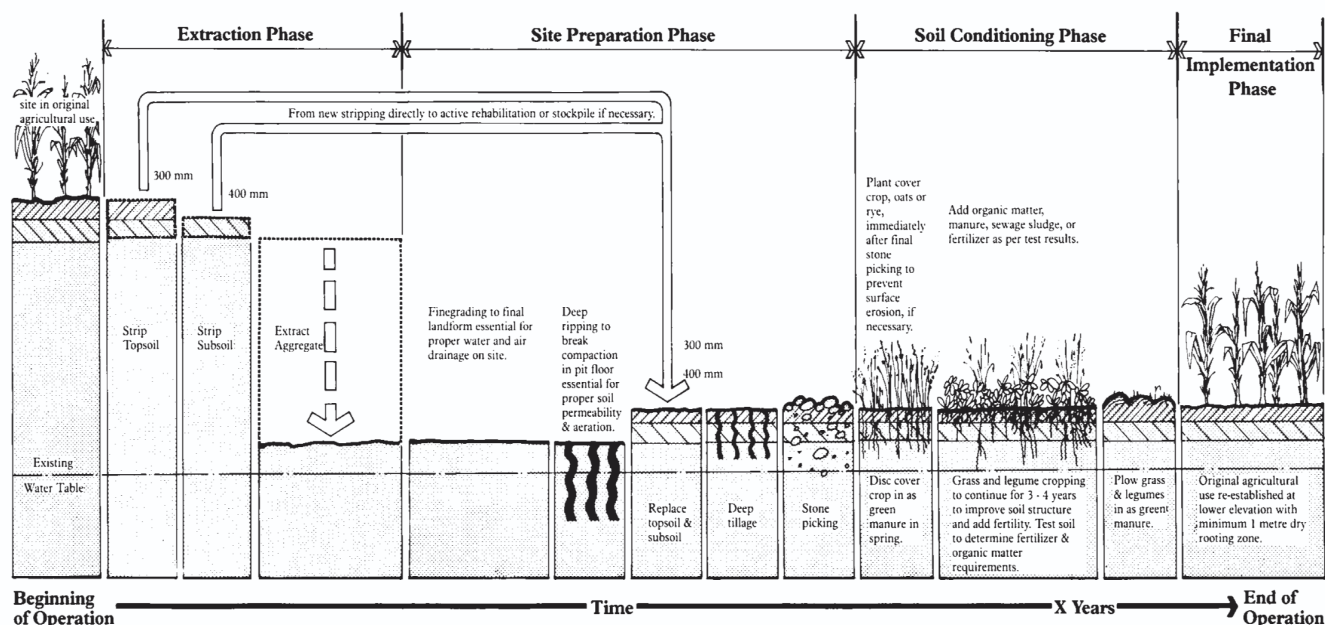


Figure 1. Progressive rehabilitation sequence that was used to inform phased agricultural rehabilitation at the site.²⁰

Initial and Final Rehabilitation Plans

In addition to phased rehabilitation notes in the operational plan, the site plan also included a more detailed rehabilitation plan. A comprehensive summary of the rehabilitation plan listed in the initial site plan prepared with the licence application and the rehabilitation plan listed in the final site plan approved by MNRF is presented in Table 1. There were eight rounds of revisions over the course of 12 years between when the initial site plan was developed for the application and when the final site plan was approved by MNRF. Revisions to the final site plan incorporated concerns raised by commenting agencies, such as a local federation of agriculture and MNRF.

The initial site plans included more detailed rehabilitation plans for wetland and pond habitat restoration and woodlot reforestation. Comparatively, the agricultural rehabilitation plan was less detailed, offering a brief overview of rehabilitation in accordance with MNRF site plan standards.²¹ Meanwhile, the final site plan approved by MNRF included an expanded agricultural rehabilitation plan that incorporated specific best management practices (Table 1).²²

²⁰ *Ibid.*

²¹ Ministry of Natural Resources and Forestry. (2020). Aggregate Resources of Ontario: Site Plan Standards. *Government of Ontario*, <https://files.ontario.ca/mnrf-aggregate-resources-of-ontario-site-plan-standards-2020-en-2021-03-18.pdf>

²² Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>



Table 1. Comparison of rehabilitation notes in the initial and final site plans. Certain information is paraphrased for better readability. Some rehabilitation notes are bolded to highlight specific changes made to the final site plan.

	Initial Rehabilitation Notes	Additions or Changes in the Final Rehabilitation Notes
General Rehabilitation Notes	General rehabilitation notes stated that “rehabilitation of pit floor and side slope areas returning to agriculture uses will consist of the following”: • Ripping to alleviate compaction where required. • Replace topsoil and subsoil to similar depth as existing conditions (min. depth of 300 mm for both soil horizons combined). • Seed to a grass/legume cover crop. • Manage and fertilize as required until self-sustaining.	All information listed in the initial site plan remained, with the addition of the following edit/statement: • Replace topsoil and subsoil to a similar depth as existing conditions (replacing topsoil ~300 mm and subsoil at a depth of ~200 mm for a minimum total depth of 500 mm for both soil horizons).
Slopes	Notes related to slopes stated that: • The side slope of the rehabilitated pit is 3:1. • Final grading will incorporate variability in the side slopes, control drainage and increase slope and moisture regime diversity. • Side slope plantings in agricultural areas include an erosion control agricultural seed mix of annual rye (50%), oats (23%), winter rye (23%) white clover (4%).	All information related to slopes listed in the initial site plan remained, with the addition of the following edit/statement: • Side slope plantings in agricultural areas include an erosion control agricultural seed mix of annual and perennial rye, oats, clover and perennial grasses such as Canadian bluegrass, timothy and creeping red fescue.





**Soil
Management
and Storage**

Notes related to topsoil and subsoil management and storage included:

- Within the limit of extraction, the site will be stripped of topsoil and subsoil in stages. Topsoil and subsoil removed from areas to be extracted will be used for berm construction, stored and/or used directly in rehabilitation of this site. Where there is a distinguishable layer, the topsoil will be stripped, handled and replaced as a separate layer.
- Overburden and topsoil not required for immediate use in berm construction or progressive rehabilitation of the site may be temporarily stockpiled at grade or on the active pit floor. Any stockpile to be stored for longer than 1 year will be vegetated to control erosion.

There were no changes to notes related to soil management and storage.





Clean Fill Importation

Notes related to the importation of topsoil or overburden included:

- Material removed at the site will be sufficient to complete rehabilitation. Clean fill may be brought on site for use in final rehabilitation.

Notes related to the importation of topsoil or overburden were revised to include the following:

- Clean inert fill (topsoil, overburden) may be imported to facilitate the establishment of 3:1 (horizontal: vertical) slopes on the pit face and topsoil may be imported to implement rehabilitation requirements.
- The licensee must ensure that the material is tested at the source, before it is deposited on-site, to ensure that the material meets the Ministry of Environment, Conservation and Parks (MECP) criteria under Table 1 of the MECP's Soils, Ground Water and Sediment Standards for use under Part XV. 1 of the Environmental Protection Act. Sampling results will be provided to MNRF upon request.
- Where the imported material is not being placed within 1.5 m of the surface, MECP's requirements for sodium adsorption ratio and electrical conductivity do not have to be met.





Agricultural Monitoring Program

There was no information regarding an agricultural monitoring program in the initial site plans.

The final site plans stated that “an Agricultural Rehabilitation Monitoring Program Report will be submitted annually and as needed once progressive rehabilitation efforts have commenced. The report will document stages of the rehabilitation process and will include details on matters such as the following”:

- An overview of the status of the current extraction and progressive rehabilitation phases.
- Description of any land that has been progressively rehabilitated.
- Documentation on the alleviation of any soil compaction, drainage provisions, erosion control.
- Description of how the soil has been replaced and any amendments added (fertilizer, organic matter).
- Description of any seeding or planting that has occurred.
- A review of previous rehabilitation management activities and observations regarding field conditions.
- Report of agricultural activity (crops grown, annual yields) and any anecdotal feedback from the farmer.
- Review of drainage issues and recommended mitigation measures as necessary.
- Summary of soil test results and post rehabilitation soil capability.
- Summary of monitoring data.

The site plan outlined the purpose of the report, and how it would be submitted:

- The purpose of the report is to gather data on average soil capabilities to ensure the recommended rehabilitation sequence is implemented and documented.
- The report will include observational documentation, records of activity and quantitative information on soil conditions.
- The monitoring report will be appended as part of annual ARA Compliance Assessment Reports for the duration of the licence.



Final Rehabilitation Information	Final rehabilitation notes included: • No permanent buildings or structures are proposed for the licenced area. • No haul roads will remain on site. • No defined surface water drainage features exist in the extraction area.	There were no changes in final rehabilitation notes between the initial and approved site plans.
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The most notable difference between the initial and final rehabilitation plans was the inclusion of an agricultural rehabilitation monitoring program. There was no mention of a monitoring program in the initial site plan; however, this was detailed at length in the final site plan. The final site plan stated that a rehabilitation monitoring plan would document rehabilitation progress over time to ensure that site conditions align with rehabilitation strategies. The rehabilitation monitoring program included quantitative and qualitative data, such as soil tests and anecdotal feedback from the farmer. Rehabilitation monitoring would begin once progressive rehabilitation commences. Rehabilitation reports would be included in annual Compliance Assessment Reports (CARs) submitted to MNR. Other differences between the initial and final site plans included additional details on topsoil and subsoil depths, a more precise agricultural erosion control seed mix and a more detailed overview of clean inert fill that may be imported to the site for rehabilitation purposes.

The final site plan was also revised to include an additional entrance point to the pit. In the case of this site, the originally proposed access point was in a location that would provide limited access to the rehabilitated fields for farming. The final site plan included details on a new access point that would increase safety and feasibility of progressive rehabilitation.

Agricultural Impact Assessment Recommendations

Recommendations made in the AIA included best practices to preserve and restore soil structure and soil capability (Table 2). Most of these best practices were not included in the initial site plan but were adopted or partially adopted in the final site plan. While the AIA outlined these best practices, they were implemented into the final site plan in response to comments and concerns raised during the commenting and review process carried out as part of the licence application. Most of these concerns were flagged by the AIA peer-reviewer contracted by the county to assess and improve the AIA and rehabilitation plan.





Table 2. Extent of adoption of AIA agricultural rehabilitation recommendations in site plan.

Agricultural Rehabilitation Recommendation	Description of the Recommendation	Adoption of the Recommendation
Minimize Soil Storage	Implementing progressive rehabilitation procedures that avoid substantial storage of topsoil and minimize storage of subsoil. This includes moving stripped soils directly to depleted areas for use in rehabilitation and limiting stripping to what is required for each season of operation.	Partially adopted in the final site plan. The final rehabilitation plan stated that soils would be utilized directly for rehabilitation “where possible”, however the operational plan did not state this and instead stated that soil would be utilized for berm creation.
Minimize Soil Mixing and Soil Compaction	Depths of soil stripping should be monitored. Deep ripping and tilling should avoid mixing soil layers. Only handling topsoil and subsoil under dry conditions and adopting a wet weather shut down procedure to minimize impacts to soil structure. Minimizing travel over soils and rehabilitated areas to reduce soil compaction.	Partially adopted in the final site plan. The final site plan stated specific soil depths and stated that that topsoil and subsoil would be stripped and replaced in layers. Other recommendations (i.e., only handling soil in dry conditions, and minimizing travel over soils) were not adopted.
Control Erosion	A perennial vegetation mix should be planted to reduce erosion.	Adopted in the final site plan.
Plant Cover Crops	A cover crop should be planted throughout the rehabilitated area and maintained for 5 years, plowing under annually to increase soil organic matter.	Partially adopted in the final site plan. The establishment of a grass-legume cover crop was included, but the 5 year time frame was not.
Soil Testing	Random soil testing should be done at the beginning of each growing season to analyze soil fertility and soil structure. Results from soil testing should direct any adjustments needed to cropping practices and/or soil amendments.	Partially adopted in the final site plan. Soil testing was included as a part of the monitoring program; however, time frames were not specific to the beginning of each growing season.



**Rehabilitation
Monitoring**

Annual rehabilitation practices report should be submitted to document agricultural rehabilitation activities and demonstrate compliance in relation to soil stripping, handling and storage; rehabilitation progress, methods, best practices; soil tests; and post rehabilitation soil capability and farming activity.

Adopted in the final site plan.





Commenting and Review Process

The initial site plans and AIA were circulated for comment and review by relevant stakeholders. This included an AIA peer-review, comments from MNRF and a local federation of agriculture. There were no comments from OMAFRA. The local farmer was also consulted to confirm that the rehabilitation plan was adequate. There was no documentation of the interaction with the farmer, as it occurred in person.

The AIA peer-review was conducted upon the request of the county. The peer-reviewer was commissioned to assess rehabilitation progress on the existing pit and the AIA and rehabilitation plan proposed for the pit expansion (this case study site). This case study report details insights related to the pit expansion. The peer-reviewer raised several important concerns and recommendations to enhance agricultural rehabilitation outcomes. Many of the concerns and recommendations raised by the AIA peer-reviewer were based on OMAFRA's 2018 Draft AIA Guidance, which was published shortly after the aggregate producer submitted the AIA for the site. Three rounds of reviews were conducted until the AIA peer-reviewer was satisfied with the AIA and rehabilitation plans.

Comments, concerns and recommendations raised by the AIA peer-reviewer, the local federation of agriculture and MNRF have been grouped into the following themes, which are expanded upon below:

- Impacts to Prime Agricultural Land
- Engaging Local Agricultural Stakeholders in AIA Development
- Recommendations to Improve Soil Management
- Establishing Proper Drainage
- Monitoring Agricultural Rehabilitation
- Access Routes to Rehabilitated Lands

Impacts to Prime Agricultural Land

As part of the public consultation process, a letter was submitted by a local federation of agriculture

that raised concerns related to the industry's "track record" of poor rehabilitation. The letter stated: "... the suggestion that this site will be rehabilitated back to agriculture, in whole, or in part, does not improve the case for the pit's expansion. The aggregate industry's overall lack of commitment and actual completion of rehabilitation plans is legendary. Given past practice of the aggregate industry, [the federation] must assume that any prime agriculture [land] lost to pits will remain lost indefinitely, certainly for several generations. Few rehabilitation plans result in land being returned to a state of producing viable crop yields." There were no direct responses on record from the aggregate producer to the federation of agriculture.

Concerns flagged in the letter from the federation of agriculture were similarly raised by the AIA peer-reviewer. More specifically, the peer-reviewer noted that the AIA did not include a discussion of the net impacts resulting from the aggregate expansion. OMAFRA has published guidance for assessing and describing net impacts of a pit or quarry in the context of magnitude and extent of impacts over the lifespan of the operation.²³ As per this guidance, AIAs are required to explain how loss of prime agricultural land will be minimized. In response to the AIA peer-reviewer, the aggregate producer updated the AIA to include a section on net impacts. When describing how net impacts would be minimized, the aggregate producer referred to the rehabilitation plan, "which would return a large majority of the lands to the same average soil capability."

²³ Ontario Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. Government of Ontario, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>



The AIA peer-reviewer was satisfied with the updated AIA and the response from the aggregate producer. There were no further comments from the producer, the AIA peer-reviewer, or the local federation of agriculture pertaining to the loss of agricultural lands and the net impact of the extraction on the agricultural system.

Engaging Local Agricultural Stakeholders in AIA Development

OMAFRA Draft AIA Guidance recommends that some level of public consultation be conducted as part of the AIA.²⁴ These guidelines state that local agricultural stakeholders such as farmers, agricultural groups, farm organizations and adjacent landowners be engaged to better understand potential impacts to the agricultural system. The Draft AIA Guidance recommends that the AIA and rehabilitation plan be modified to address the concerns raised by stakeholders.²⁵

The AIA did not indicate whether agricultural stakeholders were engaged. This was flagged by the AIA peer-reviewer, who stated that the aggregate producer should engage agricultural stakeholders and indicate how their concerns would be addressed. The aggregate producer responded to this concern by stating that stakeholder engagement in the development of an AIA is a “recommendation”, not a “requirement”. The aggregate producer stated that although they did not engage local stakeholders in the development of the AIA, they did carry out a public consultation as part of the application process, which is mandated by MNR. This public consultation process resulted in a letter from the local federation of agriculture (as detailed above) and conversations with the farmer who was leasing and farming the land. The aggregate producer stated that the farmer “represents the best available information that will meaningfully contribute to the agricultural rehabilitation of the expansion lands.” The aggregate producer also stated that “the farmer has confirmed that

the proposed rehabilitation is adequate.” The peer-reviewer was satisfied with this response.

Recommendations to Improve Soil Management

The initial site plan stated that “material recovered at the site will be sufficient to complete rehabilitation,” but also stated that “clean fill may be brought on site for use in final rehabilitation.” These contradictory statements sparked questions from both MNRF and the AIA peer-reviewer. Both MNRF and the peer-reviewer asked the aggregate producer to provide additional information on soil resources at the site, and to confirm if there would be sufficient soil for rehabilitation. The AIA peer-reviewer requested that a soil budget be prepared to demonstrate that a sufficient volume of soil resources would be available for agricultural rehabilitation. In response to this request, the aggregate producer prepared and submitted a soil budget, which confirmed that there was enough soil to support rehabilitation. In fact, the soil budget revealed a “surplus” of soil, which could be used to supplement rehabilitation of the existing adjacent pit, or “used elsewhere”. The aggregate producer shared the soil budget results with MNRF, in response to their questions surrounding availability of soil for rehabilitation. Both MNRF and the AIA peer-reviewer were satisfied with the soil budget.

Despite there being a “surplus” of soil on site, the final site plan still stated that clean fill may be imported to support the establishment of side slopes and rehabilitation requirements. In order to keep this language on the final site plan, MNRF required that imported material be tested at the source before importation to ensure compliance with the Ministry of Environment, Conservation and Parks (MECP) rules for soil management and excess soil quality standards.²⁶ In addition, MNRF asked that the aggregate producer include language on the site plan stating that “sampling results [of imported soil] will be provided to MNRF upon request.” MNRF

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ Ministry of the Environment, Conservation and Parks. (2025). Rules for soil management and excess soil quality standards. *Government of Ontario*, <https://www.ontario.ca/page/rules-soil-management-and-excess-soil-quality-standards>



also requested that the site plan include specific final depths for topsoil and subsoil at the site. The aggregate producer updated the site plan according to MNRF's comments on importation of soil and soil depths for rehabilitation.

The AIA peer-reviewer made additional recommendations to enhance soil management through the establishment of a cover crop mix. More specifically, the AIA peer-reviewer was concerned with the original seed mix proposed for the rehabilitation of side slopes. The original seed mix consisted primarily of annual rye, winter rye and oats. The peer-reviewer stated that these are considered "nurse crops" and are not suitable for erosion control. The AIA peer-reviewer recommended adding more perennials, such as timothy, creeping red fescue, hard fescue and/or Canada bluegrass to mitigate against erosion and minimize impacts to soil structure and soil capability. The aggregate producer implemented this recommendation by including an updated rehabilitation seed mix in the final rehabilitation plan.

Establishing Proper Drainage

The AIA stated that "drainage will not be a problem following rehabilitation" but did not provide additional context as to why drainage would not be impacted. The AIA peer-reviewer stated that the AIA did not adequately address site drainage issues and requested that the AIA explain why drainage would not be impacted. The peer-reviewer also requested that the rehabilitation plan explain how proper drainage would be established following agricultural rehabilitation. Specific recommendations included restoring the original drainage class and/or improving drainage conditions by establishing tile drainage if necessary and feasible. The peer-reviewer specified that tile drainage may be required for soils that are poorly drained, or for lands where the groundwater

table periodically rises within the rooting zone – which is probable following agricultural rehabilitation.

The aggregate producer responded to this concern by stating that surface material at the site consisted of sand and gravel with quick infiltration. Because of this, they "do not anticipate tile drainage or other measures to be necessary." The aggregate producer added that the current farmer had confirmed that "there are currently no drainage issues on the lands" and stated that the soil study confirmed this. The producer also explained that the contours of the proposed rehabilitation plan provided positive drainage toward the pond that would be rehabilitated on site for overflow that does not infiltrate the soils. While no specific changes were made to the AIA based on this comment, drainage best management practices were included in an agricultural monitoring plan in the final site plan. The AIA peer-reviewer was satisfied with the inclusion of drainage in the monitoring plan.

Monitoring Agricultural Rehabilitation

OMAFRA's Draft AIA Guidance cites rehabilitation monitoring as a best practice for successful restoration.²⁷ According to the Draft AIA Guidance, monitoring progressive rehabilitation may result in higher agricultural productivity and soil capability following rehabilitation.²⁸ Additionally, formal monitoring plans can improve documentation and databases of rehabilitated agricultural land and can provide valuable inputs for future policy review and revision of guideline documents.²⁹ The AIA peer-reviewer emphasized this importance and recommended that the aggregate producer incorporate an agricultural rehabilitation monitoring plan into the final site plan, as per OMAFRA Draft AIA Guidance.³⁰ The peer-reviewer specified that the monitoring plan should confirm that soil capability had been restored in accordance with the PPS (2014).³¹

²⁷ Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>

²⁸ Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>

²⁹ *Ibid.*

³⁰ *Ibid.*

³¹ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>



The aggregate producer showed some resistance to a formal monitoring plan. As detailed in email communications between the aggregate producer and the consultant preparing the AIA and site plan: *"I am wondering how far we should go regarding our commitment to monitoring... having this as a required, annual report submitted with our CAR report is something we may want to avoid."* The aggregate producer noted that at the time the application was initially prepared, AIAs were not a provincial planning requirement and OMAFRA Draft AIA Guidance, which included rehabilitation monitoring as a best practice, had not yet been published. The aggregate producer stated that they are likely to do rehabilitation monitoring themselves; however, they were not keen on the idea of it being a matter of public record, especially for seasons when rehabilitation activities were limited (i.e., after a grass legume cover crop has been planted to build soil structure). The aggregate producer went on to state that they "may not want to volunteer this information, if it is not a requirement." Although there was resistance, the aggregate producer ultimately agreed to amend the site plan to incorporate the rehabilitation monitoring plan (Table 1). The monitoring plan included reporting on rehabilitation operations, soil stripping and

handling, soil compaction, drainage provisions, soil replacement, soil testing and crop yields.³² The rehabilitation monitoring plan will be submitted to MNR with annual Compliance Assessment Reports (CARs). Because the rehabilitation monitoring plan is technically a best practice and not a requirement, it is unlikely that the monitoring plan would have been incorporated into the final site plan without the persistence of the AIA peer-reviewer.

Access Routes to Rehabilitated Lands

The initial site plan submitted with the licence application had one access route to the future rehabilitated farmlands. The AIA peer-reviewer stated that the location of the route would cause limited access to the fields, especially with farm equipment. The AIA peer-reviewer identified a missed opportunity to create an additional laneway to improve agricultural connectivity, avoid fragmentation and increase safety and accessibility to the rehabilitated field. The aggregate producer responded to this comment by stating that "a farming gate and laneway will be established post extraction and depicted on the Final Rehabilitation Plan." The aggregate producer added a diagram including the additional laneway to the site plan, which the AIA-peer-reviewer accepted. 🌿

³² *Ibid.*





Discussion

The analysis of the site plans, AIA, AIA peer-review, letter from the local federation of agriculture and comments from MNRF highlighted the challenges faced by stakeholders in developing, reviewing, approving and implementing rehabilitation plans. It also provided insights into inconsistencies and misalignments between industry priorities, public policies and best practices for rehabilitation of agricultural land.

This section discusses the findings of the analysis in the context of four key themes:

- Vague Language and Ambiguous Timelines
- Permanent Loss of Agricultural Land
- Lack of Evidence-Based and Modern Best Practices
- The Importance of Monitoring Agricultural Rehabilitation

Vague Language and Ambiguous Timelines

Site documents lacked detail and used vague and ambiguous language related to rehabilitation. This is reflected in Table 1, which offers a comprehensive overview of the rehabilitation plan. For example, while the pre-extraction CLI soil classification of the site was documented in the AIA, these classifications were not listed in the initial or final site plans. The final site plan noted that soil capability would be monitored via soil testing during progressive rehabilitation and following final rehabilitation. However, it did not state what the final soil capability (e.g., CLI soil classification) would be following rehabilitation, despite this being a key measurement of rehabilitation success as per

the PPS.³³ Moreover, the rehabilitation plan relied on language like “if possible” or “as required” without providing contextual reference to determine what standards were used to assess what is possible and when something is required. For instance, the rehabilitation plan stated that the site would be “managed and fertilized as required until self-sustaining.”

Vague language was commonly used when describing timelines. This is true for the site plan as well as the PPS and the ARA.³⁴ While the aggregate producer noted that extraction would be an interim use as per requirements of the PPS,³⁵ they did not state the duration of their extraction. There are no time frames for “interim use” or “temporary” loss of agricultural lands listed in ARA regulations and standards, the PPS, or in the site plan approved for this site. The local federation of agriculture flagged this as a significant concern. Because timelines are not defined, prime agricultural lands could be lost for “several generations”.

³³ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

³⁴ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

³⁵ *Ibid.*



Permanent Loss of Agricultural Land

While vague timelines may extend temporary loss of agricultural lands, the analysis also highlighted the potential for permanent loss of agricultural lands to aggregate extraction. The AIA described how the aggregate extraction would impact “farmland”, which includes lands being actively farmed. However, the site includes additional lands zoned as prime agricultural area that were not being actively farmed prior to extraction. Therefore, when the AIA stated that “permanent loss of farmland from the expansion will be nominal” it neglected to consider the permanent loss of prime agricultural area not currently being farmed. When looking at the raw numbers, ~14 ha of “farmland” will be lost, as well as an additional ~10 hectares of prime agricultural area (not being farmed prior to extraction). Therefore, ~24 ha of prime agricultural land will be impacted by aggregate extraction. While the AIA claimed that some of this will be offset by comprehensive rehabilitation of the expansion lands with the adjacent pit, it did not quantify to what extent the comprehensive rehabilitation would offset the loss of agricultural land in the expansion site.

The local federation of agriculture expressed significant concerns with the pit expansion due to its impacts on agricultural land. The AIA peer-reviewer similarly raised concerns surrounding net impacts of the aggregate extraction to the agricultural system. In response, the aggregate producer stated that a “large majority” of the lands would be returned to an agricultural condition. Despite concerns from the local federation of agriculture and the AIA peer-reviewer, as well as raw values showing a permanent loss of

prime agricultural land, the aggregate licence was approved by MNRF and is currently in operation.

Lack of Evidence-Based Best Practices

The progressive rehabilitation outlined in the approved site plan was based on an adaptation of the a phased agricultural rehabilitation sequence described in Mackintosh and Mozuraitis’ 1982 report *Agriculture and the Aggregate Industry*.³⁶ This report included a section entitled *Steps to Successful Rehabilitation*, which described best practices for planning rehabilitation, stripping and stockpiling soil, carrying out progressive rehabilitation, grading and recontouring the pit floor, addressing drainage concerns, eliminating soil compaction, choosing crops and post-rehabilitation management.³⁷ While this document offered a comprehensive overview of agricultural rehabilitation, it is over 40 years old. Within the past 40 years, there have been significant changes to planning policies, including agricultural and aggregate policies.³⁸ Moreover, substantial advancements have been made in the body of knowledge regarding agricultural best management practices, including practices to preserve, enhance and manage soil health and soil capability.³⁹

In 2018, OMAFRA published Draft AIA Guidance document, which included a section on *Best Management Practices for Agricultural Rehabilitation*.⁴⁰ While this document offered more updated best practices for agricultural rehabilitation, it is not grounded in significant evidence. The Draft AIA Guidance included three citations related to soil management, including: a 1991 publication on soil use and management; a 2012 publication on the role of organic amendments in soil reclamation; and a

³⁶ Mackintosh, E. E. and Mozuraitis, E. J. (1982). *Aggregates and the Aggregate Industry: Industrial Mineral Background Paper 3*. Ministry of Natural Resources, https://toarc.com/wp-content/uploads/2019/02/Agri_Aggre.pdf

³⁷ *Ibid.*

³⁸ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

³⁹ Ministry of Agriculture, Food, and Agribusiness. (2024). Agricultural best management practices. *Government of Ontario*, <https://www.ontario.ca/page/agricultural-best-management-practices>; <https://www.ontario.ca/page/soil-capability-agriculture-ontario>; Ministry of Agriculture, Food, and Agribusiness. (2025). *New Horizons: Ontario's Agricultural Soil Health and Conservation Strategy*. *Government of Ontario*, <https://www.ontario.ca/page/new-horizons-ontarios-agricultural-soil-health-and-conservation-strategy>

⁴⁰ Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>



2012 publication on soil amendments for restoring disturbed grasslands.⁴¹ The document did not reference other recent advances in soil management for preserving or restoring soil health or soil capability or crop production best practices.

In addition to a lack of evidence-based guidance, many of the best management practices outlined in OMAFRA's Draft AIA Guidance remain recommendations rather than requirements. Because of this, certain recommendations made in the AIA were not adopted in the final site plan. Best management practices not adopted included only handling soil under dry conditions and minimizing travel over soils and rehabilitated lands. Best management practices that were implemented into the final site plan included a formal agricultural rehabilitation monitoring plan, which the AIA peer-reviewer insisted upon.

The Importance of Monitoring Agricultural Rehabilitation

OMAFRA's Draft AIA Guidance states that monitoring agricultural rehabilitation is a best management practice that can support the success and viability of agricultural production following extraction. The guidelines recommend that specific metrics and activities be reported each year as part of annual Compliance Assessment Reports (CARs). While the initial site plan did not include an agricultural rehabilitation monitoring plan, the AIA and AIA peer-reviewer recommended that a monitoring plan be established. The aggregate producer showed some resistance to this, noting that they did not want to commit to volunteering monitoring information since it was not a requirement under the ARA. However, the AIA peer-reviewer continued to emphasize the importance of monitoring. The aggregate producer agreed to incorporate a comprehensive agricultural rehabilitation monitoring plan in the final site plan. The monitoring plan draws upon quantitative (e.g., soil testing) and qualitative (e.g., farmer feedback) information and will be appended to annual CARs. Recent CARs for this site indicated that most of the site currently remains in agricultural use, except for Phase 1, where extraction has begun. The monitoring plan will begin once progressive rehabilitation has started. 🌱

⁴¹ *Ibid.*





Conclusions

This case study analyzed the rehabilitation plan for a recently licenced pit expansion situated on agricultural land in Ontario. The analysis included documents related to the rehabilitation plan for the site, including site plans (initial and final), an AIA requested by the county, an AIA peer-review commissioned by the county, a letter from a local federation of agriculture, comments from MNRF and recent Compliance Assessment Reports (CARs). Except for CARs, all the documents reviewed for this report were prepared as part of the ARA licence application process. The application review and approval process took 12 years and included 8 years of site plan revisions. Aggregate extraction has only recently begun at the site. Progressive rehabilitation has not started.

According to the AIA, the majority of the site (>90%) is located on prime agricultural land, with Class 1 and Class 3 soils, indicating high soil capability for agriculture.⁴² Aggregate extraction is permitted on these lands as an interim use and must be rehabilitated back to an agricultural condition following aggregate extraction.

A comparison between the initial site plan and the final site plan approved by MNRF showed significant changes. These changes were the result of comments and concerns expressed by MNRF and by the AIA peer-reviewer. These included concerns related to drainage, soil management and erosion, access to the rehabilitated lands and rehabilitation monitoring. Through several rounds of site plan revisions, the aggregate producer was able to address these concerns, resulting in the final site plan being better aligned with best management practices for agricultural rehabilitation.⁴³ This included going above and beyond MNR standards in some instances - for example, by including a formal agricultural rehabilitation monitoring plan.

Despite significant revisions to the rehabilitation plan, certain best management practices were excluded from the final rehabilitation plan. Moreover, the final site plan remained vague, with ambiguous timelines – especially related to the timing of agricultural rehabilitation. The local federation of agriculture flagged this as a concern, stating that agricultural land could be lost for generations, and that some land may be permanently lost. These concerns are valid, considering that ~24 hectares of prime agricultural land are not being returned to an agricultural condition following extraction, posing concerns for long-term agricultural sustainability. The analysis also highlighted the lack of current evidence-based resources and guidance for planning, implementing, monitoring and evaluating rehabilitation in prime agricultural areas. 🌱

⁴² Ministry of Agriculture, Food, and Agribusiness. (2024). Soil capability for agriculture in Ontario. *Government of Ontario*, <https://www.ontario.ca/files/2024-08/omafa-soil-capability-for-agriculture-in-ontario-en-2024-08-15.pdf>

⁴³ Ministry of Agriculture, Food and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafa-agricultural-impact-assessments-en-2024-04-03.pdf>



Appendix A: Project Information

This case study report is a part of a broader research project: **Developing Evidence-based Guidelines for the Rehabilitation of Aggregate Extraction Sites in Prime Agricultural Areas in Ontario**. The overall goal of this project is to develop practical, evidence-based guidelines for rehabilitating aggregate extraction sites on agricultural land. Specifically, the project will:

- Identify key soil health properties and indicators that support rehabilitation to agricultural land uses.
- Evaluate evidence-based rehabilitation best practices for building and maintaining soil health that supports productive agricultural land.
- Assess recurring challenges related to rehabilitation in licence applications, site plans, rehabilitation plans and agricultural impact assessments for sites on agricultural land.
- Develop standard protocols for demonstrating and confirming rehabilitation measures are in place.

The rehabilitation of pits and quarries is not only mandated; it is a vital step in the sustainable management of aggregate resources in the province. Moreover, the quick return of these sites to an agricultural condition post-extraction is critical for minimizing the loss of productive farmland. This loss not only affects food security directly but also underscores the importance of expedited rehabilitation efforts.

The PPS (2024) requires that prime agricultural areas be protected for long-term use.⁴⁴ It allows the extraction of aggregates in prime agricultural areas, on prime agricultural land and specialty crop areas as an interim land use, stipulating that extraction sites must be returned to an agricultural condition. For prime agricultural areas, agricultural condition is defined as “a condition in which substantially the same areas and same average soil capability for agriculture is restored.”⁴⁵ For specialty crop areas, the PPS (2024) requires that “the same range of specialty crops common in the areas can be achieved, and, where applicable, the microclimate on which the site and surrounding area may be dependent for specialty crops will be maintained or restored.” The PPS (2024) further requires that both progressive and final rehabilitation must be carried out.

For sites where rehabilitation to an agricultural condition is required, the collective results of this project will:

- Reduce delays and uncertainty in the approval process and minimize revisions of applications, site and rehabilitation plans and technical reports by adding clarity and transparency to the commenting and approval process.
- Lead to enhanced consistency and efficiency of the licence commenting and approval process.
- Provide all stakeholders with access to an evidence-based set of parameters/indicators and common/standard language and approaches for inclusion in site and rehabilitation plans and technical reports.

⁴⁴ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>; Penaud, A., Holy, K., Lemay, M. A., Fullerton, C. (2025). Policy Timeline – the Intersection of Agriculture and Aggregates. VISTA Science and Technology.

⁴⁵ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>



- Allow OMAFA (and other review and commenting agencies) to provide timelier, more consistent reviews and enhanced guidance to applicants on, 1) what constitutes rehabilitation to an agricultural condition and same average soil capability for agriculture and; 2) the details to include in applications, site and rehabilitation plans and relevant technical reports to fully describe how sites will be returned to an agricultural condition.
- Lead to improved, more consistent rehabilitation of sites in prime agricultural areas and specialty crop areas and increased compliance. 🌾





Appendix B: Glossary of Terms

Aggregate Resources Act (ARA): Legislation that directs the management of aggregate resources in Ontario; controls and regulates aggregate operations on Crown and private lands; enforces the rehabilitation of land from which aggregates have been extracted; and works to minimize adverse impacts to the environment in respect to aggregate operations.⁴⁶ Mechanisms utilized to enforce the ARA include aggregate licences and site plan documents. The Ministry of Natural Resources (MNR) is responsible for the administration of aggregate licences and enforcing the ARA. While the ARA governs aggregate extraction, the aggregate industry must also comply with provincial planning policies (the PPS and the Greenbelt Plan) and municipal policies.

Agricultural Condition: In prime agricultural areas, agricultural condition is defined as “a condition in which substantially the same areas and same average soil capability for agriculture will be maintained, restored or enhanced.”⁴⁷ In specialty crop areas, agricultural condition is defined as “a condition in which substantially the same areas and same average soil capability for agriculture are restored, the same range and productivity of specialty crops common in the area can be achieved, and, where applicable, the microclimate on which the site and surrounding area may be dependent for specialty crop production will be maintained, restored or enhanced.”⁴⁸

Agricultural Impact Assessment (AIA): An “evaluation of potential impacts of non-agricultural uses on the agricultural system. The assessment

recommends ways to avoid or if avoidance is not possible, minimize and mitigate adverse impacts.”⁴⁹

Canada Land Inventory (CLI) for Agriculture: An inventory and “interpretative system used to assess the effects of climate and soil characteristics on the limitations of land for growing common field crops.”⁵⁰ The system evaluates soil productivity, the range of common field crops that can be grown on specific soil classes and best management practices to support the conservation of soils for field crop production.⁵¹

Comprehensive Rehabilitation: A “rehabilitation of land from which mineral aggregate resources have been extracted that is coordinated and complementary, to the extent possible, with the rehabilitation of other sites in an area where there is a high concentration of mineral aggregate operations.”⁵² Comprehensive rehabilitation is often proposed for pit expansions, which enables adjacent licenced pits to be rehabilitated to a uniform post-extraction land-use (e.g., agriculture).

Greenbelt Plan: The Greenbelt Plan (2017) is a land-use planning framework established under the Greenbelt Act to provide protection to agricultural lands, natural heritage sites and water resources in Ontario’s Greater Golden Horseshoe region.⁵³ The plan includes the Protected Countryside, Urban River Valleys and lands within the Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan and Parkway Belt West Plan areas. The plan works alongside the PPS to ensure sustainable resource use and environmental and agricultural preservation.

⁴⁶ Government of Ontario. (2021). Aggregate Resources Act. *Government of Ontario, E-laws*, <https://www.ontario.ca/laws/statute/90a08>

⁴⁷ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ Ministry of Agriculture, Food, and Agribusiness. (2024). Soil capability for agriculture in Ontario. *Government of Ontario*, <https://www.ontario.ca/files/2024-08/omafa-soil-capability-for-agriculture-in-ontario-en-2024-08-15.pdf>

⁵¹ Ministry of Agriculture, Food, and Agribusiness. (2024). Soil capability for agriculture in Ontario. *Government of Ontario*, <https://www.ontario.ca/files/2024-08/omafa-soil-capability-for-agriculture-in-ontario-en-2024-08-15.pdf>

⁵² Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

⁵³ Government of Ontario. (2017). Greenbelt Plan. *Government of Ontario*, <https://files.ontario.ca/greenbelt-plan-2017-en.pdf>



Growth Plan for the Greater Golden Horseshoe:

Growth Plan for the Greater Golden Horseshoe (2019), was a provincial plan for the Greater Golden Horseshoe region of Ontario, which spans much of Southern Ontario, including the western boundaries of Lake Ontario, Lake Simcoe, the Georgian Bay area of Lake Huron and the eastern boundary of Lake Erie. Under the Growth Act, this provincial plan set out the regulatory framework for land-use planning policies in the Greater Golden Horseshoe. The plan worked alongside the Provincial Policy Statement (2020), until the PPS came into effect in 2024.⁵⁴

Mineral Aggregates Resources: Gravel, sand, clay, earth, shale, stone limestone, dolostone, sandstone, marble and granite suitable for construction, manufacturing and maintenance purposes.⁵⁵

Overburden: All material laying between the subsoil and the workable mineral aggregate deposit. “Many sand and gravel deposits in Ontario do not contain overburden material – engineers often use the term to refer to material lying above the workable deposits, including topsoil and subsoil.”⁵⁶

Prime Agricultural Areas: Regions where prime agricultural lands predominate, including specialty crop areas and associated Canada Land Inventory Class 4 through 7 lands, and additional areas with a local concentration of farms which exhibit characteristics of ongoing agriculture. “Prime agricultural areas may be identified by a planning authority based on provincial guidance or informed

by mapping obtained from the Ontario Ministry of Agriculture, Food and Agribusiness and the Ontario Ministry of Rural Affairs or any successor to those ministries.”⁵⁷

Prime Agricultural Land: Land with high capability for agriculture, including specialty crop areas and Canada Land Inventory Class 1, 2, and 3 lands.⁵⁸

Provincial Planning/Policy Statement (PPS): The Provincial Planning/Policy Statement, is issued under the authority of the Ontario Planning Act. The PPS consists of policies that stipulate the use and development of land, including agricultural and aggregate land uses. The PPS (2024) replaced PPS (2020) and A Place to Grow: A Growth Plan for the Greater Golden Horseshoe (2019). Previous version of the PPS include 1997, 2005 and 2014.⁵⁹

Ripping: A remedial approach utilized to alleviate soil compaction and promote root penetration, infiltration and development of soil structure on rehabilitated lands.⁶⁰ It is recommended that ripping be constrained to the depth of each soil horizon (topsoil or subsoil) to minimize mixing soil layers.⁶¹

Secondary Agricultural Lands: Areas with agricultural capability, that fall outside of the soil capability range utilized to define prime agricultural areas. Secondary agricultural areas are typically found in an area with a high concentration of agricultural activity. These lands are associated with CLI Classes 4 through 7.⁶²

⁵⁴ Ministry of Municipal Affairs and Housing. (2019). A Place to Grow: Growth Plan for the Greater Golden Horseshoe. (2019) Government of Ontario, <https://files.ontario.ca/mmah-place-to-grow-office-consolidation-en-2020-08-28.pdf>

⁵⁵ Government of Ontario. (2021). Aggregate Resources Act. *Government of Ontario, E-laws*, <https://www.ontario.ca/laws/statute/90a08>

⁵⁶ Mackintosh, E. E. and Mozuraitus, E. J. (1982). Aggregates and the Aggregate Industry: Industrial Mineral Background Paper 3. *Ministry of Natural Resources*, https://toarc.com/wp-content/uploads/2019/02/Agri_Aggre.pdf

⁵⁷ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

⁵⁸ *Ibid.*

⁵⁹ Open Council. (2024). Ontario Provincial Planning Statement (PPS) tells municipalities how to handle growth and development. (2024). Open Council. <https://opencouncil.ca/provincial-planning-statement/>. Clark, A., Holy, K., Lemay, M. A., Fullerton, C. (2025). Policy Timeline – the Intersection of Agriculture and Aggregates. VISTA Science and Technology.

⁶⁰ Ministry of Agriculture, Food and Agribusiness. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>

⁶¹ *Ibid.*

⁶² Wellington County. (2025). Wellington County Official Plan. *Wellington County*, <https://www.wellington.ca/business-development/planning-development/official-plan-land-use>



Soil Capability: The suitability of soils for growing field crops. Higher soil capability aligns with higher CLI classes.⁶³

Soil Health: The “ability of soil to support crop growth without becoming degraded or otherwise harming the environment.” Soil health includes physical chemical and biological components, as outlined by the OMAFA.⁶⁴

Specialty Crop Area: Areas within the agricultural system whereby specialty crops, such as tender fruits (peaches, cherries, plums), grapes, vegetable crops, greenhouse crops and crops from agriculturally developed organic soil predominate.⁶⁵ According to the PPS (2024), specialty crop areas are typically the result of:

- “Soils that have suitability to produce specialty crops, or lands that are subject to special climatic conditions, or a combination of both;
- Farmers skilled in the production of specialty crops; and
- A long-term investment of capital in areas such as crops, drainage, infrastructure and related facilities and services to produce, store, or process specialty crops.”⁶⁶

Stripping: A process of removing the topsoil, subsoil and overburden material located above mineral aggregate deposits. Prior to extraction, soil studies can be utilized to identify the depths of each soil zone and inform a stripping plan to minimize mixing of soil layers.⁶⁷

Subsoil: The zone immediately beneath the topsoil, which may extent to a depth of 1 m or more. “Under natural conditions, the subsoil is often well structured, and contains numerous plant roots... In summer drought periods, plants may obtain much of their moisture requirements from this zone.”⁶⁸

Topsoil: The uppermost zone of the soil, often darker in colouration due to the accumulation of organic matter. “On arable agricultural lands, it is normally restricted to the depth of cultivation, which is about 15 to 30 cm.”⁶⁹ 

⁶³ Ministry of Agriculture, Food and Agribusiness. (2024). Soil Capability for Agriculture in Ontario. *Government of Ontario*, <https://www.ontario.ca/files/2024-08/omafa-soil-capability-for-agriculture-in-ontario-en-2024-08-15.pdf>

⁶⁴ Ministry of Agriculture, Food and Agribusiness. (2024). New Horizons: Ontario’s Agricultural Soil Health and Conservation Strategy. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafa-new-horizons-ontarios-agricultural-soil-health-and-conservation-strategy-en-2024-04-04.pdf>

⁶⁵ Ministry of Municipal Affairs and Housing (2024). Provincial Planning Statement. *Government of Ontario*, <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

⁶⁶ *Ibid.*

⁶⁷ Ministry of Agriculture, Food and Agribusiness. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafa-agricultural-impact-assessments-en-2024-04-03.pdf>

⁶⁸ Mackintosh, E. E. and Mozuraitus, E. J. (1982). Aggregates and the Aggregate Industry: Industrial Mineral Background Paper 3. *Ministry of Natural Resources*, https://toarc.com/wp-content/uploads/2019/02/Agri_Aggre.pdf

⁶⁹ *Ibid.*



Appendix C: Agricultural Impact Assessment Methodology

The AIA for the site was prepared under the requirements of the Greenbelt Plan, which required that AIAs be prepared to evaluate the impacts of non-agricultural uses to prime agricultural areas located in the Greenbelt.⁷⁰ The AIA evaluated potential impacts of aggregate extraction on the site and the surrounding agricultural system and recommended mitigation measures for such impacts. The AIA was prepared by a consulting firm hired by the aggregate producer.

Based on the recommendations provided by OMAFRA's AIA Draft Guidance Document,⁷¹ the AIA assessed impacts to agricultural operations and the agricultural system through two separate study areas: the "Primary Study Area" and the "Secondary Study Area". The Primary Study Area included: "the area immediately adjacent to the subject lands that has the potential to be directly impacted by the aggregate extraction operation," with the "subject lands" being the proposed pit expansion. The Primary Study Area encompassed a 120 m radius from the subject lands. The Secondary Study Area included "the potential area that may be affected by indirect impacts of the proposed operation." While the AIA stated that indirect impacts "range considerably based on the size of the aggregate operation," the AIA applied a 1 km radius to the Secondary Study Area.

The methodology used to assess impacts to the primary and secondary study areas included a review of relevant documents and databases. The AIA specified that the following documents were reviewed:

- Provincial and municipal policy and planning documents,
- Plans and reports prepared in support of the ARA licence application, prepared by other consulting firms, including: the natural environment technical report,

the hydrogeological assessment, the transportation (traffic) impact study, the noise assessment and the planning report and ARA summary statement,

- Draft site plans for the proposed pit expansion, including the Existing Conditions Plan, the Operational Plan and the Rehabilitation Plan,
- Site plans and reports for the pre-existing, adjacent pit,
- OMAFRA's Artificial Drainage Map,
- Aerial photography (historic and recent),
- Soil data resource information, including "Ontario soil survey reports and mapping, the provincial digital soil resource database, Canada Land Inventory Agricultural Capability mapping, Soil Suitability information, and mapping (for specialty crops), and information from on-site investigations."

The AIA also included a land use survey, a soil survey and a CLI evaluation. The land use survey was conducted using Google Satellite Imagery to identify agricultural operations and activities on and surrounding the proposed pit expansion. The soil survey and CLI evaluation were prepared by a soil services firm and included the following methodology:

- A review of local, provincial and national soil information and soil information,
- A review of published CLI ratings,
- A review of aerial photography and interpretation of soil polygons, disturbed soil areas and "miscellaneous landscape units (i.e., boulder pavement, streams, wayside pits),"

⁷⁰ Government of Ontario. (2017). Greenbelt Plan. *Government of Ontario*, <https://files.ontario.ca/greenbelt-plan-2017-en.pdf>

⁷¹ Ontario Ministry of Agriculture, Food, and Rural Affairs. (2018). Draft Agricultural Impact Assessment (AIA) Guidance Document. *Government of Ontario*, <https://www.ontario.ca/files/2024-04/omafra-agricultural-impact-assessments-en-2024-04-03.pdf>



- A “detailed soil survey” following OMAFRA’s Guidelines for Detailed Soil Surveys for Agricultural Land Use Planning.⁷²
- A surrounding land reconnaissance survey
- Mapping to illustrate the location of the proposed pit expansion, the occurrence of soil polygons and appropriate CLI capability ratings.

In all, this methodology offered an overview of potential impacts to the agricultural system. No other methodologies were listed in the AIA. 🌿

⁷² Ontario Ministry of Agriculture, Food and Rural Affairs. (2004). Guidelines for Detailed Soil Surveys in Ontario. *Government of Ontario*, <https://www.ontario.ca/page/guidelines-detailed-soil-surveys-ontario>





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